

THE PAUL TESSIER LECTURE

LECTURE BY GARY C. BURGET, M.D.

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Aesthetic Reconstruction of the Nose and Adjacent Facial Units Using Free Microvascular Flaps

Reconstruction of the face by free microvascular transfer, unlike free breast reconstruction, has not produced aesthetic results. A 2-dimensional free flap, fitted to the length and width of the defect, fills the hole, but neglects important aesthetic aspects of the reconstructive problem. Aesthetic success requires facial reconstruction tissue layer by tissue layer and facial unit by facial unit. Flaps must be of sufficient volume to fill the recesses of the facial defect. The facial plane of the cheek, upper lip and the nasal platform must be constructed before the nose is placed upon it. The segmental nature of the face, its units, must be respected. An unobstructed nasal lining vault should be constructed. A bone and cartilage framework with normal nasal proportions and dimensions must support the nose. Finally, fine surface contours, the subunits, must be added to the reconstructed surface.

Gary C. Burget, M.D.

INSTRUCTIONAL COURSE BY GARY C. BURGET, M.D.

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Current Techniques of Midfacial Reconstruction

This course will present specific techniques for the use of free microvascular transfer in reconstruction of the nose, cheeks and upper lip. Aesthetic concepts and pitfalls will be stressed.

Gary C. Burget, M.D.

KEYNOTE LECTURES

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K1	MICROSURGICAL RECONSTRUCTION Karcher H Graz, Austria
K2	ENDOVASCULAR AND PERCUTANEOUS APPROACH IN VASCULAR MALFORMATION OF THE FACE Moret J, Mounayer C, Piotin M, Spelle L Paris, France
K3	PRIMARY AND SECONDARY TREATMENT OF CLEFT PALATE Sommerlad BC London, United Kingdom

MICROSURGICAL RECONSTRUCTION

Karcher H
Graz, Austria

Since the first free flap transplantation 40 years have passed and today this technique has become routine. Today microvascular transplantations are used for soft- and bone tissue reconstructions as well as for muscle and nerve restorations. Especially neurovascular muscle transplants are used for functional restorations of the longstanding facial palsy. Up to now also "benign" indications have been worked out as extreme atrophies of the maxilla or mandible, defects in malformations, trauma or osteoradionecrosis.

Three dimensional techniques have significantly improved the planning and transferring of free flap operations. Prefabrication of flaps has been a new technique combining old techniques of plastic surgery with modern microsurgery. In the future new possibilities improving the bone quality in difficult cases are distraction osteoneogenesis and bone inducing factors, although many of these techniques are still performed in the laboratory.

**ENDOVASCULAR AND PERCUTANEOUS
 APPROACH IN VASCULAR MALFORMATION
 OF THE FACE**

Moret J, Mounayer C, Piotin M, Spelle L
Paris, France

Vascular malformations are errors of vascular morphogenesis, and must be differentiated from vascular tumours such as haemangiomas, because the natural history and treatment are different. Vascular malformations are divided in 2 groups regarding their flow speed: high-flow arteriovenous malformations or slow-flow vascular anomalies (capillary, venous, lymphatic or combined types). The main endovascular techniques for treatment of vascular lesions are embolization and sclerotherapy. Embolization involves placement of occlusion devices through a catheter, generally into the arteries feeding a high-flow malformation. Sclerotherapy is performed through percutaneous access of vascular lesions and is used primarily for slow flow malformations. Previous methods of treatment have been of limited value but recently good results have been reported with instillation of fibrosing agents as ethanol. The treatment of these superficial malformations remains challenging requiring a multidisciplinary approach for optimal results.

**PRIMARY AND SECONDARY TREATMENT OF
CLEFT PALATE**

Sommerlad BC
London, UK

The author has developed a technique of cleft palate repair which combines radical dissection of the velar musculature with minimal disturbance to the mucoperiosteum of the hard palate.

The technique has evolved over 25 years, based on anatomical studies and experience.

The operating microscope is used for all repairs. The dissection is carried out through a cleft marginal incision only in 80% of cases, without any mucoperiosteal flap elevation or lateral incisions. In clefts involving lip and palate, single layer vomerine flap closure of the hard palate has dramatically reduced the need for lateral releasing incisions. The velar reconstruction is carried out by elevation of the oral mucosa from the musculature, suture of the combined nasal layer/muscle layer and then dissection of the velar musculature from the nasal layer, separation from the back of the hard palate, tensor tenotomy, splitting of the palatopharyngeus muscle and identification and retro-positioning of the levator palati muscle, which is then sutured in the midline, usually behind the middle third of the velum.

Secondary velopharyngeal surgery rates at 10 years follow-up have reduced to 4.6%, although such figures are of little value in comparing techniques. A similar technique is used for submucous cleft palate repair.

In patients with velopharyngeal incompetence following cleft palate repair, if examination and investigations demonstrate anterior insertion of the levator muscles, palate re-repair is usually the first line of treatment. This involves a retro-positioning and reconstruction of the palate musculature as described above and achieves satisfactory results in 90% of cases without producing velopharyngeal obstruction.

Further evolution of the techniques will occur as understanding of the anatomy improves.

References

- The use of the operating microscope in cleft palate repair and pharyngoplasty *Plast & Reconstr Surg* Vol 112 November 2003.
- A technique for cleft repair *Plast & Reconstr Surg* Vol 112 November 2003.
- Submucous cleft palate – a system of grading and a review of a consecutive series of 40 submucous cleft palate repairs.
- Cleft Palate–Craniofacial Journal 2004; Vol 41: 114–123.
- Palate Re-repair Revisited Cleft Palate–Craniofacial Journal 2002; Vol 39 (3): 295–307.
- Cleft palate re-repair—a clinical and radiographic study of 32 consecutive cases *British J Plas Surg* 1994; Vol 47 406–410.

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ORAL SESSIONS

TOPIC 1: HISTORY OF MAXILLOFACIAL SURGERY

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2	CRANIO-MAXILLOFACIAL SURGERY IN CORPUS HIPPOCRATICUM Mylonas AI, Tzerbos FH
3	CRANIO-FACIAL SURGERY IN THE WORK OF GIROLAMO FABRICI D'ACQUAPENDENTE (1533–1619) Nardini LG, Bonati MR, Ferronato G
4	MANAGEMENT OF MAXILLO-FACIAL INJURIES IN THE XVIII CENTURY Marzano UG, Rossi D, Agazzi A, Dorto O, Troletti GD
5	TB GUNNING AN INNOVATIVE SURGEON Davidson MJC
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11	HISTORY OF THE “GUEULES CASSEES” Delaporte S

HIPPOCRATES AND THE FIRST SYSTEMATIC TREATMENT OF INJURIES TO THE MANDIBLE

Beck-Mannagetta J

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Background: It is common knowledge that the earliest record of the treatment of a luxated mandible is found in the works of the physician Hippocrates from the Greek island of Cos. The aim of this presentation is to demonstrate that Hippocrates gave detailed descriptions of the symptoms and treatment of dental and mandibular injuries as well. **Material:** The English edition of the complete scriptures of Hippocrates by WHS Jones and ET Withington (1923–1931) was used to search for the earliest systematic approach to injuries of the mandible. **Results:** The volume Surgery of the Bones and Joints; does not only contain the classic description of the repositioning of the luxated lower jaw. It also gives detailed account of the symptoms and treatment of mandibular fractures and dentoalveolar trauma by splinting and immobilisation. Dislocated fractures should be repositioned under distraction and by applying gentle force. Mobile teeth should be tied together and to the adjoining stable teeth by means of a golden thread. The fracture area should then be covered with wax. For immobilisation Hippocrates recommends the use of leather straps to be wrapped around the head, taking care that the broken fragments of the mandible are in the correct position. Afterwards the patient is put on a soft diet for ten days. If all this is performed in the right manner then healing will occur quickly and the teeth will suffer no harm. **Conclusion:** Hippocrates can be regarded as the pioneer in maxillofacial trauma by presenting the first rational therapeutic guidelines for the treatment of dental and mandibular trauma in the European history of medicine.

Keywords: Hippocrates; Trauma; Teeth; Mandible; Therapy

CRANIO-MAXILLOFACIAL SURGERY IN CORPUS HIPPOCRATICUM

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Introduction: Corpus Hippocraticum is the highest expression of ancient Greek medicine and typifies the beginnings of the scientific spirit in the healing arts. The Hippocratic Collection consists of about 70–72 medical works, where many observations and remarks regarding Oral and Cranio-Maxillofacial Surgery and Pathology are disseminated. **Material & Method:** In the present study, Corpus Hippocraticum was examined in detail for clinical descriptions, epidemiological doctrines, descriptions of

surgical conditions and instrumentation referring to Oral and Maxillofacial Surgery. The original texts of the Hippocratic Collection written in ancient Greek, as they were published along with a translation in modern Greek in G. Pournaropoulos "Hippocrates Works", Editor A. Martinos, Athens, 1968, were studied, the particular publication being the main bibliographic fountain for this retrospective essay on medical history. **Results:** Aphorisms and points referring to Cranio-Maxillofacial Surgery and Pathology are found in the following works of Corpus Hippocraticum: "Epidemics, book IV" §19, "Flesh" §12–13, "Epidemics, book V" §15, "Dentition" §19, "Aphorisms, III" §25, "Epidemics, book VI" §2, "Physician" §9, "Affections" §4, "Prognostic, book II" §11, "Diseases, book II" §31–32, "Epidemics, book VII" §113, "Joints" §30–34, "Wounds in the head". The scope of Hippocratic perspicacity and experience regarding Oral and Cranio-Maxillofacial Surgery includes dentoalveolar surgery, orofacial infections, maxillofacial trauma, dentofacial abnormalities and orthognathic surgery, as well as cranio-maxillofacial injuries. **Conclusions:** Cranio-Maxillofacial Surgery constitutes a significant part of the surgical writings of Corpus Hippocraticum. The observation, sagacity and clinical judgement of Hippocrates underline the importance of physical examination and diagnosis in every field of medical practice, particularly in Oral and Cranio-Maxillofacial Surgery, especially in an age when no diagnostic aids were available.

Keywords: Corpus hippocraticum; Cranio-maxillofacial surgery; Hippocrates

CRANIO-FACIAL SURGERY IN THE WORK OF GIROLAMO FABRICI D'ACQUAPENDENTE (1533–1619)

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Girolamo Fabrici D'Acquapendente (1533–1619) one of the most famous representative of the Paduan Medical School, was at the same time a skilled surgeon, a highly-considered anatomist, an eclectic individual, builder of surgical and orthopaedic instruments, and a firm believer in the importance of anatomical knowledge for surgeons. In XVI century Padua was the main town of the territories of the Venice Republic, outside Venice even for its well-deserved fame of political, religious and intellectual freedom, and its University was attracting students from all Europe. The same Fabrici in his almost fifty years of teaching, educated entire generations of future physicians, including William Harvey. Fabrici started to publish his frequent anatomic observations and surgical experiences only in 1600 when he was almost 70 years old, and after a thirty-year activity. A particularly important item of his production is the large anatomical Atlas Totius animalis fabricae theatrum, unfortunately unpublished. We have today in the National Marciana Library in Venice, more

than 200 figures of the monumental text which should reproduce in colours and natural size the anatomy of man and the most important animals. Several of the large images we have now are a true iconographic asset of the printed Fabrici's work. This paper aims at presenting colour anatomical figures not yet published of the cranio-facial district that for the first time will be referred to the technical surgical descriptions Fabrici had learned from the classic Greek and Roman physicians or had invented, critically analysed and divulged in the academic world of the XVII century. Moreover will be presented the techniques used for craniotomy, to cure epilepsy and vertigo, to correct lagophthalmus and ectropion, nasal polyps, lip and palate clefts, tongue and tonsils surgery and the methods used to reduce jaw dislocation.

Keywords: Cranio facial surgery; Maxillofacial surgery history

Abstr ID 430

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MANAGEMENT OF MAXILLO-FACIAL INJURIES IN THE XVIII CENTURY

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Maxillo-facial injuries, described in medical Operas of 1700s, are caused by accidents and strokes in the everyday life, and more frequently by blunt-, edged- (blades, swords, foils...) and fire-weapons (guns, archibuses...) in duels and in war on battle-fields. In the XVIII Century the medical treatment does not concern the radiodiagnosis, the use of antibiotics, the management of shock, the techniques of endotracheal intubation, the transportation and early resuscitation of the injured, so as to determine high mortality, but principles of clinical diagnosis and surgical treatment of injuries and traumas are outlined according to severity and site. Most advances in treatment of maxillo-facial injuries have been achieved in time war. Wounds made by gun-shot are the most complicate sort of wounds that can be inflicted: solution of continuity together with contusion, attrition, tissue dilacerations, bone fractures and complications, such as haemorrhages, inflammation, gangrene and extraneous bodies violently carried into the wound. In simple wounds the cure is performed by astringent and drying medicaments, but it must also avoid its suppuration. In complex injuries the treatment is performed according to superficial and deep wounds, and site (soft tissues of the head and neck; orbit and eye; nose; maxilla and mandible; oral cavity and tongue; salivary glands; vasa and nerves); but often the death due to internal lesions. The XVIII Century also sees the conception of new surgical instruments and techniques used in surgery, such as tracheotomy. Passed experience leads to the modern Maxillo-Facial Surgery.

Keywords: Maxillo-facial injuries; Surgical management

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TB GUNNING AN INNOVATIVE SURGEON

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Aim: To acknowledge the contribution of TB Gunning (1813–1889) to Oral and Maxillofacial Surgery particularly in the field of trauma management. **Method:** Presentation of a brief autobiography of the American dental surgeon T.B. Gunning indicating his lack of formal surgical training. His work in the fields of cleft palate obturation, anatomy and especially the management of jaw fractures is described. Gunning's innovative trauma management with jaw splints is illustrated by reference to his case studies. **Conclusion:** Gunning despite a lack of formal training had an innovative approach to clinical practice and his work in the field of facial fracture management in particular is worthy of note.

Abstr ID 745

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HISTORY OF MAXILLOFACIAL SURGERY IN CROATIA

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The founder of maxillofacial surgery in Croatia is prof. Ivo Eupar who has been educated by Trauner (Graz) and Pichler and Hofer (Vienna). Already in 1933 prof Eupar introduced maxillofacial and oral surgery as a curriculum at the School of Medicine, University of Zagreb, at the same time practicing maxillofacial surgery at the ENT Department. As early as 1936. he published the book "Surgery of the Jaws". Due to his efforts, in autumn 1939, the Department of Maxillofacial and Dental Surgery was founded, as the first maxillofacial department in this part of Europe. The other centers were later founded in Rijeka (Virag and R. Tavèar) and Osijek (A. Štajner). Department in Zagreb remains the main centre for Maxillofacial and oral surgery. For 65 years all Croatian maxillofacial and oral surgeons were trained there. Croatian Society of Maxillofacial and Plastic Surgery was founded in 1954, also by prof Ivo Eupar. After the Croatian Society, the Societies for maxillofacial and plastic surgery were also founded in Ljubljana and Belgrade, and were joined in the Yugoslav Association for Maxillofacial and Plastic Surgery. Within the Society the journal "Chirurgia maxillofacialis et plastica" was founded in November 1955. The journal has been published until 1992 and was cited abroad and indexed in Index Medicus. In 1970 Prof Eupar and Prof. Mladen Barloviæ were founder members of European Association for Maxillofacial Surgery. In 1998. the Croatian Society has changed the name into the Croatian Society of Maxillofacial, Plastic and Reconstructive Head

and Neck Surgery, and under the leadership of Prof. Dr Mišo Virag. It has national meetings every year and has also organized the 4th International Danubius Conference on Maxillofacial and Oral Surgery in Rovinj in 2002.

Keywords: Croatia; Maxillofacial surgery; History

Abstr ID 44

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THE BRIEF REVIEW AND PROSPECTS OF DEVELOPMENT OF MAXILLOFACIAL SURGERY IN ARMENIA

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History of medicine in Armenia has deep roots. We can learn about treatment of maxillo-facial area diseases from old manuscripts of Matenadaran (Museum of ancient books). Before VIII century methods of treatment were borrowed from Greek and Arabic doctors, but beginning with IX century Armenian physicians began to apply their own methods. With development of advanced medicine doctors educated at European Universities came to Armenia. At the beginning of XX century patients with maxillo-facial diseases were treated mainly by common surgeons. But in 1967 Yerevan State Medical Institute issued stomatologists and maxillo-facial surgeons thus developing maxillo-facial surgical procedure. Beginning with 1990 9 specialized clinics of maxillo-facial surgery and surgical stomatology have been established. On the base of these clinics doctors, post-graduates and ordinators are prepared, also great scientific and practical work is done. There are certain difficulties in the work of those clinics connected with lack of equipment this being the result of hard economical conditions. But it should be mentioned that our specialists are highly educated and skilled. The amount of the performed operations and their quality are equal to those in developed European countries and the USA. All the mentioned facts encourage us to believe that we have an excellent base for the future development of maxillo-facial surgery in Armenia. We shall succeed very soon if our country lives at peace without wars as only peace makes it possible to develop progressive science.

Keywords: Yerevan State Medical University

Abstr ID 129

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90 YEARS LONG DEVELOPMENT OF MAXILLOFACIAL SURGERY AS A SEPARATE SURGICAL DISCIPLINE AT THE TERRITORY OF SERBIA AND MONTENEGRO

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This study presents the development of of maxillofacial surgery as a separate surgical discipline within the period of last ninety years. It was not easy to get any of these data, because the most of the facts were never written at all, and the others were lost in fires and war devastations. There is no doubt today that dr Atanasije Puljo was the one who had performed the first surgical procedure that could be recognized as the very beginning of the development of maxillofacial surgery. Under the war conditions during Balkan Wars in the year 1912, Dr. Atanasije Puljo managed the double fracture of mandible with osteosynthesis by wire ligatures after the gunshot wound in one Serbian soldier, that has been pretty inventive and modern approach in that time. Together with dr Puljo, dr Maksimovic was also one of the pioneers who had tried to reconstruct the large defect of the mandible after postinflammatory necrosis during the year 1929., but the technique and result of this attempt were not published. Maxillofacial surgery had been integrated into stomatosurgery or otolaryngology until November 12th 1955, when the Section of Maxillofacial Surgery has been established at the Serbian Physicians Association. Since that time this discipline progressively develops. The paper also presents recent experiences in the domain of war maxillofacial traumatology.

Keywords: 90 years; Maxillofacial surgery; Serbia and Montenegro

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A. BERETTA CLINIC INSTITUTE FOR MOUTH DISEASE IN BOLOGNA: THE BIRTH AND DEVELOPMENT OF MAXILLO-FACIAL SURGERY IN ITALY

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The history of maxillofacial surgery in Italy is closely tied to the city of Bologna because its origins were here. At the end of the First World War, at Via S.Vitale 59 in Bologna, there was a military medical ward devoted to the care of soldiers who suffered from mutilations of the face and jaws. Dr. Cesare Cavina was called on to head this ward (connected to the University Odontoiatric Clinic headed by Dr. Arturo Beretta). In 1919 Dr. Beretta transformed the Military Hospital into a new institution: the "Clinical Institute for Mouth Diseases", and Dr. Cavina was appointed as Director of the surgical ward. Therefore, due to Dr. Cavina's exclusive ability, the birth of Oral Surgery began then, and at the same time Maxillo-Facial Surgery started as a real specialty. After Cavina's death in 1935, Dr. Natale Calabró became the head of the surgical ward. Under his leadership the Institute developed further and became very well known. In 1941, after the death of Dr. Beretta, the Institute was named after him. Only in 1962 was the name of the Oral Surgery ward changed into "Oral and Maxillo-Facial Surgery". In 1966 Dr. Guido Stea, became the head

of the ward, and with the help of a group of young, talented co-workers, he made it possible for the Maxillo Facial Surgery Division of the Beretta Institute (as it was called after 1968) to become perfectly aligned with the most important clinics in the international sphere. In 1984, while the strictly odontoiatric ward of the Beretta Institute maintained the original name, only the Maxillo-Facial Surgery Division was inserted into the National Health Service and was no longer a part of the old Institute. Therefore, a historical period ended, and a new one began.

Keywords: History; Maxillofacial; Beretta; Bologna; Italy

Abstr ID 693

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ORIGIN OF THE AESTHETIC FACIAL SURGERY

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How could it be possible to add such an antinomic adjective as “aesthetic” to the word surgery ? To answer this question we have to analyse the beginning of the facial aesthetic surgery around the only 20th century, at the same time of the psychoanalysis beginning and also its evolution in relation with philosophy and ethnology. Inquestionably, the first world war gambled as a unit of time and site, all the conditions of a meeting between surgeons coming from at the countries of the west world and a huge amount of various and serious facial traumatism. They constituted the basis of an independant maxillofacial surgery which is the origin of the aesthetic surgery even if at the same time the improvement of the anesthesiology and the asepsy gave

rise to the general cosmetic surgery. Later the procedures involved in that cosmetic surgery took their part in the general reflexion of surgery and also in the 3D technics with the time dimension. That way a sort of the inversion between noun and adjective, aesthetic surgery became the motor of a surgical design. Finally there is obviously an ambiguous relationship between aesthetic surgery and the body, which became its property for transformation and instead to be “object of the art” it became “subject of art”. Those elements of analysis could be the basis of research works for each of us whose is involved in such practice and ponder about the meaning of its action.

Keywords: Aesthetic surgery History Art and Surgery

Abstr ID 855

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HISTORY OF THE "GUEULES CASSEES"

Delaporte S

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“Gueules cassées” of the First World War : restore faces ? The First World War reveals the taking of another step in the brutality inflicted to the soldier’s bodies. One of the essential aspects of the new violence on the battlefield between 1914 and 1918 deals with the breaking of the protective anatomic barriers. From now on the projectiles penetrate into the skulls, the stomachs, the chests, they tear limbs away, ruin faces. Indeed, never before, the physicians did observe so serious body traumatism and in such a number. This way, the “Gueules cassées” represent the most characteristic example of the new violence of the battlefield. And it’s seems very important here to study the medical answer at the new question put by the Great War.

TOPIC 2: ANTE-NATAL DIAGNOSIS, EMBRYOLOGY AND SURGERY OF THE CRANIOFACIAL MALFORMATIONS

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14	EXPERIMENTAL ASPECTS ON THE PATHOGENESIS OF ROBIN SEQUENCE Schubert J, Jahn H
15	PREVENTIVE EFFECTS OF FOLIC ACID ADMINISTRATION ON RETINOIC ACID INDUCED CELLULAR DAMAGES OF MECKEL'S CARTILAGE IN RATS: AN ULTRASTRUCTURAL STUDY Firat D, Kuntsal L, Sirin Y
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18	GORLIN-GOLTZ SYNDROME. CASE REPORTS AND GENETIC STUDY Kiss T, Lászlófy CS, Udvaros I, Csuka O, Juhász A, Oberna F
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20	CERVICOFACIAL TERATOMAS: FOUR CASES REPORT Lietin B, Revol P, Aldana C, Barthélémy I, Beaujard H, Vanliferighen P, Mondié J-M
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22	THE ADHERENT LIP – STILL A PROBLEM IN CLEFT LIP AND PALATE SURGERY Hemprich A, Weinzierl K, Bröckert M
23	CLINICAL FINDINGS AND SURGICAL MANAGEMENT OF RARE FACIAL CLEFTS UNDER CONDITIONS OF CHARITY MISSIONS IN DEVELOPING COUNTRIES Sieg P, Hakim S, Jacobsen H-C, Hermes D
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25	PRIMARY TREATMENT OF CLEFT LIP AND PALATE: OPERATIVE PROTOCOLS IN UDINE REGIONAL HOSPITAL Maranzano M, Freschi G, Dovier A, Pittini C, Mizzau A, Janes M, Miotti AM
26	DELAIRE MODIFICATION OF INFERIORLY BASED FLAP PHARYNGOPLASTY Sabesan T, Paraneetharan S, Watts R, Markus AF
27	OUR EXPERIENCE IN THE TREATMENT OF VELOPHARYNGEAL INSUFFICIENCY Giuliani R, Pederneschi N

Prog. no.	Title/Authors
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Abstr ID 904

12

USEFULLNESS OF ANTENATAL IMAGING IN MANAGEMENT OF CLEFT LIP AND PALATE**Montoya P**Presenting Author: Montoya P
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Since the work of CHRIST in 1981, Ultrasound Imaging appears the base of antenatal diagnosis in cleft foetuses. Interest of antenatal imaging is well documented in two fields:

1) In a genetic and malformative approach: the anatomical type of cleft is to day well correlated with clinical neonatal findings (NYBERG-1995). This exam allows also a selection of atypical or rare facial clefts.

2) In a psychological parental approach, the exact determination of the malformation and his surgical reconstruction appears an important fact (DAVAL BAKH-TA- 2000).

For the surgeon, do the antenatal imaging have an impact on surgical timing ?

This point is to day in discussion, but new possibilities of imaging (3D ultrasound, Doppler US, RMN) opens a new field in the study of deformative processes associated with the palato-maxillary malformation, related to functional anomalies (fœtal deglutition)

So Antenatal Imaging would be an help for understanding maxillary growth perturbations and allows a best timing in surgical correction (limits of neonatal surgery, place of neonatal prosthetic and orthopedic management).

Abstr ID 869

13

THE TRIGEMINAL NERVE IMPORTANCE OF THE NORMAL EMBRYOLOGICAL DEVELOPEMENT OF THE NERVE FOR THE DEVELOPMENT OF THE FACE**Cannistra C²⁻³, Barbet P¹, Iannetti G², Fadda T**

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The authors examine 110 human embryos aged from five weeks until eleven weeks obtained after voluntary interruption of pregnancy and three malformed foetus on the cephalic region died after birth.

An Franceschetti's Syndrome, an orbito-facial cleft type 5 and a cyclopia. In the histological study of the embryos, the authors have observed the precocious and pre-eminent development of the trigeminal nerve in the cephalic region. The authors have seen in the anatomical dissection and histological study of the foetus the different activity of the trigeminal nerve in the malformed foetus which has influenced the development of the face. The precocious degeneration of the mandibular branch of the trigeminal nerve (First 4-6 weeks of pregnancy) has caused the

agenesis of the malar region and the condilar region on the Franceschetti's Syndrome. The delayed degeneration (after 14 week of pregnancy) of the infraorbital nerve has caused a necrosis of the tissues of the face and the orbitofacial cleft 5. In the cyclope, we have a precocious alteration of the frontonasal region (procencephalon) during the first 3-4 weeks of pregnancy. But the normal development of the trigeminal nerve permits a normal development of the orbital region that appears fused medially nevertheless the ethmoidonasal region is absent. On the basis of our studies, the authors have concluded that the damage of the trigeminal nerve during different periods of the embryological development causes different types of facial malformation and regulates the growth of the malformed face.

Abstr ID 653

14

EXPERIMENTAL ASPECTS ON THE PATHOGENESIS OF ROBIN SEQUENCE**Schubert J, Jahn H**

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Objective: There is still discussion regarding the involved pathogenetic factors which are the primary cause of the induced cascade of main symptoms in the Robin sequence: the insufficient mandibular growth or the failed descent of the tongue. **Design:** 45 randomly selected, 18 days old formalin-fixed fetuses of A/WySn mice, which have up to 44% clefts in the offspring on the basis of a basic genetic defect, were investigated. 24 of them had a cleft palate. The position of the mandible in relation to the fetuses' head and to the presence or absence of a cleft was measured. Furthermore the width of the clefts and the position of the tongue were determined. **Results:** All fetuses showed a marked retrognathia, which was more severe in the cleft group ($P < 0.05$), but there was no correlation between the degree of retrognathia and the width of the cleft. The median width of the clefts was 3.4 mm (1.6-6.3 mm). The tongue was inbetween the cleft in all 12 wide clefts (> 3.4 mm wide), in the other 12 free in the oral cavity. The position of the tongue did not influence the degree of retrognathia ($P < 0.05$), moreover the tongue was even free in all fetuses with severe retrognathia. **Conclusion:** The results support the primary role of the retroposition of the mandible in the development of the cardinal symptoms of the PRS.

Keywords: Robin Sequence; Cleft Palate; Pathogenesis; Embryonic development; Mandible; Tongue Position

Abstr ID 667

15

PREVENTIVE EFFECTS OF FOLIC ACID ADMINISTRATION ON RETINOIC ACID INDUCED CELLULAR DAMAGES OF MECKEL'S CARTILAGE IN RATS: AN ULTRASTRUCTURAL STUDY**Firat D, Kuntsal L, Sirin Y**

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Aims: Craniofacial abnormalities are among the most common congenital deformities. Meckel's cartilage which plays a major role in the development of the mandible, is highly susceptible to maternal teratogenic drug use. We therefore aimed to investigate ultrastructurally, possible protective effects of folic acid (FA) supplementation in an retinoic acid (RA) induced experimental maxillofacial defect model. **Materials and Methods:** 32 Sprague-Dawley pregnant female rats were used in this study. RA was administered orally at the doses of 40,60,80 mg/kg respectively, on the gestational day 8.5. 4.0 mg/kg FA was injected intraperitoneally at 7th, 8th and 9th days of pregnancy. Animals were sacrificed on the day 17.5. Following the gross inspection, mandibular segments of the embryos were processed for histologic examination under electron microscope. **Results:** RA administration in all doses resulted with statistically significant changes in mean fetal weight, mean fetal height, and mortality rate when compared to controls. FA supplementation prevented the decrease in mean fetal weight ($P<0.01$), and mortality rate ($P<0.05$) at the dose of 40 mg/kg. No significant change was found at the doses of 60 and 80 mg/kg. Ultrastructurally, extensive degeneration was observed in all intracellular components of the chondrocytes of RA treated animals. Empty spaces without organelles were observed to have scattered throughout the cytoplasm. In the group where 40 mg/kg RA and FA are applied together, there was a marked decrease in the number of lipid droplets and an improvement in the structure of granular endoplasmic reticulum along with intact nuclei. **Conclusion:** Detrimental effects of RA on Meckel's cartilage can be prevented by FA administration in rats. Nevertheless, intracellular damages are irreversible at the doses exceeding 40 mg/kg.

Keywords: Retinoic acid; Folic acid; Meckel's cartilage; Ultrastructural; Rat

Abstr ID 74

16

EXPERIMENTAL STUDY ON THE EFFECT OF PRENATAL FOLIC ACID SUPPLEMENTATION ON PROCARBAZINE-INDUCED CLEFT PALATES AND MICROGNATHIA

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Aims: The administration of Procarbazine (PCZ) – an anti-cancer agent – to gravid rats induced amongst other fetal cleft palates and micrognathia. It was investigated whether the prenatal supplementation with folic acid, a vitamin known for its protective properties against

congenital malformations, is capable of reducing the occurrence of palatal and mandibular dysmorphogenesis. **Methods:** Three groups of gravid LEW-1A rats were treated with 200mg/kg body weight (BW) PCZ on day 13.5 of gestation (GD 13.5). Dams of two groups were additionally supplemented with folic acid (1 mg/kg BW resp. 2.5 mg/kg BW) from GD13.5 through GD16.5. On GD19.5, all fetuses were obtained by caesarian sections. Fetal heads were histologically scrutinized. **Results:** The administration of PCZ alone produced cleft palates in 100% of the male and 68% of the female rat fetuses. Micrognathia was observed in 100% and 50% of the males and females, respectively. The maternal supplementation with 1 mg folic acid significantly reduced the incidence of cleft palates (56%) and micrognathia (48%) but only in male fetuses. The higher folic acid dose (2.5 mg) significantly lowered the incidence of cleft palates and micrognathia in males (40%), and the occurrence frequency of cleft palates (35%) in females where the incidence of micrognathia remained statistically unchanged. **Conclusion:** Folic acid supplementation at the used doses confers a substantial protection against PCZ-induced cleft palates and micrognathia in rats; these effects are dose- and gender-related.

Keywords: Cleft palates; Micrognathia; Folic acid; Procarbazine poster

Abstr ID 94

17

PLACE OF MAGNETIC RESONANCE IMAGING IN ANTENATAL DIAGNOSIS OF CLEFT LIP AND PALATE

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Subject: Since 1985, the magnetic resonance imaging (MRI) has taken place in imaging of fetal anomalies. Levine (1998) demonstrates the interests in facial imaging. The technical developments of MRI allow new possibilities in antenatal diagnosis of facial malformations. The purpose of this work was to evaluate the interest and limits of MRI in cleft lip and palate. **Material and Methods:** Antenatal diagnosis of 45 non-syndromic cleft lip and palate were done by standard echography. In all the cases a fetal-MRI was performed and the 3D surfacing reconstruction was possible in 20 cases. A comparison with echographic analysis and neonatal malformative finding was made. A correlation of the anatomical form was established. **Results:** In the cleft lip alone, MRI was not interesting compared to the echographic study. In cases of unilateral cleft lip and palate MRI appeared as an interesting element to malformative screening (study of palatal and vomeroseptal deformation). The best indications were the bilateral cleft lip and palate: in these cases MRI was superior in evaluation of palatal malformation and positioning of the maxillary segments. **Conclusion:** MRI is not a competitive technique to echographic diagnosis in case of cleft lip and palate patients. The MRI allows essentially a best study of deformation of the maxillary skeleton in total cleft lip and palate.

Keywords: Cleft lip and Palate; Antenatal Diagnosis; MRI

GORLIN-GOLTZ SYNDROME. CASE REPORTS AND GENETIC STUDY

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The Gorlin-Goltz syndrome is a quite rare hereditary disease, but it has a great importance for the maxillofacial surgeon, because the patients need life-long surgical therapy to treat the multiplex and recurrent jawcysts and basalio-mas. The cysts and skin tumors can develop for long without symptoms, later causing irremediable distortion, so the early diagnosis and the close observation of these patients is very emphasised. Since the syndrome exists as a precancerous condition, and leads to extreme sensitivity to irradiation, the damage of the DNA-repair enzymes can play role in the manifestation of the sickness. Mutations in the genes of these enzymes can reduce the repair capacity of the DNA, and predispose to appearing of neoplasm. This fact could explain the high frequency of skin and other tumors in Gorlin-Goltz syndrome. In our study six affected patients and their families were examined. We performed clinical, radiological and genetic investigation. We focused on the genes of the DNA-repair enzymes with the method of molecular genetics. Three polymorphism of two genes (XRCC1 codon 194, codon 399 and XRCC3 codon 241) were studied with PCR-RFLP method. The countless skin, skeletal, radiological symptoms known from the literature were identified in several combinations at each patients. At XRCC1 codon 399 polymorphism four patients proved to be heterozygote and two patients proved to be mutant. The Gorlin-Goltz syndrome has autosomal dominant inheritance connected to the PTCH gene of the 9q chromosome, but the damage of the DNA-repair enzymes also seems to have part in the pathogenesis. The investigation of the XRCC1 code 399 can help to diagnose the disease early in the members of the affected families before the symptoms appear.

Keywords: Gorlin-goltz syndrome; Genetic; DNA-Repair genes

SIX FAMILIES WITH VAN DER WOUDE AND/OR POPLITEAL PTERYGIUM SYNDROME: ALL WITH A MUTATION IN THE IRF6 GENE

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Cleft lip with or without cleft palate (OFC) is the most frequent craniofacial malformation in humans. Its aetiology is likely multifactorial: some are a result of genetic mutations, while others may be due to environmental

factors. Since 20% of OFC patients have a positive family history, genetic factors are thought to play an important role. Yet, the mode of inheritance of OFC remains controversial. We have initiated our genetic study of cleft lip and/or palate on syndromic OFC. We have collected 6 families with individuals affected by Van der Woude syndrome (VWS). VWS is a dominantly inherited disorder characterized by pits and/or sinuses of the lower lip, with cleft lip and/or cleft palate. It is the most common cleft syndrome. Recently, the Interferon regulatory factor-6 (IRF6) gene, localized to the VWS1 locus on 1q32.2, was shown to harbour mutations in patients with van der Woude and/or popliteal pterygium syndrome (PPS). In this study, we analysed six novel VWS families, with or without PPS, for possible mutations in the IRF6 gene. Screening revealed a novel heterozygous substitution in each family. The mutations affected either the DNA-binding domain, or the protein-binding domain of the transcription factor. This data confirms that mutations in the IRF6 gene are responsible for VWS and PPS syndromes, and suggests IRF6 to be the major causative gene.

Keywords: VAN Der woude; IFR6 gene

CERVICOFACIAL TERATOMAS: FOUR CASES REPORT

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Subject: Cervicofacial teratomas are extremely rare neoplasms and are defined as benign and malignant tumors that contain the three elements which remember all embryonic layers: ectoderm, mesoderm, endoderm. We report the observation of four cases. **Aims:** Through these cases of neonatal teratomas, we will try to extract a strategy of management thanks to our experience and the review of the literature. **Results:** They were two boys and two girls, four were diagnosed by prenatal ultrasound examination (one in late first quarter of pregnancy leading to an abortion, the others during the third quarter of pregnancy: 28, 29, 33 weeks pregnant) and confirmed with magnetic resonance imaging (RMI): multiple calcifications in a large, mixed, solid and partitioned cystic mass. A fetal chromosomal exam always has done and was normal. They born by caesarean: two prematurely (31 and 34 weeks pregnant), all intubated at birth for breathing failure, and transferred in neonatal reanimation (33 days on average). The topography is one maxillary (associated with bilateral cleft lip) and two left laterocervical. Surgical treatment is radical: total resection the following birthday for cervical teratomas and sixty four days post birth for the other. Histological analysis shows one mature and two immature teratomas. A close supervision after surgery and after outcome is necessary: clinical (cervical and general exam), radiological, biologic, morbidity (thyroid gland, hypoparathyroidism, tracheomalacia). One cervical teratoma reappeared nevertheless a normalization of the alpha foeto-protein rate and the treatment was also surgical. No one metastasized.

Conclusion: In such cases of huge teratomas, a well coordinated team with obstetrician, pediatrician and maxillofacial surgeon is required, for successful management for both mother and baby.

Keywords: Head and neck teratoma; Newborn

Abstr ID 658

21

THE EUSTACHIAN TUBE–AN INTERDISCIPLINARY CHALLENGE

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Objectives: The impact of cranio-maxillofacial procedures upon Eustachian tube function still is widely unknown. Aim of this presentation is to depict new aspects of the Eustachian tube function and to demonstrate its importance for cranio-maxillofacial surgery. **Methods:** Two different groups of patients were examined both clinically and by MRI of the Eustachian tube region. One of these groups were 15 adult patients with a history of cleft palate, one were 26 patients with a history of a so-called patulous Eustachian tube. **Results:** The clinical and MRI-findings reveal two new aspects for cranio-maxillofacial surgery: The problem of persistent hearing loss with cleft palate patients crucially depends on the integrity of the pterygoid hamulus and of the tensor veli palatini muscle after surgery. The masticatory muscles on the other hand play an important role for the Eustachian tube function also in non-cleft patients. **Conclusion:** The impact of cranio-maxillofacial procedures upon Eustachian tube function still is under-estimated. The knowledge of its pathophysiology should influence the surgical technique of cleft palate repair, i.e. the use of a microscope to avoid damage of the tensor veli palatini muscle as well as the pterygoid hamulus. In addition to this the oral and maxillofacial surgeon should be aware of the symptoms of a patulous Eustachian tube in patients with craniomandibular disorders and he should know as well that he has a key position for treating this frequent and embarrassing syndrome by orthodontic therapy.

Keywords: Eustachian tube; Cleft palate; Masticatory muscles

Abstr ID 247

22

THE ADHERENT LIP–STILL A PROBLEM IN CLEFT LIP AND PALATE SURGERY

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Aims: In spite of all efforts, a large number of cleft lip and palate patients with adherent upper lips still can be found

mainly in bilateral cases. This may lead to aesthetic and severe functional problems especially when orthodontic treatment is indicated. The purpose of this study was to analyse different degrees of lip adherence or a lack of free oral vestibulum. Moreover modified surgical procedures are described to achieve better primary results. **Material and Method:** From November 2003 to April 2004 we examined 49 patients (aged from 3.4 to 43.3 years; SD 15.1 “b 6.9) from our CLP clinic with 31 unilateral and 18 bilateral clefts. Impressions were taken to measure the height of the oral vestibulum as well as the width of the attached gingiva with iodine (Lugols) solution. In order to assure a mobile lip for better speech development and later orthodontic treatment we performed a vestibuloplasty using free split mucosa from the hard palate starting at the age of three years. **Results:** As could be expected most cases of lip adhesion were found in young bilateral cleft lip and palate patients, where the prolabion had been underdeveloped (18 cases). In unilateral clefts, however, the width of attached gingiva was also noted between 0.5–3 mm in the cleft area. In these cases the vestibuloplasty lead to a marked improvement with attached gingiva width between 4–6 mm. **Conclusion:** Bearing this problem in mind we have started to use a modified open vestibuloplasty with parts of the upper lip red in bilateral clefts a year ago. By now the early results show good function and good aesthetics of the upper lip up to the age of 15 months. The study is still in progress.

Keywords: Cleft lip and palate; Oral vestibulum; Vestibuloplasty

Abstr ID 665

23

CLINICAL FINDINGS AND SURGICAL MANAGEMENT OF RARE FACIAL CLEFTS UNDER CONDITIONS OF CHARITY MISSIONS IN DEVELOPING COUNTRIES

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The surgical treatment of rare facial clefts is a multi step procedure in almost all cases. Their complexity and the different individual degree of cleft formation make classification difficult and require adjusted surgical strategies. If the neurocranium is involved in the cleft formation or severe dysmorphia affecting the upper airway is diagnosed, intensive care management is usually necessary postoperatively. This paper reviews our experience in surgical management of rare facial clefts under third world conditions applied within fourteen charity missions in Africa, Asia and Middle America. Due to the special situation surgical treatment always was performed as one-step procedure. 15 Children (3 female, 12 male) of a total of 481 patients treated with a cleft lip and palate deformity suffered from rare complex facial clefts. Among these there were 6 lateral clefts (Tessier No 7), 4 oro nasal clefts (Tessier No 0 and No 3), 2 oral ocular clefts (Tessier No 5) and 3 cranial clefts (Tessier No 12 and No 14). The paper focuses on the clinical findings, preoperative diagnostics and classification of these cases. The modified surgical

management under conditions of charity missions as well as the outcome of these patients will be presented in detail and discussed.

Keywords: Rare facial clefts; Charity missions

Abstr ID 804

24

PRIMARAY TREATMENT OF TOTAL CLEFT LIP AND PALATE 8 YEARS EXPERIENCE IN THE SOUTH OF TUNISIA

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Unilateral and especially bilateral total cleft represent the most serious anatomopathological forms of cleft lip and palate. Many protocols and techniques are reported in the literature, but controversies are still present. **Aim:** The aim of this study is to present our result in treating 40 patients with total cleft lip and palate, and to compare it with other series reported in the literature. **Materials and Methods:** Between 1995 and 2003, 150 patient with cleft lip and palate wer retrospectively reviewed, of those, 40 were total, 22 cleft were unitalteral, and 18 were bilateral. A palatal resine plaque was used for all patients since their birth. First stage surgery was performed at the age of 6 months, consisting in cheik rhinoplasty and staphyloraphy. In the second stage surgery, the hard palate is colosed, patients presenting a less larger form were operated at 9 to 12 months, those presenting with a larger form were operated at 18 months. A minimal, dissection of palatal fibromucosa was performed. Phonetic rehabilitation was started from 3 years old. **Results:** The mean follow up was 5 years. Good aesthetic result was achieved on 28 patient (70%). A normal nasal breathing associated to a good nasal permeability was observed. Primary velopharyngeal competence was good on 67% of cases. Phonetic result was satisfactory in 73% of cases. A palatal fistula was present on 30% of patients. Good psychological and social integration was observed. **Discussion and Conclusion:** Our protocol and techniques showed good results comparing to the literature reports long tern randomised controlled studies are needed.

Abstr ID 413

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PRIMARY TREATMENT OF CLEFT LIP AND PALATE: OPERATIVE PROTOCOLS IN UDINE REGIONAL HOSPITAL

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In this paper the Authors present the incidence of this particular malformation in the Friuli Venezia Giulia Area, the protocols in use and the results of all the consecutive

cases affected by cleft lip and palate. Primary focus is posed on the primary surgery timing for cleft lip and palate at the Maxillofacial Unit of the St. Maria della Misericordia Regional Hospital in Udine. A detailed inspection of the case notes was undertaken to ascertain the presenting diagnosis, the complications and the outcome. The type of defect was recorded and classified so as the type of functional facial and oral outcome. The protocol for primary cleft lip and palate patients considers early pre-operative orthopoeic treatment and early closure of the lip and the soft palate. Pre operative orthopoeic treatment is starded in the first hours after birth and is considered of primary importance in guiding the growth of the upper maxillary bones and helping the patient in all the functions impaired by this malformation. Early manimally invasive surgery is again considered a very important point in the treatment plan. All of the patients are admitted at the Pediatric Intensive Care Unit of the Regional Hospital and all of the pre-operative screenings and post operative neonatological specific care is given by this unit. The Authors compare their protocol with the protocols published in the literature in terms of pre-surgical and surgical techniques and care, clinical outcome and clinical and functional impact on the scheletal growth of patients. Maxillofacial Unit, "St. Maria della Misericordia" Regional Hospital-Udine (director: Dott. A.M.Miotti) *Pediatric Intensive Care Unit, "St. Maria della Misericordia" Regional Hospital-Udine (director: Prof. F.Macagno)".

Keywords: Cleft lip and palate; Congenital craniofacial malformations

Abstr ID 623

26

DELAIRE MODIFICATION OF INFERIORLY BASED FLAP PHARYNGOPLASTY

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Velopharyngeal dysfunction (VPD) causes a defect of nasality, presenting as nasal emission of air, hypernasality or hyponasality. Pharyngeal surgery with or without palatal lengthening forms an important part of any protocol in the management of VPD. However, the most effective technique of surgery remains controversial. The superiorly based posterior pharyngoplasty is often claimed to be the most effective on the basis of direction of pull, in contrast to the inferiorly based flap. However, a modification of the latter, described by Delaire*, in which the base is more superior, overcomes these concerns**. **Aim:** To assess speech outcomes following surgery to correct VPD using the Delaire modification of the inferiorly based flap pharyngoplasty. **Patients and Methods:** 50 consecutive patients who underwent this procedure at the Dorset Cleft Centre by a single surgeon, were included in the study. Diagnosis includes VPD associated with cleft palate including submucous cleft palate, non cleft VPD and syndromic VPD. Velopharyngeal competence was assessed with the Aerophonoscope and by Videofluoroscopy and where possible by Nasendoscopy. Cleft speech type characteristics were recorded using the Cleft Palate Audit Protocol for Speech Score (CAPS). Patients characteristics are compared and analysed

statistically. **Results and Conclusion:** The speech outcome of Delaire modification of inferiorly based flap pharyngoplasty is reported. The statistical and clinical significance of this surgical intervention is discussed. This modification, by placing the base of the flap at level of the hard palate is arguably mechanically advantageous when compared with the superiorly based or conventional inferiorly based flap. **References:** *Delaire J, Tulasne J-F. Technique de l'uranostaphylo-pharyngo-plastic a pedicule inferior: Quelques details operations. *Rev Stomatol Chi Maxillofac* 1979; 80: 26–32. **Millard DR Jr: Cleft craft 111: Evolution of its surgery: Alveolar and Palatal Deformities. Boston, Little, Brown, 1980, p. 240.

Keywords: Velopharyngeal dysfunction; Nasality; Speech outcome; Delaire modification of pharyngeal flap

Abstr ID 212

27

OUR EXPERIENCE IN THE TREATMENT OF VELOPHARYNGEAL INSUFFICIENCY

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Velopharyngeal insufficiency is common in cleft palate population, according most authors 25 percent after palatal repair. The goal of the surgical intervention for the correction of VPI is to diminish airflow through the nose during speech by reducing the area of the nasopharynx. The pharyngeal flap has been the most often used surgical approach to this problem. Sphincter pharyngoplasty is preformed on numerous occasion. A third method (new) is the distraction of the hard palate. We report our surgical experience on this subject and we show our results with each procedure. We look for having a precise indication for every surgical operation. Evaluation of velopharyngeal closure and speech is obtained with listening the patient. The second important direct index is a count of nasal resonance. Direct observation of the soft palate is also important but there is minimal correlation between the appearance of the velopharyngeal structures and the speech which they are capable of producing. Cephalometry the limitations of the procedure are related to the single film sagittal plane technique. Videofluorography evaluation of velopharyngeal function offers the advantage of direct and measurable visualization of palatal excursion during speech but for having this goal, you have to perform X ray on 3 planes. Nasal air escape: measurement of the quantity of air escaping through the velopharyngeal orifice as a significant role in the continuing search for a satisfactory method for evaluating speech objectively.

Keywords: Cleft palate; VPI; Evaluation and surgical treatment

Abstr ID 459

28

EXPERIENCE WITH A MODIFIED FURLOW TECHNIQUE FOR CLEFT SOFT PALATE REPAIR

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Objectives: To review complications and modifications of Furlow double opposing Z-plasty in two-staged palatal closure. **Material and Methods:** Study design: single centre/surgeon – prospective registration of a consecutive series. Exclusion criteria: soft palate cleft only. Sample: 46 cases of soft palate closure. Demographic data: The mean age at repair was 12.1 months (SD 1.9). The mean follow-up period was 4.5 years (SD 3). In 25 patients the hard palate cleft had been closed at the age of 4 years. **Results:** Omission of lateral releasing incisions, and the use of quilting sutures, lateral Y-Y closures and fibrin glue were the main modifications. Hospitalization length averaged four days (SD 1). Two patients experienced post-operative stridor requiring steroid administration. Six patients developed mucosal slough in the oral layer which healed by secondary epithelialisation. There were no oro-nasal fistulae in the twenty-five patients who also had the second stage closure of the hard palate cleft. Pharyngoplasty was not necessary. **Conclusion:** Furlow's double opposing Z-plasty technique has been modified for use in two-stage closure of complete cleft palate with an acceptable rate of complications. A major asset is the avoidance of oro-nasal communications. This is in contrast with a series of single-staged soft palate closures.

Keywords: Cleft lip; Alveolus and palate; Reconstructive surgery; Complications

Abstr ID 568

29

MORPHOFUNCTIONAL CHANGES IN PALATE TISSUE OF CHILDREN WITH FACIAL CLEFTS

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Congenital facial clefts belong to the second most often malformation in newborns of the world population. Despite numerous investigations still unclear are morphopathogenetical mechanisms in development of facial clefts. The aim of this study was investigation of morphological growth and quality in the hard and soft tissue, obtained during plastic surgery from 20 children with lip palate clefts with routine, immunohistochemical and statistical methods. Processus maxillaris showed osteones of different thickness (from 0.06 ± 0.01 to 0.16 ± 0.1 mm) and chaotically oriented osteocytes. Number of cells in bone varied from 192.397 ± 33.3 to 439.469 ± 52.2 per mm^2 . Intensive staining for substance P was seen in osteocytes. However, chaotically organized cells contained weak immunoreactivity for peptide or even absence of it. Apoptosis was not detected in bone. Hyaline cartilage of spina nasalis anterior showed condensation of chromatin in some chondroblasts and chondrocytes and almost all cells were positive for substance P. Number of cells in cartilage varied from 32.24 ± 21.91 to 174.3 ± 69.16 . TUNEL discovered slightly

positive nuclei of many chondrocytes. Palate epithelium showed hyperplasia, atrophy or branched epithelial cords in the underlying connective tissue. Also regional vacuolization of basal cells was detected. Inflammation with epitheloid cells, plasma cells, white blood cells, and prominent nerve bundles, sclerotic blood vessels and neoangiogenesis was seen in subepithelium. Apoptosis affected muscle and connective tissue. **Conclusions.** Hard tissue in children with lip palate cleft possessed degeneration and beginning of apoptosis in hyaline cartilage of spina nasalis anterior, and unregular growth of processus maxillaris. Degenerative changes of bone relate to chaotic localization of collagen, development of prominent osteones with limited number of chaotically placed cells without apoptosis. Main changes in soft tissue include the atrophy, hyperplasia, growth of epithelium in the connective tissue, neoangiogenesis and inflammation, suggesting about regeneration variations of tissue.

Keywords: Clefts; Structure; Morphopathogenesis

Abstr ID 93

30

CORRELATION BETWEEN ALVEOLAR PROCESS MORPHOLOGY AT BIRTH, DENTAL FORMULA AND MAXILLARY GROWTH

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Subject: The brachymaxilly in the cleft lip and palate (CLP) patients stay a problem despite the progress of the primary repair treatment. On the other hand the prognosis of the maxillary growth at birth is unpredictable. The aim of this long-term retrospective study was to correlate the maxillary growth with the decidual dental formula and the morphology of the alveolar process morphology at birth. **Material & Method:** From a longitudinal study of 122 of unilateral CLP, 76 had complete data (palatal and dental cast, cephalometric study). According to the alveolar process morphology at birth 4 malformative subgroups could be identified in a preliminary study with statistical differences. The decidual dental formula was studied especially the agenesis of the decidual lateral incisor and its position (classification of Tsai TP). We compared these results with secondary maxillary growth after 12 years by cephalometric study based on Wylie analysis. **Result:** The brachymaxilly was present in 29 cases and the maxillary growth was good in the other cases. The brachymaxilly was associated with an agenesis of the decidual lateral incisor in 15/29 and with type III subgroup in 13/29. This subgroup was characterized at birth by a large cleft with a curved nasal septum, a hypoplastic alveolar border of the cleft, and a short sagittal length. When the maxillary growth was good the agenesis of decidual lateral incisor was 7/47 and only 17/47 had a type III at birth. **Conclusion:** The association of dimensional analysis of dental arch at birth and dental decidual formula seem to allow a predictive evaluation of secondary maxillary growth. A prognostic classification of maxillary growth based on these criteria is proposed.

Keywords: Cleft lip and palate; Long term follow up; Maxillary growth; Dental formula

Abstr ID 490

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SECONDARY BONE GRAFT IN ALVEOLAR CLEFT: COMPARISON BETWEEN ILIAC AND TIBIAL BONE

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Purpose: Secondary cancellous bone grafting in alveolar cleft has been an accepted procedure in oral and maxillofacial surgery. The most commonly used site for harvesting sufficient bone is the iliac crest. Sometimes harvesting in this area causes postoperative complications. Recently, tibial bone has been used as an alternative source to minimize these complications. However, resorption of the grafted bone is usually seen postoperatively. The purpose of this study was to compare the postoperative resorption between the iliac and tibial bone grafting in the alveolar cleft. **Patients and Methods:** 20 patients were selected in this study, which were iliac group (10 patients) and tibial group (10 patients). Radiographs were taken at 1 week, 3 months and 6 months after grafting. Postoperative X-rays were evaluated and compared marginal bone level between the two groups. The height of the grafted bone was compared between the two groups. The height at one week was taken as control. **Result:** Mean bone resorption rate in iliac group was 22.9 cm (range 15.9–33.9) at the 3 months, 34.0 cm (range 18.9–56.2) at the 6 months, in tibial group was 19.4 cm (range 7.2–35.0) at the 3 months, 30.9 cm (range 19.7–43.0) at the 6 months. **Conclusion:** These results suggest that the degree of bone resorption was no significant difference between the two groups, although the tibial group showed less resorption. Therefore, tibial bone was the one of the suitable donor site and usefulness for the orthodontic and implant treatment as well as iliac.

Keywords: Bone graft; Alveolar cleft; Iliac and Tivia; Bone resorption

Abstr ID 752

32

RECONSTRUCTION OF THE ALVEOLAR CLEFT FOR IMPLANT PLACEMENT USING TIBIAL BONE

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Purpose: Autogenous cancellous bone graft is a common procedure for alveolar cleft in secondary surgery. After secondary surgery, bone bearing of alveolar cleft allowed for proximal implant placement. But, after only autogenous cancellous bone graft, the lack of internal loading of the

edentulous ridge leads to resorption of the alveolus in the horizontal and eventually the vertical dimension. In this presentation, to minimize these complications, tibial bone was used for the alveolar cleft reconstruction and veneer grafting was used for the horizontal and the vertical augmentation for implant placement. **Surgical Method:** With a sterile technique, a 1.0 cm vertical incision was made through the skin. Tibia cortical bone was fenestrated using trephine bar. Craig Bone Biopsy Set (CBBS) was inserted carefully into a deep part while turning. Autogenous cancellous bone was able to finally get about 4.0 g. A fissure bur was used for outlining the osteotomy. The cortical bone for veneer grafting was harvested. The cortical bone of fenestration locus was put on the nasal cavity bottom. The cortical bone for veneer grafting was fixed. PCBM was trimmed to fit the bone cleft. Implant (Replace 4.3 to 13 mm: Nobel Biocare) placement was performed postoperative 3 months. **Result:** Autogenous cancellous bone was measuring approximately 4.0 mm. The postoperative course was uneventful. Patient could walk from next day of the surgery. X-ray examinations were performed 3 months after surgery and image findings demonstrated well maintained interdental bony height and width in the premaxilla. **Conclusion:** Autogenous cancellous and cortical bone grafts can be successfully used for the augmentation of horizontal and vertical alveolar defects in the maxilla. Improved alveolar tomography allows for the appropriate placement of endosseous implants and long-term survival of restored implants.

Keywords: Alveolar cleft; Tibial bone; Implant

Abstr ID 456

33

EVALUATION OF BONE GRAFT USING PROXIMAL TIBIA FOR ALVEOLAR CLEFT

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Purpose: Autogenous cancellous bone grafting is a common procedure for cleft of palate in secondary surgery. The most commonly used site for harvesting sufficient bone is the extra oral region, the iliac crest; however, open harvesting in this area usually results in many postoperative complications. To minimize these complications, tibial bone was used as an alternative source. The purpose of this report was to evaluate 10 cases undergoing secondary grafting of alveolar clefts from tibia. **Patients and Methods:** 10 consecutive patients (5 men and 5 women) who underwent alveolar cleft grafting with tibia grafts in the First-Department of Oral and Maxillofacial Surgery, Aichi-Gakuin University were reviewed from JUN 2003 to JAN 2004 (8 months). The mean age was 15.9 years (range 9 years–23 years). In all operation, we evaluated operation, which were amount of harvesting bone, blood loss, and operation time. **Results:** All patients underwent unilateral tibial bone harvesting with general anaesthesia. An average amount of cancellous bone was 5.4 g, with a range of 2 to 6.5 g, average of blood loss was 28.6 g, with a range of 9 to 50 g, and average of operation time was 24.9 minutes, with a range of 19 to 33 minutes. **Conclusion:** Review of 10

cases of proximal tibia autogenous bone grafting revealed that advantages of this approach include ease of harvest and minimal complication, short surgical time, an available amount of bone and minimal blood loss. Therefore, the proximal tibia offers a suitable donor site for alveolar clefts.

Keywords: Bone graft; Tibia; Alveolar cleft

Abstr ID 12

34

ANTIMICROBIAL PROPHYLAXIS IN BONE GRAFTING AND NOSE PLASTIC PROCEDURES IN CLEFT LIP AND PALATE PATIENTS

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The aim was to compare the effectiveness of antibiotic prophylaxis used either on operation day only or five postoperative days in cleft lip and palate patients. **Material and methods:** This was a prospective, randomized, clinical study. Material comprised secondary bone-grafting procedures performed from January 1999 till March 2002 in 75 patients (29 female and 46 male), aged from 7 years 1 months to 20y3mo (mean 13y8mo) and open nose plastic procedures performed from April 2002 till January 2004 in 66 patients (22 female and 44 male), aged from 5y11mo to 19y9mo (mean 12y11mo) with different types of clefts in Riga Cleft Lip and Palate Center. Either in bone-grafting or nose plastic procedures generally healthy patients were randomized into two groups. In one group Amoksiklav (Penicillin derivate) in high dosages has been used intra venously on operation day only (group A) but in other group? On operation day intra venously and five post-operative days orally (group B). On seventh postoperative day all wounds were assessed for dehiscence and infection. Body temperature was monitored twice a day during the first postoperative week. **Results:** There were no any wound infections either in group A or B. There were intra oral wound dehiscence and loss of transplanted bone in two patients from group A after secondary bone grafting procedures. However, that could be explained by other than antibiotic use reasons. There was no clinically considerable difference between A and B groups with respect to body temperature. **Conclusions:** Amoksiklav is appropriate antibiotic for prophylactic use in secondary bone grafting and open nose plastic procedures. There is no reason for use of antibiotics longer than in operation day only.

Keywords: Antibiotic prophylaxis; Cleft lip and palate

Abstr ID 248

35

SWALLOWING PATTERNS IN CLEFT LIP AND PALATE PATIENTS FOLLOWING 18 YEARS OF INTERDISCIPLINARY TREATMENT

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Aim: The aim of today's interdisciplinary treatment of clefts is complete aesthetic and functional rehabilitation of the patient. But is it possible to also achieve a physiological swallowing pattern? **Material and Methods:** In our centre patients are treated by an interdisciplinary approach from their day of birth until their 18th year of life. Tongue position during swallowing has been investigated in 117 consecutive patients. They have been assigned in four groups. 197 non-cleft orthodontic patients of the same age form the control group. **Results:** Patients with clefts of only the primary or only the secondary palate, achieved a physiological swallowing in 87% or 88% of cases at age 18 years, whilst 74% of unilateral CLP-cases had also physiological swallowing pattern, only 46% of the patients with bilateral complete clefts had achieved this. In the control group 95% of the non-cleft patients achieved physiological swallowing pattern following orthodontic and speech treatment at age 18 years. The so-called anterior swallowing pattern was the pathological pattern found most often in cleft and non-cleft patients. **Conclusion:** In most cleft patients interdisciplinary treatment leads to a physiological swallowing pattern. Only patients with bilateral clefts of lip, alveolus and palate have a critical prognosis. They need special care and attention.

Keywords: Cleft lip and palate; Swallowing patterns; Long time treatment; Speech therapy

Abstr ID 314

36

CORRECTION OF ORONASAL FISTULAS BY THE METHOD OF THE HORIZONTAL DISTRACTION OF PARTS OF ALVEOLAR RIDGE OF MAXILLA

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Corrective surgical procedures on palatal clefts result very often in underdeveloped maxillas; By the end of facial/skeletal growth these patients are ready for further surgical treatments, not all of them being equally successful. After the majority of cases of surgically treated hypoplasia maxillas, oronasal fistulas develop—which requires even further surgery. Bony defects of maxillar alveolar ridge are often corrected by osseo- or alloplastic transplants. However, resorption of osseotransplants or rejection of allotransplants happens in large percentage of these procedures which makes them rather unsuccessful. On the other hand, some deformities of maxilla are treated by segmented osteotomy to achieve desired occlusion with mandible. Results are satisfactory and there are no significant complications. These results gave rise to the idea to use the osteogenic distraction on free edges of maxillar cleft along with the adjacent teeth to close the gap. Seven patients with oronasal fistulas, that were end result of the operation of hypoplastic maxilla, have been treated at the Clinic for Maxillofacial Surgery, Military Medical Academy, Belgrade, Serbia and Montenegro, by the method of horizontal osteogenic distraction of parts of maxillar alveolar ridge along with the tooth at the edge of

the cleft. Newlyformed bone filled maxillar/palatal defect. Prosthodontic appliances added to good functional and esthetic results.

Keywords: Oronasal Fistula; Distraction; Maxilla

Abstr ID 454

37

A CEPHALOMETRIC AND DENTAL ANALYSIS OF TREATMENT OUTCOMES OF UCLP PATIENTS

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Aim of study: The aim of this study was to compare craniofacial morphology of three different groups of children demonstrating complete unilateral cleft lip and palate, treated by means of different surgical protocols at the Center of Craniofacial Disorders of the National Research Institute for Mother and Child. **Material and Methods:** The study group covered 66 children patients (42 boys and 24 girls) with mean of age 10 years, and complete unilateral cleft lip and palate. Each one of the three groups comprised of 22 patients. Children underwent one-stage technique surgery performed by a single surgeon at the age of seven months. During the surgical intervention the soft and hard palate as well as the lip underwent correction. Particular groups demonstrated varied hard palate closure. Group I patients had the mucoperiosteal flap elevated on both sides of the cleft. Group II patients had the mucoperiosteal flap elevated on the non-cleft side of the cleft, whereas Group III patients did not undergo mucoperiosteal flap elevation. Craniofacial morphology was diagnosed by means of Steiner cephalometric analysis. The quality of dental arch relationship was measured by the Goslon Yardstick. **Results:** Significant differences in craniofacial morphology were identified for groups I, II and III, with the most favorable morphology demonstrated by Group III. 88% of patients from the group treated at the Centre of Craniofacial Disorders had excellent to satisfactory dental arch relationship as indicated by the Goslon Yardstick. **Conclusions:** The study indicates that the technique of hard palate closure bears significant influence on craniofacial growth and development.

Keywords: Craniofacial growth; Unilateral cleft lip palate; Cephalometry

Abstr ID 219

38

CRANIAL BASE MORPHOLOGY IN OPERATED CLEFT LIP AND PALATE PATIENTS: CLINICAL CONSIDERATIONS

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Introduction: Cleft lip and palate patients present dento-facial deformities affecting their facial function and aesthetics. Their craniofacial growth could be disturbed due to the surgical treatment, the anomaly or the intrinsic deficiency in the tissues. It is known that the sagittal growth of the anterior cranial base supports the development of the nasomaxillary complex in a forward and downward direction. We hypothesize that the sagittal growth of the anterior cranial base is altered in cleft lip and palate patients, therefore, the sagittal deficiency in their midface. **Methods:** Cranial base characteristics were analysed in 43 operated cleft lip and palate patients with ages ranging between 10 and 18 years using lateral radiographs of the face and the cranium. This cohort was compared with a control group of 40 non cleft patients using the Structural and Architectural Craniofacial Analysis. **Results:** Cleft patients presented with statistically significant variations of the facial profile, specifically facial retrusion. The latter is due to an increased posterior angle of the cranial base and a posterior position of the anterior pillar. We also found that the ratio between the length of maxilla and the length of the anterior cranial base was minor in the study group. The maxilla appeared retrusive, deficient in length, with a posterior vertical deficiency and an anterior rotation. **Conclusion:** Facial retrusion, length and position of the maxilla found in the study group predispose these patients to develop dentofacial deformities necessitating orthodontic and surgical treatment.

Keywords: Cranial base; Cleft lip and palate; Facial retrusion

Abstr ID 366

39

LONG-TERM STABILITY OF LE FORT I MAXILLARY DISTRACTION OSTEOGENESIS

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Aims: Total or partial relapses after conventional surgical advancement of the maxilla following Le Fort I osteotomy in CLP patients are frequent and major complications. During the last years distraction osteogenesis offered new options for the treatment of severe skeletal craniofacial anomalies. In midfacial deficiency distraction after Le Fort I osteotomy is one of these tools. Immediately post-operatively the results were good. Concerning the long-term stability, there is limited data. **Methods:** 17 patients with cleft lip and palate and other anomalies were treated with rigid external distraction osteogenesis to achieve maxillary advancement. The postdistraction advancement was 9 mm average. The patients received clinical and cephalometric evaluation 3 years after treatment. **Results:** After consolidation recurrence of maxillary retrognathism was very limited. The positive sagittal dental overjet could be maintained in all cases. Further growth of the maxilla anteriorly could not be achieved with orthodontics. **Conclusion:** Distraction osteogenesis seems to provide reliable bony results. The simultaneous soft tissue and scar expansion might be an important contributing

factor. Rigid external distraction in patients with severe maxillary hypoplasia allows full correction of the deformity through treatment of the affected region only. It offers the distinct advantage of correcting these severe deformities through a minimal procedure.

Keywords: Distraction osteogenesis; Le-Fort-I-Osteotomy; Long-term stability; Cleft lip palate

Abstr ID 259

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LONG TERM RESULTS IN MAXILLARY DISTRACTION OSTEOGENESIS

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Aims: As maxillary distraction osteogenesis (DOG) is a new procedure, long-term results are rare. This study is intended to give information on osseous stability and complications encountered. **Methods:** From 5/98 to 4/04, 42 patients suffering from midfacial retrusion and hypoplasia have been treated by way of distraction osteogenesis using an external halo-borne device (RED) including 35 CLP patients. Age ranged from 6–65 yrs, and 22 patients presented a velopharyngeal flap. For protraction a modular retention plate system was used. After a subtotal Le-Fort I/II/III or quadrangular osteotomy the midface was mobilized and distraction started on the 4th postoperative day with 1mm activation/day. Analysis of DOG included cephalometric tracings at 6 months, 12 months (22 patients), and 20 months (8 patients). **Results:** Cephalometry showed an average protraction of 17 mm (9–31 mm). SNA increased from 72 to 83 and ANB from –6.5 to +6.5. Follow-up at 12 months revealed a decrease of SNA of 3 during the first six months, which might be attributed to orthodontic therapy, remodeling, and relapse. From then on no further changes were noted. Comparison of CT-scans showed complex 3-D movements of the midface. Complication-rate encountered was 18% which was related to the complicated patient situation and the learning curve of a new procedure. 21% of the cleft patients showed worsening of VPI whereas in 8% an improvement was seen. In 3 cases a secondary velopharyngoplasty was necessary afterwards. **Conclusion:** Midfacial DOG has proven to allow large and stable midfacial displacements in severe midfacial retrusion and hypoplasia. Here distraction osteogenesis is the therapy of choice. Being a new and complex procedure and treating “difficult” patients, a higher complication rate has to be accepted.

Keywords: Distraction osteogenesis; Maxilla; Cleft lip and palate

Abstr ID 75

41

CEREBRO-COSTO-MANDIBULAR SYNDROME (SMITH-THEILLER-SCHACHENMANN SYNDROME)

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Aims: Present the treatment of the facial deformities associated with this extremely rare disorder characterized by various abnormalities (Pierre Robin sequence, thorax deformity and microcephaly in one third of the patients). **Subject:** Case report of a patient that had the Pierre Robin sequence (characterized by the triad of micrognathia, glossoptosis and cleft palate) and the rib cage deformities. Fortunately the patient did not have cranial or encephalic abnormalities. Respiratory impairment, related both to the glossoptosis and the ribs deformities, is a serious life threatening condition these patients suffer. The glossoptosis was treated by distraction osteogenesis of the mandible. The closure of the cleft palate was also performed. **Results:** The patient prior to our intervention had periods of respiratory distress and was fed by means of nasogastric intubation. No respiratory complications occurred after the treatment and the nasogastric tube was removed. Today the patient has normal growth for his age and his intellectual performance is also normal. **Conclusion:** The mandible osseous distraction in cases has good results, both functional and aesthetically, in the management of severe congenital micrognathia and associated airway obstruction, and may prevent the use of more invasive procedures such as the tracheotomy.

Keywords: Cerebro-costo-mandibular syndrome; Smith-theiller-schachenmann syndrome; Pierre robin sequence; Micrognathia; Glossoptosis; Cleft palate; Thorax deformity

Abstr ID 679

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INTERIM RESULTS OF ADVANCEMENT OF THE MAXILLA IN CLEFT PATIENTS USING A NEW INTERNAL DISTRACTOR ASSISTED BY PRE-OPERATIVE 3D IMAGING/MODELLING AND PLANNING AND COMPARED WITH A PREVIOUS OSTEOTOMY TECHNIQUE

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Aims: To determine whether advancement of the maxilla at Le Fort I level in patients with repaired cleft palate using a new internal distractor (Synthes®) offers any significant advantages or disadvantages over a previously described osteotomy technique. **Method:** The study group consists of the first 12/25 consecutive cleft patients requiring maxillary advancement. All had intact maxillae and underwent pre-operative orthodontics. Patients underwent standard cephalometric (OPAL) and dental model planning as well as 3D CT imaging and planning on sterolithographic models. On screen planning in 3D was performed with Simplant CMF® and a haptic using Freeform®. The distractors were adapted to the 3D model on which surgery and maxillary advancement were simulated. The control group consisted of 24 consecutive cleft patients managed to

an identical protocol but undergoing a Le Fort I osteotomy with a modified incision, radical mobilisation, internal fixation with miniplates and autogenous iliac crest block bone grafting. **Results:** The results are demonstrated and compared in 12 of the distraction patients and 24 of the osteotomy patients on whether the planned advancement was achieved, complications, patient evaluation, stability, speech changes and cost effectiveness. **Conclusion:** Distraction osteogenesis using this new internal distractor can achieve excellent results in advancing the cleft maxilla. Bone grafting may be avoided. It remains to be seen whether the long term results justify the apparently significant additional cost involved.

References

- Sugar AW, Samuels R, Jones M, Bocca A, Newton C
Results of a Modified Cleft versus Non-Cleft Maxillary Osteotomy Int J Oral Maxillofac Surg: 1999, Suppl. 1, 28, 88.
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Keywords: Cleft lip and palate; Le fort I maxillary osteotomy, Distraction osteogenesis

Abstr ID 361

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ASSESSMENT OF THE QUALITY OF LIFE IN PATIENTS WITH OROFACIAL CLEFTS

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Patients with orofacial clefts can suffer from both functional and aesthetic impairments. Aim of this study was to answer the question, if patients with orofacial clefts and their families would have to tolerate a reduced quality of life. More than 700 patients aged between 3 years and 55 years and their parents were investigated. All patients were treated by the same protocols in one single cleft center. In order to assess the disease-related and general quality of life, several age-related standardized instruments were used in German language, including KINDL, SF-36, family impact scale and social support survey. Further, a disease-specific own questionnaire was used, which was not standardized. Patients with oral clefts exhibited in all evaluated aspects such as self-esteem, family, friends, daily life, psychological and physiologic health no significant reduction of their quality of life. However, adult patients with oral clefts exhibited slight limitations regarding their emotional and social acceptance. The quality of life in the families with patients with orofacial clefts is impaired during early infancy, but not during childhood and adolescence. Adult patients with cleft palate feel impaired by their speech stigmata. In general, when compared to a standard population, no significant reductions of the quality of life in patients with orofacial clefts was detected.

Keywords: Orofacial cleft quality of life

PSYCHOLOGICAL PROFILE OF CHINESE WITH CLEFT LIP AND PALATE DEFORMITIES**Loh JSP, Ho SMY, Cheung LK**

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CEREBRO-COSTO-MANDIBULAR SYNDROME (SMITH-THEILLER-SCHACHENMANN SYNDROME)**Jose Bilhoto, Adriano Figueiredo, Iva Lima**

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Withdrawn

Aims: Present the treatment of the facial deformities associated with this extremely rare disorder characterized by various abnormalities (Pierre Robin sequence, thorax deformity and microcephaly in one third of the patients). **Subject:** Case report of a patient that had the Pierre Robin sequence (characterized by the triad of micrognathia, glossoptosis and cleft palate) and the rib cage deformities. Fortunately the patient didnot have cranial or encephalic abnormalities. Respiratory impairment, related both to the glossoptosis and the ribs deformities, is a serious life threatening condition these patients suffer. The glossoptosis was treated by distraction osteogenesis of the mandible. The closure of the cleft palate was also performed. **Results:** The patient prior to our intervention had periods of respiratory distress and was fed by means of nasogastric intubation. No respiratory complications occurred after the treatment and the nasogastric tube was removed. Today the patient has normal growth for his age and his intellectual performance is also normal. **Conclusion:** The mandible osseous distraction in cases has good results, booth functional and aesthetically, in the management of severe congenital micrognathia and associated airway obstruction, and may prevent the use of more invasive procedures such as the tracheotomy.

Keywords: Cerebro-costo-mandibular syndrome; Smith-theiller-schachenmann syndrome; Pierre robin sequence; Micrognathia; Glossoptosis; Cleft palate; Thorax deformity

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PARTICULARITIES OF MODELING REVASCULARIZED BONE IN THE ELIMINATION OF FACIAL SKELETON DEFECTS

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Purpose: To develop methods of modeling revascularized bone in accordance with transplant blood supply type in the repair of facial skeleton defects. **Materials and Methods:** the blood supply of a fibula, an iliac crest, and a rib were examined on 92 cadavers. The following types of blood supply of bone were distinguished. First type – well provided blood supply through endosteal and periosteal ways (fibula, rib with posterior intercostals vessels)- allows the excision of full-thickness wedge-shaped bone in order to form the curvature of the facial skeleton. Second type – the blood supply through the periosteum from the fine vascular collaterals of an attached muscle (rib with anterior serratus muscle) is necessary to intact external cortical layer. We may do osteotomy only on the internal cortical and spongios layers. Third type – blood supply through the trunk vessel in the cortical layer (iliac crest). With it, to perform the osteotomy we increase blood supply of bone flap by including a muscle with an additional blood source and developed collaterals between the internal oblique muscle and iliac crest. The presumed points of transplant osteotomy are found with the help of three-dimensional computer tomography that correlates the curvature of the restored zone from the donor bone. **Results:** 78 patients were operated upon using this technique. Good transplant blood supply was confirmed by scintigraphic examination. 7 cases of autotransplant necrosis were not connected with the modeling. **Conclusions:** Revascularized autotransplant bone modeling procedures should be determined through careful consideration of the transplant blood supply.

Keywords: Microsurgery; Revascularized bone autograft; Modelling; Defects of the facial skeleton

COMPARISON OF VARIATIONS IN METHODS OF ELEVATION OF THE MICROVASCULAR ILIAC CREST TRANSPLANT WITH REGARD TO THE DONOR SITE MORBIDITY

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Background: Donor site morbidity is considered as a significant disadvantage of the microvascular iliac crest transplant. The aim of this study was to assess if a partial elevation of the iliac crest with preservation of the external table, protection of the femoral lateral cutaneous nerve and preservation of the anterior superior iliac spine allows

an improvement of the donor side morbidity. **Methods:** A total of 28 patients with microvascularized iliac crest transplanted for mandibular reconstruction were enrolled in this study. 12 of them underwent a complete transplantation of the iliac crest (group 1). In 16 cases only the internal tabula and the spongy part of the iliac crest were raised for transplantation (group 2). Apart from isolated iliac crest-muscle transplants, osteomyocutaneous transplantations were performed (group 1: 4 patients, group 2: 5 patients). The evaluation of the donor site morbidity was performed using the Larson hip score which describes the functionality and the discomfort of the hip/pelvis region. **Results:** The functional outcome showed a clear improvement in those patients in whom the external tabula of the iliac crest had been preserved (91 points in group 2 vs. 85 points in group 1; 100 points=full functionality and no complaints). If all patients were taken in consideration bone muscle transplantation resulted in a higher score (91 points) than transplantation of osteomyocutaneous flaps (85 points). Furthermore, clear temporal changes could be seen (1/2 year postoperatively 86 points, after 2 years 91 points, over 2 years 94 points). The items painlessness and function showed the highest degree of impairment. The extent of the movement and the walk seemed to be not affected. **Conclusion:** According to our experience the modified elevation of the microvascular iliac crest is a reliable procedure for mandible reconstruction with an acceptable donor site morbidity.

Keywords: Oral cancer; Mandibular reconstruction; Microvascular iliac crest; Life quality

AXIAL SPLIT OSTEOTOMY OF FREE FIBULAR FLAPS FOR MANDIBLE RECONSTRUCTION: LONG TERM RESULTS

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Introduction: Fibular flaps are considered as one of the best choice for reconstruction of the mandible. The conventional technique for shaping fibular flaps is wedge osteotomy which present several drawbacks (bone loss, difficult evaluation of osteotomy angles, wedging requires at least two cuts near the nutrient vessels). We have developed a technique called “axial split osteotomy” that greatly facilitates shaping of free fibular flaps. **Operative technique:** The fibular flap is harvested using a conventional technique. Three cuts are made using an oscillating saw after opening the periosteum and minimal dissection: the first cut is made on the external surface of the fibula, perpendicular to the main axis of the bone down to the level of the medullary canal; the second cut is made along the main axis of the bone (the length of this cut is between 3 and 5 cm); the last cut is made perpendicular to the internal surface at the junction between the anterolateral and posteromedial surfaces down to the medullary canal as for the first cut and the vascular pedicle is protected in the subperiosteal plane. The contouring is achieved by raising the two bone segments and fitting them together. This technique is compatible with the use of a skin paddle.

Results: This method has been successfully used in 4 patients requiring mandible reconstruction including the angle. A four year radiologic evaluation showed a good ossification of the osteotomy site. **Conclusion:** In our experience, the axial split osteotomy has two main advantages: simplification of cut placement and more precise contouring. This technique does not involve bone loss and by achieving a greater contact surface for bony union, this method also leads to better bone consolidation as observed in sagittal splitting of the mandible.

Keywords: Fibular flap; Free flap; Microsurgery; Mandibular reconstruction; Osteotomy

Abstr ID 598

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REFINEMENTS IN MANDIBULAR RECONSTRUCTION WITH FREE FIBULAR FLAPS THE AXIAL SPLIT OSTEOTOMY

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Aim: Present a new fibula flap osteotomy design ("axial split") for mandibular angle reconstruction and added modifications of this original technique described by Guyot. **Methods and Surgical Technique:** Ten consecutive mandibular angle reconstructions were performed following fibular axial splitting. Three safe and easy cuts are performed with minimal dissection at osteotomies sites, with minimum risk of damaging the vascular pedicle and no bone loss. No wedge position or size calculation is required. Once osteotomies are completed, precise contouring is feasible in all three planes of space, greatly facilitating optimal shaping. No strong mandibular plates angulation or fitting is needed. Osteotomized segments are simply and accurately adapted to the remaining mandible with miniplates, allowing a functional osteosynthesis and providing a broad and perfectly adjusted surfaces for bony union. **Results:** All procedures were performed uneventfully. Excellent mandibular functional and aesthetic reconstructions were achieved. Primitive mandible shape, symmetry, occlusion, and initial condylar position and TMJ health were preserved. Minimal bone loss facilitates added techniques such as double barr procedure. Simplicity of the technique significantly reduces the duration of fibula osteotomy and shaping before microsurgery. **Conclusions:** Fibular free flap is the preferred method for most cases of mandibular reconstruction. Modeling the fibula into a neomandible remains problematic. Conventional technique involves well planned wedge osteotomies to get optimal shapes. Wedging is mostly performed through trial and error saw cuts, leading to imperfect first tries and time consuming intraoperative revisions, and may involve iatrogenic lesions of the vascular pedicle. Bone gaps may occur when fitting to mandibular plate systems or adapting to the remaining mandible. As described above, axial split osteotomy for shaping fibular flaps has marked advantages in terms of speed, simplicity and precision over conventional wedge osteotomies.

Keywords: Mandibular reconstruction; Fibula flap; Axial split osteotomy

Abstr ID 392

50

THE FIBULA GRAFT FOR MANDIBLE RECONSTRUCTION—LONG TERM RESULT

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Introduction: It is common knowledge that bone resorption occurs after its transplantation. What about the revascularised fibula transplant? This clinical and radiological retrospective study attempts to determine the rate of bone resorption after mandible reconstruction using microsurgical revascularised fibula transplants or free fibula grafts with emphasis on the long term result, comparing the two grafting modalities. **Patients and Methods:** 80 fibula transplants were performed in the Department of Oral and Maxillofacial Surgery of the University Hospital of Hamburg from 1987 to 1997. 38 cases were revascularised and the rest were free bone grafts. All the 17 radiated cases received microsurgically reanastomosed transplants. Radiological analysis was carried out on all patients at 1, 3 and 7 year postoperatively. **Results:** After 7 years, the average horizontal bone resorption rate was 20% in the revascularised group, 22% in the radiated cases, and 46% in the group of free bone graft. Most of the resorption occurred during the first year after transplantation. Thereafter the revascularised transplants experienced only minor remodeling, i.e. there was no more obvious bone resorption in progress. In the group of free bone grafts, the resorption continued at a regular rate. Almost half of the bone graft disappeared after 7 years. **Conclusion:** Mandible reconstruction using the fibula flap has been becoming increasingly popular, finding more application than the iliac crest in the past decades. The bone resorption following free fibula grafting is still an unsolved problem, irregardless of the high cortical bone content. For large defects, secondary repair with poor soft tissue coverage, and especially in radiated areas, the revascularised transplant is the therapy of choice.

Keywords: Bone resorption; Free fibula graft; Revascularised fibula transplant; Mandible reconstruction; Long term result

Abstr ID 599

51

RETROSPECTIVE STUDY OF 25 MANDIBULAR OSTEORADIONECROSIS TREATED BY MEAN OF FREE FLAPS

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Aims: Mandibular osteoradionecrosis is a rare but extremely severe complication following radiation therapy. The patients with osteoradionecrosis are most often cured

of their cancer. Mandibular reconstruction becomes a priority, but remains a challenge due to the very poor vascularisation after radiation therapy. This study evaluates our results in mandibular reconstruction after osteoradionecrosis using free flaps. **Study Design:** Twenty five patients were studied during the past five years. All those patients have been treated for mandibular osteoradionecrosis using fibula free flap or brachial flap. We examined the histology of the primary tumour, the localisation of the osteoradionecrosis, the length of resection with bone reconstruction and the implementation of a skin paddle. For all the patients, we considered the success rate for the flap, we evaluated swelling and diet, prosthetic rehabilitation, and the aesthetic result with patients satisfaction. **Results:** Our success rate is similar to the literature: Flap success rate (23/26=88%) or reconstruction success rate (23/25=92%). Normal diet was obtained in 92% (23/25), prosthetic rehabilitation was performed for 8/16 cases after 2 years (50%), overall satisfaction was obtained for 92% (23/25). **Conclusion:** The free flap is the gold standard treatment for mandibular osteoradionecrosis. It must be performed once the osteoradionecrosis is present in the total height of the mandible. Resection margins are subject to specific rules taking into account the localisation of the irradiated bone. Fibula free flap appears to be the best choice for mandibular reconstruction after osteoradionecrosis due to its reliability and the possibility to perform osteotomies and implant insersion. Brachial flap is used less often in our department due to the length of the resection. Nevertheless, this type of flap is interesting considering its very rich periosteal vascularisation and its shape for basilar reconstruction.

Keywords: Osteoradionecrosis; Free flap; Reconstruction

Abstr ID 551

52

MICROVASCULAR FREE FLAPS IN CHILDREN

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Background and Aims: In recent years microsurgery has revolutionized the reconstructive techniques used in MF surgery. Thanks to this newly acquired experience, the microvascular free flaps have been utilized, albeit with due caution, also in children. On the basis of the results obtained, we report the indications and criteria used in choosing the flaps utilized in pediatric surgery. **Materials and Methods:** We report the case histories of five children between four and fourteen years of age. In all patients the bone had been resected following neoplasias (3 in the mandibular region and 2 in the maxillary region). The flaps used were taken from fibula in 4 cases and from the latissimus dorsi in 1 case. **Results:** In all cases recovery was uneventful. Skeletal growth was normal giving. Satisfactory functional and morphological results. **Discussion:** The use of free microvascular flaps allows us to tackle cases which would have been almost possible to resolve just few years ago using traditional methods. Naturally, when dealing with children, great care must be

used in the choices made, considering various factors such as the time used for the general anesthesia, the surgical aggressiveness involving notable loss of blood and the choice of the flaps used with blood vessels of suitable size. All this must be done keeping in mind that the final aim is to obtain the best possible results with the least number of morphological and functional problems both in the immediate post-operative period and in the long run.

Keywords: Free flaps; Children; Reconstruction

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53

MANDIBULAR RECONSTRUCTION: FIBULA FLAP VS ILIAC CREST FLAP

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Background: Although healing is the main goal in patients who undergo segmental mandibulectomy, the aesthetic and functional reconstruction has become an essential issue in the treatment of this pathology. Segmental mandibulectomy leads to aesthetic and functional deficiencies such as facial asymmetry, mandibular retrusion, collapse of the lower face, labial ptosis and incompetence, salivary incontinence and difficulty in oral opening and speech. **Material and Methods:** We present our series with 79 flaps used for mandibular reconstruction, 46 fibula flaps and 33 iliac crest flaps. We show the advantages and disadvantages of both flaps, their indications and contraindications. 32 patients have been rehabilitated with dental implants. 174 implants were placed with a follow up of, at least, 4 years after loading. **Results:** 174 implants were placed with an initial osseointegration of 98%. We have lost 20 implants (11.5%) and an overall survival of 89.55 with a 4 year follow up. Postoperative radiotherapy showed adverse effects on the dental implants and 17 out of the 20 implants that failed were placed after the radiation therapy. The patients have been rehabilitated with an implant fixed or removable prosthesis. **Conclusions:** Primary reconstruction is always desirable. The flap to be used in the reconstruction depends on the extent and site of the defect, the soft tissue defect, the previous surgical procedures and the general status of the patient. Both flaps accept dental implants for a posterior prosthodontic rehabilitation in order to achieve a correct functional and aesthetic reconstruction.

Abstr ID 663

54

FREE FLAPS ASSOCIATION IN RECONSTRUCTION OF EXTENSIVE COMPOSITE ORO-MANDIBULAR DEFECTS

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Aim: Composite defects resulting from advanced oral cancer tumor surgery represents a difficult reconstructive problem and, in some cases, tissutal defects are really extensive, requiring multiple free flaps. This study evaluate the use of double free flap technique in composite oro-mandibular reconstruction. **Methods:** We examine details of the surgical technique, the complications, the functional and oncologic results in a series of 15 patients who underwent reconstruction after T4 oral squamous cells carcinoma resection. Fibula osteocutaneous free flap is used in association with forearm free flap in 8 cases, fibula osseous-forearm in 5 cases, fibula osseous-rectus abdominis in 1 case, iliac crest-forearm in 1 case. Forearm free flap and rectus abdominis are used for intraoral reconstruction in all the cases. **Results:** The overall free flap survival is 100%. Venous congestion in 1 fibula flap and in 1 forearm free flap required re-exploration with revision of the thrombosed venous anastomoses. At the time of evaluation, nine patients were alive. Eleven patients regained their oral competence and an acceptable aesthetic appearance. **Conclusion:** The goal of reconstructive surgery is satisfactory aesthetic and functional restoration. In oro-mandibular area, we can achieve this result only with ideal bony and soft tissue reconstruction. We believe, in selected patients with extensive oro-mandibular defect associated with mobile tongue, floor of the mouth and tongue base resection, simultaneous free flaps are being shown to be an excellent choice for reconstruction, maximizing the characteristic of each flap with reasonable surgery time (10 hours), high success rate (100%), good rehabilitation results and quality of survival time.

Keywords: Advanced oral and oro-pharyngeal cancer; Composite defects; Microsurgical reconstruction; Double free flap technique; Satisfactory aesthetic and functional restoration

Abstr ID 414

55

MICROSURGICAL RECONSTRUCTION IN HEAD AND NECK SURGERY

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Immediate reconstruction of maxillary bones and soft tissues following big trauma, large oncological defects or late effects of radiation therapy has been proved as a reliable morpho-functional reconstruction technique. The Authors report the results of 50 consecutive operations done at the Department of Maxillofacial Surgery of The S. Maria della Misericordia Regional Hospital in Udine, Italy using free flaps since 2002. A detailed inspection of the case notes was undertaken to ascertain the presenting diagnosis, the complications and the outcome. The type of defect was recorded and classified so as the type of functional facial and

oral rehabilitation. Particular attention has been posed on the use of vascularized iliac crest with internal oblique flap for mandible and maxillary reconstruction when there is no need for overlying facial skin or oral sphincter reconstruction and for bone segments within 6 and 15 cm of length. The advantages of this composite bone flap are the large and resizable bone stock available, the quality of the bone transferred with an optimal height, depth and contour of bone to maintain a good facial profile and the possibility to reconstruct properly the oral and nasal lining, with a portion of the internal oblique muscle flap raised with the same pedicle that epithelializes during the healing stages.

Keywords: Microsurgery; Reconstructive surgery; Head and neck surgery; Free flaps

Abstr ID 391

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MICROSURGICAL FREE FLAPS IN RECONSTRUCTIVE SURGERY: A 5-YEAR, ONE TEAM EXPERIENCE IN 125 CONSECUTIVE CASES

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Introduction: Free tissue transfer has become a highly reliable method for reconstructing complex surgical defects. This study is a 5-year retrospective analysis of one surgical team involving 125 consecutive cases. **Patients and Methods:** 125 free flaps performed by one team from September 1999 to April 2004 were analysed. Regional applications included the head and neck (113/125, 90.4%), the lower (10/125, 8%) and upper (2/125, 1.6%) extremity. As donor sites served the latissimus dorsi flap (50), the iliac crest (31), forearm (15), fibula (15), jejunum (13) and in one case a groin flap. In about 1/3 of the cases, radiation therapy had been allotted preoperatively. Microsurgical anastomoses were performed to large caliber recipient vessels using an interrupted suture technique; end-to-end anastomoses were preferred, except in the secondary repair of the head and neck region (end-to-side to the internal jugular vein) and in lower extremity coverage (end-to-side to the leg artery). **Results:** The overall success rate for free flap reconstruction in this series was 95%. In 16 flaps (12.8%) re-exploration was necessary due to either anastomotic or bleeding problems, with a salvage rate of 43%. Arterial problems (4/16, 25%), venous problems (8/16, 50%), haematoma or recipient vessel problems (4/16, 25%) were identified as the underlying problems. In cases of arterial insufficiency occurred, the salvage rate was markedly lower (1/4, 25%) in comparison with venous problems (7/8, 86%). Two cases required vein grafts (one for re-exploration by venous compromise) in the early stage of our practise. **Conclusion:** Reconstructive surgery involving microsurgically revascularised transplants, satisfactory results can be achieved using one of five donor sites. The risk can be considered as low, once vast amounts of knowledge and surgical expertise involving a few, highly reliable flaps, has been acquired.

Keywords: Free flap; Free tissue transfer; Reconstructive surgery; One surgical team

LOWER LIMB SALVAGE FOLLOWING FREE FIBULA FLAP TRANSFER FOR MANDIBLE RECONSTRUCTION

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Aims: To describe a dramatic complication following free fibular flap harvest and discuss treatment options and functional implications. Case report, A 67 yrs man presented with a 3 × 2 cm SCC of the left mandibular gingiva (cT4N0M0). Primary mandibular reconstruction with a composite fibula flap was planned. No claudication nor vascular insufficiency of the legs were present. Color-doppler sonography of both legs was performed that revealed a normal flow through the popliteal, peroneal, tibialis anterior and posterior arteries. Tracheostomy, tumor resection by means of a left emimandibulectomy and type III modified radical neck dissection were performed. A vascularised osteo-cutaneous fibula flap was harvested from the left leg. After removing the tourniquet, poor vascularization of the distal leg was noted. After completion of the procedure, an angiography showed a stenotic plaque of the superficial femoral artery with distal occlusion of both tibialis anterior and posterior arteries. A prosthetic femoro-popliteal by-pass was performed and the leg immediately reperfused. 24 Four hours later the foot became ischemic and the patient had a politeal-plantar by-pass using the left safenous vein. Heel sore and surgical wound breakdown eventually occurred with pseudomonas aeruginosa/staphylococcus aureus contamination. Serial wound debridements and specific antibiotic therapy were performed. Vacuum assisted closure treatment (VAC) was then applied to the defects for 5 weeks. The defects were finally skin grafted. **Result:** The lower leg was salvaged. The wounds were successfully skin grafted. One year after surgery, the patient is able to ambulate without crutches. **Conclusion:** Leg ischemia following free fibula flap harvest is a dramatic condition that can lead to amputation or can affect the residual function of the leg. Once the blood flow to the leg has been stabilized, early mobilization is essential to avoid ankle's rigidity and major functional impairment.

Keywords: Fibula flap; Ischemia; Donor leg

MICROSURGICAL RECONSTRUCTION OF THE MANDIBLE THROUGH RHYTIDECTOMY APPROACH

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To link the requirements of a carcinologic exeresis on young patients and the aesthetic purpose of a good

reconstruction is the goal of this short study. Persuaded that except in some rare cases no mandible amputation had to be made without immediate reconstruction, we wanted to erase the facial or cervical scar which usually constitutes the indelible and continuous mark of such surgery thanks to a simultaneous intraoral and face lift approach. Three cases of such mandibular resections are here reported (the reconstruction was made by fibular free flap (2 cases) and iliac crest free flap (1 case). Obviously in those cases of benign tumor, extensive neck dissection was not mandatory as in a carcinologic point of view. In two cases, the necessity of the approach of the mandibular condyle requested the dissection of the facial nerve. Those three cases concerned two times an adult and in one time, it was a child. Those patients will be compared to two others cases (one adult and one 3 year-old child) where because of carcinologic reasons, a neck dissection with cervical approach was made. Inquestionably and whatever will be the technical difficulties encountered by the surgeons, the absence of scar through this rhytidectomy approach is very significant not only for aesthetic reasons but also for psychologic ones. Beyond the technical stakes whose have not to be underestimated, it is here a mark of elegance as the one which is in our mind inherent of the maxillofacial surgery.

Keywords: Microsurgery; Mandible reconstruction; Aesthetic

IMPLANT-SUPPORTED PROSTHESIS REHABILITATION OF JAWBONE DEFECTS WITH VASCULARIZED FIBULA FLAP: A 15 YEAR EXPERIENCE

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Aim: To demonstrate versatility of vascularized Fibula flap and long term stability of osteointegrated implants in jaw-bone defects rehabilitation. **Methods:** With large bony defects, vascularized bone represent the elective treatment. In our experience because of its size, dimensions and quality Fibula is ideal. From December 1989 to April 2004, 52 patients were treated for mandible reconstruction and 29 for maxillary reconstruction using vascularized fibular flaps. The protocol includes bone augmentation, implant surgery, soft-tissue management at the time of abutment connection, and prosthetic restoration. Forty-four fibulas were used to reconstruct resected jawbones, 28 to augment extremely atrophied alveolar ridges, 3 for a radionecrosis mandible, 5 to correct post-traumatic sequelae and 1 for a secondary cleft correction. **Results:** Seventy-six fibula flaps healed successfully with a success rate being 93.8%. There were 5 failures due to thrombosis. One hundred and seventy-seven implants were inserted bicortically into the fibula bone, and 30 implant-supported prostheses were manufactured. Implant success rate after an average follow-up of 42.2 months of masticatory load was 95.5%. Vestibuloplasty by means of split-thickness skin or palatal free keratinised mucosal graft was

performed in all cases. **Conclusions:** With every reconstructive treatment morphologic and jawbone structures along with functional properties must be restored. Using modern implantology concepts result in predictable and satisfactory reconstruction. Bony reconstruction represents the first stage of a functional rehabilitation being it crucial in order to achieve the correct support for implant placement. Fibula and its bicortical structure gives to implants a better primary stability and a better osteointegration necessary for a long lasting prothesization. Choosing the best plan of treatment, size and characteristics of the bony defects, integrity and trophism of soft tissues are of utmost importance; they must be correlated to the possible prosthetic-implant purpose of bony reconstruction.

Keywords: Fibula flap; Functional rehabilitation; Implant-supported prosthesis rehabilitation

Abstr ID 534

60

TMJ FUNCTION FOLLOWING COMPLEX MANDIBULAR RECONSTRUCTION WITH THE FREE FIBULA FLAP

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Aims: The free fibula flap is a reliable flap for the reconstruction of wide mandibular defects. Aim of the present study is to assess the functional outcome of mandibular reconstruction in patients whose condyle was preserved, those who received condylar reconstruction and those who did not receive condylar reconstruction. **Methods:** From 1998 in the University of Rome La Sapienza and in the "University of Rome Tor Vergata" 15 patients received reconstructive surgery for wide mandibular defects. Eleven patients were selected and divided into three groups: the 1st group of patients underwent reconstruction of the hemimandible, the ramus, the sigmoid incisura and the glenoid fossa; the 2nd group of patients underwent reconstruction of the hemimandible and the ramus, without reconstruction of the glenoid fossa; the 3rd group patients did not receive condylar resection in the demolitive surgical procedure received hemimandibular reconstruction. Pre-operative and post-operative X-ray imaging was used to evaluate the relationships between the mandible, the TMJ, and the temporal bone. Assessment of mandibular function in terms of movement, mastication, and speech was performed through clinical examination and electrognathography. **Results:** Group 1 had good functional testing when radiological control confirmed that the new condyle correctly fit in the glenoid fossa. Group 2 featured optimal results in terms of function. Group 3 showed better results in terms of mandibular function when the condyle is adequately repositioned in articular cavity. **Discussion:** reconstruction of the mandibular condyle following wide mandibular resection may be an important step for functional recovery. The new condyle must be correctly placed in position to fit the glenoid fossa to avoid functional interference. Preservation of the condyle is a choice only when the principles of surgical radicality are respected.

Keywords: Mandibular reconstruction; Free fibula flap; Mandibular function

Abstr ID 118

61

RECONSTRUCTION OF THE UPPER JAW USING MICROSURGICAL FREE FLAPS: CLASSIFICATION OF THE DEFECTS AND SURGICAL OPTIONS

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Background and Aims: The classification of Cordeiro is probably the most appropriate for reconstructive purposes after resection of the upper jaw. We feel that an additional subdivision is useful in improving the choice of reconstructive options. We use the following: A) limited maxillectomy: resection of a wall of the upper jaw; B) lower sub-total maxillectomy: resection of the lower 5 walls of the upper jaw conserving the orbital floor; C) upper subtotal maxillectomy: resection of the 5 upper walls conserving the palate; D) total maxillectomy + resection of 6 walls of the jaw; E) total maxillectomy + exenteratio orbitae; F) orbitomaxillectomy: exenteratio orbitae + resection of the 5 upper walls of the jaw conserving the palate. **Methods:** During the last five years we have considered 21 neoplastic patients. In Group A, 4 free flaps of the forearm and one of the fibula were carried out; in Group B, 3 rectus abdominis flaps, 1 of the fibula and 1 of the osteocutaneous scapular; in Group C, 2 osteocutaneous scapular flaps; in Group D, 4 rectus abdominis flaps; in Group E, 2 rectus abdominis flaps and one of the latissimus dorsi; in Group F, 1 rectus abdominis flap and 1 osteocutaneous flap of the latissimus dorsi. **Results:** In no instance was there necrosis; in 2 cases, a revision of the anastomosis was carried out. Three patients died in the first 6 months after surgery, with a survival rate of 65% and a follow-up which varies from 1 month to 5 years. **Conclusions:** In our experience, an expansion of Cordeiro's classification allows us to program surgery more accurately, choosing the most appropriate option for each group of bone resection.

Keywords: Upper jaw; Microsurgical free flaps; Classification; Surgical options

Abstr ID 176

62

RECONSTRUCTION OF ORBITO-MAXILLARY DEFECTS FOLLOWING CANCER: USE OF REVASCULARIZED FREE FLAPS

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Aims: The aim of the Authors is to focus the attention on the use of revascularized free flaps in the reconstruction of

mid-facial defects, after of tumour removal. **Methods:** In our series 400 consecutive patients affected by cancer of cranio-facial district have been treated. In 80 of these cases the choice of rehabilitation, after removal of primitive tumour, fall on the use of revascularized free flaps: 32 radial forearm free flap, 29 osteo-myo-cutaneous fibula free flap (12 of these were used for maxillary defects), 6 iliac crest free flap, 9 rectus abdominis muscle free flap, 2 jejunum free flap, 1 latissimus dorsi free flap, 1 latissimus dorsi + scapula free flap. In the other cases there have been used regional flaps. **Results:** The indications to maxillary and orbital reconstruction using revascularized free flap depend on: extension and localization of the bone defect, necessity for an immediate or later reconstruction, condition of the donor site and the general conditions of the patients. **Conclusions:** Nowadays it is possible to guarantee a satisfactory renewal of function and morphological appearance in the majority of patients who present with maxillary and orbital defects. There is also the possibility to correctly apply osteo-integrated implants for a good occlusal restructuring process.

Keywords: Reconstructive surgery; Oromandibular reconstruction

Abstr ID 613

63

5-YEAR EXPERIENCE WITH PREFABRICATED FIBULA FLAPS FOR THE RECONSTRUCTION OF MAXILLOFACIAL DEFECTS

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Patients and Methods: Between Jan 1999 and April 2004, 37 prefabricated osseous free flaps (35 fibulae and 2 iliac crests) in 35 patients were transferred. Indications were maxillary (15) or mandibular (12) defects and severe maxillary (7) or mandibular (3) atrophy. Prefabrication in a first surgical step at the donor site included insertion of dental implants positioned with a drilling template in a preplanned position, and split skin grafting. The mean delay between prefabrication at the donor site and flap transfer to the recipient site was 6 weeks (4–8 weeks). Upon harvesting of the flap during the second surgical step, a bar construction with overdentures was mounted onto the implants, which then was used as an occlusal key for exact 3-dimensional positioning of the graft within the defect. **Results:** Follow up was from two months to 5 years (mean 21 months). Two total and 3 partial flap losses occurred. One total loss was due to thrombosis of the flap veins during the delay period, whereas the other loss was caused by spasm of the peroneal artery. Two partial losses were due to oversegmentation of the flaps with necrosis of the distal fragment, whereas one partial loss was caused by disruption of the vessel from the distal part. A total number of 132 ITI implants were inserted into the prefabricated flaps. Of the 132 implants, 10 were lost in conjunction with flap failure. 4 of the remaining 122 implants were lost during the observation period, making up for a 96.5% success rate. **Conclusion:** Flap prefabrication based on prosthetic planning offered a powerful tool for various reconstructive

problems in the maxillofacial area. Despite being a two-stage procedure, the time for complete rehabilitation was shorter than with conventional procedures.

Keywords: Prefabrication; Osseous free flap; ITI implants; Maxillofacial defect

Abstr ID 729

64

RECONSTRUCTION USING SQUARED BARE SCAPULAR BONE FLAP FOLLOWING MAXILLECTOMY

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The patients who underwent oncologic resection of the maxilla require the reconstruction of the maxilla for recovering the oral and maxillofacial functions such as swallowing, chewing, articulation and facial esthetics. It is possible for the patients to re-make oral functions with prosthetic dentures for the defect of the maxilla. However, there are some problems including the lack of retain and the difficulty to use. On the other hand, the chewing function could not be returned, even though the swallowing, articulation and facial esthetics would be recovered using free flap without skeletal structures. We present five cases of the squared bare scapular bone flap in order to reconstruct the midfacial structure, hard palate and alveolar process following the resection of the maxilla. Bone flap in the oral cavity side was not covered, though the maxillofacial surgeons often used the skin paddle in a decade. Uncovered area turned into the scar-like tissues on the hard palate and alveolar process and it could function as an attached mucosa in which the dentures would fit. Then the dental implants were fixed in the reconstructed region. The prosthetic dentures attached with the dental implants in three cases were retained well and the patients use it comfortably. Esthetic and functional purposes were almost achieved in all cases.

Keywords: Maxillary reconstruction; Microsurgical tissue transfer

Abstr ID 379

65

THE PREFABRICATED SPONGIOUS BONE RADIAL FORE ARM FLAP

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If primary reconstruction of full size mandibula defects with microvascular bone grafts has failed, another

microvascular graft is required for secondary reconstruction especially after radiotherapy. Here the prefabrication of bone grafts may be an alternative. In five patients iliac spongy bone cylinders were grafted in the lower forearm and wrapped with the fascia. After uneventful healing for 4 weeks, the prefabricated spongy bone radial forearm flap, with the complete vessel pedicle was used with and without skin island to bridge defects of the mandible with a size of up to 10 cm. In the mandible region there was a primary take of the graft, although one case required revision of the venous anastomosis two days after grafting. During the follow up period of up to three years the radiographic controls showed the ossification between the spongy bone of the prefabricated transplant and the stumps of the mandible as well as the formation of cortical bone wrapping the cancellous bone. At time of osteosynthesis plate removal the bony fusion between graft and original mandible was confirmed. The results prove that the prefabricated spongy bone radial forearm flap is an additional graft that still can work when other microvascular osseous grafts have failed already.

Keywords: Microvascular surgery; Flap prefabrication; Head and neck surgery

Abstr ID 222

66

THE PREFABRICATED FLAP IN RECONSTRUCTIVE SURGERY

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Introduction: It is very difficult to win an exact suitable pedicled osseous iliac crest flap for reconstruction in head and neck surgery. Very often it is too large and the form does not correspond to the surface. By reconstruction of the upper jaw the pedicle of the transplant is often too short for achieving an anastomosis without tension. Moreover the covering of the osseous flap with soft tissue of mucosa is not possible. **Purpose:** To achieve these demands to a pedicled iliac crest flap. **Material and Methods:** With 8 patients a model of the head was milled after CT scanning. This model of a part of the head was duplicated in plastic material and a plastic foil was created to form the iliac crest flap to the form we want to achieve. Intraoperatively the transplant was fixed after manual adaptation to the model and the planned form of the flap will be fixed with the plastic foil. This foil was fixed with screws to the plastic model and an artery and vein anastomosis was made between the pedicle of the transplant and the thoracodorsal artery and vein after resting of the transplant in the axilla. Three months later this prefabricated transplant was removed out of the axilla and pedicled fixed to the zone of the head we want to reconstruct. **Results:** With all 8 patients an exact fit of the prefabricated transplant was achieved. The length of the pedicle was absolutely sufficient. The covering of the osseous transplant was achieved without problems with a new growing mucous membrane between foil and the transplant. **Conclusion:** The prefabrication of a pedicled osseous iliac crest transplant is a worth help to get a good suitable flap and it is pos-

sible to achieve an exact fitting of the transplant for reconstruction.

Keywords: Prefabrication; Free pedicled flap

Abstr ID 604

67

MICROSURGICAL RECONSTRUCTION OF OROPHARYNX AFTER CANCER REMOVE BY COLON-OMENTAL FLAP

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Background: To extend the indications of surgical rehabilitation of oropharyngeal tumors. To improve the quality of life in operated patients. **Methods:** 26 patients with malignant local tumors of oral cavity (15), tongue (3), laryngopharynx (2), larynx (1), maxilla (1), mandibula (2), facial soft tissue (2) underwent the extensive resections with the removal of large mucosal fragments of oral cavity (15 pts), oropharynx (8 pts), and laryngopharynx (3 pts). In primary tumor group (15 pts) staging was adequate to index T4 in 9 patients, T3 in 4 patients, T2 in 2 patients. In 11 patients the relapse of tumor took place after surgical treatment and/or chemoradiotherapy. In all cases extensive functional and cosmetic defects of digestive tract have been formed. Transverse colon flap was used for microsurgical reconstruction of oral and pharyngeal mucosa. Transplant had been supplied with artery and vein of Riolan arcus. By intestinal portion of flap the mucosa in the area of defects was restored and by omental portion was soft tissues defect. The second step of oropharyngeal reconstruction had been performed in 4 patients. **Results:** The necrosis of flap took place in 1 patient (3.8%). The salivary fistulas in 3 patients. No complications in abdominal cavity took place. One patient died in early post-op period due to erosive bleeding from mediastinal vessels. Feeding per os started from 14th day after surgery. Natural feeding was restored in all cases. All the patients were decanulated in 3 weeks after surgery. Late results are studying. 60 months survival had been registered in two patients. **Conclusion:** The usage of new method of colon-omental flap autotransplantation results in improving of quality of life in patients after wide resections of socially important and functionally notable organs.

Keywords: Microsurgical reconstruction; Autotransplantation colon-omental flap; Oropharyngeal tumors

Abstr ID 692

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GLOSSECTOMY AND MICROSURGICAL RECONSTRUCTION

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Carcinoma of the tongue usually request complete or almost complete tongue removal with if possible the preservation of the larynx. Then, the problem of the recovery of the function after such exeresis is more important to consider because of the bad prognosis. The aftereffects of such surgery are usually long time for patients in terms of phonation and swallowing. The improvement of the reconstruction thanks to the microsurgical procedures allowed to better consider the validity of the indications of total tongue removal. A study of some 38 patients underwent complete glossectomy from 1990 to 2003. Most of the cases dealt with big tumors (T3–T4). The reconstruction was achieved in 24 cases by a gastric flap, 13 times it was reconstructed by a latissimus dorsi flap and one time with a gracilis free flaps under a gastric. The analysis of the results was based on the functional recovery of the phonation and the swallowing. From those results the authors could discuss about the different principles of tongue reconstruction:

- Respect of the functional and anatomical units
- volume and shape of the chosen flap
- suspension of the flap to the mandible arch
- restoration of the sensitivity of the flap
- part of the irradiation.

Finally, the microsurgical procedures constitute a good solution for the exigency of a tongue reconstruction in terms of shape, volume, deformability, sensitivity and its longterm stability. Nevertheless the adaptability and the spirit of participation of the patients together with the mastery of the surgeon are the main conditions of the achievement of the function recovery; so it is very important to take that points in account before decided such surgical treatment.

Abstr ID 208

69

MICROSURGICAL FLAP IN LARGE PALATE DEFECTS CLOSURE

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The aim of our work is to propose an alternative solution for large palate defects closure, especially in cleft patients, when classic methods prove to be ineffective. When no local soft tissues were available or reliable, we resorted to a microsurgical flap, in order to restore both hard and soft palate. The results were encouraging in all aspects. So far we have used this microsurgical method in 6 cases. There was a multidisciplinary approach, maxillo-facial surgeons, specialists in microsurgery, anesthesiologists, pediatricists, ortodonts etc. working together. The proper age for this kind of operation should be dictated by the general condition of the patients. The age range was 7 to 12 years old. We have used the forearm vascularised flap, the anastomosis being performed at the level of facial vessels. In two cases the flap was prefabricated, in order to have both surfaces covered with skin. In these cases the operations were performed in two steps at one month distance from each other. We would like to emphasize the risks these operations present, due especially to the long

lasting general anesthesia and postoperative care. In all these cases ortodontic treatment has been used and in some of them ortognathic surgery is to be performed.

Keywords: Large palate defects; Unreliable local soft tissues; Failed classic surgery; Microsurgical radial flap

Abstr ID 36

70

THE FOREARM FASCIO-SUBCUTANEUOS FREE FLAP IN ORAL RECONSTRUCTION

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In most of oncological Center the forearm fascio-cutaneous flap is the first choice for intraoral soft tissue reconstruction following ablative surgery. The forearm flap is particularly thin, pliable and foldable and these characteristics make this flap unique for mucosal defects reconstruction. The main limit is that the skin is not physiologic in the oral cavity, even thought in many cases we observed some changes to a mucosa-like epithelium. An other disadvantage is related to the presence of the hair on the surface. To overcome to these problems has been described the prelaminated fascio-mucosal free flaps bringing a mucosal buccal graft to the subcutaneous tissue of the forearm and transferring the free flap to the recipient site after 20 days. This technique requires a two stage-operation but, most important, needs to wait 3 weeks more for ablative surgery. Recently we accomplished oral reconstructions with fascio-subcutaneous forearm flap in seven patients, harvesting the deep fascia and subcutaneous tissue without the overlying skin. We harvested the flap elevating two dermo-epidermal flaps on the forearm according to the reconstruction design and replaced them like skin grafts at the end; the donor site appearance is more favourable because of the direct closure. We observed a rapid reepithelialization of the flap with a mucosal surface that is more physiologic than the cutaneous layer; with this technique the flaps are thinner than normal, more pliable and the surface is not hairy.

Keywords: Free flap; Forearm flap

Abstr ID 356

71

EXPERIENCE OF THE RADIAL FOREARM FLAP APPLICATION FOR SECONDARY PHARYNGOSTOMA PLASTY

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Pharyngostoma reconstruction after unsuccessful primary plasty represents a difficult clinical problem. In our clinic

during the period from 1996 to 2003 17 patients with pharyngostoma after the combined treatment of a larynx cancer and unsuccessful primary plasty (with local tissues - 11; with deltopectoral flap - 6) were examined and undergone a surgical treatment. There were 16 men and 1 woman whose ages ranged from 35 to 65 years. In all cases secondary pharyngostoma plasty by microsurgical autotransplantation of the radial forearm flap was performed. The flap was formed by two skin elements on the general fascial base. The flap develops half-and-half after mobilization, leather outside. Fascial layers are sewed among themselves on perimeter of the flap. Complete integration of replaced vascular tissue complex was achieved in all supervisions. In three cases fistula formations were observed in the early postoperative period. But they were independently closed. No complications at the transplant donor sites were observed. In two cases it was marked time restriction of the radiocarpal joint mobility, not demanding special treatment. All patients were satisfied with aesthetic and functional results of the treatment. Thus, microsurgical autotransplantation of the radial forearm flap is optimum way of pharyngostoma reconstruction, formed as a result of unsuccessful primary plasty.

Keywords: Pharyngostoma reconstruction; Microsurgical autotransplantation; Radial forearm flap

Abstr ID 326

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RECONSTRUCTION OF THROUGH AND THROUGH OSTEOCUTANEOUS DEFECTS OF THE MOUTH AND FACE WITH SUBSCAPULAR SYSTEM FLAPS

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Background: Major ablative surgery in the head and neck region may create composite defects involving the oral mucosa, bone and the overlying facial skin. The large surface area and the three-dimensional nature of these defects pose a difficult reconstructive challenge requiring adequate bone and large, positionally versatile skin flaps. **Patients and Methods:** 19 patients with through and through osteocutaneous defects of the mouth and face were reconstructed with composite subscapular artery system flaps. The evaluated parameters included: site and dimensions of the tissue defect, specific flap properties and review of the recipient and donor site morbidity. **Results:** 10 variants of scapular osteocutaneous flaps, eight latissimus dorsi with serratus anterior and rib osteo-myocutaneous flaps, and one combination of an osteocutaneous scapular and myocutaneous latissimus dorsi flap were used to reconstruct composite facial defects with mean dimensions of: skin: 54.4 cm², mucosa 56.2 cm² and bone of 8.2 cm. Ischemic complications occurred in 3 patients including 1 total flap failure and 1 failure of the bony component in previously irradiated patient. The 3d flap was successfully salvaged. No significant long-term donor site morbidity was noted. **Conclusion:** Composite flaps based on the subscapular artery system are a versatile reconstructive modality for large through and through defects of the mouth and face.

Keywords: Jaw reconstruction; Scapular and latissimus dorsi free flaps; Defects of mouth and face

Abstr ID 277

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SIMULTANEOUS NON-INVASIVE TISSUE OXYGEN AND BLOOD FLOW MONITORING IN MICROSURGICAL FLAPS

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Aims: Early recognition of microvascular flap failure is important for the outcome of the graft and for the decision on surgical revision in order to avoid the loss of the graft. Therefore, monitoring of microsurgical tissue flaps is of great clinical interest. The aim of this study was to investigate if early recognition of microvascular flap failure with this method is possible in order to avoid the loss of the graft. **Patients and Methods:** Since June 2002, 71 patients with microsurgical flaps (34 radial forearm flaps, 5 upper arm flaps, 6 vastus lateralis flaps, 26 osteocutaneous fibula flaps) underwent flap monitoring. Using O2C (LEA-Medizintechnik, Germany), we analysed non-invasively hemoglobin oxygenation (SO₂ [%]), hemoglobin concentration (Hbconc [AU]), blood flow [AU] and flow velocity [AU] preoperative (donator region), intraoperative and up to the 14th day postoperative in different tissue levels. **Results:** In eight flaps (11.3 %, 3 radial forearm flaps, 1 upper arm flap, 4 osteocutaneous fibula flaps) disorders of oxygenation and perfusion occurred. Two flaps recovered spontaneously, in three flaps surgical revision was necessary with two of the these flaps surviving. Altogether we lost four flaps. **Conclusion:** Simultaneous non-invasive tissue oxygen and flow monitoring combines advantages of several other monitoring systems. O2C permits objective and early recognition of flap failure prior to clinical assessment. Because of its simple application and high sensitivity it is suitable for monitoring in free tissue transplantation.

Keywords: Microsurgery; Free flap monitoring; Maxillofacial surgery

Abstr ID 624

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NON-INNervATED FREE FLAPS IN ORAL & ORO PHARYNGEAL RECONSTRUCTION: DO THEY REGAIN SENSATION?

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Introduction: The concept of sensation in free tissue transfer is gaining momentum. Literature reports on sensory recovery are equivocal for non-innervated and innervated free flaps, although there is positive evidence towards innervated flaps. We retrospectively studied the sensory recovery of non-innervated radial forearm, jejunal

and gastro omental free flaps used in oral and oro pharyngeal reconstruction in patients with malignant disease. **Patients and Methods:** Study design is retrospective. A total of 60 patients who underwent oral and oro pharyngeal reconstruction with non-innervated radial forearm(36), jejunal(13) or gastro omental(11) free flaps at authors institution, over a 5-year period were included in this study. Sensitivity of the flap to light touch, sharp prick, temperature discrimination and static two point discrimination was assessed and compared with that of the corresponding unaffected normal mucosa. The minimum study period was 12 months post surgery. The degree of these different sensitivities were compared and analysed critically. **Results and Conclusion:** The degree of sensory recovery of these different non-innervated free flaps is reported. The statistical and clinical significance of the results of the study is discussed.

References

Santamaria E, Wei FC, Chen IH, Chuang DC. Sensation recovery on innervated radial forearm flap for hemiglossectomy reconstruction by using different recipient nerves. *PLast Reconstr Surg* 1999; 103: 450–7.

Keywords: Non innervated free flaps; Sensory recovery; Oral & oro pharyngeal reconstruction

Abstr ID 295

75

LONG-TERM RESULTS OF SUBMANDIBULAR GLAND TRANSFER FOR THE SURGICAL CORRECTION OF KERATOCONJUNCTIVITIS SICCA. A CLINICAL, IMMUNOHISTOLOGICAL AND SCINTIGRAPHIC STUDY

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Aims: In order to investigate the long-term functional results and histological alteration of glandular structures after microsurgical transfer of the submandibular gland for treatment of keratoconjunctivitis sicca. **Material and Methods:** 15 cases of transplanted submandibular gland were evaluated 5–8 years following surgical procedure. Immunohistochemical investigations were carried out using Ki-67, ASMA, S-100 and PGP. Furthermore, secretory pattern after denervation as well as laboratory analysis of secreted saliva were evaluated. Neuroreceptor reaction of transplanted glands was assessed by salivary gland scintigraphy using carbachol stimulation. **Results:** We found a significant higher base-secretion of proteins in the transplanted glands. After stimulation with carbachol, protein concentration fell in all samples; this effect was higher than in control glands. Interesting is that a transplanted gland is highly sensitive to cholinergic stimulation by carbachol. Scintigraphy showed a normal primary uptake and clearance. Immunohistologically, surviving acinar cells and neuronal structures were proven. Clinical findings were stable in the follow-up period and showed no significant change compared with short-term results. **Conclusion:** Clinical and immunohistological findings have proven the long-term reliability of surgical method. Patients profited from saliva lubrication of the ocular surface years after initial treatment. For functional evalua-

tion of transplanted glands scintigraphy provides an appropriate and reproducible diagnostic procedure. Considering all this, submandibular gland transfer still represents the definitive treatment option in severe cases of keratoconjunctivitis sicca.

Keywords: Submandibular gland transfer; Scintigraphy; Keratoconjunctivitis sicca; Saliva

Abstr ID 70

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ONE-STAGE FACIAL REANIMATION ACCORDING TO HARII: EXPERIENCE WITH 24 PATIENTS

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Object: In 1998 the Japanese surgeon Kiyonori Harii devised a new technique to solve long standing facial paralysis. Authors present their experience with that procedure. **Materials and Methods:** 24 patients affected by chronic facial paralysis (average 11.6 years) have been operated on between April 1999 and April 2004. All patients have been operated on by transposing a latissimus dorsi free flap into the affected side of the face through a face-lift incision. Most vascular anastomoses of the thoracodorsal vessels were accomplished on facial vessels. The thoracodorsal nerve (16 cm long) was anastomized into the contralateral side of the face to a branch of the facial nerve for the zygomatic major muscle. In 14 cases a thin flap of temporal muscle was rotated to rehabilitate the paralyzed lid. **Results:** A total number of 14 patients have the flap functioning till now. For the other 10 patients it is still too early. The average time of starting of contraction of the muscle was 10 months (between 3 and 22 months). According to evaluation criteria of Harii (highest 5, lowest 1) the rating of rehabilitation is: 6/14 grade 5, 5/14 grade 4, 2/14 grade 3, 1/14 grade 2. **Conclusions:** Classical correction of facial paralysis requires two operations and a rehabilitating time of 18–24 months. This technique allows to reanimate the face by one surgery with great saving of time. Results are similar to those of classical technique.

Keywords: Facial paralysis; Latissimus dorsi flap

Abstr ID 57

77

LENGTHENING TEMPORALIS MYOPLASTY AND TRANSFACIAL NERVE GRAFT (VII-V)

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Introduction: In 70 patients with facial paralysis who were operated in our department with lengthening temporalis

myoplasty, we were satisfied with the result. We were able to obtain successively a “mandibular smile” (depending on the mandibular movements), a “voluntary temporal smile”, and finally a “spontaneous smile” thanks to the physical therapy and the brain plasticity. In 10 patients, we were interested in improving the results by adding a transfacial nerve graft in order to give an emotional smile. A sural nerve is harvested and then anastomosed between a zygomatic nerve on the healthy side and a deep temporal nerve of the temporalis muscle on the affected side. This transferred muscle became double innervated (VII–V). **Material and Method:** 10 cases of temporalis lengthening myoplasty and transfacial nerve grafting were performed since 2001. The surgical technique is detailed. The criteria for complete nerve growth was the contraction of the contralateral transposed temporalis muscle after electric stimulation of the facial trunk on the healthy side. **Results:** Temporalis reinnervation by the facial nerve could be observed and documented by electromyography. Several series of stimulation on the healthy side reproduced the same strength of contraction of the transferred temporalis muscle with the same delay period which varies from 3.1 msec to 4 msec. **Discussion:** Transfacial nerve grafting seems to help the transposed temporalis muscle to obtain more facial function, and therefore improve the quality of the spontaneous smile. It should be indicated in special cases, specially in children or in patients in whom physical therapy will be difficult.

Keywords: Facial palsy; Temporalis myoplasty; Nerve graft

Abstr ID 680

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NEUROTIZATION OF C7 POSTERIOR ROOT AND THE SPINAL ACCESSORY NERVE FOR RECONSTRUCTION THE TRAPEZIUS MUSCLE FUNCTION

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Objectives: To introduce a new approach of neurotization for treatment the shoulder complaints after the radical neck dissection which transfer the C7 posterior root to the spinal accessory nerve for reconstruction the function of trapezius muscle. **Methods:** 10 patients underwent the neurotization during the radical neck dissection. In the operation, we preserved the apo-cranial part of spinal accessory nerve from the trapezius muscle (length 3.0 cm) and anastomosed it to C7 posterior root we had previously reserved. Subjective complaints, objective physical examinations and electromyography were investigated pre-operatively and 1,3,6 month post-operatively to evaluate the trapezius muscle function after the anastomosis. **Results:** 1,3,6 month after the operation, the recovery rates of each part are as follows: superior part 9.8%, C68.9%, C73.5%, Gmiddle part 4.7%, C73.6%, C69.4% Ginferior part 6.2%, C70.5%, C70.3%. The range of abduction motion of upper arm in 7 cases (70%) exceeded 90 degrees. Mean of maximal abduction angle 95 degrees. The VAS test f1.0. Evaluation of the shoulder function showed that the myo-atrophy and the disability of abduction is lower.

Conclusion: Transfer the C7 posterior root to the spinal accessory nerve during radical neck dissection can well reconstruct the function of trapezius muscle. This approach provides a wider indication in comparison with the functional neck dissection without impairment of arm function after cutting C7.

Keywords: Neck dissection; Shoulder complaints; Neurotization

Abstr ID 418

80

OROMANDIBULAR RECONSTRUCTION USING FIBULA OSTEOCUTANEOUS FREE FLAP: FOUR DIFFERENT PREPLATING TECHNIQUES

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Aim: Nowadays microvascular free flaps represent a first choice in method in head and neck surgery reconstruction. The goal of an oromandibular reconstruction, after a partially or fully extended resection, is to recreate a normal morphology with a mandibular profile as much as possible similar to the original one and to restore the oral function. These goals can be satisfied using fibula osteocutaneous free flap combined with the preplating technique. The aim of this presentation is to describe our experience using the preplating technique for oromandibular reconstruction. **Method:** The preplating technique includes four different methods to shape the titanium plate that will be use in the reconstruction phase against the existing mandible before resection. We have adopted the preplating technique in 15 oncological patients between 1998 and 2003: in 8 of them the external cortical bone of the mandible was conserved by the tumour and we used the vestibolar preplating technique; in one the internal cortical bone was integred and we used the lingual preplating technique; when either the internal and the external cortical bone were infiltrated we adopted in 4 cases the double preplating technique, in one case the Luhr technique. **Results:** With the preplating technique we have gained a high success rate in mandibular fibula flap reconstruction. A nice aesthetic profile was obtained with a precise reconstruction of the inferior mandibular border. Either restoration of the mandibular continuity and the maintaining of the presurgical three-dimensional occlusion relation ship with the replacement of the oral muscles to the titanium plate, permitted a good prosthetic rehabilitation and functional resthablishment. **Conclusion:** The preplating technique combined with fibula microvascular free flap can be considered as a useful and predictable method for oromandibular reconstruction.

Keywords: Fibula free flap preplating

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NEW APPROACH OF THE MANDIBLE DEFECT RESTORATION

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There are a few methods of the mandible defect restoration. But after oncology operation with vast soft tissues removing there is no possibility to close free bone transplant or titanium implant with the soft tissues. Moreover radiotherapy depresses regenerative potency of the tissues. Therefore quantity of the methods is reduced. According to our opinion the most suitable methods for the mandible defect elimination are vascularized costomuscular flap and distractive histogenesis (bony and soft tissues genesis) by means of gradual distraction. There were 13 patients with face malignant tumors. Index III–IV were in all cases. First compressive-distractive device (CDD) was fixed on the mandible. Then tumor was removed together with the mandible and soft tissues. Half of the mandible body was resected in 2 patients, completely body (total body amputation) in 3, half body and branch (half of the mandible) in 4 and partly body and branch in 4 patients. Thus bony defects were from 10 to 16 cm. The remainder of the mandible was osteotomized two or three times and two or three transported fragments were made. Compression was created. The mandible body was restored in all 5 patients. Among 8 patients with the body and branch defects body and branch was restored by means of CDD only in one patient. In other 7 patients after the mandible body restoration with CDD branch was created with costomuscular vascularized transplants. Two type flaps were used: rib with serratus muscle and fragment of iliac bone with surrounding muscles. Full surviving of flaps were in all cases. Approach with use two methods reconstruction of mandible is important. Every method is realizing main task – distraction is restoring body of mandible and microsurgical transplantation is regaining soft tissues and branch of mandible.

Keywords: Mandible restoration; Microsurgical

Abstr ID 681

82

EVALUATION OF MASTICATION FUNCTION AFTER THREE-DIMENSIONAL MAXILLARY RECONSTRUCTION

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Objectives: To evaluate the mastication function of the patient whose maxilla was reconstructed with individual titanium mesh and Chinese flap or combined with fibular flap, in order to testify the superiority on maxillary functional reconstruction. **Methods:** Since March of 2001, we had been performed 10 cases of maxillary defect which were reconstructed with individual titanium mesh and Chinese flap or combined with fibular flap, and routine removal partial denture fixed after 3–6 months postoperatively. The defect type was classified according to Brown's classification. There were 2 cases of type $\frac{1}{2}$ U defect, 8 cases of type $\frac{1}{2}$ V defect, and 2 cases with the defect across the midline. They included 4 males, 6 females. The mean age of

this group was 48 years old (range: 32–65 years old). Assessment was preceded of occlusal force by T-Scan II system (Tekscan company, USA). The centric occlusal position was recorded three times using an appropriate sensor. And the occlusal force was evaluated preoperatively and postoperatively. **Results:** The data were analyzed by SAS 6.04 paired T test. The occlusal force analysis results indicated the ABF and AOA were significantly different preoperatively and postoperatively ($P > 0.05$). The recovery rate of total occlusal force ranged from 27.05%–74.06%, and the average was 50.15%. **Conclusion:** This new approach of three-dimensional functional maxillary reconstruction had satisfied outcomes in contour and function, especially the mastication function.

Keywords: Maxillary defect; Occlusal force; Reconstruction

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83

DIMENSIONAL FACIAL SKELETON RECONSTRUCTION WITH THE HELP OF THE REVASCULARIZED ILIAC CREST AND THE INTERNAL OBLIQUE MUSCLE

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Purpose: To broaden the possibilities of spatial modeling of the revascularized iliac crest by including an additional source of blood supply – the ascending branch of the deep circumflex iliac artery and by using a three dimensional computer tomography to model the recipient and donor area in the preoperative stage. **Materials and Methods:** The source of blood supply in the iliac crest – the main trunk and ascending branch of the deep circumflex iliac vessel – was examined in 30 cadavers. The elevation of the iliac crest with internal oblique muscle was conducted on 9 patients. The curvature of the transplant and repairable area of the facial skeleton was estimated with the help of 3D computer tomography. **Results:** The ascending branch of the deep circumflex iliac artery is involved in the blood supply of the iliac crest in 90% of cases. The computerized tomographic examination during the preoperative period helped to determine the points of the osteotomy of the autograft. This flap was transplanted into 9 patients. 7 patients were reconstructed lower jaw; 2 patients were reconstructed upper jaw and molar bone. The internal oblique muscle in 5 cases covered the defect of the oral cavity mucous layer; in 4 cases it was used as an outline plate for soft tissue volume reconstruction. **Conclusion:** The usage of an additional source of blood to the iliac crest makes possible the dimensional facial skeleton reconstruction. This fact gives us the possibility of making safe the osteotomy of iliac crest. The objective estimation of a defect and a donor area with the help of a three dimensional examination allowed us to achieve the maximal symmetry of the facial skeleton by marking the points of osteotomy.

Keywords: Microsurgery; Iliac crest autotransplantation; 3D computer tomography; Defects of the facial skeleton

Abstr ID 104

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APPLICATION OF PREFABRICATED FREE FLAPS FOR RECONSTRUCTION PENETRATING DEFECTS OF ORAL CAVITY

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Purpose: Folded flaps are frequently used to repair penetrating defects of oral cavity, but the Folded flaps are bulky and the postoperative profile are not acceptable. In this article, we present another technique to reconstruct penetrating defects of oral cavity with prefabricated free flaps. **Patients and Surgical Technique:** Four patients with oral penetrating defects resulting from previous injury in upper lip (one case), resection of malignant tumor in bucca (two cases) and osteomyelitis of the upper jaw in palate (one case) underwent reconstruction using prefabricated forearm flaps. Surgery was performed in two stages. In stage 1, the forearm flaps were elevated and the dorsal wounding surface of the flap was covered with skin graft harvested from abdomen. The prefabricated flap with vascular pedicles was maintained in donor sites. The weeks later, the vascular pedicle was cut off and the flap was transferred from the donor to recipient sites to repair defects in stage 2 surgery. **Results:** All the flaps well survived and the contour of the reconstructed organs were kept unchangeable and normal, and also the functions of the reconstructed organs such as speech were kept normal. **Conclusion:** Prefabricated free flaps with more acceptable postoperative appearance than folded flaps are an ideal method for reconstruction penetrating defects of oral cavity.

Keywords: Prefabricated flap; Penetrating defects of oral cavity; Reconstruction

Abstr ID 342

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POSTISCHEMIC REACTIVE HYPEREMIA ASSESSING FLAP HEMODYNAMICS

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Aims: Today it is routine practice to use pedicled or free flaps to reconstruct defects after ablative surgery. If patient morbidity from flap failure is to be minimized, an improved understanding of flap hemodynamics and responses to ischemia is needed. **Study Design:** The capacity of a flap to repay blood flow deficit after ischemia was investigated. We closed and opened the flap feeding artery, and recorded the peak flow, the duration, and the magnitude of postischemic reactive hyperemia after clamp release in a rat groin flap model. **Results:** The progressive increase of postischemic reactive hyperemia with clamping time was seen both in the free flap and the pedicled flap model, but it was less prominent immediately after surgery. Furthermore, postischemic reactive hyperemia was increased after preconditioning of the flap. For preconditioning, we used three cycles of 10 min of feeding artery clamping, followed by 10 min of reperfusion. In addition, the measured parameters of postischemic reactive hyperemia were decreased in hypothermal conditions, and increased after blood withdrawals. Thus, acute ischemic preconditioning and blood withdrawals appear to increase the vasodilator response to ischemia in a flap and the capacity of a flap to repay blood flow debt after ischemia. In contrast, hypothermia and surgical manipulation appear to decrease them. **Conclusion:** In the field of microsurgery, postischemic reactive hyperemia provides further insight into the complex mechanisms of hemodynamic responses in ischemic pedicled and free flaps.

Keywords: Free flap; Microsurgery; Postischemic reactive hyperemia; Reconstructive surgery

TOPIC 4: SURGERY OF THE AERODIGESTIVE TRACK CANCER BETWEEN CHEMOTHERAPY AND IRRADIATION

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Prog. no.	Title/Authors
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SQUAMOUS CELL CARCINOMA OF TONGUE: A RETROSPECTIVE STUDY OF 329 CASES

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Squamous cell carcinoma (SCC) of tongue is one of the commonest and challenging problems to the head and neck surgeons and clinical oncologists. The most effective treatment of these tumours remains controversial*. This is a retrospective study, which attempted to evaluate the treatment outcome in patients with SCC of tongue with long term follow up. **Aim:** To evaluate the survival outcome of different treatment modalities in the management of patients with SCC of tongue. **Patients and Methods:** The study design is retrospective. A total of 329 patients with biopsy proven, previously untreated, SCC of tongue treated with curative intent from 1985 to 1998 were included in this study. Male to female ratio was 1.4: 1 (192 male and 137 female). Age range from 22 to 96 years with a median value of 53. The treatment modalities included surgery, radiotherapy +/- chemotherapy in isolation or in various combinations. The outcome of these different treatment modalities on the patients 5 year survival rate is analysed critically. **Results and Conclusion:** The influence of the different treatment modalities for SCC of tongue on the patients survival rate is reported. The clinical and statistical significance of the results is discussed.

References:

1. Harrison L B et al. Long term results of primary radiotherapy with/without neck dissection for squamous cell cancer of the base of tongue. *Head Neck* 1998; 20: 668–73.
2. Hicks W L jr et al. Surgery as a single modality therapy for squamous cell carcinoma of the oral tongue. *Am J Otolaryngol* 1998; 19: 24–8.

Keywords: Squamous cell carcinoma; Tongue; Surgery; Radiotherapy; Survival outcome

Abstr ID 443

87

EFFICACY OF ROUTINE FOLLOW-UP OF PATIENTS TREATED FOR T1-2N0M0 SQUAMOUS CELL CARCINOMA

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In a retrospective study, 102 patients curatively treated for a T1-2N0M0 squamous cell carcinoma of the floor of

mouth and tongue, with a minimum follow-up of 5 years, the value of this follow-up was evaluated. During the follow-up (mean 61.04 months, SE 3.75 months) 10 patients developed recurrences, of which five were detected on routine follow-up and five of own accord. Twenty patients developed a secondary primary tumor, of which 11 were detected by routine follow-up. No neck recurrences occurred. After a 5-year period of follow-up, still seven patients developed a secondary primary tumor of which only three were detected on a routine basis and could be treated curatively. No correlation was found between type of primary treatment, histological features and recurrence of secondary events. Mean survival was 129 months (SE 7 months) for T2 squamous cell carcinomas of the floor of mouth and 157 months (SE 7 months) for T1- squamous cell carcinomas of the floor of mouth. The survival of T1-2 squamous cell carcinomas of the tongue and T1-squamous cell carcinomas of the floor of mouth did not appear to be significantly different. As a result of this study it can be concluded that the efficacy of routine follow-up after a period of five years is limited. An easy access to follow-up consultations at own initiative appears to be just as important.

Keywords: Oral carcinoma; Follow-up

Abstr ID 103

88

A POPULATION-BASED HISTORICAL COHORT STUDY OF THE OUTCOME OF TREATMENT OF BUCCAL MUCOSA CARCINOMA AMONG MANITOBANS

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Introduction: Carcinoma of the buccal mucosa is rare. Poor prognosis of this disease has been associated with high rates of local and regional recurrence and its inherent aggressive nature. **Methods:** A historical cohort of 69 cases of previously untreated biopsy-proven squamous cell carcinoma of buccal mucosa from the cancer registry of the Province of Manitoba between January 1975 and December 2003 were identified. Kaplan-Meier survival analysis and Cox's proportional hazard model were used to compare 5-year survival by treatment modality and to estimate risk ratios. **Results:** The mean age of the study population was 70.8 ± 13.8 years, 38 patients were females, 61% had T1 or T2 tumors, 73% were NO, and 49% were stage I or II. Treatment included radiotherapy as a single modality in 40%, surgery alone in 38%, surgery and radiotherapy in 16%, and 6% received palliative treatment. The treatment failed in twenty-four patients, 19(79%) at the primary site and 7 (29%) in the neck. The overall 5-year survival was 53.9%. Survival was similar for stages I–IV: 54%, 57%, 52%, and 58%, respectively ($P > 0.05$). Radiotherapy, as a single treatment modality, had a 2.5 times greater risk of death at 5 years, as compared to surgery with or without radiotherapy, after controlling for age ($RR = 2.5$, 95% $CI = 1.1, 6.0$; $P < 0.05$). **Conclusions:** Squamous cell carcinoma of the buccal mucosa at our institution had a relatively poor survival for early stage disease, a

preponderance of treatment failure at the primary site, and a high proportion of patients treated with radiotherapy as a single treatment modality. The poor survival may reflect an aggressive tumor, suboptimal treatment, or inaccurate staging. Further studies with pooling of multi-center data would be required to determine the true nature of this disease and its optimal management.

Keywords: Buccal mucosa carcinoma; Cheek carcinoma

Abstr ID 710

89

EVOLVING STUDY OF MALIGNANT HEAD AND NECK TUMORS TREATED IN THE OMF SURGERY CLINIC IN CLUJ-NAPOCA ROMANIA, OVER A PERIOD OF TEN YEARS (1993–2002)

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Malignant tumor cases increased significantly in patients we treated, mostly in advanced stages, thus increasing treatment costs and drastically reducing survival and life quality. **Objectives:** Global evaluation of malignant tumor cases treated between 1993–2002 in our Clinic; evaluation of the treatment methods, calculating the risk of recurrence, establishing the average time from surgery to recurrence; determining of post-therapeutic survival rate. **Material:** 1072 patients with malignant tumors, treated between 1993–2002 in our Clinic. Working methods: examining charts, pathology reports, clinical reassessment, gathering actualized data in 2003; statistical validation with Student's test, results charts and data archive with "Microsoft Excel", "chi-square" test with "Epi Info 6" and survival rate with statistical software. **Results:** Malignant tumors patients are 9.10% of the cases treated in our clinic, 24.56% presented in stage one and 46.78% in stage IV. Treatments were: 70.6% surgery, 9.05% surgery and radiotherapy 8.3% palliative, rest received surgery associated with radio- and chemotherapy or strictly radiotherapy or chemotherapy. Recurrence is in our study 9 months earlier (average) in urban patients than in rural patients, and 6.5 months earlier in male than in female patients. Surgical treatment alone, in early stages decreases the rate of recurrence: 23.21% cases, compared to the associated surgery and radiotherapy treatment: 38.14%. In stage one tumors, surgical treatment alone is a protection factor for recurrence, ($P=0.0000001$, $\chi^2=27.97$, $RR=0.38$). In stage IV tumors, surgical treatment alone is a risk factor for recurrence ($P=0.00000001$, $\chi^2=37.2$, $RR=1.99$). Treatment in stage one is a protection factor regarding the appearance of tumor recurrence ($P=0.0000002$, $\chi^2=26.77$, $RR=0.42$) and treatment in stage IV is a risk factor for tumor recurrence ($P=0.0000137$, $\chi^2=18.9$, $RR=1.64$). Post therapeutic survival (for 352 patients who responded to our study) is: 86.36% at one year ($P=0.000001$), 49.43% at three years ($\chi^2=5.36$), 30.68% at five years ($P=0.00005$, $\chi^2=22.663$) and 3.40% at ten years ($P=0.00111$).

Keywords: Malignant tumors; Treatment methods; Survival; Recurrences

Abstr ID 178

90

USE OF REVASCULARIZED FREE FLAPS FOR THE RECONSTRUCTION OF ORO-MANDIBULAR DEFECTS

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Aims: Many methods have been described by different Authors for the reconstruction of oro-mandibular defects. The aim of the authors is to focus the attention on the use of revascularized free flaps. **Methods:** in our series 400 consecutive patients affected by cancer of oro-mandibular district have been treated. In 80 of these cases the choice of rehabilitation fall on the use of revascularized free flaps: 32 radial forearm, 29 osteo-myo-cutaneous, 6 iliac crest, 9 rectus abdominis, 2 jejunum, 1 latissimus dorsi, 1 latissimus dorsi + scapula. In particular, 17 of the 29 osteo-myo-cutaneous fibular free flaps were used for mandibular reconstruction as well as all the iliac crest free flaps. **Results:** The indications to the mandibular reconstruction using free revascularized flap depend on different factors. In particular the use of the revascularized free flap lies in the fact that is possible, in this way, to overcome eventual cutaneous mucosal losses associated with the bone loss. **Conclusions:** Different free flaps have been described for mandibular reconstruction: fibula, iliac crest, radial and scapular, which are the most widely used. Nowadays it is possible to guarantee a satisfactory renewal of function and morphological appearance in the majority of patients who present with oro-mandibular defects.

Keywords: Reconstructive surgery; Oromandibular reconstruction

Abstr ID 9

91

MAXILLARY RECONSTRUCTION WITH TEMPORALIS MUSCULOPERIOSTEAL FLAP WITH OR WITHOUT CRANIAL BONE

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Aims: Maxillary reconstruction remains as one of the most challenging areas in the head and neck surgery. Although small partial defects of the palate are managed without significant difficulty, larger maxillectomy defects require special attention. **Methods:** 23 patients (14 m, 9 f) with a partial, hemi- or subtotal maxillary defect were reconstructed using a temporalis musculoperiosteal flap between 1998 and 2003. The material consisted of 7 patients

(pts) with a squamous cell carcinoma (SCC), 7 with an adenoid- or adenoid cystic carcinoma (ADC), 4 with a melanoma, 3 with a sarcoma, 1 with a plasmacytoma and 1 with a trauma. A free calvarial bone transplant was used in 19 pts including 12 pts with a subtotal (2/3) or hemimaxillary (1/2) defect. Radiotherapy was given preoperatively to seven pts with SCC (66Gy) and postoperatively to pts with ADC (62Gy). **Results:** The primary success rate after the surgery was 87% (20/23). Seventeen out of 23 (74%) pts were still alive and had a functional palatal closure after the two-year follow-up. Twelve pts received dental rehabilitation with complete (7) or with teeth-supported partial dentures (5). In two pts the retention of the upper jaw prosthesis was later improved with implant surgery. **Conclusion:** Partial and large hemimaxillectomy defects can be successfully reconstructed with a temporalis musculoperiosteal flap together with or without a cranial bone graft. The morbidity is low and the prosthodontic rehabilitation can be performed. It is possible to improve the functional results with dental implants. This regional reconstruction yields an adequate local disease control with a good functional outcome.

Keywords: Maxillary cancer; Temporalis musculoperiosteal flap; Maxillary reconstruction

Abstr ID 590

92

PALATE RECONSTRUCTION WITH BUCCINATOR MYOMUCOSAL ISLAND FLAP AND BUCCAL FAT PAD FLAP (ORAL COMMUNICATION)

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Introduction: Palatal region is a difficult challenge to reconstruct because of the big sequels that a poor reconstruction may originate. In the medium size and small defects, the myomucosal buccinator flap combined with the buccal fat pad flap can be used to get successfully reparations. **Objectives:** We present our experience in the association between these two flaps to reconstruct oncological palatal defects. **Material and Methods:** During the last two years we have operated 5 cases of oncological reconstruction with the combination of these two flaps. In one patient we also combined a rotational palatal flap to close the defect. The defect sizes were between 2 × 2 cm and 3 × 5 cm. The histological diagnosis was adenoid cystic carcinoma in 3 cases, squamous cell carcinoma in one case and low grade mucoepidermoid carcinoma in one case. The buccal fat pad permits a good surgical closure avoiding dead spaces and decreasing the number of leakages. **Results:** The survival and the anatomical reparation were achieved. One patient had a soft palate leakage that was resolved with conservative treatment. Functional results were excellent analysing phonation, swallowing and palatal competence. **Discussion:** The buccinator myomucosal island flap was first described by Bozola in 1989 to close palatal fistulas and to make an anatomical palatal reconstruction. It is a safe and easy surgical procedure with a minimal morbidity in the donor site. If a buccal fat pad flap is associated a better surgical closure is got. This

new technique is effective for small and medium size palatal defects and can avoid the use of same other more difficult reconstructive options.

Keywords: Buccinator flap; Palatal defects

Abstr ID 781

93

THE SUPERIORLY BASED PLATYSMA FLAP IN ORAL RECONSTRUCTION: A CASE SERIES

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The platysma myocutaneous flap for intraoral reconstruction was introduced in 1978 (Futrell et al. 1978). It has been used for head and neck reconstruction in different superiorly (Futrell et al. 1978) and posteriorly based (Ariyan 1977). There are today available three different variations of the platysma flap based on the dominant blood supply. The inferiorly based flap, with arterial supply from the transverse cervical artery, has no application in oral reconstruction (Baur and Helman, 2002). The superiorly based and posteriorly based versions of the flap have wide application in the oral region. The purpose of this study was to access the reliability and use of the superiorly based platysma flap for oral reconstruction. This case series consists of 5 patients were reconstructed with a superiorly based platysma flap for various tumor resection defects of the oral region (anterior and lateral floor of mouth, buccal mucosa). The flaps were monitored for complications, including skin loss and ischemia in the postoperative period. Three patients in this study had no complications. One patient had some skin sloughing, but the underlying muscle remained viable and mucosalized normally. One patient had flap loss in the distal end, possibly due to vascular compromise that occurred during a concomitant neck dissection. The superiorly based platysma flap is a reliable reconstruction option for defects in the oral region. If skin slough occurs, it is usually inconsequential for intraoral reconstruction. When skin sloughing occurs, the underlying muscle remained intact in our series, allowing for mucosalization. The underlying muscle remains intact in our series, allowing for mucosalization.

Keywords: Platysma flap oral reconstruction

Abstr ID 410

94

THE VERSATILITY OF THE TEMPOROPARIETAL FACIAL FLAP APPLICATION

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The temporoparietal region has become an extremely useful donor site as to supplying vascularized soft tissues and

cranial bones for reconstruction of various facial deformities. The broad thin sheet of vascularized fascia may be transferred alone or as a carrier of subjacent bone or overlying skin and scalp. **Aims:** The aim was to study the potential of the temporoparietal region. **Subject:** We analyzed the 15-year experience of application of 187 flaps based on superficial temporal vessels. We designed and used various kinds of flaps for a set of reconstructive purposes. Temporoparietal facial flap has been applied for periorbital, ear, palate and nose reconstruction and correction of paralyzed face in 98 cases. Skin and scalp facial flaps were used in 82 cases predominantly for periorbital and perioral reconstruction in men. In 7 cases osteofacial flaps were harvested for maxilla and zygoma reconstruction. In complex defects restoration two types of flaps were applied. In majority of cases we used pedicled flaps and only in 8 patients microsurgical transplantation was completed. **Results:** We had 2 cases of partial loss of the scalp using pedicled flap and 2 cases of failure in microsurgical transplantation of facial flaps to the palate. In our practice the thin texture of the temporoparietal facial flap proved to be aesthetically more suitable. In addition to that the profile of the outer cranium contributes to production of combined bone and soft tissue vascularized grafts for reconstruction of the maxillo-facial region. The donor site is easily hidden by hair regrowth with its blood supply being very reliable. In conclusion the unique anatomic interrelationships of the temporoparietal region allow for creativity in correction of a variety of composite defects. The flaps harvested in this region have supplanted many of the others.

Keywords: Plastic surgery temporoparietal; Fascia flap donor site

Abstr ID 709

95

PRIMARY COMBINED PLASTIC SURGERY IN PATIENTS WITH ADVANCED OROPHARYNGEAL MALIGNANT TUMORS

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Aims: The main indications for primary combined plastic surgery after large operations in patients with oropharyngeal malignant tumors are: (a) anatomical features of defects consists of two end more injuries epithelial surfaces, (b) patients with tumors of III–IV stages. **Method:** The combined plastic surgery was held in 63 patients in the 1984–2003. The most patients (57) had squamous cell carcinoma, 4 patients–osteosarcoma, 4 patients–soft tissue sarcoma. Combinations of myocutaneous flaps were used in a majority of cases. Of them 28 included major pectoral flap, 11 – sternocleidomastoid flap. Destruction of alveolar rib of mandible was observed in 34 cases. Reconstructive plates were used for mandible reconstruction in 24 cases, major pectoral flap included rib segment–in 3 cases, free osteomyocutaneous flap with microsurgical technique–in 7 cases. **Results:** 44 patients (70%) had different complications, such as: partial suture disclosure with stoma formation, partial or total flap necrosis, wound infection. In all 6 cases of total flap necrosis caused by radiotherapy in

total focal dose of 60–70 Gy, there were second wound dealing. 3 patients followed by fracture of the reconstructive plate, in a one year period after surgery recovered by new plate. 5 patients had wound infection with further plate disclosure that demanded plate elimination. 23 (36.5%) patients died from progress of cancer, 9 (14.3%)–from other diseases. 22 (35%)–patients live without metastases and relapse of tumor. **Conclusion:** This kind of plastic surgery with primary reconstructions can be carried out in this patient group gives an ability to decrease period of hospitalization and physiologic and psychological rehabilitation.

Keywords: Oropharyngeal plastic surgery

Abstr ID 907

96

RECONSTRUCTION OF ORAL CAVITY BY MAJOR FLAPS AT CANCER ABLATIVE SURGERY 25 YEARS EXPERIENCE

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Aims and Methods: For 25 years, from 1977 to 2002, subjects of 215 so called major flaps such as cutaneous, musculocutaneous and osteocutaneous flaps employed primarily or secondarily in 164 patients were performed at the reconstructive surgery following oral cancer ablation in our department, were retrospectively discussed. Of 164 patients, 37 (22.6%) was tongue, 23 (14.0%) was lower gingiva and 22 (13.4%) was floor of the mouth in each primary sites. 104 (63.4%) cancers were histopathologically squamous cell carcinoma. Of total number of 215 major flaps in 164 patients, 109 (50.7%) were pedicled cutaneous or musculocutaneous flaps such as 36 deltoid pectoral (DP) flaps, 47 pectoral major musculocutaneous (PM-MC) flaps, 14 latissimus dorsi (LD-MC) flaps and others were revascularized flaps using anastomoses technique. These revascularized flaps were 68 cutaneous flaps such as 47 forearm flaps, 21 rectus abdominis flaps and 38 osteocutaneous flaps such as 10 iliac, 7 scapular and 21 fibular flaps. **Results:** There was tendency more revascularized flaps were performed after 1990s. During this period, 14 flaps were unfortunately failed into total necrosis in this series. Rate of total necrosis of the flaps was 7.0% respectively and cumulative successful rate was 93.0%. **Conclusion:** Reconstruction of the defects using major flaps following oral cancer ablation attributes to the radicality of tumor, to cosmetics and also functional point of view.

Abstr ID 151

97

TEAM APPROACH IN RECONSTRUCTIVE SURGERY FOR COVERING POSTEXCIZIONAL DEFECTS IN ORO-MAXILLOFACIAL SURGERY

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Introduction: Multidisciplinary approach in reconstructive surgery of head and neck area is new in our University. Traditionally such cases were solved by monospecialised teams (OMF, plastic or ENT surgeons). Each one of those teams is limited either during the ablation or during the reconstruction. **Material and Method:** Thirty-six patients were operated in two-team approach (OMF and plastic surgery) for pathology concerning oro-maxillofacial area. The patients had cancer resection (32), benign tumors (2), and traumatic loss (1). The defects concerned the tongue / the floor of the mouth (14), the lower lip (7), facial soft tissues (6), the maxillary sinus (1), the mandible (7), and the nose (1). There have been used 41 flaps - pectoralis major (12), temporal (3), deltopectoral (1), radial forearm free flap (20), and fibula free flap (5) in various compositions. **Results:** While the OMF surgeons performed the excision and local flaps dissection (e.g. temporal and deltopectoral) the plastic surgery team performed the flap dissection (e.g. radial, fibula or pectoral) the receptor vessels dissection, and vascular anastomosis. Both teams participated at the final closure. The long operating times (6–12 hours) required anesthesiologic support and case adapted reanimation. There were 2 failures ended with lost free flaps. Another patient died at one month due to bronchopneumonia. Four patients had local recurrence or metastasis during the first year. In the remaining 27 patients, the functional results (1–4 yrs) were considered good (11) and very good (16). The cosmetic results were evaluated as good (14) and very good (13). **Conclusion:** Two-team approach allowed each surgeon to focus to only one task. Multidisciplinary approach in the surgery of the oro-maxillofacial area requires high skills, complex surgeries and high costs. However since such strategy offers the advantage of optimal functional and cosmetic results it became the “gold standard”.

Keywords: Oro-maxillofacial surgery; Reconstructive surgery; Microsurgery; Team approach

Abstr ID 86

98

DETECTION OF SENTINEL LYMPH NODE USING LYMPHOSCINTIGRAPHY IN SQUAMOUS CELL CARCINOMA OF THE ORAL CAVITY IN A PROSPECTIVE STUDY OF 31 PATIENTS.

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Introduction: This study aimed at evaluating the relevance of sentinel lymph node detection by lymphoscintigraphy in patients diagnosed with squamous cell carcinoma of the oral cavity in the absence of neck adenopathy. **Patients and Method:** A prospective study was carried out in 31 patients diagnosed with T1 to T3 squamous cell carcinoma of the oral cavity without any clinically detectable neck

adenopathy. A lymphoscintigraphy was performed the day before surgery. All patients underwent sentinel lymph node biopsy guided by a gamma-ray detecting probe and modified neck dissection. Anatomopathologic evaluation of the sentinel lymph node included, in addition to the standard protocol, immunohistochemical analysis and thin sections of HPS stained preparations. **Results:** In 3 patients, the lymphoscintigraphy failed to detect any sentinel lymph node. In the remaining group of 28 patients, 20 patients showed a negative sentinel node concordant with an histologically negative neck dissection. In 5 patients, a positive lymph node was found although the rest of the neck dissection was negative. In 3 patients, sentinel lymph node was found to be negative but other neck nodes were positive. The overall sensitivity of lymphoscintigraphy in our study was 62%. **Discussion:** Surprisingly, the results of our study do not support the clinical usefulness of sentinel lymph node detection as a reliable and accurate staging method in patients with oral squamous cell carcinoma. We observed that lymphoscintigraphy was not a reliable method for detecting micrometastases in patients diagnosed with a squamous cell carcinoma of the oral cavity without clinical evidence of neck metastases.

Keywords: Sentinel lymph node; Oral cavity squamous; Cell carcinoma

Abstr ID 240

99

SENTINEL LYMPH NODES IN ORAL CANCER: DETECTION OF MICROMETASTASES USING RT-PCR

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The cervical lymph node (CLN) status is the most important prognostic factor in oral cancer. However, the mainstream to address the CLN depending on the diagnostic imaging. Sentinel lymph node (SLN) biopsy combined with lymphoscintigraphy is a minimally invasive technique that samples first-echelon lymph node to predict the need for more extensive neck dissection. Lymphatic mapping followed by focused analysis of the SLN is highly accurate in identifying micrometastases. In this study, we investigate the possibility of identifying the SLNs in oral cancer and the detection of micrometastases in SLNs by identification of specific tumor markers using RT-PCR. Sixteen consecutive patients who have clinically negative CLN underwent SLN biopsy, followed by a neck dissection. SLNs were detected with isotope labeling ^{99m}Tc-phytate. All lymph nodes were examined by conventional HE staining for evaluating metastasis. In addition, each SLN was cut into multiple sections for cytokeratin IHC staining and for RT-PCR for cytokeratin 19. SLNs were identified in 14 (100%) of 14 patients by lymphoscintigraphy and gamma probe. Two to seven SLNs were identified in each patient. HE staining of SLNs identified tumor in 4 patients (28.6%), and RT-PCR for cytokeratin 19 of SLNs identified occult micrometastases in 3 patient

(21.4%) whose SLNs were negative by HE. Overall, the RT-PCR results were positive in 7 (50%) patients and in 13 SLNs (21.3%). In this study, no micrometastases were identified using HE staining and cytokeratin 19 IHC except for some SLN in a limited number of cases. For oral cancer we could demonstrate that the SLN concept could be effective and useful for better assessing the status of the LNs. RT-PCR identified micrometastases in 21.4% of patients whose SLNs were negative by conventional staging techniques. The molecular profiling of SLNs may be important in predicting metastatic potential and determining.

Keywords: Metastasis; Neck dissection; Oral cancer; Sentinel lymph node

Abstr ID 29

100

A PILOT STUDY ON SENTINEL LYMPH-NODES IN PATIENTS WITH ORAL CARCINOMA

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Introduction: It is well known that oral cavity carcinoma has a special lymphatic tropisms and that it spreads to neck lymph-nodes in an orderly fashion. In others tumours, such as melanoma or breast cancer, sentinel node (SN) biopsy has shown very good results and its applicability has been proved. **Objectives:** The aim of this study is to evaluate the effectiveness of Nuclear Medicine techniques to detect neck SNs in oral cancer. We also wished to determine the accuracy of SN biopsy in the context of primary surgical treatment of the disease, in order to decrease both morbidity and surgical time. **Patients and Methods:** From October 1998 through October 2002, we performed a prospective study on 32 consecutive patients with intraoral carcinoma, who had no clinical or CT evidence of positive neck nodes (N0). We compared SN biopsy results with standard neck dissection. We used intralesional injections of 99mTc-labelled microcolloidal albumin in a dose of 37 MBq per patient to obtain a pre-surgical lymphoscintigraphy 3–20 hours p.i. Surgery was performed 4 to 19 hours post-scintigraphy. A hand-held gamma probe was used to detect the SNs intraoperatively. Complete neck dissection always followed SN biopsy. **Results:** We obtained an efficacy of 97% (31 of 32 patients) in sentinel node detection. The sensibility of SN biopsy to predict full neck dissection positivity was a 100% (16 were true positive –95% confidence interval). Negative predictive value was also 100% (15 were true negative –95% confidence interval). **Conclusions:** We believe that SN biopsy is an effective technique to predict neck lymphnode status. In patients with oral cancer, SN biopsy could replace complete neck dissection in the near future.

Keywords: Oral cancer; Sentinel node; Lymphadenectomy

Abstr ID 542

101

EFFECTIVENESS OF LYMPHOSCINTIGRAPHIC SENTINEL NODE DETECTION FOR CERVICAL

STAGING OF PATIENTS WITH SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK

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Objective: To evaluate the feasibility and staging ability of the sentinel node technique for patients with squamous cell carcinoma of the oral cavity or oropharynx and clinically negative necks. **Design:** Prospective study comparing the histopathologic status of the sentinel node (SN) with that of the remaining neck dissection tissues. **Patients and Methods:** Thirty unpreviously untreated patients with T1 to T4 squamous cell carcinoma of the oral cavity or oropharynx and clinically negative necks (N0) were included in the study. **Interventions:** Injection of 99m Tc-radiolabelled sulphur colloid around the primary tumour and lymphoscintigraphy were performed the day before surgery. Intraoperatively, the sentinel node(s) was localized with a gamma probe and removed during neck dissection. The tumour was resected at the same time. **Results:** For one patient, lymphoscintigraphy revealed no SN. SN were identified in 29 patients/37 necks. In 29 necks, there were no positive sentinel node. In 5 patients, the sentinel node was the only histopathologically positive node. In one patient, sentinel node and other nodes in the remaining neck tissue were positive. There was only one false negative case, the first case of the study, indicating the need for a learning curve for the technique.

Keywords: Squamous cell carcinoma; Sentinel node

Abstr ID 548

103

EVALUATION OF SENTINEL LYMPH NODE BIOPSY AS AN ALTERNATIVE TO ELECTIVE LYMPH NODE DISSECTION IN PATIENTS WITH ORAL CARCINOMAS

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Introduction: Neck dissection is a broadly accepted diagnostic-therapeutic procedure to obtain the correct cervical stage in head and neck squamous cell carcinomas, but most of them are unnecessary when not existing tumoral infiltration in the histopathological study. The sentinel node biopsy technique is nowadays another method of cervical stage in oral cavity squamous cell carcinomas. We present our experience with this technique. **Materials and Methods:** Our series is composed by 30 patients with carcinoma localized in the tongue (14), floor of the mouth (6), lower lip (4), gingiva (1), retromolar trigone (2) and buccal mucosa (3). 11 patients were staged T1, 16 T2 and 4 T3. All patients were staged N0M0. We used blue dye in only 9 patients, because most of the sentinel nodes were negative to the dye. **Results:** In 16

patients a cervical node dissection was performed. In 6 patients a positive metastatic node was observed and in two of them others metastatic nodes were found in the neck. Failure of the technique was reported in only two cases. In one case a skip metastasis was observed in the neck dissection, with a negative sentinel node biopsy. In the other case the sentinel node was impossible to achieve. **Conclusions:** The technique of sentinel node biopsy in oral carcinomas allows easy and safe identification of sentinel node and shows promise in guiding selective neck dissection.

Keywords: Sentinel node, Head and neck squamous cell carcinoma

Abstr ID 614

104

ROLE OF ULTRASOUND DIAGNOSTIC IN STUDY OF N-POSITIVE SQUAMOUS CELL CARCINOMA OF HEAD AND NECK AND ESTIMATION OF EFFICIENCY OF CHEMORADIOTHERAPY

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Aim: To define sensitivity and specificity ultrasound tomography at research of neck lymph node metastases of squamous cell carcinoma, and to reveal criteria for an estimation of efficiency of chemoradiotherapy. **Materials and Methods:** The ultrasound research was carried out to 40 patients with neck lymph node metastases receiving chemoradiotherapy, from which at 18 lesions were on both side on neck. The research was carried out after each course of chemotherapy and radiotherapy. To each patient were carried out fine needle biopsies under ultrasound guide. At the patients who received neck dissection the comparison of the patomorphologic data with the ultrasound data was carried out. **Results:** The received data have allowed to allocate the certain tendencies of ultrasound distinctions of metastatic lymph nodes at an estimation of efficiency chemoradiotherapy. Criteries at a positive effect of treatment were: (1) reductions of the sizes lymph nodes; (2) changes of their structure (often - increase of echogeneity); (3) reductions of quantity of vessels in lymph node; (4) decrease of parameters blood flow in vessels of lymph node. The sensitivity ultrasound tomography is 96.4%, specificity 91%. **Conclusions:** The ultrasound tomography is high informative in diagnostics of a metastatic lesion of neck lymph node at squamous cancer of head and neck, and can be applied for an estimation of efficiency chemoradiotherapy. The ultrasound tomography is important method for choice of decision about neck dissection after chemoradiotherapy. At doubts arising at this choice the final answer gives fine needle biopsy under the ultrasound guide.

Keywords: Neck metastases; Ultrasound tomography; Chemoradiotherapy

Abstr ID 541

105

MULTIMODAL IMAGE REGISTRATION FOR LOCALIZATION OF SENTINEL NODES IN HEAD AND NECK SQUAMOUS CELL CARCINOMA

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Purpose: The aim of this study was to propose a new method of preoperative 3D localization of the neck sentinel node. **Patients and Methods:** This prospective study was carried out between August 2002 and August 2003. Ten patients with oral squamous cell cancer staged T1, T2 or T4 N0 underwent this method of preoperative localization of the sentinel lymph node. lymphoscintigraphy is recognized as the investigation of choice for preoperative detection of sentinel nodes. Although we found it to be highly sensitive (100% in our study), this does not compensate its inability to precisely locate the sentinel node in the anatomic context of the neck. To overcome this drawback, we used multimodal image registration, applied to the cervical region. We associated the following imaging modalities: scintigraphy (single-photon emission computed tomography (SPECT) and gamma transmission) and computed tomography (CT). SPECT and gamma transmission (barium 133 sources) were carried out on a triple-head Philips-Irix® (Da best netherlands) camera and CT on a General Electric console. Gamma transmission was used to place the SPECT images in a reference cervical anatomical context (CT images). Registration used a manual method based on definition of homologous volume structures. **Results:** Preoperative image registration effectively localized the cervical sentinel node in 9 of the 10 patients, enabling a guided surgical approach in 90% of cases. The SN was resected using a hand-held gamma probe. **Conclusion:** This original study adapts a new tool to obtain preoperative localization of the cervical sentinel node. We confirmed the feasibility of this method in this indication. Although this method is a novel one, we believe that it will become useful once a consensus has been reached on exclusive excision of the cervical sentinel node in oral cancers.

Keywords: Sentinel node; Imagery; Lymphoscintigraphy

Abstr ID 783

106

RESULT OF TREATMENT OF EPIDERMOID CARCINOMA OF THE UPPER GUM AND THE HARD PALATE

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Aim: The aim of this retrospective study was to determine a rational of treatment of epidermoid carcinoma of the upper gum and hard palate. **Patients and Methods:** In a period of 11 years, 34 patients treated with current intent were analysed. **Results:** There were 19 women (76%) and the mean age was 67.3 ans. There were 76% of advanced tumours. Fifty per cent of patients classified N0 had node involvement. The 5-year probabilities of survival were 33.7%. Patients without node involvement had better prognosis ($P=0.034$). The 5-year probabilities of non-recurrence were 61% and patients without node involvement had better prognosis ($P=0.032$). At the end of the

study, only 42% of patients were still alive. **Conclusion:** This type of tumour is different from those of other locations in oral cavity or oropharynx. Meanwhile the technique of sentinel node proves its effectiveness in a large randomised series a selective neck dissection must always be considered in patients without clinically nodes. Surgery or radiotherapy can be used alone in T1N0, T2N0. Surgery with postoperative radiotherapy must be used in advanced tumours and in involved nodes. Chemotherapy can be used in inoperable patients regardless the size of the tumour.

Keywords: Epidermoid carcinoma; Upper gum; Hard palate

Abstr ID 629

107

FIVE-YEARS SURVIVAL OF PATIENTS WITH SQUAMOS CELL CARCINOMA OF THE LOWER LIP

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Introduction: Squamos cell carcinoma (SCC) is the most frequent carcinoma of the lower lip. Largely occurs in men with history of prolonged sun exposure. **Aim:** The purpose of this study is to present the length survival of our patients after surgery. **Study:** In the ten years period we have treated 439 patients with SCC on the lower lip. Out of the total number, 383 respondent to regular follow-up and we had insight in their post-surgical condition and therefore they are included in this study. Selection was made regarding the TMN classification and Stage of illness. All results were pathohistologically verified. **Results:** The majority of patients (86%) were men. The youngest patient was 8 years old, and the oldest was 87. At the moment of surgery 179 patients had tumors in diameter no more than 2 cm (T1MoNo)-Stage I. In Stage II we had 146 patients, in Stage III, 39 and least number of patients we had in Stage IV, only 19. All patients in I and II Stage were treated wide excision of the tumours, while those in Stage III and IV apart from excision, were treated by selective, functional or radical neck dissection and afterwards were sent to radiotherapy. Three of them had distant metastasis and were treated with citostatics. Regular follow-up where scheduled in 6 months for patients in I and II Stages and in 3 months for patients in III and IV Stages. Five-years survival was the longest in patients in Stage I. 92.7% and Stage II.86.9%. The lowest survival period we had in patients in Stage III and IV-32.7%. **Conclusion:** The patients with Ca in Stage I and II have good prognosis after surgical treatment, but we can not say this for patients who have Ca in Stage III and IV.

Keywords: Squamous cell carcinoma; Lower lip; Stage

Abstr ID 90

108

PROPHYLACTIC NECK DISSECTION VS RADIOTHERAPY VS FOLLOW-UP IN PATIENTS WITH LOWER LIP CARCINOMA AND NO-NECK

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Aim: For lower lip carcinomas, an incidence of 15% of cervical lymph node metastasis is generally accepted. This is an argument in favor of an expectant approach. The purpose of this study was to compare the results of the different approaches to the clinically negative neck: prophylactic neck dissection, prophylactic neck irradiation and follow-up. **Material and Method:** The retrospective study included 200 patients with lower lip squamous cell carcinomas. The following data were evaluated: (1) the incidence of cervical lymph node metastasis in patients with a clinically negative neck; and (2) pathological confirmation of cervical lymph node metastasis. **Results:** In the group undergoing prophylactic neck dissection, pathology revealed neck lymph node metastasis in 20% of the cases. More than half of the patients receiving prophylactic radiotherapy developed bulky neck lymph node metastases. Out of the patients attending the 2-year follow-up program, 64.2% developed a clinically positive neck. Cervical lymph node metastases in these patients was pathologically proven in 87.8% of cases. **Conclusion:** The high incidence of a clinically positive neck, along with the high incidence of neck node metastasis after neck dissection, suggest that elective neck dissection is the treatment of choice for the neck in patients with lower lip carcinoma.

Keywords: Lower lip; Cancer no-neck; Prophylactic neck dissection

Abstr ID 444

109

THE INCIDENCE OF MALNUTRITION IN PATIENTS WITH ORAL, OROPHARYNGEAL AND HYPOPHARYNGEAL CARCINOMAS DURING DIAGNOSES, TREATMENT AND REVALIDATION

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Introduction: Malnutrition is prevalent in 30–50% of the patients with Head and Neck cancer. The outcome of treatment depends in part on the nutritional status on admission and during treatment. Patients with Oral, Oropharyngeal and Hypopharyngeal (OOH) carcinomas are specifically at risk for (treatment) complications due to malnutrition. The most suitable moment when nutritional intervention should take place is unknown. Therefore in this study specification of malnutrition and nutrition related problems are documented and analysed. **Material and Methods:** A prospective observational study (2003) was performed to measure outcome of treatment and pinpoint the moment to prevent malnutrition in patients with OOH. Nutritional and anthropometrical assessments were conducted. The EORTC QLQ-H&N35 and -C30 were applied to assess the nutrition related problems and quality

of life six times during and at least six months after treatment. **Results:** Patients ($n=68$) included in this study were treated with Radiotherapy ($n=25$), Chemo-/Radiotherapy ($n=10$), Surgery ($n=19$) or Surgery/Radiotherapy ($n=14$). Twentyfour patients (35%) reported substantial loss of weight on their first visit according to the malnutrition criteria. Substantial loss of weight (6.5–10.5%) occurred in 26 patients at completion of treatment with radiotherapy alone or combined with another treatment modality. Loss of weight in patients undergoing surgery was less prominent (4/19). Mann Whitney U test showed a higher loss of weight ($P=0.002$) in patients treated with radiotherapy or combined with another treatment modality. **Discussion:** Patients admitted to the outpatient clinic were already underfed. Their nutritional status declined progressively during treatment, especially in radiotherapy patients. Screening malnutrition in patients should be compulsory and should preferably be repeated before, during and six month after treatment. Nutritional assessment has to be done on a weekly basis during treatment with radiotherapy with a standard food questionnaire and should result in prompt intervention.

Keywords: Oral oncology; Quality of life; Nutrition

Abstr ID 84

110

A REVIEW OF THE MANAGEMENT OF CHYLE LEAKS FOLLOWING NECK DISSECTIONS OVER A 5 YEAR PERIOD: HULL'S EXPERIENCE

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Introduction: Chyle leaks are a well recognised complication of neck dissection but can be difficult to manage. Persistent chylous fistula is rare but can be a potential lethal complication (1). A thorough understanding of the pathophysiology is essential to plan appropriate treatment and ensure the best possible outcome. There is an apparent lack of consensus on ideal management. **Aims:** The authors sought to review the literature and describe the experience and conclusion of one major regional head and neck cancer unit concerning the management of this difficult condition. **Method:** This was a retrospective study over a 5 year period (1999–2003) in which charts of 228 patients were reviewed and patients with chyle leak were identified. **Results:** 265 neck dissections were performed in 228 patients. 7 patients were identified with a chyle leak. Of the 7 cases 4 were identified intraoperatively and 3 were identified postoperatively. 3 patients were managed medically. Duration of leaks was 7 days (range 6–24 days). Operative intervention was necessary in 4 of the patients: 3 with persistent leaks and one because of a high volume leak. **Conclusion:** Once identified medical management aims to reduce chyle output through the use of IV fluids, enteral fluids, bed rest, a medium chain triglyceride diet and low or no suction. If conservative management fails (persistent large volumes or a problem maintaining adequate nutrition) then surgery is indicated.

Reference

- 1 Conley, J. J. (1979). Complications of Neck and Neck Surgery, pp. 30–31. Philadelphia: W.B. Saunders.

Keywords: Chyle leaks; Neck dissection; Head and neck cancer

Abstr ID 670

111

COMBINED TREATMENT OUTCOMES IN THE NECK IN PATIENTS WITH N0 DISEASE

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Aim: The purpose of this retrospective study was to evaluate treatment outcomes in the neck following selective neck dissections and postoperative radiation therapy in patients with oral carcinoma and NO disease. **Material and Methods:** Sixty five patients with oral squamous cell carcinoma and N0 neck were included in this study. The patients were treated with resection of primary lesions and 73 supraomohyoid neck dissections. All patients received postoperative radiation therapy at the primary site and in the neck. Follow-up ranged from one to seven years. **Results:** In 16 patients (24.6%) the neck dissection specimens were found to harbor metastatic disease. There were 9 recurrences in the neck (12.3%–5 histologically NO patients and 4 histologically N+ patients). From the 16 histologically N+ patients who received radiation therapy, one patient is alive with disease in the neck and three died of uncontrolled neck recurrence (treatment failure rate:25%). Treatment failure rate in the 49 histologically NO patients who also received postoperative radiation therapy, was 10.2% (one patient is alive with disease in the neck and four died of neck recurrence). **Conclusions:** The supraomohyoid neck dissection is a useful staging procedure in patients with NO neck. In our group of patients neck recurrences were almost evenly distributed between histologically NO and N+ patients. Combined treatment outcomes were worse in the histologically N+ patients when compared with the histologically NO group, irrespective of the administration of postoperative radiation therapy in both groups.

Keywords: Oral cancer; No neck; Combined treatment

Abstr ID 282

112

IS NO NECK INDICATION FOR ELECTIVE NECK NODE DISSECTION IN PATIENTS WITH CARCINOMA OF ORAL CAVITY?

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The management of the No neck patients with oral carcinoma is controversial. Neck dissection provides very important staging data that guides patient treatment. The objective of the study was to detect occult metastasis in the neck not detected by physical and radiographic examination. **Material and Method:** The study was performed on 48 necks in 30 patients with carcinoma of oral cavity (48/30). In dependence of pathology findings we would performed elective or upstaged to therapeutic neck dissection. So, we used sentinel node biopsy as a supplement for making of neck lymphatic mapping. **Results:** We harvested 472 lymph nodes, but 17 of them were positive. Only one nonsentinel lymph node was positive and 16 were sentinel (95%). Results emphasize high percent of occult metastasis in No patients –36.7%. 14/48 necks contained metastasis that is 11/30 patients. The level II was the most frequent localization of metastasis –53%, but level I –29%. T1 (5 patients) do not have metastasis, T2 (9) have 2 patients with metastasis, T3 (13) –7, but T4 (3) –2. **Conclusion:** The presence of occult metastasis is high. Elective neck dissection is recommended in patients with T2-4 NO. Sentinel node biopsy is complementary staging method with high level of sensitivity.

Keywords: Neck dissection oral carcinoma sentinel lymph node

Abstr ID 910

113

“TO-DAY’S VIEWS ON THE PATHOGENESIS OF OSTEORADIONECROSIS OF THE JAW BONES”

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Osteoradionecrosis (ORN) is one of the most feared complications of radiotherapy in the head and neck area. Its pathogenesis has been controversial for many years; its treatment methods even more. Therefore the authors have done a literature study in order to better understand the basic mechanism and the contributing factors of ORN. Thus they will try to offer some differential indications to the existing, yet expensive treatment methods such as hyperbaric oxygen, long lasting continuous IV-administration of antibiotics, free bone grafting in a (previously placed) muscle flap, free revascularised composite bone flaps.

Abstr ID 696

114

EARLY SURGICAL RE-VASCULARISATION IN OSTEORADIONECROSIS

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Radiotherapy-induced bone damages progress to facial osteoradionecrosis, after successive events, most often after a release factor. But sometimes, the emergence of the osteoradionecrosis is spontaneous, or his evolution difficult to control. Hypoxia, hypovascularisation, and hypocellularity are at the origin of the pathology, but it seems that some gravity factors makes the evolution getting worse. Dreadful complications can occur and challenge the surgeon. As the free tissue transfer imports well-vascularised non-irradiated tissue, the knowledge of these factors could encourage the surgeon to manage a surgical revascularisation earlier, before an uncontrolled evolution. Actually, when the osteoradionecrosis occurs, the time matters more than ever. 62 observations were studied (between 1992 and 2002), all of them reconstructed immediately with a free flap. 13 had a mandible resection during a previous surgery elsewhere (including for 6 of them a failure of free flap reconstruction). 6 of the 62 patients were treated with a periosteum free flap. All the data were collected, and analyzed with statistic tests according to the evaluation of the results. Six gravity factors are identified, and the presence of them require a radical resection with an immediate reconstruction. Early treatment make possible a “radical resection” of the necrosis with a conservation of the mandible, and a periosteum revascularization. To bring some well-vascularised tissue with an osteoinduction capacity, isolating the fragile irradiated region, restoring the function, and respecting the aesthetic, those are the aims of the revascularisation in osteoradionecrosis.

Keywords: Radionecrosis classification microsurgery reconstruction

Abstr ID 5

115

INFLUENCE OF RADIATION THERAPY ON RECONSTRUCTIVE FLAPS AFTER RADICAL RESECTION OF THE FACIAL TUMOURS

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Aim: The purpose of this study was to evaluate the effects of the Cobaltotherapy on the reconstructive flaps in the facial region after the resection of the malignant tumours. We try to compare the influence of RT before or after surgery on the probability of healing in patients who have undergone facial reconstruction with different kind of flaps. **Material and Methods:** 58 (fifty-eight) reconstructive flaps were used in 52 (fifty-two) patients who received radiotherapy (RT) before (group I, 6 flaps) or after (group II, 52 flaps) surgery. All patients were irradiated with a theratron Elite60 Co treatment unit (Canada), and the status was evaluated pre or postirradiation. The follow-up period was between 1999–2002. The patients with distant metastases were not included in this study. **Results:** The success and healing rates of the flaps were evaluated. The effects were lower in the group I (85.7%) than in the group II (97%). The rate of acute radiation reaction of the flaps in the group II was lower than in the normal tissues (35% versus 84%). Late side effects of RT were rare. **Conclusion:** Our results

are favorable for the postoperative RT concerning the prevention of the tumours recurrence, viability of the reconstructive flaps and esthetics.

Keywords: Cobalthotherapy; Facial region; Malignant tumours

Abstr ID 570

116

DOES HYPERBARIC OXYGEN THERAPY POTENTIATE HEALING IN SURGERY OF THE MANDIBULE OSTEORADIONECROSIS?

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Aim: Osteoradionecrosis Surgery is difficult, with frequent lack of healing. We managed a retrospective study about the neoadjuvant and adjuvant hyperbaric therapy treatment in surgical procedure. **Methods:** Between 1996 and 1998, mandibular osteoradionecrosis were treated with surgical procedure alone. Since 1999 up to 2003, the surgical procedure was framed with hyperbaric therapy: 30 and 20 dives (2 dives a day) respectively before and after surgery. We analysed the hospitalisation duration, number of procedure by patient to obtain healing, and outcome after each procedure as a function of the osteoradionecrosis stage. **Results:** In the group "surgery alone", 63 surgical procedures were performed in 23 patients (average : 2.7 procedure per patient). The hospitalisation duration average was 24.8 days. The success rate was respectively 66, 72 and 55% for stages I to III. In the group "surgery and hyperbaric therapy", 48 surgical procedures were performed in 38 patients (average 1.2 procedure per patient), and the hospitalisation duration average was 13.5 days. The success rate was respectively 84, 88 and 88 % for stages I to III. The difference was significative for the only surgical procedure number: Hyperbaric therapy decreased the surgical procedure number of 1.2 ($P < 0.05$). **Conclusion:** Hyperbaric therapy enhance oxygen perfusion temporary. After 10–15 days, this effect disappears. So this treatment appears to be inefficient alone in osteoradionecrosis. But in our study, in combination with surgery, hyperbaric therapy decreased the surgical procedure number per patient. We think that a significant difference could be found in the outcome and the hospitalisation duration with more patients in each group.

Keywords: Osteoradionecrosis mandible; Hyperbaric oxygen therapy

Abstr ID 810

117

HYPERBALIC OXYGEN THERAPY ENHANCES THE EFFICACY OF CHEMORADIOTHERAPY

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Aims: The presence of hypoxic cells in malignant tumors is widely regarded as one of the major reasons for radiotherapy failure of local tumor control. Recent research has disclosed that radiotherapy within 30 min of hyperbaric oxygen (HBO) therapy improves the radiosensitivity of hypoxic cells. Furthermore, it has been reported that HBO increases the effects of drugs such as platinum derivatives. We have been treating patients with T4 oral and oropharyngeal squamous cell carcinoma with chemoradiotherapy. In addition to this treatment, HBO therapy has been applied in combination with radiotherapy. Here, we investigated whether HBO therapy enhanced the efficacy of local control in T4 tumors in comparison to chemoradiotherapy without HBO. **Patients and Methods:** Eight patients received only chemoradiotherapy. Our chemoradiotherapy regimen consisted of targeted intra-arterial carboplatin infusion via the tumor's feeding artery, with concurrent hyperfractionated radiotherapy and oral administration of tegafur/uracil (UFT®). Six patients, in addition to chemotherapy, received radiotherapy within 15 minutes of decompression after HBO (60 min of 100% oxygen inhalation at 2.5 ATA), once daily. **Results:** Of eight patients who received chemoradiotherapy within a median follow-up period of 14 months, three showed neither residual tumors in surgical specimens nor recurrence. One patient without surgery had no recurrent tumor during a follow-up of 60 months, while the remaining four patients had either relapse of the primary tumor or residual tumor: therefore, the local control rate was 50%. Of the six patients who received chemoradiotherapy with HBO, none had neither relapse of the primary tumor or residual tumor within a median follow-up period of 18 months: therefore, the local control rate was 100%. **Conclusion:** This study was conducted in a small number of patients and the follow-up period was relatively short: however, the results suggest that HBO therapy is a promising option for chemoradiotherapy.

Abstr ID 77

118

HYPERBARIC OXYGEN IN THE HEAD AND THE NECK REGION, THE PLYMOUTH EXPERIENCE

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Introduction/Aims: Despite rather contentious origins, Hyperbaric Oxygen (HBO) has found a role as adjunctive therapy in the treatment of certain surgical and medical

conditions over the years. This article aims to outline the accepted areas of HBO therapy relevant to the head and neck surgeon, the mechanisms of action and summarises a number of cases demonstrating the efficacy of the technique. **Material and Methods:** A review of relevant publications (full-text articles and text books) and a retrospective review of the medical notes of two hundred patients treated with HBO for problems in the H&N region at the Hyperbaric Medical Centre (Plymouth, UK) between 1992 and 2002 were carried out. **Results:** There are other relevant studies of randomized controls trials (not specifically of the H&N). Little consistency was found in relation to referral and treatment protocols. Timing and length of treatment varied significantly between studies. The Plymouth study group followed similar protocols in relation to the length and number of treatment in relation to the problem. There was a significant variation in the time of referral. **Conclusions:** HBO therapy is widely accepted as the first line treatment in diving related diseases. There are other indications such as radiation necrosis, problem wounds, and compromised skin grafts/flaps of major importance for the H&N surgeon. Because the small number of Hyperbaric Oxygen Centres and the reduced volume of published research, there is no consistency in the time of the referrals. This study shows the importance of timing in the final outcome and the need of further research and the design of protocols for the use of HBO in the H&N region.

Keywords: Hyperbaric oxygen therapy; Head and neck; Radionecrosis; Protocol

Abstr ID 348

119

RECONSTRUCTION OF MANDIBULAR CONTINUITY DEFECTS - ASSESSMENT OF THE PROGNOSTIC VALUE OF RADIATION DOSE, KIND OF OSTEOPLASTIC PROCEDURE, IMPLANT SURFACE AND SURGEON (DEPARTMENT)

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Orofacial rehabilitation following mandibular continuity defects remains a clinical challenge in Maxillofacial Surgery involving reconstruction with autologous iliac crest bone and the insertion of dental implants. The aim of this retrospective study was to evaluate the prognostic value of the dose of a prior radiation therapy, of the implant (surface) type and the type of bone bed. Furthermore, we investigated different centers (surgeons) on implant outcome. **Patients and Method:** 106 patients from two independent Departments of Maxillofacial Surgery who underwent reconstruction of a mandibular continuity defect with a free iliac crest bone graft followed by insertion of dental implants were analysed retrospectively. 47 patients (44%) were irradiated for oral cancer. We documented: radiation dose (no radiation, 1–49 Gray, over 49 Gray), implant surface (smooth, medium rough, rough=TPS), bone type at insertion of the dental implants (original vs. osteoplastic bone) and implant survival. **Results:** 512 dental implants were inserted. Between the two departments no significant differences considering demographic parameters,

surgical and rehabilitation strategies were seen. Univariate analysis revealed local significant differences ($P<0.05$) for radiation dose and bone type as well as a tendency for significance ($P<0.1$) for the implant surface, but not for department ($P>0.1$). Confirmatory, multivariate analysis revealed radiation dose to be the only independent significant prognostic parameter (relative risk for implant failure 1.7 for over 49 Gy). For the subpopulation of the high irradiated bone bed (>49 Gy; 176 implants) the univariate influence of the implant surface could not be confirmed in the multivariate analysis. **Conclusion:** In a large collective from two geographically separated departments only high radiation doses were identified as an independent prognostic parameter for implant survival. Low radiation doses, osteoplastic procedures, influence of the surgeon as well as the choice of the implant surface seem to play a minor role.

Keywords: Dental implants; Implant surface; Osteoplastic; Radiation

Abstr ID 407

120

CHARACTERIZATION AND VALIDATION OF THE PET-LABELED NITROIMIDAZOLE DERIVATIVE EF3 TO MEASURE TUMOR HYPOXIA

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Aims: Tumor hypoxia, as detected by polarographic probes is a prognostic factor in head and neck oncology. The use of EF3/EF5 is another sensitive and less invasive approach. EF3/EF5 are nitroimidazole compounds which are trapped into hypoxic cells. EF3/EF5 can be detected *ex vivo* by immunofluorescence using monoclonal antibodies. Tagged with an appropriate radioactive isotope, nitroimidazole compounds could be detected *in vivo* by nuclear medicine techniques. Labeling of EF3 with a 18F positron emitter has been recently performed in our Institution; our main objective was its pre-clinical validation. **Methods:** Syngeneic tumors grown in C3H mice were used. Mice were injected IV with 18F-EF3. For pharmacokinetic experiments, blood, urines and feces were collected. For biodistribution experiments, 14 different organs and tumor were harvested. Animals were sacrificed from 5 to 770 min after injection. Samples were gamma counted. **Results:** Blood half life was in agreement with those of other nitroimidazole compounds when taking account lipophilicity of EF3. This characteristic of 18F-EF3 was confirmed by data showing early homogeneous biodistribution throughout animals. Thereafter, higher levels were found in tumor and in organs involved in drug clearance and excretion. Activity in brain always remained lower than in every other tissues, lessening classical CNS side effect of nitroimidazole compound. 18F-EF3 was excreted dominantly through the urinary tract. High tumor to control tissue ratios were measured. 18F-EF3 signal did depend on tumor strain and on

breathing conditions of tumor bearing mice. Furthermore, it was significantly correlated to well validated hypoxia detection with EF5 immunofluorescence and allowed PET scan imaging of hypoxia. **Conclusions:** Thanks to these data demonstrating pO₂ dependence of 18F-EF3 signal, a phase I study in Head and Neck patients is in progress.

Keywords: Hypoxia; Oncology; Pet

Abstr ID 325

121

ELASTIC SCATTERING SPECTROSCOPY (ESS) IN THE DIAGNOSIS OF ORAL SQUAMOUS CELL CARCINOMA

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Introduction: In diagnosis of cancer and precancer there are a number of ongoing challenges. The ability to match surgical resection to tumour extent remains problematic. In this paper we describe a new technique that gives real time pathological information of tissues. The technique interrogates a small volume of tissue ~1 mm³ by intense white light and measures the resultant scattered light signal. **Material and Methods:** Two groups of patients were investigated. The first group (*n*=13) underwent neck dissection for primary oral squamous cell carcinoma whereas the second group underwent marginal resection for bone involvement from primary disease (*n*=21). A short pulse of light from a xenon arc lamp was fired into the tissue using a fiberoptic probe and the resultant signal was broken down to spectral elements and displayed on a PC. Linear discriminate analysis was applied to differentiate between normal and aberrant tissue. **Results:** The sensitivity value in the first group was 98% while the specificity was 67%. In the second group the sensitivity exceeded 87% and the specificity 80%. **Discussion:** ESS is a reliable tool for the diagnosis of oral cancer in formalin fixed tissue. **Conclusion:** If these results can be repeated in vivo ESS would be an important adjunct to cancer diagnosis and mapping.

Keywords: Elastic light scattering; Diagnosis; Oral cancer

Abstr ID 521

122

IMMUNOHISTOCHEMICAL ANALYSIS OF LYMPHANGIOGENESIS OF HUMAN TONGUE SQUAMOUS CELL CARCINOMA USING A SPECIFIC ANTIBODY TO LYMPHATIC ENDOTHELIAL CELLS

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Purpose: Lymph node metastasis is the major cause of recurrence in patients with tongue carcinoma. Tumor lymphangiogenesis is believed to play an important role in such lymph node metastases. In this study, we investigated the lymphangiogenesis of tongue squamous cell carcinoma to elucidate the mechanism of lymph node metastasis of tongue carcinoma. **Patients and Methods:** Formalin-fixed and paraffin-embedded tissue sections from 40 patients with tongue squamous cell carcinoma were examined immunohistochemically using D2-40, a lymphatic endothelial cell specific mouse monoclonal antibody (Signet Lab. USA). We also examined tumor angiogenesis using CD34, a endothelial cell-specific mouse monoclonal antibody. **Results:** D2-40 antibody could clearly discriminate lymphatic vessels from CD-34 positive blood vessels. D2-40 positive lymphatic vessel density was higher in mucosa of hyperplastic epithelium near the cancer tissue and tumor periphery near the invasion front of tumor cells than normal mucosa distant from cancer tissue. In the tumor stroma, however, no apparent increase in lymphatic vessel density was observed as compared with high density of tumor blood vessels. In addition, D2-40 positive tumor cells at the plasma membrane were observed in almost 50% of the cases. This positivity rate was inversely correlated to the degree of tumor cell differentiation. **Conclusion:** These results indicate that D2-40 antibody is a useful marker to identify lymphatic vessels from blood vessels. A study now is ongoing to clarify the significance of D2-40 positive tumor cells.

Keywords: Lymphangiogenesis; Squamous cell carcinoma

Abstr ID 602

123

PREVALENCE OF HUMAN PAPILLOMAVIRUSES IN LESIONS OF THE ORAL CAVITY

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Introduction: This study determined the presence of human papillomavirus (HPV) DNA in non-invasive brush biopsies from lesions of the oral cavity. **Methods:** Epithelial cells were collected from 185 patients with different types of oral mucosal lesions (87 oral squamous cell carcinomas (OSCCs)), 34 precancerous lesions (e.g. leukoplakias, lichen), 9 ulcerous lesions and from 55 healthy control subjects. HPV DNA was detected by an auto-nested polymerase chain reaction (PCR), and genotype was determined by direct sequencing. **Results:** HPV prevalence was 55.2% in carcinomas, 79.4% in precancerous lesions and 34.5% in healthy control subjects. HPV-6 and HPV-16 was found in 48.0%, resp. 22.4% of HPV-positive lesions but was not associated with a particular type of lesion. HPV-18 was found in 52.6% of the HPV-positive healthy control subjects (*P*<0.001), but only three cancer (6.3%) lesions were infected with this type. **Conclusion:** These data suggest that HPV infection in cancerous and precancerous lesions of the oral mucosa occurs more frequently than previously considered and follow-up is

strongly recommended in these cases. Further studies are needed in cases of HPV infected dysplasias or other premalignant oral lesions, which reveal clinical strategies for prompt surgical intervention or rather expectant therapy. Therefore treatment strategies of HPV associated OSCCs versus tobacco- or alcohol associated OSCCs have to be reconceived in future time.

Keywords: Prevalence; Human papillomavirus (HPV); Oral squamous cell carcinoma (OSCC); Polymerase-chain-reaction (PCR); Direct sequencing; Non-invasive brush biopsy.

Abstr ID 603

124

NON-INVASIVE BRUSH BIOPSY AS AN INNOVATIVE TOOL FOR EARLY DETECTION OF ORAL CARCINOMAS

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Purpose: The aim of this prospective and blinded study was to investigate the diagnostic accuracy of DNA-Image-Cytometry in combination with non-invasive brush biopsies taken from suspicious oral lesions. **Material and Methods:** Cytological diagnoses obtained from 1328 exfoliative smears of 332 different lesions were compared with histology and/or clinical follow-ups of the respective patients. Additionally nuclear DNA contents were measured after Feulgen re-staining using a TV image analysis system. DNA-aneuploidy was assumed if abnormal DNA-stemlines or cells with DNA-content greater 9c were observed. **Results:** Sensitivity of our cytological diagnoses in addition to DNA-Image-Cytometry on oral smears for the detection of cancer cells was 97.8%, specificity 100%, positive predictive value 100% and negative predictive value 98.1%. **Conclusion:** The application of DNA-Image-Cytometry with DNA-aneuploidy as a marker for neoplastic transformation in oral smears secures cytologic diagnosis of carcinomas. Smears from brushings of all visible oral lesions are an easily practicable, cheap, non-invasive, painless and safe screening method for detection of oral precancerous lesions and squamous cell carcinoma in all stages. We conclude that non-invasive brush biopsies including DNA-Image-Cytometry are a very sensitive and highly specific, objective and reproducible adjuvant tool for identification of neoplastic cells in smears of suspicious oral lesions.

Keywords: Non-invasive brush biopsy; DNA-Image-cytometry; Oral cancer

Abstr ID 327

125

A COMPARISON OF FDG PET/CT AND MRI VERSUS HISTOLOGY FOR DETECTION OF RECURRENT DISEASE IN ADVANCED HEAD & NECK CANCER

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Objectives: Monitoring of head and cancer following surgery and radiotherapy poses a clinical and imaging challenge. A comparison of FDG PET/CT and MRI versus histology for detection of recurrent disease has been undertaken in order to verify the validity of FDG PET/CT in detecting early recurrences. **Methods:** Between October 2002 and April 2004 26 patients underwent whole body FDG PET/CT scanning (Discovery LS, GEMS) for monitoring advanced head and neck disease previously treated with surgery and adjuvant radiotherapy. MRI was performed in 10 symptomatic patients whereas all of them were examined under anesthetic and biopsied in order to obtain histological verification. **Results:** FDG PET/CT detected recurrence in 8 patients whereas failed to detect recurrence in 1 patient with adenoid cystic carcinoma. 12 patients were PET/CT true negative while 5 patients were false positive. The MRI failed to detect disease in 3 patients while the results failed to differentiate between recurrent disease and postoperative radiotherapy-induced changes in 4 patients. In addition, PET/CT detected distant metastases in the lungs in 2 patients. **Conclusions:** FDG PET/CT performs better than MRI in the detection of recurrent head and disease where structural imaging has known limitations. This may lead to detection of early recurrence allowing successful surgical salvage.

Keywords: Recurrent head & neck cancer; PET/CT; MRI; Histology

Abstr ID 795

127

THE ROLE OF HUMAN PAPILLOMA VIRUSES (HPV) IN THE ETHIOPATHOGENESIS OF THE ORAL CAVITY CARCINOMA

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Foreward: The human papillomaviruses (HPV) are small DNA viruses that belong to the family Papovaviridae. Infection with certain HPV genotypes are intimately linked with squamous epithelial cell benign and malignant lesions of the anogenital region. Recent evidence suggests that HPV infection can contribute etiologically to some tumors in the oral cavity. However, the understanding of etiological role of HPV in oral carcinogenesis is hampered by the fact that there is a marked variation in the HPV DNA prevalence rate in tissue specimens of oral squamous cell carcinoma and oropharyngeal squamous cell carcinoma (OSCC), varying from 0% to 100%. **Material and Methods:** The aim of our study was to elucidate further the putative etiologic role of HPV in oral malignant and benign tumors. Using four different polymerase chain reaction (PCR) protocols the presence of HPV DNA was investigated in tissue specimens obtained from three groups of patients, patients with oral squamous cell carcinoma and oropharyngeal squamous cell carcinoma (OSCC), in

patients with benign tumors of oral cavity and oropharynx (BOC) and in a control group of histologically normal oral and oropharyngeal mucosa tissue specimens (NOM), that were obtained from the individuals who matched the subjects with neoplasms in age, gender, localization of obtained tissue specimens and drinking and smoking habits. All together 273 tissue specimens were tested with four different PCR protocols: 104 OSCC, 49 BOC and 120 NOM. According to the available literature data, our investigation is the first study in which HPV-DNA prevalence was comparatively studied in tissue specimens of both oral squamous cell carcinoma patients and matching control subjects. **Results:** HPV-DNA was detected in 10 of 104 (9.6%) tissue specimens of OSCC. HPV-DNA was detected in 4 of 76 (5.2%) tissue specimens from oral squamous cell carcinomas and in 6 of 28 (21.4%) oropharyngeal squamous cell carcinomas ($P=0.013$). Tissue specimens of OSCC contained HPV-16, HPV-31, HPV-33 and HPV-58. To the best of our knowledge, our HPV-58 positive OSCC represent the first oral carcinoma in which this HPV genotype was detected. HPV-DNA was detected in 4 of 49 (8.2%) tissue specimens of BOC. HPV-6 was detected in two tissue specimens and HPV-16 in another two tissue specimens. HPV-DNA was detected in 8 of 120 (6.6%) tissue specimens of NOM. Tissue specimens of normal oral mucosa contained HPV-6, HPV-11, HPV-16, HPV-31 and HPV-68. To the best of our knowledge, our HPV-31 and HPV-68 positive normal oral mucosa specimens represent the first normal oral mucosa specimens in which these HPV genotypes were detected. **Discussion:** The fact that the presence of the HPV-DNA was detected in a similar rate in OSCC and benign lesions as well as in normal oral mucosa specimens ($P=0.719$), allows us to conclude that HPVs are not important etiological factor in the development of oral malignant and benign tumors. Our results suggest that occasional findings of HPV DNA in tissue specimens of oral neoplasms are most probably the result of an incidental HPV colonization of oral mucosa, rather than of viral infection. Furthermore, we hypothesize that the HPV-DNA prevalence rate detected in histologically normal oral mucosa is the main parameter which influences the prevalence rates of HPV-DNA in oral squamous cell carcinoma specimens in certain geographical population.

Abstr ID 787

128

PAROTID SURGERY – REVIEW OF 107 TUMOURS (1990–2002)

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Background: Tumours of the parotid gland are uncommon. We performed a retrospective study to analyse the clinical, diagnostic and therapeutic features of a group of patients. **Methods:** We reviewed the clinical and the surgical records of a series of 109 patients who were submitted to operation due to parotid tumours by the Plastic, Reconstructive and Aesthetic Service of São João Hospital, Oporto (Portugal) between 1990 and 2002. The following parameters were evaluated, (age, sex, gland

afflicted, symptoms and duration of symptoms, diagnostic procedures, treatment methods and their sequels, follow-up, and recurrences). **Results:** Pleomorphic adenoma was the commonest tumour (63.5%). In the majority fine-needle aspiration cytology was used. Swelling was the most frequent clinical finding in the benign (95.7%) and malignant disease (93.3%). In 68.2 per cent superficial parotidectomy was performed. There were five cases of permanent facial palsy and ten patients developed Freis syndrome. Recurrent disease was seen in six patients (3 pleomorphic adenomas, 2 Warthin's tumors and 1 epidermoid carcinoma). **Conclusions:** For the majority of tumours, superficial parotidectomy is an effective treatment, with acceptable morbidity.

Abstr ID 540

129

STATISTICAL ANALYSIS BASED ON CLINICAL RESULTS ON 117 CASES OF PAROTIDECTOMY

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Tumors of salivary glands concern 3% of the total tumors of head and neck area. The tumors of parotid glands are more frequent than the rest of the salivary glands and count about 80%. The frequency of parotid glands tumors according the international statistics is about 1-3 cases in 100.000 inhabitants per year. In our clinic during the period 1994–2003 were surgically treated 117 cases concerning the parotid gland area. Twenty seven of them were malignant and ninety benign. For 13 of the total cases (117) a total parotidectomy was performed, for 75 cases a partial superficial parotidectomy and for the rest 29 cases local resection (enucleation). For those 13 cases of total parotidectomy in 6 of them the facial nerve was preserved and for one case the great auricular nerve was used for replacing the continuity of facial nerve. Out of 104 partial parotidectomies and local resection, temporary paresis of facial nerve presented in 14 cases (13.5%) a percentage which decreased in the last five years were out of 61 cases only five of them (8.2%) presented temporary paresis. This is due to the experience of the surgeon, improvement of operation time and gentle surgical maneuvers on the nerve. In this paper analysis of the results according to age, sex, histological type, complication and their duration is attempted.

Keywords: Salivary gland; Parotidectomy; Tumor

Abstr ID 749

130

MULTIPLE PAROTID GLAND NEOPLASMS

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Base: It is usually uncommon to have solitary and multiple parotid tumours occurring in an individual. There have been some individual case reports mentioned the occurrence of multiple parotid neoplasm of different histologies but overall incidence and the implications of multiple synchronous and metachronous tumours is relatively unknown. **Materials & Methods:** The study was for 30 year period between 1974 to 2003 of all the superficial parotidectomies done in the maxillo facial department St. Richards Hospital Chichester, Worthing and Southlands hospitals Nhs trust West sussex County United Kingdom. It was a retrospective study. A total of 602 parotidectomies were performed for neoplastic conditions and this forms the basis of the study. Patients with multiple tumours were identified based on the histology. The patients with multiple parotid tumours were evaluated based on the Presentation, Clinical features, results of investigations (CT Scan, CT Sialogram, Fine needle aspiration cytology, Magnetic Resonance Imaging), operative details (Suprificial and complete parotidectomies, Unilateral or Bilateral), Histology and Post-op course. In addition, similar details were obtained from age and sex matched controls with the solitary parotid tumours and the possible predictors of multiple tumours and the difference in the outcome were analysed using standard statistical methods. The detailed results are presented and the implications of the findings discussed.

Keywords: Synchronous & Metachronous; Parotid Neoplasms

Abstr ID 164

131

FACIAL NERVE WEAKNESS AFTER NERVE PRESERVING PAROTIDECTOMIES

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Facial nerve weakness after nerve preserving parotidectomies are well recognised postoperative sequel. However, the reasons for it are poorly understood and their post-operative occurrences are notoriously difficult to predict preoperatively. **Aims:** First: to quantify and therefore reliably assess postoperative facial nerve weakness at branch level Second: A reliable and easily reproducible facial nerve grading system would facilitate its systematic use post-operatively at predetermined times. The latter coupled with appropriate data collection would help to identify of possible causes of postoperative facial nerve weakness. **Method:** The author developed a facial nerve grading system. (1) This system was used on consecutive facial nerve preserving parotidectomies. A number of data were recorded pre-, intra and postoperatively including age, general medical condition, blood pressure during operation, time taken to identify the facial nerve, duration of operation, postoperative complications etc. An assessment, using the facial nerve grading system, was made at predetermined times postoperatively, including postoperative evening, 24 h, 7 days, 1 month etc. The results are presented and they give some indications of the possible causes of facial nerve weakness. Therefore they help to predict the likelihood of postoperative facial nerve weakness on an individual basis.

Keywords: Parotidectomy; Facial nerve weakness; Postoperative; Causes

Abstr ID 582

132

MINOR SALIVARY GLAND CARCINOMA: ANALYSIS OF PROGNOSTIC FACTORS AND TREATMENT MODALITIES

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Aims: Minor salivary gland carcinoma occurs infrequently but may pose a diagnostic and therapeutic dilemma for the head and neck surgeon. The purpose of this study was to contribute for determining treatment protocol and predictors of survival in this kind of malignancy. **Study Design:** The clinical course of 39 consecutive patients with minor salivary gland carcinomas surgically treated on our clinic in ten year period was evaluated for the study. Comparison was created with relevant information concerning patient, disease, diagnostics and treatment distinctiveness. The efficiency of surgical resections and post-operative radiotherapy, were compared with recurrence, histology, grade, stage and local and distant metastases, as a prognostic factors. Rank regression procedure was conducted for analysis of survival. **Results:** Prevailing of mucoepidermoid (38.4%) and adenoid cystic (35.9%) carcinoma was revealed with palate as a commonest site. Lymph node metastases were confirmed in 18% while in 23% neck dissections were concomitant. 16 patients underwent planned postoperative radiation therapy. Multivariate analysis on the lesions showed that histology grade ($P < 0.01$), tumor size ($P < 0.01$), bone extension ($P = 0.014$), margin status and stage were associated with decreased survival. The recurrence rate at the primary site was significantly higher for adenoid cystic carcinoma than for other histology's ($P < 0.005$). The average cumulative survival rate in five year follow up was 84%. Immunohistology was effective in distinguishing type and grade amongst adenocarcinoma, mucoepidermoid carcinoma and adenoid cystic carcinoma. **Conclusion:** Exact preoperative assessment, staging and radical primary surgery irrespective of site and histological type are crucial to achieve best survival and loco-regional control for minor salivary gland carcinoma.

Keywords: Salivary gland tumor; Computed Tomography; Immunohistology; Radiotherapy; Regional Control; Survival

Abstr ID 743

133

OUR EXPERIENCE REGARDING THE MANAGEMENT OF PARAGANGLIONOMAS

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Introduction: Paraganglionomas of the carotid arteries are extremely rare, usually benign, tumors (only 10% are malignant tumors). Their onset is at carotid function level that is why they were called carotid body tumors in the past. **Material and Method:** A number of 8 paraganglionomas were admitted in the Oral and Maxillofacial Clinic of the Central Military Hospital between 1993–2003. All cases were benign tumors and one had a bilateral evolution, but we could not find a familiar character. The distribution according to sexes shows an increased frequency in women (7 tumors) and only one male patient. The distribution according to age is the following: 5 patients in the 20–30 years group, one patient in the 30–40 years group and 2 patients in the 50–60 years group. All the cases had a slow, long-time asymptomatic, evolution which was followed by the onset of a poorly contoured uncharacteristic submandibular mass. The diagnosis was based on an routine echographic examination later followed by echo-Doppler, MRI and angiographic investigations. All the patients were operated. Postoperative we had 2 recurrences which made a second surgery necessary. **Conclusion:** Paraganglionomas are rare entities which have a slow asymptomatic evolution. The diagnosis is often difficult and it implies a number of special investigations: echographic, echo-Doppler, CT, MRI, angiographic. The treatment is usually surgical with a mortality rate of 30% (1950) and a high rate of difficulty. There are ways of making this treatment easier by using the preoperative embolization and the transmandibular approach.

Keywords: Carotid artery; Paraganglionoma; Diagnosis

Abstr ID 543

134

PARAPHARYNGEAL SPACE TUMOURS: DIAGNOSTIC APPROACH AND TREATMENT MODALITIES

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Tumours of the parapharyngeal space are rare. The mandibular ramus prevents extraoral protuberance and early appearance. The appropriate diagnostic procedure should be individualized for each case, but generally includes computerised tomography, magnetic resonance imaging or magnetic resonance angiography. Surgical approach to lesions of the above mentioned space is not only confined by the mandible and the styloid process, but also by the proximity of important neurovascular structures. Various surgical techniques to override these problems have been suggested, including intra and extraoral approaches, with or without mandibular osteotomy. **Aim:** The purpose of this paper is to present the parapharyngeal space tumours treated at the Oral and Maxillofacial Surgery department in the last 7 years. **Method:** The medical files and surgical records of the

department from 1997 to 2003 were reviewed. Inclusion criteria were lesion in the parapharyngeal space that had been removed surgically and sufficient documentation of the medical records. **Results:** Seven patients with parapharyngeal space tumours fulfilled the inclusion criteria and are presented. Five of the tumours were salivary in origin, one was a neurilemmoma and the other was a lymphoepithelial cyst. The presenting symptoms and following diagnostic procedures are described for each case, as well as the surgical management. For six patients the surgical approach was extraoral, with either no osteotomy (two patients), subsigmoid mandibular osteotomy (three patients) or midline mandibulotomy (one patient). **Conclusions:** Diagnosis as well as surgical approach of tumours of the parapharyngeal space can be challenging. We propose the single midline mandibular osteotomy as a technique of choice because it is less invasive, it spares the inferior alveolar nerve and provides excellent access.

Keywords: Parapharyngeal space; Tumour

Abstr ID 4

135

TREATMENT OF THE PLEOMORPHIC ADENOMA OF THE PAROTID GLAND. TECHNICAL REFINEMENTS.

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Although the guidelines of the salivary glands tumours are currently well established, some controversy remains concerning the management of the parotid tumours. Classical approaches frequently offer poor aesthetic results and relapse after treatment of benign tumours continues being a frequent complication. In this paper we present our experience regarding the treatment of the pleomorphic adenoma of the parotid gland. A series of 240 patients affected by parotid tumours treated from 1992 to 2002 is reviewed. 121 cases out of them were pleomorphic adenoma (50%). Mean follow up was 64.9 months, ranging from 12 to 360 months. Technical refinements, such as our experience with the face-lift type approach to the parotid gland and the coverage of the surgical bed by using the superficial muscular aponeurotic system (SMAS) flap are presented. Complications after surgery are reviewed. 16 cases (13%) of relapsing pleomorphic adenoma were registered, most of them after an incorrect primary treatment. After treatment of the relapsing adenoma, secondary relapse was registered in 37.5 % of these cases. We discuss the management of this severe complication. In conclusion, pleomorphic adenoma of the parotid gland remains a therapeutical challenge. Technical refinements lead to a better aesthetic results, although its role in preventing the Frey's syndrome still remains unclear.

Keywords: Pleomorphic Adenoma; Parotid tumours

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Abstr ID 380

136

TISSUE ENGINEERING OF ORAL MUCOSA–10 YEARS EXPERIENCE AND PERSPECTIVES

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Tissue Engineering of autogenous mucosa has been developed from culturing keratinocytes. The grafting of oral keratinocytes has been reported since more than ten years. The culturing technique has been improved using autogenous serum as growth factor and resorbable carrier membranes as support for the cultured cells. Tissue engineered oral mucosa grafts have been used in preprosthetic and other reconstructive procedures of the oral cavity. Typical examples are the vestibuloplasty and the freeing of the tongue where the epithelial defect is covered by the tissue engineered mucosa graft. Other applications are the prelamination of free flaps with tissue engineered mucosa. The grafted cells that form only a thin epithelial sheet *in vitro* differentiate into multilayered epithelium with the formation of a basal membrane after grafting. Cytokeratins as typical markers of epithelial differentiation are then expressed in a certain sequence. Although longterm follow up of the grafted mucosa shows a good functional result, there is a shrinkage of the grafted area and a lack of differentiation into proper gingiva. Therefore grafts consisting of an epithelial and a fibroblast layer was tested clinically. It shows an improved keratinization in the grafted area e.g. around dental implants. As perspective to improve the handling and the quality of the graft tissue engineered mucosa consisting of both fibroblasts and keratinocytes in one collagen sheet has been developed as well as the maturation of the epithelial layer was increased using a perfusion cell culture system.

Keywords: Tissue engineering; Autogenous Oral Mucosa; Longterm experience

Abstr ID 686

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TISSUE BANKS – USEFUL IN CRANIO-MAXILLOFACIAL SURGERY?

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The European Parliament Legislative resolution on the proposal for a European Parliament and Council directive on setting standards of quality and safety for the donation, procurement, testing, processing, storage, and distribution of human tissues and cells is ongoing at the moment. The directive was announced on March 31 2004. This directive will hopefully harmonize the procedures in the European Union regarding the use of human tissues in tissue banks. After this directive is applied, human tissues and cells may be handled only in cleanrooms and stored only in dedicated

accredited tissue banks. This legislation will ensure the safety of these products for the surgeon and the patient. For a cranio-maxillofacial surgeon, there are several tissue bank products, which could be used in clinical practice, as well as in experimental surgery. The most commonly used material is bone, both fresh-frozen and sterilized. However, also cartilage, skin and even amniotic membrane could be used in operations in the cranio-maxillofacial area. They could also be useful in the development of tissue engineering, where currently many biodegradable scaffolds are being studied. However, their use is not yet widely accepted within the surgical community. This presentation will elucidate the potential uses of different tissue bank products as such in cranio-maxillofacial surgery and their potential advantages in tissue engineering.

Keywords: Tissue bank; Eu directive; Tissue Engineering

Abstr ID 319

138

EVALUATION OF TRANSPLANTED TISSUE-ENGINEERED ORAL MUCOSA EQUIVALENT IN IMMUNODEFICIENT MICE

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Aims: A problem maxillofacial surgeons face is a lack of sufficient autogenous oral mucosa for oral reconstruction. Skin has disadvantages of adnexal structures and a different keratinization pattern than oral mucosa. In this study, we successfully assembled, *ex vivo*, a human oral mucosa equivalent, consisting of epidermal and dermal components. **Study Design:** Autogenous oral keratinocytes were harvested from a punch biopsy and were cultured for 12 days in a serum culture system, with irradiated fibroblasts (3T3, European Collection of Animal Cell culture 85022108). Secondary culture were obtained with human fibroblast in a fibrin-gel. Transplantation into nude mice (nu/nu) were realized according to Barrandon design. Mice were killed 17 days posttransplantation. Epithelium of the transplanted oral mucosa equivalent was evaluated with haematoxylin-eosin staining, and with the different markers: keratins, laminin, collagen IV, neural growth factors (Trk-A, and p75), and epidermal growth factor (EGF). **Results:** Engineered human oral mucosa (EHOM) showed well-organized and stratified tissues in which epithelial cells expressed pankeratins and also differentiating keratin (K10, K13, and K19). In our model, epithelial cells interacted with fibroblasts in the lamina propria by secreting basement membrane proteins: laminins, and collagen IV. Immunohistochemical stain for Trk-A, and EGFR were positive. Immunohistochemical stain for p75 were negative. **Conclusion:** Using tissue engineering technology, we produced well-organized human oral mucosa equivalent.

Keywords: Composite oral mucosa; Cell culture; Transplantation

ADIPOSE TISSUE AS A MODEL FOR SOFT TISSUE ENGINEERING

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Problem: The engineering of soft tissues still is in a state of experimental studies, in part due to the problems of nutrition and oxygenation. Adipose tissue can serve as a simple model for the engineering of a soft tissue requiring vascularisation. It has high significance since it provides volume and contour of many flaps used in maxillofacial reconstruction. **Materials and Methods:** Human adipose tissue stromal cells were amplified in culture and seeded onto collagen microparticles. Following adipogenic differentiation they were composed to adipose tissue equivalents together with endothelial cells. The expression of markers specific or typical for adipose tissue (Leptin, Adiponectin) was ascertained by RT-PCR. Furthermore, the tissue equivalents were implanted into immunodeficient SCID-mice ($n=9$) and evaluated after 7 days, 3 and 6 weeks.

Results: Histologic examination of the *in vitro* aggregates revealed to more or less extent (between 30% and 95%) mature adipose tissue with formation of univacuolar adipocytes, which stained positive with Sudan stain. The expression of leptin and adiponectin could be demonstrated on the mRNA-level after the differentiation process. A capillary-like network formation could be shown in histological sections and in laser scanning microscopy. The *in vivo* investigations, however, showed a loss of volume and partial regression of the adipose tissue equivalents after 3 weeks. **Conclusion:** The tissue engineering of fat is feasible *in vitro*. The *in vivo* results, however, reflect the insufficiency of nutrition and vascularisation of the engineering strategies up to date and have to be improved.

Keywords: Tissue engineering; Adipose tissue

HUMAN MESENCHYMAL STEM AND PROGENITOR CELLS (hMSC): ISOLATION FROM HUMAN BONE MARROW, CONDITIONS OF EX VIVO EXPANSION AND DIFFERENTIATION STIMULI

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Aim: Human Mesenchymal Stem and Progenitor Cells (hMSC) have been isolated from various organs in the human body and seem to be involved in regeneration of mesenchymal tissues. Therefore we asked for the conditions of efficient hMSC expansion from human bone marrow and

for the appropriate stimuli to differentiate these cells into osteocytes, chondrocytes, adipocytes, and myocytes.

Method: Human bone marrow samples taken from hip replacement operations were seeded onto plastic dishes in various serum-containing and serum-free culture media. Immunohistochemistry and RT-PCR analyses were established to characterize differentiation markers. **Results:** We found reproducible and efficient expansion of MSC with multilineage differentiation capability over 3–4 log within culture periods of 21–28 days. Preselected fetal calf serum proved superior to commercially available mesenchymal stem cell expansion supplements or serum-free media to promote optimal expansion rates. hMSC could be differentiated into either osteoblasts (assayed by expression of bone sialoprotein, osteocalcin, or alkaline phosphatase), chondrocytes (by staining with toluidine blue), myocytes (by expression of myogenin) or fat cells (assayed by oil red O staining) at different time points of the expansion culture. The FACS analysis showed the expression of SH2 and SH3, which are described to characterize hMSC. Furthermore the cells are negative for CD34 and CD45.

Conclusion: This study describes conditions for efficient expansion and differentiation of MSC from human bone marrow. We show that cultivation of MSC may follow very different mechanisms compared with those known for other stem and progenitor cells (for example hematopoietic stem cells).

Keywords: Mesenchymal stem cell and progenitor cells; Isolation; Expansion; Differentiation

EVALUATION OF OSTEOGENIC POTENTIAL OF CULTURED HUMAN PERIOSTEUM-DERIVED CELLS

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Aim: Periosteum shows osteogenic potential and much attention has been focused on its use as a grafting material for the repair of bone and joint defects. Recently, the osteogenic potential of cultured periosteal cells has been reported. However, little has been clarified about the histologic and radiographic features of bone induction from cultured periosteal cells. In addition, very few studies have investigated the osteogenic potential of human periosteum-derived cells. Here we present findings of bone formation induced from cultured human periosteum-derived cells using a xenogeneic graft model in rats. **Methods:** Ten periosteal cells taken from ten human mandibles were placed in culture medium (Dalbeco modified Eagle Medium) [Gibco, Grand Island, NY, USA] containing 1% penicillin, and 1% Streptomycin and 1% amphotericin (Gibco) with 10% Fetal Bovine Serum for 14 days in accordance with the method of Hanada et al. After reaching confluence, periosteal cells were resuspended with 0.25% trypsin/EDTA (Gibco) for 30 minutes. Periosteal cells were then re-cultured three dimensionally on a collagen sponge for 7 days. Collagen-periosteal cell

complex was grafted into the rat calvarial defect model and immunosuppressant (FK506 1.0 mg/kg/day) was administered intramuscularly. At 14, 21 and 28 days post grafting, grafted tissue was extirpated and compared histologically and radiographically with the control group (no graft in the defect). **Result and Conclusion:** In the experimental group, periosteal cells had proliferated and differentiated into chondrogenic cells by 14 days post grafting. At 21 days post grafting, new bone formation was evident. By 28 days post grafting, bone growth was observed and new calcification was detected radiographically in the defect. Cultured human periosteum-derived cells showed osteogenic potential in the xenogeneic graft model of rat calvarial defect.

Keywords: Human periosteal cell; Transplantation; Osteogenic potential

Abstr ID 201

142

REPAIR OF MANDIBULAR CRITICAL SIZE DEFECTS WITH AN OSTEOINDUCTIVE COLLAGEN (COLLOSS) IN COMBINATION WITH COLLAGEN MEMBRANES

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The aim of this study was to evaluate the effect of: guided tissue regeneration with collagen membranes alone, implantation an osteoinductive collagen(colloss) alone, and of the combined treatment on the healing of mandibular critical size defects. The study was conducted on 48 adult Wistar rats. Standardized circular transosseous critical size defect, 5 mm in diameter, were created in the right mandibles of rats. The 48 rats were divided into four groups: In group 1 ($n=12$), the defect was untreated. In group 2 ($n=12$), a resorbable collagen membrane was used. In group 3 ($n=12$), the defect was filled with colloss. In group 4 ($n=12$), the defect was filled with colloss and covered with a resorbable collagen membrane. Animals were killed after 3 and 6 weeks of healing (6 rats in each group were killed after 3 weeks and the other 6 after 6 weeks). The harvested specimens were processed for radiography and standard histological examination. **Results:** The combined treatment with membrane and colloss demonstrated a significantly better bone healing than with collagen membrane alone or colloss alone at both 3 weeks and 6 weeks of healing. It was concluded that colloss has a good osteoinductive potential enhanced when is used in combination with resorbable collagen membranes.

Keywords: Bone regeneration osteoinduction guided tissue regeneration

Abstr ID 204

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CONSIDERING POLYMER COMPOSITIONS IN TISSUE ENGINEERED GRAFTS ON BONE FORMATION IN CALVARIAL DEFECTS

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Aim: Tissue Engineering will overcome contemporary limits in bone augmentation and reconstruction. To determine the most biocompatible composition of polyglycolic/polylactic acid polymers for the delivery of bone marrow stromal cells (BMSCs) assessing the potential of foreign body reactions and osteogenicity of various compositions of PGA/PLA polymers in calvarial defects. **Material and Methods:** BMSCs obtained from the long bones of rabbits were grown on matrices consisting of either 85:15, 50:50 or 15:85 ratios of PGA/PLA for 3 days and then assessed for alkaline phosphatase and mRNA specific for TGF- β 1 and osteocalcin. Two defects of 6 mm diameter were made on each side of the calvaria in 5 different rabbits per matrix-type. After sacrificing the animals 4 weeks post-surgery, calvariae were assessed in decalcified histological sections. Mean values and standard deviations for bone formation in defects in each group were compared with each other treatments to assess differences in bone formation among groups. **Results:** Unfilled control sites and defects filled with BMSC alone showed mainly extensive fibrous connective tissue growth. The defects filled with polymers of various compositions alone revealed intense inflammatory reaction in presence of high PGA content and reduced foreign body giant cell formation with slow degradation in presence of high PLA content. The calvarial defects treated with BMSC-impregnated PLA/PGA (50:50) matrices showed the most extensively vascularized and ossified tissue. Nevertheless the inflammation caused by this PLA/PGA matrix was minimal. **Conclusion:** In cranial defects PLA/PGA polymers composed of equal ratios of PLA and PGA serve as a better carrier supporting bone formation than those containing either higher amounts of PLA or PGA. Matrices with higher PGA are immunogenic and inhibit bone healing, while those with higher PLA content inhibit bone formation due to their slow degradation.

Keywords: Oral presentation tissue engineering; Bone formation; Polyglycolic/polylactic acid polymers; Critical size defects; Calvarial defects

Abstr ID 60

144

BMP IN MAXILLO-FACIAL SURGERY

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Subject: The Bone Morphogenetic Proteins (BMPs) are members of the Transforming Growth Factor- β (TGF- β) family. They are a family of bone matrix polypeptides that induce a sequence of cellular events that lead to the formation of new bone. *In vitro*, BMPs induce differentiation of mesenchymal stem cells into osteoblast and chondroblast cells. When implanted into humans and animals, several of the BMPs have been shown to initiate

bone induction. The advancement in recombinant DNA technology has led to the identification, cloning and production of BMP quantities sufficient for therapeutic clinical applications. In April 2001, BMP-7 (OP-1) received approval for clinical use in non-union fracture in Australia and Europe. **Methods:** Based on an extensive review of the international literature and their experience, the authors report the use of BMPs in preclinical animal models and initial human experience in maxillofacial surgery:

- mandibular reconstruction (using prefabricated vascularized bone grafts or with osteogenesis distraction);
 - calvarial defect reconstruction;
 - maxillary sinus floor augmentation and alveolar ridge augmentation;
 - alveolar ridge preservation after tooth extraction;
- Conclusion:** The authors will detailed two potential clinical applications of BMPs in maxillo-facial surgery:
- in mandibular reconstruction of gunshot wounds by osteogenic distraction, the consolidation phase can be shortened by administration of BMP in the distracted callus;
 - in mandibular reconstruction of osteoradionecrosis, a prefabricated flap can be induced by administration of BMPs in a latissimus dorsi muscle flap placed into a custom-made bivalved scaffold.

Keywords: Tissue engineering; Growth factors; BMP; Osteoradionecrosis

Abstr ID 446

145

COMPUTER AIDED BONE TISSUE ENGINEERING

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Aim: Computer-aided technologies are employed for the design and manufacturing of scaffolds intended for implantation as defined three-dimensional tissue substitutes. In this study we tested whether autologous osteoblast-like cells cultured *in vitro* on individualised scaffolds can be used to support bone regeneration in mandibular defect sites. **Methods:** For this purpose, bone defects were surgically introduced into the mandibles of minipigs and the scaffold of the defect site was modelled by computed tomography. Autologous bone cells from porcine calvaria were harvested from minipigs and grown in culture. Cells were seeded on scaffolds generated by rapid prototyping of polylactide/polyglycolide copolymers. Some of the cell/scaffold constructs were cultured for different time periods (up to 4 weeks) in order to investigate the *ex-vivo* behaviour of osteoblasts. The defects were then reconstructed by implanting the extra corporally generated tissue constructs. **Results:** The intraoperative situs as well as the post-operative CT scans demonstrated an accurate anatomical fitting at the defect sites. The cell/scaffold constructs revealed viability of differentiated osteoblasts in a bone-like manner throughout the experimental period. The implanted scaffold constructs enriched with osteoblast-like cells were well tolerated and appeared to support bone

formation as revealed by histological and immunohistochemical analyses. **Conclusion:** These results warrant further attempts to combine computer modelling and tissue engineering for use in bone reconstructive surgery.

Keywords: Tissue engineering; CAD/CAM Bone

Abstr ID 583

146

THE INFLUENCE OF THE PREPARATION TECHNIQUE ON PROLIFERATION AND DIFFERENTIATION OF HUMAN OSTEOBLASTS OF THE JAW

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Aim: Progress in implantology requires more and more frequently the augmentation of the implant insertion site. Although autogenous bone is still the best graft due to its osteogenic potency, its stability, and its lack of immun-reaction, the harvesting is related with a certain morbidity at the donor site. The tissue engineering technology allows for culturing of osteoblasts on biomaterials to produce osteogenic tissue to be applied in patients. The aim of this study was to test the suitability of bone chips and bone grinding dust to grow osteoblasts and to assess the influence of donor site. **Methods:** From 28 patients 37 bone specimens gained during removal of third molars in the upper and lower jaw were investigated. 17 specimens were bone chips and 20 were bone grinding dust. Primary cultures were established, and after subculture histochemical and immunohistochemical tests (BrdU- labelling, MTT-test, ALP-histochemistry, Collagen I-immunohistochemistry, Osteocalcin-Elisa) were performed to determine cell proliferation and differentiation. **Results:** Bone chips and bone dust gained from mandible and maxilla are suitable to culture human osteoblasts. However cell growth from bone chips was faster and more reliable. The results of tests in cell cultures from the maxilla were better than from the mandible. The preparation technique had no influence on the expression of cell differentiation markers (ALP, Collagen I, Osteocalcin). **Conclusion:** We recommend the use of bone chips from the maxilla for culturing human osteoblasts.

Keywords: Tissue engineering; Osteoblasts; Culture technique

Abstr ID 640

147

AUTOLOGOUS PLATELET RICH PLASMA FOR TOPICAL USE IN MAXILLOFACIAL SURGERY

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Aim: Alveolar bone regeneration is frequently necessary for dental implant placement in maxillofacial surgery.

Recent reports indicate that high levels of growth factors presence in platelet rich plasma (PRP) may enhance wound healing and formation of new bone when used in combination with bone grafts. To assess the effect of topical PRP concentrat on the bone regeneration, patients undergoing maxillofacial procedures were studied. **Method:** Autologous platelet concentrate was obtained from PRP derived from blood. PRP was concentrated by centrifugation and adjusted to 10 in the 10th power platelets per ml by the local department for transfusion medicine. A prospective controlled randomised trial has been set up two years ago as a two-center-study in Giessen and Erlangen. Included were 50 patients with strong atrophy in endentulous maxilla who needed osteoplastic bone graft from the iliac crest for sinusfloor augmentation prior to implant placement. The main parameter is the bone quality in the biopsy 4 months after augmentation measured as histomorphometry bone volume. As a side parameter we could registrate the radiological density in the CT made before implant insertion. Platelet gel and bone preperatation was performed by using autologous materials only. **Results:** The recruitment for the study has been completed, so that first results can be presented. One patient showed localized resorption of the bone graft and one patient must be treated because of a sinusitis maxillaris. Histological evaluation of biopsy revealed numerous areas of osteoid and bone formation without evidence of inflammatory cell infiltrate. The bone volume reached from 40–70 percent. The final bone graft controlled by CT showed remarkably dense bone in sufficient quantity. **Conclusion:** These findings suggest that topical use of autologous concentrated platelets may improve the process of bone regeneration.

Keywords: Bone graft prp dental implants

Abstr ID 119

148

USE OF FROZEN BONE COMBINED WITH OP-1 FOR THE RECONSTRUCTION OF THE MANDIBLE IN SHEEP

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Introduction: Bone formation is still a problem awaiting solution. In jawbones, the ultimate objective of bone reconstruction is to replace teeth so it is necessary to obtain bone of enough quality to allow the successful insertion of dental implants. **Objectives:** The aim of our study is to compare the quantity and quality of bone tissue formed after the resection of a critical segment of a sheep lower jaw and the insertion of heterologous frozen rib bone and heterologous frozen bone in combination with morphogenetic recombinant protein (OP-1). **Material and Method:** Twenty 8 years of age sheep were operated. In all cases a 60-mm segment of lower jaw was removed under general anaesthesia by an extraoral approach. The resulting gap was maintained by means of a reconstruction plate. The sheep were divided in 5 of 4 individual groups and different procedures were performed. In one group the gap

was let as control, in a second group a frozen heterologous rib graft was inserted. In other group the gap was filled with OP-1. The fourth group was filled with platelet rich plasma and the last one a frozen rib graft was inserted and covered with OP-1. Periodical clinical and radiographic checkouts were performed. All the animals were slaughtered 8 weeks after surgery and the lower jaw was extracted. Clinical, radiological and morphological studies were done. **Results:** No bone formation was observed in any animals of control and platelet rich plasma group. New bone formation was observed in all the animals which OP-1 was used. The new bone was formed separately from the rib in the animals that received frozen heterologous ribs graft plus OP-1. No rib resorption was observed. In the frozen rib group the bone formation was inconstant and lesser than OP-1 groups.

Keywords: Mandibular reconstruction; BMP

Abstr ID 250

149

ARTIFICIAL LOW TEMPERATURE HYDROXYAPATITE IN TREATING OF CRITICAL BONE DEFECTS - A N INVESTIGATION IN MINI-PIGS

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Aim: To test the biodegradation and the induction of bone formation by a new synthetic bone graft substitute. This new calcium-ceramic is fabricated by a sol-gel-process at 200 degree Celsius. **Materials and Method:** 26 one year old Goettingen minipigs were divided into five groups. In all 5 groups a critical size defect (<5 cm) in the mandible was filled by a different material (group K1 and L1: 40% β -TCP plus 60% HA; group L2: only HA; group K2 and L3 formed the control groups, without any ceramics). Five weeks (group K1-2) and eight months later (group L1-3) clinical, histological and morphological investigations of the former defects were made. **Results:** The bone formation was superior in the ceramics-groups (K1 and L1-2) in comparison with the control groups (K2 and L3). In all ceramics-groups biodegradation of ceramics was considered to very good with an resorption rate of more than 93% eight months postoperatively. No difference was observed between pure HA (L2) and the combination of HA and β -TCP-group (L1). In both groups complete bone formation was seen in the former defects. In the control group only an incomplete bone formation with 48.4% of the defect area was noted. This difference was significant ($P < 0.001$). **Conclusion:** Calcium phosphate ceramics, made by a sol gel method at 200 degree Celsius seems to be suitable for filling bone defects and is of interest for orthopedic surgery, traumatology, craniomaxillofacial surgery and dentistry.

Keywords: Hydroxyapatite; β -Tricalciumphosphate ceramics; Calcium phosphate matrix; Critical size defect; Bone formation

THREE-DIMENSIONAL (3-D) HISTOMORPHOMETRIC EVALUATION OF THE DISTRACTION REGENERATE

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A new three-dimensional (3-D) histomorphometric technique is presented for qualitative and quantitative evaluation of the distraction regenerate. This method consists of (1) serial-sectioning of the specimen; (2) high-contrast histological staining followed by high-resolution digital image capture and (3) automated 3-D post-processing. The distraction specimens of 16 sheep that underwent bifocal cranial transport distraction osteogenesis were used to evaluate this method. A total of 1650 serial 30 µm thick coronal histological sections were digitalised, aligned and rendered into 3-D images. 3-D histomorphometry allowed reconstruction of the distraction regenerate in all three planes and permitted 3-D visualisation of the microstructural architecture of the distraction regenerate in the virtual space. Duplicate measurements of the total and mineralised distraction regenerate, expressed in voxels (micron³) showed a small method error according to Bland (6.25% of measurements were out of the 95% limits of agreement). 3-D histomorphometry showed to have a potential for qualitative and quantitative assessment of the microarchitecture of the distraction regenerate in experimental DO research. The main disadvantage of the described method is its first phase. The technique of serial-sectioning in this study was highly destructive to the specimen and very time-consuming. Hence, automated serial-sectioning methods with a minimized material-dependent tissue loss are required to improve this method.

Keywords: Distraction; Experimental, 3-D; Histomorphometry

SERUM POLYPEPTIDE GROWTH FACTORS IN PATIENTS WITH ORAL SQUAMOUS CELL CARCINOMA

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Oral squamous cell carcinoma is one of the most common head and neck cancers. Generally, oral squamous cell carcinoma has a poor prognosis due to its tendency towards local invasion and subsequent metastasis, which is mediated by multiple factors and angiogenesis. The role of polypeptide growth factors in pathogenesis in neoplastic diseases is currently subject several investigations. The aim of presented study was to determine serum concentra-

tion of IGF-I, IGFBP-3, TGFβ1, VEGF and HGF in patients with squamous cell carcinoma. The investigation were carried out in group of 30 men and women. They were all hospitalized because of oral squamous cell carcinoma. In blood serum samples the concentrations of the IGF-I, IGFBP-3, TGFβ1, VEGF and HGF were determined. Daily secretion of the IGF-I did not significantly differ from those observed in controls. In the patients with squamous cell carcinoma significant decrease of daily serum IGFBP-3 concentrations and following disturbances of IGF-I/IGFBP-3 ratio in comparison to healthy controls were observed. Total daily TGFβ1 secretion in these patients was significantly lower but daily oscillations of the VEGF were significantly higher in comparison to healthy controls. Serum concentrations of the HGF did not significantly differ from those observed in controls. The changes can be an important pathogenic elements involving in the progression of oral squamous cell carcinoma.

Keywords: Oral squamous cell carcinoma; Polypeptide growth factors; IGF; IGFBP-3; VEGF; HGF; TGFβ1

GENE EXPRESSION PROFILING AND P53 MUTATION OF ORAL SQUAMOUS CELL CARCINOMA

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Aim: Oral squamous cell carcinoma (OSCC) has heterogeneous clinical outcomes that cannot be predicted well from currently known clinical or molecular prognostic factors. Instead, gene expression profiling may enable preciser prediction of the clinical outcomes of the patients. To identify the genes involving the prognosis of oral cancer, we analyzed gene expression profiles of 40 OSCCs, using a DNA microarray consisting of 1289 genes, and examined them in relation with p53 status and clinical parameters. **Patients and Methods:** Forty patients with histologically confirmed OSCC were enrolled in this study. The cDNA microarray analysis was applied to the mRNA expression patterns of 1289 genes of the 40 OSCC patients. We also examined p53 tumor suppressor gene mutation in the same samples by a combination of yeast functional assay and DNA sequencing. **Results:** We identified 417 genes that were expressed differently between 16 OSCCs with p53 mutation and 17 OSCCs without it. Also several genes showed significantly different expressions between OSCCs with lymph node metastasis and those without it. **Conclusion:** Investigation of the genes expressed differently between OSCCs with malignancy and those without it should help to disclose the molecular mechanism of oral cancer and hold the future potential of identifying molecular markers crucial for prognosis and sensitive to suitable therapy.

Keywords: Oral squamous cell carcinoma; DNA microarray, P53 tumor suppressor gene

Abstr ID 473

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ADHESION MOLECULES IN EARLY STAGES OF ORAL CAVITY CANCER: P-CADHERIN EXPRESSION REDUCED AS INDICATOR OF POOR PROGNOSIS

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Aims: To evaluate whether or not the impaired expression of E-cadherin (E-cad) and P-cadherin (P-cad) correlates with the clinical evolution and prognosis in oral squamous cell carcinoma. Our purpose was to determine the value of cadherin expression as a potential predictive factor in tumor behaviour. **Study Design:** Analysis of the E-cad and P-cad expression was performed in formalin fixed paraffin-embedded tissues by immunohistochemistry with the Envision ±HRP method (Dako A/S, Glostrup, Denmark) with heat-induced antigen retrieval. Fifty samples of patients surgically treated for oral cavity cancer (early stages pT1–pT2 and nodal stage pN0) were studied. A semi-quantitative estimation based on the staining intensity and relative abundance of cadherin immunoreactive cells towards the invasive front of the tumoral tissue was performed. The E-cad and P-cad expression was correlated with disease progression, relapse and overall survival. **Results:** The loss of P-cad expression was significantly correlated with loco-regional recurrence in the follow-up (chi square = 6.975, $P=0.01$) and, in relation with the E-cad expression, a lower but still significant correlation was found between loss of this cadherin and recurrence (chi square = 5.003, $P=0.03$). However, no association between cadherin expression and survival was observed ($P<0.05$). The multivariate regression analysis showed that P-cad expression was an independent predictor of disease-free survival. The relative risk of recurrence was 8 times higher in the group showing P-cad expression reduced. **Conclusion:** The down-regulation of cadherins is a common malignant event in oral squamous cell carcinoma progression, and is closely correlated with the prognosis of this disease. Our findings suggest that the reduced P-cad expression might play a role as prognostic factor in oral cancer patients. Up-regulation of P-cad may serve as a novel antitumor therapeutic strategy by stimulating cells to change to a benign behaviour.

Abstr ID 173

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CLINICAL RELEVANCE OF CYTOKERATIN-EXPRESSION IN ORAL CANCER

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Objective: The pattern of cytokeratin (Ck) expression seems to characterise differentiation of epithelium. Differ-

ent expression of cytokeratins correlates with a poor prognosis in different cancers. Therefore the expression of Ck 5-6, Ck 8-18, Ck 10, Ck 14 and Ck 19 were evaluated in oral carcinoma in relation to their clinico-pathological features in order to determine the value as a prognostic marker. **Material and Method:** 285 patients with histologically proven squamous cell carcinoma of the oral cavity treated surgically were eligible for the study. Surgical tumour therapy included radical tumour resection and neck dissection, if necessary. All tumours were classified post-surgically according to the pTNM system. Radiotherapy was performed when lymph node metastases were detected histologically. Patient were clinically evaluated in our routine follow-up. Tumor specimen of all 285 patients were investigated for the expression of Ck 5-6, Ck 8-18, Ck 10, Ck 14 and Ck 19. Core needle biopsies from paraffin wax embedded tissue blocks were re-embedded in a tissue array. Immunohistochemical screening under identical condition were carried out with Ck 5-6, Ck 8-18, Ck 10, Ck 14 and Ck 19 antibodies. Correlation between clinical features and the cytokeratin-expression were evaluated statistically by Kaplan-Meier curves, Log-Rank — and chi-square Tests. **Results:** Ck 8-18 ($P=0.04$) and Ck 19 ($P=0.002$) expression in oral carcinoma was correlated with a significant poor prognosis. No significant correlation was found between Ck expression and the presence of lymph metastasis. **Conclusion:** Ck 8-18 and Ck 19 in carcinoma of oral cavity seem to be predictive parameters in the prognosis of squamous cell carcinomas.

Keywords: Cytokeratin; Prognosis; Oral cancer

Abstr ID 536

155

ORAL SQUAMOUS CELL CARCINOMA TRANSFECTION VIA CATIONIC TARGETED LIPOSOMES

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Aims: During recent decades the outcome of therapy for oral squamous cell carcinoma has not improved despite introduction of radical surgery and radiotherapy. Recent applications in the microsurgical reconstruction of the resected tissues have diminished the disadvantages of the treatment still the defect in the anatomy and the physiology of the masticatory organ has remained considerable. We have studied molecular level therapy for oral cancer and introduced a non-immunogenic, low-toxicity, and tumor targeted vehicle for oral cancer gene therapy. **Study Design:** For transfection experiments a commercially available cell line HN was used (DSMZ, Braunschweig, Germany). The cell line was established from cervical lymph node metastasis of oral squamous cell carcinoma of the soft palate. Transfection was performed *in vitro* by

using monolayer cell culture. Cells were incubated with transfection media containing cationic liposomes and plasmid coding green fluorescent protein. The expression level of the protein was measured with fluorescence reader (Tecan AG, Hombrechtikon, Switzerland). **Results:** Compared to transfection with pure DNA the liposomal transfection vehicle demonstrated four to six-fold transfection efficiency. The cytotoxicity was low with therapeutic concentrations. **Conclusions:** Presented gene delivery method is efficient, and shows low toxicity. It provides an easy method to perform targeted gene therapy. These *in vitro* results are able to be applied further *in vivo* studies and finally clinical trials.

Keywords: Oral squamous cell carcinoma; Transfection; Cationic liposomes; Gene therapy

Abstr ID 642

156

CYTOTOXIC EFFECT OF ETOPOSIDE IN LIPID NANOSPHERES ON ORAL CANCER CELLS

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Introduction: In order to increase the concentration of chemotherapeutic agents in malignant tissue and reduce dose related side effects, drugs can be entrapped into delivery systems. In our *in vitro* study the effect of etoposide encapsulated lipid nanospheres (LN) on oral squamous cell carcinoma cell lines was studied. **Material and Methods:** Lipid nanospheres of etoposide were prepared using soya bean oil, egglecithin, etoposide and cholesterol followed by homogenization and ultrasonication. In order to enhance the transport into the tumor cells folate was anchored onto the nanosphere. For cell culture experiments 10,000 cells were cultured in 96-well microtiterplates overnight. Etoposide or etoposide encapsulated LN as well as folate anchored LN were added to the medium with a concentration between 0.2 and 3.2mg/ml for 24 hours. Cell viability testing was performed using WST-1 test kit. This assay is based on the reduction of WST-1 reagent by viable cells. Quantification was carried out using an ELISA plate reader at 450 nm. **Results:** A significant reduction of cell viability with increasing concentrations with pure etoposide (99% for 0.8mg/ml) was noted. Etoposide encapsulated lipid nanospheres showed a slightly reduced cell viability (81% for 0.8mg/ml) after 24h treatment. With folate anchored nanospheres a significant reduction was detectable (58% for 0.8mg/ml). **Discus-**

sion: The results indicate that etoposide encapsulated lipid nanospheres have no negative effect on oral squamous cell carcinoma cells, because etoposide is neither released from LN nor internalised by the cells in a significant amount. Specific anchoring on LN as for example with folate increased the internalization of entrapped chemotherapeutic agents.

Keywords: Oral cancer; New therapeutics; Drug targeting; Lipid nanospheres; Cytotoxicity

Abstr ID 293

157

ANTICANCER AGENTS SENSITIZE SQUAMOUS CELL CARCINOMA CELLS TO TUMOR NECROSIS FACTOR (TNF)-RELATED APOPTOSIS-INDUCING LIGAND (TRAIL)-INDUCED CELL DEATH

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Aims: Squamous cell carcinoma (SCC) is the most frequent tumor in the oral cavity. Although anticancer agents such as cisplatin or etoposide have been used for clinical treatment, some patients suffer from inherent or acquired resistance to these anticancer agents. Thus, new treatment modalities for the management of SCC patients are urgently required. Tumor necrosis factor (TNF)-related apoptosis-inducing ligand (TRAIL) induces apoptosis in tumor, but not normal cells. In the present study, we examined whether TRAIL in combination with the anticancer agents induces cell death in SCC cell lines, especially those with increased expression of Bcl-xL. **Methods:** Human SCC lines were originally established in our laboratory and maintained in cRPMI1640 medium supplemented with 10% fetal bovine serum and 100 fMg/ml kanamycin. Cell survival was determined by a WST-8 assay kit (Dojindo Laboratories, Kumamoto, Japan). The cells were stimulated with anticancer agents (Etoposide, cisplatin, carboplatin or Actinomycin D) or medium alone for 24h, followed by addition of recombinant soluble TRAIL. Cells were assayed for the expression of TRAIL-Rs using a flow cytometer. **Results:** Bcl-xL provides resistance to TRAIL-induced cell death. TRAIL in combination with anticancer agents induced cell death in an additive or synergistic manner in Bcl-xL overexpressing SCC cell lines that are resistant to multiple anticancer agents. **Conclusions:** Combination therapy with anticancer agents and TRAIL could be useful in the design of treatment modalities for patients with SCC, especially those with elevated levels of Bcl-xL.

Keywords: Trail SCC

TOPIC 6: NEW TECHNOLOGIES

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CURRENT ADVANCES IN COMPLEX CRANIOFACIAL RECONTOURING**Gellrich N.-C, Schön R, Schramm A, Zizelmann Ch, Gutwald R, Schmelzeisen R**

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Complex craniofacial reconstructions require precise planning and combination of various treatment options to end in a favourable input to output ratio. We present latest advances in combination of software modifications for virtual model planning with intraoperative navigation, application of specific orbital mesh types and bone substitutes or autologous bone grafts to reconstruct extended contour defects of the craniofacial skeleton. In 14 patients with craniofacial deformities at least involving the upper and middle thirds of the skull the above mentioned multimodal therapeutic concept was carried out. Except for 4 cases all were performed as single surgeries instead of multiple operations. In 3 cases individual CAD/CAM titanium implants were contoured according to the virtually optimally reconstructed anatomy and simultaneously intraoperatively inserted, whereas the neighbouring augmented contours (via reosteotomy and repositioning, bone grafting, bone substitute, mesh) were controlled via navigation. The latter three patients underwent extended craniofacial trauma with primary dural reconstruction. Secondly the above mentioned reconstruction was performed as a single step procedure. Simultaneous camouflaging of temporal hollowing was required in two of these patients by replacing soft tissue loss through hard tissue augmentation. Advanced analyzing software was used to validate the surgical outcome in comparison to applied measures. Current research and future perspectives include autologous tissue-engineered reconstruction to avoid additional split bone graft harvesting and to achieve a more biological type of reconstruction.

Keywords: Craniofacial reconstruction; Virtual model; Navigation; Orbital mesh; Tissue-engineering

- the quality of the occlusion;
- the mandibular motion at 6 and 12 months;
- the skeletal stability at one year;
- temporomandibular joint symptoms.

Results: 1 patient of the “Empirical” group was reoperated 5 days after the osteotomy (condyle malposition). There was no reintervention in the “Orthopilot® group”. The recovery of the TMJ motion was faster and best in the “Orthopilot® group”, especially for propulsion and lateral movements. -Skeletal stability: % Stability Stable Limit Relapse OTHOPILOT® 67.6 26.5 5.9 EMPIRICAL 35.7 35.7 28.6 The stability was better in the “Orthopilot® group” but 4 patients had a relapse. All of them had the same preoperative profile with an important class II anterior open bite deformity, associated with TMJ dysfunction. They all had a mandibular advancement over 9 mm and a counter-clockwise rotation, complicated by a condylar resorption 1 year later. None of the “Empirical group” patients, even in the relapse sub-group, had condylar resorption but none of them exhibited this type of deformity, or had such an important mandibular advancement. TMJ symptoms: there was no difference between the two groups. **Discussion:** The Orthopilot® navigation system assured a better fit to the planned occlusion. It led to a better long term stability of bone position. It allowed a faster recovery of preoperative mandibular motion. But it was not sufficient to reduce the risk of condylar resorption in predisposed population. It was also an excellent educational tool.

Keywords: Computer-assisted surgery; Orthognathic surgery

VOXEL BASED COMPUTER ASSISTED PLANNING AND RECONSTRUCTIVE SURGERY**Schön R*, Gellrich N.-C, Zizelmann C, Schramm A, Schmelzeisen R**

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Aims: To achieve satisfying results after operative correction of complex craniofacial deformities often multiple procedures are performed. To reduce the operative trauma it is mandatory to minimize the number of operative procedures. **Material and Method:** In 54 patients presenting severe posttraumatic deformities of the frontal bone, the orbit and the midface a computer based voxel data evaluation of the deformities was performed preoperatively. Using virtual models were a computer based reconstruction was planned preoperatively. The surgical results were evaluated intraoperatively by computer assisted means and if needed an intraoperative correction of the surgical results was performed. **Results:** In 48 of the 54 patients bony deformities such as severe posttraumatic deformities of the frontal and temporal bone, the orbito zygomatic complex and the midface were reconstructed in a single computer assisted operation. Reosteotomy and reconstruction of the orbito zygomatic complex ($n=28$),

COMPUTER-ASSISTED ORTHOGNATHIC SURGERY: 100 CONSECUTIVE CASES WITH THE ORTHOPILOT® SYSTEM**Teitelbaum J, Diminutto M, Raphael B, Bettega G**

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The Orthopilot® navigator is routinely used in our department for condyle repositioning. We evaluated its benefits on 100 consecutive cases. **Patients:** 85 patients were treated with the Orthopilot® navigator, 14 without (system unavailable). **Method:** 4 criteria were evaluated:

medial canthal ligament repair ($n=15$), titanium mesh repair of orbital walls and midfacial defects following ablative surgery ($n=25$) and recontouring of severe deformities of the frontal and temporal region using calcium phosphate cements ($n=17$) were performed. **Conclusion:** Predictable and satisfying results after reconstructive craniomaxillofacial surgery were achieved in 48 out of 54 patients in a single operation following Voxel based preoperative data analysis, planning, and an exact intraoperative navigated control of the surgical results.

Keywords: Computer assisted surgery; Virtual planning and reconstruction; Craniofacial posttraumatic deformities

Abstr ID 265

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SURGICAL RECONSTRUCTION IN CASE OF ORBITAL DEFORMITIES USING IMAGE-BASED NAVIGATION ASSISTANCE

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Introduction: Secondary orbital or periorbital skeletal reconstruction remains a difficult challenge. Recent use of high-resolution computed tomography data for preoperative planning offer an approach to improved orbital reconstructions using image guided surgery techniques. **Material and Methods:** Noncomparative interventional series of 10 consecutive orbital and periorbital procedures were scheduled for image-guided surgery by use of a wireless passive infrared surgical navigation system (VectorVisionTM, BrainLAB). The preoperative high-resolution computed tomography (CT, Siemens Somatom Sensation 16) data was obtained before surgery. After attaching the skull reference to the patients head, the patient-to-image registration was performed using surface scanning with a class I laser device called "z-touchTM". After registration axial, coronal and sagittal reconstructions of the pointer tip position was displayed in real time on the video display. The registration accuracy was expressed by a calculated value, the root mean square (RMS) and while for system validation the intraoperative accuracy was visually checked with identification of anatomical landmarks. **Results:** The series consisted of 6 cases of orbital fracture, 3 cases of orbital reconstruction, and 1 case of tumor excision. The image guided technique was useful in providing preoperative planning and intraoperative surgical guidance in all cases. No complications were observed. **Conclusion:** Image-guided technique is a useful adjunctive tool in providing three-dimensional intraoperative anatomical guidance in a consecutive series of varied orbital procedures.

Keywords: Orbital deformities; Primary and secondary reconstruction; Image-data based planning; Navigation-guided surgery

Abstr ID 529

162

ACRO 3D: THREE DIMENSIONAL CT SCAN CEPHALOMETRIC ANALYSIS FOR CRANIOMAXILLOFACIAL SURGERY, EX VIVO VALIDATION

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Aims: To develop new three dimensional (3D) CT Scan cephalometric analysis for craniomaxillofacial surgery and to ex vivo validate the 3D cephalometric concept on human dry skulls. **Methods:** ACRO 3D software for 3D cephalometric analysis is developed and presented. The *ex vivo* validation consists in comparing 9 direct distance measurements, between 12 cranial landmarks on 27 human dry skulls, done with 3D measuring machine, to these done on two dimensional (2D) profile and frontal TeleX-rays (with digital electronic caliper) and on 3D CT Scan reconstructions (with 3D CT measurement tool). The measurements were done twice by 2 independent observers. Inter- and intra-observer variability for measurements on 2D TeleX-rays and 3D CT Scan reconstructions are checked using Pearson correlation coefficient. The 2D TeleX-rays and 3D CT Scan reconstructions measurements reliability is analyzed by Student t-test. The equivalence between the two radiological modalities is analyzed by Bland Altman approach. The distance measurements superiority between 3D CT Scan reconstructions and 2D TeleX-rays is checked by Student t-test. **Results:** The significant statistical difference between measurements on 2D TeleX-rays and 3D CT Scan reconstructions is discussed. The theoretical 3D cephalometric analysis background, which links together Delaire ideal individual equilibrium concept and Moss functional matrix theory, is presented. The modular 3D cephalometric analysis structure is shown. **Conclusion:** Even if in vivo validations are needed, the 3D CT cephalometry could become, under some criteria, the next radiological standard for craniomaxillofacial analyses.

Keywords: 2D Cephalometry; 3D cephalometric analysis; 3D Imaging 3d computer assisted surgery validation studies

Abstr ID 261

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CONCEPTS OF COMPUTER-BASED SIMULATION IN ORTHOGNATHIC SURGERY

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Aims: Virtual surgery could be an efficient means in complex malformation cases. Trying out different operations on a realistic model could help finding the appropriate

way for the ideal therapeutical approach. By now lack of computational power, questions regarding the calculation of soft tissue outcome and the simulation of surgery and the time needed to compute the results are the major reasons why virtual surgery cannot be considered a routine procedure. **Methods:** Different software tools will be demonstrated to overcome the above mentioned problems. Finite-element-based soft tissue simulation (Amira software) to predict the esthetic outcome was compared with post-operative CT-scans. To overcome the high computational needs, the GEMSS concept of grid computing connects the surgeons' PC with far distant located supercomputers. Thus simulation based on preoperative CT-scans will be performed after the surgeon has made the bony osteotomies and the results can be seen on the surgeons' PC within minutes. To plan and conduct bony osteotomies, tools for cephalometric analysis and investigation of pre-post changes have been developed and tested on cadaver specimens and real cases. **Results:** All the above mentioned tasks have been tested in several complex orthognathic cases. Finite-element-based soft tissue prediction showed high correspondence with the real result. Connecting a standard office PC with a supercomputer and performing real-time simulation has been established. Finally, the tools for cephalometric and pre-post analysis have shown to furnish precise data within the resolution of the utilized CT-scans. **Conclusion:** Virtual surgery and consecutive soft tissue prediction will be tools in the not so far distant future for the oral and maxillofacial surgeon to plan complex orthognathic cases. Furthermore, this software could be used for training purposes and patient information.

Keywords: Computer-aided surgery; Orthognathic surgery

Abstr ID 651

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COMPUTER AIDED PLANNING, MANUFACTURING AND NAVIGATION IN CRANIO-MAXILLOFACIAL RECONSTRUCTION

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Combined posttraumatic or postsurgical deformities of skull and facial skeleton are the most demanding situations in cranio-maxillofacial reconstruction. Very few single step procedures have been described due to lack of interdisciplinary competens. Detailed planning and interdisciplinary case discussions are needed to prepare the surgical team. The use of individual prefabricated implants (CAD-CAM) for skull reconstruction became a clinical routine in the last 10 years. A variety of companies provide the surgeons with different types of implants. Periorbital reconstruction however still depends on bone grafting procedures and the use of intraoperative molded titanium implants. The use of computer assisted planning, intraoperative navigation and postoperative control for orbital and midface reconstruction has been described by the authors in previous papers. The possibility to combine these techniques allowed single step reconstruction of extensive skull defects and severe orbital and midface deformities. We report on

five cases of single step reconstruction of complex craniofacial deformities using computer assisted prefabricated titanium implants for skull reconstruction and simultaneous navigational periorbital reconstruction. The postsurgical outcome was preoperatively designed using virtual models which were used for the fabrication of titanium skull implants and intraoperative navigation. Soft tissue defects like temporal hollowing could also be restored using the virtual model technique. No additional intraoperative data acquisition was needed. Reliable intraoperative accuracy resulted from non-invasive registration procedures using dental splints. Only interdisciplinary approaches performed by neuro-, ENT- and maxillofacial surgeons could lead the postsurgical outcome to the preoperative simulated results. The combination of CAD-CAM techniques with modern computer assisted maxillofacial surgery achieves valid low cost and one stage reconstructive procedures optimizing the advantages of virtual models which have fully replaced the need for stereolithographic models.

Keywords: Computer assisted surgery; Navigation; Reconstructive surgery

Abstr ID 426

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SURGICAL ROBOT FOR CRANIOTOMIES

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Aim: Within the framework of the Collaborative Research Centre (SFB 414)–Information Technology in Medicine: Computer and Sensor Aided Surgery–the surgical robot system RobaCKa was developed. It is dedicated for maxillofacial surgery, i.e. milling of the bony skull. In April 2003 the first patient was treated with the system. **Methods:** The system consists of a "Staubli RX 90" robot, the robot control system, an infrared-navigation-system (Polaris), a force-torque-sensor and an overload-protection. Since surgical robots are complex mechatronic systems, it is important to apply systematic approaches for fault-free design, error detection and quality assurance. This includes besides risk analysis and proper design methods also the tests on phantoms to evaluate the accuracy of the system. **Results:** In the first clinical trial mainly the workflow and performance of the system were tested. The system works safe and can be used intuitively within in the surgical environment. The accuracy can be given as an error of 0.66 ± 0.2 mm (maximum deviation is 1.06 mm). **Conclusion:** It is necessary to implement risk management also in clinical research. The correctness of the concept and the final system setup was proofed by performing a verification protocol and phantom tests. Finally the system was used for a patient trial in the department of maxillofacial surgery in Heidelberg. This trial was the first time, when a robot was used for milling complex trajectories, i.e. with relevant position and angulation changes, autonomously.

Keywords: Computer-assisted surgery; Robot; Osteotomy; Craniotomy; Navigation; Risk analysis; Active system

Abstr ID 697

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SURGICOBOT: SURGICAL GESTURE ASSISTANCE COBOT FOR MAXILLO-FACIAL INTERVENTIONS

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This paper describes a COBOT (collaborative robot) demonstrator developed by the Robotic Département of CEA and Maxillo-Facial Surgery Département of Amiens. Its basic purpose is to help surgeons to avoid harming sensitive anatomical structures that are only seen on pre-operative imagery. The system is based on a haptic robotic arm holding the surgical drill featuring both excellent transparency and a capability to generate forces and feedback in the hand. A surgical instrument, a maxillo-facial drill, is fixed at the extremity of the haptic arm. The other essential components of the system are an advanced haptic controller and a virtual reality engine able to compute force constraints based on a simulation of the interactions between the surgical instrument and the patient modelled anatomy. Using the COBOT, the surgeon can freely handle his surgical instrument except in the volumes defined before as protected anatomical zones. The COBOT then restrains the surgeon penetrating these zones and thus actually assists the safe performance of delicate surgery by actively protecting anatomical structures like the spinal cord or the dental nerve. This concept clearly combines several technologies, mainly force-feedback robotics, virtual reality and exploitation of 3D models constructed from medical imagery of patient. In order to investigate in other ways this potential, the CEA and CHU Amiens have turned the concept into a full-scale demonstrator used to perform an osteotomy operation on a resin jaw. We demonstrate that it is possible to combine a high level robot assistance with a real transparent mode allowing the surgeon to freely perform his operation in a secure mode restraining his movement in only few limited areas. These areas are designed by the surgeon himself before the surgery on the CT scanner or the MRI according to the needed protection zone.

Keywords: Robotic surgery; 3D imaging virtual reality software

Abstr ID 831

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PIEZOELECTRIC BONE SURGERY/A NEW QUALITY IN FACIAL OSTEOTOMIES

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Subject: Evaluation of a new osteotomic device in maxillofacial osteotomies was performed. The usual devices, used for bone cutting in MFS, a high-speed drill or a

bone saw represent some risk of serious damages to surrounding soft tissues and alveolar nerve and vessels. The piezoelectric system using ultrasonic micrometric vibrations instead of rotational or reciprocal movements prevents these injuries. The possible cellular damage at the bone resection edges and the cutting power for facial bones were tested. Specimens of bone taken during surgery were examined microscopically for detecting the presence of vital osteogenic cells proximate to the resection border. Maxillary (Le Fort I, sinus, alveolar) and Mandibular osteotomies (mandibular body, sagittal split and alveolar) and resections were made using this technique. **Results:** Histological findings displayed vital osteocytes close to the resection edges. Bone cutting was easily performed in both jaws, the maxilla and mandible. About 100 osteotomies were performed with this device including orthognathic surgery and mandibular resections. The cutting efficiency is comparable to other cutting techniques. Of advantage is the risk free manipulation close to soft tissues. **Conclusion:** The ultrasonic bone preparation is a safe and effective method for bone cutting in maxillofacial and skull base surgery. No tissue damages of the surrounding tissues and a close alignment of vital osteocytes at the distance up to 10 micrometers from the resection edge were recorded.

Abstr ID 69

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THE PIEZOELECTRIC OSTEOTOMY: A NEW TECHNIQUE FOR BONE SECTION. INTEREST IN MAXILLOFACIAL SURGERY

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Introduction: In bone tissue section, mechanical means such as drills and saws are usually used in the maxillofacial surgery field. Piezoelectric bone surgery is a new way of cutting hard tissues. **Material and Methods:** 20 patients presenting dentomaxillary deformities have benefited from a bimaxillary surgery with palatal expansion achieved thanks to piezoelectric cuts. The efficiency of this tool has been appreciated by: Its preservation of the soft tissues. its preservation of the alveolar inferior nerves. Its potential to perform a complete mandibular split. Its sectional power to cut osseous tissues by timing the different surgical steps. **Results:** The piezoelectric osseous section perfectly preserves the soft tissues. It perfectly preserves the alveolar inferior nerves as the sensation recovers to normal in less than one week, in more than 75% of the cases. It allows a total sagittal split it lengthens the duration of a bimaxillary osteotomy by approximately 30 minutes. **Discussion:** Piezoelectric effect is the property of certain materials to deform under the action of an electric field. If the polarization of the electric field periodically reverses, these materials start to vibrate. At a 29 000 Hertz frequency of vibration, a piezoelectric scalpel is aggressive for hard tissues, but respects the soft tissues. The piezoelectric surgical material already available allows osseous cut in orthognathic surgery without trauma for the soft tissues. The physical resistance of this material is yet limited, which explains the lengthening of the surgery. The quality of the results obtained, with the suppression of the principal

adverse effect of this kind of surgery, fully justifies the systematic use of this tool.

Keywords: Piezoelectric; Osteotomy; A-traumatic; Preservation; Alveolar inferior nerve; Soft tissues.

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OSTEOINDUCTION FOLLOWING TO SUPRAPERIOSTEAL SURGERY OF ALVEOLAR TISSUE FLAPS APPLYING THE WATER-JET TECHNIQUE

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Aims: Surgery of soft tissues is possible when applying the Water-jet scalpel. This technique enables careful preparation of different tissue layers as well as differentiated treatment of various morphological structures. It was to study the technique in comparison with conventional methods. **Material/Methods:** 20 pigs were operated in general anaesthesia and followed up for 40 days: In 10 juveniles and 10 adults mucoperiosteal oral mucosa flaps were prepared in the right upper vestibulum of the mouth using a scalpel (control group). On the left side oral mucosa flaps were reflected supraperiosteally with the jet-scalpel (study group). O₂ saturation of flaps was measured before surgery and after suturing. All anatomical structures were always clearly visible, little intraoperative blood loss and the short duration of all the operative procedures were impressing. No postoperative complications were observed. After follow-up radiologic, histologic and histomorphometric examinations were carried out. **Results:** Preparation of supraperiosteal oral mucosa flaps was easy when applying the jet-scalpel. The technique made possible easy preparation of flaps even when sparing the periosteum. Only following to water jet a significant increase of bone was measured on the left side of the upper jaw in histomorphometric observations in juvenile animals only. **Summary:** Especially in juvenile as well as in adult animals the Water-jet technique seems to be a real alternative in surgery of alveolar tissue flaps. This may be of interest for surgery of cranial malformations.

Keywords: Water jet; Osteoinduction; Supraperiosteal mucosa flaps; Experimental research

Abstr ID 460

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ENDOSCOPICALLY CONTROLLED TRANSNASAL APPROACH TO MAXILLARY CORTICOTOMIES FOR TRANSPALATAL DISTRACTION OSTEOGENESIS

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Aim: Corticotomies at the Le Fort I level for transpalatal osteodistraction are usually performed with a buccal sulcus approach. The aim was to evaluate the feasibility and the morbidity of a transnasal approach with endoscopic control. **Material and Methods:** A transnasal approach was developed with entry incisions in the lateral nasal vestibule and in the membranous septum. A standard orthopaedic 25 offset view angle straight endoscope was used for illumination and portal and transsinus control of the corticotomies. A prospective clinical trial was performed with 20 consecutive patients who underwent transpalatal osteodistraction surgery for non-congenital maxillary transverse hypoplasia between February and October of 2003. Demographic data, indications for surgery, technical nuances and postoperative course were recorded. These parameters were used to compare the experimental group with a group of 187 transpalatal osteodistraction surgeries performed with the buccal sulcus approach. **Results:** Endoscopy was necessary to control the completeness of the zygomatic buttress transection, and to a lesser extent, to control the extension of the posterior wall osteotomy. The learning curve was flat, with a decrease in total operation time from 190 minutes to 45 minutes. Hospitalization length and postoperative morbidity were similar to the conventional approach, except for nasal discharge that was more frequently observed in the experimental group. **Conclusion:** The main asset of endoscopically controlled transpalatal osteodistraction surgery is patients' and referring doctors' positive perception of minimal access surgery.

Keywords: Endoscopy; Distraction osteogenesis; Maxillary hypoplasia

Abstr ID 227

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ANATOMICAL STUDY OF ENDOSCOPIC SUBMANDIBULAR RESECTION IN HUMAN CADAVERS

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The aim of the study was to evaluate the faisability of videoassisted submandibular resection and to verify the preservation of the facial vessels and the nerves (lingal nerve, marginal mandibular branch of the facial nerve and hypoglossal nerve). **Methods:** Anatomical study was carried on 6 cadavers. 12 Submandibular resections were performed using a 30 angle endoscope and conventionnal surgical instruments through two 15 mm submandibular incisions. Dissection was carried on in an avascular plan using scissors. Submandibular vessels were ligated using miniclips. Extirpation of the gland was done through on of the 15 mm incisions. An open submandibular dissection was performed to verify the major anatomical structures. **Results:** Resection of the submandibular gland was successfull in all cases without the need of an additionnal incision. Lesions of the facial artery and the lingual nerve occurred in two cases and only during the first procedures. Mean duration time decreased from 120 to 35 minutes. **Conclusion:** Videoassisted submandibular surgery is possible in human cadavers. Preservation of the major

structures and successful resection of the gland can be done. The surgical procedure is quite simple but needs teaching training to improve duration time and diminish unwanted lesions. The field of application of this technique has to be determined to be a significant progress for the patients

Keywords: Endoscopic surgery; Minimally invasive surgery; Submandibular gland; Anatomical study

Abstr ID 433

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VIRTUAL SEGMENTATION AND FRAGMENT POSITIONING FOR THE PLANNING AND VISUALIZATION OF NAVIGATION SUPPORTED INTERVENTIONS

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Aims: The navigation supported planning for surgical intervention is so far based on computer tomographies and two-dimensional segmentation of the individual layers. The use of navigation technologies for the treatment of fractures and defects as well as for the planning of implants is however considerably limited by lacking possibilities of

data set manipulation. In order to meet the requirements of the surgeon on the virtual planning situation and simulation of the operation, the integration of an efficient CAD-System from the engineering field might be considered. **Methods:** We introduce the CAD platform CATIA® for using in the fragment positioning, defect reconstruction and implant planning. The virtual modifications can be now realized immediately on the three-dimensional planning model. Therefore, the time-consuming and very difficult segmentation of the individual layers of the tomographies is avoidable. Fracture fragments can be three-dimensionally segmented and positioned on the right place. Osteosynthesis material is selected preoperatively and virtually integrated on the screen in the correct dimension. The processing of the data sets in the CAD and VR-environment is facilitated by modern multidimensional visualization concepts (5 side CAVE). The reconstructed data record is fed into a navigation system and is the basis for an accurate reconstruction of the osseous structures. **Conclusion:** Furthermore, the expansion of the surgical planning tools due to the virtual reality environment and the specific use of navigation supported methods minimize the operative accesses for the surgeon. The preoperative virtual planning of multiple fragment fractures and defect fractures, particularly in the periorbital middle face, is very important for the precise reconstruction of form and function. Due to integration of modern visualization concepts the often difficult construction of individual implants will be facilitated considerably.

Keywords: Virtual reconstruction; Navigation; Cad-system Osteosynthesis and traumatology

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EXPERIMENTAL STUDY ON THE BIOMECHANICAL STABILITY OF A NEW LOCKING PLATE SYSTEM IN THE MANDIBLE

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Aim: Various types of bone-plating systems have been developed to provide stable fixation for mandibular fractures. A disadvantage of conventional bone miniplate/screws systems is that both segments must be perfectly adapted for an optimal plate fixation to prevent alterations in the alignment of the segments and changes in the occlusal relationship. The aim of our study was to evaluate and compare the stability of a new internal multidirectional mini-locking system and a new conventional plate and screw system with the same elastic and geometric measures in a three dimensional *in vitro* model. **Material and Methods:** Micromovements in the gap tissue of 12 human mandibles treated with different designed locking and non-locking plate systems following fracture or osteotomy in the region of the corpus and angular were investigated by means of strain gauges. **Results:** We found maximum micromovements in the group of non-locking plate systems under loading. In the group of non locking plate system with a higher modulus of elasticity we found higher micromovements than in the group of locking plate systems with a lower modulus of elasticity. Concerning the design of the locking plate system no significant differences were found between double and single bar design. Physiological micromovements in the gap tissue was found under strain in not optimal and also osteotomized mandibles fixed with the mini-locking system. **Conclusion:** The results of this study showed that in case of corpus and angle fractures the fixation technique by mini-locking plates/screws system provides stable fixation under functional loading. The degree of adaptation and the precisely contoured plate affected the mechanical behavior of non-locking system. The investigated miniplate locking systems will circumvent the need for precise plate adaptation and compensate not perfectly adapted segments.

Keywords: Experimental; Biomechanic; Multidirectional mini-locking system

BONE HEALING FOLLOWING OSTEOSYNTHESIS WITH FOUR DIFFERENT MINIPLATE SYSTEMS IN SHEEP

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Aim: The aim of this investigation was to evaluate the influence on bone healing following osteosynthesis in the

mandible of sheep with four different 2.0 miniplate systems. **Material:** ST = Miniplates with Self-Tapping Screws. The screws were inserted manually after predrilling. SDF = Miniplates with Self-Drilling-Forming Screws. The screws, which formed their own thread into the bone, were inserted manually without predrilling. SDT-L = Self-Drilling-Tapping-Locking. The screws had a drill-like tip and a separate selftapping shaft. A special thread beneath the screw head was designed to lock into corresponding threaded plate holes. They were inserted with a special micro-motor-machine. ST-L = Self-Tapping-Locking. The screws had also a thread beneath the screw head in order to lock into the plate holes. The screws were inserted manually after predrilling. **Method:** In 24 sheep a standardised osteotomy was performed at the right premolar space. Osteosynthesis was performed with one of the above mentioned systems. Sacrification time points were at 4 and 8 weeks. After computer-tomography and assistance of a Navigation-system the callus formation was measured. Histological analysis was performed at each osteotomy. **Results:** After 4 and 8 weeks the highest callus formation was seen by the SDF-System followed by the ST- and SDT-L-System. The Locking-System ST-L showed the lowest callus formation. In relation to the osteotomy gap the lowest percentage of new bone formation after 4 weeks was observed with the ST-, SDF- and SDT-L-Systems whereas the highest rate of bone formation was seen by the ST-L-System. After 8 weeks an increase of bone formation within the ST-, SDF- and SDT-L-Systems could be observed, coming up to comparable values as the ST-L-System. **Conclusion:** The Self-Tapping-Locking-System showed the highest stability. Therefore the clinical use of this system in difficult cases should be supported.

Keywords: Miniplate; Mini-locking-system; Osteosynthesis; Fracture healing

THE EFFECT OF TEETH IN THE MANDIBULAR FRACTURE LINE ON HEALING AND CHOICE OF TREATMENT MODALITIES

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Purpose: Different opinions were presented and discussed for the treatment techniques of maxillofacial fractures, in recent years. One of the main concerns on this issue is about to remove or to leave the teeth which involved by the fracture line. The decision for the removal is made according to the position of teeth, possible problems in the socket which may occur after extraction, treatment method and the occlusion. One of the most important issue is the maintenance of occlusion. Therefore, in both open reduction (mini plate and screw or wire osteosynthesis) and closed reduction treatment modalities, it is necessary to maintain the normal occlusion of the jaws. In this study, we aimed to investigate the effect of teeth in the fracture line on the healing process of bone. **Material and Methods:** This study includes 100 patients (74 male, 26 female). The number of the fracture lines which involve teeth was 80 and

90 teeth were related with these regions. Open and closed reduction treatment modalities were chosen according to the condition of the cases. **Conclusion:** According to the opinions which refer either to leave or remove, the teeth are thought to be responsible from the complications which come out during the healing process in the fracture area. Some authors recommend that the teeth involved by the fracture line be removed to reduce the likely sequelae like osteomyelitis. They stated that retained teeth often became a nidus for infection. Some authors think that extraction of the tooth entails further trauma to bone tissue and presents technical difficulties when the fragments are mobile. Retaining of the teeth may permit proper alignment of the dental arch and preventing collapsing of the fragments. In some cases, postponed extractions of teeth in the fracture line is an effective method to preserve the alignment of dental arch, to maintain the occlusion and to prevent postoperative complications. Although these teeth are necessary to keep the occlusion in the beginning of treatment, they have to be extracted after functional healing process is completed to prevent the postoperative complications. The factors which should be considered for removal include the conditions of both teeth and alveolar bone, timing and type of treatment. Thus, the decision should not be made without analyzing the data and potential risk factors.

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DETERMINANTS OF COMPLICATIONS DEVELOPMENT IN PATIENTS WITH MANDIBLE FRACTURES

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Aims: The aim of the present study was to identify the main factors that increase the risk of complications development in patients with mandible fractures (MF). **Materials and Methods:** A retrospective analysis of 829 patients with 1194 MF in tooth-bearing area, treated in one center over the period 1995–1999 was undertaken. The data concerning etiology, demography, treatment and complications was estimated. The multivariate analysis was used to evaluate the risk of complications development. **Results:** Demographic data revealed that 84.3% were male, the mean age- 29.9 years. The commonest cases of injury were assaults 81% followed by accidental falls 10.2% and traffic accidents 5.3%. MF were accomplished by trauma of other systems in 26.6%, the neurosurgical injury was predominant. Open reduction was performed in 22.3% of patients, closed reduction and maxillo-mandibular fixation—in 77.7%. Complications were observed in 27.3% of patients. 46% of them did not take any medical help before complications development, 15% were treated for accompanied injury without adequate diagnostics and treatment for MF, 17% received specialized medical help and were transferred to our department because of complications development. The majority of complications were of inflammatory type often associated with non-union or delayed union. Statistical analysis showed that the main contributory factors in complications development are delayed hospitalization, age, accompanied pathology.

Other suspected risk factors are angular localization and fixation using osteosynthesis. **Conclusions:** The present work reveals some contributory factors as to the complications development in patients with MF. The main alterable risk-factor was the delay until specialized medical care, that gives an evidence of the important role of social and medico-organizing conditions.

Keywords: Mandible fractures; Surgical treatment; Complications

Abstr ID 850

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COMPLICATIONS OF INTERNAL FIXATION FOR TREATMENT OF MANDIBULAR FRACTURES

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Aim: In this study we analysed the complications of internal fixation used for treatment of fractures of the dentulous portion of the mandible. **Materials and Methods:** 80 patients were treated for mandibular fractures (except condyle and ramus) the last two years. These included 121 fractures: 5 symphyseal, 62 corpus and 54 angle fractures. There were 64 men and 16 women. All the patients were treated with internal fixation: 2.0 and/or 2.3 systems, without postoperative IMF. **Results:** Of the 121 fractures, a total of 19 fractures were noted to have had complications (15.7%). 31 complications were observed in this group of 19 fractures: 23 minor complications (1 hematoma, 1 adhesion intraoral, 1 jugal wide scar, 5 hypoesthesia at 6 months, 9 infections, 6 bone exposition), 8 major complications (pseudarthrosis). **Conclusion:** Internal fixation is the goal standard of treatment of mandibular fractures. It permits to remove postoperative IMF. But internal fixation is very demanding. It must be adapted and contextual factors (fractures, patients) appear to influence the clinical decision and surgical technique.

Abstr ID 224

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“MANDIBULAR FRACTURE TREATMENT WITH 2.0 MM UNILOCK SYSTEM MINIPLATES: CLINICAL EXPERIENCE WITH 90 PATIENTS”

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Objectives: We retrospectively analyze the clinical results when using the new 2.0 Unilock miniplates (SynthesR) in mandibular fracture treatment from October 2001

to December 2003 at our Department. **Materials and Methods:** A total of 90 patients were treated along the study period 72 males and 18 females, presenting 155 mandibular fractures. Mandibular osteosynthesis with 2.0 unilock miniplates and screws was performed in 135 out of the total of 155 fractures. A total of 221 miniplates were used: 76 "large" profile, 47 "medium" and 98 "small". The patient average clinical follow-up was 6.89 months (range 3-29). **Results:** (1) In 100% of 135 fractures, fixation obtained was intraoperatively considered stable enough. 15 fractures (11.11%) developed postsurgical infection: 7 (46.67%) along the first postoperative month and 8 (53.33%) along the following months (range 3 to 12 months). (2) The 7 fractures with early postoperative "minor" infections presented a favourable outcome and fracture healing only with antibiotic treatment. (3) In all the 8 fractures with late postoperative infection, a surgical procedure was needed. (4) Four fractures out of 135 (2.96%) presented pseudoarthrosis (3) or delayed healing (1), without any evident clinical infection. A new osteosynthesis procedure was indicated in the 3 pseudoarthrosis cases, after 2.0 mm hardware removal. Two of these ones (66%) presented comminuted fractures. (5) At follow up, 3 patients presented mild postoperative malocclusion and 2 TMJ disorders, none needing reoperation. **Conclusions:** The mandibular fracture osteosynthesis with 2.0 mm Unilock plates and screws offers an apparent biomechanical advantage with a low complication rate in clinical practice when used in non-comminuted fractures.

Keywords: Mandible fracture; Unilock miniplates; Complications

Abstr ID 662

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BIOMECHANICAL TESTING OF OSTEOSYNTHESIS SYSTEMS FOR TREATMENT OF THE ATROPHIC MANDIBLE

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Aim: Mandibular fracture treatment in the elderly impose some unresolved problems. The unfavorable conditions of the edentulous and atrophic mandible contributes to the high complication rates after osteosynthetic treatment. A new plating system (pencilbone plate), fulfilling the special biological, biomechanical and clinical requirements of the atrophic mandible, has been clinically successful used. In order to evaluate the features of the new plating system biomechanical investigations were performed in comparisons to other systems. **Methods:** In experimental tests, pencilbone plates, pencilbone locking plates and reconstruction plates were investigated for their effects on bone deformations on human edentulous atrophic mandibles by using strain gauges. The deformation of variously atrophic mandibles were recorded in dependence of the plating systems. **Results:** The micromovements in the fracture gap was found to be independent from the degree of mandibular atrophy, when similar plating systems were used. Pencilbone locking plates were found to be more stable than conventional pencilbone plates. Whereas reconstruction plates were demonstrated to be more stable on

mandibles with a less grade of atrophy, other plating systems were similar in the biomechanical stability when a severe grade of atrophy was present. **Conclusion:** At the atrophied mandible, the stability of the locking pencilbone plate-system competes with the stability of the reconstruction plate-systems, but the miniaturized plate-system imposes major advantages concerning surgical ease, reduced operation time and earlier prosthetic rehabilitation.

Keywords: Atrophic mandible; Mandibular fracture; Miniplate osteosynthesis; Locking plate; Biomechanic

Abstr ID 274

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DO ATROPHIC MANDIBLES HAVE REDUCED VASCULARITY? IMPLICATIONS FOR FRACTURE MANAGEMENT

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Fractures of highly resorbed edentulous mandibles have an uncertain prognosis with a high rate of non union. This study assesses whether the bone quality of resorbed mandibles differs from the bone quality of mandibles with greater vertical bone height. Mandibles from 46 individuals were collected post mortem and were radiographed and sectioned. Sections from the mental foramen region were either dried for apparent density determination, or embedded and prepared for quantitative backscattered electron analysis in a scanning electron microscope. (qBSE-SEM). The digital BSE-SEM images allowed analysis of the vascularity (number and cross sectional area of Haversian canals) and the degree of mineralization of the bone tissue. Mandibular bone height was negatively correlated with apparent density ($P=0.0335$) and positively correlated with cross sectional area ($P<0.001$), but no correlation was found between bone height and cortical vascularity ($P=0.270$) or mineralization density. ($P=0.078$). The only finding of potential significance (apart from the fact that smaller mandibles are smaller) is that the severely resorbed mandibles had a smaller proportion of bone taken up by marrow space. This may affect the number of osteogenic cells available at the fracture site, and indicates an area for further study. Implications for fracture management are discussed

Keywords: Atrophic mandible; Mandibular fracture

Abstr ID 438

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COMPUTER ANALYSIS OF MECHANICAL STRESS IN RECONSTRUCTION PLATES FOR BRIDGING ANGLE DEFECTS OF THE MANDIBLE

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Introduction: Surgical treatment of tumors often requires a segmental resection of the mandible. A defect reconstruction

should always be carried out in order to avoid chronic adverse results. Either an osteoplastic method or alloplastic reconstruction with titanium reconstruction plate alone can be applied. The aim of the present study was to evaluate the mechanical stress by means of the finite element method (FEM) in reconstruction plates and the screw-plate-bone-interfaces used in bridging a mandibular angle defect. **Material and Methods:** Based on the geometrical data of a human mandible, an angle defect bridged by a titanium reconstruction plate was generated and exposed to chewing force of 135 N. The reconstruction plate was tightly fixed with 2.7 mm bicortical screws. Starting with conventional plate designs plate design, screw configuration and screw diameter were varied. The mechanical stress was calculated according to von Mises stress hypothesis. **Results:** A maximum stress of 1363 Nmm⁻² in the distal portion of the reconstruction around the drilling holes is calculated. The value is almost twofold of the ultimate tensile stress of titanium (610 Nmm⁻²). Also the mechanical stress in compact bone reaches a maximum value of 175 Nmm⁻² which exceeds the ultimate tensile stress of the bone (85 Nmm⁻²) by more than twofold. Enlarging the diameter of the screws to 4 mm a reduction of the mechanical stress in the reconstruction plate and in the compact bone to 525 Nmm⁻² and 47 Nmm⁻² respectively was found. Investigating a quadrangular screw configuration the values even drop to 95 Nmm⁻², respectively 29 Nmm⁻² (4 mm) and 102 Nmm⁻², respectively 42 Nmm⁻² (2.7 mm). **Conclusion:** Using the FEM it is possible to identify the weak links of an alloplastic reconstruction of the mandible. Therefore the result may add a value information in further mechanical improvement of reconstruction plates.

Keywords: Reconstruction plates; Finite-element-method; Mandible

Abstr ID 439

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POSSIBILITIES AND LIMITATIONS OF ALLOPLASTIC MANDIBULAR RECONSTRUCTION

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Introduction: Treatment of tumors of the oral cavity often requires a segmental mandibular resection. This always implies a considerable loss in function and aesthetics. The aim of the study was to analyse the option for alloplastic mandibular reconstruction and the outcome. **Material and Methods:** During a decade 102 patients (m=73, f=29, average age 55 years) received a segmental mandibular resection. The anatomical localisation according to the classification after Jewer et al. (1989) was as follows: L-defect (n=53, 52.0%), CL-defect (n=24, 23.5%), LCL-defect (n=14, 13.7%), C-defect (n=6, 5.8%), H-defect (n=4, 4.0%) and CH-defect (n=1, 1.0%). The mandible was bridged with titanium reconstruction plate in 73 patients including 4 with temporomandibular joint prosthesis. The remaining 29 patients were reconstructed with autologous bone grafts fixed with miniplates. **Results:** The overall 1-year success rate was 74%; for the miniplate bridged defects 85% and the reconstruction plate bridged defects 66%. Reconstruction plate associated complications were found in 39% of the cases, but 44% in the chin region.

The complications were as follows extraoral exposure (15.7%), intraoral exposure (9.8%), extra-intraoral exposure (1.0%), loose osteosynthesis screws (4.9%), and fractures of the reconstruction plate (4.9%). All fractures were seen after 6 months. A higher risk for failure of the reconstruction plate could be statistically detected for men ($P=0.002$) and for smokers ($P=0.004$). Whereas no increased risk could be proven for the anatomic location of the defect nor for used osteosynthesis device (miniplate or reconstruction plate). Also radiation lowered the 1-year success rate to 45% ($P=0.003$). **Conclusion:** Nevertheless alloplastic mandibular reconstruction has to be considered for patients with mandibular resection with advanced malignancies (Klotch et al. 1999) in order to avoid longer microsurgical operation with higher risks. Therefore alloplastic reconstruction devices are the treatment of choice in those patients.

Keywords: Alloplastic mandibular reconstruction; Tumor surgery

Abstr ID 2

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FRACTURE OF MANDIBULAR RECONSTRUCTION PLATES IN TUMOR SURGERY AFTER SEGMENTAL RESECTION OF THE LOWER JAW

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Aims: Mandibular reconstruction after segmental resection of the lower jaw is important to provide good functional and cosmetic results. Beside vascularized and nonvascularized bone grafts, plates can be used to bridge continuity defects. In cases, where primary reconstruction with bone grafts was not possible, the Synthes 2.4 unlock-system[®] was used to bridge mandibular defects. This study assessed the incidence of fractured plates after segmental resection in patients with squamous cell carcinoma. **Patients and Methods:** In a retrospective study 112 patients were evaluated recording to the incidence of fractured plates. The fracture lines were investigated by electron microscopy (REM) and the biomechanics of plate fractures were evaluated. **Results:** Plate fractures occurred in 11 of 112 patients, in two of these patients we observed a second fracture after changing the first plate, in both cases at the same plate-region. We observed a total of 13 AO-plate fractures, 11 of them at the angle area, two in the mental region. The mean time of plate fractures was 24 months postoperatively (11–50 months). Fractures occurred in dentate and edentulous patients. The main reason was fatigue fracture due to plate design. **Conclusions:** Bridging mandibular defects with reconstruction plates in this study was associated with a 11% rate of plate fractures beside other complications. The indication for a segmental resection of the mandible must be evaluated carefully and the design of the plates must be modified in order to achieve a rigid and long-term stability.

Keywords: Plate fracture; Mandibular reconstruction; Tumor surgery

GUNSHOT WOUNDS: RECONSTRUCTION OF THE LOWER FACE BY OSTEOGENIC DISTRACTION**Labbé D, Nicolas J, Kaluzinski E, Soubeyrand E, Sabin P, Compère J-F, Bénateau H**Presenting Author: Bénateau H
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Subject: Although the technique of osteogenic distraction is well established, the device still need to be improved, miniaturized, lightened, made more flexible and adaptable for mandibular reconstruction in adults with gunshot wounds. We have used successively unidirectional and bidirectional devices, then bone transporter with a horse shoe-shaped trammel. The trammel system was then replaced by an endless screw, and at least with a customised endless screw. **Methods:** Eleven adults patients with gunshot injuries underwent mandibular reconstruction using osteogenic distraction with an external device. The jaw bone loss varied between 3 and 13.5 cm (mean = 7.88 cm). In ten cases, this intervention was the first attempt at jaw reconstruction and in the other case it was secondary, following failed microanastomosis using a fibula flap. To improve the projection of the chin, eight of our patients underwent secondary bone grafts from the ilium or calvaria. **Results:** An average bone gain of 79 mm was achieved. Soft tissue reconstruction was noticeable without any flap. The gum and notably the attached gingiva are also reconstructed by osteogenic distraction. **Conclusions:** Distraction of bone fragments permit simultaneous expansion of soft tissues, avoiding free or pedicled myocutaneous flaps for soft tissue reconstruction. The alveolar ridge with the attached gum is also recreated by the distraction and allowed dental rehabilitation by osseointegrated implants. The problems of inflammation around implants are thus largely overcome.

Keywords: Gunshot wounds; Osteogenic distraction; Reconstruction

OPTIMIZATION OF DIAGNOSTICS AND TREATMENT OF CONDYLE FRACTURES**Agapov VS*, Butsan SB, Bykova AA, Afanasieva EA, Alexachina IP**Presenting Author: Agapov VS
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Aims: Improving diagnostics and treatment of condyle fracture **Methods:** We have diagnosed and treated 36 patients with condyle fractures, for more than two years. All patients distributed in 3 research groups with fractures: (1) on the level of the condyle basis (2) on the level of the condyle neck (3) on the level of condyle head. Computer tomography (CT) with three-dimensional reconstruction of facial skeleton bones and magnetic resonance imaging (MRI) of temporomandibular joint (TMJ) were conducted

along with traditional radiological methods. We consider MRI of TMJ to be the most precise diagnostic method for these patients. T1 and T2 images in sagittal oblique and coronary oblique projections were obtained. Since the investigation was primarily conducted soon after the injury, occlusion while scanning was fixed. In 12–16 days after surgical treatment, control study of 23 patients was carried out. **Results:** CT data allow to determine accurately the degree of fragments displacement. It is possible to detect the presence of soft tissue interposition between fragments using MRI of TMJ. In this case, conservative treatment method with closed reduction has no prospects owing to inability to attain adequate fragment reposition and consolidation. In a number of cases as a result of the conservative treatment failure revealed by MRI, the surgical treatment should have been conducted. In 100% cases of condyle fractures observing with the help of MRI, hemarthrosis of TMJ on the injury side was detected. It was discovered that in case of implementing an open reduction and rigid fixation in a period of less than 10 days after injury, while conducting the control MRI procedure on the 12th day after the operation, full hemarthrosis resolution was observed. **Conclusion:** CT and MRI data allow to define severity of TMJ injury and indications for surgical treatment.

Keywords: Condyle fracture; Diagnostics; Surgical treatment

FUNCTION IMPAIRMENT AND PAIN AFTER CLOSED TREATMENT OF FRACTURES OF THE MANDIBULAR CONDYLE**Dijkstra PU*, Stegenga B, de Bont LGM, Bos RRM**Presenting Author: Dijkstra PU
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Aims: To determine prognosis of fractures of the mandibular condyle after closed treatment with respect to function and pain in a prospective cohort study. **Methods:** Patients ($n = 144$) with a fracture of the mandibular condyle were included in a prospective study. Fracture types, i.e., intra capsular fracture, condylar neck fractures and subcondylar fractures, and position of fracture parts, dislocation of the condylar head, displacement and deviation were determined on radiographs. All condylar fractures were treated closed. Follow-up was after 12 months in which average pain, VAS, 100 mm), and mandibular functioning were assessed. Two cut-off points of impaired mandibular function were used, i.e., a score of >0 and a score of >4 on the mandibular function impairment questionnaire (MFIQ). Post-fracture pain was defined as any score >0 on the VAS. As potential risk factors for an impaired mandibular function and pain, fracture characteristics, cause of fracture, gender and age were analysed. Factors significantly related to impaired mandibular function and pain in univariate analyses were entered in a multivariate logistic regression analysis. **Results:** Data of 116 (81%) patients, 41 females (35%) and 75 males (65%), were available for analysis. The mean age was 27.8 (SD: 13.7) years. The average follow-up was 1.2 years (SD: 0.7). Condylar neck fractures were most common

(52%). Bilateral fractures were present in 28% of the patients. Pain was found in 9% of the patients. Impaired mandibular function was found in 40% (with cut off MFIQ>0) and 24% (with cut off MFIQ4) of the patients. **Conclusion:** Multivariate logistic regression analysis revealed that most important risk factor for pain 1 year after closed treatment of a condylar fracture was being female. The most important risk factors for function impairment were >25 years of age and gross displacement of the fracture parts.

Keywords: Outcome; Fractures; Mandibular condyle; Pain; Mandibular function

Abstr ID 396

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REMODELLING OF MANDIBULAR CONDYLE FRACTURES IN ADULTS FOLLOWING CLOSED TREATMENT: CLINICAL SYMPTOMS VERSUS RADIOGRAPHIC CHANGES

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Numerous studies being published ever since the beginning of 20th century have contributed to understanding controversial matters of mandibular condyle fractures. As a result there are no doubts on the benefits of closed treatment of condyle fractures in children, because of the increased degree of remodelling in this age group. In adults, however, especially in cases of fractures-dislocations of the mandibular condyle, the results of closed treatment have been disputed when compared with open or more recently with endoscopic reduction. In our study we investigate the relation among fracture type of the mandibular condyle, long term function of temporomandibular joint and radiographic imaging of the remodelling in adults who received closed treatment. The study group was treated during the last 15 years in the Department of Oral and Maxillofacial Surgery, Aristotle University of Thessaloniki. Full clinical and computed tomography examination was carried out during the final follow up appointment. As previous studies report, closed treatment of fractures of the mandibular condyle in adults is successful and has a low rate of complications. In this study it was found that such a function can be explained by the degree and morphology of the remodelling. Only few patients presented clinical symptoms of temporomandibular joint dysfunction and these were associated with unfavourable remodelling.

Keywords: Condyle fractures; Remodelling; Computed tomography

Abstr ID 740

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CONDYLAR FRACTURE TREATMENT USING THE PERIAURICULAR TRANSPAROTID APPROACH

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Aims: Treatment of mandibular condyle fractures as yet has no general consensus. The aim of our study was to determine the safety and efficiency of surgical treatment. **Patients and Methods:** A prospective study was conducted on 34 patients with 36 fractures of the condyle. The fractures were treated surgically with a transparotid facelift or retromandibular approach using miniplates and screws for fixation. Patients were carefully followed up and were also asked to answer a survey paper 6–39 months postoperatively. **Results:** Occlusion practically identical to pretraumatic was achieved in 31 out of 33 dentate patients (94%). Postoperative interincisal distance was 30 to 61 mm (mean 44 mm), 4 patients (12%) had postoperative deviation to the side of injury upon mouth opening. Facial symmetry was achieved in all of the patients. Eight out of 36 cases (22%) had a transient weakness of certain ipsilateral facial muscle groups, lasting 4–8 weeks. In one of these patient, mild weakness of the upper lip and lower eyelid remains after 18 months. There were 5 cases of miniplate fracture (14%), all of them in patients where 1.7 or thinner miniplates were used. There were 5 cases of salivary fistulas (14%), all of them in patients where the parotid capsule was not closed in a watertight fashion. According to a postoperative survey completed by 32 patients, 30 of them (94%) were very satisfied with the outcome of treatment. **Conclusion:** If conducted properly, the transparotid facelift approach offers a safe and effective possibility for treatment of condyle fractures.

Keywords: Surgical treatment of facial fractures; Mandibular condyle fractures

Abstr ID 757

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RESULTS OF THE SURGICAL TREATMENT OF FRACTURES OF THE CONDYLAR PROCESS USING MINIPLATE OSTEOSYNTHESIS WITH RETROMANDIBULAR ACCESS

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Between 1999 and 2003 (5 years) 157 patients were treated for various fractures of the condylar processes using miniplate osteosynthesis. These included 134 males and 23 females aged 14 to 65 years old. The mean age was 33.2 years. Depending on the intra-surgical visual evaluation of the fracture line in the anatomical region of the condylar process, the fracture was classified according to Goli as one of three pathological variations: fracture of the head, fracture of the neck or high subcondylar fracture, fracture of the base of the neck or low subcondylar fracture. The morphological and functional results obtained following surgical treatment using miniplate osteosynthesis with retromandibular access were evaluated on the basis of follow-up clinical and radiological examinations performed at the out-patients clinic. The period of observation varied

in the 157 patients from 6 months to 5 years post-surgery. Analysis of the authors' material and the results obtained suggests that, if there are indications for surgical treatment of fractures of the condylar process using miniplate osteosynthesis, retromandibular access has some significant advantages when compared to other techniques. It is relatively simple technically. It assures easy access to the fracture, allowing for repositioning and fixation of the bone fragments under visual control, and it is one of the safest techniques with regard to the facial nerve.

Keywords: Fractures of the condylar process; Surgical treatment; Retromandibular access

Abstr ID 655

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RETROMANDIBULAR APPROACH TO MANDIBULAR CONDYLAR FRACTURES

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In the past mandibular condylar fractures were mostly managed by conservative treatment comprising firm or elastic maxillo-mandibular fixation and subsequent rehabilitation. The results were considered equal or even superior to open methods of treatment. Since early 1990s reports about less than satisfactory results of conservative treatment of condylar fractures started to appear and the enthusiasm for open treatment increased due to improved technique of osteosynthesis. In Kuwait we started to operate condylar fractures in 1997. We tried different approaches and reported on our results in 2001. Our overall complication rate was then 28% and only operations done from retromandibular approach were complications free. This led to adoption of retromandibular approach as a method of choice for surgical treatment of fractured condyle. We have based our indications on criteria established by Joos and Kleinheinz (1998) and used surgical technique described by Ellis and Dean (1993). Between 1999 and 2002 we operated 20 patients aged 14–51 years (22 condyles) from retromandibular approach. Osteosynthesis was performed using one standard 2 mm Titanium miniplate in 17 patients and two miniplates in 3 patients. Two patients (10%) experienced temporary weakness of facial nerve that resolved completely till 3 months after the surgery. In one case we were not able to complete osteosynthesis from retromandibular approach and had to employ pre-auricular incision as well. In our presentation we discuss indications, illustrate surgical technique and present long-term functional results.

Keywords: Mandibular condyle; Mandibular fracture fracture fixation; Internal

Abstr ID 823

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TREATMENT OF PATIENTS WITH FRACTURES OF THE MANDIBLE CONDYLAR PROCESSES

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Aims: Analysis of the patients' treatment with fractures of the mandible condylar processes **Material and Method:** We have followed-up 88 operated on patients with the mandible fractures, the age ranging from 17 to 63. The prescription of the sustained injury ranged from 4 days to 6 months. Fractures and dislocations of the condylar process were revealed in 13 patients (14.8%) to whom osteosyntheses were performed with the use of the titanium minisheet following the failure of the conservative orthopedic methods of treatment. Two patients with fractures and dislocations of the head of the mandible have also undergone replantation of the condylar process. All the surgeries have been performed using a typical incision turning round the angle of the mandible under endotracheal anesthesia with the nasal intubation. The bite was established and fixed in the correct position. The fragments were reset and fixed with titanium minisheets. During the replantation surgery the titanium minisheet was fixed on the removed head of the mandible, then the condylar process was introduced into mandibular fossa with its further fixation to the mandible. In the post-operative period physiotherapy and mechanic therapy were performed. Complications of the inflammatory character were not observed. **Results and Conclusion:** The analysis of the short-term and long-term results of the surgical treatment of the condylar process fractures allows to conclude that in case of the extensive injuries with a dislocation, a conservative treatment is less preferable. In the course of the patients' treatment the opening of mouth was insignificantly restricted with no disturbance of bite.

Abstr ID 751

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A NOVEL OSTEOSYNTHESIS PLATE DESIGNED FOR FRACTURES OF THE CONDYLAR PROCESS USING FINITE ELEMENT ANALYSIS. A PRELIMINARY CLINICAL FOLLOW-UP STUDY OF 25 CASES

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The condylar region is one of the most frequent sites for mandibular fractures. Yet anatomical and biomechanical limitations continue to make this application challenging, encountering a considerable complication rate up to 30%. Loosening of screws (Hammer et al., 1997; Choi et al., 2001; Sugiura et al., 2001), bending instability of miniplates (Undt et al., 1999) and especially plate fractures (Hammer et al., 1997; Undt et al., 1999; Choi et al., 2001; Sugiura et al., 2001) have been observed repeatedly. To analyze the biomechanical behavior of the mandible and plate osteosynthesis we employed different finite element analyses (FEA). Subsequently a plate that was designed and developed to withstand the stresses applied in this particular region of the mandible. We present our first

clinical experience with this plate in 25 cases of reduction and osteosynthesis of fractures of the condylar process from transoral approach. From 12 2002 to 04 2004 no instability (according to clinical as well as radiological evidence) could be observed.

Keywords: Fracture; Mandibular condylar process; Plate osteosynthesis; Finite element analysis; Transoral approach

References

- Hammer B, Schier P, Prein J. Osteosynthesis of condylar neck fractures: a review of 30 patients. *Br J Oral Maxillofac Surg* 1997 Aug; 35(4):288–291
- Choi BH, Yi CK, Yoo JH. Clinical evaluation of 3 types of plate osteosynthesis for fixation of condylar neck fractures. *J Oral Maxillofac Surg* 2001 Jul; 59 (7): 734–737; discussion 738.
- Sugiura T, Yamamoto K, Murakami K, Sugimura M. A comparative evaluation of osteosynthesis with lag screws, miniplates, or Kirschner wires for mandibular condylar process fractures. *J Oral Maxillofac Surg* 2001 Oct;59(10):1161-8; discussion 1169–1170.
- Undt G, Kermer C, Rasse M, Sinko K, Ewers R. Transoral miniplate osteosynthesis of condylar neck fractures.: *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1999 Nov;88(5):534–543.

Abstr ID 872

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USE OF CONDYLAR TRAPEZOIDAL PLATES(TCP)IN CONDYLAR FRACTURES:OUR SERIE FROM 2001 TO 2003

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Introduction: We present our experience of a new osteosynthesis plate for surgical treatment of condylar fractures. **Materiel and Methods:** All displaced condylar fractures are operated in our department since 1993. The average results obtained by many other devices led us to use till june 2001 a new kind of plate biomechanically validated and especially designed for subcondylar fractures. From june 2001 to december 2003 we collected 59 operated fractures. Among them 31 were stabilized by mean of a TCP plate. The classical Risdon open approach was modified in order to obtain a better access to the fracture line and to the posterior edge of the ramus. **Results:** No complication occured apart from one loosening of the screws. The fonctionnal results were similar to those obtained in the operated group which means limited mouth opening the first postoperative month (mean 30,20 mm) increasing to normal values (>40 mm) between the fourth and the fifth month. **Conclusion:** The TCP plate constitutes a great advance in condylar fracture surgery. It is easily and quickly inserted through a modified Risdon approach and provides an optimal stability. That's why we recommand its current use in all kind of displaced subcondylar fractures.

Abstr ID 501

194

SURGICAL MANAGEMENT OF CONDYLAR HEAD FRACTURES – COMPARISON OF SMALL FAGMENT SCREWS VS. MINI- AND MICROPLATES

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Aims: Fractures of the condylar head are still widely considered not to be amenable to effec-tive osteosynthesis. Since 2000 we treated displaced diacapitular and high condylar fractures by open reduction, using a newly developed system based on 1.7 or 1.8 mm small fragment screws. The present prospective study wants to evaluate the postoperative functional results, in order to allow a comparison to the functional results achieved a) by micro- and miniplates, (employed from 1993 to 1999) and b) to the results after functional-conservative treatment respectively. **Methods:** Functional results were assessed clinically, plus by MRI and axiography, at least 3 months after removal of osteosynthesis material. a) So far, in the group treated with small fragment screws, 28 out of 86 joints (22/73 patients) were assessed postoperatively by MRI and axiography. b) The surgical reference group (1993–1999) comprises 106 fractures (84 subjects), MRI and axiography are available for 56 joints (43 subjects). c) 16 joints after functional-conservative treatment served as a control. Results: Translatory movements after small fragment osteosynthesis (mean 85–90% of the non fractured sides, NFS) were significantly superior to the conservative controls (range 50% of the NFS, $P<0.01$), and also superior to micro- and miniplating (75% of the NFS, $P<0.05$). High grade limitations were observed in about 30% after platelet-osteosynthesis ($P<0.01$), after small fragment screws in less than 10% ($P<0.05$). Fracture dislocations after mini- or microplates occurred in 11% ($P<0.01$) as compared to small fragment screws in 4%. **Conclusions:** Titanium small fragment screws (1.7 and 1.8 mm) combine good biome-chani-cal stability and excellent retention in the spongi-ous bone of the condylar head. The extraar-ticular position of the small screw heads prevents scar formation and offers optimum ana-tomical and functional reconstruction. As a result, osteosynthesis with small fragment screws proved clearly superior to both mini- or microplates and func-tional-conservative treatment.

Keywords: Traumatology; Fracture; tmj; Osteosynthesis; Condylar head; Diacapitular fracture; High condylar fracture; Stability

Abstr ID 502

195

COMMINUTED FRACTURES OF THE CONDYLAR HEAD – IS THERE REALLY SUCH A CLINICAL ENTITY REGARDING SURGICAL MANAGEMENT ?

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Aims: In condylar head traumatology about 15% of the fractures are considered to be comminuted, thus not being amenable to osteosynthesis. However, when performing osteosynthesis in condylar head traumatology, this idea was not substantiated by our clinical findings. Therefore, this study was designed to assess a) the prevalence of comminuted fractures according to the intraoperative sites and b) to evaluate, in how far a successful and stable osteosynthesis can be performed even in "comminuted" cases. **Methods:** Between 1993 and 2004, a total of 187 consecutive fractures (147 subjects) with displacement of the condylar head (classes V, $n=83$ and VI, $n=104$ according to Spiessl and Schroll) underwent open reduction and diaarticular osteosynthesis. According to the intraoperative sites, the fracture lines, number of fragments and lesions to the articular soft tissues were documented as well as the kind of osteosynthesis performed. Stability was assessed during removal of osteosynthesis material (mean 4-6 months postoperatively), respectively by a radiological and clinical follow-up. **Results:** Multifragmentation (<5 fragments) was found in 17%, whereas only 10/182 fractures were classified as "comminuted". By a preauricular approach, 3/7 comminuted fractures could not be osteosynthesized successfully. Via retroaurikulär, all 3/3 "comminuted" fractures, however, were amenable to stable osteosynthesis based on small fragment screws. Due to a better overview using a retroauricular approach ($n=86$) the identification of a major fragment allowed a correct anatomical reconstruction of the condylar head. Nevertheless, a stable osteosynthesis could be achieved by additional microplating only, both in case of comminuted and multifragmented fractures ($n=31/187$). **Conclusions:** In conclusion the intraoperative sites could not substantiate the idea of so called "comminuted" fractures as suggested by radiological (e.g. CT based) diagnosis. Instead, we always found a major fragment and a variable amount of minor burst out fragments, which did not represent serious obstacles to osteosynthesis.

Keywords: TMJ, Comminuted fractures; Traumatology; Osteosynthesis; Diacapitular fracture; Condylar head; Stability; Approach; Multifragment

Abstr ID 299

196

SURGICAL TREATMENT OF THE LATE COMPLICATIONS OF CONDYLAR FRACTURES.

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The Aim Presentation of methods of surgical treatment of late complications of condylar fractures. Analysis of indications for such treatment, assessment of the achieved results. **Material and Methods:** Fractures of the mandibular condyle constitute 25–30% of mandibular fractures. In many cases these fractures are treated nonsurgically with IMF, in some cases these fractures are simply misdiagnosed or due to critical condition of the patient (multiple trauma) left untreated. Such treatment in cases with severe dislocations leads to complications (malunion, deformation,

malocclusion, pain) In the years 1997–2003, 23 cases of late complications were treated in the II Maxillofacial Clinic of the Warsaw Medical University. For surgical techniques correction osteotomies of the mandibular body or the mandibular ramus and condylectomy were performed. In 5 cases additional maxillary osteotomy was applied. For stabilization plate osteosynthesis or wire fixation was used. **Results:** In all cases we achieved improved occlusion, pain reduction and face symmetry. **Conclusions** The complex maxillofacial injuries involving TMJ should be treated early as one step procedure. Such treatment gives good functional and aesthetic results and shortens recovery and rehabilitation Surgical treatment in cases of malunion is difficult and necessitates multidisciplinary team approach (orthodontist, surgeon, prosthetist).

Keywords: Condylar fractures; Condylar luxation; Malunion; Correction osteotomy

Abstr ID 367

197

IMPROVED MIDFACIAL FRACTURE REPAIR USING ULTRASONOGRAPHY

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During the reposition of the fractured zygoma, the zygomatic arch is not routinely exposed, although its contour is an important indicator for the position of the zygoma. The impressed zygomatic arch points to a rotational or anteroposterior malposition of the zygomatic bone. Moreover, the impression itself leads to asymmetry of the facial contour. Therefore, the zygomatic arch should be visualized during fracture repair. It was the aim of our study to assess the benefit of ultrasonography for that. Intraoperative ultrasonography was used in 20 traumatized patients. 11 had dislocated fractures of the zygomatic arch, and 9 had combined fractures of zygomatic bone and arch. Ultrasonography was used under sterile conditions. The zygomatic arch was visualized before and after the reduction manoeuvre. Each patient underwent postoperative radiological assessment of the surgical results. Ultrasonography was able to visualize the fractures of the zygomatic arch in all 20 cases. The ultrasonic images were coincident with the preoperative radiographs. In contrast, palpation could not certainly detect the fractures in 12 patients. Using ultrasonography after the reposition manoeuvre, the alignment of the zygomatic arch could be reliably assessed in 19 cases. Only in one patient, ultrasonographic visualization failed because of unusual dislocation. In 9 patients, ultrasonography showed insufficient alignment which again was not revealed by clinical evaluation. These findings induced the surgeon to undertake further reduction efforts, again controlled by ultrasonographic imaging. In 19 out of 20 patients, adequate reduction of zygomatic bone and arch could be achieved, proved by postoperative radiographs. Again, the ultrasonographic findings were coincident with the radiological images. Ultrasonography proved to be a reliable and useful tool for intraoperative reposition control insuring correct

alignment of zygomatic bone and arch and anticipating reoperation because of misalignment.

Keywords: Ultrasonography; Midfacial fracture; Zygomatic bone

Abstr ID 612

198

EXTENDED TRANSCARUNCULAR APPROACH. WIDE EXPOSURE OF THE MEDIAL ORBITAL WALL. AN ALTERNATIVE TO CORONAL SURGERY

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Introduction: Surgery of the orbital medial wall has always been a challenge for the craniofacial surgeon up. The medial wall serves as a support for the lacrimal duct and is perforated by the anterior and posterior ethmoidal arteries. It also provides an excellent surgical plane to the orbital apex and sphenoidal sinus. Until now, either coronal surgery was carried out or there was no guarantee of achieving exposure to the medial wall. With the transconjunctival approach alone we lacked on medial exposure. It was possible to gain some of it by tunnelling beyond the oblique muscle, although very often we were aware of its exact location. **Materials and Methods:** The extended transcaruncular approach combines both the transconjunctival and transcaruncular by means of desinserting the inferior oblique muscle giving the surgeon a wide field of vision of the floor and medial orbital walls. During the period from January 2003 to March 2004, 6 extended transcaruncular approaches have been carried out for the treatment of acute trauma, enophthalmos and Graves disease. Ophthalmologic revision including Lancaster tests was made to all cases.

Conclusions: It is a safe procedure, decreases surgical execution time, which in selected cases save the coronal approach. All patients had excellent aesthetic and functional results. Complications rate due to the extended transcaruncular approach was low.

Keywords: Orbit surgery transcaruncular facial trauma

Abstr ID 235

199

TRANSANTRAL APPROACH FOR THE TREATMENT OF INFERIOR ORBITAL BLOWOUT FRACTURE

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Introduction: Orbital blowout fractures may cause the herniation of orbital fat and the extraocular muscle dysfunction, resulting in enophthalmos and diplopia. Various surgical approaches, such as infraorbital, subciliary, and transconjunctival approaches, to the inferior orbital blowout (IOB) fracture have been reported. These approach methods have some problems, such as scar, ectropion, and entropion. We used the transantral approach and internal fixation with Y-shaped miniplate for reduction of IOB fracture and obtained good results. **Patients & Surgical techniques:** Transantral approach and internal fixation was used for the treatment of IOB fracture in 9 patients. The mean age was 29 years (ranged from 16 to 67). Six patients were male and three female. Two patients had enophthalmos and four patients had the limitation of ocular movement, especially upgaze, with diplopia. IOB fracture was reduced manually under direct vision via transantral approach and Y-shape 5-hole miniplate was contoured and fixed to the inner surface of the posterolateral wall of maxillary sinus with two screws. If the defect of orbital floor is less than 1 cm², IOB fracture was reduced and fixed with a miniplate only. In the larger defect than 1 cm², Medpor (Porex Surgical Inc. College Park, GA, USA) was attached to the miniplate to prevent the herniation of periorbital fat and the drooping of eyeball. **Result:** Good esthetic and functional results were obtained in all patients. In 6 patients, IOB fracture was reduction and fixation with only miniplate. Medpor sheet and miniplate was used in 1 patient and only manual reduction in 2 patients. Two patients showed mild enophthalmos, who had the medial blowout fracture. However, no patient had diplopia or the limitation of eyeball movement. **Conclusion:** These results suggested that this technique is easy and reliable method for IOB fracture.

Keywords: Blowout fracture; Orbital floor reconstruction; Miniplate; Transantral approach

Abstr ID 415

200

RECONSTRUCTION OF ORBITAL FLOOR FRACTURES. A CURRENT SURGICAL MANAGEMENT

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The ideal management of orbital floor fractures continues to be debated. The goal of surgery is 2-fold: To reposition of herniated orbital fat and tissue within the orbit, and restore the anatomy and volume of the orbit. Many materials, both autogenous and alloplastic, have been used to span the defect. **Objective:** We compare the use of autogenous bone with alloplastic implants (Medpor, Titanium mesh) for the repair of orbital floor defects after trauma. **Material and Methods:** one hundred and thirty six patients with orbital floor fracture were analyzed from 2001 to 2004 at Department of Oral and Maxillo-Facial of the University of Messina (Italy). The reconstruction was made by autogenous bone graft, titanium mesh, Medpor.

Results: During a mean follow-up of 16 months, patients had no postoperative complaints. There were no instances of infection at the surgical site and donor site. No evidence of extrusion of implants. No clinical evidence of enophthalmos or diplopia. Extraocular movements were intact in all patients. **Conclusion:** There are so many implants to reconstruct orbital floor fractures after trauma. In this study we analyze the pro and vs of all these implants. Today alloplastic materials merit consideration in many circumstances when bone autogenous graft is contraindicated or when the surgeon does not want to use it.

Keywords: Orbital floor fractures; Orbital trauma

Abstr ID 606

201

MODIFICATION OF MAXILLARY SINUS ENDOSCOPY FOR DISEASES AND TUMOURS OF THE ORBIT INVOLVING ITS INFERIOR WALL AND INFERO-MEDIAL ANGLE.

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Material: The diagnostic procedure was carried out in 20 patients with primary or recurrent tumours of accessory sinuses following multimodal treatment and in 10 patients who had, based on CT scans, fractures of the inferior orbital wall. **Methods:** Maxillary sinus endoscopy was done using biologically non-reactive and optically transparent hydrogel. Under local anaesthesia a trocar was inserted into canine fossa; then maxillary sinus was filled with hydrogel through the tube of trocar. The "gel endoscopy" was used to assess the spread of tumour and make a biopsy of it, and to evaluate the degree of pathological changes, if any, of the inferior orbital wall. The endoscopy completed, hydrogel was vacuum aspirated.

Results: In all cases tumours were successfully sampled. The spread of tumour over maxillary sinus was essentially the same compared to CT scans; the extent of surgery was thus unchanged. As to the fractures of inferior orbital wall, in 5 cases endoscopy and CT rendered the same information. In 3 cases CT scans suggested isolated linear fracture of inferior orbital wall, whereas endoscopy found markedly displaced two-folding fractures. In one case CT found deep fracture of inferior orbital wall, whereas endoscopically it was isolated subperiosteal fracture. One patient was found to have subperiosteal fracture which complied with CT findings. However, endoscopy additionally found inflammation of the sinus, and the patient was not operated.

Discussion: Maxillary sinus endoscopy makes it possible to assess the spread of tumour and verify its nature. "Gel endoscopy" findings significantly altered the extent of planned surgery in 4 out of 10 patients with orbital fractures. The use of hydrogel markedly increases the informative value of endoscopy due to the optimal dissection effect in the gel-filled sinus.

Keywords: Sinus endoscopy; Diseases; Tumours

Abstr ID 770

202

OVER 30-YEARS EXPERIENCE IN THE TREATMENT OF PATIENTS WITH ORBITAL BLOW-OUT FRACTURE

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Aim: to present over 30-years experience in multidisciplinary diagnostics and treatment of patients with blow-out fracture of the orbit. **Method:** 344 patients, including 148 children with blow-out fracture of the orbit (BFO) were treated in our Department from 1971 to 2003. Management comprised mandatory ophthalmologic examination based on special chart of examination in the orbital injuries, including instrumental methods (synoptometr, Hess examination), radiological diagnostics, primary reconstruction of the orbit, orthoptic rehabilitation, eye muscles surgery or prismatic correction in cases of failure. Indications for surgical treatment were as follows: persistent posttraumatic diplopia, positive traction test and positive radiological examination. The aim of primary surgery of the orbit was to restore full passive motility of the eyeball and to reconstruct orbital floor by autogenous bone graft harvested preferably from the anterior maxillary wall. Optimal timing of surgery was 14 days following injury.

Results: There were following criteria of recovery: singular vision, full passive and active eyeball motility, proper position of the eyeball in the orbit. Results of treatment were evaluated with regard of: age, type of diplopia, type and location of fracture, eyeball position, timing of surgery. Recovery was obtained in 40.1% of operated on patients, higher cure rate was observed in children (49.3%), in patients with III type of diplopia (63.2%), in linear fractures (51.2%), in patients operated on up to 14 days following injury (52.2%). **Conclusions:**

1. In diagnostics and treatment of BFO closed cooperation of a surgeon, ophthalmologist and radiologist is essential.
2. Surgical treatment of BFO is indicated in patients with persistent diplopia concomitant with restricted eyeball motility.
3. Prognosis in BFO depends on age of patients, type of fracture and diplopia, enophthalmos, time from injury to surgery.

Keywords: Blow-out fracture; Orbital fractures form of presentation: orally

Abstr ID 666

203

RECONSTRUCTION OF ORBITAL WALL DEFECTS WITH CALCIUM PHOSPHATE CEMENT: CLINICAL AND HISTOLOGICAL FINDINGS IN A SHEEP MODEL, A PILOT STUDY

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The purpose of this pilot study was to evaluate calcium phosphate cement in the treatment of orbital wall defect fractures in adult sheep and to compare this alloplastic material to autologous calvaria split bone grafts. Defects of the medial and inferior orbital wall were set and reconstructed one week later. Additionally, in one group delayed reconstruction after four weeks was performed. After sixteen weeks animals were sacrificed. Clinical, radiological and histological examinations were carried out. The use of cement yielded advantages compared to calvaria split graft, as it makes intraoperative corrections easier to perform. It also led to an increase in precision of reconstruction of the orbital volume and it proved to be osseointegrative. Moreover, both materials were used successfully in combination. Regions of most intensive remodeling were the anterior orbital floor and the adjacent orbital rim. The period of time between trauma and reconstruction showed to be an important parameter for both eye globe motility and the formation of new bone tissue. In contrast to animals treated one week after trauma, those treated after four weeks showed impaired eye motility but increased and accelerated bone formation. The preliminary results of this study demonstrated the potential of calcium phosphate cement as a useful biomaterial for the reconstruction of the orbital region. Further animal trials are necessary to investigate its capability as a carrier for mediators where bone healing should be influenced or supported.

Keywords: Orbit defect fractures calciumphosphate cement image guidance trauma

Abstr ID 711

204

BLOW-OUT FRACTURES IN CHILDREN. 5 YEARS EXPERIENCE

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Aims: True blow-out fractures in are not very common. To present our experience in the treatment of orbital floor fractures in children. **Material and Method:** 10 children with blow-out fractures (9 male, 1 female), age 5–14 years, treated from 1999 to 2003. In all cases diplopia and impairment of eye movement existed. Diagnosis was established from clinical and radiological findings including CT-scan. The orbital floor was approached via lower eye lid incision. The fracture site was revealed and the soft tissues entrapped in towards the sinus, were elevated as far backwards as needed (in all cases not more than 2.6 cm from the orbital rim). The thin fractured bones were restored and the integrity of the orbital floor was secured by applying an alloplastic material. Soft dura substitute was used in cases of linear fractures or solid pre-shaped polyethylene biomaterial (Medpor®) in severe fractures with difficulty in securing stability. Additional antral packing was used in one case. **Results:** There was no

post- surgical complication. Diplopia and impairment of eye bulb movement subsided in all cases. In 3 cases with late treatment, amelioration was obvious after surgery but full recovery of eye abilities was achieved 2 to 3 months after surgery. **Conclusion:** Early diagnosis of blow-out fractures in children is important for immediate good results. Any central nervous damage leading to impairment of eye movement must be excluded. Surgical treatment is the same as in adults, aiming in establishing a continuous and smooth floor for the eye bulb movements. Alloplastic material proved to be a good choice in all cases.

Keywords: Blow-out fractures; Children; Treatment

Abstr ID 621

205

TITANIUM MESHES IN CRANIO-MAXILLOFACIAL RECONSTRUCTION. OUR EXPERIENCE IN TWO YEARS AND 28 PATIENTS

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Introduction: Multiple materials are currently used for frontal and orbital reconstruction (most of the times autogenous bone, or alloplastic materials: bone cements, titanium). Titanium meshes have proved to be an adequate alternative to choose among all of them because of their biocompatibility and friendly use. **Purpose:** To explain our experience with the use of titanium meshes for orbital and cranial reconstruction, showing some possible indications in facial traumatology (acute and posttraumatic sequelae) and reconstruction after oncological resection. **Patients and methods:** 32 titanium meshes were used in 28 patients for craniofacial and/or orbital defect reconstruction between January 2002 and December 2003 at our institutions. The different indications were as follows:

- 1- Primary orbital or orbitocranial reconstruction after cranial base tumor resection (6 meshes in 4 patients)
- 2 - Secondary cranio-orbital late reconstruction after tumor resection (4 meshes in 4 patients). Five oncologic patients received full-course radiation therapy, pre-operatively (3) or postoperatively (2).
- 3 - Acute posttraumatic orbital defects: 19 titanium meshes (17 patients).
- 4 - Late posttraumatic orbital defects in three patients (3 meshes). The following approaches were used: coronal (10), transconjunctival (6), subtarsal (4), extended transcaruncular (2) and lacerations or scars (6). The average follow-up period was 13 months (range 4–19 months).

Results: No infections, exposures or material failure have been observed. The following complications were found: residual enophthalmos in two cases (secondary oncological reconstruction group), diplopia -in resolution- (in one late posttraumatic sequelae) and a case of lacrimal duct section when using a transconjunctival approach. **Conclusions:** In our experience, the use of titanium meshes, alone or

associated with bone cements or bone grafts provides good aesthetic and functional results when used for reconstruction of orbital or craniofacial defects, with minimal risk of infection or another complications.

Keywords: Titanium meshes; Cranio-maxillofacial reconstruction; Orbital reconstruction

Abstr ID 223

206

APPLICATION OF THE MANDIBULAR OUTER-TABLE BONE GRAFT IN CRANIO-MAXILLO-FACIAL SURGERY: INDICATION, TECHNIQUE AND RESULT

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Aims: The purpose of this study was to evaluate the application of the mandibular outer-table as an autogenous bone graft for the surgical management of the cranio-maxillo-facial deformity. **Method:** A total of 69 patients suffering from cranio-maxillo-facial deformities or bone defect were treated at the department of cranio-maxillo-facial surgery of Beijing Plastic Surgery Hospital. The patients were recorded of 15 cases of cranio-maxillo-facial deformities, 33 cases of post-trauma deformities, 3 cases of the bone reconstruction after tumor resection and 18 cases of the cranio-maxillo-facial cosmetic surgery. All the patients were repaired using the mandibular outer-table as an autogenous bone graft. The outer mandibular table was harvested through interoral approach. Assisted with titanium rigid fixation technique, the mandibular outer-table autogenous bone graft were used to reconstruct the craniofacial bone framework or as onlay/inlay bone graft for the facial augmentation. Details were recorded of age, sex, diagnosis with emphasize of their indications and clinical results. **Results:** All patients were observed during 6–48 months. The grafted bone healed well with the adjacent bone. No obvious bone absorption was observed, the craniofacial appearance were greatly improved.

Conclusion: The mandibular outer-table autogenous bone graft easy to harvest, was composed mainly of dense cortex bone and possesses superior mechanical quality. It can be used either as onlay/inlay bone graft for regional augmentation or as pillar material for craniofacial framework reconstruction.

Keywords: Bone graft; Mandibular outer-table; Cranio-maxillo-facial deformity

Abstr ID 298

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TEAM APPROACH TO SEVERE CRANIO-MAXILLOFACIAL INJURIES

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The Aim: The raising number of severe craniofacial injuries necessitated one step treatment by means of modern diagnostic and therapeutic techniques. Such team was created in The Trauma Center of the State Clinic Hospital nr 1, gathering specialists in neurosurgery, ophthalmology, maxillo-facial, plastic and general surgery. In this paper we present and discuss our experiences, method of treatment and results, Material and methods.

Abstr ID 244

208

THE SONOGRAPHY AS A TRAINING TOOL FOR SCREENING OF DUBIOUS MIDFACIAL FRACTURES

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Aims: In uncertain midfacial fractures, sonography is an alternative first line imaging modality to conventional radiographs. Patients with sonographically confirmed fractures can then be directly admitted to three-dimensional imaging, resulting in decreased radiation exposure, the conventional radiographs being omitted. **Methods:** Using a high-frequent linear and a curved array scanner, in a healthy proband images of the zygomatic arch, the anterior maxillary sinus wall, the infraorbital rim and the lateral orbital wall were obtained. For identification and anatomical allocation corresponding navigated ultrasound images of a reference skull were generated and fused with segmented CT data set. Navigated sonography was reproduced in 10 patients with orbitozygomatic fractures by one examiner. Therefore, the CT data sets, performed during preoperative diagnostics, were fused with the ultrasound images. **Results:** Because of different coupling shapes the high-frequent linear array scanner was subjectively found to be more suitable for sonography in the field of the zygomatic arch, the anterior maxillary sinus wall, and the infraorbital rim, the curved array scanner for transbulbar sonography of the orbital walls. After coupling sonography and the navigation system and referencing the scanner, it was possible to verify ultrasound findings objectively by navigation of the scanner and fusion with the CT data set. Using the reference skull, ultrasound images corresponding to normal findings were obtained and with the fused CT data, providing coloured segmentation of the facial bones, an anatomical correct identification was possible. After training, one examiner was able to correctly identify orbitozygomatic fractures in 7 of 10 patients using ultrasound. **Conclusion:** Fusion of ultrasound images and corresponding CT data, with the help of a navigation system, a sonographical training tool for preliminary evaluation of midfacial fractures is available.

Keywords: Sonography; Midfacial fracture; Navigated ultrasound

Abstr ID 275

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THE USE OF A NOVEL 3D PLANNING ENVIRONMENT IN TREATMENT PLANNING SECONDARY TRAUMATIC FACIAL DEFORMITY

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There is little doubt that advances in the imaging of complex facial injuries have facilitated their understanding and subsequent management. In complex facial injuries accurate imaging is achieved by helical CT scanners providing a continuous stream of axial images which may be formatted to produce 3D or coronal views, allowing easier interpretation of conceptually difficult image series. 3D reconstructed images can provide precise and detailed information for the anatomical interpretation of complex skeletal fracture configurations, enhancing the specialist's perception of them, and facilitating more efficient treatment planning. The management of secondary traumatic deformities involves the use of conventional osteotomies of maxilla, zygoma, and mandible where appropriate, together with the use of bone grafts and alloplasts. We report a new method of interrogating maxillofacial CT data using a novel 3 dimensional planning environment utilising the SimPlant craniofacial module (Materialise) to plan precise bony movements, together with the shape and volume of both bone grafts and alloplasts. Three post traumatic cases are presented to illustrate the value of this technique. This technique can be used to aid both the surgeon in terms of operative planning, choice of donor site, and the volume of alloplast required. All operative planning could be performed on a laptop PC which facilitated pre and intraoperative understanding and better informed consent for the patient. We commend the use of this method.

Keywords: Bone defects; Computed tomography; Computer aided design; Secondary facial deformity; Reconstructive surgery

Abstr ID 712

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CURRENT CONCEPTS ON CRANIO-ORBITO-FACIAL TRAUMA IN PEDIATRIC AGE

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Fractures of the forehead, anterior cranial base and orbito-nasal-ethmoid fractures, combined with brain injury and dural tears, constitute a frequent pattern of injury in infants and children younger than 5 years, when major anterior craniofacial trauma occurs. The Authors present their experience in dealing with pediatric traumatology in the last

15 years. 184 patients were evaluated (1998–2003) based on the different type of trauma. 133 were treated in acute stage and 51 as a secondary treatment. Orbital fractures (31%) were more frequent than mandibular (29%). The mechanism of injury can be summarized as follows: traffic accidents 52%, sport injuries 30%, falls 15%, miscellaneous 3%. Complete evaluation using CT scan combined with neurosurgical anaesthesiological and craniofacial assessment must be performed to evaluate the patient. A combined neurosurgical and craniofacial reconstructive procedure is necessary for the repair of the injured brain, dura and skeleton. Once the brain and dural injuries have been managed by the neurosurgeon, the anterior cranial base must be reconstructed by applying the basic craniofacial principles: reduction and stabilization (with microplates, screws or reabsorbable plates) of all the remaining fractures, sealing of the anterior cranial base. When bony defects are present autogenous cranial bone graft is harvested and used. This form of Team approach for the early diagnosis and management of combined injuries, is cost effective and results in rapid facial rehabilitation for the injured child.

Keywords: Cranio-orbito-facial trauma pediatric age autogenous cranial graft

Abstr ID 122

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AN ALTERNATIVE SURGICAL TECHNIQUE TO CRANIALIZATION IN THE MANAGEMENT OF POST- TRAUMATIC CHRONIC FRONTAL SINUSITIS: A PRESENTATION OF TWO CLINICAL CASES

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Fractures of the frontal sinus could be the origin of chronic infectious complications. Osseous sequestra block the drainage of the lateral regions of the frontal sinus. This lack of drainage leads to chronic sinusitis. The treatment of choice is usually surgical. Two treatments are usually suggested either cranialization or obliteration of the frontal sinus with autogenous or heterogenous materials. These treatments require the complete removal of the sinus mucosa. This could be difficult due to the architecture of the sinus or the comminution of the fractures. Remnants of this mucosa increase the risk of the development of mucocoele which could be complicated by a meningitis, cerebral empyema, or meningocele. We propose an alternative surgical technique in which the physiology of the sinus is restored. Briefly, this technique consists in removing the posterior frontal sinus wall replacing it by a pedicled graft and recanalization of the frontal sinus duct. After an anatomical and pathophysiological summary, and a literature review, we will present two clinical cases who had undergone the proposed surgical technique with their follow-up. These patients had a follow-up of ten years without any complications which consisted of clinical examination and radiological

evaluation including computed tomography and magnetic resonance imaging.

Keywords: Chronic frontal sinusitis; Cranialization; Frontal sinus fracture

Abstr ID 128

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RECONSTRUCTION AND CORRECTION OF POST-TRAUMATIC ENOPHTHALMOS.

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Aims: Enophthalmos is defined as a back-ward (and usually downward) displacement of the globe into the bony orbit. In post-traumatic forms the mechanisms which determine globe position are: 1) the enlargement of the orbital cavity, 2) the escape of orbital fat into the maxillary sinus, 3) fat atrophy, loss of ligament support and scar contracture. The aim of this paper is to analyse the strategies to prevent enophthalmos in orbito-zygomatic fractures and to correct late post-traumatic enophthalmos.

Methods: In this study 80 patients (52 cases of orbito-zygomatic fractures and 28 late post-traumatic enophthalmos), were treated between January 1998 and August 2003, by fractures reduction, in primary enophthalmos. In enophthalmos as a sequelae, the treatment was orbital reconstruction in combination with bone-grafts harvested from calvaria or iliac crest. In some cases biomaterial were also employed. All these techniques may also be combined depending on the type of enophthalmos. **Results:** In all cases there were satisfactory results: it is evident that a perfect correction of the deformity is difficult to achieve. Often soft-tissue changes limit the aesthetic result despite adequate bony correction. **Conclusion:** Post-traumatic enophthalmos is a complex orbital deformity resulting from an injury disrupting orbital bone and ligament support allowing displacement and a change in shape of the orbital soft-tissue contents. The essential principles of surgical correction include full dissection of the bony orbital soft tissues including the posterior orbit with restoration of bony orbital volume by the judicious insertion of bone grafts to correct the vertical as well as the antero-posterior position of the ocular globe. The combination of techniques of craniofacial exposure, osteotomies and bone grafting allow the condition of post-traumatic enophthalmos to be greatly improved with minimal complications.

Keywords: Enophthalmos orbito-zygomatic fractures orbital reconstruction

Abstr ID 395

213

RECONSTRUCTION OF INTERNAL ORBITAL WALL FRACTURE WITH ILIAC CREST FREE BONE GRAFT; CLINICAL, CT AND MRI FOLLOW UP STUDY

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Purpose: To clinically and radiologically assess the outcome of the internal orbital reconstruction with iliac bone graft. **Patients and Methods:** Twenty-four consecutive patients with unilateral orbital wall fractures were enrolled in this prospective study. A medial cortical wall from the anterior ileum was used for reconstruction. At each follow up the position of the globe was clinically assessed. The coronal and sagittal computer tomography (CT) and magnetic resonance imaging (MRI) were used to observe the posture of the graft, bone defects and intraorbital soft tissue changes. **Results:** Fifteen males and 9 females with mean age of 37.3 years were included in the study. Most of the orbital fractures (46%) were pure orbital floor fractures. The mean follow-up was 7.8 months. Only one patient with a medial wall and floor fracture required a reoperation due to insufficient bone graft. At the last follow up this patient was the only one (4%) who suffered both from enophthalmos (2 mm) and hypophthalmos (3 mm). Five patients (21%) had hypophthalmos (>1mm) at the end of the study. Resorption and remodeling were detected in all grafts, but none were totally resorbed. Sagittal or coronal postures of the bone grafts were assessed good in 18 (75%) orbits. Bone defects (>10 mm) at reconstructed areas were detected in 13 orbits (54%). Scar tissue was observed only in 3 (13%) reconstructed orbits. **Conclusions:** Resorption rate turned out high, but most of it was advantageous remodeling. The overall outcome was good. Secondary operation leads to poor outcome. Thin CT and MRI sections, 2mm or less, are needed to evaluate accurately the place and the posture of bone graft and the volume of the orbit.

Abstr ID 371

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ALGORITHM OF THE SURGICAL TREATMENT OF POSTTRAUMATIC MIDFACE DEFORMITIES

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Aims: The aim of our study was to introduce the algorithm of the surgical treatment of the patients with established posttraumatic midface deformities using free bone and cartilaginous grafts. **Materials and Methods:** During the period 1998–2003, 103 patients treated for posttraumatic zygonasoorbitalis and maxillary complex deformities. CT scans have greatly facilitated the assessment of displaced bones, bone defects and enabled to measure bone orbital volume. All patients had received open reduction and internal fixation through the coronal, subciliary and intraoral incisions. In cases with nose deformities we performed close and open rhinoplasty

approach. For correction of eno- and hypophthalmus, defects of the zygoalveolar crest and maxilla we used calvarial bone grafts, in nose reconstruction we preferred autogenous cartilages grafts. Rather than closing the subcilisry incision at this point we performed periosteal suspension of the lower eyelid and cheek to prevent ptosis of soft tissues in the region of malar prominence. Simultaneously depending on the type of the soft tissues deformities and the patient's age we perform soft tissue reconstruction and different types of the aesthetic operation. **Results:** Total correction or significant improvement of the enophthalmos, zygomatic projection, shape of the nose and the occlusion were achieved in each case. Residual enophthalmos (1–2 mm) has remained in 3 patients with severe posttraumatic deformities. Temporary palsy to the frontal branch of the facial nerve has occurred in one patient. Permanent scleral show was in 2 cases. **Conclusions:** Late repair of the deformity have to be more extensive than primary repair, because reposition of the bone fragments and reconstruction of the bone defects are not enough for complete correction of the deformity. Simultaneously soft tissue reconstruction is necessary to achieve good aesthetic results.

Keywords: Posttraumatic midface deformities; Enophthalmos; Zygonasoorbital deformities; Calvarial grafts; Cartilage grafts

Abstr ID 483

215

EARLY POST-OPERATIVE REHABILITATION OF PATIENTS SUFFERING FROM NASAL BREATHING DISTURBANCES

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Nowadays the quantity of bone-recovering operations made on an average zone of the face has grown up. This situation concerned with the growing up quantity of chronic inflammatory diseases of top respiratory tract and traumas as well as with the improving technologies of surgical interventions made for patients with innate or posttraumatic disturbances of bones of the facial skeleton. According the foregoing there is a necessity for an adequate nasal tamponade which could provide recovering of nasal breathing in the early post-operative period. So we developed the complex of medical and diagnostic measures providing more effective hemostasis and recovering of nasal breathing in the early post-operative period for patients with chronic inflammatory diseases and disturbances of nasal bones and sinuses. Preliminary, since 2002, we carried out the analysis of condition of patients with innate or posttraumatic disturbances of an average zone of the face. We should note that nasal breathing recovering in the early post-operative period (especially after prolonged surgical interventions in bones of an average zone of the facial skeleton) provides a mild post-anesthetic period and a decrease of a post-operative acidosis. And the

nasal tamponade, of course, carries out function of a reduction of a bleeding. We researched particular features of application of balloon tamponade in clinical practice which has got two basic functions: hemostasis and recovering of nasal breathing. We operated 30 patients and recovered nasal breathing right after the surgical intervention. This let us fundamentally reduce reactive alterations of a mucous membrane. Cases of an exacerbation of inflammatory processes became less often marked. Results are proved by the complex of methods of examination used in cranio-facial surgery and otolaryngology

Keywords: Innate or posttraumatic disturbances; Nasal breathing; Effective hemostasis

Abstr ID 81

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INTEREST OF A NEW VERSATILE MINIPLATE DESIGN FOR MAXILLARY ORTHOGNATHIC SURGERY

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Aims: The Lefort I osteotomy has become a very usual procedure. It is principally due to the use of rigid osteosynthesis devices based on screwed titanium miniplates. Unfortunately, the amount and the vector of the bone replacement are very variable. Furthermore, the morphological individual bone surface variations are great. Thus, it is necessary to perform a tedious, time-consuming and often difficult modelling of the plates for each of the four osteosynthesis sites. **Materiel and Method:** Our new titanium plate is based on a concept of great malleability in all the directions. Thus, the medial segment of the plate is simply a one square millimeter bar. The two extremities of the plate are the same as usual, with two holes at each side. This materiel has been used in 85 consecutives cases of Lefort I osteotomies for four years. The movements were sagital for 74 cases and vertical for 52 cases. Four plates were systematically placed. The screws were standard (2mm). **Results:** In all cases a normal bone healing occurred, without complication due to the osteosynthesis materiel and particularly without pseudarthrosis nor delayed consolidation. No initial relapse nor secondary displacement was observed. In some cases where this materiel was removed (for personal reasons), osseous healing was seen as complete without any inflammatory reaction. **Conclusion:** This simple new designed osteosynthesis miniplate leads to a quick and safe immobilisation of the Lefort I osteotomy. During surgery, it requires less time than other materiel to be adaptated. After surgery, it is very well tolerated and permits a good bone healing. It allows a simplification for the surgeon and the instrumentist while only three different sizes are enough for all cases. It appears very usefull, reliable and, last but not least, cost effective.

Keywords: Osteosynthesis; Lefort i; Maxilla; Osteotomy; Miniplate

THERMOGRAPHIC OBSERVATIONS DURING OSTEOSYNTHESIS OF THE MID-FACE*Jan-Hendrik Lenz, Jörg Ritzke, Ernst Langnau, Walter Wild, Burkhard Kramp, Karsten KH Gundlach*

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Aims: Drilling for osteosynthesis in the mid-face can cause high temperatures in tissues. Necrosis and loss of implants are possible consequences. Visualization of tissue temperatures is possible by using thermovision by means of infrared light. The technique renders quantification/interpretation of collected data. **Material and Methods:** In experimental and clinical observations the thermovision camera AGEMA 470 was used. First, 34 drillings were made in dried macerated skulls without cooling and 36 drillings were made saline cooling using in the mid-face of moistened and warmed (37°C) macerated skulls. Resulting temperatures were noted on outer and inner surfaces of skulls. Then, 62 drillings with saline cooling and screwings during management of midfacial fractures were evaluated using standard miniscrews/plates (2.0 mm Stryker-Leibinger, 2.0 mm Modus-Medartis). **Results:** In dried skulls extreme temperatures of up to 60 degrees were measured during drilling, screwing resulted in a lesser increase of temperature. Temperatures at inner bony surfaces were even higher than at outer ones. Observations in moistened and warmed skulls revealed major temperature rises in the bone at the lateral orbit during drilling (up to 22°C). Screwing did not cause any great increase in temperature (less than 7°C). Clinical measurements revealed no differences between two miniscrew systems applied. No increase of temperature was measured at the lateral orbit. Using a hand piece for drilling with integrated cooling caused low rises of temperatures only. Temperature rises of up to 26 degrees were noted when cooling with a syringe. Highest temperature differences (up to 5 degrees) were noted during screwing at the infraorbital margin. **Conclusions:** Deep drilling can cause high temperatures. Cooling with a hand piece seems to be most effective. The use of a syringe is not recommendable. Highest temperature rises were measured at the infraorbital margin. Drilling and screwing should be performed especially careful there.

Keywords: Thermography; Osteosynthesis; Mid-face; Traumatology

TRANSGINGIVAL LAG-SCREW (TLS) IN OSTEOSYNTHESIS OF ALVEOLAR PROCESS FRACTURE*Nyárády Z, Olasz L, Gelencsér G, Kinczel G and Nyárády J*

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Introduction: Fracture of the alveolar process is a common injury in oral traumatology. In some cases, traditional fixation of the fractured piece may not be possible. The teeth necessary for occlusion or splinting are missing. The fracture line and soft tissue injury may jeopardize the blood supply of the broken piece. Even in these extreme and rare situations, the best rehabilitation is needed to avoid the loss of hard and soft tissue, needing secondary reconstruction. The lag-screw technique, developed by AO in the 1960's, are widely used in traumatology. The lag-screws not only fix and compress the fracture, facilitating bone healing. In this paper we present a transgingival introduction of lag-screw technique for the osteosynthesis of alveolar process fracture. **The case:** A 42 year old male presented to our clinic with a bilateral fracture of the maxillary alveolar process. The line of fracture and accompanying soft tissue damage made traditional fixations impossible on the left side. On this side we applied three L13 mm D2.0 mm mini-screws (ProMed) transgingivally in a dynamic compression manner. The moving fragment was drilled with a larger diameter instrument, than the screw. The right side was operated on traditionally, using "Würzburg" micro-plates (Stryker-Leibinger). **Results:** The left side healed nicely. On the conventionally operated side bone loss developed. We found TLS easy to use, quick and free of problems. It is a minimal invasive technique. **Discussion:** The technique is recommended for those alveolar fractures when the blood supply is jeopardized and conventional fixation is not possible.

Keywords: Lag-screw; Transgingival; Minimal invasive; Alveolar process fracture; Osteosynthesis

TYROSINE DERIVED POLYCARBONATE IS OSTEOCONDUCTIVE AND INDUCTIVE IN RABBITS*Asikainen AJ, Noponen J, Hietanen J, Laitinen O, Peltö M, Kellomäki M, Ashammakhi N, Lindqvist C, Suuronen R*

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Tyrosine derived polycarbonates have been successfully used in fixing osteotomies in cancellous bone in rats and have shown to elicit direct bone apposition in rabbits. Tyrosine derived polycarbonates show similar degrading pattern as the currently clinically used polylactides. In addition, the implants have not shown to induce fibrous capsule formation at the bone-implant interface or release acidic residues during degradation. In this study the suitability of poly (desamino tyrosyl-tyrosine ethyl ester carbonate) [PDTE carbonate] membrane for guided bone regeneration was evaluated in artificially created mandibular defects in rabbits. Standardized through and trough defects (6 × 12 mm) were created in mandibular angle of 20 NZW rabbits. The defects were enveloped with PDTE carbonate membranes and fixed with absorbable sutures at the superior edge through the intact bone. Follow-up times varied from 6 to 52 weeks. Samples were embedded in methylmetacrylate and sections were prepared using cutting

and grinding technique. Sections were stained with Masson-Goldner trichrome stain. At six weeks, histologically, ossification of the defects proceeded well, no fibrous capsule formation was seen where the membrane was at close contact with bone, supporting the previously published study. At 12 and 24 weeks newly formed bone is evident in all samples. Bone orientation and structure was, however, not yet normal. Small metaplastic bone islets were seen at sites opposite to the defect, next to the membrane. Bone was also growing along the membrane at the superior edge of the membrane. Based on these results we conclude that PDTE carbonate is a promising material for guided bone regeneration. However, further studies are needed to confirm its behaviour in tissues and limitations of its use. To our knowledge this is the first time PDTE carbonate is reported to be both osteoconductive and –inductive.

Keywords: Bioabsorbable; Guided bone regeneration; Pdtc carbonate; Mandible; Reconstruction

Abstr ID 160

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21 YEARS EXPERIENCE WITH RESORBABLE OSTEOSYNTHESIS MATERIALS

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Aims: 20 years ago we have performed animal experiments with resorbable osteosynthesis materials. Our experiences had been based on the literature written by Cutright (1971). Our excellent results of our animal experiences were published in 1985*. **Method:** 1984 I performed my first resorbable osteosynthesis of an orbital fracture in the frontozygomatic suture. This procedure was performed with a PDS-plate and PDS-screws. Also there had been some problems in the beginning in due time we got good results due to the fast development of better materials. **Results:** In the meantime we have performed in our clinic 245 patients with 473 resorbable osteosynthesis plates in the facial skeleton. Several teams at our clinic have used different resorbable osteosynthesis materials and have compared these different materials. Since 2000 we have started to treat mandibular fracture with resorbable osteosynthesis materials without intermaxillary immobilization. Up to now we have treated 48 patients with 80 fractures and 126 plates without major complication. (Yerit et al. 2002). **Conclusion:** What we did not expect in the year 1984 that there will be such a fast development of excellent resorbable osteosynthesis material is by now reality. We know by now that this is a worldwide successfully used method, also in the mandible.

References

- Cutright, D.E.: Fracture reduction using a biodegradable material, polylactic acid. *J Oral Surg* 29, 393 (1971).
 Experimental and Clinical Results of New Advances in the Treatment of Facial Trauma, R. Ewers, F. Härle, *Plast Reconstr Surg* 73, 25–31(1985).

Yerit K.C., Enislidis G., Schopper C., Turhani D., Wanschitz F., Wagner A., Watzinger F., Ewers R., Fixation of mandibular fractures with biodegradable plates and screws. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2002 Sept., 94(3):294–300

Abstr ID 726

221

THE USE OF BIODEGRADABLE BONE PLATES IN MAXILLOFACIAL SURGERY

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The author has placed biodegradable bone plates and screws in the facial skeleton of more than 300 patients for a variety of applications. Three products have been used for orthognathic/craniofacial surgery (258), trauma of the upper, middle and lower face (16), and to stabilize bone grafts to the facial skeleton(11).

Of the three manufacturers, there were 179 patients who received Bionx, 99 received Inion, and 7 received Macropore. The age of the patients (23.28 years \pm 12.05) and gender distribution between the groups is similar.

Material failure and exaggerated inflammation are the two complications that have been noted. The need for a second operation to restabilize or to remove the devices is 7 (3% for breakage, 4% for inflammation).

Subtle differences between the manufacturers are noted but are not significant. The site of the placement is significant for breakage with all occurring in the mandible. For inflammation the majority occurred in the midface/orbit. Patient size (>200lbs), and ability to cooperate are predictors of failure. No identifiers for exaggerated inflammation have been identified other than site (maxilla) of placement. Patient acceptance of this material is very high (>98%). In conclusion, biodegradable bone plates and screws have a place in oral and maxillofacial surgery. Satisfactory or better results have been obtained in most patients and appeal is very high. The systems for placement remain awkward and primitive and the ultimate potential of this material (incorporation of bone growth factors) has not yet been realized.

Abstr ID 135

222

BIODEGRADABLE OSTEOSYNTHESIS MATERIALS FOR STABILIZATION IN PEDIATRIC MIDFACE FRACTURES, OUR EXPERIENCE.

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Introduction: The features of an ideal bioresorbable fixation system include the following: 1) it provides sufficient initial strength to stabilize bone segments and

allows uneventful bone healing, 2) it degrades predictably and completely after osteosynthesis has restored adequate intrinsic bone strength, 3) there is no need for a surgical procedure to remove the implants, 4) biocompatibility so has not to induce a significant inflammatory foreign response or immunological reaction, 5) there is technical ease of use, 6) it's cost-effective. **Materials and Methods:** From January 2001, 60 pediatric patients with midfacial fractures were surgically treated with resorbable plates. **Results and Discussion:** In all patients the resorbable plates provide a rigid fixation of facial fractures after the reduction and postoperative stability. The plates degrade predictably and completely after osteosynthesis has restored adequate intrinsic bone strength. Before usage, plates have to be warmed through electric thermal unit. This allows modelling and adaptability upon the type of fracture and therefore the highest healing. More over surgical time can be reduced and implants removal through secondary surgical procedure can be avoided. This material does not induce growth restriction, hardware migration and change in the craniofacial morphology; so the resorbable fixation is an attractive option in pediatric maxillofacial surgery. The biocompatibility showed satisfactory wound healing with no sign of infection or local inflammation, and the cost of these materials is similar to titanium osteosynthesis. **Conclusions:** Our early experience suggests that in pediatric midfacial fractures the resorbable devices must be used. These materials have the same advantages of the rigid fixation, and do not interfere with patients' skeleton growth.

References

- Eppley, Barry L.; Sadove, A. Michael.; Havlik, Robert J.M.D. Resorbable plates fixation in Pediatric Craniofacial surgery. *Plast. Reconstr Surg*, Volume 100(1). July 1997. 1–7.
- Habal, Mutaz M.D. Resorbable Fixation in Pediatric. Craniofacial Surgery. *Plast Reconstr Surg* 100(1). July 1997. 8–13.

Keywords: Pediatric biodegradable osteosynthesis

Abstr ID 484

223

USE OF DESIGNS FROM BIORESORBABLE MATERIALS FOR FIXING BONE FRAGMENTS IN MAXILLOFACIAL SURGERY

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The growth of congenital deformations jaws planned in last years and also steady increase of the trauma and post-traumatic deformations of bones maxillofacial area, forces surgeons of all world to develop new and to improve already existing methods of treatment of fractures and orthognatic operations. The success of surgical treatment in many respects depends on reliability of fixing of bone fragments. The rigid of fixing under condition of correct

comparison of bone fragments provides optimum conditions for healing a bone wound and early functional loading. In trauma, orthognatic and reconstructive surgery of maxillofacial area various kinds of fixation systems are widely used. It is necessary to recognize as the most perspective bioresorbable plates and screws. Since 2001 year experimental researches of bioresorbable materials (Bionx Imp.) took part in our institute. The results of these researches allowed us to recommend this plates and screws for wide surgical practice. There we 10 patients operated using these materials. Patients had the congenital and acquired deformations of jaws, traumas and posttraumatic deformations were made. Were used bioresorbable plates and screws of firms Bionx Imp. (Linvatec) and W. Lorenz. The received results allow to draw a conclusion on successful treatment and absence of any complications.

Keywords: Congenital deformations; Bioresorbable plates and screws

Abstr ID 7

224

LABORATORY-EXPERIMENTAL BASIS FOR USE OF RESORBABLE PLATES FOR JAWS OSTEOSYNTHESIS

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Aims: To evaluate a new modification of biocompatible material in laboratory conditions and in clinical experiment in order to introduce this material in clinical practice.

Methods: For this experiment we have chosen modern bioinert resorbable polymer N-vinylpyrrolidone. Orotic acid was used as material with ability to stimulate regeneration. For this trial we used 15mm long, 8mm wide and 1mm thick miniplates. These were fixed with 9mm long and 1mm in diameter pegs which were also made of N-vinylpyrrolidone. We have conducted experimental research on 60 rabbits in which artificially made area of bony defect was replaced with N-vinylpyrrolidone miniplate fixed by titanium screws. For the control group we used Lactosorbä miniplates. After 3, 6, 9 and 12 months a degree of miniplate resorption was evaluated. **Results:** We obtained histological evidence that the rate of healing at the bone-miniplate interface was higher in N-vinylpyrrolidone miniplates compared to Lactosorbä. The timing of resorption for N-vinylpyrrolidone miniplate and N-vinylpyrrolidone miniplate combined with orotic acid is as follows: 3 and 4 months – no changes, 6 months–first appearance of decondensation zones, 9 months–separation of miniplate fibers, 12 months–fragmentation of miniplates and resorption of stiffen fibers. Lactosorbä miniplate remained intact for the whole period of 12-month observation. **Conclusion:** The results we obtained allow us to make a conclusion that N-vinylpyrrolidone resorbable miniplates have high degree of acceptability by surrounding bony tissues. It has been proved that orotic acid serves as material increasing and facilitating regeneration and osseointegration and that it has undoubtedly positive effect.

Keywords: Jaw fracture; Osteosynthesis; Resorbable plates

Abstr ID 33

225

MICROSCOPICAL EVALUATION REVEALS THAT SELF-REINFORCED POLYLACTIDE-POLYGLYCOLIDE 80/20 SCREWS TAKE MORE THAN 1/2; YEARS TO RESORB IN RABBIT CRANIAL BONE

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The aim of this study was to assess tissue reactions to bioabsorbable self-reinforced polylactide/polyglycolide (SR-PLGA) 80/20 miniscrews in rabbit cranial bone. One PLGA screw was implanted on one side and one titanium screw on the other side of the sagittal suture ($n = 21$). Three animals were sacrificed after 2, 4, 8, 16, 24, 54 and 72 weeks. In histological examination the numbers of macrophages, giant cells, active osteoblasts and fibrous tissue layers were assessed and degradation of the bioabsorbable screws was evaluated. After two weeks, macrophages were seen near the heads of both screws. After 4 and 8 weeks, the bioabsorbable screws were surrounded by fibrous tissue. Osteoblastic activity and groups of several giant cells were seen. After 24 weeks, a significant change in the morphology of the PLGA screws had occurred. Osteoblastic activity and the amount of giant cells had decreased. After one year, some PLGA biomaterial was still present. PLGA screws had been replaced by adipose tissue, fibrous tissue and "foamy macrophages" which had PLGA particles inside them. After 1/2; years, the amount of biomaterial remaining had decreased remarkably. The particles of biomaterial were inside "foamy macrophages". SR-PLGA 80/20 screws are biocompatible and have no clinically manifested complications when used in cranial bone of rabbits. No contraindications as regards their clinical use in craniofacial surgery was found when studied in cranial bone of rabbit. **Keywords:** cranial bone, rabbit, SR-PLGA, tissue reaction, titanium

Keywords: Cranial bone; Rabbit; SR-PLGA; Tissue reaction; Titanium

Abstr ID 32

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CT EVALUATION OF PERSISTENCE OF INDENTATION WITH BIOABSORBABLE POLY-L/D-LACTIDE VS. SILICONE SPONGE SCLERAL BUCKLING IMPLANTS

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Purpose: To measure the amount and duration of indentation depth achieved with biodegradable poly-L/D-lactide 96/4 (PLA96) and silicone sponge implants. **Methods:** Thirty rabbits underwent a scleral buckling

procedure. A PLA96 buckling implant was used in 15 and a silicone sponge buckling implant in 15 rabbits. A circumferential scleral buckling implant was sutured episclerally on the left eye of each rabbit, just temporal to the superior rectus muscle and 7 mm posterior to the limbus. CT scanning was performed at one week, and three and five months postoperatively. **Results:** The PLA96 buckling implant (implant diameter 3–3.5 mm) used in this study created lower indentation than the silicone sponge implant (implant diameter 4 mm), possibly as a result of the surgical technique. The indentation created by the PLA96 implant decreased over time compared with the silicone implant. There were no complications related to either kind of implant. **Conclusion:** Both silicone sponge implants and PLA96 implants caused indentation that decreased in a comparable manner over the follow-up period (5 months). **Key words** Bioabsorbable, experimental, polylactide, retinal detachment, scleral buckling **Brief summary statement:** An experimental study: bioabsorbable implants made of poly-(L/D)-lactide 96/4 were sutured episclerally in 15 rabbits; in the control group silicone sponge implants were used. The indentation achieved decreased in both groups in a comparable manner over the follow-up period of 5 months. There were no complications related to either kind of material.

Keywords: Bioabsorbable; Experimental; Polylactide; Retinal detachment; Scleral buckling

Abstr ID 485

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EFFICIENCY OF APPLICATION CARBON MATERIALS RADIOPAQUE IN MAXILLOFACIAL SURGERY

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Last years in maxillofacial surgery, alongside with used metals, polymers and ceramics have started to use carbon materials. Being one of the basic chemical elements incrustated in living tissues, carbon has inertness, absence of toxicity and carcinogen city. Instability of crystal structure of carbon assumes the numerous physical properties. At all positive physical and chemical, morphological, properties of carbon materials they have one serious lack - absence of radiopaque. Last property of the carbons implants was proved to be also by our radiological researches: carbon materials in various forms and planes were not differentiated by X-ray research because of there natural not contrast. Thus, the doctor loses a opportunity to track the nearest and remote post op condition implants, it's degree of consolidation with a parent bone, a degree of deterioration of a carbon material that is very important. In this case, undoubtedly, gets the great value a possibility for contrasting a material for implantation. In the Central scientific research institute since 2001, we made a number of experimental researches with obtaining and introduction to clinical practice of carbon composite materials with addition radiopaque additives for the best visualization at radiological research, thus the positive result were received.

During the nearest and remote postoperative period, doctors can watch a condition and a localization of carbon materials. We operated 8 patients using these materials. Remote post op watching period lasted for 3 years.

Keywords: Carbons implant; Radiopaque.

Abstr ID 30

228

OSTEOSYNTHESIS WITH SUPERELASTIC DEVICES WITH SHAPE MEMORY EFFECT IN MAXILLOFACIAL TRAUMATOLOGY

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Aims: To generalize 20-years experience of development and inculcation of superelastic devices with shape memory effect (SME) in clinical practice for osteosynthesis in facial skull fractures. **Subject:** Devices made of superelastic alloys with SME on the base of nickelid titanium (NiTi) have been developed for different variants of osteosynthesis, their biomechanical properties have been studied and the technology of osteosynthesis has been explained. In an experiment on 108 animals the particularities of reparative processes in different fractures of facial skull in conditions of compression osteosynthesis with NiTi devices were studied. During 1983–2003 NiTi devices were used for facial skull bone osteosynthesis in 3994 patients: in 3336–in mandibular fractures, in 513–in midface trauma, in 126–in multiple fractures of the mandible and maxilla, in 11–in naso-orbital ethmoidal fractures and in 8–in frontal orbital fractures. In 342 mandibular fractures were complicated with traumatic osteomyelities, in 89–with slow fragments consolidation, in 43–imperfectly united fractures took place. **Results:** Clinical, radiological and functional investigations have shown that NiTi ensure a dynamic dosed compression and allow to perform osteosynthesis in the conditions of a small wound in minimal exposure of fragments. Positive results of osteosynthesis were achieved in 3862 patients (96.7%), negative – in 132 (3.3%). Clinical investigations have shown that the use of NiTi fixators ensure stable fixation of bone fragments and early functional loading after operation as well as higher functional and aesthetic results in comparison with traditional methods of osteosynthesis. **Conclusion:** Osteosynthesis with NiTi devices is a method of choice and opens new possibilities in treatment of facial skull fractures.

Keywords: Osteosynthesis; Niti devices, Shape memory effect

Abstr ID 698

229

RECONSTRUCTION OF THE ORBIT WITH SUPERELASTIC NITI ENDOPROSTHESIS WITH THE “THROUGH” POROSITY

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Aim: The aim of investigation was to estimate the efficacy of the use of superelastic endoprostheses with the “through” porosity in orbit reconstruction. **Methods:** In an experiment on animals the interaction of porous nickelid titanium (NiTi) implants with the “through” porosity with human body tissues was studied in grafting of the implants into bone defects and subcutaneous cellulose. In clinic superelastic NiTi endoprostheses with the “through” porosity were used for orbit reconstruction in 102 patients in midface trauma and in removal of tumors of the accessory sinuses of the nose. The experimental results were estimated on the basis of morphological, biophysical, biomechanical investigations and clinical and radiological data in terms from 6 months to 12 years postoperatively. **Results:** The study of the grinds of tissues taken from the animals with scanning electron microscopy has revealed that in grafting of porous implants into skull defects all the pores of the implants were filled with bone tissue in 180 days. Positive results were achieved in 99 patients (97.1%), negative – in 3 patients (2.9%). Clinical investigations have shown that NiTi porous implants make it possible to reconstruct the different parts of the orbit and ensure good anatomic, functional and aesthetic results. In radiological investigations in terms from 1 to 12 years postoperatively in the region of “bone-implant” the structures were close to compact bone tissue, pneumatization of the maxillary sinuses was preserved. In diagnostic endoscopy it has been established that NiTi implants were covered with epithelial structures. **Conclusion:** Achieved data confirm the perspectives of the use of superelastic NiTi implants with the “through” porosity for orbit reconstruction and these endoprosthesis can be recommended for the use in clinical practice.

Keywords: Reconstruction of the orbit; Niti endoprostheses; Through porosity

Abstr ID 458

230

THERMAL MEMORY STAPLE FIXATION OF MANDIBULAR PARASYMPHYSEAL FRACTURES-A PROSPECTIVE RANDOMISED CLINICAL TRIAL

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Subject: It is possible to manufacture certain nickel-titanium alloys to possess memory which permits thermal modification. This property has been employed elsewhere in vascular stents and in orthopaedic surgery. The ability to staple accessible facial fractures carries the attraction of speed, simplicity and flexible application where tension tying is required. **Aim:** To compare a new method of fracture fixation versus conventional titanium plating. Some of the disadvantages of plating include prolonged theatre time because of plate bending and adaptation, and the initial costs of providing plating kits. **Method:** We describe the technique involved in the exposure and reduction of the fracture followed by staple application. This

is performed by preparing a burr-hole either side of the reduced fracture, freezing and straightening a suitable sized staple. On introduction into the bony holes body heat permits staple memory to reshape the staple to its original unfrozen form, thus firmly gripping the fracture. **Study Design:** A prospective, randomised controlled trial of mandibular parasymphiseal stapling was undertaken on suitable patients. Approval was obtained from the Regional Ethics Committee and the Medical Devices Agency. **Results:** The results from a comparison of a group of seventeen patients and a similar number of control patients are included in this study. **Conclusion:** We believe that this method of fracture fixation can offer significant advantages over conventional plating in the management of certain fractures. The method is easier for trainees to learn and perfect, shortens operating time and staples are very inexpensive. To date we have experienced no complications with the use of this method.

Abstr ID 512

231

POLY(DTE CARBONATE) MEMBRANE IS USEFUL IN TREATING RABBIT CRANIAL DEFECTS.

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Reconstruction of cranial defects is usually made with biostable osteofixation devices and autologous bone transplants. Studies have shown that preventing soft tissue invasion and inducing bone formation at the defect site leads to faster healing times and less morbidity. This can be achieved by using biostable or bioresorbable osteofixation devices. Use of biostable fixation may lead to problems especially in the growing calvarium. Also, a second operation and removal of biostable membranes increases the costs of treatment. Therefore, different bioresorbable polymers have been studied for guided bone regeneration. Tyrosine derived polycarbonates have been successfully used for fixation of osteotomies and treatment of segmental bone defects. It is osteoconductive and creates very modest foreign body reaction. In this study the behavior of poly (desamino tyrosyl-tyrosine ethyl ester carbonate) (PDTE carbonate) membrane in rabbit craniotomies was evaluated by means of micro-ct imaging. To the best of our knowledge this has never been done before. A 15 mm diameter craniotomy was prepared on 18 NZW rabbits calvaria. The defect was covered with PDTE carbonate membrane (20 × 20 × 0.3–0.5mm). The membrane was fixed at two points through intact bone with nonresorbable sutures and a periosteal flap was sutured on top of it. Follow-up of the animals ranged from 6 to 26 weeks in three groups (*n* = 6). After sacrifice, all rabbit skulls were radiographed with a micro-ct device. At 6 weeks the ossification of the defect was not complete. At 12 weeks part of the defects were fully ossified and at 26 weeks all defects were fully ossified, however the full thickness of bone was not yet achieved. It seems that due to the good biocompatibility and slow degradation, the ossification process proceeds along the PDTE membrane. Preliminary analysis of the images suggest that PDTE membrane is

osteoconductive in critical size defects of the rabbit calvarium.

Keywords: Pdte carbonate; Poly (desamino tyrosyl-tyrosine ethyl ester carbonate); Tyrosine; Bioresorbable; BONE; Osteoconductive; Craniotomy; Rabbit; Biocompatibility; Critical size defect; Calvarium; Guided bone regeneration

Abstr ID 189

232

BIORESORBABLE RIGID FIXATION OF MANDIBULAR FRACTURES

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AIM: Few data exist regarding the use of biodegradable plates and screws for the internal fixation of mandibular fractures. The purpose of this study was to evaluate the stability of biodegradable, self-reinforced poly-L-lactide plates and screws for the internal fixation of fractures of the human mandible. **Design of the study:** Four patients (all male; average age, 21 years) with different fracture patterns of the mandible underwent management with a bioresorbable fixation system. No condylar fractures were included in the study. After surgery, no intermaxillary fixation was applied. All patients were on a liquid diet for two weeks and a soft diet for 2 more weeks after surgery. Images (panoramic radiograph) were taken immediately after surgery and at the 2 months, 6 months, and 12 months intervals. The follow-up period averaged 13 months (range, 2 months to 18 months). **Results:** Mucosal dehiscences over the resorbable devices were present in 2 patients. Mucosal healing and consolidation of the fracture were normal in all other patients. All patients regained stable and repeatable occlusion. **Conclusion:** Self-reinforced biodegradable plating materials provide a reliable and sufficient alternative to conventional titanium plate systems. However, resorbable plates and screws seem to be much more bulky than titanium plates for the use in mandibular fractures, particularly in cases of symphysis fractures, when two plates are needed.

Keywords: Mandible fracture bioresorbable plates

Abstr ID 694

233

BIORESORBABLE OSTEOSYNTHESIS AND ORTHOGNATHIC SURGERY

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Introduction: In orthognathic surgery, osteotomies are usually fixed with metallic screws and plates. The removal

of those devices were usually made after several months. Later the use of titanium appeared as new procedure in the way to avoid the removal of the material because of its tolerance and a minimal corrosion. Then, lots of research works pointed out the existency of small pieces of titanium especially in the soft tissues around the plates. The question of the removal of the plates have to be asked. **Material and Method:** Since more than ten years the use of bioresorbable material had been developed in maxillofacial surgery as the first use in orthognatic surgery had been published in 1994. In the department of maxillofacial surgery of Amiens (France) this bioresorbable material could be use since 1999. We choiced to use it exclusively in orthognatic surgery because of its high cost. 94 patients were operated on for orthognatic surgery and systematically osteosynth-

esis were made with bioresorbable material. It was L/DL lactic acid copolymer. The authors present here the analysis of the series of Lefort I osteotomies to have an homogenous study that is to say 40 patients. **Results:** This technics allowed very good results and the advantage that the surgical time will disappear after several months. The results concerned as usual all the data, but we particularly pointed out a cephalometric analysis the stability of the results in comparison with those of litterature. Complications are very rare. The analysis allowed also to point out some disadvantages with the use of such material most of all in case of use in others indications.

Keywords: Resorbable material orthognatic surgery

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SINGLE BENIGN LESIONS OF THE NECK

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According to our clinical praxis, there is much more benign than malignant lesions of the neck, and this number gradually raises when dealing only with single neck lesions. Studies with such topic, especially those concerned either to proportions or to classification are not common. During last ten years at the Clinic for Maxillofacial Surgery (Military Medical Academy – Belgrade) there were 768 patients with single benign lesion of the neck. Almost a third of them (32.29%) were operated under local anesthesia. Patients were 3–94 years old, with discrete prevalence of males. There were 61/768 (7.94%) different cutaneous tumors; 71/768 (9.24%) vascular lesions (80% different malformations, 12.68% paragangliomas, 2.82% hemangiopericytomas, 2.82% ganglioneuromas, 2.82% cystic hygromas, 2.82% pyogenic granulomas); 342/768 (44.53%) cystic lesions (17.25% medial branchial cysts, 32.75% lateral branchial cysts, 44.74% dermoid cysts, 4.68% trichilemmomas, 0.29% hydrocystomas, 0.29% lymphoepithelial cysts); 36/768 (4.69%) nervous tumors (41.67% Schwannomas, 9.65% neurinomas, 33.33% neurofibromas); 124/768 (16.15%) connective tissue tumors (4.84% fibromas, 94.35% lipomas and 0.81% intravenous leiomyomas); 100/768 (13.02%) lymphatic lesions (42% reactive nonspecific lymphadenitis, 4% histiocytomas, 2% fibrohistiocytomas, 28% sarcoidosis, 20% TBC, 4% cat-scratch disease, 4% Castleman's disease); 27/768 (3.52%) tumor-like lesions (70.37% foreign bodies, 11.11% muscular ossifications, 7.41% dystrophic calcification of adipose tissue, 3.71% myositis and panniculitis, 3.71% pseudocyst, 3.71% persistent thymus) and 7/768 (0.91%) of rare tumors (28.57% Warthin tumors, 14.29% pseudotumors, 14.29% hamartomas, 14.29% chordomas, 14.29% apocrineomas, 14.29% eccrine acrospiomas). Most common were branchial cysts 171/768 (22.27%) (ratio medial:lateral – 34.5%:65.5%); dermoid cysts – 153/768 (19.92%) and lipomas – 117/768 (15.23%). The biggest ones were one lipoma of 1960 g and one carotid body paraganglioma that measured over 25 cm.

Keywords: Benign lesions; Neck

Abstr ID 421

235

SKIN TUMORS OF HEAD AND NECK: OUR EXPERIENCE 2001–2003

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Introduction: Although in the head and neck region is located amounts of near 9–10% of the cutaneous surface,

up to 86% of neoplastic pathology arise in this region. **Materials and Methods:** The authors reports the casuistry of malignant skin tumours of the head and neck observed between January 2001 and December 2003 in the Operative Unit of Maxillofacial surgery of the “Bellaria” hospital of Bologna. Were examined the age and sex distribution, anatomical site, the histological diagnosis, dimensions of the tumour and surgical treatment. **Results:** A total of 176 patients affected by skin tumors of the head and neck were observed, of whom 106 were males and 70 were females. The age range was from 52 to 93 years. The dimensions of the tumor ranged from 1.5 to 7.3 cm, the nasal region was the most frequent site of occurrence. The most common tumor was the basal cell carcinoma followed by squamous cell carcinoma. The surgical therapy was local excision and direct suture in 20 cases, skin graft in 49 cases and local flap in 107 cases. Persistent local inflammation occurred in 20 cases; two cases presented wound dehiscence and septic complications of whom in one case the local flap failed. In one case a relapse of the tumor occurred. **Discussion:** The major etiologic factor is considered the excessive exposure to the ultraviolet radiation but recently has been advocated as risk factor also the ultraviolet radiation B exposure in temperate climates related to the loss of the ozone layer. In conclusion skin tumors of the head and neck represents a frequent pathology in Maxillofacial surgery and cause often difficulty in the choice of surgical treatment.

Keywords: Skin; Tumors; Head; Neck

Abstr ID 474

236

STUDY OF BASAL CELL CARCINOMA IN PATIENTS OF THE OMF SURGERY CLINIC IN CLUJ-NAPOCA, ROMANIA OVER A PERIOD OF 10 YEARS (1994–2003)

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Introduction: Basal cell carcinoma is a tumor with intermediate malignancy and if treated correctly the first time (first attempt), leads to complete, adequate healing, both functional and aesthetic. Objectives of our study are: global evaluation of patients with basal cell carcinoma over a ten years period (1994–2003) treated in our Clinic, evaluation of treatment methods and determining the recurrence risk depending on the applied treatment. **Material and Method:** We studied a number of 282 patients with clinically and histopathologically diagnosed basal cell carcinoma of the head and neck, treated in our clinic during the timeframe mentioned above. Working methods applied were: the observation of patient charts and pathology reports. We used the “Microsoft Excel” program to achieve the working tables and results histograms, the “Epi Info 6” program to estimate the chi-square independence test and the relative risk, the “Student” test for the statistical validation of our results. **Results:** recurrences after only surgical treatment were observed in 3.067% cases and in 10.924% cases after multimodal treatment or other methods. The treatment method applied had influence upon the appearance of tumor recurrence (chi-square=7.11;

$P=0.0076$). Surgical treatment as first choice for basal cell carcinoma of the head and neck is a protection factor for recurrence compared to other treatment methods applied before surgery ($RR=0.28$). Recurrences occurred after *de novo* surgery is explained by the "morpheic" histological type, advanced tumor stage (T4) in difficult access areas of the head, which lead to non-radical surgery. **Conclusions:** Surgical treatment of basal cell carcinoma as the first choice is preferred to other treatment methods because of a lower recurrence rate. Any other treatment previous to surgery leads to uncertain or hazardous results and may result in changing the histological type to squamous cell carcinoma or aggressive undifferentiated carcinoma."

Keywords: Basal cell carcinoma; Surgical treatment; Recurrence

Abstr ID 475

237

ETIOLOGY AND EPIDEMIOLOGY OF NONMELANOMA SKIN CANCER: A REVIEW

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The nonmelanoma skin cancers including basal-cell and squamous-cell carcinoma. **Aim:** To discuss current epidemiologic data concerning the incidence, morbidity, precursor lesions, and prevention of nonmelanoma skin cancer. Also, the study analyzes the etiologic factors such as race, ethnic origin, sex, age, etc. **Methods:** The current literature was reviewed in order to provide current epidemiologic data for the most common nonmelanoma skin cancer (basal cell carcinoma and squamous cell carcinoma). The authors compare literature data from Serbia and the rest of the Europe. **Results and Discussion:** Nonmelanoma skin cancer is exceedingly common, the incidence is rising rapidly and associated with significant morbidity. Although BCC is most common, the SCC is most dangerous because of this behavior: infiltrative destructive growing, recidivisms, metastasis and per neural spreading and can be lethal. The main causes of non-melanoma skin cancer are: sun exposure, ozone depletion, and genetic susceptibility and precursor lesions for squamous cell carcinoma. Recently, the collaboration between molecular biology and epidemiology has contributed to assess the potential synergism between environmental and genetic factors, such as the capacity of repairing the UV-induced DNA damage, in the etiology of non-melanoma skin cancer, as by the xeroderma pigmentosum model. Early detection and prevention are extremely important.

Abstr ID 357

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COMPARATIVE CLINICAL AND NUCLEAR MORPHOMETRIC ANALYSIS OF SQUAMOUS CELL SKIN CANCER OF THE HEAD AND NECK

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We present clinical and nuclear morphometric analysis of 233 squamous-cell skin cancers of head and neck in 10-year period (1990–1999). We analysed clinical course of those patients and biological behaviour of tumours and found aggressive tumours with metastases and local recidives in 62 (26%) patients follow up was 4 years. All clinical data were analysed for sex and age distribution as well as tumor size and localisation. All histologic specimens were analysed for histologic type and all tumors were divided in ceratotic and nonceratotic cancers. We made nuclear morphometry analysis for 100 nuclei in basal part of all tumors. We performed surgical excisions and primary reconstructions in all primary tumors. In cases of local recidives and neck lymph node metastases there were performed primary reconstructions including pectoralis major flaps in 5 and microvascular reconstructions in 3 patients. Overall metastatic rate was 5.5%. There is no prognostic value of clinical parameters but we found strong prognostic value of integrated optical density with $P=0.0027$ between two clinical groups for nonceratotic squamous cell cancer. Adequate treatment of squamous cell skin cancer of head and neck could be effectively planned according to analysis of nuclear morphometry of primary tumor (larger clinical free margin and closer follow up for aggressive tumors)

Keywords: Squamous cell cancer; Skin; Surgery; Nuclear morphometry

Abstr ID 742

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SUBCLINICAL HORIZONTAL GROWTH OF NON-MELANOMA SKIN CANCERS

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Malignant skin tumors have the ability to develop asymmetrical subclinical extensions at the periphery which cannot be recognized therapeutically or during an operation in their true proportions. **Aim:** To determine a correlation between the horizontal growth of non-melanoma skin cancers and clinical parameters (diameter, clinical type of growth) as well as to determine, according to the obtained results, recommendations for minimal surgical margins necessary for a high percentage of eradication. **Material and Method:** In a four year prospective study (1998–2002) we examined 64 patients with histologically confirmed non-melanoma skin cancer (Basal Cell and Squamous Cell Skin Cancer). We measured maximal dimension in both vertical and horizontal directions. The average measurement of two dimensions we defined as diameter. We formed four groups (<10 mm; 11–20; 21–30; >31 mm). Histological investigations and measurement of horizontal extensions were made using Breuninger's method. **Results:** Value of the maximal horizontal extension with exofitital non-melanoma skin cancers is significantly lower than with endofitital ones

(t -test 2.38; $P < 0.05$). The only deviation from this statement can be seen in the first diametrical group (to 10mm) which brings up the conclusion that after the initial growth of skin cancers, further growth stabilizes the values of maximum horizontal subclinical extensions, especially with exofitital type of growth. To attain more than 93.25% of eradication of horizontal sprouts of exofitital type of cancer up to 20 mm in diameter, “surgical margin” of minimum 6mm is recommendable for cancers of 21 to 30 mm and minimum 8mm for those of over 31mm. **Discussion:** The aim of this study is not to present the percentage of recuperation, for which at least five year patient monitoring is necessary, but to enable practitioners who engage in this pathology to predict subclinical tumor extensions so that they can preoperatively determine surgical margins

Keywords: Basal cell carcinoma; Squamous cell carcinoma; Non melanoma skin cancer; Horizontal growth

Abstr ID 744

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IS IT POSSIBLE TO DIE FROM NON-MELANOMA SKIN CANCER?

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The treatment of skin cancer is simple and as a rule results in cure. However, the treatment of recurrent or extremely advanced skin cancer is sometimes disappointing. The objective of this study was to identify the patients having a recurrence following initial treatment and among them the rare patients succumbing due to skin cancer. In a 25 year period a total of 123 patients were treated or only evaluated for a non-melanoma skin cancer recurrence. Out of these patients 12 were initially seen at our Department and the remaining 111 patients had a recurrence following initial treatment elsewhere. The treatment of recurrences ranged from a simple reexcision up to major craniofacial resections. Several patients were considered unresectable and received no treatment at all. Eighteen patients were not cured. There were 10 patients with a basal cell cancer, one with a Merkel cell tumor, one with a sebaceous carcinoma, and six with squamous cell cancer. One previously untreated patient with a neglected scalp basal cell cancer invading the brain was considered incurable. Three out of 11 patients with a recurrence following initial treatment at our Department died due to skin cancer. One had perineural spread of a squamous cell cheek cancer to the middle cranial fossa, the second an uncontrolled primary tumor, the remaining patient had metastatic dissemination of a Merkel cell tumor. Fourteen out of 111 patients initially treated elsewhere died or were last seen with a recurrence—12 of them had uncontrolled local disease. Two patients were reported as having distant metastases; none was verified at our Department. Very seldom it is possible to die due to skin cancer. As a rule it is the unusual neglect by the patient or ignorant initial treatment and no follow up that precede.

Keywords: Skin cancer; Recurrences; Non-melanoma skin cancer

Abstr ID 221

241

SKIN TUMORS OF THE HEAD AND NECK IN ORGAN TRANSPLANT RECIPIENTS

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An increased frequency of neoplastic disorders is a recognized complication of solid organ transplantation. Skin cancers are the most common malignancies occurring in transplant recipients, with an increasing frequency with time after transplantation. Skin cancers are more aggressive with a higher risk of metastasis than in the general population. The large majority of neoplastic lesions develop on the head and neck, suggesting an additive or potentiating immunosuppressive effect exerted by sunlight exposure in transplant recipients that are already on chronic pharmacological immunosuppression. In our experience based on 1200 organ transplant recipients, we found a total of 245 head and neck skin cancers in 127 (10.6%) patients. The presence of head and neck solar keratosis, the precursor of squamous cell carcinomas (SCC), was detected in 350 patients. These pre-neoplastic and neoplastic lesions developed at younger age compared with the general population, were often multiple, and showed atypical clinical features. Since these lesions habitually show increased aggressiveness, with a higher risk of local recurrences, regional and distant metastasis, early intervention represents the key to preventing metastatic disease and death. Precancerous lesions can be treated with cryotherapy, topical 5-fluorouracil, topical immunomodulators and photodynamic therapy. Skin cancers should be managed with surgical excision or, alternatively, with electrodesiccation-curettage, curettage-cryotherapy, photodynamic therapy. Transplant patients who are deemed high risk should receive regular dermatological follow-up visits every 3–6 months, whereas annual examination could be sufficient for the remainder. Skin cancers as well as precancerous lesions should be treated as soon as diagnosed and with the most radical approach possible. The level of immunosuppression should be kept as low as possible, in order to reduce the risk of SCC and Kaposi's sarcoma, consistently with a good graft function. Patients should be advised to avoid sunlight exposure, to use high-factor sunscreens and to wear protective clothing.

Keywords: Skin tumors; Organ transplant

Abstr ID 332

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SKIN FACE LESIONS REPAIRED BY RHOMBOID FLAP

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Aim: In this paper the use of rhomboid flap applied on skin defect after a surgical excision of skin face lesions is discussed, and the immediate and further therapeutic outcome of this particular operation is commented. The surgical steps are widely exposed, and the advantages of the rhomboid flap are well analysed. Focused on the final results taken after the applied surgery, the indications for its use are especially referred. **Materials and Methods:** Patients with skin face lesions, such as basal cell carcinoma, large fistula and post traumatic necrotic tissue, were treated with a radical excision followed by an immediate reconstruction using the rhomboid flap, better known as Limberg's flap. Its unique geometrical design provides with a satisfactory closure of the surgical defect and is easy enough to be elevated, in order to permit an easy rotation. A two-layered closure was performed so as to avoid tension on the suture line. **Results-Conclusion:** Our patients showed satisfactory results and no complications were noticed during the immediate and further, 6 to 18 months, post operative period. The esthetic result is excellent with a minimal deformation at the level of the donor site. In conclusion, the rhomboid flap is indicated as a reparation to skin face defects that are outlined with negative margins caused by the pathological situation and whose primary lesion is not invasive to the facial muscle layer.

Keywords: Skin face; Rhomboid flap; Basal cell carcinoma; Infection; Trauma

Abstr ID 290

243

FACIAL RECONSTRUCTION WITH PREFABRICATED TEMPOROFASCIA FLAP AFTER SKIN CANCER REMOVAL

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Aim: Review the functional and aesthetic results of the full eyelid reconstruction techniques of with a special focus on the temporal fascial flap. **Subject and Method:** Some cheek or eyelid skin cancers (recurrent basal or squamous cell carcinomas, melanomas) need large resection and histology checking before reconstruction. After resection the lack of layers is compounded (skin, fat, muscle, even anterior maxillary bone sometimes). In such cases, we often propose a two stage surgery: first stage, the cancer is removed and the hair bearing scalp is released from the temporalis fascia flap. A split-thickness skin graft is anchored on the future flap; second stage (8 to 10 days after), when we are sure of the total tumor removal, the deeper part flap is released and transposed to the cheek or eyelid region. **Results:** This procedure avoids using a free flap, the pathology involving more often the elderly. This flap brings up enough thickness but is also supple. More over the two time surgery allows to improve the flap vitality and the cancer removal quality. The retraction is less pronounced than with a full thickness skin graft. The flap is reliable, can be shaped easily to fit any lateral lack of substance. The scalp scar is quite inconspicuous, even if sometimes some localized hair loss is

seen. The weak point is the venous drainage which is sometimes insufficient.

Keywords: Eyelid reconstruction; Temporofascia flap

Abstr ID 451

244

RECONSTRUCTION OF LARGE LOWER FACE DEFECTS AFTER MALIGNANT TUMORS

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Aims: Reconstruction of large lower face defects after malignant tumors is a hard challenge for the surgeon. We need important contribution of healthy tissue for a good functional and aesthetic result. **Material and Methods:** After a retrospective study, the authors report their experience in reconstruction of the lower face defects after large resections, using a group of 73 patients with malignant tumors. This group of patients underwent multiple therapeutic protocols in which the surgical treatment was not always the first therapeutic act. For the large defects we have used pedicled flaps or free flaps. For the large soft tissue defects we have successfully used Camille-Bernard flaps and modified Karapandzic flaps and for the complex defects (soft tissue and bone) we have used pectoralis major flap with rib or the free fibula flap. **Results:** The surgical treatment represents the main therapeutic method for malignant tumors. The reconstruction of large lower face defects takes also into consideration the importance of the functional and aesthetic factors for a normal or almost normal social life. **Conclusion:** The evolution of the surgical reconstructive methods allows a wide choice of reconstruction techniques adapted to the particularities of each case. We consider that free tissue transfer is useful for the reconstruction of the extensive defects when we have difficulties in covering with regional flaps. One stage reconstruction of the large lower face defects makes it possible to speed up the functional and aesthetic rehabilitation.

Keywords: Reconstruction, Large defects, Malignant tumors

Abstr ID 695

245

THE REVERSE HELICAL CHONDROCRUTANEUS FREE FLAP IN DISTAL NOSE RECONSTRUCTION: TECHNICAL REFINEMENTS, EXTENDED INDICATIONS AND ANATOMICAL LIMITS

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Elegantly promoted by Pribaz, the microvascular transplantation of the ascending part of the helix is the golden

standard method to reconstruct, full-thickness defects of the distal nose. Based on the part of superficial temporal vessels, the flap pedicle however remains short and its lengthening requires an intraparotid dissection. In order to bypass these both disadvantages, we modified the flap design and raised it as a reverse flow island on the distal part of the superficial temporal pedicle. Ten reconstructions were carried out to treat traumatic (6) or oncological (4) distal nose defects involving the alae (5), the columela (1) or both subunits across the nasal tip (4). Seven flaps were elevated as reverse flow transfers, on the homolateral auricle to the nose defect: all showed lengthened vascular pedicles (L:3–5 cm) that reached, with an adequate calibre match, the small recipient vessels found in the nasogenian area. In contrast, the free remaining flaps harvested as prograde flow transfers on the contralateral auricle exhibited a short pedicle (L:1–2 cm) but larger donor vessels. All flaps survived completely although two suffered from a venous congestion. Anatomical and cosmetic results were of high quality but were only achieved in isolated alar defects. When the restored area overlapped the natural boundaries of several subunits, secondary revisions were indeed always required to reach an ideal symmetry. Prograde and retrograde variants of the helical flap are reliable and versatile transfers that enable the one-stage reconstruction of alar or columellar defects in selected patients with high cosmetic expectations and major concerns about frontal scarring. Nevertheless, they also provide a useful method for secondary distal nose reconstruction in multi-operated traumatic patients for whom the forehead and cheek donor sites are no more available.

Keywords: Pribaz nasal reconstruction microsurgery

Abstr ID 382

246

THE SUPERIOR EYELID FLAP IN THE RECONSTRUCTION OF TRANSFIXING INTERNAL CANTHAL INJURIES

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Introduction: Non-traumatic substance losses in the internal canthal region are rare. Aetiology is mainly related to radiotherapy and multiple surgeries. Radiation-induced necrosis of the skin and bone can easily establish an orbito-nasal communication. The functional and aesthetic impact of such injuries is considerable. **Materials and Methods:** The surgical technique used the superior eyelid flap in the reconstruction of the deep plane and a local skin flap to the reconstruction of the superficial plane. Three patients, suffering an orbito-nasal communication provoked by surgery and radiotherapy of an naso-ethmoidal malignant tumour, were treated according to this technique. **Results:** Postoperative period was uneventful in all patients. Aesthetic and functional results were satisfactory and stable in the long term (postoperative follow-up from 6 months to 2 years). **Discussion:** Treatment of orbital radiation-induced necrosis presents a clinical challenge. This eyelid flap has the advantages of plasticity, vascular reliability and anatomical proximity to the lesion. Dis-

advantages are a limited size and the necessity of contralateral blepharoplasty to achieve symmetry. This bi-planar reconstruction offers enough bulk to prevent early or late relapse in irradiated tissue. Conclusion Technical simplicity, anatomical proximity, vascular reliability and absence of donor site morbidity make the superior eyelid flap a sure indication in the reconstruction of transfixing substance losses in the internal canthal region.

Keywords: Orbital surgery; Orbital disease; Eyelid flap

Abstr ID 828

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EYELID RECONSTRUCTION FOLLOWING RESECTION OF MALIGNANT SKIN TUMOR

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Subject: Periorbital reconstruction after skin cancer resection represents a challenging problem. Knowledge of exact eyelid anatomy is necessary to perform this kind of operation. The eyelids provide structural support for the globe and play an essential role in protecting and lubricating the eye. The goals of eyelid reconstruction are to restore the function of the eyelids and lachrymal drainage apparatus, provide adequate protection for the globe, and achieve reasonable cosmetic results. **Method:** After reviewing the general principles of eyelid reconstruction, the authors present their experience with reconstruction techniques, with regard to the location and size of the eyelid defect. When the defect is less than one-quarter of lid length, direct suture is possible. When the defect is larger, reconstruction techniques differ for the upper and lower lid. **Results and Discussion:** The morphological and aesthetic results, and the incidence of complications of the several eyelid reconstruction techniques used by authors, are discussed. In cases of malignant eyelid tumor, an adequate resection is mandatory. So for the following eyelid reconstruction, a correct choice of the surgical technique is indispensable. The success of this surgery is based on the ability of the surgeon to use different available techniques in relation to different kinds of defect following eyelid resection.

Abstr ID 286

248

LOCAL FLAPS IN THE RECONSTRUCTION AFTER MALIGNANT TUMORS OF THE SCALP

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Introduction: The resection of malignant tumors of the scalp usually result in extended loss of soft and sometimes even hard tissue. The reconstruction of these large defects

sets some serious problems for the maxillofacial surgeon, especially when the lesions are intricate with radio-dermatitis or radionecrosis. **Method:** We review a number of illustrating cases in which we used extended local flaps sometimes associated with skin grafts to cover these large defects. **Results:** We obtained good results in managing large defects even though sometimes they extended over 1/2 of the total area of the scalp. No recurrence was recorded up to 5 years of follow-up. The aspect of the patients was improved and also their social life and comfort. **Conclusion:** The use of local flaps for the reconstruction of large defects after malignant tumors of the scalp is sometimes a better method than the use of free microvascular flaps, especially when we have older patients with poor general condition. We believe that local flaps usually ensure a better aesthetic result and they do not imply extensive surgery. This well-known method, although thoroughly practiced, still requires a careful planning and personal skill and experience from the maxillofacial surgeon in order to be a better alternative to free microvascular flaps.

Keywords: Reconstruction; Malignant tumors; Scalp; Local flaps

Abstr ID 45

249

FAMILIAL NEUROFIBROMATOSIS

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Introduction: Neurofibromatosis (Reclingauzen's disease) is a congenital systemic disease which defeats nervous system and fibrous tissues. It occurs very seldom —0.6–0.7 % of the whole amount of facial neoplasms. Familial Neurofibromatosis occurs even less often and it should be regarded as an occasional case of the disease. Till now its treatment remains inefficient. **Material and Methods:** 9 patients with Neurofibromatosis have been admitted to our clinic for the last 25 years. Among them there were only two cases of Familial Neurofibromatosis (brother and sister). The patients were admitted to hospital at the age of 18 and 16 correspondingly. Up to the age of 13–14 there were no symptoms of the illness, except for light-brown spots on the face and body. In 2–3 years there was growth of soft tissues on the right cheek typical for Neurofibromatosis. Operations were performed—removal of the tumors within the limits of healthy tissues. Both patients were relapsed in 1.5–2 years. Within the next 3–4 years the patients were operated on again (brother 3 times, sister— twice). No malignant regenerations were marked at histological investigation of the removed tissues. During the following 6–7 years relapses occurred on face and body again several times, vital functions were broken, general condition gradually worsened and at the age of 32 and 28 the patients died. **Conclusion:** Surgical method still remains the only one in the treatment of Neurofibromatosis which unfortunately does not lead to full recovery. And in case of progressing of the disease with involvement of CNS it results in lethal outcome. Family Neurofibromatosis is the especially adverse type of this disease.

Keywords: Yerevan State Medical University

Abstr ID 185

250

THE ULTRASONOGRAPHICAL TARGET SIGN OF PLEXIFORM NEUROFIBROMAS IN NEUROFIBROMATOSIS TYPE 1 PATIENTS IS RESTRICTED TO THE DISPLACING SUBTYPE.

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Introduction: Neurofibromatosis type 1 (NF1) is an autosomal dominant inherited disorder affecting about 1:3000 or 4000 newborns. Neurofibromas are the hallmark of the disease. Recent results of ultrasonographic investigations suggested a distinct ultrasonographic pattern indicative for a neurofibroma. We have recently proposed a subtyping of plexiform neurofibromas based on magnetic resonance images. The ultrasonographic findings were compared to those found on MRI. **Material and Methods:** All 30 patients fulfilled the current NIH diagnostic criteria for NF1. All patients were affected with cutaneous neurofibromas and 20 patients were also affected with a plexiform neurofibroma (PNF). Those patients who were surgically treated had a complete histological work-up of the resection specimens. B-scan ultrasound (7.5 MHz) was applied with the focus directed to the region of interest. **Results:** On ultrasonograms, neurofibromas are of round to oval shape, have well defined borders, and low echo-reflective internal structures. In PNF the ultrasonogram showed an irregular tumor mass without any defined borders. Inside the tumor isolated or few linear reflections reminded of tension lines. These findings were exclusively found in invasive PNF. Superficial neurofibromas of the diffuse/plexiform type were indicated with a thin, homogeneous low echo-reflective region close to the applicator with distal enhancement of the signals. The linear reflections running in parallels that were assigned to the PNF were also seen. However, these tumors were all of the displacing type. **Discussion:** This investigation shows, for the first time, that ultrasonography can visualize PNF in NF1 patients. The so-called target sign for neurofibroma can not be applied for this tumor type in general. Indeed, this target sign is restricted to a subtype of PNF that constitutes nodules. Ultrasonography can be used to visualize this subtype of PNF in NF1. Supported by Deutsche Krebshilfe/ and DFG (Fr 1035/6-1).

Keywords: Neurofibromatosis; B-scan ultrasound; Plexiform neurofibroma

Abstr ID 842

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INTERDISCIPLINARY MANAGEMENT OF NEUROFIBROMATOSIS 1, INVOLVING THE CRANIO-MAXILLOFACIAL REGION IN CHILDREN

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Neurofibromatosis 1 (NF1) (von Recklinghausen Type) is a disorder consisting of multiple central and peripheral nervous system tumours, café au lait cutaneous pigmentation and lesions of vascular system and viscera, with a tendency for malignant transformation to occur. **Aims:** To study the orofacial features of NF1, and the craniomaxillofacial and comprehensive interdisciplinary management of children with NF1 attending the Royal Children's Hospital, Melbourne, Australia. **Subjects and Methods of Study:** The Hospital records of 153 children (88M:65F) with NF1, admitted to the Royal Children's Hospital between January 1992 and January 2002, were reviewed. **Results:** Of 153 children, 16 (10M:6F) had recorded orofacial lesions and had been seen in the Departments of Dentistry and Plastic and Maxillofacial Surgery. Optimum management involved early diagnosis and the involvement of a multi-interdisciplinary Paediatric Neurofibromatosis Clinic (established in many major paediatric hospitals), to refine diagnosis, provide counseling, guide management, collect data and promote research.

Abstr ID 269

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HEMANGIOMAS AND VASCULAR MALFORMATIONS: DIFFERENTIAL DIAGNOSIS, CLASSIFICATION, THERAPY

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Purpose: Treatment of patients with extended vascular anomalies in the head and neck requires a multidisciplinary approach involving, pediatricians, maxillofacial surgeons, dermatologists and radiologists. We analyzed the value of an interdisciplinary classification and treatment concept. **Patients and Methods:** The classification distinguishes hemangiomas and vascular malformations. Whereas hemangiomas are endothelial proliferations which grow in sense of hyperplastic tumors, vascular malformations (VM) are considered to be developmental anomalies and growth is similar to hypertrophic lesions. VMs are further classified into high-flow or low-flow lesions and according to the vascular channels into capillary, venous, or lymphatic malformations. Since 2000 we have provided interdisciplinary consultation for patients with vascular anomalies. In patients with hemangiomas and venous malformations, the clinical diagnosis is confirmed by color-coded duplex sonography and magnetic resonance imaging when needed; angiography is performed as part of the treatment planning for patients with arteriovenous malformations. Patients

with hemangiomas are treated by laser surgery, with cryosurgery in small anomalies or conservatively according to size and behavior. In patients with venous malformations, percutaneous or interstitial laser surgery can be performed, alternatively in large malformations percutaneous sclerotherapy is combined with surgical reduction; patients with arteriovenous malformations undergo transarterial embolization prior to surgical excision of the nidus. **Results:** A total of 150 patients attended the interdisciplinary consultation. This group included 83 patients with facial hemangiomas, 28 with venous malformations, 17 with capillary malformations, 9 with lymphatic malformations, and 13 with high-flow arteriovenous malformations. **Conclusions:** The interdisciplinary protocol increases diagnostic accuracy and helps to establish individual treatment plans for patients with extended vascular anomalies.

Keywords: Hemangiomas; Vascular malformations; Differential diagnosis; Classification; Multidisciplinary concept

Abstr ID 566

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TREATMENT OF CONGENITAL HEMANGIOMAS: NEW ENTITIES CONCERNING SURGERY

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Introduction: Two types of congenital hemangioma have been recently defined: the Non Involuting Congenital Hemangioma (NICH) and the Rapidly Involuting Congenital Hemangioma (RICH). The aim of this presentation is to define the appropriate surgical moment and procedure for both types of hemangioma. **Patients and Methods:** Over the last 2 years, 29 consecutive patients with congenital hemangiomas have been followed at the department of Maxillo-facial Surgery (Children's Hospital A-Trousseau, Paris). 11 patients (2–6 months of age) were diagnosed with RICH and 18 patients (2–10 years old) with NICH. Diagnosis was based on clinical parameters and ultrasound. Surgery was necessary in 12 NICH patients. 6 RICH patients have already been operated; surgical intervention was carried out based on the size, the localization and risk of ulceration or bleeding. **Results:** The authors report the surgical difficulties and complications. In NICH patients, surgical intervention remains essential, stressed by the absence of involution and the risk of progression. Arteriography and embolisation may be necessary when the echo-doppler shows arterio-venous fistulas risking hemorrhage during operation. In the absence of an AV-shunt repetitive excision should be taken into account. Concerning the RICH, surgery is also indicated because of the initial risk of hemorrhage and the possible disgracious cutaneous sequelae. **Conclusion:** Specific clinical aspect of congenital hemangioma during the first months of life should lead to early surgery to avoid the risk of sequelae, difficult to treat later because requiring which require more sophisticated surgical procedures (skin expansion, skinraft) Department of Maxillo-facial Surgery Hopital D'enfants A. Trousseau, AP-HP Université Paris 6.

Keywords: Congenital; Hemangioma; Early surgery

COMPLEX SURGICAL TREATMENT AND REHABILITATION OF PATIENTS WITH EXTRACRANIAL ARTERIOVENOUS HEMANGIOMAS

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Aims: Develop algorithm of treating patients with extracranial arteriovenous hemangiomas. **Materials and Methods:** Since 1997, 9 patients with extensive extracranial arteriovenous hemangiomas have been treated. Hemangioma localized in parietal, temporal and frontal regions of head leads to cosmetic and esthetic abnormalities. Thus, threat of spontaneous bleeding or bleeding caused by trauma always exists. In 3 cases there was noticed bleeding from hemangioma surface caused by local trophic disorder, one of them was the result of a trauma. In diagnostics and treatment of these patients digital subtraction angiography, which shows extra- and intracranial sources of blood supply, magnetic resonance imaging procedures, endovascular surgery, embolisation of efferent vessels and of hemangioma stroma were used. Histacryle adhesive (2-isobutylcyanmetacryle) and PVA (polyvinylalcohol) were applied. Patients were surged after a special preparation. Preliminary tissue suturing on border of hemangioma was performed intraoperatively, then the tumor with periosteum was excised to the bone. After hemostasis the wound surface was closed with a separate dermal graft. Postoperative alopecia was eliminated by dermotensia technique 7–9 months after the hemangioma surgery procedure. **Results:** Nine patients were successfully surged according to the described technique. However, in 1 case hemangioma kept growing and bleeding. **Conclusion:** In our opinion, there should be a multimodal approach to extensive extracranial arteriovenous hemangiomas treatment. It is expedient to use angiography and embolisation of all possible vessels, which take part in hemangioma blood supply and formation. Separate dermal graft was successfully applied to eliminate postoperative defects as the first stage of the patients' rehabilitation.

Keywords: Extracranial hemangioma; Complex treatment

INTRAMUSCULAR HEMANGIOMA OF TEMPORAL MUSCLE.

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This tumor used to present in early childhood or early adult life. Intramuscular hemangioma (IMH) involving the skeletal musculature is an estrange tumor. This hemangio-

mas used to appeared on the large muscle volume of the upper and lower extremities and trunk. On head and neck localization masseter is the most common muscle. Intramuscular hemangioma of the temporalis muscle is a really infrequently presentation. The etiology is caused by a hamartoma that arising from abnormal embryonic rests. The symptoms are a slow growing mass that may fluctuate in size and gives a facial asymmetry, swelling Magnetic resonance imaging detects the different contrast between normal muscle and hemangioma, gives a better delineation than CT. Intramuscular hemangioma is less bright on T1 images but is much brighter on T2 images. Differential diagnosis should be made with other mesenchymal lesions such us neurofibroma, aneurysm, lipoma, dermoid cyst, sarcoma and enlarged lymph nodes. Intramuscular hemangioma is characterized by multicentric proliferation of cords of endothelial cells that subsequently canalize. Treatment depends on the location, accessibility, depth to invasion, rate of growth, age of patient and cosmetic consideration. Preoperative embolization of the hemangioma may reduce intraoperative hemorrhaging. Surgical treatment was with an approach of infratemporal fossa was done.

Keywords: Intramuscular hemangioma temporal muscle head & neck vascular tumors

HEMORRHAGIC HIGH-FLOW VASCULAR MALFORMATIONS OF THE MANDIBLE

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Endosseous vascular malformations of the mandible represent a class of diseases with low incidence, but high morbidity, management risks and mortality. Lesions classified according to the flow rate and vascular type can display variable clinical signs. A severe acute intraoral hemorrhage can be the first manifestation to attest the presence of the occult lesion. Even minor trauma implied by dental treatment can inflict fatal hemorrhage in an uninvestigated patient. The patient group comprised 3 male patients, with ages ranging between 6–24 years, admitted during a period of 13 years severe hemorrhage inflicted by dental extraction. After control of the acute hemorrhage, imaging investigations (CT and DSA) confirmed the high-flow arterio-venous malformations of the mandible. Hemodynamic rehabilitation of the patients presenting severe perturbances of the blood balance was followed by repeated selective intraarterial embolization as the treatment of choice. The protocol was undertaken in all cases by an interdisciplinary team of maxillofacial surgeons and cardiovascular interventionists. Intralesional and intravascular tissue glue embolization was associated in two cases. The treatment sequences were repeatedly evaluated by angiography. All cases were successfully treated. No signs of recurrence or local progression of the lesion could be detected in the postoperative follow-up. Control CT's

demonstrate bone healing and formation, as well as normal mandibular growth over a period ranging from 1 to 13 years. The patients are in good general health. Prophylactic imaging diagnosis is of paramount importance in detecting high-flow vascular malformations, failing to show distinct aspects on conventional radiographs. The combined surgical-embolization procedure represents the salvaging modality in cases of undetected arterio-venous malformations with dramatic blood loss. It is mandatory to include these patients in a strict dental control and rehabilitation program.

Keywords: Vascular malformations; Embolization; Hemorrhage; DSA

Abstr ID 143

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INTEREST OF EARLY SURGICAL EXCISION OF PERIORBITAL HEMANGIOMA

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Introduction: Periorbital hemangioma have the same evolution in 3 stages as in the other localization but their functional risk lead to an early treatment. Medical treatment are not always efficient and have unfavorable side effects. Surgery using ultrasonic devices has recently become the main option – but two questions arise–do we operate early enough? Do we have to operate before the establishment of functional definitive ophthalmic troubles? **Material and Methods:** A retrospective study was based on 66 children operated between 1994 and 2002, 52 aged from 2 to 19 months have been operated on for functional reasons–14 aged from 13 to 33 months have been operated on for morphological reasons or psychological prejudice. An ultrasonic device was used in 97% of the cases. **Results:** Using Ultrasonic device allowed an easier and less bleeding dissection; the removal of the hemangioma was up to 90% in 92% of cases. Two postoperative complications were observed but evolving favourably thanks to medical management. The average operating duration was of 60 min and hospitalisation of 3.5 days. In the group of 52 patients with functional problems, 30 have been precisely followed ophthalmicly. When preoperative ophthalmic complications existed, all the ophthalmic criteria have been improved after surgery especially regarding astigmatism from 3.5 to 1.9 or amblyopia which has been reduced from 77% preoperative to 35% postoperative while in a process of reeducation. But those improvements may remain insufficient. **Conclusion:** The incomplete reversibility of the ophthalmic functional disturbance should lead to intervene before their existence. The authors have described clinical situations which should lead to surgery before ophthalmic complications.

Keywords: Periorbital hemangioma; Early surgery; Ultrasonic device

Abstr ID 739

258

VASCULAR MALFORMATION REMOVAL USING THE ND:YAG LASER, A PROSPECTIVE STUDY REPORT

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Aims: Vascular lesions in the head and neck region are a common pathological entity. Many different treatment modalities have been used for their removal, with the results often being less than satisfactory. In the past decade, the Nd:YAG laser has emerged as a new mode of treatment for vascular lesions, and our goal was to determine its clinical value. **Patients and Methods:** A prospective study was conducted in which patients with intraoral, as well as extraoral vascular lesions were treated with the Nd:YAG laser. The Nd:YAG laser beam coagulates tissue to a depth of about 5–10 mm, a process called photocoagulation. In our study, 111 patients with vascular lesions were treated. Of these, 96 had small lesions, with surface diameters of less than 3×3 cm, and 5 had large lesions, with surface diameters of more than 3×3 cm. All of the patients were followed up carefully, time until complete healing was recorded, as were also any eventual complications. Post-treatment pain and discomfort were controlled with oral analgetics and topical anesthetics. **Results:** In both groups of patients, tissue sloughing occurred within 2 to 3 days. Healing time in small lesions was 2 to 3 weeks, and in large lesions 3 to 4 weeks. There were 3 cases of minor complications in patients with small lesions and 1 case in patients with large lesions. Overall, patients were very satisfied with treatment outcomes. **Conclusion:** The Nd:YAG laser is a safe and effective tool for removal of vascular lesions.

Keywords: Vascular malformations; Laser treatment

Abstr ID 272

259

NAVIGATION-ASSISTED INTERSTITIAL LASER TREATMENT FOR HEAD AND NECK VASCULAR MALFORMATIONS

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Purpose: Laser-induced interstitial thermal therapy (LITT) is a minimally invasive surgical technique for the treatment of haemangioma and vascular malformations. As the technique is interstitial, the placement of the laser fibre occurs remotely from the operator/surgeon and is not visible as would be the case in an open surgical procedure or by percutaneous laser application. Image guided navigation-controlled LITT offer a non-invasive

safe treatment option. **Material and Methods:** Multiple image data navigation guided LITT was performed in patients (five procedures) with giant venous malformations of the maxillofacial area. The system consisted of a special new developed Nd:YAG laser fibre introducer set in conjunction with fused computed tomography and magnetic resonance based surgical navigation. **Results:** As a result of the 3-D reconstruction for laser surgical planning and the defined target areas for laser probe navigation, the application of the interstitial laser treatment could be performed exactly. In all cases, control examination clearly showed a diminished tumour volume and all patients reported subjective amelioration. **Conclusion:** The results suggest

that navigation-guided LITT can be performed safely with preserving of vital structures and can be effective in the treatment of complex vascular malformations. Combined with computer assisted surgery it opens a new route of access not only for LITT but for all different kinds of surgery with many potential applications. Using navigated LITT the risk of side effects like damaging vital structures can be reduced. Furthermore, there is therapy-placement control in regions that are not easily controlled by ultrasound systems.

Keywords: Vascular malformations; Interstitial laser therapy; Image-guided planning; Navigation-assisted laser application

TOPIC 9: AESTHETIC SURGERY OF THE FACE

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BLEPHAROPLASTY IN THE WELLNESS ERA**Mommaerts MY**

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Patients requesting eyelid corrections for ageing are presenting more often and at a younger age than a decennium ago. Society demands win from traditional family attitudes. But nobody gears up mentally for the cutting, stretching, bruising and pain. Today patients are particularly concerned about the extent of the postoperative social deprivation, the possibility for "down time" surgery, the lack of discomfort during and after the procedure and the natural appearance of the result. Cosmetic cranio-maxillo-facial surgeons can boost their blepharoplasty practice by dealing with these concerns. The author will refer to techniques reducing anxiety, bruising, and deprivation from social life, and to techniques that customize and optimize the results of upper and lower blepharoplasties.

AESTHETIC FOREHEAD REMODELLING**Duvigneaud S, Shahla M, Ouattara B, Swennen G, Lemaître A***

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Even though the forehead plays a major part in facial aesthetics, it is too often ignored. The contours of the forehead are basically very difficult to modify. Nevertheless, minor, medium and major adjustments of the forehead can complement a surgery of the mid and lower parts of the face and improve its global aesthetics. In this presentation, we will first introduce the basic criteria of forehead aesthetics. We will then describe different techniques and their results: craniofacial deformities, reduction surgery and augmentation surgery. Craniofacial deformities: Early surgery: floating forehead. Later surgery: total remodelling Reduction surgery: Contouring is the easiest method but is limited to small irregularities and also to supra-orbital rim. Osteotomy of the anterior wall of the frontal sinuses is better in many cases Augmentation surgery: Bone graft surgery is indicated in small defects. Splitting forehead surgery can give good results but is difficult to achieve. Prosthetic augmentation is the simplest and most reliable method to obtain good results even for major defects. **Conclusion:** The forehead, often neglected, is very important in the facial harmony. Both minor and major techniques can be used but minor adjustments can already produce interesting results. For augmentation, we prefer use surgical cement which is prepared and modeled during the surgery.

Keywords: Forehead surgery; Forehead plasty; Forehead osteotomy

PERIORBITAL AND MIDFACIAL REJUVENATION VIA BLEPHAROPLASTY AND SUB-PERIOSTEAL MIDFACE RHYTIDECTOMY**Anastassov GE**

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Purpose: The rejuvenation of the middle third of the face is a formidable endeavor. This is due to the central location and the relative inaccessibility of this region through the common lateral approaches. The stigmata of midfacial ageing are the malar descent, lateral orbital festoon formation, tear through deformity, deep melo-jugal sulcus, buccal fat pad and sub-orbicularis oculi fat tissue (SOOFT) prolapse, deep naso-labial folds and cutaneous and muscular descent. All of these deformities can be addressed with upper and lower blepharoplasties with arcus marginalis release, lateral canthopexy, subperiosteal midface rhytidectomy with temporal suspension of the malar mound and SOOFT repositioning. **Patients and Methods:** There were a total of 20 patients in this series. 16 were female and 4 were male. The youngest female patient was 43 years old and the youngest male was 51 years old. The oldest female patient was 74 years old and the oldest male was 73 years old. The average age for the female patients was 58.45 years and the average male age was 61.5 years. Two patients had the procedure done for reconstructive purposes. Both had sequelae of facial nerve palsy. The remaining patients had the procedure done for purely aesthetic, rejuvenation reasons. **Results:** In the beginning of our experience there was one Oriental female patient with mild post-operative ectropion, which resolved with continuous massage and did not require operative intervention. Most of the patients experienced prolonged post-operative oedema. The patients were satisfied with their post-operative outcomes. **Conclusions:** Simultaneous periorbital and midfacial rejuvenation can be achieved via upper and lower blepharoplasties, lateral canthopexies and subperiosteal midface rhytidectomy.

Keywords: Facial rejuvenation; Midface lift; Periorbital rejuvenation

PLATHYSMA-SUSPENSION AND PLATHYSMA-PEXY IN CERVICAL LIFT: ANATOMICAL STUDY AND PRELIMINARY RESULTS**Labbé D, Franco RG, Nicolas J**

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After anatomical studies performed in ten selected fresh cadavers, the authors have developed a technique for treatment of the cervical area during the face lift. They prefer to call it PLATYSMA-SUSPENSION and PLATYSMA-PEXY instead of plicature. Such technique consists in a platysmal suspension of its free edge with its

fixation into a resistant tissue close to earlobe (Loré's fascia). There is a very good definition of the anterior triangle of the neck with no need to undermine the platysma muscle because of a perfect sliding plan between the platysma and the sternocleidomastoid muscle. This technique is determined by its simplicity as well as its effectiveness. Ten fresh cadavers were operated, and twenty hemifaces were analyzed by the proposed technique, and they were photographed and filmed accordingly. In two cadavers we did an anterior suture in platysmal bands as proposed by Cardoso 3. That suture showed us a complete anterior sliding of this muscle with an inversion of fibers curvature into a convex form, revealing so the sliding plan under the platysma muscle. In six cadavers, because of the first results, we studied after complete resection of the skin, the suspension of posterior border of the platysma in to the fascia of Loré with a very good definition of the mandibular rim and anterior border of the sternocleidomastoid muscle and also a lifting and support of the submandibular gland. Thirty patients were operated by the senior author with a follow-up period minimum of ten months. The results are presented, the PLATYSMA-SUSPENSION minimizes the risks of a nervous injury and hematomas by preventing deep and unnecessary dissections, considering that the superficial cervical fascia has a perfect sliding plan between the platysma and the deepest structures of the neck.

Keywords: Lifting; Plathysma

Abstr ID 110

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AUTOTRANSPLANTATION OF EYEBROWS AND EYELASHES

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Objective: To restore lost eyebrows and eyelashes means of micrografts autotransplantation. **Material and Methods:** a method of patient's hair (micrografts) autotransplantation to restore lost eyebrows and eyelashes, was used in 26 patients. Traumas, burns, thermal, chemical and mechanical effects were the causes of the loss of eyebrows. For example, one patient plucked out her eyebrows and they have stopped growing, another one has lost the external half of the left eyebrow as the result of acetone containing paint getting on it. Several patients have lost their eyebrows as the result of their coloring. The majority of patients have lost eyebrows and eyelashes due the thermal burns. 11 patients had partial or complete restoration of one or both eyebrows by means of the finest method of autotransplantation of micrografts taken from occipital area. Micrografts comprised only one hair. In 20 patients the method was used restoration of both eyebrows and eyelashes. Of these, two patients were completely deprived of eyelashes on the upper and lower eyelids with rough scar deformities of recipient zones. To compare the method of autotransplantation of a long flap with one row of hairs and the method of micrografts autotransplantation the procedures were performed simultaneously in different variants. The remaining 5 patients had isolated defect of eyelashes. **Conclusion:** The method of micrografts autotransplantation performed with the use of microscope in conformity with all the rules of autotransplantation yields

excellent results in restoring lost eyebrows. Micrografts autotransplantation in the area of eyelashes of the upper eyelids gives positive results in 50% of cases and in the area of the lower eyelids only in 20% of cases, which can be explained by the constant contact of eyelashes with tears. Therefore, we prefer the method of autotransplantation of long unbroken flaps with one or two rows of hairs.

Abstr ID 99

265

CLINICAL EVALUATION OF FAT TISSUE GRAFT IN AESTHETIC AND RECONSTRUCTIVE FACIAL SURGERY

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Background: A variety of agents and techniques are currently available to improve facial volume depletion. But failures of these agents are due to reduced biocompatibility. The first use of autologous fat grafting was described in 19th century and became increasingly popular for facial soft tissue. **Objective:** The aim of this study is to know if the autologous fat transplantation is the ideal way to correct the facial atrophy in senescence or in pathological cases. Did aesthetic subunits and indication modify the results? **Material and Methods:** Review of 100 cases of facial structural augmentation by autologous fat graft with clinical evaluation has been done. The patient's idea about this technique and the results has been asked and compared between two populations of aesthetic and reconstructive surgery. **Results:** Autologous facial fat grafting gives a high satisfactory rate for patients with 82% of good results in aesthetic population and 74% in reconstructive cases. The results are different between facial subunits. The best results are obtained in malar and cheek area and the worst in the lips. **Conclusion:** Autologous fat transplantation can be a gratifyingly effective treatment for facial subcutaneous augmentation that may produce permanent results and high satisfactory rate.

Keywords: Autologous fat transplantation; Facial atrophy; Malar and cheek area permanent results and high satisfactory rate

Abstr ID 826

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NASAL TIP SURGERY INTERACTION WITH AESTHETIC JAW REPOSITION

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Aims: The purpose of this brief communication is to show that they can be effected for aesthetical aims contemporarily double jaw surgery and rhinoseptoplasty with predictable results. **Subject and Methods:** From 1996 until

today the same author (the first) simultaneously performed 140 double jaw osteotomies and rhinoseptoplasty for aesthetical aims with predictable results, above all how much concerns the cartilages (tip, septum and alar basis), with patient's satisfaction. The double jaw surgery executed with rigid fixation. The rhinoplasty was carried out with open access after the facial skeleton aesthetic surgery (i.e. orthognathic surgery). **Results:** The simultaneous rhinoplasty donot make the jaw surgery more heavy and the postop. course is the same than in isolated orthognathic procedure. The result are aesthetically good in 95% of the patients. Only 7 patients show minor final defects needing touch-up. The revision was be performed in 4 patients only because the 98% are satisfied with the result. **Conclusion:** Quite a lot of authors have already shown that following some exact indications they can effectively combine maxillary osteotomies with rhinoplasty in the same surgical time getting a more harmonious result. It is necessary to know the changes that maxillomandibular surgery produces on the face and particularly on the soft tissues. These concern the projection of the tip, its rotation and the width of the bases. So we believe that exist consequent movements to maxillary surgery that can favorably be exploited to modify somenegative aspect of nose morphology like the basis widening, in case of narrow noses or the lifting of the tip if this was rotated downward for support defect. The large number of the sample and the supremacy of benefits compared with the minimal drawbacks do the simultaneous rhinoplasty and duble jaw surgery a fantastic possibility to transform the orthognathic surgery in aesthetic surgery of the facial skeleton.

Abstr ID 179

267

IMPROVING THE AESTHETIC EFFECT OF GENIOPLASTY

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The mandibles contour determines the shape of the lower part of the face and thus influences the appearance of the face and neck. Sliding genioplasty by horizontal symphyseal osteotomy is now part of the classic armamentarium of the maxillofacial surgeon in the field of orthognathic surgery. This is a simple, fast, and safe technique. However, getting a good aesthetic result with a natural appearance is not as easy and predictable as one could think. After a long practice, authors noticed that the choice of the right timing for surgery, the precise estimation of the new position of the chin bone (being careful not to deepen excessively the labiomental fold or to reduce the lower part of the face too much), therapeutic abstention in some specific cases (for instance protruding chin with biretrocheily resulting from inadequate orthodontics with bicuspid extraction), and the informed consent from the patient with respect of their ethnic origin, are key points in getting a positive result. Considering these points of the treatment planning, sliding genioplasty is a powerful and versatile procedure that can be used to correct almost any type of chin deformity. This is

a valuable aesthetic tool, true ice-on-the-cake in the large field of orthognathic surgery.

Keywords: Genioplasty aesthetic

Abstr ID 64

268

LONG-TERM SOFT TISSUE FOLLOW-UP OF 60 PATIENTS TREATED WITH ASSOCIATED RHINOPLASTY-MENTOPLASTY

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Abstract: Accurate evaluation of the different facial segments highlight any of the slight residual imbalances occurring after Maxillo-Facial procedures or as a result of the natural aging process. Attractive individuals who have facial proportions considered to be out of normal range cannot be simply classified as not normal because of their strict cephalometric values. A traditional treatment planning philosophy involving a balance between aesthetics and stability and basing aesthetic decisions on normative cephalometric data is significantly flawed. The Schwartz analysis provides us a good method for improving our standards. Other Authors offer accurate biplanar analysis such the the Arnett one, but the Surgeon can obtain a natural result with his own experience comparing it to the actual idea of beauty. Facial aesthetic strongly depend on the underlying bone structure and sometimes it is necessary to perform two surgical treatments, as a primary operation or secondary to the first. Rhinoplasty and genioplasty may be necessary because of residual asymmetry. Many of our patients in fact are treated for orthognathic surgery, trauma or congenital anomalies, and it is necessary to have a strict follow-up to evaluate the surgical stability of the bone and soft tissues. Only after these check-ups can we project the secondary treatment. These are expected to give the face a constant beauty and a good function. The aim of this study is to evaluate the stability of the results in 60 patients treated with rhinoplasty and genioplasty in the last 10 years, comparing the various techniques of chin osteotomy and chin grafts.

Keywords: Chin surgery; Rhinoplasty; Ancillary procedures

Abstr ID 843

269

100 CASES OF AUGMENTATION RHINOPLASTY TECHNICAL ASPECTS AND PRACTICAL DEDUCTIONS

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Reviewing results after 100 cases of the authors and analyse of different technical points in augmentation

rhinoplasties:

- indication of surgery,
- material used for augmentation,
- donor site,
- incision's site
- material for immobilisation,
- medicine, etc.

The situation is different depending after trauma occurs during childhood or adult or after neuro surgery. The best results seem to be obtained by bone graft. We prefer usually calvarial bone for many reasons. Open rhinoplasty is sometimes used. We use wire spine for the graft's immobilization. We don't use antibiotics and pain's medication is rarely given. At least most of patients and surgeons are satisfied by good functional and aesthetic results.

Abstr ID 705

270

THE DISTORTED DEFORMITY AFTER THE AUGMENTATION RHINOPLASTY WITH COSTAL CARTILAGE

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After the facial injury and the tumor excision at the nasal area, various types of nasal deformities, for example a distorted nose and a saddle nose, often remain. In that condition augmentation rhinoplasty is indicated. As reconstructive materials, to now a bony cortex, a cartilage and an artificial high-polymer are mentioned. Costal cartilage is sufficient in the body, proper pliable for nasal dorsum and manufactured easily. In our institution, augmentation rhinoplasty has been carried out using costal cartilage. In many cases, the deformity is much improved with costal cartilage to show a straight nasal dorsum. However, in a few cases an implanted cartilage at the nasal dorsum transformed arciform and the re-operation became necessary to correct the deformity. In this time the deformed cases are picked up and the etiology is discussed. In our institution, augmentation rhinoplasty with costal cartilage has been indicated in 15 cases (seven males and eight females) from 1995 to 2000. The range of ages is 19 to 61 years old and the mean age is 30.8. The typical cases with the distortion at the nasal dorsum after the costal cartilage implanting are presented. In addition, the result of experimental implantation of costal cartilage in rabbits is reported to clarify the causes of the distortion of the costal cartilage in clinical cases.

Keywords: Saddle nose; Augmentation rhinoplasty;
A costal cartilage; Curve deformity

Abstr ID 155

271

SPECIAL FEATURES OF CORRECTIVE AESTHETIC SURGERY ON MALE PATIENTS

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In many respects, men have a different relationship to their physical appearance and aging processes than we experience with women. These special features have to be respected during the planning and execution of corrective surgery. Correction of the eyelids and the periorbital area contribute to a more youthful manly appearance. This is particularly relevant to the positioning of the eyebrows. The corrected form of the nose should respect the male appearance. It is also the case that men quite often have psychological problems associated with the shape of the nose. It is important for the wishes of the patient to be considered along with the experience of the surgeon. Correction of sunken facial soft-tissue has to be carried out in a particular layer so that the roots of the beard are not damaged. It is not uncommon for this to result in increased operative and postoperative bleeding and a lengthening of the time needed for the swelling to go down after the operation. The new contouring of the cervical facial angle can cause some difficulties. In rare cases, the excess of soft tissue of the double chin has to be removed by additional excisions. In the spectrum of aesthetic surgery men also request operations which involve the correction of the bony structures of the face. Patients very often request a chin enlargement, improved contouring of the mandibular angle, or even significant forming of the forehead. We will give an account of our experience of the wishes of male patients regarding therapeutical measures and their results.

Abstr ID 384

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AESTHETIC CORRECTION OF SIGNS OF AGING FACE IN THE OLDER ORTHOGNATHIC SURGERY POPULATION

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Orthognathic surgery generally improves the aspect of the face in young patients. Recently, maxillo-mandibular osteotomies are increasingly performed in the older population. (30–50 years or more). The most important signs of the aging face that appear slowly but surely are the following: (1) ptosis of the malar fat pad increasing the nasolabial folds (2) aggravation of the dark circle around the eyes (3) development of jowls (4) ptosis of the submental tissues (5) aggravation of the submental furrow with an unaesthetic neck-chin line (6) thinning of the lips Retraction of the facial bones and/or decrease in facial height would increase these symptoms. However, especially in the older orthognathic population, maxilla and mandible are generally moved forward and facial height is increased. Facial osteotomies have the potential to improve the lips, the jowls and mild submental deformities, however, do not ameliorate the fatty neck and the submental furrow. Moreover, facial osteotomies could worsen the dark circles around the eyes in the nasolabial folds. For several years, three different types of face lift have been used in our

department: (1) centrofacial subperiosteal lift by lower eyelid and intraoral approach which allows the repositioning of the malar fat pad and the correction of the dark circle around the eyes. (2) submental plasty with desepidermized platform to increase the submental furrow area in conjunction with neck defatting and chin lift (3) limited cervicofacial lift with SMAS plication. These surgical techniques can be used separately or in combination. The aim of this presentation is to illustrate our experience with these different techniques; Presentation of the different techniques and clinical cases.

Keywords: Aging face; Maxillo-mandibular; Osteotomies subperiosteal; Centro-facial lift; Submentalplasty

Abstr ID 714

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AESTHETIC IMPROVEMENT IN MIDDLE THIRD OF THE FACE DURING ORTHOGNATHIC PROCEDURES: MAXILLO-MALAR OSTEOTOMY VS SIMULTANEOUS LE FORT I OSTEOTOMY AND PLACEMENT OF ALLOPLASTIC IMPLANTS

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Aims: A relative deficiency in midface projection may be congenital or may be acquired. It is often associated with occlusal disharmonies. Augmentation has been proposed to improve the appearance of patients with a flat malar eminence, to create a more youthful-looking face, and to deemphasize prominent nasal or mental profiles, especially when the alteration of form is combined with an impairment of function, such as a malocclusion. The use of osteotomies, and placement of autogenous and alloplastic materials to correct midface hypoplasia has been described in literature. The following report compares the results gotten by our nine-year experience in the use of two different methods to correct midface hypoplasia during orthognathic procedures. **Material and Methods:** Our experience is based on 48 patients, 21 males and 27 females, aged from 18 to 41 years (mean age: 24 years), treated consecutively between 1995 and 2004. All patients presented with sagittal maxillary hypoplasia associated with mandibular prognathism and deficient cheekbone contour. A first group, composed of 37 patients, underwent a simultaneous setback procedure using the bilateral sagittal split osteotomy, maxillary advancement by a low-level Le Fort I osteotomy, and simultaneous augmentation of the malar eminence with the positioning of porous polyethylene

implants (Medpor, Porex Surgical Inc, College Park, GA). A second group, composed of 11 patients, underwent a simultaneous setback procedure using the bilateral sagittal split osteotomy and maxillary advancement by a quadrangular maxillary-zygomatic osteotomy, without malar implants positioning. **Results:** Functional and aesthetic results were excellent in both groups. **Conclusion:** In our efforts to achieve optimal functional and esthetic results with long-term stability, we use the maxillo-malar osteotomy less frequently than we have in the past. It is possible to achieve excellent results performing maxillary osteotomies at Le Fort I level and augmenting the malar area with Medpor.

Keywords: Aesthetic surgery; Orthognathic surgery; Alloplastic implants.

Abstr ID 827

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PAROTIDECTOMIES: ASSESSMENT OF THE AESTHETIC ACCESS ROUTE

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Background: Despite its proved safety and its relevance in the cosmetic field, the aesthetic access route (SMAS flap and lifting incision) is not a routine procedure for many surgeons. **Aim:** To assess concerns from the patient's perspective before a parotidectomy and after the Redon technique (subcutaneous flap and neck incision) and the aesthetic access route (SMAS flap and lifting incision). **Methods:** 40 consecutive patients were asked to classify their concerns before surgery (1 to 4 months) and 1 year after surgery (10 Redon technique and 30 aesthetic access route). Both procedures are described. Tricks are pointed out. **Result:** Before a parotidectomy, patients are concern in a decreasing order with the facial nerve function, the scar, the soft-tissue defect in the dorsal part of the cheek and the Frey's syndrome. After a Redon technique, patients were concern in a decreasing order with the soft-tissue defect, the scar and the Frey's syndrome. After the aesthetic technique, no one was concern with the scar, and the facial function. No one was concern with the soft tissue defect although a light asymmetry could be noticed, two patients presented. **Conclusion:** The aesthetic access route should be the gold standard procedure for parotidectomies, except for cancer and very fatty patients.

Keywords: Asymetry; Dysymetry of the face

TOPIC 10: ASYMETRY, DYSYMETRY OF THE FACE

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Abstr ID 905

275

MANDIBULAR ASYMETRIES: DIAGNOSIS AND ASSESSMENT**Stoelinga P**

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This presentation will deal with the diagnostic pitfalls of mandibular asymmetries and the consequences for treatment. Although at first glance asymmetries are easy to classify, there are many variations possible which almost requires an individual approach to each deformity. Orthodontic treatment preceding the surgery needs to take this into account if one wants to arrive at the best possible result of a coordinated surgical-orthodontic approach.

Abstr ID 426

276

A SURGICAL 3D SIMULATION SYSTEM FOR ORTHOGNATHIC TREATMENT**Mori Y, Shimizu H, Minami K, Yura Y**

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Aim: Three-dimensional reconstructed image from computed tomography (3D-CT) has been applied for diagnosis and planning of orthognathic surgery. However real time simulation for complex surgical procedures was very difficult because of artifacts around dentitions, long time data processing and the expensive hardware system. We already developed the Unified Maxillofacial Measuring System on the standard coordinates system regulated by 3D cephalometric measurement. It could load and register data from 3D-CT and dental casts and realized to improve accuracy of the image. We newly developed a surgical simulation system for orthognathic treatment with this coordinate system on a conventional hardware without long time data processing. **Material and Method:** The system was mainly developed with the AVS express on the Windows workstation. The AVS express realized flexible image processing combining each module on the network editor. CT data were obtained as DICOM3 format and constructed. Data of dentitions were obtained from the 3D range scanner as surface model. These data were registered on the standard coordinates system from 3D cephalogram. **Result:** This system could simulate almost orthognathic surgical procedures. We could simulate SSRO, IVRO, Le Fort I osteotomy, and alveolar segmental osteotomies as we actually operated. And it could also calculate and display the interference between bone segments after simulation according to the data from dental casts. The simulation with the system took within 1 hour. **Conclusion:** Almost simulation systems up to now could not set up their osteotomy line freely, because of machine and program capacity. Now, the system realized simulation cross to the actual operation.

Keywords: Orthognathic surgery; 3d; Simulation

Abstr ID 689

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THREE-DIMENSIONAL (3-D) CEPHALOMETRY. THE BASICS FOR VIRTUAL PLANNING**Gwen RJ, Swennen E-L, Barth Filip Schutyser, Pieter Degroove, Alex Lemaitre**

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The introduction of cephalometry by Broadbent in 1931 has made a breakthrough in orthodontics. Recent advances in computer technology allow the combination of conventional cephalometric procedures and computer tomographic techniques. Although, three-dimensional (3-D) cephalometric procedures have been described in the literature, a validated 3-D cephalometric analysis of both hard and soft tissues is lacking. Because virtual planning of cranial distraction and orthognathic surgical procedures becomes increasingly popular, 3-D cephalometric analysis is necessary to compare preoperative, virtual planning and post-operative results. Hence, the purpose of this study is to present and evaluate the accuracy of a new 3-D cephalometric analysis of both hard and soft tissues for planning and assessment of treatment outcome of distraction and orthognathic surgical procedures. A total of 20 control patients were used to evaluate accuracy and reliability of 3-D landmark definition and 3-D linear, angular and orthogonal measurements. The measurement error was evaluated according to the 95% limits of agreement method of Bland-Altman. Reliability was tested according to Sackett. Measurement error according to Bland and Altman was less than 1.5 degrees and 1.5 mm. Squared correlation coefficients (r^2) according to Sackett showed a high reliability. The results of this study showed that the presented 3-D cephalometric analysis is highly accurate and reliable.

Keywords: 3-D, Cephalometry; Virtual planning;
 Distraction; Orthognathic surgery

Abstr ID 420

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RELIABILITY IN LANDMARKS IDENTIFICATION ON CT SCAN FOR 3D CEPHALOMETRY**Marecaux C, Sidjilani BM, Chabanas M, Lauwers F, Boutault F**

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Introduction: New 3D cephalometries have been presented for diagnostic and planning in orthognathic surgery. Thus, manually located points on CT scan imaging are used to build maxillofacial frameworks and complete biometries. Method validation requires studying reliability in landmarks identification. Whereas it was widely studied on telerradiography for 2D cephalometries, no evaluation has been still done for 3D methods. **Methods:** Reliability in landmarks identification was studied by reproducibility

(G coefficient method) and dispersion (mean, range, standard deviation) of points localization on X, Y and Z axis. 39 anatomic points were studied, including usual cephalometric points, Delaire analysis points and anatomical landmarks used for new 3D cephalometries. Landmarks were pointed out on a graphic interface providing interactive axial coronal sagittal and 3D surfacic views. Identifications were done 3 times by 2 different operators on 12 whole face CT scan. **Results and Discussion:** Statistical reproducibility is got for 25 points. However, statistically reproducible points can have dispersion which would be not satisfying for reliable orthognatic planning. Landmarks reproducibility depends on:

- Imaging technique specifications
- Computed data processing
- Landmarks anatomical definition
- Manual identification of landmarks CT scan, contrary to teleradiography, is a 3D anatomic and valuable imaging for facial dysmorphism diagnostic and surgical planning.

However, there are specific shortcomings to this imaging technique: radiographic artefacts, resolution, partial volume effect, graphic processing. Chosen landmarks for 3D cephalometry have to be different that they were for 2D and anatomically well defined. **Conclusion:** CT scan is a much more meaningful imaging method for facial dysmorphism diagnostic and surgical planning in orthognatic surgery. Manual identification on CT scan imaging is reproducible for chosen anatomically well defined landmarks and a reliable method for 3D cephalometry definition.

Keywords: Landmarks identification reproducibility; 3D cephalometry; 3D CT scan imaging

Abstr ID 375

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CRANIOFACIAL MORPHOLOGY IN PATIENT WITH FACIAL ASYMMETRY: A THREE-DIMENSIONAL ANALYSIS WITH COMPUTED TOMOGRAPHY

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Aims: The present study intended to evaluate morphological characteristics of craniofacial skeleton in patient with facial asymmetry. **Patients and Methods:** Forty-two patient (Male 20, female 22) with skeletal class III malocclusion composed of two groups; Asymmetry group (Group I, $n=24$) and Non-Asymmetry group (Group II, $n=18$) were compared. The skeletal chin deviation more than 4mm to mid-sagittal plane was regarded as 'asymmetric'. All the CT datas were taken before the orthognathic surgery and the 3D CT data were processed with 3D visualization & analyzing program. The difference between the two groups, correlation between the endo- & exo-cranial base and maxillomandibular asymmetry was evaluated statistically. The method error of the angular and lineal measurements was 1.6 degree and 1.7 mm. **Results:** The group I exhibited remarkable bilateral difference in A-P position of the condyle & angle, distance and Condyle-Gonion-Me dis-

tance than Group II. The degree of mandibular deviation was positively correlated with the morphology of the mandible and horizontal position of the condyle. Antero-posterior position of condyle was significantly correlated with cranial deviation, perous ridge, and mastoid position. Cranial deviation angle (Cristagali-Clinoid center-Opisthion) had correlation with posterior cranial fossa angle, however, had no correlation with anterior and middle cranial fossa angle. **Conclusions:** Chin deviation accompanied cranial asymmetry in 58.3% of patients. For 33% of patients, rotation of cranial base & anterior displacement of TMJ influenced the mandibular deviation and could be regarded as deformational posterior plagiocephaly related. The result reveals the need of new classification system for facial asymmetry based not only on the conventional 2D maxillomandibular structure but also the 3D cranial base landmarks. Moreover, anterior nasal spine or posterior cranial landmarks cannot be used for analysis of asymmetry because these landmarks also can be influenced by the craniofacial asymmetry.

Keywords: Facial asymmetry; Craniofacial; Three dimensionanl; CT, Morphology; Plagiocephaly

Abstr ID 65

280

TECHNIQUE OF FACIAL ANALYSIS WITH A NEW FACEBOW TRANSFER AND CT-BASED ANATOMICAL MODELING

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The correction of dentofacial deformities requires an accurate manipulation of teeth and jaws onto the three spatial dimensions in order to obtain esthetics, stability and function. There are many techniques that can be used for facial bi-planar analysis, being the Arnett's the more recent, and for obtaining 3D data of patient faces, such as laser scanning, CT scanning, 3D Ultrasonography, and many others. The surgeon's eye associate to the personal experience are mostly involved in achieving the "perfect" result, making those techniques an aid for the surgical step, but still there can be some imperfection. The maxilla and the mandible must be analyzed in two or more segments that may have different shape and position. This cannot be made precisely with a traditional facebow. Another problem is having a constant data for clinical and radiological head position. We developed with Evident a facebow and a clinical evaluation technique with the aim of: Acquire constant "Natural Head Position" data for Clinical and Radiological analysis. Develop a method of splitting into two or more segments the mandible in 3D planes by means of the new facebow associated to a stereolithographic model on which we do the clinical measures and simulate the surgical treatment. Do a follow-up with the same analysis. The results of our study on 10 patients demonstrate an improvement in re-orienting the facial bones in the right planes with a better aesthetic result. Actually this is a preliminary report and we have no data on the stability of the result. We believe this can be a valid aid in making facial analysis in Maxillo-Facial Surgery because it allows to measure clinically the skin response, simulate surgery

and transfer with surgical guides the projected therapy on our patients.

Keywords: Orthognathic surgery; Facial analysis; Facebow; Stereolithography

Abstr ID 364

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VERTICAL CHANGES IN ORTHOGNATHIC SURGERY—INTRAOPERATIVE CONTROLLING BY MEANS OF THE NEW FACE-O-METER

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In orthognathic surgery new and more sophisticated techniques in plate and screw osteosyntheses as well as improved and more refined implant material have enabled surgeons to carry out stable osteosyntheses of the osteotomised jaw. This means that intermaxillary fixation — dreaded by so many patients is no longer necessary. However, one problem surgeons do have during the operation is achieving the correct spacing of the upper jaw before the osteosynthesis. The upper jaw is set by means of the double-splint procedure in preparation for the simultaneous surgical correction (S.T. Samsiri, 1987). Using the Dorson-grip, the upper and lower jaws, fixed with the splint between, are centralised and moved up and down in the hinge axis of the joint. This procedure enables the sagittal and transversal relation of the upper jaw to be determined; the surgeon cannot however determine the vertical relation. With the Face-O-Meter being described here, the preoperative vertical dimension can be measured and the new desired position of the maxilla can be controlled three-dimensionally. For the measuring point we take the interincisive point, particularly when finding the centre and the height for the maxilla. The Face-O-Meter rests on 3 short Kirschner-wires fixed percutaneously in the frontal base as fixed reference points and is therefore superior to other methods. Before the osteotomy first the horizontal line of the eyes is monitored to the frontal line of the upper teeth by a sighting device and measured in degrees. Second the incisal pointer is directed to the interincisal point. Afterwards the sighting device and the incisal pointer are adjusted in degrees and millimetres in all three dimensions according to our treatment plan. Perfect control is possible and occasional failures of the treatment plan can be detected and corrected immediately. We are using the Face-O-Meter now since 1987 in over 600 operations.

Keywords: Vertical changes in orthognathic surgery; Intraoperative controlling by means of the new face-O-meter

Abstr ID 297

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COMBINED—ORTHODONTIC AND SURGICAL TREATMENT OF FACE ASYMMETRY

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The aim of our study is to present our experiences in diagnosis and combined treatment of facial deformities with severe asymmetry. **Material and Methods:** In the years 1999–2004 in the Department of Orthodontics and II Maxillofacial Surgery Clinic of the Warsaw Medical University 19 patients (aged 16–32) with asymmetric deformities of the viscerocranium required combined orthodontic and surgical treatment. In 12 cases face asymmetry was mostly manifested by malocclusion due to too early and asymmetric extractions of premolars. After orthodontic preparation these patients were treated by LeFort I osteotomy or sagittal split osteotomy or both. Additionally genioplasty was performed in 5 cases. In 7 cases the face asymmetry was caused by hyperplastic condyle or mandibular ramus, which resulted, in the following years in deformations of the mandibula, maxilla, orbits and the nose. In 4 cases there was history of trauma to the TMJ, in 3 cases infection — all before the pubertal spur. All Patients received long time (up to 4 years) orthodontic preparation. As for surgical methods different kind of mandibular or maxillary osteotomies and osteotomies were performed accomplished by autogenous bone grafting. Modern diagnostic methods were applied before the treatment and afterwards for results assessment. **Results:** In all treated patients improvement of facial features and occlusion was achieved. No major complication were observed. **Conclusion:** Close cooperation of the orthodontist and the surgeon, modern diagnostics and appropriate surgical technique give good results and long time stability.

Keywords: Face asymmetry; Mandibular osteotomy; Condylar hyperplasia

Abstr ID 646

283

CORRECTION OF MANDIBULAR ASYMMETRY BY VERTICAL OBLIQUE OSTEOTOMY—A CEPHALOMETRIC STUDY

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Aim: The aim of the study was (1) to find variables to describe asymmetries comparable and reproducible in frontal cephalograms, (2) to prove, whether asymmetries of the mandible can be successfully corrected by the combined surgical-orthodontic treatment using the vertical oblique osteotomy (VO) of the mandible and (3). to quantify the amount of (a) symmetry in comparison to an untreated control group. **Material and Methods:** 54 patients were treated for asymmetry of the mandible by VO. For having an additional genioplasty, 15 patients were

excluded so that the test group consisted of 37 patients. Frontal cephalograms prior to treatment and at least one year after mandibular osteotomy were computerized and evaluated with the CEPHANAL program by Segner, based on the systematic anterior-posterior cephalometric analysis by Segner and Scheuer (1990). Lateral cephalograms of a group of 43 individuals with ideal occlusion without any orthodontic treatment served as a control group. Statistical evaluations were carried out using the SPSS statistical program. **Results:** To describe transversal asymmetries 4 cardinal variables were distinguished: e.g. the distance of chin point from the skull midline was 5.73 mm (range 0.30 to 12.55 mm) in the test group preoperatively and 2.78 mm (range 0.03 to 7.85 mm) postoperatively ($P \leq 0.001$). The control group showed a distance from the midline of 2.20 mm with a range of 0.00 to 6.45 mm. The difference from the control group to the test group was highly significant preoperatively ($P \leq 0.001$) and not significant to the test group postoperatively. **Conclusion:** Cephalometric evaluation showed a significant asymmetric skeletal configuration of the patients preoperatively. One year postoperatively stable skeletal symmetry was documented. The Vertical Oblique Osteotomy proves to be a suitable method to correct mandibular asymmetry.

Keywords: Vertical oblique osteotomy; Mandibular asymmetry; Cephalometry

Abstr ID 167

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A NEW SURGICAL CORRECTION OF SOME CLASSES II MALOCCLUSIONS RELATED TO MANDIBULAR RAMUS DEFICITS

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Aims: Some important classes II malocclusions due to ramus deficits required particular surgeries of the mandible. The classic treatment consist in performing a "L" osteotomy with graft and external approach. Our goal is to present and to assess a new technic performed by intraoral route, used to increase the posterior ramus length. **Materials and Methods:** The study is carried out on 16 cases 10 women and 6 men who were affected by class II malocclusions because of ramus deficit. The age of the patients range from 17 to 38 years old. The average is 29.8. The osteotomy is a classic sagittal splitting up of the mandible but with a section of the muscular strap which surrounded the mandibular angle. Then a posterior open bite is established. It will be closed by an orthodontic treatment. Different dimensions were recorded (length of the ramus and corpus, angulation of the occlusal plane). **Results:** The proposed technic induced an increment of the ramus length. The average is 3.25 cm. There is an horizontal tilting of the occlusion plane. The average is 11.71. The average postoperative orthodontic treatment was 4 months. It gave a total closure of the posterior open bite. All the patients six months after surgery were in class I occlusion. **Conclusion:** The presented technic is reliable to increase the vertical dimension of the ramus by an intraoral approach. It induces a stable horizontalisation of the

occlusal plane. It provides a stable classe I occlusion. It avoids the classic external approach which is usually used. Grafts are useless.

Keywords: Osteotomy; Ramus length; Class II

Abstr ID 773

285

TREATMENT OF MANDIBULAR ASYMMETRY BY BILATERAL INTRAORAL VERTICAL RAMUS OSTEOTOMY

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Various symptoms and signs of mandibular dysfunction have been reported following orthognathic surgery. Although sagittal splitting ramus osteotomy, which has become one of the common surgical procedures used for treating mandibular deformities, has superior advantages, there is concern regarding pathological changes in the temporomandibular joints following surgical treatment of mandibular asymmetry. A higher incidence of mandibular dysfunction has also been reported with mandibular asymmetry. Consequently, in treatment surgeons must not only consider the occlusion itself but also positive outcome in improving mandibular dysfunction. The purpose of this study was to determine if surgical correction of mandibular asymmetry by intraoral vertical ramus osteotomies (IVROs) results in improvement of symptoms. A prospective study was undertaken 62 patients (43 female and 29 male) with mandibular asymmetry. Each Patient was treated by bilateral IVRO's with 2-3 weeks of maxillomandibular fixation and no interosseous fixation of proximal segment. Panoramic and transcranial radiographic and MRI studies of TMJ's, before and a minimum of one year after surgery were made. History, clinical dysfunction, and pain indices were used to study the frequency and severity of mandibular dysfunction. The severity of pain experience and mandibular dysfunction was significantly reduced or totally eliminated during the follow-up period. Our studies indicated that surgical correction of mandibular asymmetry by IVRO's had a beneficial effect not only on dental occlusion but also upon the signs and symptoms of mandibular dysfunction.

Keywords: Mandibular asymmetry; Intraoral vertical ramus osteotomy

Abstr ID 455

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TREATMENT OF TEMPOROMANDIBULAR JOINT ANKYLOSIS

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Introduction: Temporomandibular joint (TMJ) ankylosis is a pathological process caused by damage of the mandibular condyle. Occurring during developmental age, it leads to alteration of the entire maxillofacial complex. Therefore, surgical methods applied to eliminate temporomandibular ankylosis cover essential operations to correct the secondary maxillofacial deformity. Childhood condylar damage may trigger ankylosis and alternate mandibular growth. **Aim:** This paper aims at discussing our clinical experience in using external distraction devices for reconstruction of temporomandibular joint. **Subject:** 10 patients aged from 2 to 14 years with temporomandibular joint ankylosis, mouth opening 1.5–4.5 mm were treated at our center by distraction osteogenesis. The procedure involved radiographic analysis, including orthopantomography, lateral and posteroanterior cephalometry and computed tomography. Simultaneous release of the joint and reconstruction of the condyle with distraction and bone transportation was performed. Reverse-L osteotomy was applied on the mandibular ramus and an extra-oral Molina distractor was fixed on the osteotomized fragment and the mandibular ramus. The osteotomized ramus fragment was activated after five-day long latency period at a rate of 1 mm per day until satisfactory results were obtained. The distractor was mounted for approx. 3 to 4 months after completion of distraction, and then removed under local anesthesia. **Results:** The average duration of distraction was 18 days. Excellent results were achieved both clinically and radiologically with minimal relapse. Good occlusal relation achieved revealed normalization of most cephalometric values. Mean preoperative and postoperative sixth-month interincisor opening values stood at 4.5 and 30.6 mm, respectively. **Conclusion:** Combined with arthroplasty, osseous mandibular distraction offers an excellent new alternative for treatment of patients with mandibular hypoplasia and associated ankylosis, with minimal morbidity and complications involved.

Keywords: Temporomandibular joint; Ankylosis; Distraction osteogenesis

Abstr ID 844

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STERNOCLAVICULAR GRAFTS FOR CONDYLAR RECONSTRUCTION

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Aims: The aim of the following job is to appraise the aesthetic and functional consequences of the ramus-condyle unit reconstruction (RCU) with sternoclavicular graft (SCG). **Subject and Methods:** From 2000 until today, 5 SCGs have been realized in 5 patient males, with 25 year-old middle age, to reconstruct 3 TMJs with post-traumatic ankylosis and 2 cases with RCU absence after oncological resection. In all the patients, the serious facial asymmetry was in partnership to a symptomatic picture mainly characterized by insufficiency of the TMJ, with absent or limited opening of the mouth. The adopted surgical technique expects a double access, preauricular and sub-mandibular. The split harvest of the clavicle anterior

portion is contralateral to the receiving site. The rigid fixation of the graft with plates, mono and bicortical screws complete the surgery. **Results:** Any complication has been recorded during the follow-up (range: 10–36 months) where the results depose for a notable occlusal stability and of the posterior vertical dimension. In all the patients, the mandibular opening >4 cm has been reached after a 2 month period of functional rehabilitation. Also moderate recoveries of movement of opposite laterality have happened. **Conclusion:** In the adult patient the SCG is preferred, in comparison to other autologous bony grafts, because very more similar from the histological point of view to the condylar tissue to be reconstituted. Of the clavicle great sturdiness and dimensional stability are appreciated in the time that guarantees the maintenance of the gotten surgical result. Characteristics that allow to integrate to the SCG also orthognathic surgery procedures, to correct in one operating session three-dimensional dento-maxillary deformities. We hold therefore that the SCG assures the restoration of a good articular and occlusal functionality, the recovery of the facial symmetry, guaranteeing so aesthetic and functional results predictable and stable in the time.

Abstr ID 852

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OVERGROWTH OF CHONDROSTAL GRAFT

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Introduction: Costochondral graft is often used to replace absent or destroyed TMJ. The chondral end of the costal graft aims to avoid bone to bone contact and to permit a better articular function. However, before the end of puberty, the graft has the aim to obtain sufficient growth in order to maintain good facial balance or facial symmetry. **Patient and Methods:** 32 young patients had a unilateral (25) or bilateral (7) costochondral graft. These correspond to 41 costochondral grafts for the treatment of TMJ ankylosis (14) condylar dysplasia including hemifacial microsomia (7) or degenerative rheumatoid arthritis (2) between 1983 and 2000. The age range was between 2 and 15 years. The height of the cartilage was about 10 millimeters or more until 1996, and about 3 millimeters after this date without any other change in treatment plan or surgical technique. **Results and Discussion:** 100% of the bilateral cases and 50% of the unilateral cases operated on and before 1996 had an overgrowth developing a contralateral mandibular deviation in the unilateral group or a class III more or less symmetrical in the bilateral group. No overgrowth had been observed since 1996, for the exception of one case. The younger the patient was, the more important was the overgrowth at the time of surgery. The treatment of overgrowth was the same as the condylar hyperplasia: resection of a part of cartilage to restore the mandibular symmetry or to correct the dentoskeletal class III with the help of orthodontic treatment. **Conclusion:** The growth of costochondral graft depends essentially on the height of the cartilage as well as the age of the patient at the time of surgery.

UNILATERAL CONDYLAR HYPERPLASIA: A STUDY OF 46 CASES TREATED WITH CONDYLECTOMY

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Purpose: Unilateral condylar hyperplasia is a rare benign malformation due to the overgrowth of the condylar cartilage. It is a mandibular asymmetry characterized by an increased vertical height and occlusal disturbances. The aim of our study was to define a classification of condylar hyperplasia according to the direction of development, as well as a radiographic and clinical evaluation of aesthetic and functional results. **Patients and Methods:** 46 cases were selected from a database of 58 patients with an age range from 12 to 58 years between 1980 and 2003. Isolated condylectomy or associated with other osteotomy was performed in all cases. Condylar hyperplasia was classified in two types: vertical or horizontal according to a clinical, radiographic and cephalometric studies. The condylectomy was evaluated clinically by the occlusal examination, the articular function, the facial symmetry and radiologically by a cephalometric study. **Results:** In our study, unilateral condylar hyperplasia had a greater incidence in women at a rate of 69.6% with a homogeneous distribution between the two types. The aetiology of this entity was still unknown. The occlusal results of the condylectomy were satisfactory in 84.4% of the cases. Architecturally, this surgery normalized the posterior vertical height and the occlusal plane significantly ($P < 0.05$) and improved the facial symmetry with postoperative stability. The articular function was maintained in more than 90% of the cases. **Conclusion:** Condylar hyperplasia is a posterior vertical excess classified in two types: vertical and horizontal. In our opinion, the condylectomy is the treatment of choice. It must be performed independent of age. It eliminates the etiopathologic factor, restores the vertical height, normalizes the occlusal plane and the facial symmetry while conserving the articular function.

Keywords: Unilateral condylar hyperplasia; Hemimandibular hyperplasia; Facial asymmetry; Condylectomy; Posterior vertical excess

NEW METHODS OF CORRECTING THE LATERAL CONTOUR DEFECT IN HEMIFACIAL MICROSMIA AIDED BY 3D IMAGING/MODELLING/PLANNING

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Aims: Conventional end-stage treatment options for facial lateral contour deficiency in Hemifacial Microsomia (HFM) include onlay bone grafting and soft tissue augmentation. Both have notable disadvantages including

resorption of bone and late sagging of soft tissues. This study aimed to correct the contour deficiency by new and more reliable methods. **Method:** Although distraction osteogenesis has proved very effective in correcting much of the Mandibular deformity in HFM, sometimes a lateral bony and soft tissue contour defect remains. We have devised a different way of correcting this problem by repositioning laterally the angle and ramus of the mandible on the affected side. The Mandibular angle is widened on the affected side after a midline body osteotomy in the symphyseal region together with bilateral sagittal splits. The posterior aspect of the mandible on the affected side moves laterally kicking outwards laterally the deficient mandibular ramus. A block iliac bone graft used interpositionally within the sagittal split produces further lateralisation of the ramus which is then fixed with screws. The same kind of correction can be performed using distraction osteogenesis. Planning on a model involved performing a sagittal split on a previously vertically distracted ramus/angle, placing an external distractor (Normed®) with two pins in each fragment. The pins in the lateral part of the sagittal split are connected to a rotating ring (a 'vectoriser'), which draws them outwards, by 0.5 mm per 360-degree turn. **Results:** The results are demonstrated in several patients. **Conclusion:** These techniques are applicable only to a small number of cases but perhaps offer a better correction than conventional methods. The advantages are aesthetically self evident and this may be in part due to concomitant expansion of the functional matrix.

Keywords: Hemifacialmicrosomia; Distraction; Osteotomy; Lateral contour defect

ANTHROPOMETRIC EVALUATION OF SOFT TISSUES IMPROVEMENT AFTER DISTRACTION OSTEOGENESIS IN HEMIFACIAL MICROSMIA

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Aims: To analyze soft tissues improvement after distraction osteogenesis procedures in patients affected by Hemifacial Microsomia. **Subject:** Soft tissues hypoplasia still represents one of the major problems in hemifacial microsomia (HFM). For many years the treatment of hypoplasia followed three major axes:

- the use of grafts by injection of adiposal tissues (lipofilling)
- free adiposal tissues grafts
- microsurgical flaps, mainly of the fasciocutaneous type.

According to Mc Carthy's experience since 1989 Distraction Osteogenesis (DO) has been applied more and more with the aim to correct simultaneously both the skeletal and the soft tissues deficiency. Several papers have showed that during DO we can observe proliferation of bone cells, muscular cells, nerves and vessels obtaining a true Distraction Histogenesis. In 1995 Molina stated that skeletal DO

proceeds parallel to an expansion of all soft tissues of the face and upper neck. Few researches have analyzed the real increase of soft tissues especially in a long term point of view. AA used anthropometric analysis according to Farkas to state soft tissues improvement. **Results:** AA analyzed all HFM patients they have been treated in the last 15 years with or without DO. Correction of asymmetry with DO has been gained in type I and IIa HFM while in type IIb and III we adopted different strategies. **Conclusion:** After 14 years of DO in HFM we realized that any case needs a personal approach and probably the best choice is a mix between distraction procedures, orthognathic surgery and classical soft tissues management.

Keywords: Distraction osteogenesis; Hemifacial microsomia; Soft tissues

Abstr ID 690

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GENIOPLASTY IN THE ASYMMETRIC FACE

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Asymmetrical faces often need complex and compounded surgery. Correction of an asymmetrical chin is a challenging task and may not be overlooked in the overall facial symmetrisation procedures. From January 1999 to December 2003 we performed 17 genioplasties of all types in asymmetric faces in our university department of maxillo-facial surgery. Eleven patients were females, six were males. The purposes of these genioplasties were several: aesthetic improvement (5), correction of post-traumatic facial asymmetry (1), balancing of facial dysmorphism (9) (orthognathic or other) and secondary corrections in cleft patients (2). In all of the patients the chin correction was combined with one or more facial interventions. We performed the same incision and dissection in all of our patients. The inferior alveolar nerves were always identified. In all of the cases we dealt with a minimal to major asymmetrical chin deformity. Symmetrisation genioplasty consisted of derotation procedure, reaxation procedure, ostectomy or simple shaving of the inferior mandibular border. In the majority of the patients (10/17) the symmetrisation procedure of the chin was combined with either an advancement, a backward transposition or a reduction genioplasty. The purpose of our study was to assess hard and soft tissue stability in all types of genioplasty. Special attention went to the long-term follow-up of the chin symmetrisation procedures. We therefore compared the pre-operative with the immediate post-operative and long-term follow-up lateral cephalometric radiographs. An evaluation of sensory deficits was performed, based on clinical examination.

We will discuss our results of this follow-up study.

Keywords: Asymmetry genioplasty facial aesthetic surgery

Abstr ID 847

293

ESTHETICAL PORPUSE IN TRIDIMENSIONAL CORRECTION OF MAXILLO-FACIAL ASYMMETRIES

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Subject: Aesthetical tridimensional correction of maxillo-facial asymmetries represents an emerging problem into the orthognathic surgery. Actually, patients affected by maxillo-facial asymmetry, required a functional resolution of the problem but also a reasonable cosmetic result. The aesthetic results achievable by only orthognathic surgery sometimes are not sufficient. So we have to perform additional techniques useful to improve the patient's aesthetics. **Method:** After reviewing the causes of maxillo-facial asymmetry and main techniques for its correction, the authors present their experience with some complementary techniques for aesthetical tridimensional correction of those asymmetries. Pre-operative study includes a clinical-photometric exam of the patient, a 2D and 3D TC exam so as so a cephalometric analysis of hard and soft tissue in accord to Arnett. **Results and Discussion:** The functional and in particular aesthetic results are discussed. Both psychological and aesthetic satisfaction of the patients were achieved. Present and increasing esthetical demand of the patient has to persuade the surgeon to point the focus on the choice of surgical technique used to correct maxillo-facial asymmetry, also availing himself of complementary surgical procedures for an esthetical improvement of same patient.

Abstr ID 615

294

CORRECTION OF FACIAL DEFORMITIES BY PERICRANIAL AND OSTEOPERICRANIAL FLAPS

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Introduction: Pericranial flaps consisted of the galea and periosteum, that is of all tissues between the subfollicular level of scalp and calvarial bone. Osteopericranial flaps included parietal bone (split or full thickness) pedicled on the galea and the periosteum. **Patients and Method:** In 29 patients with various facial deformities (Romberg's disease, Treacher Collins syndrome, facial asymmetry, lipodystrophy, hemifacial microsomia, Hanhart's syndrome and posttraumatic deformities) correction was performed using vascularized pericranial and/or osteopericranial flaps based on the superficial temporal vessels. These procedures have been combined with orthognathic surgery in 7 patients. In order to achieve satisfactory tissue volume and thickness, it was necessary to fold, duplicate pericranial flap. After the flap had been raised and doubled it was placed into the prepared subcutaneous pocket. In majority of patients in

whom osteopericranial flaps were used, in order to achieve satisfactory facial contour, it was necessary to create osteopericranial flap of full thickness parietal bone (donor site has been reconstructed with split thickness calvarial bone). It is also possible, as a one stage procedure, to combine a osteopericranial flap with additional pericranial flap to correct severe facial deformities. **Results:** By using described techniques, in all patients a significant aesthetic improvement was achieved. In all cases where doubled pericranial flaps were used the fullness of the reconstructed area slightly decreased within 6–8 months postoperatively. In cases with osteopericranial flaps there was no sign of bone resorption and consequent changes of the facial contour. **Conclusion:** Correction of facial deformities using pericranial and/or osteopericranial flap, alone or in combination with orthognathic surgical procedures, gives very good long term aesthetic and functional results.

Abstr ID 591

295

DEEPITHELIALIZED FREE FLAPS IN SOFT TISSUE AUGMENTATION OF THE FACE

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Microsurgical flaps have improved results of facial contour restoration in cases of severe soft tissue deficiencies. Main free flaps utilized are omentum, parascapular, forearm and latissimus dorsi flaps. Free flaps are indicated in Romberg disease (hemifacial atrophy), postirradiation hypoplasia of the face (radiotherapy in pediatric age) and post cancer ablative surgery. This article introduces our experience with deepithelialized free dermal fat flaps in reconstruction of facial asymmetry. Seven patients with congenital and acquired defects were treated with 8 flaps; one patient by 2 simultaneous free flaps. In the first case a free omental flap was utilized for facial soft tissue augmentation. This flap is good, but difficult to be distributed with different thickness. Donor site morbidity is also quite high. Four patients were treated transposing a deepithelialized parascapular flap. This free flap is the better way to rebuild large losses of substance, well planned even with different thickness according to the needs and parts of face to be treated. Two deepithelialized free flap of latissimus dorsi were used simultaneously on the same patient. Derma and fat being the main component as the thin streep of muscle would later reabsorbe. The flap is less versatile than parascapular one but may be harvested bilaterally at the same time. One deepithelialized radial forearm flap was used; that represents a solution for very limited defects. Long term follow-up demonstrated maintenance of bulk of all free flaps. All patients required later revision of flaps in order to maximise results. Results appear to indicate that deepithelialized free flaps are useful in reconstructive procedures for patients with extensive facial defects or bad vascular local conditions.

Keywords: Deepithelialized free flaps; Latissimus dorsi; Parascapular; Omentum; Forearm; Soft tissue atrophy

Abstr ID 376

296

THREE-DIMENSIONAL ANALYSIS OF MASSETER AND MEDIAL PTERYGOID MUSCLE IN DEVIATED MANDIBULAR PROGNATHISM

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Aims: The purpose of this study was to evaluate the three-dimensional (3D) volume of the masseter and medial pterygoid muscle in deviated mandibular prognathism to test the hypothesis that facial asymmetry is related with asymmetrical muscular function. **Patients and Methods:** The study was conducted with 28 skeletal class III patients composed of two groups; 17 patients (average age, 21.8 years) with mandibular deviation and 11 controls without facial asymmetry (average age, 21.5 years). The right-left difference of the volume of masseter and medial pterygoid muscle were measured and transformed into Asymmetry Index AI). Masseteric muscle direction in relation to FH plane were measured on the basis of 3D CT scans. Craniofacial skeletal pattern was analysed from frontal and lateral cephalogram. The muscular activity was evaluated with electromyography (EMG) recorded from the skin over superficial masseter and anterior temporal muscle. **Results:** AI of the medial pterygoid and the degree of mandibular deviation had significant correlation ($R=0.71$, $P<0.01$). The difference between the right and left masticatory muscle activity was positively correlated with the difference of the medial pterygoid volume ($R=0.56$, $P<0.01$). The result implies the patient with asymmetrical mandible showed larger medial pterygoid volume, stronger masseteric force on the ipsilateral deviated side. However, there was no direct correlation between the muscular activity and volume in both groups and the masseteric muscle direction showed no constant relation with the degree of mandibular asymmetry. **Conclusions:** These data showed the difference in volume and activity in the masticatory muscle might partially explain right-left morphological difference in mandibular asymmetry.

Keywords: Three dimension; Asymmetry; Masseter; Medial pterygoid; Mandible; Volume

Abstr ID 316

297

PROGRESSIVE FACIAL HEMIATROPHY WITH ASSOCIATED OSSEOUS LESIONS

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Progressive facial hemiatrophy (PFH), or Parry-Romberg's Syndrome, is a rare condition of unknown aetiology characterized by the slow and progressive appearance of unilateral facial atrophy that affects the skin, subcutaneous tissue, muscle and bone. Hemilateral extension to the trunk

and members has been reported in isolated cases. It frequently commences in the first or second decade of life, progresses at a variable rhythm and stabilizes within a period of between 2–10 years. We report two typical cases and other unusual form of PFH: a 60-year-old female patient whose cutaneous symptoms commenced in 1987 in the form of a purplish erythema on the left side of her face and neck, which subsequently remitted giving rise to an indurated region in the left maxillary region. Since 1995 until the present day, she has developed facial hemiatrophy on the left side accompanied by progressive osseous reabsorption of the upper maxilla and left mandible with atrophy of soft tissue. The osseous lesions described in PFH are variable and are strictly related to the age at which the condition appears. When the condition commences after the age of 15 years, the lesions are considered to appear exclusively in soft tissue. The association of the onset of PFH with progressive osteolysis of the maxilla has not been previously reported in an adult patient.

Keywords: Bone; Progressive Facial Hemiatrophy; Parry-Romberg Syndrome

Abstr ID 854

298

PARRY-ROMBERG SYNDROM/INTEREST OF THE LIPOSTRUCTURE

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Parry-Romberg syndrome is characterised by a limited progressive hemifacial atrophy involving the skin, soft tissue, and underlying cranio-facial skeleton. Involvement of the central nervous system with impairment in neurologic function occurs infrequently. Since its first description in 1825, this syndrome has aroused interrogation and reflection about its pathophysiology, its variable clinical expression and its progression. Because of the uncertain pathophysiology, medical therapy has not been very successful. Palliative reconstruction surgery remains the only possibility. We propose our experiment of filling by lipostructure[®] for five years. This technique developed by Coleman is now well established and its long-term stability is not any more to show. In this indication, it is carried out in adverse conditions because of vascular refraction, which force us to repeat the injections. However, it enables us to obtain very satisfactory and stable results with the provision scrupulously of respecting the protocol of aspiration, centrifugation and injection, while being far from invasive free flap proposed. Of course, the lipostructure[®] is only a weapon in the therapeutic arsenal, which could be combined with other techniques, in particular for the correction of the osseous bases.

Abstr ID 875

299

FACIAL ASSYMETRY AND SCOLIOSIS

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Purpose: Facial asymmetry is a common part of maxillofacial deformity and has been studied its etiology and therapeutic method by many scholars. At present it has been known that unilateral mandibular hyper and hypogrowth developed facial asymmetry, and many factors such as trauma history and unilateral condylar pathologic condition et al related to it. On the other side, some studies was reported that one of the serious etiologies related with scoliosis and torticollis. The aim of this study is to evaluate the relationship between facial asymmetry and scoliosis, and the prognosis after orthognathic surgery. **Patients and Methods:** A retrospective study was performed on 41 patients with facial asymmetry. Physical examination, Panoramic view, Cephalometry, 3-dimensional CT, and whole spinal AP were used as a diagnostic tools. Treatments included pre-operative orthodontic treatment, osteotomy, and rehabilitation of the mandibular movement. Follow-up period was longer than 6 months. **Results:** (1) The 5 cases were related to scoliosis of the 41 cases. (2) All 5 cases had relapsed within 6 months, post-operatively. **Conclusion:** In patients with facial asymmetry related with scoliosis, The treatment strategy must be established carefully. To obtain a stable result of the orthognathic surgery, treatment of scoliosis must be coincided with the correction of the facial asymmetry.

Abstr ID 127

300

ANOPHTHALMIC ORBIT: INTEGRATED RECONSTRUCTIVE STRATEGIES

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Aims: Anophthalmic Orbit may be due to congenital or acquired disorders. The congenital anophthalmic orbit refers to any orbit that contains a severely hypoplastic eye at birth (microphthalmos), or a complete absence of the globe through failure of formation of the optic vesicle. In congenital forms the aim of surgery is to provide adequate orbital growth. In acquired forms the goal is orbital volume restoration by means of adequate replacement of the orbital content. After enucleation, primary or secondary reconstruction requires various procedures. The goal is orbital volume recovery as well as reconstruction of the fornices, and eyelids. In orbital exenteration the reconstructive aims include restructuring of the anatomic boundaries of the orbit, when these have been disrupted by resection, and orbital volume recovery with soft tissue replacement. The aim of this paper is to analyze the timing in integrated reconstructive strategies. **Methods:** In this study 28 patients (6 cases of congenital and 22 of acquired anophthalmic orbit), were treated between October 1997 and August 2002, by applying protocols that are based on

data from the literature. **Results:** In 19 cases there were satisfactory results. Few complications such as implant dislocation (3 cases), residual asymmetry (2 cases), and eyelid retraction required revision surgery or some refinements (4 cases). **Conclusion:** In rehabilitating a patient with an anophthalmic orbit it is essential to ensure that the patient has realistic expectations regarding

a final prosthesis. Interaction of the various health-care professionals is also essential to develop new prosthetic devices as well as innovative methods of socket reconstruction.

Keywords: Congenital anophthalmia acquired anophthalmia; Orbital reconstruction

TOPIC 11: ORTHOGNATIC SURGERY

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Abstr ID 525

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NEW SIDE CEPHALOMETRIC ANALYSIS**Gola R, Cheynet F, Guyot L, Richard O**

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The authors are offering a new side cephalometric analysis made with 13 anatomic points. Nine points are osseous and four points are cutaneous. All the points are exobasicranial. This analysis is the result of the latest phylogenetic, ontogenetic, anatomic and biomechanical findings. A new exobasicranial facial cephalometric plane is defined, starting from the nasion (Na) and going to the glenion (Gl). This the Nasion–Glenion plane is perpendicular to the maxillary incisive axis and to the facial growth axis. Four vertical anatomic planes perpendicular to the Frankfort horizontal plane are drawn. The cutaneous facial plane intersect the glabella (Gla), it allows to appreciate the sagittal division of the face and the position of the cutaneous chin. The premaxillary plane intersect the fronto-maxillo nasal suture (FMN), it allows to appreciate the position of the maxillar, the mandible and the osseous chin. The posterior maxillary plane intersect the inferior pterygoid point (Pti), it allows to appreciate the position of the mandibular ramus. The cranio rachidian plane intersect the basion, it allows to appreciate the position of the cervical spine to the cranium. An occlusal plane is defined by a curve with FMN as the center and a radius equal to FMN-Gl. This occlusal plane merges the curve of Spee. This new both functional and aesthetic cephalometric analysis allows simple, fast and easy studies of the main facial and cervical structures.

Keywords: Cephalometrics; Orthognathic surgery; Anatomy; Orthodontics

Abstr ID 554

302

STATISTICAL VALIDATION OF DELAIRE'S ARCHITECTURAL CRANIOFACIAL ANALYSIS**Perrin JP*, Mercier JM¹, Nimeskern N², Bernard P³**

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Delaire's analysis is a reference in orthodontics and orthognathic surgery, largely validated by the use. This study was carried out to appraise this method in a more objective way using statistics. **Materials and Method:** Cephalometric tracings of 36 Caucasian subjects in clinical class I dento-skeletal relationship (18 males/18 females, 27 years of average age, 19.4% having had orthodontic treatment) were carried out. The objective was to search for an eventual significant difference between the theoretical architecture, given by the analysis, and the real architecture of these normal patients. The tracing as well as the statistical data-processing were possible thanks to an

original coordinates system (formed by lines C1 [x-coordinate axis] and C0 [y-coordinate axis], new line introduced by Nimeskern) coupled to a spreadsheet. Each point is defined by 2 values, its abscissa and its ordinate assimilable, respectively, to its sagittal and vertical position.

Results: Statistical comparisons between real and theoretical(t) points and angles highlight a significant difference concerning angles C1F1 and C1f1M, C1F1 and C1f1m, sagittal position of points Me and Me(t), position of Go and Go(t), vertical position of Goc and Go(t), real and theoretical goniac angles. On the contrary, angles C1f1M and C1f1m, points ENA and ENA(t), points NP and NP(t), vertical position of Me and Me(t), sagittal position of Goc and Go(t), real and theoretical goniac angles, real and theoretical anterior total facial height, midface height and lower facial height are not statistically different. **Conclusion:** These results validate Delaire's analysis. The differences found concerning angles C1F1, C1f1M, C1f1m and the sagittal position of Me and Me(t) reflect the same data which was taken into account by Delaire and therefore doesnot invalidate the method. Data concerning Go are the only ones remaining debatable.

Keywords: Delaire Cephalometric analysis Coordinates Spreadsheet Statistics class I dento-skeletal relationship

Abstr ID 727

303

ANTERIOR OPEN BITE WITH SHORT POSTERIOR FACE HEIGHT:**Turvey TA**

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Introduction: Long-term stability studies suggest that elevating the posterior maxilla with or without simultaneous mandibular surgery provides the best chance of occlusal correction, retention and favorable adaptation for open bite correction. The esthetic correction with this surgery is not always optimal especially in the presence of short posterior face height. **Methods:** By using bone plates, screws and autogenous bone grafts, the rigidity of stabilization of facial osteotomies has improved long-term outcome, especially when counter clockwise facial rotation is attempted. To optimize the esthetic outcome, counter clockwise facial rotation is necessary when dealing with conditions such as Treacher Collins Syndrome, condylo-mandibular dysplasia, juvenile rheumatoid arthritis and hemimandibular hypertrophy. To elongate the posterior face, down grafting the posterior maxilla via LeFort I osteotomy and interpositional bone grafting is done as well as elongating the mandibular ramus. The ramus surgery is conducted via a neck incision, inverted L osteotomy and interpositional bone graft. In the absence of a condyle, costochondral reconstruction is employed. Genioplasty is almost always necessary. These surgical procedures are always planned in a single stage however, occasionally it is necessary to stage the procedures. **Conclusions:** Improved long-term esthetic outcome has been observed, especially with the definition of the inferior border of the mandible and chin projection in patients with short posterior face and anterior open bite who underwent counterclockwise facial rotation. Occlusal and functional outcomes are subject to

adaptation but results are improved with orthodontic detailing and physical therapy. Careful attention to preoperative evaluation, planning the surgical details with face bow mounted articulated study models, cephalometric tracings and stereolythic model surgery as well as careful surgical execution are necessary to assure success.

Abstr ID 197

304

STABILITY AND RELAPSE AFTER SURGICAL-ORTHODONTIC CORRECTION OF SKELETAL OPEN-BITE DEFORMITIES

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Aim: The aim of this study was to evaluate the adaptive changes and the functional behavior of soft tissue and orofacial muscles after surgical correction of skeletal open bite and to show their influence on occlusion and their contribution to relapse. **Method:** The study utilized 91 patients, 42 males and 49 females, aged 18 to 36 years, 37 with skeletal class III malocclusions and 22 with skeletal class I malocclusions and 32 skeletal class II. All patients originally had an anterior open bite without vertical overlap of the central incisors. 64 patients had undergone bimaxillary orthognathic surgery; 27 patients only Le Fort I osteotomy. Were assessed anterior and posterior tongue position, lip competence, lip incisor relationship, masticatory muscle activity and breathing mode. **Results:** Demonstrated that statistically strong correlation were found between anterior and posterior tongue positions and occlusion. Lack of anterior contact and of a strong interdigitation allowed tongue interpositioning. The activity of the masticatory muscles and habitual mouth posture were correlated to open bite, over jet and over bite. The lower lip and the tongue had more effect on the position of incisors than does the upper lip. The improvement of breathing mode was probably due to the increase in lip competency. The interlabial distance was significantly correlated with mentalis muscle activity. **Conclusion:** After surgical correction of anterior skeletal open bite, surely the adaptive changes in the orofacial complex of adults, contribute to cause the relapse. The occlusion should be as stable and optimal as possible to eliminate reasons for relapse.

Keywords: Orthognathic Surgery; Skeletal Open bite; Relapse

Abstr ID 153

305

CONTROLLING CONDYLAR PROCESS POSITION DURING ORTHOGNATHIC OPERATIONS

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Aims: Assessing the temporomandibular joint (TMJ) pathology of patients with congenital jaw anomalies before and after osteotomy with the help of axiography and magnetic resonance imaging (MRI) by the method of positioning operated fragments and controlling their position. **Materials:** A complex examination, treatment planning, operations and rehabilitation were performed in 16 cases with maxillary and mandibular congenital anomalies using axiography and MRI of TMJ. **Results:** All patients with maxillary and mandibular congenital anomalies were defined as having pathological changes in TMJ, in 5 cases preoperative splint therapy was performed. In preoperative period all patients were being treated by orthodontists for 1–2 years. Surgical treatment was performed in 6 cases on mandible, in 10 cases on maxilla and mandibula. We performed intercortical osteotomy in the ramous of the mandible and osteotomy by Le Fort I. After the surgical treatment the orthodontic correction was finished. During the postoperative period, TMJ examination was conducted in 3 months, in 6 months and in 12 months. We prescribed splint therapy for 2 patients after operation. **Conclusion:** According to the investigation, all patients with maxillary and mandibular congenital anomalies need to be examined by different methods, also they need pathology correction, surgical treatment planning with due regard for condylar head position, which is vital for their complete rehabilitation.

Keywords: Condyle; Condyle position; Orthognathic operation

Abstr ID 334

306

MULTIPLE PROCEDURES IN ORTHOGNATHIC SURGERY

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Secondary procedure might be necessary in virtually any facial deformity. The final decision about the second surgery should be left exclusively to the patient, surgeons role being to inform about a possibility/necessity of further correction/improvement of the initially achieved result. The nature and technique of expected procedure (genioplasty, liposuction, fat injection, rhinoplasty etc.) must be explained prior to the first osteotomy. Decisive factors in deciding about further surgical treatment of facial deformity are: degree of the deformity–patient's age patient's expectations – patient's ethnic, cultural background Having in mind, that a patient is unable to visualize himself after the surgery, the use of modern software and 3D planning is of great importance, whenever possible. We have to admit, that even for an experienced surgeon it is sometime difficult to decide about the degree (if not necessity) of additional procedure. Intraoperative decision-making is close-to-impossible for the position of the patient and the effect of general anesthesia on facial soft tissue. Therefore, the author prefers to delay secondary procedures-ideal (or minimum) time to perform them is 6 months post-osteotomy. This time allows a patient to "come to terms" with her new facial features, and is usually enough for the facial soft tissue to settle enough for precise

planning of the procedure. Author presents various facial deformities needing additional surgery (i.e. “gummy smile”) but concentrates on cases of facial asymmetry, where a necessity of second surgery is always evident. Analysis of three age groups—teenagers, 20+, 30+ shows, that the need of multiple surgeries increases with age, and that it is recommended to postpone any secondary procedure until minimum 6 months after the first operation/osteotomy/distraction.

Keywords: Orthognathic surgery; Facial asymmetry; Additional surgeries

Abstr ID 88

307

CREATING CLINICAL PATHWAYS IN MAXILLO-FACIAL SURGERY: EXAMPLE ORTHOGNATHIC SURGERY

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Aim: Clinical Pathways are valuable organizational tools improving the management of hospital treatment in various patient groups. Reduction of days spent in the hospital, improvement of quality of care and cost reduction are their principle goals. With the example of orthognathic surgery the concept of Clinical Pathways was tested in Maxillo-Facial-Surgery within a large hospital center. **Method:** Past orthognathic-surgery-patient's records were screened for all types of procedures performed. Principal aims of a pathway were defined. Points of conflicting interest and organizational problems were identified and modified. The Clinical Pathway was implemented and reevaluated after 3 months by patient records, registering the actual adherence to the path. By questionnaire the opinions of the clinical personal were gathered. The reduced costs of clinical personal was registered. **Results:** All initial patients passed the predefined Clinical Pathway. The reduction of the length of hospital stay for this group was 5 days. More than 60% of the personal were at ease with the new organizational instrument. There was a considerable reduction of cost of clinical personal per case. **Conclusion:** By example of a Clinical Pathway in Cranio-Maxillo-Facial-Surgery in a large german hospital setting, for patients undergoing orthognathic surgery, several advantages of a Clinical Pathway were demonstrated in this study. The Clinical Pathway proved itself to be of practical value as all patients' treatment courses stayed within the predefined path. An improvement of the clinical work-flow and related processes resulted. Clinical personal expressed that patients and personal benefited from the Clinical pathway. The quality of care improved. Hospitalization time was considerably reduced. Cost of personal decreased. A significant social benefit for the personal participating in the project was observed. Numerous clinical and interdisciplinary problems were identified and eliminated. A basis for clinical quality-management and a quality of care report was achieved.

Keywords: Clinical Pathways; Cranio-Maxillo-Facial Surgery; Orthognathic Surgery

Abstr ID 52

308

SOFT TISSUE CHANGES ASSOCIATED TO MANDIBULAR CONSTRICTION WITH MIDLINE OSTEOTOMY

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Background: Among the different options for the correction of transverse discrepancies, mandibular constriction with a midline osteotomy in conjunction with a bilateral sagittal split osteotomy (MC BSSO) has been reported to be a stable modality. Soft tissue changes associated to this surgical technique cannot be accurately assessed with cephalograms or photographs. **Objective:** The purpose of this study was to determine the soft tissue changes at the mandibular angle in patients who underwent MC BSSO. **Patients and Methods:** Seventy-seven patients underwent orthognathic surgery for the treatment of their dentofacial deformity between May and July 2002. Thirty of these patients (18 females and 12 males) received a MC BSSO to address their transverse discrepancy. The patients were interviewed and three dimension (3D) images were taken prior to surgery, 3 months post-surgery, and at least 6 months after surgery. The 3D data was obtained with the 3D MD photo imager that allows identification of anatomic landmarks and superimposition of the scans with a minimal accuracy of 0.5mm. **Results and Conclusions:** The 3D scan allowed accurate location of the soft tissue gonion and measurement of the soft tissue changes. No significant changes were found in the gonial soft tissues when the pre-op and post-op images were superimposed, measured, and compared. The interviews demonstrated that patients did not notice any minor soft tissue changes in lower facial width. MC BSSO is as previously reported a simple, stable, low cost, and low morbidity surgical procedure with minimal soft tissue changes in the posterior lower face.

Abstr ID 100

309

PATIENTS WITH OCCLUSAL SMALL DISCREPANCE WITHIN IMPORTANT ESTHETIC DEFORMITY: THE CHALLENGE IN PLANNING ORTHOGNATHIC SURGERY

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Aims: Surgical plan is one of the most important steps in order to reach a good esthetic result in orthognathic surgery.

As every surgeon with an average experience knows, when a class III patient presents a large sagittal occlusal discrepancy, the chance to achieving a good esthetic outcome is normally high. In fact, in such cases the facial deformity resides both in the upper and in the lower jaw; the movement of the two jaws in opposite directions for several millimeters brings in most cases to a favourable esthetic result. **Subject:** The problem is present in the cases where a remarkable esthetic deformity coexists with a very small occlusal discrepancy, e.g. an edge to edge inter-incisal relation. In these cases, a simple reciprocal movement in the sagittal plane is not sufficient; so, a combined vertical, rotational shifting of the two-jaws complex, together with a mandibular autorotation, is often necessary. Of course, attention must be paid to the specific features of each case, i.e.: sex, age, soft tissue thickness and elasticity, upper and lower lip length, chin prominence/height and incisal/gingival exposure, face height, concavity of the whole patients profile, and so on. **Results:** In this way, patients undergoing orthognathic surgery operations within great esthetic expectations can be more easily satisfied, because positions of nose tip, upper and lower lip and chin can be moved most of the times in the desired way. **Conclusion:** A few cases of this particular type are shown and the different peculiarities of each are discussed.

Abstr ID 370

310

OUR EXPERIENCE IN SURGICAL TREATMENT OF MANDIBULAR MALFORMATIONS

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The aim of the study was comparison extra and intraoral method of surgical treatment of morphological malformations of the mandible **Material and Methods:** The study involved 158 patients with morphological malformations of the mandible treated in our department in the years 1985-2000. The studied group included 115 men and 43 women. The most frequently treated malformation was mandibular prognathism observed in 133 patients, and then in decreasing order of incidence – mandibular retrognathism found in eight cases, apertognathia in eight cases and other combined maxillomandibular malformations found in six subjects. **Treatment:** In the treatment, ostectomy of mandibular branch from extraoral access was performed (98 patients) or intraoral sagittal splitting of the branch by Obwegeser-Dal Pont method (60 patients) was carried out. For improvement of the appearance of the face, in 19 patients additionally genioplasty was carried out. **Results:** The results of morphological mandibular malformation correction obtained with the application of the methods of extraoral ostectomy of mandibular branch and its intraoral sagittal splitting are similar. **Conclusion:** The effects obtained by the method of mandibular branch sagittal splitting were better in view of absent cutaneous scars and lesion of mandibular branch of facial nerve.

Abstr ID 432

311

COMPARISON OF THE PREDICTED SURGICAL RESULTS FOLLOWING VIRTUAL PLANNING WITH THOSE ACTUALLY ACHIEVED FOLLOWING BIMAXILLARY OPERATION OF DYSGNATHIA

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Aim: For simulating surgery of dysgnathia computer softwares allowing two-dimensional virtual planning are used frequently. But in many cases it is not possible to transfer the virtually achieved data correctly to the surgical site. It is the purpose of this study to find the errors likely to occur when transferring these data. **Methods:** In 22 bimaxillary osteotomies for dysgnathia the results of preoperative planning were compared to the surgical results. The program WinCeph 4.19 (Compudent) was used for cephalometric analyses and simulation of the operations. **Results:** Six major skeletal parameters were evaluated when comparing both the planned and the actual outcome and the following results were recorded: Delta-SNA 1.53 (+/- 1.20), Delta-SNB 1.67 (+/- 1.29), Delta-ANB (+/- 1.4), Delta-NL-NSL 3.8 (+/- 2.29), Delta-ML-NSL 3.6 (+/- 3.7) and Delta-ArGoMe 6.1 (+/- 4.6). **Conclusion:** It was not unexpected that the most important differences between planning and surgical outcome were found to be in the vertical parameters. Planning and data transfer was comparatively accurate with regard to sagittal data. Apart from several mechanical methods for data transfer, systems using navigation are therefore being discussed and used more and more. They ensure proper simulation and accurate data transfer to the surgical site.

Abstr ID 734

312

AN INOVATIVE PROCEDURE IN SURGICAL TREATMENT OF MANDIBUL DEFORMITIES

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Every change of the normal appearance of the jaws and the disturbance of their mutual relation provokes not only esthetic, but also functional difficulties. It is very important for the surgeons which methods or procedures to apply in order to achieve the most successful correction of deformities. **Purpose:** The aim of this paper is to propose an easier approach to the inner side of ramus mandibule and to modify Obwegeser and Dal Pont method. **Method:** After the incision of the frontal side of ramus mandibule, we are doing an horizontal incision of the soft tissue (mucus membrane and m. pterigoideus internus) in the middle part just above lingula and to show clearly foramen mandibule and incisura mandibularis. In the cases with microgeni mandible, we perform oblique osteotomy in the lower part of the mentum and we make angulation of

the mobile jaw bone, in order to achieve most optimal contact between the cortex and medulla with the upper part of the osteotomic bone. **Results:** In the last 3 years we treated 39 progenies which were combined with other anomalies and 11 mentoplasties. Many of them will be showed in the pretreatment and after treatment state. **Conclusion:** The above methods or procedures have not yet been described in the literature, and we consider it is our original contribution in the treatment of these types of deformities. In our practice we reached most optimal results and we highly recommend them.

Abstr ID 216

313

TECHNICAL MODIFICATIONS IN SARPE

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Surgically assisted rapid palatal expansion is a major ambulatory surgical technique that allows an efficient and safe correction of maxillary collapse. The technique consists in the combination of a lateral, a midline and a posterior corticotomy, with the objective of weakening the maxillary bone, allowing thus an orthopedic device to cause the bony expansion. **Material and Methods:** We present the experience of the authors with a technique consisting in a lateral corticotomy of the maxilla together with a midpalatal osteotomy performed through the interincisal space. No pterigomaxillary osteotomy is done. The lateral corticotomy was performed in the last cases through a vertical incision posterior to the canine. **Results:** We present our results in 31 cases and an evaluation of complications of the technique. In 21 cases the procedure was performed before an standard Lefort 1 osteotomy to avoid its segmentation. An analysis of complications showed minor events such as devitalization of a central incisor (1 case), asymmetrical expansion (1) or mechanical problems of the device (2 cases). No serious bleeding, nerve damage or pathological fracture was observed. **Conclusions:** SARPE is a well known technique for treatment of maxillary collapse. In cases where a combined defect exists, the authors prefer to sequentially perform SARPE and an standard Lefort 1 to avoid the eventual complications and more time-consuming procedure of a segmented Lefort 1. Two vertical incisions in the canine/bicuspid area and a trans mucosal interincisal osteotomy are enough to carry out the technique.

Abstr ID 914

314

LONG TERM FOLLOW-UP CHANGES OF HYOID BONE AND PHARYNGEAL AIRWAY SIZE FOLLOWING ORTHOGNATHIC SURGERY

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Aims: The purpose of this study was to determine long-term changes in hyoid bone position and pharyngeal airway size after mandibular advancement and setback. An attempt was also made to identify relationships between length of suprahyoid musculature and skeletal relapse. **Methods:** Sixty-four consecutive patients underwent bilateral sagittal split osteotomy (BSSO) for treatment of skeletal Class II and III malocclusion between 1986 and 1989. Of these, 27 patients (42%) 15 after mandibular advancement and 12 after setback- were available for a long-term cephalography in 2002. The measurement was performed from the serial cephalograms taken preoperatively, and one week, six months and 14 months post-operatively and at the final evaluation of average 12 years. **Results:** At the long-term follow-up, the hyoid bone repositioned in a more posterior position than its pre-operative location, and pharyngeal airway space narrowed in both groups. In advancement group, the upper and middle airways were finally 3.8 mm and 4.7 mm smaller than their respective preoperative sizes. Skeletal relapse of 2 mm at B-point was observed during the entire post-operative period. After mandibular advancement of 4.1 mm at B-point, the length of the suprahyoid musculature cephalometrically measured continuously increased from a preoperative value of 40.3 mm to a long-term value of 45.1 mm and correlated significantly with skeletal relapse. After mandibular setback of 5.6 mm at B-point, suprahyoid musculature shortened initially by 4 mm but started lengthening after one year from 41.3 mm to a final value of 41.9 mm, correlating only to the amount of surgical movement. **Conclusion:** During a postoperative period of 12 years, irrespective of the initial surgical movement, positional changes of the pharyngeal complex occur in a posterior direction. These changes are even more markedly observable after mandibular advancement than after setback. Marked decrease of pharyngeal airway size over the long term may negate the benefits of mandibular advancement in obstructive sleep apnea syndrome.

Abstr ID 631

315

OCCLUSAL AND SKELETAL STABILITY IN CLASS III DYSGNATHIAS : AFTER VERTICAL RAMUS OSTEOTOMIES

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Aims: The purpose of this paper was to evaluate occlusal and skeletal stability in class III dysgnathias patients under venting vertical ramus osteotomies for mandibular set back. **Material and Methods:** 28 VRO have been performed using same extra oral approach by 4 surgeons in the time period from 2000–2002. 26 patients underwent bimaxillary and 2 single jaw surgery. Largest set back was 10 mm. Retromandibular approach with 3 cm incision J shape osteotomy and rigid bone fixation is the subject of this method. Postoperative orthopantomograms and lateral cephalograms were taken and analyzed for bone healing right after operation, 2 months, 6 months, 1 year postoperatively. Clinical examinations of patients were performed at the same time using special chart for

evaluation of patient complaints and objective findings of the TMJ, occlusion, muscles and inter-maxillary relapses.

Results: Two patients had minor post-operative hematoma and parotid swelling. Mouth opening after operation was from 38–60 mm. 6 patients had unilateral disc sound in the TMJ, one patient had slight disc seizing, and one patient has unilateral moderate, and two patients slight atrophy of masseter muscle. No TMJ pain or musculoskeletal disturbances were diagnosed. No infection and nerve damage were found. Cephalometric analysis showed most significant changes had happened to maxillary incisors inclination angle against SN line and against Frankfort line. Incisors inclination angle change against SN line was $+5.0$, ± 1.1 and as a result decreased interincisal angle.

Conclusions: We found no skeletal relapse however dentoalveolar changes happened from operation until 1 year after surgery. Bone healing was established after 6 months and after 1 year more matured bone was found in the osteotomy line. Our first 2 years results using this method showed only few complications and high predictability of this approach.

Abstr ID 601

316

DIRECT BIXILLARY ADVANCEMENT IN TREATING OSAS PATIENTS

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Aims: Stanford's protocol is generally approved and utilized in treating OSAS. It provides, though, several operations if the whole category of treatment is being utilized. In the Central Hospital of Satakunta we, therefore, concluded, that in more demanding cases it would be favourable for the patient to do bimaxillary advancement without preceding other, smaller operations (i.e. UPPP, UPP; Box-operations). The minor operations, most likely, cannot sufficiently help the patients and yet, the surgical discomfort remains to be suffered. **Methods:** In this material we follow 17 patients which all have undergone bimaxillary advancement because of diagnosed OSAS. 15 were men and 2 women. The age varied from 33 to 68 the average being 50.5 years. Patient interview, polysomnography, lateral X-ray and assessment of general health status were made prior to operation and postoperatively. PAS was measured before the operation, next day after the operation and then 3, 6 and 12 months postoperatively. The five year follow-up examination is under process now. A new polysomnography, lateral X-ray and patient interview will be carried out. **Results:** As a rule patients felt considerable relief or even cure of their OSAS-disease after bimaxillary advancement during one year follow-up. Oxygen saturation was improved in all cases and the amount of saturation "dips" was diminished. PAS was increased in all cases except one. The results after five years follow-up will be presented. **Conclusions:** According to this study direct bimaxillary advancement in OSAS seems to be a good choice in selected cases.

Keywords: Obstructive sleep apnea; Bimaxillary advancement 5 years follow-up

Abstr ID 386

317

CHIN OSTEOTOMY INCLUDING THE GENII APOPHYSIS: AN ORIGINAL TECHNIQUE TO PULL THE TONGUE AHEAD

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Chin is an important anatomic site in the face both functionally and aesthetically. There are several types of chin dysmorphia and their correction needs different surgical procedures. These techniques do not include the genii apophysis situated on the posterior side of the mandibular symphysis. Some sleep disorders, like snoring and obstructive apnea are sometimes in relation with a small retro-basilingual space, without hypertrophied tongue or maxillo-mandibular retro-position. The tongue is anteriorly attached on genii apophysis by M. Genioglossi. To increase the posterior aeral space, techniques for genii transposition has been describe by Riley and Powell in 1984 and 1993, by Chabolle et al. in 1995. Even if these techniques give a good clinical evolution, they are limited. The Riley's method can present strangulation of the muscles attachments because the bone rotation. The Chabolle's method cannot be used on inferior incisors and canines edentulous patients. We use for several years an other genii transposition technique. In fact it is a conventional genioplasty with extension to the genii apophysis area. It is easy to control the axial advancement of the muscles attached on the genii apophysis, to rule the chin position laterally and vertically and to perfectly reconstruct the mandibular margin. The osteosynthesis is done with a strong titanium plate which passes over de symphysis defect and secures the good position of the osteotomy.

Keywords: Chin osteotomy sleep apnea syndrome

Abstr ID 671

318

RETROSPECTIVE STUDY OF TWENTY-TWO PATIENTS TREATED BY MAXILLO-MANDIBULAR ADVANCEMENT WITH ADJUNCTIVE PROCEDURES FOR OBSTRUCTIVE SLEEP APNEA SYNDROME

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Aim: The purpose of this retrospective study was to evaluate the results of a surgical protocol based on maxillomandibular advancement in the treatment of obstructive sleep apnea syndrome. **Study Design:** Twenty-two patients, with particular craniofacial characteristics consisting in maxillomandibular deficiency and/or retromandibulism underwent bimaxillary advancement via Lefort I and

bilateral sagittal ramus osteotomies. Adjunctive procedures as genioplasty, uvuloplasty and glossoplasty were performed in the same surgical procedure. All the patients were evaluated before and after surgery by a physical examination, Delaire cephalometric analysis, and polysomnography (six months after surgery). Surgery was considered successful when the postoperative apnea and hypopnea index (AHI) was less than 15/h and with at least a 50% reduction of the initial index. **Results:** The surgical success rate was 82%. There were no postoperative complications. The AHI decreased from 55/h (+/- 18.8) to 10.8/h (+/- 6.69). Eighteen patients were recovered. The other four were improved, but without total recovering. **Conclusion:** The

results of this study indicate that successful surgical treatment by maxillomandibular advancements with adjunctive procedures in the same operative time is efficient with a high percentage of success, when patients are clearly selected. In our point of view, the presurgical cephalometric evaluation is essential to select the patients for this surgical therapy. Mandibular or bimaxillary retroposition must be present to indicate the surgery. Nevertheless a long-term evaluation should be necessary to confirm the stability of these results.

Keywords: Obstructive sleep; Apnea syndrome; Maxillomandibular advancement

TOPIC 12: DISTRACTION OSTEOGENESIS

Prog. no.	Title/Authors
319	BILATERAL INTRA-ORAL DISTRACTION OSTEOGENESIS FOR THE MANAGEMENT OF CONGENITAL SEVERE MANDIBULAR HYPOPLASIA IN EARLY CHILDHOOD Sadakah AA, Elshal MA
320	MAXILLARY DISTRACTION WITH AN INTERNAL BILATERAL DEVICE Schendel SA, Kahn DM, Samuels L
321	MANDIBULAR DISTRACTION USING THE SAGITTAL SPLIT TECHNIQUE Schendel SA, Rodriguez A, Linckiii D
322	BIDIRECTIONAL MAXILLARY DISTRACTION OSTEOGENESIS: A WAY TO SOLVE THE EXTREME MAXILLARY CROWDING Carlino F, Amici A, Rocchetta D
323	MULTIAXIS INTRAORAL DISTRACTION OF THE MANDIBLE FOLLOW-UP OF 10 PATIENTS De Santis R, Bergaminelli F, Petti A, Rufolo R
324	TO RESOLVE ANTERIOR MANDIBULAR DENTAL CROWDING: INTEREST SYMPHYSIS DISTRACTION OSTEOGENESIS Diner PA, Tomat C, Picard A, Vazquez MP
325	TRANSVERSAL PALATAL EXPANSION USING A PALATAL DISTRATOR Gerlach KL, Zahl C
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BILATERAL INTRA-ORAL DISTRACTION OSTEOGENESIS FOR THE MANAGEMENT OF CONGENITAL SEVERE MANDIBULAR HYPOPLASIA IN EARLY CHILDHOOD

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Young children with severe mandibular hypoplasia usually present with varying degrees of peripheral airway obstruction and difficulty with feeding. This could in long term lead to developmental delay, failure to thrive, learning and for behavioral problems. Early treatment is important for such children. Distraction osteogenesis (D.O) using intra-oral devices provides an excellent alternative when other surgical techniques including osteotomy and/or bone grafting do not prove to be satisfactory. Compared to extra-oral distractors, the intra-oral one has numerous advantages. However, the available literature on long term follow up following D.O for such patients is lacking. **Aim of the Work:** To evaluate the long term efficacy of intra-oral bilateral D.O in the treatment of severe congenital mandibular hypoplasia in early childhood. **Patients and Methods:** Six patients (4 females and 2 males), their ages ranged from 7 months to 8 years (with a mean of 34 months). They were complaining from severe congenital mandibular hypoplasia with obstructive sleep apnea and difficulty in feeding. The patients were successfully treated using bilateral intra-oral unidirectional Martin distractor by the use of a modified technique which allows the whole distractor to protrude through the vestibular mucosa into the buccal cavity instead of being totally buried subperiosteally. The detailed technique & the long term follow up will be discussed.

MAXILLARY DISTRACTION WITH AN INTERNAL BILATERAL DEVICE

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Aims: A technique for maxillary distraction using a bilateral intra-oral device anchored on the malar prominences and either fixed to the maxillary bone or wired to the dentition. **Methods:** A Le fort I osteotomy was performed and the device placed followed by an initial distraction of 3-4 mm. After a two day latency period distraction was continued at 1mm a day until the desired occlusion was achieved. The device was left in place for a minimum of 2 months. Cephalometric and panoramic records were obtained at appropriated intervals for study. **Results:** Six patients with non-syndromic cleft lip and palate underwent Le Fort I distraction. Average distraction was 14 mm and there were no complications. The distraction and device was well tolerated by the patients. **Conclusion:** Distraction

osteogenesis allows for gradual stretching of the soft tissue envelope to accommodate the new bone and reduce relapse, especially in large advancements and when scarring is present. Current maxillary distraction devices are either external such as a halo or separate internal unilateral devices. Both of these have significant limitations. The device in this study is intra-oral and bilaterally based by an arch bow on the malar prominences. This allows easier placement and increased stability as seen by this study. Furthermore, because the device is hidden and entirely intra-oral, it is better tolerated by patients and can be left in place for a longer retention period. The longer retention period reduces relapse by enhancing a stable bone regenerate as seen in this study.

MANDIBULAR DISTRACTION USING THE SAGITTAL SPLIT TECHNIQUE

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The sagittal split osteotomy presents several potential advantages over the straight line osteotomy or corticotomy usually used for mandibular distraction. The potential bone regenerative surface is larger, the proximal segment can be rotated into a better alignment and initial distraction can be obtained and still have bone interface and contact. **Methods:** Ten consecutive patients who underwent internal distraction using a curved distractor and the sagittal split ramus osteotomy were evaluated. The classical osteotomy as describe by H. Obwegeser was used and distraction carried out based on logarithmic growth principles for the mandible. Cephalometric and panoramic radiographs were used to measure the results of distraction. **Results:** There were no complications and all patients achieved the desired outcome goals. The largest distraction was 43 mm with an average of 25 mm. The results were stable with the longest follow up of 3 years. A class I occlusion was obtained with out any open bite deformity. Scarring was also minimized by the intraoral placement of the internal distractor. **Conclusion:** The sagittal split technique is ideal for mandibular distraction. Together with an internal distractor there is an additive affect and multi vector distraction can be accomplished with less patient inconvenience. Tongue is minimized and the bone regenerate of a better thickness. The main limitation is the need for sufficient quantity of bone to permit the sagittal split.

BIDIRECTIONAL MAXILLARY DISTRACTION OSTEOGENESIS: A WAY TO SOLVE THE EXTREME MAXILLARY CROWDING

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Aims: Many techniques have been proposed today in the field of distraction osteogenesis. One of these techniques is the Segmental Distraction Osteogenesis of the Anterior Alveolar Process, described by A. Triaca in 2001, that provides the osteotomy and subsequent sagittal distraction of a dento-alveolar segment, usually made of 6 teeth, via a simple intra-oral device. Another technique for orthognathic distraction is the classic maxillary expansion via a palatal screw, well known long before the distraction-era. **Subject:** The technique presented in this paper is a combination of these two operations. A Le Fort I down-fracture is performed, the maxilla is then divided in 3 pieces via a Y-shaped osteotomy, passing between two frontal teeth bilaterally and carrying out a median palatal osteotomy posteriorly. Then, a palatal plate with a double screw is applied on the teeth: one screw works transversally in the molar-premolar area, the other pushes sagittally the frontal block of the teeth, delimited by the anterior arms of the Y-shaped osteotomy. Then the maxilla is repositioned in the original position and fixed with an adsorbable wire (PDS). The screws are both activated intraoperatively and in the following days. **Results:** Result of the procedure is a maxillary expansion both in the transversal and in the sagittal plane. **Conclusion:** The present technique has been used in cases of pre-surgical orthodontic treatment, in order to solve an extreme maxillary crowding. The treatment processed without complications and the two jaws could be orthodontically prepared without extractions.

Abstr ID 136

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MULTIAXIS INTRAORAL DISTRACTION OF THE MANDIBLE FOLLOW-UP OF 10 PATIENTS

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Aim: The scope of this article is to present distraction osteogenesis as a rapidly and valid technique in maxillo-facial surgery for correction of facial deformities. We present the first results obtained using a multidirectional distraction device on 10 patients with a follow up of 12 months our technique for mandibular. **Methods:** The patient selection criteria were short mandibular ramus, diminishing posterior facial height, pre-existing TMJ dysfunction with radiographic evidence of degenerative changes in the condyle-fossa complex, skeletal open-bite, a significant mandibular advancement and major cranio maxillo facial deformities. **Results:** All patients received required advancement with a satisfactory occlusion and aesthetic results. The ossification was obtained in all patients. Only in one patient the osteotomy was not complete than was necessary to fracture again in ALR. The mean advancement was about 12.6 mm with a minimum of 6 mm and a maximum of 16 mm. 7 of 10 patients have been received a Le Fort I osteotomy during or after the primary procedure. We noted a temporary diminishing sensibility to the inferior lip that was disappeared about 3 weeks later in all patients. **Conclusion:** The utilization of the present device has become routine in our office. Since the distractor remains in situ during distraction and consolidation time, there is a certain degree

of discomfort for the patient relative to a conventional orthognathic procedure. In comparison with an extraoral device the results seems to be the same without scarring the face due to the intraoral approach. We believe that the advantages of skeletal stability far outweigh the discomfort of the patients, particularly in high-risk cases, such as those with TMJ problems

Abstr ID 144

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TO RESOLVE ANTERIOR MANDIBULAR DENTAL CROWDING: INTEREST SYMPHYSIS DISTRACTION OSTEOGENESIS

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Introduction: Severe mandibular anterior crowding which are beyond orthodontics require surgery. Because the classical technics are limited especially regarding the keratinized gingiva, osteodistraction has recently become the main option. **Patients and Methods:** The Martin intraoral device developed in Trousseau Hospital Department 1996 were used in 11 patients aged from 4 to 15 years old with bone born and tooth born fixations. **Results:** The intraoral device was bone born and tooth anchoring stimulating open forces on the basal and alveolar bone protecting TMJ and avoiding occlusal interferences during the distraction period. The keratinized mucosa and the mucosa have followed the bone creation without damage since D.O. is a slower procedure. Clinically no modification of the buccal aperture and no suffering were mentioned by the patients. Analysis of the TMJ consequences by CT scan, and MRI showed no condylar morphology changes. A dental eruption was observed during D.O. into the distracted callus. Thanks to the analyses of the occlusograms in 7 patients, the authors demonstrated that for an average of widening (mesured on the device) on the midline osteotomy area, the transversal intercanine gain is about 6.5 mm (56%) and the transversal intermolar gain about 3.1 mm (27%). The symphysis widening often creates a mandibular advancement, that is why the associated class II treatment must be postponed. **Conclusion:** D.O. is the only technique which can resolve severe anterior mandibular crowding, especially in children but its indications must remain limited: when anterior transversal mandibular deficiency is above 5 mm, when there is a lack of lateral mandibular expansion in the premolar molar area, when an interceptive surgery must be done in young children, e-g in severe syndrom as Hypoglossia Syndrome.

Abstr ID 207

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TRANSVERSAL PALATAL EXPANSION USING A PALATAL DISTRATOR

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Aims: Objective of this study was to evaluate the effectiveness of a new developed palatal distractor in the treatment of severe maxillary deficiency. **Material and Methods:** A distractor with a cylindrical shape and attached miniplates at both ends was fixed with screws at the palatine bones. In addition the lateral walls of the maxillary sinuses and the midpalatal suture had been osteotomized. The actual distraction was started after a latency period of 7 days to a daily distraction distance of 0.4 mm. After 3 weeks the orthodontic alignment of the dental arches could then be started, 3 months later the distractor was removed. **Results:** In a pilot study 10 patients with a mean age of 26 years were treated. After a three-week distraction period, mean changes of 8.8 mm in intercanine distance, 8.6 mm in anterior dental arch width, and 8.3 mm in posterior dental arch width were registered. 6 months after the subsequent multibracket appliance therapy, and 3 months after removal of the distractor these values were found to be largely constant. Only in one case a temporary oronasal fistula was registered, among 20 other treated patients with a shorter follow up in one of these patients root resorptions were observed at the central incisors during the orthodontic therapy. **Conclusions:** Because of the short treatment period, the absence of relapses and severe complications, and the handling simplicity for the patient, this method is recommended for clinical application.

Abstr ID 453

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MAXILLARY DISTRACTION LONG-TERM RESULTS

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Aim: This study presents our experience in using external and internal devices for correction of mid-face hypoplasia and analyses long-term stability (follow-up- 2 years) of skeletal and soft tissue changes after maxillary advancement by distraction osteogenesis. **Material and Methods:** 34 patients with severe cleft-related midfacial hypoplasia aged 12–18 years were treated at our centre by Le Fort I osteotomy and deployment of internal or external distraction device. Lateral and P-A cephalogram analyses were performed for all patients prior to, as well as three, six, twelve, eighteen, and twenty-four months after the surgery to assess changes in the craniofacial morphology. The stability of changes in the craniofacial skeleton was measured against the co-ordinate system XY. The evaluation was made against 12 linear variables as well as 10 angular variables. **Results:** Maxilla was significantly advanced in case of all patients who were subjected to internal and external maxillary distraction. All patients demonstrated post-operative sagittal advancement of maxilla where point A advanced against X-axis by mean 8.6 mm (range 5.2–14.8 mm); the SNA angle increased from 72.6 degrees (range 63.2–75.5 degrees) to 80.3 degrees (range 72.3–83.5 degrees). Maxillary distraction has enhanced the profile by increasing nasal projection, normalizing nasolabial angle, and making the upper lip more prominent. The facial concavity evolved into facial convexity. The

profile changed from a prognathic into an orthognathic ones. The final occlusal relation was satisfactory and negative overjets in all patients were corrected to normal values. Long-term cephalometric evaluation after a mean follow-up period of 24 months show stable results concerning the skeletal and soft tissue relations. **Conclusion:** Maxillary distraction is an effective method for maxillary hypoplasia in cleft patients. The results are predictable and stable.

Abstr ID 656

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DISTRACTION OSTEOGENESIS FOR TEMPOROMANDIBULAR JOINT RECONSTRUCTION

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Aim: Due to problems encountered with both autogenous grafting and prosthetic joint replacement, distraction osteogenesis (DO) has been applied to TMJ reconstruction. DO is the formation of bone between osseous surfaces that are incrementally separated. In bifocal DO, a transport disc is moved away from residual host bone. Osteogenesis takes place at the trailing edge of the disk, while a cap of fibrocartilage forms at the leading edge. This latter phenomenon, which can cause difficulty in closing segmental defects, is advantageous in TMJ reconstruction. A transport disk fashioned from the ramus or angle of the mandible is moved towards the glenoid fossa. Regenerate bone at the trailing edge forms a new ramus or condylar neck, while fibrocartilage at the leading edge becomes an articular surface. **Materials and Methods:** Seven TMJ reconstructions in six patients are included in this study. Two immediately followed tumor resection. Two were for traumatic injuries. Two were for sequelae of rheumatoid arthritis. One was for degenerative changes from a Teflon-Proplast foreign body reaction. All were treated with a unidirectional distractor. Latency was 7 days, followed by activation of 0.5 mm twice daily until good occlusion was obtained. **Results:** Follow up has been from six to twenty-six months. The results have been encouraging, with excellent range of motion, stable occlusion, and radiographic remodeling of the reconstructed condyles. There have been no complications. **Conclusions:** DO is a promising treatment option for TMJ reconstruction. It shares all of the advantages of autogenous grafting without the disadvantages of a donor site. It has none of the drawbacks of prosthetic joint reconstruction. Further evaluation of the technique is warranted.

Abstr ID 688

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THREE-DIMENSIONAL QUANTITATIVE COMPUTER TOMOGRAPHY (3-D QCT) FOR EVALUATION OF THE DISTRACTION REGENERATE

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Only few clinical and experimental imaging studies have been published that attempt to quantify the process of bone regeneration by distraction osteogenesis (DO) of the membranous craniofacial bones. Quantitative computer tomography (QCT) has been described in the orthopaedic DO literature as an objective measurement method for quantitative assessment of the density of newly formed bone. Because conventional QCT is based on freehand region-of-interest (ROI) areas drawn on each scan level, this technique is time-consuming and prone to analysis bias. This study presents a new method for objective assessment of the distraction regenerate using three-dimensional quantitative computer tomography (3-D QCT). The distraction specimens of 16 sheep that underwent bifocal cranial distraction osteogenesis to reconstruct a critical size defect were used to evaluate this method. To analyse the validity of the new method (3-D QCT), statistical method comparisons to the gold standard (QCT), were performed. Squared correlation coefficients (r^2) according to Sackett showed a high reliability ($r^2 > 70\%$) for the total DO regenerate, DO Regions 2, 3 and 4. Method comparison according to Bland-Altman (\bar{U} 6.25% of measurements out of 95% limits of agreement) showed that 3-D QCT was valid for DO research. 3D-QCT based densitometry, however, focus only one aspect of the distraction regenerate and should be used in combination with histomorphometry.

Abstr ID 768

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THE ROTTERDAM DISTRATOR: A CAR JACK FOR WIDENING THE NARROW MAXILLA

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Transverse Maxillary Hypoplasia (TMH), in adolescents and adults, can be corrected by means of a surgically assisted rapid maxillary expansion. A new bone-borne distractor based on the principle of a car jack has been developed. The device has two abutment plates with six 2 mm long nails. After activation of the distractor these nails penetrate the bone automatically and the distractor is stabilised. The activation rod is directly behind the central incisors. No screw fixation is necessary. **Materials and Methods:** Between September 2003 and March 2004 ten patients with TMH were treated with the Rotterdam distractor at the Craniofacial Centre and department of Oral and Maxillofacial Surgery of Erasmus Medical Centre Rotterdam. Six syndromal patients and 4 non-syndromal patients were included. Standard corticotomies of the maxilla were performed. The Rotterdam distractor was positioned with the plates on the bone over the roots of the premolars. Distraction was started after one week. The distractor was removed after a consolidation period of 3 months. **Results:** In all 10 patients the distractor did

function successfully and the desired expansion was achieved. In one cleft patient with an extreme low palate the distractor lost stability after reaching the expansion and had to be removed. In 7 patients the activation rod moved out of the midline towards the left or right side, but this had no effect on the rate or direction of expansion. **Discussion:** Traditional tooth-borne distractors may cause periodontal complications, segmental tipping, and anchorage-tooth tipping. The bone-borne Rotterdam distractor is easily placed, activated and removed. Especially in syndromal patients with totally collapsed maxillary segments and no space for tooth-borne appliances or other bone-borne distractors the Rotterdam distractor is very helpful. **Conclusion:** The Rotterdam Distractor is a simple and promising new bone-borne device for widening the maxilla.

Abstr ID 841

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OUR EXPERIENCE IN LEFORT III DISTRACTION OSTEOGENESIS USING THE INTERNAL MODUS MDO 2.0[®] DISTRATOR. REPORT OF 3 CLINICAL CASES

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Introduction: In the light of 3 clinical cases, we present our experience about the Le Fort III level osteogenesis distraction using the Modus MDO 2.0[®] internal device. **Patients and Method:** Between July 2003 and January 2004, we took charge of 3 patients who presented an important hypoplasia of the middle third of the face resulting in class III dental occlusion and in poor aesthetic appearance. Two of them were 20 years old twin brothers suffering from achondroplastic dwarfism. The third one was a 4 years old child affected from a Crouzon's disease. Clinical examination and cephalometric analyses were in favour of a middle face advancement lying between 12 and 15 mm. Because of a low age or a lack of motivation, only one of the patients benefited from a preoperative orthodontic treatment. **Method:** The surgical procedures were at first simulated on polyurethane models obtained from CT data. This allowed a precise drawing of the osteotomy lines, a good checking of the positioning of the plates and an accurate visualisation of the vector of distraction. The surgery consisted in a slightly modified Tessier II manner Le Fort III level osteotomy and in putting in place the pre-formed plates and the distraction cylinders over the osteotomy line in the zygomatic area. After checking the lack of interference, a distraction of 1 to 2 mm was per-operatively achieved and the distraction rods were passed through the skin behind the ears. The devices were then activated from the second post-operative day at the rate of 0.5 to 1 mm per day during 10 to 17 days. **Results:** One of the patients had to be re-operated on at the first post-operative day because of the breaking of one of the distraction rods under the dressing. Apart from this single complication, the distraction protocols could be carried through up to the wished result. A good correction of the dental occlusion and of the morphologic appearance were

achieved in all the patients. The removal of the devices and the remodelling of the bony callus were carried between the 2nd the 5th month. The follow-up is still short but the results seem to be stable for the moment. **Conclusion:** The Modus MDO 2.0[®] internal distractor is well adapted to the

Le Fort III distraction osteogenesis even among children. The devices were remarkably tolerated by the patients on account to their subcutaneous position. Particular care must however be taken with the distraction rods because of their relative fragility.

TOPIC 13: PROSTHESES, EPITHESES, IMPLANTHOLOGY AND PRE-PROSTHETIC SURGERY

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ALVEOLAR BONE GRAFTING AIMING IMPLANT INSERTION**Tulasne JF**Presenting Author: Tulasne JF
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"Bone grafting for implants has proved to be very successful and we now have a follow-up of nearly fifteen years. Even the most extreme forms of atrophic jaws can be reconstructed and rehabilitated with implant-supported bridges. In the same way alveolar reconstruction is of course possible and the results are very satisfactory. However complete, "anatomic" resto-ration of the alveolus is still a challenge for the surgeon, particularly in case of vertical defects. The use of dense cortical bone for grafting is imperative. Cortical bone is harvested from the calvarium in most cases for several reasons : large amount of bone, high density, absence of pain and visible scar. Only a slight depression of the scalp can be observed in bald patients in the parietal area. This dense bone gives rather predictable results. Nevertheless some degree of resorption of the graft is usually observed after some months, which can jeopardize the cosmetic result, particularly in the anterior maxillary area. Coverage of the graft with a membrane can prevent this resorption but the membrane is likely to become infected. Reducing the healing period of the graft with placement of implants at three to four months instead of six could maintain the initial bone volume and therefore preserve the initial good aesthetic construction.

CLINICAL EVALUATION OF HARVESTING TIBIAL BONE FOR SINUS GRAFT**Nabeshima H, Mizuno M, Wakita T, Nakashima K, Ito Y, Kurita K, Nakayama A, Tange K, Takeda A, Imai T, Lozada J, Punjabi AP**Presenting Author: Nabeshima H
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Introduction: Autogenous bone is the gold standard graft for sinus augmentation. The harvest of autogenous bone grafts from intraoral sites does often not provide sufficient bone volume and quality. The commonly used anatomical site for harvesting sufficient bone was the iliac crest. However, postoperatively, open harvesting in this site usually results in many complications such as severe pain and blood loss. To minimize these complications, tibial bone was used as an alternative source. The purpose of this report is to describe our clinical experience with performing the tibial bone graft for the sinus augmentation. **Patient and Method:** The 10 patients underwent maxillary sinus lift elevation procedure with bone harvested from tibia. (6 patients: Loma linda university. 4 patients Aichi gakuin university). This procedures were performed under the general anesthesia and IV sedation. A Bone Grafting instrument was used to harvest cancellous. A Bone

Grafting Instrument was made through the penetrating hole. After the harvest of bone, it was used to tightly fill up the newly created extra sinusoidal space. All of 10 cases were evaluated on the bases of the clinical observation. **Result:** All of 10 patients, 5 women and 5 men. The patient ranged in age from 40 to 83 years. The average age was 59 years. The average surgical time was 30.2minutes (range, 20–40). Blood loss averaged 15ml (range, 10–16). The average volume of autogenous bone was 5.5 g (range, 5–7). All 10 Patients could walk from next day of the surgery. **Conclusion:** In order to obtain a better outcome of bone grafting for sinus floor elevation procedure, technique of tibial bone provided some advantages which were harvested sufficient cancellous bone, short operation time and minimal bloodloss. There were no major postoperative complications.

Keywords: Sinus graft; Tibial bone

LONG TERM EVALUATION OF THE SECONDARY BONE GRAFT FOR THE DENTAL REHABILITATION OF THE ALVEOLAR CLEFT IN CLEFT LIP AND PALATE**Captier G, Delestan C, Bigorre M, Baumler C, Canonge E, Montoya P**Presenting Author: Captier G
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Subject: The secondary bone graft (SBG) with gingivoperiosteoplasty (GPP) is a well accepted method for the rehabilitation of the alveolar cleft but is long term evaluation especially for dental rehabilitation is poorly documented. The aim of this study was studied the long term result of dental rehabilitation of the alveolar cleft after the SBG. **Material & Method:** The SBG was regularly used since 1996 and 108 cases were collected. The graft was harvested from the iliac bone and the GPP was systematically performed. From this group 62 cleft lip and palate (51 unilateral and 11 bilateral) had 3 years or more long term follow up. The definitive lateral incisor were agenetic in 32 cases and present in 30 cases. The radiological and clinical parameters were analysed. **Results:** The orthodontic gap closure were achieved with a good result in almost all cases when the definitive lateral incisor were present. The bone resorption of the SBG were light. When the lateral incisive were agenetic the orthodontic gap closure were performed in 17% with a light resorption of the bone. But in some time the transverse collapse relapsed. In the other cases (83%) the gap stayed opening for prosthetic. When there was an agenesis of the lateral incisor the bone resorption was higher. In three cases a dental implant could be performed. **Conclusion:** The dental rehabilitation of the alveolar cleft after SBG and GPP is improve especially when there are not dental agenesis. The gap opening and prosthetic rehabilitation with dental implant is a great challenge cause of the bone resorption and the scar retraction of the gum.

Keywords: Cleft lip and palate; Seondary bone grafting; Alveolar cleft; Dental rehabilitation

Abstr ID 22

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SINUS LIFT AUGMENTATION COMBINED WITH ONLAY BONE GRAFTS IN ATROPHIC MAXILLARY PREPROSTHETIC SURGERY. LONG TERM RESULTS

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Aim: Augmentation of the maxillary sinus floor with autogenous bone grafts has become a well-accepted reconstructive preprosthetic technique. In some cases this procedure must be complemented with other grafts to restore alveolar width deficit that is frequently observed. The aim of this study was to evaluate the long-term results of the combined sinus lift and onlay graft technique associated with implantological rehabilitation. **Methods:** Between 2000 to 2004, a combined sinus lift-onlay graft preprosthetic procedure was performed in fifteen patients, thirteen women and two men. In the cases reported the autogenous bone donor site was the anterior iliac crest in eleven cases and posterior iliac crest in four cases. In two patients, the sinus autogenous bone graft was mixed with platelet-rich plasma (PRP). In a second phase, six screw implants were inserted as mean per patient. This phase was performed 6 months after preprosthetic technique. The follow-up period was 19 months (2 to 42 months). **Results:** The quality of the new bone observed during the second surgery was grade III–IV. Two sinus membrane were disrupted during sinus lift. In most patients the loss of height of sinus graft was less than 2 mm. Partial resorption of the onlay bone graft was observed in one case in which PRP was added to the particle bone. At the end of the follow-up period, more than 90% of implants were successfully osseointegrated. A percentage of 3% of the implants were lost by peri-implantitis and 4% were not loaded due to prosthetic problems. **Conclusion:** Rehabilitation with osseointegrated implants after combined sinus lift augmentation and onlay grafts offers successful results in patients with severe atrophic maxillary. Autogenous bone grafts show a high rate of integration and a low percentage of complications that make them appropriate for preprosthetic surgery.

Keywords: Sinus lift; Onlay graft; Preprosthetic surgery

Abstr ID 67

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ANALYSIS OF A SERIES OF 126 MAXILLO-MANDIBULAR RECONSTRUCTIONS WITH BICORTICAL CRANIAL BONE GRAFT

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Introduction: The goals of this study is to analyse a surgical reconstruction technique of the edentulous atrophied maxillae or mandible with bicortical calvarial bone grafts.

Materials and Methods: (1) 75 patients, with an average age of 41, have benefited from 126 maxillo-mandibular reconstructions of this kind. (2) This parietal bone harvesting technique was identical in all cases, with reconstruction of the donor site by monocortical grafts taken from the surrounding calvaria. (3) The bone grafts were clicked vertically or horizontally into the maxillae according to a tenon/mortise principle. On the mandibular level, they had all been synthesised mostly with screws. **Results:** Over the 104 calvarial bone harvesting, three complications had been observed: (1) Two simple dural wounds among which, one appeared during the removal of a monocortical graft in the surrounding calvaria for reconstruction. (2) One contralateral cerebral haemorrhage accident spontaneously and completely resolving in an elderly patient. Over the 126 reconstructions we have observed: (1) Five partial failings. (2) Two total failings. **Discussion:** This technique offers many advantages: (1) it only requires one surgical area. (2) There is no post-operative pain, nor sequelae. (3) It can be achieved on a thin calvarium and presents a lower complication percentage than those observed with monocortical grafts. (4) It allows voluminous reconstructions. (5) It recourses to membranous bone gifted of better osseous integration abilities. The analysis of these results incites us to suggest: (1) To click horizontally the bone grafts into place to profit from successive layers of compact bone during the dental implant placement. (2) To synthesise the grafts even on the maxillary level.

Keywords: Edentulous; Maxillae; Mandible; Reconstruction; Bicortical; Calvarial; Bone graft

Abstr ID 674

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ALVEOLAR RIDGE AUGMENTATION USING CALVARIAL SPLIT BONE GRAFTS FOR DENTAL REHABILITATION

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Aim: The aim of this study was to evaluate the outcome of calvarial split bone grafts in extensive cases of alveolar ridge reconstruction for dental rehabilitation. **Methods:** A total of 122 calvarial bone grafts had been used for augmentation in 34 patients with alveolar ridge defects caused by trauma, tumour resection or atrophy. 17 patients were operated in the maxilla, 14 in the mandible and 3 in both jaws. 103 endosseous dental implants were placed into the bone grafts. Computed tomography scans were taken immediately postoperative (T1), before implant placement 5 to 6 months after transplantation (T2) and after a period of one year (T3) to determine changes in bone volume and density. Complications as well as success rates of bone transplants and dental implants were clinically recorded. **Results:** After a mean follow-up period of 2.5 years partial transplant loss occurred after wound dehiscence in two cases both associated with loss of an implant. Overall success rate of calvarial bone grafts was 98.4% and 98.1% of dental implants. Wound dehiscence occurred in additional 8 cases associated with local infection in one case, but all healed under local treatment. Bone resorption

at a the time period T2 and T3 was low compared to T1. In all cases successful dental restoration could be performed. **Conclusion:** Considering the low bone resorption and the high success rates it is concluded that calvarial split bone grafts combined with osseous dental implants is a promising operation technique for alveolar ridge reconstruction.

Keywords: Alveolar ridge; Reconstruction; Calvarial graft; Bone resorption; Implantology

Abstr ID 322

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RECONSTRUCTION OF THE SEVERELY RESORBED MANDIBLE WITH MODIFIED "TENT POLE" PROCEDURE

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Aims: The purpose of this prospective study is to assess the outcome of the simultaneous placement of dental implants and autologous bone in the severely resorbed mandible using the "tent-pole" technique described by Robert Marx (JOMS, 2002, p. 878–887). The technique was modified from the previously presented protocol. **Materials and Methods:** Seven patients have been operated in this study. All patients had severe mandibular resorption (#8804; 6 mm of vertical bone height in the symphyseal area). Bone graft was harvested from the posterior iliac crest and the mandible was reconstructed with dental implants and simultaneous bone graft using an extraoral incision at submental area. All patients had 4 Straumann[®] implants (4.1 by 12 mm) placed between the mental foramina. The graft was covered with Tisseel[®] fibrin glue. Vertical bone height in the midline and mental area were measured intra-operatively, and after the prosthodontic construction was finished. Post-operative pain was assessed from each patient after the operation with visual analogue scale. The mandibular nerve status was assessed immediately after the operation and during follow-up. **Results:** The preliminary results of the ongoing prospective study will be presented. The follow-up time ranged between 6 to 15 months after the operation. None of the patients had post-operative infection. All patients presented some degree of mental nerve paresthesia immediately after the operation. Paresthesia resolved in all patients during the bone graft healing period. **Conclusions:** Simultaneous implant placement and bone grafting with autogenous cancellous bone using modified "tent-pole" technique provides for reliable reconstruction of the severely resorbed mandible.

Keywords: Keywords: Autogenous bone grafting; Mandibular reconstruction; Dental implants

Abstr ID 669

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A 3-YEAR FOLLOW-UP OF PATIENTS RECONSTRUCTED WITH FREE ILIAC CREST GRAFTS AND IMPLANTS IN THE ATROPHIC EDENTULOUS MAXILLAE

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Aims: A longitudinal follow-up of implant stability in grafted maxillae with the aid of clinical, radiological and resonance frequency analysis (RFA) parameters. **Method:** Twenty-eight patients with atrophic edentulous maxillae were reconstructed with free iliac crest grafts, onlay/inlay or interpositional grafting technique. The resorption pattern in the maxilla decided the grafting technique. Endosteal implants were placed after six months of bone graft healing. Implant stability was measured with RFA 4 times: when the implants were placed, after 6 to 8 months of healing, after 6 months and 3 years of bridge loading. Individual check up was performed on the implants at the 6 months and 3-year follow-up after removal of the supraconstructions (Procera Implant Bridge). Radiological follow-up on marginal bone level was performed annually. **Results:** Twenty-five patients fulfilled the follow-up. A total of 192 implants were placed and the survival rate at the 3-year follow-up was 90%. Twelve of the 20 failed implants were lost before loading (early failures). A reduction (2.0 mm) of the marginal bone level was seen between implant placement and the first year of bridge loading with no further changes during the observation period. The RFA-value for all implants differed significantly between abutment connection (60.2 +/–7.2) and six months of bridge loading (62.5 +/–5.5) ($P=0.05$, Wilcoxon Signed Ranks Test) but were non significant between 6 months of bridge loading and three years of bridge loading (61.8 +/–5.7). All 25 patients were provided with fixed implant bridges and all patients are still wearing their bridges after 3 years. **Conclusion:** This clinical follow-up with radiological examinations and RFA measurements indicate a predictable and stable long-term result for patients with atrophic edentulous maxillae reconstructed with autogenous bone and delayed placement of endosteal implants.

Keywords: Implant stability; Autogenous bone graft; Edentulous atrophic maxilla; Three year follow-up; Resonance frequency analysis; Marginal bone level

Abstr ID 162

339

SINUSGRAFTS WITH SYNTHETIC ALGAE DERIVED HYDROXYAPATITE

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Aims: We consider transplanted autogenous pelvic bone (Golden Standard) the best augmentation material for sinusgrafts. The aim of this retrospective study was to evaluate if synthetic Hydroxyapatite, produced out of marine algae with the CE certified brand name Algipore[®]

is almost as good, concerning new bone formation and remodelling, as autogenous bone (Block & Kent 1997) and if dental implants placed into this new bone show comparable survival rates. **Material:** From September 5th 1990 to March 31 2004 I performed 198 sinusgrafts in severely resorbed maxillary sinuses with 2–5 mm (mean 3–6 mm) remaining bone on 122 patients. All 198 sinusgrafts were augmented with a mixture of 90% Aligipore® and 10% autogenous collector bone chips gained from the bone trap. In a second stage operation, after 6 months of primary healing, I applied 574 implants on 96 of these patients. During implant application I harvested 415 trephine cores for undecalcified hard section histologic evaluation according to Donath from 137 of these patients. **Result I:** The longest observation period of loaded implants in this study was 162 months. The implant survival rate was calculated according to the Kaplan Meier analysis. The loss came to 36 out of 574 loaded implants (6.27%). **Conclusion:** The results of this study with synthetic material are comparable with studies about autogenous bone (Block & Kent 1997) and studies on other augmentation materials (Hallman et al. 2002) regarding new bone formation and implant losses.

References:

- Block MS, Kent JN: J Oral Maxillofac Surg 55:1281, 1997
Hallman et al.: J Oral Maxillofac Surg 60: 277, 2002

Abstr ID 117

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BIOSETAL AND ITS FORMS IN MAXILLO-FACIAL SURGERY

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At present maxillo-facial surgeon is facing the problems of post-traumatic restoration defects and post tumour defects of facial skeletal bones in his clinical practice. The usage of different types of osseous transplants does not always give positive results. **Aim:** The aim of our investigation is to study the possibility of using different implants developed on the basis of glassceramics for restoration of bone tissue defects in maxilla facial area. Such implants are biosetal (porous and powder). **Materials and Methods:** The experimental research has been carried but on mongrels 18 days in which powder biosetal was introduced into defect formed in 10 dogs and in 8 dogs porous biosetal was modeled according to the size defect and introduced into it. Implants were in close contact with the defect edges and fixed with the help of surrounding soft tissues. Histological investigations after taking the dogs out of experiments were performed in 14, 21, 28 and 90 days. Under clinical conditions biosetal both powder and porous was used to restore the bone tissue defects in maxilla and mandibular areas in 112 patients. **Results:** The above investigations gave all the grounds to reveal that implants out of porous biosetal introduced into bone tissue defect do not show any marked signs of antigenicity. The absence of inflammatory reaction of bone tissue and surrounding soft tissue of

foreign body cells and active growth of bone tissue into pores of implants made from biosetal is the proof of the above said. Clinical and X-ray examinations indices showed positive treatment results for 107 patients. There were no purulent-inflammatory complications for these patients. Bone tissue was regenerated for a short period of time. **Conclusion:** Our investigations show the perspectives of using biosetal in endoimplant of maxilla facial area.

Keywords: Biosetal; Bone tissue defect restoration; Implant; Glass-ceramics; Regeneration

Abstr ID 124

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MAXILLARY SINUS LIFT WITH PLATELET GROWTH FACTORS ISOLATED USING THE AGFTM METHOD. CLINICAL AND HISTOLOGICAL TRIALS COMPARED WITH SINUS LIFTS MADE WITH AUTOLOGOUS BONE GRAFTS

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Aim: There are autologous growth factors inside platelets which enhance bone regeneration and wound healing. These factors are isolated and used in the form of platelet rich plasma (PRP) in maxillofacial surgery. The aim of this trial was to evaluate the efficacy of a new method of growth factor isolation (AGF) as applied to the rehabilitation of atrophic maxillary bones in comparison to autologous bone. Following the AGF method the growth factors are extracted and treated in order to obtain concentrations 6–8 times higher than blood concentrations and 2–3 times higher than conventional PRP. **Methods:** 10 patients suffering from bilateral atrophy of the posterior sectors of the upper jaw underwent bilateral sinus lifts. One side was lifted using an autologous bone graft harvested from the iliac crest, the other side using AGF in association with hydroxiapatite. 4 months after surgery implants were inserted and then 4 months later the second implant surgery took place. The two methods were then compared using histologic evaluations of the implant sites and by evaluating the stability using an OssTell instrument. **Results:** No complications occurred and primary stability of the implants was obtained with no significant differences noted by OssTell on either side. Histological examination confirmed new bone formation on both sides with average rates (58% of bioplastic material) slightly more for autologous bone grafts compared to 55% for AGF. **Conclusions:** The AGF method seems to promote good new bone formation within 4 months and it is comparable to that of autologous bone grafts. Thus it can be considered as an alternative method for some specific conditions (sinus lifts, cystic lesions) where new bone formation is required. The main advantage of this method is that it is less invasive as it does not require a second surgical site.

Keywords: PRP; AGF; Autologous bone; Bone formation

BONE TISSUE ENGINEERING USING AUTOLOGOUS ENDOTHELIAL CELLS, OSTEOBLASTS AND FIBRINMATRIX

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Aims: Autologous bone tissue engineering is aiming at the extracorporal rebuilding of lost bone using exclusively cells and matrix from the receiver organism which were manufactured, cultivated and combined *in vitro*. The aim of this study was to establish an autologous carrier matrix for cells and proteins consisting of fibrin and to characterize the properties of this 100% autologous construction *in vitro* and *in vivo*. **Material and Methods:** Eight minipigs were used for manufacturing of the bone substitute using osteoblasts from the calvarian periosteum and endothelial cells from the jugular vein. Cells were cultivated until confluent stage and then seeded on a fibrin matrix based on autologous blood serum, combined with an autologous platelet-rich-plasma-concentrate and replanted in a critical size defect of the mandible. Specimens were taken at day 7 and 14 and analysed. Simultaneous attachment, proliferation, and differentiation of the cells on the carrier matrix was evaluated. **Results:** *In vitro* results demonstrated complete attachment of the cells on the matrix surface after 6 hours and distinctive proliferation of both cell types after 48 hours without any apoptotic signs. In 6 of the 8 animals histomorphometric analyses revealed an accelerated bone regeneration. Immunohistologic staining for endothelial cells showed an increased angiogenic front within the fibrin matrix, which was clearly in front of the osteogenic front. With the help of cell tracking technique it was possible to identify the transplanted cells over the whole period of investigation. **Conclusion:** With this study we could demonstrate the possibility of creating a total autologous bone substitute. Based on vital transplanted cells and the nature of the matrix this construction is able to regenerate a bony defect in a fast and reliable manner.

Keywords: Autologous tissue engineering; Endothelial cells; Osteoblasts; Fibrin matrix

ORAL REHABILITATION WITH ENDOSTEAL IMPLANTS

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The aim of oral rehabilitation is to restore function, form and a sense of wellbeing following ablative surgery for malignant disease. Whilst reconstruction performed primarily restores facial form, oral rehabilitation is compromised due to the distortion of the oral anatomy. Presence of bulky flaps, impaired muscle function and coordination,

tethering of the tongue, lips and cheeks and obliteration of the sulci often renders conventional prosthodontic treatment impossible. These problems are further compounded by sensory impairment and harmful effects of radiotherapy such as mucositis and xerostomia. The application of endosteal implants helps to overcome many of these problems and achieve oral rehabilitation for the patient. This involves the creation of a favourable implant environment—adequate bone volume, favourable interarch relations (horizontal, vertical and transverse) and a healthy soft tissue envelope. The need for oral rehabilitation influences the method of reconstruction and choice of flap to repair the surgical defect in order to achieve optimal bone contour and volume. The advantages, disadvantages and limitation of the commoner composite flaps, e.g. DCIA, fibular, scapula and radius should be considered with respect to endosteal implants. The creation of a favourable peri-implant soft tissue environment is most important and often predetermines success or failure. Ideally the implant is surrounded by keratinised mucosa. This involves debulking of the flap, release of any tethering of the tongue, lips or cheeks, re-creation of a sulcus and placement of split thickness mucosal grafts. Enhancement of the peri-implant environment can be achieved using standard or modified preprosthetic surgical techniques as described by Kazanjian, Trauner, Rehrmann, Obwegeser and Edlan and more recently by Palacci. Other relevant factors to be considered about oral rehabilitation include anticipated patient survival and motivation, timing of implant treatment—i.e. primary or secondary implant placement, the effects of radiotherapy and role of hyperbaric oxygen, cost and capacity issues and most importantly, does the patient in fact benefit from these additional interventions. The benefits of oral rehabilitation have been demonstrated using validated health related quality of life measures, thus justifying the additional surgical interventions in this already compromised group of patients.

References

1. Hayter JP, Cawood JI. Oral rehabilitation with endosteal implants and free flaps. *Int J Oral Maxillofac Surg* 1996; 25: 3–12.
2. Schliephake H, Neukam FW, Schmelzeisen R, Wichmann M. Long-term results of endosteal implants used for restoration of oral function after oncologic surgery. *Int J Oral Maxillofac Surg* 1999; 28: 260–265.
3. Rogers SN et al. Psychological response of the edentulous patient after primary surgery for oral cancer: a cross sectional study. *J Prosthet Dent* 1999; 82: 105.

HISTOLOGICAL EXAMINATIONS IN THE IRRADIATED MANDIBLE IN CONJUNCTION WITH IMPLANTOLOGICAL-PROSTHODONTIC REHABILITATION

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Materials and Methods: From 1987–2002, 273 Brånemark fixtures have been placed into the interforaminal mandibles of 60 patients with oral carcinomas. 50 patients were treated by postoperative radiotherapy to a total reference dose of 58–64Gy. 10 patients received 35–45Gy during a preoperative neoadjuvant chemo-radiotherapy protocol. The interval between radiotherapy and implant placement was at least 9 months. 34 patients had a trepan drill to get bone biopsies. A continuous examination through numerous biopsies was possible in 9 patients. **Results:** The histological examinations of bone biopsies after a focal dose of 58–64Gy indicated a massive fibrosis, a lack of vascularization and a distinctive decrease of vital bone cells. Significantly reduced fibrosis and vascular damage can be observed with a radiation dose of up to 45Gy. Biopsies following extended intervals after curative radiotherapy did not demonstrate any recuperating effect. The rate of complication in the clinical course as well as early or late failure revealed a significant correlation to the focal dose. The following serious complication occurred within the group over 58Gy (50 patients, 225 implants): 1 osteoradionecrosis, 3 soft-tissue necrosis and the loss of 11 implants. After 6 and 9 years, two cases suffered serious late complications as osteoradionecrosis with simultaneous loss of 10 implants. Until now, no complication occurred in the group receiving less than 45Gy (10 patients, 48 implants). **Conclusion:** Under clinical curative conditions the threshold dose for permanent damage to the mandibular bone has to be estimated at 45Gy. This finding agrees well with a neoadjuvant chemo-radiotherapy protocol including subsequent implantological-prosthetic rehabilitation. A recuperative effect of the radiogenically damaged mandible after a dose of >60Gy is not to be expected. Under these conditions implantological management of an irradiated mandible is permanently connected to a potential rate of serious complications.

Keywords: Radiogenic damage of the mandible; Implantological rehabilitation of the mandible; Osteoradionecrosis

Abstr ID 508

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FUNCTIONAL RECONSTRUCTION OF MAXILLA BY COMBINED WITH REVASCULARIZED FIBULAR OSTEOSEPTOCUTANEOUS FLAP AND ENDOSSEOUS IMPLANTS: REPORT OF A CASE WITH TEN YEARS FOLLOW UP

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Purpose: Revascularized fibular osteoseptocutaneous flap has been recently employed for the reconstruction of various bone and soft tissue composite defects following oral cancer ablation. Recontour of the shape by osteotomy technique for the fibula and endosseous implant enabled to get better cosmetics of facial appearance and functions such as masticatory, phonetic when employed at the maxillary reconstruction. In this presentation, report of a case who was reconstructed by this combination manner and observed for ten years will introduced on the point of cosmetic and function and also bone resorption of fibula.

Objective patient: A 59-year-old female patient was surgically resected for squamous cell carcinoma arising at anterior site of maxillary gingiva as initial treatment. Prosthetic rehabilitation was tried but not achieved satisfactory result because of water and air leakage. Six months later partial maxillectomy, resected defect was reconstructed by fibular osteoseptocutaneous flap with osteotomy was performed at two portions and simultaneously placed by four endosseous implants in fibula directly. De-epithelized cutaneous flap was covered on both oral and sinus sites. Nine months later, abutments were set and thickness of flap was coordinated to prepare the implants for prosthesis. Superstructure using milling-bar attachment system was fabricated. **Results and Conclusion:** Results of ten years follow up on the basis of cosmetic and function, patient was satisfied and no bone resorption of fibula was radiographically confirmed and no peri-implant hyperplasia has been observed under the ten years function.

Keywords: Maxillary gingival cancer; Maxillary reconstruction; Revascularized fibular osteoseptocutaneous flap; Cancer surgery

Abstr ID 862

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DENTAL IMPLANTED REHABILITATION AND FIBULA FREE FLAP IN MANDIBULAR RECONSTRUCTION

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The authors have retrospectively studied ten selected cases of adaptive mandibular reconstruction with a fibula free flap in order to allow oral rehabilitation with dental implants. In this perspective, the authors discuss the choice of the reconstructive technique in order to obtain a sufficient osseous height. At the beginning of their experience and for different discussed reasons, they have decided a single barret fibula flap. This technique had brought sufficient height in 3 cases but had to be completed either by bone grafts ($n=3$) or distraction ($n=1$). The authors would like to discuss on the interest of the double barret technique ($n=3$) when possible should be considered as the best solution.

Abstr ID 834

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THE PROSTHETIC REHABILITATION OF THE EMPTY EYE SOCKET AFTER TUMOUR OPERATIONS

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Aims: The prosthetic rehabilitation of an empty eye socket after tumour operations is despite the use of

endosseous implants difficult. This is mostly due to thin bones around the orbit. The loss of the implants is higher than in other areas of the face. Therefore we have introduced 10 years ago a new system, which has reduced the loss. Besides that there is the possibility of the prosthetic rehabilitation shortly after the ablative surgery, which is very important for these patients. **Methods:** With the help of a carrierplate with screw inserts (Epitec-second generation) fixation elements for the eye prosthesis are brought into the orbital cavity immediately during the tumour operation. Because of the use of the carrierplate the position of the fixation elements is optimal in the middle of the empty orbit. Independent of the bony resection around the orbit, the carrierplate can be fixed in areas with enough bone to give stability. With this system 16 patients with different extents of orbital resection have been treated. The majority of the patients could be rehabilitated about 14 days after the first operation with an implant-fixed eye prosthesis. **Results:** In all the patients the eye prosthesis could be incorporated with very good functional and esthetic results. In none of the cases we had a loss of the carrierplate or of the fixation elements. Only in one very old patient we removed the carrierplate, because cleaning was not adequate. Therefore we have modified the plate design. **Conclusion:** The longterm results are so encouraging, that we think this might be the method of choice in the prosthetic rehabilitation of the empty eye socket after tumour operation.

Abstr ID 766

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SURGICAL-PROSTHETIC RECONSTRUCTION OF THE FACIAL DEFECTS IN OUR OWN EXPERIENCE

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Objective: To present our own experience in surgical-prosthetic reconstruction of the facial defects. **Material and Methods:** From 1994 to 2004, 28 patients with facial defects were treated in the Department of Maxillofacial Surgery of the Jagiellonian University in Krakow. There were 24 patients with facial defects after ablative surgery for oral cancer, 2 with posttraumatic and 2 with congenital defects. Main indications for reconstruction were as follows: lack of the patient's acceptance for surgical reconstruction, ineffectiveness of surgical reconstruction, bad general health condition of the patient and, in cancer cases, doubt of the radicality of the tumor resection. **Results:** In cases with maxillary and mandible bone defects autogenous bone grafts and dental or zygoma implants for dentures support (15 cases) were used. For reconstruction of the soft tissue defects silicon epitheses (6 cases) and silicon epitheses supported by cranial implants (7cases) were prepared. Good aesthetic and functional results were obtained. Combination of surgical techniques with prosthetic methods and implants enables reconstruction of the complex facial and oral defects. Silicon material for epitheses enhances good aesthetic results and improves adherence to the skin especially when supported by cranial implants. **Conclusions:** (1). Appliance of the intraosseus implants for supporting dental prostheses and epitheses

makes them stabile and improves their function. They can be also used in patients after radiotherapy. (2). Complex facial defects reconstructions by using silicon epitheses assure good aesthetic results of treatment.

Keywords: Surgical-prosthetic reconstruction; Facial defects form of presentation; Orally

Abstr ID 108

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FACIAL RECONSTRUCTION AFTER MAJOR SURGERY USING ENDOOSSEOUS FIXTURES

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Major facial surgery after trauma, cancer surgery or radiotherapy can cause large defects of the facial structures that need to be reconstructed. Epistheses using silicone can be very helpful in such defects with their characteristics that are quite similar to the skin (flexibility, possibilities of modelling or coloring). The main problem is the one of the fixation that has been solved thanks to the titanium extraoral fixtures that give bone anchorage and that can be used in orbital, nasal or midface reconstruction. To perform such reconstruction, some precautions must be taken concerning bone and soft tissues. Concerning bone, the surgeon must be informed of the quality and quantity of residual bone to fix the prostheses in good position in order to have good cosmetic result. Concerning the soft tissue, they must be strong enough to protect the underlying bone but not too thick (i.e. flap covering) to avoid local inflammation and to have good cosmetic results. The patient and the surgeon must be aware that these silicone prostheses are progressively damaged by the sun (ultraviolet) and that they need to be changed every two years. The authors give, through their ten year experience, the step by step technique which is very reliable and which gives satisfying results on the underlying structure and on the prosthesis, with a low rate of complications.

Keywords: Facial reconstruction; Fixture; Epistheses

Abstr ID 169

350

LEFORT 1 IN IMPLANT PREPROSTHETIC SURGERY

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Lefort 1 ostetomies in implant preprosthetic surgery In maxillary atrophy many techniques aiming implant insertion have been proposed. However the Lefort 1 approach with graft have many advantages. (1) It solves the maxillary discrepancy, which is frequent in cases of major atrophy. (2) It provides a very easy access to the sinus floor of the

sinus. (3) It improves the aesthetic aspect of the patient. (4) It reduces the the prosthetic size We present here an over view of the different grafting technique always with autogenous bone, through a Lefort 1 osteotomy. The Lefort 1 can be used in case of partial dental losses to solve in one surgical procedure a malocclusion and a bony defect. It can be used in total edentulous patients to provide the best position to the maxilla. It can be use to perform a localised grafting. The implants can be inserted in the same procedure or in a second time. Because of the necessity of an accurate implant position our trend is to insert the implants in a second time. The use of the Lefort 1 osteotomy does not change the bone grafting rules. The disadvantage stays in a more important procedure compared with the classic sinus floor +/- prremaxilla grafting. Finally in our experience it stays one of the first choice procedures in maxillary preprosthetic surgery.

Keywords: Lefort; Osteotomy; Bone grafting implant

Abstr ID 394

351

VERTICAL DISTRACTION OSTEOGENESIS FOR DENTAL IMPLANT IN SEVERE ALVEOLAR DEFECT CASES

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Aim: To evaluate the clinical results of vertical distraction osteogenesis for dental implant in severe alveolar defect cases. **Materials and Methods:** 39 cases with severe alveolar vertical defects underwent vertical distraction osteogenesis treatment. The mean defects were 14 mm (ranged from 10 to 20 mm), which were caused by tumor resection in 28 cases, by trauma in 10 cases by congenital deformity in 1 case. Operations of osteotomy and distraction fixation were performed under general anesthesia in 19 cases, under local anesthesia in 20 cases. Altogether 42 distractors were applied in maxillary and mandibular alveolars. Latency time was 5–7 days, distractor was activated 2 times per day and 0.5 mm per time. OPG film was taken in Pre-OP and Post-Op in 1 week, 4 week, 8 week, 12 week and 36 week to measure and evaluate the results. Solidity time varied from 8 weeks to 13 weeks before implants were placed. **Results:** All 39 cases showed that new bone formed in the distraction area by removing distractor device, mean gained alveolar height were 13.5 mm (ranged 11–20 mm). 114 dental implants were placed in 37 cases without problem, the follow up varied from 6 months to 40 months. w cases draw out from further treatment because of costs problem. **Conclusion:** Alveolar vertical distraction osteogenesis is a feasible alternative in alveolar augmentation for devevere alveolar vertical defects, which could not be augmented with GBR or onlay graft. The indication, surgical skill, complication and strategies would be discussed in the presentation.

Abstr ID 365

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NEW TECHNIQUE FOR CALLUS DISTRACTION WITH THE ENDODISTRACTION IMPLANT DOUBLES THE HEIGHT OF SEVERELY ATROPHIC MANDIBLES

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The preprosthetic alveolar ridge augmentation with conventional distraction appliances using Ilizarov's callus distraction in the interforaminal region of the mandible has, for various reasons, serious drawbacks. Most distraction appliances, for example, are fixed to the osteotomy segment using two mini plates and screws, which then have to be removed in a second, separate operation. This is no longer necessary with the endodistraction implant, since both its parts—the long distraction screw and the hollow implant placed above it—protrude like an healing abutment beyond the alveolar ridge and can be easily removed at the end of treatment with no pain involved for the patient. The aim is to restore the original height of the alveolar ridge of the edentulous mandible with minimal surgery. The preferred indication for this technique is the anterior region of the high atrophic mandible. The endodistraction implant offers also high comfort to the patient during the distraction period. For the whole treatment period the supragingival cylindrical implant remains at the same level just like a healing abutment and can also serve for temporary fixation of the lower denture. After ridge augmentation with this new distraction technique up to 15 mm vertical distraction, and after the retention time, any type of implant can be used. All reported patients were prosthodontically treated with individual bar retented overdentures. The main advantages of the endodistraction implant compared to common techniques are simple uniform devices with a fully standardized surgical technique. The threaded rod is hidden sterile in the soft tissues of the chin, without compromising the comfort of the patient inside the oral cavity. Starting in 1999 the results of 22 patients are presented.

Keywords: New technique for callus distraction with the endodistraction implant doubles the height of severely atrophic mandibles

Abstr ID 17

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A RETROSPECTIVE STUDY OF 45 ORAL IMPLANTS INSERTED IN MANDIBULAR BONE DEFECTS REHABILITATED BY MEAND OF VERTICAL DISTRACTION OSTEOGENESIS

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This retrospective study evaluates the results obtained over 10 cases of mandibular defects treated by means of Vertical Distraction Osteogenesis (VDO) towards implants prosthetic rehabilitation. Selecting criteria for the mandibular defect were: teeth defects with a minimum of three elements, a basal bone with a minimum height of 8.0 mm and depth of 5.0 mm. All cases were treated using the same intraoral device. Device positioning was performed on the vestibular side of the mandible preserving the lingual

periosteum and obtaining an ideal distraction vector toward implant insertion. Distraction protocol included: a latency period of 5 days, 0.5 to 1.0 mm of distraction rate and a stabilization period of 3 months. Surgical removal of the device was always combined with dental-implant insertions. After 3 months of osteointegration, second stage implant surgery and vestibuloplasty, by means of free palatal gingiva graft, were performed. All distraction procedures were successful allowing inserting a total of 45 oral implants. During implants insertion, histological evaluation was performed by means of a cylindrical-biopsy. Histology confirmed bony formation with the typical features of the distracted bone and with degree of density adequate for implants insertion with good primary stability. At the time of second stage implant surgery, implant osteointegration was confirmed for all implants except one (implant survival rate 3 months after insertion: 97%). The mean follow-up of implant osteointegration ranged from 8 to 42 months (average: 28.5 months). The masticatory load ranged from 1 to 34 months, reporting an implant success rate of 100%. X-ray investigations after 12 and 24 months of implant loading revealed minimum resorption of the bone surrounding the implants. At the same time clinical evaluation of perimplant soft tissue was negative. Thanks to the ideal positioning of the fixtures, functional and aesthetic prosthetic rehabilitation was achieved in all cases.

Keywords: Vertical distraction; Osteogenesis implant rehabilitation

Abstr ID 14

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THE CLINICAL APPLICATIONS OF ALVEOLAR DISTRACTION OSTEOGENESIS

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Aim: The aim of this study is to evaluate the clinical applications of different alveolar distraction systems (intraosseous and extraosseous) used in the vertical distraction at the alveolar process. **Study Design:** In this study, 10 patients who referred to the Istanbul University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery with alveolar deficiency for implant placement were treated with alveolar distraction. The causes of alveolar deficiencies were trauma, surgical resections of tumors, congenital deformities or periodontal diseases. All operations were performed under local anesthesia. After a latency period of 7 days, the distractors were activated at a rate of no more than 0.5 mm per 12 hours, followed by a consolidation period of 60 days. The devices were removed and endosseous implants were placed. Panoramic films were taken in pre-op, post-op in 1 week, 4 weeks, 8 weeks, 12 weeks and 36 weeks to evaluate healing. The prosthesis were fabricated 3 months after the implant placement. **Results:** We provided successful prosthesis with optimum esthetics and function for all of our patients except one. Satisfactory rehabilitation was achieved. **Conclusion:** Distraction osteogenesis is a satisfactory method for treating alveolar defects. Its main advantage is that it provides not

only the distraction of the hard tissue, but also the advancement of the soft tissue.

Keywords: Alveolar distraction osteogenesis; Alveolar deficiency; Implant placement

Abstr ID 191

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ALVEOLAR DISTRACTION OSTEOGENESIS AND IMPLANTOLOGY. WHATS NEW ?

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Aims: Planning the distraction vector according to the axis of the implants and of the teeth is the key to the procedure of alveolar distraction, in order to avoid the palatal or lingual shifting of the transported bone¹. A new software system, that avoids the errors due to the differences between the tooth axis and the CT acquisition plane, was been applied. **Study Design:** Dental Vox2 is a software system that with a single CT acquisition and irrespective of the patient orientation or the chosen tooth, allows for to obtain exact morphological measurements of the underlying bone and planned teeth. The images data, obtained by an intraoral stent, are transferred in the operating room by using a surgical plate with a notch for the pin of the distraction device. The procedure was applied in 11 cases of post-traumatic alveolar deficiency. **Results:** The alveolar distraction was performed without any complications or problems. Vertical bone gain average was 9.9 mm, and panorex and B-scan ultrasound showed earlier mineralization. The alveolar bone was restored in all dimensions and the arch form of the maxillary bones was respected. 34 implants of adequate diameter and length were inserted in the distracted zone according to surgical and prosthetic plan. **Conclusion:** Adequate prosthetic teeth plan should come first designing alveolar distraction. Teeth position should exactly lead bone distraction. In this paper a new software system was being presented, in order to enhance implant surgical and prosthetic plan by providing exact morphological measurements of the bone and planned teeth. Thus prosthetic rehabilitation with functional and aesthetic benefits can follow alveolar distraction.

Keywords: Alveolar distraction implantology distraction vector

Abstr ID 481

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ZYGOMATIC IMPLANTS: A RELIABLE SOLUTION FOR REHABILITATION OF THE SEVERELY RESORBED MAXILLA

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Introduction: The rehabilitation of the atrophic and severely resorbed maxilla with osseointegrated implants, provides a tremendous challenge for the implantology team. The restorative biomaterials in use (membranes, pins, alloplastic bone grafts), as well as the development of specific surgical techniques (bone grafting, sinus lift, etc.), have contributed a lot into the management of such a challenge, but without totally eliminating various concerns and complications. Zygomatic implants having been in use since the 1990s, provide a reliable solution for the reconstruction of the severely resorbed maxilla in a shorter treatment time and with less morbidity. **Material and Method:** Five patients received a total of 10 zygomatic implants (2/patient), in combination with 4 routine osseointegrated implants in the anterior maxilla of each patient, from January 1, 2000 to July 31, 2003. Six to 8 months elapsed for healing before second-stage surgery was performed. In each patient a hybrid fixed prosthesis supported by 2 zygomatic implants and 4 maxillary implants, was fabricated for the rehabilitation of the severely resorbed maxilla. The mean follow-up period was 28–30 months. **Results:** No implant was removed at the time of abutment connection surgery or during the follow-up period. All the patients are satisfied with the clinical outcome of the particular rehabilitation technique, mentioning especially the avoidance of onlay bone grafting or sinus augmentation. **Conclusions:** The complicated surgical procedures, the longer treatment time, and the increased possibility of implant failures in treating patients with atrophic maxilla, constitute some of the serious concerns in the management of such cases. Zygomatic implants can offer a predictable alternative solution for the rehabilitation of the severely resorbed maxilla, minimizing the need for bone grafting and allowing shorter treatment time.

Keywords: Zygomatic implants; Rehabilitation; Resorbed maxilla

Abstr ID 445

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TISSUE REACTION TOWARDS IMMEDIATELY LOADED DENTAL IMPLANTS

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Aims: The treatment of patients with early or immediately loaded dental implants has renewed interest in the behavior of osteoblasts at the implant surface under load. A newly designed dental implant indicated for immediate loading was tested in vivo for early stages of osteoblast behavior at the implant surface. **Methods:** 32 implants were placed in the mandibles of 8 minipigs. Half of the implants ($n=16$) were immediately loaded under occlusal contacts, and implants placed in non-occlusal relations served as a control. **Results:** All implants, except one which showed signs of tissue infection, healed uneventfully and were stable

throughout the experimental period. Ultrastructural analysis of mandibular specimens revealed an intimate attachment of osteoblasts to the material surface beginning as early as day 1. Application of either occlusal or non-occlusal load did not alter the phenotypic morphology of the attached osteoblasts. Transmission electron microscopy and X-ray diffraction analysis demonstrated a direct contact of bone-like minerals over the whole implant surface with no signs of crestal hard tissue alteration. EDX analysis showed a slight release of titanium from the implant side. **Conclusion:** These results indicate that immediate loading of specially designed dental implants can be performed without disruption of the titanium/bone interface or disturbance of osteoblast physiology in the early loading phase. Immediate loading protocols can be performed without disturbance of normal bone biology.

Keywords: Implants immediate loading; Bone histology

Abstr ID 408

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ZYGOMATIC IMPLANTS: A REPORT ON 100 CASES

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Aims: The rehabilitation of the edentulous posterior maxilla poses a serious challenge to surgeons due to the low bony density, the pneumatization of the maxillary sinus and the atrophy of the alveolar ridge. Several therapeutic options have been developed to achieve that complete rehabilitation of the area including procedures as sinus lift, onlay bone grafts, alveolar distraction or the use of specially designed implants (zygomatic, pterygoid). The zygomatic implant present the advantage that the malar bone is not resorbed in the edentulous patient, therefore it becomes a good alternative and it allows to avoid the manipulation of the maxillary bone. The purpose of this communication is to report a retrospective review of our series of zygomatic implants and to compare with other series. **Methods:** Since November 1998 to December 2003 a total number of 100 zygomatic implants were inserted in 57 patients. The following aspects were reviewed: cause of the edentulism, partial or complete edentulism, length of zygomatic implants, degree of osteointegration and complications. **Results:** A number of 100 implants were inserted in 57 patients. Non specific cause of edentulism was observed in 40 partial and 17 total edentulous patients. The length of the implants was 40–42–45–50 mm used in 18–3–42–37 cases, respectively. 2 osseointegration failures have been detected during the period of the review, one of them due to osteitis, and the second associated to severe pain. Five patients referred minor complications including acute sinusitis, facial cellulitis and cutaneous fistula. **Conclusion:** Our series allows us to conclude that the zygomatic implants are a good solution for the rehabilitation of the posterior maxilla. The low index of complications, and the high degree of osseointegration achieved with this simple, predictable and non-expensive technique allows us to encourage the use of this procedure.

Keywords: Zygomatic; Implants; Maxilla

EFFECT OF IMPLANT SURFACE CHARACTERISTICS ON OSSEOINTEGRATION IN THE TIBIA AND THE ILIUM OF DOGS

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Aim: The failure rate of implant is relatively high in a poor quality of bone. This study was performed in order to compare the osseointegration of 4 different commercially available implants in the poor quality of bone. **Materials and Methods:** Four mongrel dogs, weighing 15 kg or more, were used. Four different surface treated commercially available implants were used. Animals were divided into 4 groups on the basis of implant surface characteristics: Control group (the machined surface implants, AVANA, Osstem Inc., Korea); RBM group (resorbable blast media surface implants, AVANA, Osstem Inc., Korea); HA group (HA-coated implants, Steri-Oss, Nobel Biocare, Sweden); and SLA group (SLA implants, Bicon, Bicon Inc., USA). Twenty-four implants were installed unilaterally into the left metaphysis of tibia and iliac crest of dogs under general anesthesia. Animals were sacrificed 8 weeks after installation of implants. **Result:** Histologically, all implants were osseointegrated in the bone. Histomorphometric analysis, the average bone-implant contact ratio was highest in HA group ($82.5 \pm 12.4\%$), in the order of SLA group ($66.3 \pm 18.2\%$), RBM group ($51.1 \pm 12.3\%$), and control group ($50.1 \pm 18.1\%$) in the ilium. The ratios of HA ($P < 0.01$) and SLA ($P < 0.05$) groups were significantly higher than control group. The bone-implant contact ratios of HA group ($95.4 \pm 2.9\%$), RBM group ($87.1 \pm 5.3\%$), and SLA group ($86.0 \pm 3.5\%$) in the cortical bone of the tibia were significantly higher than that of control group ($75.9 \pm 11.9\%$). In marrow space the bone-implant contact ratio of HA group ($P < 0.01$) and SLA group ($P < 0.05$) was significantly higher than that of control group. **Conclusion:** These results indicate that the better osseointegration can be obtained in the rough surfaced implants, such as HA coated or SLA treated implants than the machined, smooth surfaced implants and HA-coated implants can obtain good osseointegration in the marrow space among them.

Keywords: Implant surface; Osseointegration

CURRENT STATE OF COMPUTER ASSISTED NAVIGATION IN CRANIO-MAXILLOFACIAL SURGERY WITH SPECIAL FOCUS ON DENTAL IMPLANTOLOGY

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Subject: Computer assisted navigation technology has already been successfully established in cranio-maxillofacial surgery in various applications and is used in clinical routine, such as in dental implantology, for arthroscopies of the temporomandibular joint, osteotomies, distraction osteogenesis, image guided biopsies and removals of foreign bodies. This lecture provides a concise survey of the current state of navigation in cranio-maxillofacial surgery with special focus on dental implantology and tele-consultation, also considering accuracy. **Methods:** The main components of a navigation system are a computer with the software for preoperative planning and intraoperative navigation combined with a tracking system for continuous position-registration of the patient and the surgical instruments (i.e. the dental drill) using special tools that are attached to the patient's mandibula or maxilla and to the instruments. Head-mounted displays are used to display the position of the instruments relatively to a preoperative surgical plan by means of overlay graphics that are merged with the view of the "real" operation site ("augmented reality"). To investigate accuracy of navigated placement of dental implants the postoperative CT of the patient is matched with the corresponding preoperative plan. **Results:** Since 1995 in 72 patients a total of 395 dental implants has been successfully positioned with computer assisted navigation, including 68 transmucosal interforaminal implants (17 patients, 4 implants for each of them). The navigation-accuracy permits a safe drilling of implants also in difficult implantological cases (e.g. tumor patients) or close to the nerve. Special software and a clearly defined workflow allow for a reduction of the time required for the preparation of the intervention to approximately half a day. **Conclusions:** Navigation can contribute to an increased intraoperative safety and a considerable quality-improvement in implantology. Teleconsultation via internet during the preoperative planning phase can make highly specialized prosthetic knowledge available for the surgeon who performs the operation.

TRANSFER OF VIRTUAL IMPLANT PLANNING BASED ON 3-DIMENSIONAL IMAGING USING IMAGE GUIDED SURGERY AND SURGICAL GUIDES

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Image guided surgery and surgical guides manufactured by CAD/CAM technology represent two different approaches to transfer virtual implant planning based on 3-dimensional radiographic images on the operative site. Using image guided surgery the implant positions are only determined virtually, and it is up to the surgeon to implement these positions guided by an imaging system. Therefore a navigation device is required, which must be securely fixed to the patients jaw during diagnostic imaging as well as intraoperatively. In contrast using surgical guides, the prospective implant positions are physically determined by drilling tubes inserted into the guide in correspondance to the virtual planning. Intraoperative changes are not

possible. Flapless surgery allows the correct and stable positioning of the guide directly on the mucosa. **Materials and Methods:** Our clinical experience in image guided implantology is based on the use of the Robodent[®] System, experience with surgical guides is based on the use of the Materialise[®] system as well as the Teeth in an hour[®] concept by Nobel Biocare[®]. The aim of the study was to evaluate different aspects of clinical relevance of both concepts under consideration of the necessary effort. **Results:** Both concepts reached sufficient precision to use the bone locally available preventing nerve damage. The incorporation of prefabricated immediate prosthetics was easier with the surgical guides due to their higher precision. **Advantages of Image guided implantology:** -intraoperative flexibility -simultaneous augmentations possible -lower cost per patient **Disadvantages:** -difficult fixation of navigating device in edentulous jaws -high initial investment cost **Advantages of surgical guide systems** -higher precision -easy fixation of the guide in edentulous jaws -lower initial investment cost **Disadvantages:** -missing intraoperative flexibility -higher cost per patient

Keywords: Virtual implant planning; Image guided implantology; Surgical guides; CAD/CAM technology

Abstr ID 152

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USE OF OSTEOPLASTY AND DISTRACTION OSTEOGENESIS FOR ENLARGEMENT OF MANDIBULAR ALVEOLAR PROCESS

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Aims: Considerable atrophy of alveolar mandibular part combined with full adentia gradually leads to inability to wear a removable dental prosthesis, consequently, satisfactory fixation can be only attained with dental implants. **Materials and Methods:** The most popular technique is insertion four dental implants in the frontal part between mental foramen, preparing a bar construction and fixing prosthesis. This procedure is impossible if the alveolar crest is narrow and atrophied. To enlarge the size (height) of mandibular alveolar process, the following techniques were applied: sandwich-technique in 9 cases, autobone grafting in 24 cases, distractional methods in 14 cases. There were 33 female and 14 male patients aged from 28 to 62 years. **Results:** Sandwich-technique was applied to the patients with the crest more than 6 mm wide and 10–15 mm high from the edge of mental part of mandible. Autobone grafting was performed in cases, when the alveolar crest was less than 6 mm wide. In cases with mandible less than 6 mm wide and less than 10 mm high in mental part, intraoral distractional apparatus for frontal part of mandibula with distraction gap 1 mm. **Conclusion:** The results of treatment of mandibular alveolar process atrophy have been retraced for 7 years. Dental implants use, combined with different techniques of mandibular alveolar process enlargement, has proved to be a high-effective method of treatment.

Keywords: Osteoplasty; Distractional osteogenesis; Implants; Splints

Abstr ID 231

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MODIFIED PRE-PROSTHETIC SURGICAL TECHNIQUE IN THE POST-IMPLANT REHABILITATION AFTER RECONSTRUCTIVE ORAL SURGERY

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Aims: Reconstructive procedures after surgical treatment of oral cancer insufficient alveolar bone may leave the lower jaw – despite subsequent implantation – in an inappropriate condition for prosthetic rehabilitation. In order to overcome this problem and create suitable oral rehabilitation, some surgical procedures are described according to the soft tissue profile. **Material and Methods:** Clinical cases, including diminished vestibular region, oversized forearm flap, bone augmentation, sandwich-technique, distraction osteogenesis, and post-surgical tongue fixation are presented. Following implantation modified pre-prosthetic techniques like the multiple flaps Edlan-Mejchar procedure and mouth-floor lowering in combination with simultaneous uncovering of implants and insertion of healing-abutments were carried out. **Results:** Bone augmentation induced significant loss of available vestibulum through soft tissue displacement. The sandwich-technique and distraction osteogenesis did not impair the prosthetic bed, but did not improve it either. Vestibular depth ranged from 0–3 mm. After pre-prosthetic surgery a minimum of 5 mm could be attained in all cases. Complications were secondary healing, marginal bone resorption and partial flap necrosis. Limitations were scar building and narrow inter-implant distance. **Conclusion:** Oral reconstructive procedures in combination with implants insertion are not frequently able to provide prosthetic rehabilitation. In these cases simple modified techniques are necessary for effective soft tissue management especially for the improvement of denture bed.

Keywords: Pre-prosthetic; Implants; Soft tissue management; Flap design

Abstr ID 101

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SOFT TISSUE MANAGEMENT AFTER TRIDIMENSIONAL ALVEOLAR RECONSTRUCTION

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Aims: The reconstruction of the alveolar ridge via autogenous bone grafts has been largely developed in the last years for pre-implantation surgery. In the extreme alveolar atrophy, the skeletal discrepancy becomes often great in the vertical, sagittal and transversal planes; this means the need to build up the alveolar ridges with great vertical and transversal bone grafts. **Subject:** These

procedures create a second kind of problem: the management of the overlaying soft tissues. In fact, great vertical bone augmentations mean a generous mobilisation of the buccal mucosa for the suture, losing in this way almost all the attached gingiva. For this reason, vestibuloplasty procedures are often necessary. The technique of simple fixation of the vestibular mucosa to the bone underneath, instead to the periosteum, as described by Harry and Cerbone in 1991 and by Triaca and Carlino in 1996, is shown. This is demonstrated to be a stable procedure, and does not need any mucosal/skin grafts. An alternative to this procedure is to use, during the bone augmentation surgery, a mucosal high vestibular incision in the buccal/labial sulcus, instead of the classic alveolar sagittal cut. **Results:** In this way therefore, the final suture lies

far away from the bone graft, avoiding the risk of post-operative dehiscence. Secondly, by pulling the mucosal flap towards the vestibulum, instead of towards the palate, allows the conservation of the attached gingiva, avoiding the need of the subsequent vestibuloplasty procedure. **Conclusion:** This technique has been used in 20 cases up till now and has shown to be a safe procedure. This is however a drawback: soft tissue flap preparation takes longer than usual. The technique cannot be performed in the posterior maxilla, due to the presence of the Stenone duct, and in the mandibulat region of the mental nerves.

Keywords: Pre-prosthetic surgery; Vestibuloplasty; Autogenous bone grafts

TOPIC 14: SKULL BASE SURGERY

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SUBCRANIAL APPROACH : REVIEW OF 29 CASES

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Introduction: Subcranial approach was described by Raveh in 1978 as an alternative to classical neurosurgical approaches to the anterior cranial fossa in frontobasal fractures. Afterwards, the approach has been adapted and described by the same and other authors for oncologic surgery of the anterior cranial fossa. **Materials and Methods:** We retrospectively analyze 29 consecutive patients operated at our institutions from January 2001 to December 2003 using a subcranial approach for treatment of different posttraumatic and neoplastic conditions in the anterior cranial fossa. Preoperative patient evaluation, surgical technique, as well as different indications for surgery are reviewed. **Results:** No intra or postoperative mortality occurred. Nine patients underwent oncological craniofacial resections (5 presenting malignant tumors and 4 benign). In ten patients the approach was used in primary management of central frontobasal and frontonasoorbital fractures as unique approach to the anterior cranial fossa and interorbital space. The approach was also used to repair posttraumatic CSF (cerebrospinal fluid) fistulas (three cases), and other infectious (mucopyocele) and obstructive frontal sinus problems (seven cases). Associated minor complications are described. **Discussion:** Although classical neurosurgical approaches (frontal, bifrontal craniotomies) to the anterior cranial fossa show to be useful and safe, they present a high rate of associated morbidity mainly related to brain retraction and olfactory nerve section during the procedure. Subcranial approach is an interesting, versatile alternative for central anterior craniofacial conditions providing a wide exposure of the frontosphenothmoidal and anterior cranial fossa regions. No frontal lobe retraction is needed and associated morbidity is minimal. **Conclusions:** Subcranial approach is a reasonable, safe and effective surgical technique in the management of anterior cranial fossa lesions, providing an excellent surgical exposure and wide access without frontal lobe retraction

Keywords: Subcranial approach; Cranial base; Trauma; Tumors

THE TRANSORAL-TRANSMAXILLARY APPROACH TO THE SKULL BASE

Schmelzle R

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Aims: The indications, technique and results of the transoral-transmaxillary approach to the skull base are described. **Subject:** The median approach via the palate,

velum or following a Le Fort-I-osteotomy allows us to access pathological structures (e.g. fractures, infections, tumors, malformations) of the upper-anterior cervical spinal column, the clivus, the sphenoidal sinus and the orbits apex. **Results:** In comparison, using the approach described by Raveh, a vast area of the cranial base can be scrutinised, although the manual manipulation, bone transplantation and the osteosynthesis in the cranio-cervical border via the transoral-transpalatine approach proves easier, directer and enables greater visual control of the entire operating field. Additionally, the transoral approach can be combined with an extraoral approach, rendering a vast region of the skull base exposed for surgical manipulation. If access to regions of the lateral skull base is necessary, the buccal-transpalatine approach can be successfully implemented allowing not only access to the skull base but also vast regions of the visceral cranium. With the advent of innovations like navigation systems, a higher degree of surgical orientation as well as accuracy can be achieved, being beneficial to the surgeon and patient alike. **Conclusion:** In this paper we feature the transoral-transmaxillary approach solely as well as in combination with extraoral approaches and demonstrate the advantages of this procedure. In addition we highlight the implementation of a navigation system which is routinely used in the skull base surgery in our clinic.

Keywords: Skull base; Transoral approach; Navigation system

TRANSMAXILLARY APPROACH IN THE TREATMENT OF BASILAR IMPRESSION SYNDROME

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Introduction: The common denominator of this pathology is the resultant brainstem and upper cord compression. Basilar impression, although uncommon, is one of the more usual indications of odontectomy. **Objectives:** We show our experience in transmaxillary approaches by means of segmentary Lefort I versus transoral approaches in compression syndromes. **Material and Methods:** We present two cases of critical basilar impression in adults and pediatric ages. We describe the surgical technical of this particular approach. **Discussion:** With this approach we obtain an excellent vision of the clivus area even in the extreme cases of restricted oral aperture or impossibility of cervical hyperextension caused by previous surgical occipitocervical fixation. In this way we don't need a median labial mandibuloglossotomy, like in the most of transoral approaches. **Conclusion:** In our experience is the elective technical in the clivus surgery, with less morbidity than classical transoral approach whatever etiological diagnostic (congenital anomalies, trauma, benign and malignant tumors, inflammatory conditions, and those of uncertain etiology), rare complications and short surgical time in trained teams.

Keywords: Transmaxillary approach skull base basilar impression syndrome

Abstr ID 422

368

FRONTO-ETHMOIDAL OSTEOMAS: DIAGNOSIS AND SURGICAL TREATMENT

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Background: Osteoma is a benign tumor, composed of mature compact or cancellous bone, which can arise in any facial bone. Among the paranasal sinuses, the frontal and ethmoid sinuses are most frequently involved. Osteoma grows very slowly and small lesions are often not symptomatic. On the other hand, sometimes patient present with symptoms such as sinusitis, headache or ophthalmologic manifestations. These findings are secondary to obstruction of the involved sinus cavity with secondary mucocoele formation or occasionally an expansile lesion with distortion of the facial contour. **Purpose:** To point out operative criteria in managing fronto-ethmoidal osteomas. **Method:** From 1995 to 2000, twenty-one patients affected with non-syndromic fronto-ethmoidal osteomas were evaluated in our Department of Maxillo-Facial Surgery. All patients were investigated by CT scans in axial and coronal planes. The treatment and outcomes of this group were reviewed. **Results:** All patients presented in this study underwent surgery and had a follow-up of at least 3 years. Surgical excision of the tumor was undertaken with an uneventful recovery. Postoperative CT scans in axial and coronal planes showed complete removal of the tumor in all subjects. No complications or recurrences were observed. **Conclusions:** Small, asymptomatic osteomas probably do not need to be treated but should be observed periodically. Surgical management remains the mainstay of treatment for these tumors. It requires total excision via an adequate approach, depending upon the site of presentation.

Keywords: Frontal osteoma; Ethmoidal osteoma; Orbital osteoma

Abstr ID 106

369

MANAGEMENT OF SKULL BASE MENINGIOMAS INVOLVING THE INFRATEMPORAL FOSSA AND PARANASAL SINUSES

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Introduction: Expansion of skull base meningiomas into infratemporal fossa in most cases is a result of subtotal or partial removal of middle fossa meningiomas. **Materials and Methods:** Between 1995 and 2002 36 patients (23 females, 13 males who ranged in age from 29 to 67 years) with skull base meningiomas extending into infratemporal fossa were operated on. 28 patients have been operated on previously: 21 for a sphenoid wing meningiomas, 7- for

cavernous sinus meningiomas. 8 patients were operated on primarily. Tumor extended into subtemporal fossa in all cases, in 18 cases tumor extended into orbit, in 15 cases in parasellar region, in 10 into pterygopalatine fossa, in 8 into maxillar sinus, in 6 – in sphenoidal sinus, in 4 – into nasopharynx. Hyperostosis revealed in 33 cases, bone erosion- in 3. Orbotozygomatic approach was used in 22 cases, middle fossa zygomatic approach- in 14 cases. **Results and Conclusions:** Postoperative CT demonstrated a total resection of tumor in 6 primary operated patients, in 18 recurring cases - subtotal resection because of infiltration of cavernous sinus and petroclival region, in 10 recurring expansive tumors-partial removal of 2/3 tumor. Histological examination demonstrated middle fossa bone invasion, infiltration of muscles of subtemporal fossa and mucosa. Further investigation of biological behavior of inviltrative meningiomas is necessary.

Keywords: Skull base meningiomas; Infratemporal fossa; Paranasal sinuses

Abstr ID 472

370

SURGERY IN TREATMENT OF ADVANCED CRANIOFACIAL TUMORS

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Aims: in some cases locally-advanced tumors of paranasal sinuses and infratemporal fossa spreading into the skull base demand combined craniofacial resections. **Methods:** 345 pts with various tumors involving the skull base were treated at our clinic for the last 23 years. Beside them 184(53.3%) with different malignant tumors: 92(50%)–squamous/adenocystic cancer, 61(33.2%)–sarcoma, 13(7.1%)–esthesioneuroblastoma and others. 161(46.7%) with benign tumors: 125(77.6%)–parapharyngeal tumors, 27(16.8%)–tumors of paranasal sinuses/nasal cavity, 9(5.6%)–meningiomas of the infratemporal fossa. **Results:** Surgery was the main treatment procedure in 237(68.7%) pts. 19(8%) out of them had previously chemoradiotherapy and 52(22%)–radiotherapy alone. Transfacial approach was used in 82(34.6%) pts for combined resections of the maxilla, orbit, ethmoidal cells, frontal and sphenoid sinuses, dura mater. Combined craniofacial resections were performed in 35(10.1%) pts with intracranial tumor spreading. The dura mater defect was subsequently reconstructed in 4(11.4%) cases by pericranial flaps and in 10(28.6%) by temporal muscle. Temporary liquorrhea developed in 3(1.3%) cases. Tumors of the infratemporal fossa, basically benign, were removed through the external neck approach that combined with mandible osteotomy in 7(3.6%) cases of sarcoma. 27(14.7%) pts had different treatment failures such as local recurrences or distant metastasis. **Conclusion:** preoperative chemoradiotherapy or radiotherapy allows to achieve resectability of advanced craniofacial tumors and in some

cases to perform preservative treatment. Craniofacial approach in cases of intracranial tumor spreading indeed allows to achieve high remission rate due to the radical elimination of the tumor.

Keywords: Craniofacial tumors; Surgery

Abstr ID 779

371

THE RECONSTRUCTION OF SKULL BASE DEFECTS FOLLOWING THE REMOVAL OF TUMORS WITH CRANIOFACIAL EXTENSION

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Introduction: The skull base reconstruction is very important procedure in the cases of radical resection of skull base tumors. **Materials and Methods:** We presented 72 patients (male 40, female 32), aged 35 to 76 years, with skull base tumors extending into the orbits and paranasal sinuses (benign 45, malignant 27). All these lesions were divided into 3 groups: I group. The midline lesions (42 cases) included defects of ethmoid and sphenoid sinuses, frontal sinuses, medial parts of maxillary sinuses. II group. The lateral lesions involved lateral parts of frontal sinus, upper-lateral parts of maxillary sinus as lateral skull base defects (19 cases). III group. Combined skull base defects included both medial and lateral defects with widely opened paranasal sinuses and nasopharynx. (11 cases). **Results and Conclusions:** Its important to emphasize that the reconstruction with a periosteum flap from frontoparietal area should be preferred in midline defects, a temporalis muscle flap with adjusted periosteum- in lateral defects. The reconstruction with autograft using microsurgery technique (m. latissimus dorsi flap, m. pectoralis, combined flap using m. pectoralis and m. abdominalis rectus musculocutaneous flap, omentum, m. latissimus dorsi with split-rib grafts) is indicated in combined defects. Its observed that two patients had nasal cerebrospinal fluid leak which resolved after continuous lumbar drainage. Preoperative planning of optimal method of closure of skull base defect depends on location and expansion of skull base tumor.

Keywords: Skull base defects; Craniofacial resection

Abstr ID 840

372

TISSUE EXPANSION IN RECONSTRUCTION OF CRANIOFACIAL DEFECTS

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Aim: Tissue expanders are one alternative for craniofacial defects. Its objective is the progressive dilation of a region of skin until it achieves a sufficient size to cover the defect. The selection of the defect to reconstruct by tissue expansion and the correct handling of the expander are important factors that the surgeon should know in order to achieve a good result both aesthetically and functionally. **Methods:** We have performed a retrospective study of 12 patients with craniofacial defects, treated with tissue expanders in the last five years. We have done a descriptive analysis, evaluating the results obtained and the complications during the expansion. We analyzed diverse aspects (surgical technique, region of the defect, localization of the expander, expander size and the rate of the expansion) that can influence the final result. **Results:** In 100% of the cases, the origin of the craniofacial defects is the removal of tumoral lesions. In 80% of the cases, the final aesthetic and functional result is satisfactory. We found complications in 5 patients: ulceration of the expanded skin, crystallization of the expander liquid, infection and 2 expander perforations. The first three ones required removal the expander and the next ones necessitated to advance the surgery, but with a good final result. **Conclusion:** In our experience, the tissue expanders are a good alternative in the reconstruction of certain craniofacial defects with satisfactory aesthetic and functional results.

Abstr ID 177

373

RECONSTRUCTION OF ANTERIOR AND MIDDLE SKULL BASE DEFECTS USING MICROVASCULAR FREE FLAPS

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Aims: The aim of this paper is to establish the indications regarding the use of microvascular free flaps in the reconstruction of anterior and middle skull base defects after removal of neoplastic pathologies. **Methods:** At the Department of Maxillo Facial Surgery of the University of Rome "La Sapienza" and "Tor Vergata" 20 surgical treatment for neoplastic pathologies involving the anterior and middle skull base the residual defects were restored using microvascular free flaps. In 7 cases with involvement of the anterior skull base the Authors performed 5 latissimus Dorsi, 1 Rectus Abdominis and Radial Forearm free flap. In the remaining 13 cases with involvement of the middle skull base the Authors performed 8 Latissimus Dorsi and 5 Rectus Abdominis free flap. **Results:** The perfectioning of microvascular reconstructive techniques has brought to important developments in the surgical treatment of neoplastic pathologies involving the skull base. **Conclusion:** In literature various surgical techniques are described for an adequate reconstruction of the anterior and middle skull base, and according to us, the choice of the appropriate method is represented by a careful evaluation of the case, in particular: the localization of the neoplastic lesion and the entity of the residual defect after its removal.

Keywords: Skull base surgery, Reconstructive surgery

MANAGEMENT OF CRANIOFACIAL MALIGNANT TUMORS

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Introduction: The management of craniofacial malignant tumors associates with high risk of morbidity and mortality. **Materials and Methods:** Between 1996 and 2001 24 patients, 13 males and 11 females ranged in age from 23 to 71 years have been operated on by cooperative team of Burdenko Neurosurgical Institute and Gertcen Oncological Institute. Craniofacial carcinomas were in 19 cases, chondrosarcomas in 2 cases, malignant osteoblastoclastomas in 2 cases, fibrosarcoma in 1 case. In all cases biopsy was performed for planning the protocol of treatment. Combined therapy, included preoperative or/and postoperative radio and chemotherapy was used. Anterior craniofacial block resection was performed in 10 cases, lateral craniofacial block resection in 14 cases. For reconstruction of defects free vascularised flap technique was used (muscular, musculocutaneous, omentum vascularised flaps) in 19 cases. In 5 cases temporal muscle and periosteum flaps were enough for effective closure of defects. In 5 cases intraoperative radiotherapy was performed after block- resection before plastic procedure. **Results and Conclusions:** During the follow up period (2 to 8 years) 9 patients died, 15 survived, 7 of them survived more than 5 years. The multidisciplinary approach to this problem is necessary, including fundamental investigation of biological behavior of these tumors, complex of modern diagnostic techniques, radio and chemotherapy and co-operative surgical team, including craniofacial, plastic and skull base surgeons.

Keywords: Skull base; Malignant tumors

SKULL BASE SURGERY

Sailer

Presenting Author: Sailer

30 years ago skull base surgery was an exclusive part of neurosurgery. With the development of craniofacial surgery for anomalies by Paul Tessier, Hugo Obwegeser and other pioneers, the cranial base especially the anterior cranial base lost its neurosurgical exclusivity. Craniofacial surgery for malformations influenced the treatment of tumours of the skull base. This led to aesthetic considerations also in the treatment of tumours without using visible incision lines anymore and to multiple craniofacial access surgery (Sailer) and dismantling and reassembling the facial skeleton (Creoni). At the same time Kocher's incredible transmaxillary approach to the pituitary gland from 1905 was elaborated to a routine procedure to reach the skull base through an inferior craniotomy (Schmelzle). New methods for reconstruction of the skull base after tumour removal are identical to those for defect closure after craniofacial surgery of malformations. Widely the temporal muscle flap with or without bone grafting (Fisch), homologous materials like lyophilized cartilage and pericranial flaps (Sailer, Grätz), microvascular flaps, customized titanium implants were used for reconstruction. Altogether an enormous progress in the field of tumour treatment of the cranial base was achieved because several specialties and multidisciplinary teams worked together or rivalled each other for the sake of the patients. This is clearly seen also in the contributions of this scientific session.

TOPIC 15: ORBITAL SURGERY

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ORBITAL SURGERY—INTEREST OF CRANIOFACIAL APPROACHES TO ABORD TUMORS OF THE POSTERIOR ORBITAL CAVITY

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Introduction: Posterior orbital cavity is a deep area where various benign tumors can develop. The purpose of this study is to evaluate the interest of lateral craniofacial and frontal transsinus approaches. **Material and Methods:** The surgical removal of 57 tumors of the posterior orbital cavity has been realized: In 43 cases, the tumors were approached by a lateral craniofacial abord. In 10 cases, a frontal transsinus approach was performed. In 4 cases, a double approach with lateral and transsinus abord was realized. In all cases, tumoral dissection was realized under light microscope assistance. **Results:** In 54 cases, a complete removal was performed. In 3 cases, partial removal of the tumor has been performed because of its histologic nature. Two patients had a tumor of the optic nerve. Blindness was complete after surgery. In all other cases, visual acuity was improved after surgery. In 10 cases, oculomotricity troubles were present during a few days. There is no other complications. **Discussion:** Classical lateral approaches give a very small field of vision. Neurosurgical approaches are dangerous for the superior ocular muscles. These craniofacial approaches are easily and rapidly performed: lateral craniofacial approach allows exploration of the 3/4th of the posterior orbital cavity and to easily reach the optic nerve. frontal transsinus approach allows the exploration of the superior and internal orbital angle including the optic nerve. Combined frontal and lateral approach allows the extended exploration of all the posterior orbital cavity. Local and general postoperative courses are very simple.

Keywords: Craniofacial; Frontal; Transsinus; Combined; Approaches; Tumors; Orbit

THE LATERAL APPROACH TO THE ORBIT

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Aims: To demonstrate the indications, techniques and outcome of the lateral approach to the orbit. **Subject:** This retrospective study included 100 patients with various orbital pathologies who underwent intraorbital surgery using a lateral orbitotomy. Indications included benign neoplasms and malignant primary or metastatic tumors, infections, malformations, trauma – especially the decompression of retrobulbar hematomata, and foreign bodies. Via a curved vertical incision or a horizontal incision starting from the lateral canthus, the lateral orbital rim was exposed and temporarily removed. **Results:** Using the

lateral approach an exploration of the orbit including most of the medial parts was possible. However, for infection or certain trauma cases smaller additional approaches were necessary. In this retrospective study an intraoperative navigation system was used in 10 patients. It proved to be a useful supplement during the surgical exploration. The main problem was the topographic changes due to surgery, especially soft tissue displacement after removal of the lateral orbital rim, resulting in discrepancies between the preoperative image data and the surgical site. **Conclusion:** The lateral orbitotomy proved to be reliable and enabled great visual control of the entire operating field. Although small approaches are generally a promising field for intraoperative navigation systems, the topographic changes resulting in discrepancies between the image data and the surgical site are the main problem of this technology with special relevance for orbital surgical procedures.

Keywords: Orbital surgery; Lateral orbitotomy; Intraoperative navigation

SURGICAL APPROACHES TO RETROBULBAR BENIGN TUMORS OF THE ORBIT

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The aim of this study is to present a treatment planning for benign orbital tumors. From 1998 through 2004, 32 patients with orbital benign tumors were operated on in the Maxillo-Facial Surgery Department, San Paolo Hospital, University of Milan. If orbital tumors were located anteriorly, the surgical approaches of choice were the anterior accesses through conjunctiva or skin. In case of lesions that lay posterior to the equator of the globe, transosseal approaches improve the exposure of the retrobulbar space. In particular, for retrobulbar tumors located lateral or inferior to the optic nerve, the treatment of choice was the lateral orbitotomy. If the tumors were located superior to the optic nerve, or in case of lacrimal gland tumors extended in the posterior half of the orbit, the supero-lateral orbitotomy provided a better exposure. Benign retrobulbar tumors located medial to the optic nerve were best handled by the anterior medial approach combined with lateral orbitotomy. In fact, the removal of the lateral orbital rim and wall allowed intraoperative lateral displacement of the globe, with a deep medial access. Tumor located within the orbital apex were difficult to expose by the previously described orbital approaches. For those cases it may be preferable to collaborate with a neurosurgeon to remove the mass via a transcranial approach. Both the immediate and long term morphological and aesthetic results were good in all patients. One patient had a permanent papillary disfunction. The choice of surgical approaches used to manage orbital lesions depends on two elements: the location and the suspected diagnosis. The goal of surgery must include minimal disruption and esthetically acceptable incisions.

Keywords: Benign tumor; Orbit; Surgical access

Abstr ID 664

378

SURGICAL APPROACHES TO MEDIANLY LOCATED BENIGN ORBITAL TUMORS

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Introduction/Aims: The precise location of orbital benign tumors in relation to the optic nerve and the apex of the orbit, determined by either clinical evaluation and modern imaging (US CT, MRI, PET), chiefly affects the choice of the best surgical approach. Most orbital tumors can be resected through a lateral approach or a medial orbitotomy. The lateral approach, first proposed by Krönlein in 1889, is used for tumors located in the superior, temporal, or inferior compartment of the orbit and those in the lateral apex; while the medial approach is indicated for masses located medial to the optic nerve. The aim of this study is to underscore the importance of a topographic mini-invasive resection of such lesions. **Methods:** Over the last 10-year period, 20 patients (12 women and 8 men) affected by unilateral benign orbital tumors located in the medial space (intraconally or extraconally) were treated in our Department. In our series, patients were first referred to a specialist upon complaining of the following symptoms: exophthalmos, dystopia, diplopia, epiphora, visual acuity reduction. All the patients underwent surgical excision of the orbital masses. **Results:** Concerning soft tissues orbital approaches we adopted: Lynch incision (6 cases), medial conjunctival incision (5 cases), gull-wing incision (5 cases), coronal incision (4 cases); while considering bone approaches, we performed: medial marginotomy (5 cases), glabellar osteotomy (6 cases), Krönlein operation (4 cases). In all the patients the postoperative course was uneventful with complete resolution of the symptoms. **Conclusion:** In our opinion, the present wide range of surgical approaches to benign orbital tumors located in the medial space allows the surgeon to choose the best procedure for each case, providing the widest surgical field and a careful dissection of anatomical structures adjacent to the mass.

Keywords: Benign orbital tumors; Surgical approaches to medial orbital space; Mini-invasive topographic orbital surgery

Abstr ID 758

379

DIAGNOSTIC AND THERAPEUTIC DIFFICULTIES OF NON-HODGKIN LYMPHOMAS OF THE ORBIT

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Non-Hodgkin lymphomas are malignant neoplasms of the lymphatic system, and comprise around 10% of neoplasms of the head and neck. According to the REAL classification, they are divided into B, T and NK cell lymphomas. The histological sub-types most often encountered are:

large B cell lymphomas, lymphomas arising from centres of division, and lymphomas arising from the marginal zone (MALT type). The treatment method of choice is chemotherapy, and, if necessary, also radiotherapy. From the authors' own experiences, however, it seems that the pre-operative diagnosis of a lymphoma which has its primary location in the retrobulbar area in the muscular cone, and which manifests clinically as an orbital tumour, is practically impossible. This is a cause not only of difficulties in clinical diagnosis, but also in treatment. In 5 out of 50 patients who were treated surgically due to various orbital tumours between 1995 and 2002, malignant intraorbital lymphatic growth was not diagnosed until histological and immunohistochemical examinations were performed of material obtained following extensive surgical procedures, often accompanied by lateral marginotomy or craniotomy. The diagnostic difficulties which were encountered during the treatment of primary lymphomas of the orbit, their histogenesis, and management are illustrated by the authors' own cases.

Keywords: Lymphomas of the orbit; Diagnosis; Treatment

Abstr ID 19

380

SURGICAL TREATMENT OF SEVERE GRAVES ORBITOPATHY

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Graves orbitopathy is the most common cause of unilateral or bilateral proptosis in adults. Proptosis, measured by Hertel exophthalmometry, is defined as abnormal displacement of the eye beyond a normal range of 14 to 21 mm with a 2 mm disparity. Graves orbitopathy may result in retrobulbar pain, optic nerve compression, exposure keratopathy, diplopia, cosmetic deformity and even blindness. This entity is most often seen in patients with diffuse toxic goiter but may also be present in euthyroid or hypothyroid patients and may not correlate with thyroid function. Conservative therapy in cases of severe dysthyroid ophthalmopathy has not given satisfactory results. Surgery has a definitive place in the treatment of the exophthalmos in Graves orbitopathy. In cases with Hertel values less than 25 mm the two-wall orbital decompression with removal of orbital fat gives satisfactory results. In cases with Hertel values more than 25 mm the three-wall orbital decompression with lipectomy and an advancement osteotomy of the supra-, lateral- and infraorbital rim is the treatment of choice. This method of orbital decompression gives very good functional and aesthetical long-term results. We present our experience and results in the surgical treatment of severe Graves orbitopathy by three-wall decompression with lipectomy and advancement osteotomy of the supra-, lateral- and infraorbital rim.

Keywords: Graves orbitopathy; Three wall orbital decompression; Lipectomy; Osteotomy of the supra-, lateral; Infra orbital rim

3-WALL ORBITAL DECOMPRESSION – CLINICAL RESULTS OF A MODIFIED TECHNIQUE

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Aims: In this study the clinical results of a modified technique for 3-wall orbital decompression in Graves' disease are described. **Methods:** In the time between October 2002 until August 2003 six patients (5 female, 1 male) with Graves' orbitopathy underwent 3-wall orbital decompression. The ages varied from 17 to 72 years. Utilising a transconjunctival approach with lateral canthotomy the entire lateral orbital wall was osteotomised and transpositioned into a lateral and anterior position. To avoid steps the osteotomy lines were running into the cranial and caudal orbital rim. Fixation was achieved by means of microplate osteosynthesis. Orbital floor and medial orbital wall were osteotomised and displaced via the same approach. To avoid overprojection of the lateral orbital rim the modification comprises a reshaping of the lateral outer curvature. All patients underwent clinical examinations before and after decompression including Hertel ophthalmometry, Werner classification and clinical activity score (CAS). **Results:** Improvement of Hertel measurements could be demonstrated in all patients with a mean value of 7.8 mm. The compression of the optic nerve could be released with visual recovery in both cases. Near to all values of both Werner and CAS classification were improved and most of them became normal. A low number of complications were found. No iatrogenic visual loss and no additional diplopic images had to be detected, whereas patients with pre-existing diplopia showed no improvement of this symptom. One haematoma and one protracted swelling could be managed conservatively. **Conclusion:** The modified 3-wall orbital decompression, according to the original technique described by Tessier in 1969, is an effective and safe therapy of exophthalmos. The best results could be achieved after having taped the full potential of conservative treatment modalities. Only in cases where the eyesight is endangered, because of optic nerve compression or corneal ulceration early interventions become necessary.

Keywords: Orbital decompression; Graves disease; Optic nerve compression; Orbita surgery

ORBITAL DECOMPRESSION IN GRAVES' ORBITOPATHY (COMBINING ZYGOMA LATERALISATION AND TWO WALL REMOVAL)

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Grave's ophthalmopathy (Graves' disease) is a severe and rare immunological inflammatory extrathyroidal reaction

of the orbital tissue (mainly ocular muscles are concerned by an interstitial swelling but sometimes connective of adipose tissues can be concerned too). Orbital decompression can be indicated for Graves' orbitopathy, particularly in cases with proptosis (exophthalmos). In these cases, the patients can suffer from cosmetic complications but also from functional complications, such as exposure keratopathy, involvement of the optic nerve with loss of vision, painful retroorbital pressure sensation, diplopia, lagophthalmos with inefficient function of the globe and eyelid interface. We present a series of 26 cases of Graves' patients retrospectively studied. These patients were addressed for proptosis after failure of non surgical treatments (i.e. corticosteroid but not radiotherapy). Successful reduction of exophthalmos was achieved by orbital decompression with subsequent relief of presenting symptoms through a subciliary approach. Orbital decompression was performed using Tessier's technique (malar osteotomy with lateralisation of the malar bone stabilized by the way of a bone or coral wedge) combined with orbital walls removal (two walls). In this series, the orbital fat was not removed. The complications included infra-orbital nerve hypoaesthesia, foreign body reaction, esotropia (sometimes requiring surgery), microplate granuloma, dysaesthesia. No new ocular motility disturbance occurred. Orbital decompression should be considered for patients with severe proptosis not responding to conservative treatments with a low rate of complication and good cosmetic and functional results.

Keywords: Orbita; Decompression; Grave's orbitopathy

GRAVES' OPHTHALMOPATHY: THERAPEUTIC STRATEGY

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Introduction: Graves' ophthalmopathy is the primary aetiology for exophthalmos in adults and its physiopathology remains controversial. Since its initial description, more than 150 years ago, its heterogeneous clinical manifestations and poorly understood links with thyroid pathology remain unresolved issues. Disease activity is the main determinant for the management of Graves' ophthalmopathy, but treatments are often symptomatic, aiming only at decreasing orbital inflammation. **Material and Methods:** We report hereby on a retrospective analysis of 30 patients (23 women and 7 men; mean age: 50.1 years old) diagnosed with Graves' ophthalmopathy and followed in our department between 1991 and 2002. Following a phase of medical management of their pathology, all patients underwent identical surgical orbital decompression. **Results:** Medico-surgical cares provided as well as results are presented with a mean follow-up of 23 months. The most spectacular effects of the surgical procedure were observed in the most severe cases suffering from optic neuropathy. **Discussion:** Based on our clinical experience, new concepts in the field of Graves' ophthalmopathy are discussed. Disease activity, evaluated through various means, appears to be the

primary guide for therapeutic management. Moreover, the importance of a multidisciplinary approach is highlighted, in order to improve the management of this difficult disorder.

Keywords: Graves' ophthalmopathy; Orbital decompression; Exophthalmos

Abstr ID 759

384

SURGICAL DECOMPRESSION OF THE ORBITS IN PATIENTS WITH MALIGNANT INFILTRATIVE-OEDEMATOUS EXOPHTHALMOS IN GRAVES DISEASE

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Malignant infiltrative-oedematous exophthalmos occurs in 2–5% of patients with Graves disease. Its aetiology has not yet been sufficiently elucidated. Untreated, it quickly results in blindness. Thirteen females and 6 males, aged 30–62 years old (mean age 47.5 years) were treated for malignant infiltrative-oedematous exophthalmos. Indications for surgical decompression of the orbits were as follows: decreasing sharpness of vision resulting from pressure on the optic nerve, and not receding following pharmacological treatment, persisting exophthalmos accompanied by an inability to close the eyelids and persisting ulceration of the cornea, contraindications to steroid therapy and radiotherapy, and a sudden rise in intrabulbar pressure with an acute attack of glaucoma during steroid treatment. The severity of the disorder was determined according to the classification of the American Tyreological Society, and took into account the NOSPECS parameters and resulting index of ophthalmopathy. A two-wall decompression (floor plus central wall of the orbit) was performed in 15 patients, and a three-wall decompression (floor plus central wall plus lateral wall of the orbit) was performed in 4 other patients. These procedures led to a significant clinical improvement and a statistically significant decrease in the index of ophthalmopathy from 9.2 to 5.4 ($P < 0.01$). In particular, an improvement was found with regard to decrease in the degree of exophthalmos, changes in the cornea and neuropathy of the optic nerve (improvements of 100%, 100% and 80%, respectively). Results are illustrated with the authors' own cases.

Keywords: Graves disease; Orbital decompression; Surgical treatment

Abstr ID 138

385

ORBITAL DECOMPRESSION FOR DYSTHYROID ORBITOPATHY

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Background: Exophthalmos is a condition of altered thyroid metabolism that causes depositions within the extraocular muscles, increasing their bulk as much as ten fold. **Aim:** To assess reduction of exophthalmos achieved after orbital bony wall decompression and fat excision for dysthyroid orbitopathy. **Methods and Patients:** We have selected 21 patients (mean age = 46 years) with dysthyroid exophthalmia for retrospective evaluation. The inclusion criteria were: previous unsuccessful medical treatment for esthetical or functional requests. These selected patients underwent, under general anesthesia, a 2 or 3 wall (medial, inferior and/or lateral) orbital decompression with orbital fat excision, between September 1997 and January 2004. 37 orbits were decompressed and surgery was bilateral in 16 patients. All our patients had clinical control and a CT scan after 6 months. Main data were clinicals: visual acuity, presence of diplopia, trigeminal anesthesia, Hertel exophthalmometry and Oculo-Orbital Index (OOI) calculation (Computed Tomography). **Results:** On the second day, one patient had to return to operating room to drain an haematoma. Average postoperative retrodisplacement was 3.6 mm by Hertel exophthalmometry and 15.5 by Oculo-Orbital Index calculation. **Conclusion:** Orbital bony wall decompression with fat excision could be considered a effective method for the treatment of patients with dysthyroid orbitopathy. Nevertheless results seemed to be quite unpredictable and further study with computed assisted surgery is initiated.

Keywords: Graves disease; Exophthalmos; Surgical decompression

Abstr ID 616

386

CORRECTION OF EXOPHTHALMOS AND EYELID DEFORMITIES IN PATIENTS WITH SEVERE THYROID OPHTHALMOPATHY

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Introduction: Conservative therapy in cases of severe thyroid ophthalmopathy (TO) has not given satisfactory results. Because of this, surgical treatment, i.e. orbital decompression, is now used with increasing frequency. **Patients and Method:** Since 1986, 85 patients with severe TO have been treated by own method of surgical decompression of the orbit and correction of the eyelids. The procedure begins within the upper eyelid. The excision of the excessive skin and subcutaneous tissue is performed and eyelid fat is removed. In order to obtain the correction of upper eyelid retraction, the central part of levator aponeurosis and Muller's muscle are excised. Through blepharoplasty incision in the lower eyelid, the retrobulbar part of orbital floor, the lateral orbital wall as well as periorbital and intraorbital fat are removed. Through an incision made over the medial margin of the orbit, the ethmoidal part of the medial orbital wall and the

retrobulbar fat are removed. **Results:** After operation all patients showed a significant reduction of exophthalmos (5–7 mm), correction of eyelid retraction, significant reduction of intraocular pressure, marked improvement of ocular muscle function, as well as considerable reduction or disappearance of subjective symptoms. There were no cases of subsequent impairment of vision or ocular motility. **Conclusion:** Significant symmetrical decompression of the orbit, particularly in the narrow orbital apex where the highest pressure is, is achieved by surgical treatment described.

Abstr ID 125

387

RATIONALE OF TREATMENT IN ENDOCRINE OPHTHALMOPATHY

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Aims: Endocrine Ophthalmopathy is a chronic and multi-system disorder caused by an autoimmune process, characterized by the presence of antibodies which stimulate a general fibroblastic reaction (thyroid gland and lower extremities) and involves orbital fat tissue and muscles. The clinical findings and therapy, for the treatment of exophthalmos, such as changes in extrinsic eye motility, diplopia, optic nerve involvement and lid retraction, were analysed and the various types of surgical treatment currently available for Graves ophthalmopathy were evaluated. **Methods:** The surgical techniques were transpalpebral decompression by removal of intraorbital fat, three-wall osseous expansion, and zygomatic osteotomy. Adjunctive procedures were lengthening of the levator muscle of the upper eyelid, lengthening of the retractor of the lower eyelid (if necessary), and surgery of the extrinsic eye muscles to correct diplopia. All these techniques were useful in treating the disease, which is characterized by chronic evolution and, at times, a malignant outcome. A total of 114 orbits were treated using different techniques of decompression and secondary adjunctive procedures. Results were analysed after a minimum 6-month follow-up. **Results:** It was evident that surgery greatly reduced the degree of exophthalmos and improved eye motility, diplopia and visual acuity. **Conclusion:** Close cooperation among a team of specialists, including endocrinologist, ophthalmologist, neuroradiologist, surgeon, anaesthesiologist, and radiotherapist, is the keypoint both in the

preoperative stage and in the postoperative in order to quantify the results.

Keywords: Exophthalmos; Endocrine; Ophthalmopathy; Thyroid disorder

Abstr ID 82

388

INTEREST OF 3D NAVIGATION SYSTEM FOR ORBITAL DECOMPRESSION IN DYSTHYROIDIC EXOPHTALMIA

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Aims: Surgical correction of exophthalmia in Graves disease can be done by partial removal of one or several orbital walls. Clinical results are generally good, but poorly predictable. Furthermore, this kind of surgery can be dangerous without a perfect knowledge of anatomical situation. Thus, it could be useful to evaluate the interest of a 3D navigation system (3DNS) in those cases. **Material and Method:** 24 patients (41 orbits) have undergone orbital decompression for five years. 11 patients (21 orbits) were operated with a navigation system (Stealth station®) and 13 patients (20 orbits) without. Choice between both procedures was almost random, according mainly to availability of the 3DNS. Studied parameters were : surgical time, pre- and post-op eyeball protrusion, complications rate and survey. **Results:** Survey is the same in both groups. Surgical time increased obviously with the beginning of 3DNS use. However, it decreased with navigation technique experience, according to the learning curve. Complication rate is poor in both groups, without significant difference. Surgical limits are pushed back with navigation system: osteotomies are larger, closer to optical nerve and higher on medial orbital wall. In cases of bilateral exophthalmia, it seems easier to achieve symetric result with 3DNS than without, and in cases of unilateral exophthalmia, 3DNS allows a better evaluation of orbital surface to remove and completes easier symmetrization. **Conclusion:** 3DNS gives a better knowledge of anatomical environment during surgery, leading to better precision and safer procedure. Despite its cost and increase of the operating room occupation, 3DNS seems useful, specially for trainees in maxillofacial surgery as it improves orbital surgical anatomy knowledge.

Keywords: Grave disease; Exophthalmia; Navigation; Orbital decompression

TOPIC 16: FACIAL BURNS AND THEIR SEQUELLAE

Prog. no.	Title/Authors
389	INTRODUCTION: FACIAL BURNS FROM PAST TO FUTURE Dhennin C, Tours F
390	ACQUACEL AG IN THE MANAGEMENT OF PARTIAL THICKNESS FACIAL BURNS IN A PAEDIATRIC UNIT Lopez E, Marina A, Sanchez O, Codina J
391	COMPLEX FACIAL RECONSTRUCTION AFTER THIRD DEGREE BURNS Drommer RB
392	RESTORATION OF POST BURN SEQUELLAE OF THE NOSE WITH MIDLINE FOREHEAD FLAP Caquant L, Mojallal A, Vouillaume D, Recchiuto J, Comparin JP, Foyatier JL
393	CORRECTION OF EXTENSIVE POST-TRAUMATIC SCAR DEFORMATIONS OF SCALP AND CONCOMITANT CRANIAL VAULT DEFECTS Lopatin A, Yasonov S

FACIAL BURNS FROM PAST TO FUTURE**Dhennin C**

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Burns remain the most devastating ordeal that a human being can sustain. Facial burns appear to be a symbol of their destroying the identity of the survivors despite the modern burn care evolution. After millennia of death, grievous pain, stench, lengthy wounds and scars, a constructive era in burn care has been initiated during World War II when disparate data collected before the war allowed a better approach of the trauma and care under the burden of the circumstances. Few remarkable surgeons were involved in this so difficult and non-rewarding task and during a Cranio-Maxillofacial Surgery Congress, one of them, Sir A. McIndoe, deserves being recalled because some aspects of his career remain relevant today as surgical, human and ethical principles, if not always in direct practice. While before the war his career had not been turned towards burns injuries, his involvement and understanding of the problems were immediate. The exemplary nature of his determination in face care and reconstruction, information, rehabilitation of the pilots injured must be stressed. World War II time works led to the concept and creation of the Burn Centres. Only the teams and means of these structures allow the modern burn care and researches needed. As a result today many burn victims can survive but the sequels remain, as we do not have power over the full reconstruction of the charred tissues despite remarkable advancements. Nevertheless acute local burn care, when the face is concerned as well as any other area, must tend towards conclusive results without falling back on possible secondary surgery for after-effects, which might have been prevented, even if acute care may appear time-consuming and demanding.

“Behind a burnt face one can give up living”, J. Pons

**ACQUACEL AG IN THE MANAGEMENT
OF PARTIAL THICKNESS FACIAL
BURNS IN A PAEDIATRIC
UNIT**
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Introduction: In the management of paediatric burns is very important the control of infection in wounds in order to decrease the morbidity and mortality. On the other hand is relevant to make shorter the hospital stay and the number of operations or bandages changes under general anaesthesia. In this study we present a comparison between the treatment with Aquacel Ag (hidrofyber with ionic silver)

and the conventional one by means of moisturized gauzes in partial thickness burns in children. Methods: We present two groups of 5 patients with partial thickness facial burns in which we have evaluated: total days of hospital stay, number of dressing changes, needs of analgesic medication, operations and complications (infection, scarring and others) and final results and secuelaes. Results: In the group of Aquacel Ag we observed a early discarded from the hospital, no dressing changes until the complete epitelization, which is in relation with a better pain control, no operation at all and no complications. Discussion: This is a preliminary study with a little group of people but seems to indicate that Aquacel Ag could be the election dress for partial thickness burns especially in paediatric population. The advantages are shorter hospitalisation, better pain control, better mobility, and good cosmetic results.

Keywords: Partial thickness; Facial burns;
Paediatrics

**COMPLEX FACIAL RECONSTRUCTION AFTER
THIRD DEGREE BURNS**
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The reconstruction of elements of the head and face damaged by burns is generally a process of high technical complexity. A man was burned two years before. Several attempts at reconstruction had taken place in Indonesia. It is only with the help of aid organizations that the patients can stay in a place where the operation can be carried out. The extent of the burn included complete soft-tissue loss in the areas of the frontal bone and the parietal bone on both sides. The cartilage and soft-tissue structures of both ears were almost completely destroyed. There was a complete loss of the skin of the upper and lower lips, although the oral mucosa was preserved. Only the outer bony structures of the nose still existed. The lower and upper palpebra were only existent as scar tissue. Very large burn keloids covered the middle and lower third of the face and the left lateral neck. The reconstruction took place in steps, at first with the help of large local flaps. The centre of the face including the upper lip was provided with a micro vascular anastomost forearm flap. Secondary defects were healed with full thickness skin grafts and split skin grafts. The patient returned home after 5/12; months and was provided in advance with ear and nose prostheses. A further reconstruction of the outer nose is planned and will take place in Germany. The rehabilitation of a person damaged by burns to this extent has not only technical surgical requirements. The logistics have to be co-ordinated so that a patient such as this does not suffer the effects of being thrown into a completely foreign culture.

Abstr ID 98

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RESTORATION OF POST BURN SEQUELLAE OF THE NOSE WITH MIDLINE FOREHEAD FLAP

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Skin expansion has had considerable impact in nose reconstruction. In burn victims use of expansion demands special attention due to the poor quality of the skin and blood supply. The aim of this study is to present and to evaluate the midline forehead flap with cutaneous expansion in restoration of post burn sequellae of the nose. If most of the nose is destroyed, total nose reconstruction is the best procedure. A flap-type reconstruction with the forehead can be used. The expansion allows closure of the donor site. It offers new prospect for the treatment of facial burn sequellae as it allows increasing the surfaces of the remaining unaffected skin and using them to cover the excision of nasal scar lesions. We use a rectangular expander placed at level of the scar on the forehead in order to obtain an oblique flap (volume 160cc, length 12cm, width 5cm, projection 3cm). A radial incision is done in the anterior temporal region of the scalp and the internal valve is placed in the temporal region. This technique has rapidly become generally used in our burn center and good results were observed after cutaneous expansion even on grafted skin with expanders placed under the muscle. The authors report 5 cases of patients with severe extended facial burn sequellae who were subjected to this technique, demonstrating satisfactory general results. Follow-up investigations included photographs and patient symptoms and satisfaction.

Keywords: Post burn sequellae of the nose midline; Forehead; Flap cutaneous expansion

Abstr ID 777

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CORRECTION OF EXTENSIVE POST-TRAUMATIC SCAR DEFORMATIONS OF SCALP AND CONCOMITANT CRANIAL VAULT DEFECTS

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Aims: The purpose of this investigation was to evaluate possibilities of simultaneous surgical correction of cranial vault and scalp defects taking advantage of the soft tissue expansion technique. **Method:** We had to observe five patients aged 7–13 years (4 boys and 1 girl) presented with extensive scar deformities of scalp and bone defects in the vault of the skull as a resulted of electrical and mechanical traumas. Surgery was performed in two steps. In the beginning, we reserved the necessary amount of hair-peering skin. Thereafter, cranioplasty was undertaken with simultaneous excision of scalp areas presented with cicatricial alopecia and their plastic substitution by preliminary expanded cutaneous flaps. Plastic reconstruction of the skin and bone tissues was initiated within 6–8 weeks after the onset of dermotension. For cranioplasty the autobone graft was used in 3 cases, allogenic bone graft – in 1 case and protacryl, in 1 case. **Results:** In three cases with autobone grafting the postoperative course was uneventful and ended in a favorable outcome. In case of an allobone graft we observed a lysis of the implant and in case of protacryl an infection complication (parietal osteomyelitis) was coming out. In both cases the implants were removed and defect was covered with a titanium mesh attached to the cranial vault bones with microscrews. **Conclusion:** Our experience in the treatment of five patients with posttraumatic soft tissues and cranial vault defects suggests the expediency of simultaneous treatment of cicatricial alopecia and a concomitant skull bone defect using a preliminarily expanded cutaneous flap. This approach secures necessary amount of tissue to cover the osteograft and to substitute a large cosmetic defect.

Keywords: Post-traumatic; Cranial vault deformations

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POSTER SESSIONS

TOPIC 1: HISTORY OF MAXILLOFACIAL SURGERY

Prog. no.	Title/Authors
394	DAN THEODORESCU, THE PERSONALITY KNOWN FOR HAVING ORGANIZED THE MAXILLOFACIAL SURGERY, ACCORDING EUROPEAN PRINCIPLES Burlibasa C, Burlibasa M, Ionescu I
395	THE INCIDENCE OF LIP AND/OR PALATE CLEFTS IN THE REPUBLIC OF MOLDOVA IN 1987–2000 Lupan I
396	175 ANNIVERSARY OF ALPHONIUS NICOLAUS JULIUS VON SZYMANOWSKI Stamers K, Skagers A, Leibur E, Rautio J, Shuvalov S, Charkov L

HISTORY OF MAXILLOFACIAL SURGERY—DAN THEODORESCU, THE PERSONALITY KNOWN FOR HAVING ORGANIZED THE MAXILLOFACIAL SURGERY, ACCORDING EUROPEAN PRINCIPLES

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Born in Tulcea, the town whose name can be associated with the Danube Delta, Dan Theodorescu got his Ph.D. in 1925. Throughout the period of time that followed, he worked simultaneously for Topographic Anatomy Department, for the Medical Surgery Laboratory and for various general surgery clinics and, he also succeeded in publishing more than sixty works. He was admitted as an associate assistant for the surgery clinic in Salpetriere Hospital in Paris (Professor Gosset). In 1934, he attended Zahnärztlichen Institut and Kiefer Station in Vienna (Manager: Professor Ph.D. H. Pichler), specializing in maxillofacial surgery. While focussing on maxillofacial surgery in Vienna, he published in "Presse Medicale" and in several other reviews in Austria, cooperating with Professor Otto Hoffer, Professor H. Pichler, Dr. Trauner and Dr. Mathis, articles concerning jugal cancer, mandibular prognatism, salivar lithiasis etc. In 1936, he delivered a lecture on "Salivar Lithiasis" for the International Surgery Congress held in Bucharest. The lecture was further improved and then published under the form of a monography, which is still in use. In 1937, he founded the Roumanian Review of Stomatology, in which he published several articles concerning traumatology, maxillofacial oncology, congenital malformation, perimaxillar supurations. In 1938, after coming back to Romania, he founded a fifty-bed maxillofacial clinic which, in spite of its size, could offer quite modern services of Odontology, Dental Prosthetics and Parodontology, trying to apply medical thinking to stomatologic practice. During World War II, he, together with some very good young colleagues such Mihail Cicerone and Valerian Popescu, attended to the treatment of all those Romanian, German, American or Russian wounded people and he formed a school of specialists which was to continue his fruitful activity, after his premature death in 1948.

Keywords: Maxillofacial surgery; Dan Theodorescu; History of maxillofacial surgery

THE INCIDENCE OF LIP AND/OR PALATE CLEFTS IN THE REPUBLIC OF MOLDOVA IN 1987–2000

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The purpose of this research is to investigate the incidence and structure of CLP in the period 1987–2000 and to

compare data obtained with those of the period 1960–1974. The study comprised 914 children with CLP, born in 1987–2000. The children were divided into groups according to their age, sex, form of cleft, location, etc. It was determined that incidence of CLP in the period of 1987–2000 constituted 1.01:1000 in life-births (this index was 0.69:1000 in 1960–1974). Boys with CLP represent 56.13% and the girls – 43.87% in children with CLP. The ratio boys/girls is 1.28:1 (1.4:1 in 1960–1974). CL is registered in 28.55% of children, CLP-in 36.65% of children and CP-in 34.14%. Atypical forms were revealed in 0.66% of children with clefts. Incidence of CLP varies in various regions of the country. Boys prevail among children with CLP but their share has decreased from 58.35% to 56.17% and the share of girls with CLP has increased from 41.65% to 43.83% accordingly. The increase of CP share from 26.22% to 34.14% has occurred because of the aforesaid reason. The share of CL has also decreased from 37.28% to 28.55%. The incidence of CLP per 1000 newborn children was 0.66, the incidence of CP–0.34 (in 1960–1974 there were recorded CLP–0.51 and CP–0.18). The analysis of data referring to CLP incidence in Moldova for the period 1987–2000 revealed the increase of CLP at the level of 0.32:1000 in comparison with the period 1960–1974. Boys are affected more frequently, though the tendency of the increase of clefts in girls has been noticed. The change in the structure of cleft form is also registered: the share of CL has decreased and that of CP has increased to 7.92%.

Keywords: Clefts of the lip and palate (CLP); Incidence; Period; Clefts of the lip (CL); Clefts of the palate (CP)

175 ANNIVERSARY OF ALPHONIUS NICOLAUS JULIUS VON SZYMANOWSKI

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Szymanowski was born in Riga in 27th of January in 1829. At the age of six years after fathers death, family moves from Riga to Revel (now called Tallin) in Estonia. At the age of eleven he entered Revel gymnasium and at 1850 graduated as one of the best students. After gymnasium he entered medical faculty of the University of Dorpat now Tartu. There Szymanowski proof his surgical talent and wisdom. Szymanowski began his creative activity as a student, he inventing the bone resection saw in his inaugural medical disertation 'Addimenta ad osseum resectionem' in 1856. He wrote his first book in 1857 about plaster of Paris bandages, it calls 'Der Gypsverband'. In next year he got license of Doctor of Medical since, in the same year he wrote complete review of history of rhinoplasty and his own experience which name is 'Adnotationes ad rinoplasticen'. In 1858 Szymanowski was transferred to the imperial Alexander University in Helsinki. Here he wrote revision of Nicolay Pirogoff's book 'Surgical anatomy of arteries and fascia'. In 1860

Szymanowski was appointed to Imperial Saint Vladimir University in Kiev. Here he did his greatest works: 'Handbuch der Operativen Chirurgie' in 3 volumes in Russian and German languages and also book 'Operacii na poverhnosti chelovetskovo tela' (Operations on surface of human body) which is regarded as one of first basic handbooks in plastic and maxillofacial surgery. In all his life he was an active inventor of surgical instruments: he

developed more than 20 surgical instruments. Unfortunately in 1866 Szymanowski was diagnosed having a malignant tumor. He was operated 2 times by Prof. Vladimir Karavajev head of surgery department of St. Vladimirs university. But after pulmonaly metastasis developement he died on April 25th 1868 being 39 years old.

Keywords: Szymanowski

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DO FOLIC ACID AND THIOCYANATE HAVE A PREVENTIVE EFFECT ON EXOGENOUSLY INDUCED DISTURBANCE OF THE EMBRYONIC EVOLUTION OF THE FACE SKULL ?

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Aims: At the rat model is examined, whether folic acid (F) and thiocyanate (T) alone or combines able are, to prevent malformations of the occlusion of the second palate on the 14th day postconception (pc) induced through the cytostatic drug Procarbazine (P). **Methods:** 7 groups ($n=20$) of gravid Lew-1A rats were formed: P 20 mg/100g body mass (bm) on day 14 pc, F 0.016 mg/100 mg bm on days 1, 4, 7, 10, 13, 16 + 19 pc, T 3.2 mg/100 mg bm on days 10 + 13 pc, FP, TP+FTP (same dosage as F, F+P) and K (control) untreated. **Results:** All animals treated with P showed a significantly stronger shortening of the lower jaw (microgenia) in case of simultaneous small shortening of the upper jaw (micrognathia). A larger length of the upper and lower jaw showed the animals of the prevention group TFP in case of the largest length of the second palate. The rate of total cleft palates was to gift of P 60%; it reduced to additional gift of F onto 47%, of T on 50% and of F and T to 40%. The rate of subtotal cleft palates was to gift of P 5%, and increased itself according to gift of F and P to 11% resp. of T and P to 35% (significant) while it was being 0% to gift of F, T and P simultaneously. **Conclusion:** The combined gift of preventive drug F caused a partial compensation of the pocarbazine induced disturbance of the embryonic evolution of the face skull because T change the membrane surface in the sence of a improved cellular resorption of F. This applies also for the resorption of P, therefore with combined gift of T and P without addition of F no reduction of the part of total cleft palates comes.

Keywords: Malformations of the skull; Prevention; Folic acid; Thiocyanate

Abstr ID 92

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MORPHOGENESIS OF THE JUNCTION BETWEEN THE CHONDROCRANIUM AND THE NEUROCRANIUM IN THE CORONAL RING, I.E. THE SPHENOFONTAL SUTURE

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Subject: The aim of this study was to describe the prenatal structure and the morphogenesis of the sphenofrontal suture that constitute the basal part of the coronal ring. **Material & Methods:** Eleven human specimens, two embryos and nine foetus were prepared for light microscopy study of the sphenofrontal suture. The 10-µm

sections were done with the microtome in the sagittal plane from the midline to the sphenoidal fontanelle. **Results:** At the end of foetal period, the sphenofrontal suture had a five-layer structure like the cranial sutures, and was formed by two different morphogenetic unities. The orbitosphenofrontal suture was formed between the orbital part of the frontal bone, membranous ossification, and the lesser wing of the sphenoid bone, endochondral ossification of the ala orbitalis. In the early stage a transient sphenothmoidal cartilage was inserted between this two ossification. The second unit, the lateral sphenofrontal suture, was formed between the frontal bone and the great wing of the sphenoid, which the ossification was membranous in this portion. It's formed like the cranial suture, directly from the mesenchyme. **Conclusion:** the sphenofrontal suture is a typical fibrous suture arising from two morphogenetic unities: chondromembranous junction and membranous neurocranium. Then the coronal ring is an heterogeneous growth system.

Keywords: Skull base; Sphenofrontal suture; Embryology; Coronal synostosis

Abstr ID 157

399

UNCOMMON PAEDIATRIC MAXILLOFACIAL LESIONS

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Paediatric maxillofacial lesions are either congenital or acquired. They represent a challenging problem to the surgeon and a psychological problem to both the patient and the parents. Cleft lip and palate represent one of such lesions and the problem has been under investigation for a long time, but some other lesions are still in need for more understanding as regards the natural process of development and management. In this presentation the experience of the author in the management of some uncommon lesions such as diffuse infantile lipomatosis of the face, aggressive fibromatosis of the head and neck as well as aggressive fibrous dysplasias is elaborated. The difficulties as well as the results of treatment are discussed with reference to the different approaches to each category of lesions. The need to further understanding of such lesions and their behaviour is strongly recommended. It is one of the areas that we all face difficulties in planning and management as well as uncertainty about the outcome of the procedures and it is mandatory to involve the parents in the understanding of the need for a staged procedure which might be difficult to accept from the parents point of view.

Keywords: Paediatric; Diffuselipomatosis; Aggressivefibromatosis; Fibrous dysplasia; Diagnosis; Treatment

Abstr ID 214

400

PRESURGICAL CUSTOM-MADE ORTHOPEDIC DEVICES IN THE TREATMENT OF SEVERE WIDE CLEFTS

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In the treatment of severe clefts, orthopaedic devices prior to surgical repair can improve the results, and make easier the surgical technique. Since Latham described his orthopedic appliances, many different types of active and passive devices have been used for the treatment of these patients. We described the different orthopaedic devices used in our service, in the treatment of severe clefts, including facial clefts. We have used them for a variable amount of time previous to surgical repair of soft tissues. We expose the way of activation of the device, usually by elastics, and the movement we try to get to improve the initial situation of the patient. Activation of the device is performed by mean of elastics and screws, although elastics are faster and same efficient in the 4 first weeks of age. The fixation of the devices is achieved by mean of pins into the bone and composite to avoid accidentally removal. We consider that the use of presurgical orthopedics is necessary in almost all cases of bilateral cleft lip and severe unilateral one, when a primary gingivoperiosteoplasty is planned. Five different orthopaedic devices are shown, in association with patients situation pre and post device activation. We expose the way we design the device and the associated movement to get closer cleft edges, which sometimes requires not only en block movement but also fragment rotation.

Keywords: Cleft lip palate; Presurgical orthopedics; Severe clefts

Abstr ID 215

401

EARLY BONE GRAFTING IN RARE FACIAL CLEFT. CASE REPORT

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Rare facial clefts are a very uncommon pathology. Classified thirty years ago by Tessier, which standardized its name, these entities have been scant by reported in literature. We report the case of one of the most rare facial clefts, number 4. A black male neonates was referred to our centre just after being born. He presented a bilateral rare facial cleft, being classified like left number 4 cleft affecting the palate, maxilla and orbital floor, without any support for orbital contents and right number 5 cleft. There was an incompetence of eyelids to close the left eye, due to the non existence of lowed eyelid, affected by the cleft. Because of the wide left cleft and the risk of corneal infection, we decide when he was 15 days, to place a custom-made orthopaedic device to close and rotate the cleft edges. At the same time we performed a non-cruent tarsorrhaphy to help eye closing. After more than 30 days device activation, we decided to operate the patient to close soft tissues. Because of the eye dystopia, due to orbital floor absence, early bone grafting was planned at the same time. The operation was performed when the baby was 2 months old. Following principles given by Tessier, design and raise of the flaps were performed bilaterally. Prior to this, a temporoparietal flap was raised and full thickness calvarian bone graft was harvested. Once the flaps were raised, the bone graft was divided into three parts, which were placed

in order to reconstruct the orbital floor and the anterior orbital and maxillary rims, those bilaterally. All the grafts were fixed by means of vycrilâ sutures. Intraoral and external defects were repaired following the previous design and a gastrostomy was performed for feeding to avoid contamination.

Keywords: Rare facial cleft; Bone grafting; Bilateral clefts

Abstr ID 243

402

SURGICAL TREATMENT OF BILATERAL TEMPOROMANDIBULAR ANKYLOSIS IN A CASE OF AURICULO-CONDYLAR SYNDROME

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Aims: Postnatal mandibular hypoplasia in combination with severe respiratory distress generally leads to the consideration of the Pierre-Robin sequence. However, we present the case of a male newborn with question mark ears who received the diagnosis of auriculo-condylar syndrome. This rare condition results from abnormal development of the first and second branchial arches. **Subject:** The boy was born as the first child of consanguineous parents after uncomplicated pregnancy and delivery. Both parents had no signs of anomalies. Postnatal examination revealed severe hypoplasia of a non-mobile mandible, question mark ears, and bilateral appendages between tongue and velum. No intraoral cleft was observed. Computed tomography and a 3D model were used for preoperative planning. **Results:** To improve the upper airway passage the first surgical correction of the mandible was performed on day 9 after birth. Intraoperatively, a fixation of the anterior mandible to the hyoid was additionally found. This was detached and an anterior osteotomy of the mandible was performed for expansion. Intraorally, the lingual appendages were resected. After 2 weeks the temporomandibular joint ankylosis of the left side was resected and the posterior fixed tongue was intensively mobilized. 4 days later the temporomandibular joint of the right side, that was less involved, was also mobilized. Intraoperatively, an intermaxillary distance of 15 mm was achieved. **Conclusion:** Performing a stepwise surgical correction of a complex mandibular anomaly, a significant functional improvement was achieved, avoiding tracheotomy up to now, 4 months after birth.

Keywords: Auriculo-condylar syndrome; Temporomandibular joint ankylosis

Abstr ID 253

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GIGANT DERMOID CYST OF THE FLOOR OF THE MOUTH

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Introduction: Dermoid cysts are subcutaneous cystic masses that in the oro-facial territory are located typically at the floor of the mouth. In contrast with epidermoid cysts, dermoid have adnexal structures inside. Their origin is the enclosure of germinal epithelium cells in the mesenchymal stroma of the floor of the mouth during the embryonic development. Clinically are intra or extra oral masses depending on their position respect the mylohyoid muscle. Intraorally when are big can interfere with speech, mastication, swallow or even breathing. Extraorally cause a submental or submaxillary mass. Therapy is surgical enucleation by an intraoral approach if the cyst is above the mylohyoid muscle and a cervical one if is below it. **Patients and Methods:** A 29 years old male patient with a giant cyst of the floor of the mouth both over and below the mylohyoid muscle that caused interference with the speech and the swallow was treated in our hospital by a simple intraoral incision. 6 months after the surgery the patient has not suffered complications, with an immediate improvement of the speech and the swallow by enucleating the cyst. **Conclusions:** Dermoid and epidermoid cysts of the oral cavity are located usually at the floor of the mouth. The diagnosis is made by the clinic findings, and confirmed by computed tomography. Treatment consists in extirpation by intra oral or cervical approach, depending on the localization and the size of the mass.

Abstr ID 260

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FORCE MEASUREMENT IN MAXILLARY DISTRACTION OSTEOGENESIS

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Aims: Midfacial distraction osteogenesis is a novel method in orthognathic surgery. Until now no information on the forces necessary to move the midface or their temporal changes is available. Knowledge of this data could lead to better planning of treatment. **Methods:** Strain gauges were applied to an extraoral midfacial distractor (halo-borne, RED-I/II) in 10 patients measuring total force and forces applied on the right and left midface. To collect data over the full treatment period of up to 80 days, a portable data logger was developed which was gathering data during the whole period. To display and analyze the data, a MatLab graphical user interface was implemented to show the course of forces and their changes following activation of the distractor (1 mm/day, total movement up to 20 mm). **Results:** Strain gauge application proved to measure forces over the whole treatment period. The changes of forces showed a similar course in all patients starting at 10-15 N and reaching maximum values between 40 and 130 N at the end of the distraction period. During retention time of 3-8 weeks forces declined gradually but did not reach initial values. The force's peaks correlated with patients' complaints of tension and pain and indicated therapy-related problems like improper mobilization or early osseous fusion. Forces of 20-25 N at distractor removal showed to lead to a stable postoperative midface position. Problems to withstand malhandling by patients was seen in some strain gauge applications which led to modifications in application protection. **Conclusions:** Strain gauge mea-

surements are useful in monitoring and analyzing midfacial distraction therapy and help making individual treatment plans for individual soft and hard tissue circumstances. Even high forces of over 100 N did not cause hardware problems, distractor breakdown or loosening of the halo-fixation.

Keywords: Distraction osteogenesis; Maxilla; Strain gauges; Force measurement

Abstr ID 289

405

POPLITEAL PTERYGIUM SYNDROME. EARLY SURGERY FOR SUCCESSFUL TREATMENT

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Subject: The popliteal pterygium syndrome is a rare congenital disorder characterized by popliteal webs associated with mucous bands between jaws, a cleft palate and an ankyloblepharon filiforme. **Case Report:** The male newborn presents a hypotonia and a low weight. The facial abnormalities include a bilateral cleft palate without palatal bone on the left side, some mucous bands between cheeks and gums. One is tight between the left half uvula and the incisive papilla. The oral aperture is limited by a syngnathia. The tongue is stiff to the floor of the mouth. Pits are seen on the lower lip. The mucous membranes and the syngnathia are early surgically released under a nasotracheal intubation and the palatal cleft is closed at eight months of age. The fibrous bands between upper and lower eyelids are bilateral but allow the eyelid aperture. The popliteal pterygia are bilateral, attached from the ischium to the os calcis. Syndactily between the second and the third left toe and a first toe deformity complement this case. No other visceral malformation is found, particularly a genitourinary one. **Discussion:** The term "pterygium" is derived from the greek word for wing, pterygion, and refers to an abnormal triangular fold of tissue. Pterygia can occur in various portions of the body including the neck, eyelids, knee, elbow and digits. Popliteal pterygium syndrome is rare (1/300000). Usually it is an autosomal dominant syndrome with facial, leg and genitourinary anomalies combined. The maxillofacial anomalies like syngnathia which occurs in 40% of the cases have to be released early to allow the feeding. The management of the popliteal pterygium have to take care of the variations of the position of the popliteal vessels and nerves.

Keywords: Popliteal pterygium syndrome

Abstr ID 305

406

MULTIPLE DENTOFACIAL DEFORMITIES

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Aim: The aim of this paper is to present our experience in the simultaneous surgical treatment for skeletal and soft tissue deformity. Patients with the cleft palate, mid-face hypoplasia and mandibular excess require complex surgical planning of maxillary advancement, transversal expansion and osteoreconstruction of the cleft and prosthetic rehabilitation. **Methods:** We present case report of patient with multiple dentofacial deformity of the hard and soft tissue. We used allograft materials for osteoreconstructive process of cleft to induce osteoplastic correction. Our surgical treatment consists in Le Fort I and sagittal split osteotomies for the repositioning of the skeletal frame and surgical therapy of mandibular excess. **Results:** Complete therapy of this patient required 5 operations, using of osteotransplants in combination with autologous osteoplastic implants. Clinical case will illustrate the various solutions that can be achieved with correction of the maxillo – mandibular asymmetry combined surgical technique aiming at reconstruction of the soft and hard deformities. **Conclusion:** The maxillo mandibular osteotomies are not sufficient to restore good facial symmetry. It is necessary to supplement therapy with autogenic osteotransplantative materials which helps to realized perfect facial remodeling. Orthodontic and prosthetic therapy is also necessary to allow the patient maximal esthetical and functional benefit.

Keywords: Dentofacial deformities; Aesthetic surgery

Abstr ID 368

407

ANTHROPOMETRY, 2-D PHOTOGRAMMETRY AND 3-D PHOTOGRAMMETRY – A COMPARATIVE STUDY IN THE ANALYSIS OF THE CLEFT FACE

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Aims: Anthropometric analysis of the face has been performed with direct facial measurement and photogrammetry. Both methods have disadvantages. The aim of our investigation was to create a 3-D image of the primary cleft face deformity with a video scanner and to compare its results with conventional techniques. **Methods:** Facial plaster casts of 51 patients with uni- and bilateral cleft lip and palate before primary lip repair were scanned with digital surface photogrammetry DSP 400. Twenty-one facial anthropometric measurements—with special focus on the nasal deformity—were analyzed. All three techniques were applied and compared. **Results:** Image capture with the 3-D scanner was possible without problems in all models. 3-D image results correlated well with the direct measurements of the model ($y=0.9747 \times 0.1949$; $R^2 > 0.98$), however, large distance measurements were more reliable than small ones. 3-D photogrammetry results were superior to 2-D measurements. Significant dimensional differences of the anthropometric parameters were noted depending on the cleft type. **Discussion:** As direct measurements are over-complex in infants, non-invasive, rapid 3-D video imaging is a promising new tool. The technique's reliability seems to be high. Three-dimensional image evaluation of cleft deformity and cleft treatment might improve surgical treatment planning and outcome in the future.

Keywords: Photogrammetry; Anthropometry; Cleft lip

Abstr ID 373

408

ANALYSIS OF LIP MOTION OF CLEFT LIP USING AN IN-CONTACT MOTION CAPTURE SYSTEM

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Introduction: In-contact Motion Capture System (IMCS) is an accurate and a useful three dimensional motion analyzer applying infrared rays and a computer system. In our institution, lip motion of cleft lip cases has been captured using this IMCS. **Aim:** Three dimensional analysis and the evaluation of the lip motions in hemilateral cleft lip cases. **Materials and Methods:** Five cases with hemilateral cleft lip, who had been already operated at their infant stages, were examined in this time. The objective points were determined on the half points between both angles and both tops of cupid bow. Small infrared-ray-sensors were set on those points. The IMCS is composed with four cameras, which radiate and take infrared rays and send the data of time course and position to computer. The IMCS captured infrared-ray reflected from the sensors on the face and lip. Three dimensional coordinates were continuously recorded during the voice expressing [u] and [i] in each. On the CRT and the printer, XYZ three dimensional coordinates were drawn as a curved line on the time course. **Results:** The moving path of the non-affected side was more than one of the affected side in XY, XZ, YZ, X, Y, and Z. In two cases, the cranial movement was exchanged to the frontal direction. It may be dependent upon the original lack of lip tissue in the cleft side, the operative scarring and the distortion at the cheiloplasty. **Conclusion:** It is much important not only static post-operative lip form, but also lip motion should be analyzed in cleft lip cases in order to evaluate the function of the reconstructed cleft lips.

Keywords: In-contact motion capture system; Cleft lip; Motion analysis

Abstr ID 381

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ORBITOFACIAL CLEFTS: DISCUSSION AND ANALYSIS ABOUT SEVEN CASES

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Introduction: Orbitofacial clefts belong to the group of rare facial clefts. Their incidence is of 1.43 to 4.85 for 100000 births. Their description and treatment were studied in detail by Tessier whose anatomoclinical classification is an international reference today. This series is important due to the rarity of these types of clefts and the few number

of cases reported. **Patients and Methods:** This is a retrospective study of 7 orbitofacial clefts, carried out in the Maxillofacial Pediatric Departement of Trousseau Hospital, Paris and the Surgical Pediatric Departement of Clocheville Hospital, Tours. The treatment planning was studied for each case. **Results:** We analyse the clinical results, especially in the functional, morphological and aesthetic fields with 2 to 22 year follow-up. It is a very heterogeneous series since all the cases are different. Thus it is not possible to define a real codified treatment planning, but only a global management that should be adapted to each patient. We discuss the optimal date for first stage surgery, with or without primary bone grafting, as well as facial plasty with interdigitation flap, or with rotation-advancement flap. Each therapeutic problem is considered step by step and our treatment plan is explained. **Conclusion:** We think that early closing with one stage surgery and primary orbitary bone grafting is the best way of. The closing age depends on the anatomical type and the experience of the surgical teams, but can become a neonatal emergency if the ocular function is at risk.

Keywords: Facial clefts; Rare facial clefts; Orbitofacial clefts; Oblique clefts; Tessier classification

Abstr ID 514

410

BONE GRAFTING OF CLEFT LIP AND PALATE PATIENTS: THE EXPERIENCE OF THE PÉCS CLEFT TEAM

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Introduction: Our cleft team was founded in 1996. Since then more than 320 patients are under our treatment. Approximately 20 new patients are received every year. Secondary bone grafting of the alveolar cleft ridge has become a well-established procedure with several advantages to the CLP patient. We have been performing alveolar bone grafting as a part of our complex cleft treatment scheme since 1998. **Aims:** The purpose of this study was to assess our experience and safety with secondary bone grafting of CLP patients in our treatment protocol. **Patients and Methods:** Forty patients between the ages of 6–25 years had taken part in this study. There were 12 bilateral and 28 unilateral clefts. After primary closure 3 patients needed bilateral bone grafting. A high quality compressed iliac spongiosa was used, as grafting material at the stage of mixed dentition or late secondarily at the age of permanent dentition. Clinical, radiographic, photographic and dental cast follow-ups were performed with regard to cleft type, residual alveolar cleft morphology, success rate for bone grafting, and postoperative complications. **Results:** Results showed benefits from bone grafting to the cleft of the lip and primary palate in facilitating the eruption of lateral incisor if present and canines. There were no major complications of the procedure. **Conclusion:** Secondary bone grafting forms the bases of following therapy: the stabilization of the dental maxillary arch; providing bony support to the teeth neighboring the cleft; facilitating the eruption of the canine and closure of oronasal fistulae; augmentation of the alar base of the nose. This is a safe and

relatively easy to perform step, in the complex treatment of cleft palate.

Keywords: Bone grafting; Cleft lip and palate; Team; Complex treatment; Pre-orthodontics

Abstr ID 530

411

ANALYSIS OF OBSTETRIC DATA IN 508 INFANTS BORN WITH CLEFT LIP AND/OR PALATE

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Aims: Reported is the analysis of obstetric data in infants born with cleft lip and/or palate (CL±P), as well as the relationship between gender and type of cleft. **Subject:** Analysed was the data of 508 infants born with non-syndrome CL±P that were treated at the Department of Maxillofacial and Oral Surgery University Hospital Dubrava in Zagreb, Croatia. **Results:** The gender distribution was 272 male infants with CL±P and 236 female infants with CL±P. Cleft of primary palate (CL) was observed in 118 infants, cleft of secondary palate (CP) in 185 infants while 205 infants had cleft of both primary and secondary palate (CLP). 9 infants were born after 7 months of pregnancy, 61 after 8 months, 436 after 9 months and 2 infants were born following 10 months of pregnancy. The smallest recorded birth weight in this study was 1270 grams, while the maximum was 5250 grams. The smallest infant in length was 38cm while the longest was 62 cm. This study separately analysed the relationship between gender and type of cleft, i.e. gender and birth length, gender and birth weight as well as the type of cleft and birth weight. **Conclusion:** Results of this study have shown that clefts are more common in male infants, where CLP is most common and CL least common. CLP is more common in male infants with statistically significant difference in comparison to females, while the case is opposite in CP patients. No statistical significance was measured when comparing duration of pregnancy. CL and CLP cases are more common in infants born following 8 months of pregnancy, while CP cases are more common in children born following 9 months of pregnancy. The recorded birth weights show no statistically significant difference, nor the difference in length.

Keywords: Cleft Lip and/or Palate; Obstetric data; Gender and type of cleft

Abstr ID 600

412

BONE GRAFTING OF ALVEOLAR CLEFTS IN PATIENTS WITH CLEFT LIP AND PALATE

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Aims: The aim of this study was to analyse the success rate of secondary alveolar cleft grafting performed at the Department of Maxillofacial Surgery of Tartu University Hospital. **Method:** The study included 29 patients who had secondary bone grafting of 40 alveolar clefts between 1994 and March 2004. We used an iliac crest graft in 15 cases and a mental area graft in 14 cases. Details were recorded of age, sex, laterality of the cleft, pre-operative orthodontic treatment, the fact whether grafting was combined with soft tissue revision surgery, method of harvesting the graft, complications, eruption of the canines, and the success of graftings established on the basis of bone level around the erupted canine. We generally perform bone grafting of alveolar clefts when the patient is between 9 and 12 years of age. **Results:** Of the grafts used only two failed (6.9 per cent). The outcome was more favorable when the canine was unerupted pre-operatively. The patients with a unilateral or a bilateral cleft who had bone grafting at the time when the maxilla was expanded orthodontically, had better results. **Conclusions:** Our finding is consistent with the result of other studies that the canines should be unerupted at the time of grafting. Most canines erupt spontaneously after careful surgery, and do not need to be exposed. Grafting can be combined with minor revision surgery. High level of successful grafting was achieved in this series.

Keywords: Bone grafting

Abstr ID 668

413

ULTRASTRUCTURAL INVESTIGATION OF THE HEPATIC EFFECTS OF VITAMIN A USED IN ORAL LESIONS: AN EXPERIMENTAL STUDY IN PREGNANT RATS

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Aims: Isotretinoin provides a wide range of clinical use in skin disorders as well as oral leukoplakia. On the other hand, retinoic acid is a well known teratogenic substance which mainly affects liver cells. We therefore aimed to examine ultrastructurally, possible detrimental effects of retinoic acid on the livers of pregnant rats together with their embryos. **Materials and Methods:** 16 Sprague-Dawley pregnant female rats were used in this study. Animals were divided equally into two groups. In the experimental group, an acute dose of 40 mg/kg isotretinoin was administered orally on the 7.5th gestational day. Control group received no treatment. Animals were sacrificed on the 17.5th day and liver of both embryos and the mothers were processed for ultrastructural examination. **Results:** Hepatocytes of the mothers who had abnormal embryos justified by specific skeletal strains were highly affected, particularly in the periportal regions. Large cystic vacuoles and myelin-like figures in the areas close to cell membrane were observed in these hepatocytes. Structural integrity of the granular endoplasmic reticulum was also degenerated and there was prominent enlargement on the membranes of rough endoplasmic reticulum. Apart from slight disconnection between the hepatocytes and widening of the intercellular spaces, there was no remarkable changes

in the livers of abnormal embryos. **Conclusion:** We concluded that the isotretinoin has substantial effects on the hepatocytes of pregnant rats than embryos, and this condition requires close follow-up in clinical use.

Keywords: Vitamin A; Liver; Ultrastructural; Rat

Abstr ID 784

414

TECHNICAL NOTE ABOUT SURGICAL CORRECTION OF THE NOSE IN BINDER SYNDROME

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Summary: The Binder's syndrome (maxillo-nasal dysplasia) is a congenital malformation characterized by an extremely flat and retruded nose, associated or not with a class III malocclusion. **Material:** Our patient was a 19-year-old man, with a maxillo-nasal dysplasia, he presented many deformities of the nose base such as : a undertip projection (undefined tip), a large nostril and a short columella with acute nasolabial angle, and the nasal dorsum was convex associated with a thickened skin. **Methods and Results:** He was treated using an external transcolumellar and an upper vestibular approach with:

- an advancement of the septum.
- A L-shaped bone graft from the iliac crest used to projecting the tip and lengthening the columella associated with a suture of the middle crus around the graft.
- Skin -excision of the external part of the nostrils to reduce them.
- Two cortical bone grafts were placed around the lower part of sinus piriform causing a protrusion of the premaxilla area and columellar bases.

Aim: We describe this technique with a review of literature, insisting on using rhinoplasty complementary act of the nose base in Binder's syndrome associated with a particular morphotype in our region done with thickened skin and undefined tip.

Abstr ID 816

415

MAXILLARY DISTRACTION IN CLEFT PALATE PATIENTS

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Maxillary Distraction in Cleft Palate Patients

Traditional orthognathic surgery for cleft palate patients with maxillary hypoplasia is accompanied by a high rate of relapse. In the department of maxillo Facial and plastic Surgery, Alexandria faculty of Dentistry, we have performed mid face distraction in cleft palate patients suffering maxillary retrusion using the rigid external distractor (R E D II system) manufactured by Martin. Over 20 cases were

managed using this system after a high Le Fort I osteotomy of the maxilla. The results, pitfalls, complications and long term follow up together with orthodontic correction of the teeth will be presented.

Abstr ID 818

416

PULMONARY FUNCTION IN CHILDREN WITH CONGENITAL CLEFT LIP AND PALATE

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With the implementation of fibrobronchoscopy into the prophylactic and treatment of pulmonary diseases (PD) the possibility to study of bronchoalveolar zone in bronchoalveolar wash off (BAW) was appeared. There are a few studies devoted to the investigation of microflora in BAW before operation, commonly these works investigate the preoperative period in patients with surgical disease of lungs. In pathologic conditions of respiratory character and form of microflora in BAW are not different from the microflora of the studied sputum. Microflora, revealed in bronchopulmonary complications (BPC) are very different: staphylococci, streptococci, fungus, corynebacteria, anaerobes and others. Pathogenic staphylococci in monoculture or in association with other microorganisms is frequently founded. Penetration of colibacilli flora into airways and lungs is very dangerous, because the course of disease obtains progressed character and finished tragically. V.I. Struchkov et al. reported about some peculiarities of microflora in BPC. At the first, in these cases pathogenic and toxinforming strains of staphylococci are revealed. Gram negative bacteria uncharacterized for the given localization: protei, enterobacteria are revealed. On the mucus membrane of nasal cavity, pharynx and trachea. It testifies about disorder in mechanism of antinfective prevention of patients body. At the second microorganisms, especially association of microbes manifest complete polyresistance to antibiotics. It is very important to outline once more, that the formation of infective pathologic process closely connects with condition of preventive systems of bronchus and lungs. The prevention of respiratory organs are supplied by mucocellular system of bronchus, the system of unspecific enzyme prevention, protheolitic system of trachea-bronchial secretion, local and common immune systems, lung macrophages. These systems, supplying the optimal conditions for function of pulmonary organs. Carries out detention, inactivation and extermination of foreign substances, products of metabolism from lungs and bronchus and takes part in adaptation of body to environmental changes and displacement of hemostasis. Sanation of mouth cavity, airways, particularly, preoperative bronchoscopic sanation is one of conditions in prevention of BLC. Inverse condition should be considered as medical mistake. Surfactant- (is derived from the english-superficial-active substance) is complicated substance of lipid-albumen-carbohydrate nature, presenting as a pellicle on the border of phase division of air-liquid in lung alveolar and regulating superficial tension (ST) in the change of their volumes. Hyperventilation creates favourable conditions for the development of autoinfection in atelectatic parts of lungs. According to the opinion of the most authors [8,11,12] inflammatory process primarily begins in bronchus, and the infection spreads into lower parts and

passes on lung tissue. It is testified by identity of revealed microflora in pharynx and bronchus. Revisiting and analyses of available literature couldn't find out the information about microbiological medium of lungs and SSL in children with congenital cleft lip and palate. In this connection we decided to investigate microflora and SSL in BAW of children with cleft lip and palate on the stages of operative treatment.

Abstr ID 861

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NEURAL CREST AND ENDODERM RESPECTIVE PART IN HYOID BONE MORPHOGENESIS

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The cephalic neural crest participates in vertebrates to visceral and cranial skeletogenesis. The hyoid bone, part of the viscerocranium is a complex skeletic structure of the pharyngeal area. It derives from neural crest cells of the medium and posterior rhombencephalon which will colonize the second, third and fourth branchial arches. In birds, hyoid bone is symmetrical and impaired; it is formed by a median part, the rostral entoglossum, the medium basihyal and the caudal basibranchial, and a lateral part with its proximal ceratobranchial segment and its distal epibranchial segment. In early neurulation stage, the neural structures are segmented in rhombomeres and the pharyngeal structures are segmented in branchial arches. This segmentation corresponds to the Hox gene expression colinearity. Recent results in early neurulation showed that the pharyngeal endoderm give the Hox-negative neural crest cells signals instructing maxillary skeletic structures differentiation. This endoderm may play a role in specification of mesencephalic neural crest cells for the formation of Meckel's, articulate and quadrate cartilages of the first branchial arch. The Hox-positive neural crest cells seem unable to follow rostral portion endodermal instructions. We extend the study to the Hox-positive neural crest cells derived structures as the hyoid bone in order to determine the origin and the nature of the responsible signals in skeleton differentiation (in the second, third and fourth branchial arches). Endodermal shape stripes have been defined by projections on posterior rhombencephalon structures. We have defined shapely the endodermal areas implicated in hyoid bone formation with extirpations experiments. Then, the skeletogenic activity of these same territories has been identified by supplementation grafting experiments: they induce supplementary cartilage formation by duplicating several parts of hyoid bone. We have established an endodermal cartography of the different implicated endodermal territories. A molecular analysis on serial cuts has precised the endodermal molecular factors implicated in induction of the Hox-negative neural crest cells. All the anatomic, cellular and molecular results demonstrate that neural crest cells derived branchial and hypobranchial skeleton pattern is early programmed in pharyngeal endoderm.

RECONSTRUCTION OF TESSIER 0 FACIAL CLEFTS BY PFEIFFER WAVY INCISION

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Aim: Present the surgical outcomes achieved in the treatment of complex Tessier O facial clefts using the Pfeiffer wavy incision technique. **Methods:** 10 patients with Tessier O facial clefts have been treated in the last 5 years in the Institute of Craniofacial Surgery at Hyderabad (India), comprising 20% of all craniofacial clefts repaired in this Centre. A wavy or undulating type of incision following Pfeiffer has been the technique selected for surgery. **Results:** Treatment of craniofacial clefts remains a challenge for craniofacial surgeons. Important principles must be maintained in the management of soft and hard tissues. Function, symmetry and esthetics (reorientation of the lost anatomical architecture, vermilion notch, philtral and collumellar heights, symmetrical ala, projecting nasal tip, naso labial folds) are concepts to keep in mind when managing central facial clefts. Difficulties in conventional techniques (Local rotational flaps, Geometrical principle design and Z—plasty design) include soft tissue mismatch, no functional approaches and irregularly shaped scars. Pfeiffés functional technique provides good length, mobilization and exposure of the soft tissues when managing central facial clefts. Main disadvantages are tensions in closure, and may need multiple modifications depending on difficulty of clefts. **Conclusions:** Rehabilitation of patients with facial clefts includes many appealing features of craniofacial surgery. The exact incidence of unusual craniofacial clefts is not known because of its rarity and as a result of which there has not been any standardization. 10 Tessier O facial clefts have been repaired in the last 5 years by using the Pfeiffer wavy or undulating type of incision. Experience has shown that the Pfeiffer wavy incision procedure is a helpful technique helping in the surgical treatment of these complex facial clefts, leading to excellent outcomes.

Keywords: Facial clefts; Tessier 0; Wavy incisions

SECONDARY RECONSTRUCTIVE PROCEDURES IN THE CLEFT PATIENTS: OUR CLINICAL APPROACHES

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Cleft lip and palate continues to be a significant public problem. The reported worldwide incidence is 1

in 800 live births. Unfortunately surgical repair of these deformities can cause some secondary problems. A wide variety of deformities can occur following repair of the cleft lip and palate. Lip deformities include absent, deficient or deformed Cupid's bow, short, long, tight or wide lip, vermilion deficiencies, philtrum deformities and scar deformities. Palate deformities include oronasal fistulas, palatal fistulas and residual alveolar clefts. Furthermore, different nasal deformities, maxillary and velopharyngeal insufficiencies can be associated with these deformities. To correct these deformities some secondary surgical procedures must be performed in these patients. In this clinical report, three female cleft cases who underwent secondary reconstructive surgery are presented. All of the patients firstly operated in other clinics. In first patient, who operated for cleft lip and palate, there was whistle deformity, residual alveolar cleft and nasal deformity. The second patient had palatal fistula and the third patient had palatal fistula and bifid uvula, both of them are operated patients. All deformities were treated successfully in our department. In the light of these patients and the data of literature secondary surgical procedures in the cleft patients are discussed.

Keywords: Cleft lip; Cleft palate; Cleft surgery

SECONDARY BONE GRAFTING IN CLEFT LIP AND PALATE PATIENTS- POSTER

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Introduction: The first reported bone graft to the cleft maxilla is attributed to Lexer nearly century ago. Secondary alveolar bone grafting has become, a well established procedure and an integral part of the surgical management cleft lip and palate. Iliac crest bone is most widely used as a graft. Own experience in this therapeutic treatment has been presented. **Patients and Methods:** Between years 2002 and 2004, 23 patients underwent secondary alveolar bone grafting at the Department of Oral and Maxillofacial Surgery in Lublin. In group of these patients 37% was post operation of cleft lip and palate and 63% post cleft lip and alveolus operation. Age at the time of alveolar bone grafting range from 8 to 14 years. All patients underwent preoperative orthodontic treatment. Radiographs have been taken before and after surgery. **Results:** In all treated patients after surgery we observed: 1) uniting the cleft maxilla in one arch, 2) providing bone matrix for eruption of teeth and support for the permanent teeth after orthodontic treatment, 3) well-contoured alveolar process 3) oronasal fistula elimination. **Conclusion:** High success of secondary alveolar bone graft is one of the goals of cleft defect management-acceptable facial development. Patients who had undergone secondary grafting had more favorable nosomaxillary profile.

Keywords: Bone graft; Cleft; Surgery

TOPIC 3: HEAD AND NECK FUNCTIONAL MICROSURGERY

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PRIMARY INTRAOSSEOUS CARCINOMA ARISING FROM ODONTOGENIC CYST: THREE NEW CASES AND REVIEW OF THE LITERATURE

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Introduction: The Primary Intraosseous Carcinoma (PIOC) are a rare group of malignant tumours with a strict clinical and histopathological features. The different classification suggested for this tumours and the limited number of cases described in literature make difficult to know with accuracy how many published cases are real. **Methods:** We present three new cases of PIOC originated from a previous cystic lesions that were treated in our hospital. Two were located in the posterior region of the jaw, which is the most frequent place of appearance, and the third in upper maxilla. We explain the type of surgery made in each case and the functional and aesthetic reconstruction which are two microsurgical flaps of fibula and one with iliac crest bone graft, with posterior placing of implants. We discuss the classification, the clinical and radiological diagnosis, the treatment and the survival. **Results:** Histopathologically, we reported, in the three cases, a cystic cellular epithelial with Squamous Cell Carcinoma (SCC) affecting bone exclusively without connection to the oral mucosa neither the surrounding tissues as well as the absence of tumoral disease in any other area of the organism. One of the patient died because of an early cervical recurrence, while the other two are actually free of disease. We reported only one complication of the reconstructive surgery, and orosinus communication that required a second term surgery with a palatine fibromucous flap. **Conclusions:** Its very important the histopathological analysis of all cystic lesions in the jaw, because of the risk to coexist with carcinomatous cells. We also believe that the treatment of this tumours should be the practice of an aggressive surgery and, in some cases, associated with radiotherapy and/or chemotherapy after surgery.

Keywords: Primary intraosseous carcinoma; Odontogenic cyst; Odontogenic tumour

Abstr ID 55

422

MYCOTIC PSEUDO-ANEURYSM OF THE INTERNAL CAROTID ARTERY FOLLOWING NECK DISSECTION

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Aims: To describe a rare but life-threatening complication following a modified neck dissection and discuss the causes and the appropriate treatment. Case report, a 62 year man presented with a 5 × 3 cm SCC of the anterior mouths floor

(cT3N0M0). He underwent tracheostomy, anterior mouth floor resection, partial glossectomy and marginal mandibulectomy together with a bilateral type III modified radical neck dissection. The defect was reconstructed with a radial forearm free flap. The 7th post-op day the patient was taken back to the theatre because of a sudden bleeding from the left side of the neck. Surgical exploration revealed a tear of the external carotid artery, proximal to the anastomotic site. Redo of the arterial anastomosis and repair of the carotid wall were performed. The patient did well and the flap completely survived. Nevertheless, pseudomonas aeruginosa contamination of the tracheostoma was diagnosed few days later. The 20th post-op day a tender, pulsating mass developed on the right side of the neck. Angiographic study demonstrated a pseudo-aneurysm of the internal carotid artery (ICA). The patient was taken to the theatre and the aneurysm resected and repaired with an autologous saphenous vein graft. Specific antibiotic therapy was given for 6 months. **Results:** Histology confirmed Pseudomonas aeruginosa contamination of the carotid artery and surrounding fibrous tissue. One year after surgery the patient is free of disease and do not show any recurrence of the infection. Color-doppler ultrasound one demonstrate patency of the by-pass with a normal blood flow. **Conclusion:** Asymptomatic neck infection arising from a contaminated tracheostoma following a neck dissection can damage the ICA wall producing mycotic pseudoaneurysm. Immediate diagnosis and treatment by means of combined surgical resection and repair with autologous vein graft and prolonged antibiotic therapy are effective in controlling the risk of recurrence.

Keywords: Neck dissection; Pseudoaneurysm; Carotid artery

Abstr ID 159

423

SEGMENTAL MANDIBULECTOMY AND IMMEDIATE FREE FIBULA FLAP RECONSTRUCTION OF AN AMELOBLASTOMA IN THE MANDIBLE

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An ameloblastoma is usually a slow growing, locally invasive tumour of odontogenic origin. The ratio of ameloblastomas of the mandible to maxilla is 5 to 1. Men and Women are equally effected. Ameloblastomas may grow very large. Despite the rich literature on this tumour the method of treatment is still controversial and not well established. **Case report:** 39-year-old white woman who had a large recidive ameloblastoma in the right side of the mandible. The first operation was in 1987. After that the patient had the tumour for 17 years before seeking treatment. She presented with asymptomatic face, large swelling on the right side and malocclusion. Radiograph presentation was a huge intraosseus multilocular radiolucent - soap bubble - lesion with buccal and lingual cortical expansion missing premolar and molar teeth. The large ameloblastoma was removed with segmental

mandibulectomy and immediate fibula flap. The length of the mandibular defect was 12 cm. The skin was primarily closed. There was no reexploration or partial flap losses. Histology was follicular type of ameloblastoma. Selecting the surgical treatment of ameloblastoma we must consider some elements, the location of tumour, the patient's age and medical status, the size of the tumour and clinicopathologic variant. In the case the segmental mandibulectomy and immediate vascularized fibula flap reconstruction proved a good choice representing an ideal treatment method for large ameloblastoma in the lower jaw.

Keywords: Ameloblastoma; Segmental Mandibulectomy; Free Fibula Flap

Abstr ID 209

424

COMPOSITE MICROSURGICAL RADIAL FLAP IN MANDIBULAR RECONSTRUCTION AFTER MALIGNANT TUMOR RESECTION—CASE REPORT

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The aim of our paper is to present the composite osteo-cutaneous radial flap in the reconstruction of the mandible, after cancer resection. The patient, a 40 years old woman, first came in our service 6 years ago, presenting a stage II cancer of the cheeks mucosa. She has undergone surgery, consisting of large resection of the tumor and functional neck dissection. She has received also radiotherapy and chemotherapy to complete the surgical treatment. The evolution was very good until two years ago, when she presented in our department for the periodical check up. On this occasion we discovered a small ulcerative lesion at the level of the mandibular gum, on the same side with the primary malignant lesion. The biopsy revealed a squamous cell carcinoma, involving also the bone. We decided to perform surgery afterwards the patient being planned for radiation therapy. The patient did not receive the higher dose of radiation during the first session. We performed the large resection of the tumor, the defect consisting of gum and oral floor mucosa and a bone segment. Normally, considering the small size of the bone defect, a microsurgical reconstruction is not to be the elective option. In order to make possible the subsequent radiotherapy we decided to use a microsurgical flap for the reconstruction. The most appropriate one appeared to be the radial composite flap. The functional result was very good and the flap perfectly integrated. She had a good quality of life for two years after surgery. Unfortunately she died due to a brain metastasis. As a conclusion, in those cases of oral cancer, where subsequent radiotherapy is planned, the microsurgical reconstruction should be considered, especially due to the good vascularisation of the tissues and rapid healing of the wounds.

Keywords: Microsurgical flap; Composite radial flap; Subsequent radiotherapy; Good vascularisation; Rapid healing

Abstr ID 284

425

THE POSTEXPLOSIVE FACE AND JAWS DEFECT REPLACEMENT BY FIBULAR GRAFT—CASE REPORT

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We present male patient, 41 year old, with explosive injury of the face and jaws. At the admission of the patient it was diagnosed isolated explosive injury of the mid and lower third of the face with complete defect of the lower lip tissue, its angles, mental and submental spaces and mandible body. According to that it was presented tongue prolapse. We also diagnosed fracture of upper jaw—type Le Fort I with maxilla's separation and luxation of the upper jaw teeth. Lab finding showed posttraumatic anemia without hemorrhagic shock. Immediately after admission we made primary surgical treatment of the wound and preventive tracheostomy, by anemia correction. Plastic of the soft tissue defect performed two weeks later by peduncular pectoral myocutaneous flap. Replacement of the mandible defect with vascularized fibula followed ten months later. Angiography of lower extremity was made previously. Fibular graft was modeled by osteotomy on two places in approximate anatomical shape and fixed by mini-plates and wires for recipient region. At the same time it was made excision of pectoral flap's pedicle. We controlled function of swallowing and chewing. Doppler examined regular circulation through the anastomosis. Four years after fibular replacement of mandible defect, control scintigraphy showed full vitality of the graft.

Keywords: Mandible replacement; Fibular flap

Abstr ID 486

426

PATENCY ASSESSMENT OF THE INTERNAL JUGULAR VEIN AFTER NECK DISSECTION

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Radical neck dissection is frequently used to treat cervical lymph node metastasis. However, ligation of the internal jugular vein (IJV) during neck dissection can cause serious postoperative complications, such as facial edema, intracranial hypertension, and chemosis. Modified radical neck dissection (MRND) with preservation of the IJV has been recommended to reduce morbidity. Postoperatively, however, MRND may lead to occlusion of the IJV, and patency rates vary widely. The IJV often plays an important part in microvascular surgery during head and neck reconstruction. Our main objective was to define factors affecting the postoperative status of the IJV. Twenty-seven patients with oral malignant tumors who underwent neck dissection with preservation of the IJV were studied retrospectively to

evaluate patency of the IJV. Twenty-three patients underwent ablative surgery of the primary lesion with neck dissection and 4 underwent neck dissection alone. Three patients received simple closure and skin grafting of the primary lesion, and 20 received reconstruction surgery (4 platysma flaps, 3 radial forearm flaps, 3 lateral upper arm flaps, 2 pectoralis major myocutaneous flaps, and 8 rectus abdominis myocutaneous flaps). The maximum and minimum diameters of IJV as measured on computed tomographic scans were used to assess patency of the IJV. Patency was evaluated by calculating the cross-sectional area of the IJV and the ratio of the long axis to the short axis of the IJV (L/S ratio). The relation between the change in IJV status and the type of flap used for reconstruction was also examined. Occlusion of the IJV was present in 3.7% of the subjects, and "narrowing" was present in 63.6%. The size of the flap significantly correlated with "narrowing" of the IJV, suggesting that "narrowing" was caused mainly by compression due to the flap.

Keywords: Neck dissection; Internal jugular vein; Patency; Enhanced CT

Abstr ID 493

427

TOTAL GLOSSECTOMY RECONSTRUCTED WITH RECTUS ABDOMINIS FLAP AND DENTAL IMPLANTS

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Background: Total glossectomy causes an important aesthetic and functional defect. Deglutition, swallowing oral opening and speech articulation are diminished as a result of the mutilant defect. The rectus abdominis flap is a versatile flap in head and neck reconstruction because of its ease of harvest, reliability and long vascular pedicle. **Material and Methods:** we present a case of a 42 year old man who developed an squamous cell carcinoma of the dorsum of the tongue extended to the floor of the mouth. He underwent total glossectomy and was immediately reconstructed with a rectus abdominis flap. He received postoperative radiotherapy up to 50Gy. One year after the end of the radiotherapy 4 osseointegrated implants of 3.75×13 and 4×11.5 mm were placed in the symphysis region. After an osseointegration period of 6 months the patient was rehabilitated with an implant removable prosthesis. **Results:** The rectus abdominis flap reconstructed the tongue and the floor of the mouth. The dental implants had a correct primary stability and the radiotherapy did not have adverse effects in the osseointegration. After a follow up of 2 years no bone resorption or perimplantitis have been observed. **Conclusions:** The rectus abdominis flap is ideal for total glossectomy reconstruction due to its high quantity of soft tissue. The goal in total tongue reconstruction is to supply enough soft tissue height for an approximation of the neotongue to the palate. The dental implant improve the aesthetic and functional rehabilitation of the patients.

Abstr ID 494

428

UPPER LIP AND ORAL COMMISURE RECONSTRUCTION WITH A RADIAL FOREARM FLAP

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Background: The radial forearm flap is one of the most versatile flaps for head and neck reconstruction. Since it was described for intraoral reconstruction in 1983, it has been used for soft tissue reconstruction including tongue, palate, lips and oral mucosa. **Material and Methods:** We present a 45 year old woman with a left hemifacial congenital angioma affecting the cheek and the infraorbital region. She was treated with radiotherapy at the age of 16 after which she developed a necrotizing cellulitis and a left maxillar osteoradionecrosis. She underwent an hemimaxillectomy and was reconstructed with a cervicofacial flap. She developed an oronasal fistula and was treated with a temporalis muscle flap. She had an important retraction of the oral commisure treated with an Abbe labial flap that finally necrosed. As a consequence of the radiotherapy and the surgical procedures she had an important collapse of the left middle third specially in the cheek area and upper lip with incompetence and retraction of the oral commisure. After releasing the fibrosis and the retraction debridement she underwent facial reconstruction with a radial flap. We used a bilobed design to reconstruct the oral mucosa, the upper lip and the commisure. **Results:** The radial flap reconstructed the upper lip and the commisure without any signs of vascular compromise. The fibrosis and retraction were released, trismus was minimized and lip competence was achieved. Aesthetic result was good but a different color match skin was noticed. **Conclusions:** The radial flap is the main flap for extensive head and neck soft tissue reconstruction. Extensive facial defects involving the oral mucosa, upper lip, and oral commisure can be reconstructed using the radial flap with a bilobed design achieving excellent functional results.

Abstr ID 495

429

ODONTOGENIC MIXOMA: MANDIBULAR RECONSTRUCTION WITH ILIAC CREST FREE FLAP AND DENTAL IMPLANTS

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Background: The mixoma or odontogenic fibromixoma is a benign tumor that represents the 3–6% of the odontogenic tumors. It is usually located at the mandibular angle or in the parasymphysis area. It is usually asymptomatic but it can grow towards a convex mass in the intraoral soft tissue. **Material and Methods:** We present a case of a 38 year old woman with a mandibular mixoma located at the right

parasymphysis and the mandibular body. Asegmental mandibulectomy was performed from the mandibular midline until the right mandibular body. Immediate mandibular reconstruction was carried out with an iliac crest free flap. Osteotomies were performed in order to maintain the shape of the neomandible and 4 dental implants were placed of 3.75×13 mm were placed in the iliac bone. After a consolidation period of 4 months the prosthodontic rehabilitation was achieved with an implant fixed prosthesis. **Results:** The iliac crest free flap preserved the height and the thickness of the native mandible. Primary consolidation of the bone segments was achieved and the soft tissues healed without any dehiscence. Primary stability of the dental implants was constated and 1 year after the prothetic rehabilitation there arent any signs of bone resorption or perimplantitis. **Conclusions:** The mixoma is a benign neoplasm with a local invasive behaviour. Although some authors treat these tumors with conservative surgery the high incidence of local recurrence makes radical surgery and primary mandibular reconstruction the main goal in treating these tumors. The iliac crest free flap maintains the height and the width of the mandible and dental implants can be placed primarily in order to achieve a correct prosthodontic rehabilitation.

Abstr ID 497

430

RECONSTRUCTION OF MAXILLECTOMY AND MIDFACIAL DEFECTS

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Background: Maxillectomy defects become more complex when critical structures such as the orbit, globe and cranial base are resected resulting in both facial disfigurement and compromised oral function. Immediate reconstruction with local, regional and distant tissues becomes essential. **Material and Methods:** We present our midfacial defects classification and the different flaps used for their reconstruction. The vertical component of the defect divides in: Class 1: maxillectomy without oroantral fistula Class 2: low maxillectomy with oroantral fistula Class 3: high maxillectomy not including the orbital floor or rim Class 4: radical maxillectomy including the orbital floor or rim with or without exenteration with or without skull base resection. The horizontal component of the defect divides in: A) Unilateral alveolar maxilla and hard palate resected B) Bilateral alveolar maxilla and hard palate resected C) Removal of the entire alveolar maxilla and hard palate. **Results:** For class 1 defects we would either use local flaps such as buccinator flap or a fat pad flap or use regional flaps such as temporalis muscle flap. The oral rehabilitation can be achieved placing dental implants in the remanent maxilla or with a prosthesis with telescopic crowns if remanent teeth are available. For class 2 defects we would either use the temporalis flap or a free flap such as a fibula flap or an iliac crest flap. Dental implants can be placed immediately for a posterior prosthodontic rehabilitation. For class 3 and 4 defects preserving the globe we would use a fibula or an iliac crest flap with immediate dental implants and a rectus abdominis flap if exenteration is performed.

Conclusions: Midfacial resections create important defects that must be classified and individualized before selecting an adequate flap in order to achieve a correct aesthetic and functional rehabilitation of our patients.

Abstr ID 555

431

DESMOPLASTIC AMELOBLASTOMA OF THE MANDIBLE. SUBTOTAL RECONSTRUCTION WITH FIBULA FLAP: A CASE REPORT

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Desmoplastic ameloblastoma is an uncommon variant of ameloblastoma possessing particular anatomical, histological and radiographic features. Characterized by stromal desmoplasia, this tumor tends to be located in the anterior region of both the maxillary and the mandible. In radiological terms, it presents itself as a lesion with alternating radiolucent and radiopaque areas. The disease occurs in both sexes, normally around the age of forty. This presentation presents a case of desmoplastic ameloblastoma of the mandible in a male patient aged 72. The lesion was unusual with respect to the other desmoplastic lesions reported in the literature in terms of its contralateral extension, which was probably due to long growth, given the age of the patient. The large-scale surgical demolition carried out required subtotal reconstruction of the mandible by means of a microvascular portion of fibula. Preliminary study of the bone resection carried out by means of TC and stereolithographic model had indicated for a 20 cm stretch of fibula. The flap was osteotomized into 5 segments fixed with miniplates. In this case we have to consider the large end extended demolition and the possibility offered by this flap to give a quite normal form of the mandibular arch and a secondary prosthetic rehabilitation.

Keywords: Mandible desmoplastic ameloblastoma; Fibula free flap; Mandible reconstruction

Abstr ID 558

432

FACIAL MIDDLE THIRD RECONSTRUCTION WITH FIBULA FREE FLAP: OUR EXPERIENCE

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The reconstruction of maxillary defects after oncologic surgery always represents a problem of not easy resolution. The use of free flaps represents the best solution in the facial middle third reconstruction, with bone, skin and mucosa defects, in patients already treated with radiotherapy and in cases of a large cranial base communication. The objectives

for an adequate esthetic-functional reconstruction are: separation between oral cavity and nasal region, orbital cavity support, prosthetic-dental rehabilitation, facial soft tissue and profile projection. This reconstruction requires a good precision to obtain a valid middle third morphology, with a correct dento-skeletal relation between maxilla and mandible, so to achieve a normal and functional occlusion. In our experience, the fibula free flap is the first choice in the osseous reconstruction of orbital-maxillary region. The characteristics of this flap are well known. The flap can be osteotomized into many segments for his double vascularization so to reconstruct in three-dimensional way the orbital region, the zygomatic buttress and the alveolar ridge, so to permit a secondary application of fixtures for a complete prosthetic rehabilitation. The Authors present some cases treated with this modality. Particularly one was a case of a large demolition of orbit-ethmoid-sphenoid-maxillary region reconstructed with two flaps: rectus abdominis and fibula flap.

Keywords: Oncologic surgery; Middle third reconstruction; Fibula free flap

Abstr ID 559

433

SOFT TISSUE RECONSTRUCTION IN THE ORAL CAVITY: FREE THIGH FLAP VS. RADIAL FOREARM FLAP

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The minor resection of anterior and lateral oral floor and palatal-amigdaloglossos region and partial glossectomy were always treated with brilliant results with the radial forearm flap, a flap with good characteristics of versatility and adaptation. In the last few years, a new concept based on the utilization of septocutaneous artery, has given the possibility to use other types of flaps, like the antero-lateral thigh flap. This flap was first used in the penis reconstruction, then was adapted to the oncologic surgery of the oral cavity after minor resection. The Authors present their experience with the two types of reconstruction and try to make a comparison between their characteristics. There are common aspects, like harvest time, the possibility to be innervated and utilization with or without their fascia. The antero-lateral thigh flap presents a minor anatomic variability (only in 3% we can observe the absence of perforator vessels) and surely a minor morbidity of donor site, with direct closing surgery, without skin grafts, and without the sacrifice of an important artery, the radial artery, like in the radial forearm flap. We consider that, according to our experience, both in the reconstruction of high mobility districts of the oral cavity (soft palate, oral floor and tongue) both in the low mobility districts (hard palate, alveolar ridge, cheek), the use of the antero-lateral thigh flap represents a good alternative to the radial forearm flap.

Keywords: Oncologic surgery; Minor resection of oral cavity; Thigh flap and radial forearm flap

Abstr ID 652

434

POSTOPERATIVE MONITORING OF MICROVASCULAR FREE FLAPS WITH LICOX-TISSUE OXYGEN-MEASUREMENT AND POSITRON EMISSION TOMOGRAPHY

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Background: Aim of this study was to assess blood flow (BF) of microvascular free flaps studied with positron emission tomography (PET) and free flap oxygenation with LICOX catheter probe measurement system in patients with head and neck squamous cell cancer (HNSCC) undergoing major radical surgery 3–4 weeks after high dose radiotherapy. **Methods:** Three patients underwent resection of the HNSCC of the oral cavity followed by microvascular reconstruction with a radial forearm flap. Regional BF in oral and neck tissues was measured with PET using radiolabelled water ($[^{15}\text{O}]\text{H}_2\text{O}$) within two days following radical surgery. Patients were also continuously monitored for three postoperative days using LICOX-tissue oxygen measurement. **Results:** The blood flow of the entire flap could be assessed quantitatively with PET using radiolabelled water. The blood flow was compared to the muscle contralateral to the recipient site. A low flap-to-muscle BF ratio appeared to correlate with circulatory incongruity, and thus with poorer flap success. The tissue oxygenation-curve of the free flap gave continuous data of the free flap vitality during the three crucial postoperative days. **Conclusions:** This pilot study suggests that PET using $[^{15}\text{O}]\text{H}_2\text{O}$ is a feasible method to quantitatively evaluate BF of the whole free flap in patients operated on for oral HNSCC. Tissue oxygenation measurement using LICOX-instrumentation appears to be a feasible method for clinical use for continuous free flap monitoring.

Keywords: PET; Free flap; Blood flow; Postoperative; Head and neck cancer; LICOX

Abstr ID 767

435

PERFORATOR FLAPS FROM THE LATERAL LOWER LEG FOR DEFECT COVER IN MAXILLOFACIAL SURGERY

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According to anatomical investigations on 20 cadavers, a perforator flap from the lateral lower leg was developed for intra- and extraoral reconstruction and used in 18 patients so far. The 4–6 cm long pedicle mainly originates from the peroneal artery, having a diameter of 0.8–1.2 mm and can be identified 5–15 cm below the fibula head. In two cadavers and one clinical case, the perforator branched off from the tibial posterior (2) or popliteal artery. Selective dye injections have shown, that thin and pliable skin paddles of up to $8 \times 15\text{cm}$ can be raised on one single

perforator. For primary closure, flap width is limited to 6cm. Defect cover was performed at the floor of the mouth (7), soft palate (1), tongue (3), buccal mucosa (2), nose (2), and cheek (3). Anastomoses were performed to the lingual artery (intraoral defects) or facial artery (skin defects). Except for one case, the flaps healed without complications, and the functional results were satisfying. No defatting procedures were necessary. At the donor site, a linear scar resulted without functional impairments. The peroneal vessels were preserved during flap raising. Perforator flaps from the lateral lower leg may offer a wide indicational spectrum and have a minimal donor site morbidity. Despite the limited vessel diameter, safe anastomoses are possible with some microsurgical experience.

Keywords: Perforator flaps; Intraoral defect cover; Skin defects

Abstr ID 874

436

RECONSTRUCTION OF COMPLEX MAXILLOFACIAL DEFECT WITH THE FIBULA-PERONEUS LONGUS FREE FLAP: TWO CASES

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Aims: Wide defects of the head and neck often resulting in both esthetical and functional discomforts for the patients and can be a difficult challenge for the reconstructive surgeons. Various free flaps are described in the literature for the reconstruction of combined maxillofacial bony and soft tissue defects. Our purpose is to describe the reconstruction of two maxillofacial complex defects with a poorly described osteomuscular free flap: the fibula-peroneus longus flap. **Methods:** Two patients affected by an advanced SCC (T4) of the maxilla underwent tumor resection and primary reconstruction with the fibula-peroneus longus free flap. **Results:** The two patients treated have shown excellent results for functions and aesthetics. No complications occurred and the patients were discharged from the hospital in few weeks without any limitations. The postoperative CT3D scans showed in every case the correct orientation of the flap in the three-dimensional spatial position. **Conclusions:** In our experience weve found fibula's skin paddle not completely reliable. The fibula-peroneus longus free flap provides a large amount of soft tissue supplied by a constant feeder vessel and ensuring optimal reliability. Moreover his harvesting is easy and repeatable and this flap joints the qualities of bulk and flexibility in three-dimensional spatial positioning.

Keywords: Reconstructive Surgery; Maxillary Reconstruction

Abstr ID 218

437

AGGRESSIVE FIBROMATOSIS OF THE TONGUE. RECONSTRUCTION WITH A FREE FOREARM FLAP

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Aim: Aggressive fibromatosis (AF) is a rare proliferative lesion which infiltrates surrounding tissues. The lingual location has been previously reported by only a few authors. **Subject:** A 15-year-old man was reported to our Department with a lingual painless mass and a retracted and asymmetric tongue. A Magnetic Resonance (MR) was performed with the result of an area of fibrosis in the tongue and the right side of the floor of the mouth. A biopsy of the lesion was informed as suggestive of fibromatosis with muscular atrophy. It was practised a right hemiglossectomy with a partial resection of the floor of the mouth, and a left microvascularized free flap was obtained to reconstruct the lingual defect. The result of the histological study was fibromatosis with surgical margins. The patient remains asymptomatic with no recurrence nine months after the surgery. **Discussion:** AF consists in a proliferation of fibroblasts in a matrix of collagen, which is locally aggressive and does not metastasize. Its aetiology remains unknown. Microscopically, it is characterized by an infiltrating proliferation of mature spindle cells, with no atipia. No mitosis, atipia or metastasis was found in our case. In relation with the diagnosis, MR is very useful, although the biopsy is completely necessary to make a correct differential diagnosis (specially with low-grade fibrosarcoma). We do not think about radiotherapy or chemotherapy for the treatment of choice of this entity. The correct management is a complete surgical removal of the lesion with surgical margins. We made a resection of the right side of the tongue, and a reconstruction with a microvascularized free forearm flap. **Conclusion:** The prognosis of this entity depends on the initial adequate surgical resection. It is necessary a long-term follow up period to detect possible recurrences.

Keywords: Aggressive fibromatosis; Tongue free forearm flap

Abstr ID 263

438

CONTINUOUS REGIONAL TISSUE OXYGENATION ASSESSMENT IN FREE TISSUE MICROVASCULAR TRANSPLANTS

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Introduction: Early detection of vascular compromise within microvascular surgery is essential if reexploration is to prove successful. Tissue oxygen pressure is increasingly recognized to be a sensitive and reliable index of perfusion-dependent tissue oxygenation, and preliminary studies suggest that it may be of value in the assessment of free-flap viability. Therefore, we investigated the application of an implantable microcatheter oxygen sensor in the monitoring of microvascular transplants used in head and neck and studied the interrelation between hemodynamic

parameters and regional tissue oxygenation in the post-operative period. **Material and Methods:** In 14 patients with heterogeneous microvascular transplants, a flexible micro catheter oxygen tension probe (polarographic Clark-type cell O₂-sensor, Licox) was placed surgically into the deep muscle portion. Tissue oxygen pressure (ptiO₂) was recorded postoperatively (mean monitoring time: 2.8 ± 1.4 days). The data generated were correlated with changes in systemic hemodynamic parameters. **Results:** Continuous monitoring of tissue oxygen pressure in critical regions of the microvascular transplant was feasible in all patients. During reperfusion, termination of the operation and the early hours postoperatively the tissue oxygen pressure monitoring showed recurrent ischemic values, indicating insufficient tissue oxygenation. Results for clinical data have confirmed the efficacy of continuous tissue oxygen pressure measurements using this implantable microsensor as a method that provides an objective, recordable index of free-tissue transfer viability in a variety of circumstances and vascular events. Comparison of mean values and dynamic changes showed an association between mean arterial pressure and arterial oxygen pressure within the early postoperative course. **Conclusion:** Tissue oxygen pressure is a suitable index by which to evaluate tissue viability with the microprobe surgically placed in critical regions of revascularized free-tissue transplants.

Keywords: Microvascular transplants; Ischemia; Tissue oxygen pressure; Continuous monitoring

Abstr ID 498

439

TOTAL GLOSSECTOMY RECONSTRUCTION:PECTORALIS FLAP VS RECTUS ABDOMONIS FLAP

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Background: Squamous cell carcinoma of the tongue is one of the most frequent carcinoma of the head and neck region. In some cases total glossectomy is necessary to accomplish a wide resection of the tumor. Total glossectomy leads to functional and aesthetic defects such as difficulty in swallowing, deglutition and oral speech. Total glossectomy creates a mutilant defect that must be reconstructed primarily. **Material and Methods:** In order to achieve a tongue reconstruction we can either use the pectoralis major pedicled flap or a rectus abdominis free flap. The pectoralis major flap was first described by Ariyan for head and neck reconstruction. Since then, it has been used in different ways and we usually use it for tongue reconstruction in patients with poor health conditions in which microvascular free flaps are at risk. The rectus abdominis free flap was initially used by Pennington in head and neck reconstruction. It is commonly used for total glossectomy reconstruction due to its amount of soft tissue. We present our series using both the pectoralis major flap and the rectus abdominis flap for total glossectomy reconstruction showing and comparing the advantages,

disadvantages, indications and contraindications of both flaps. **Conclusions:** Total glossectomy requires immediate reconstruction. We can achieve that with the pectoralis flap or the rectus abdominis flap. The main goal is to supply sufficient soft tissue height for an approximation of the neotongue to the palate. The rectus abdominis provides more soft tissue height and length than the pectoralis flap and It also gives us the possibility of a two team approach. The pectoralis flap is a very reliable regional flap that does not require microvascular anastomoses but it has a limited mobility due to its arc of rotation. Therefore we use this flap for palliative surgery or for patients in which the health conditions contraindicates the use of free flaps.

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IMMUNOHISTOCHEMICAL EVALUATION OF TRIGEMINAL GANGLION IN REGIONAL ISCHEMIA

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Vascular diseases, mostly atherosclerosis, are affecting also carotid arteries. There is only some investigation on vascular related pathology in oro-maxillofacial region concerning oral mucosa and salivary glands, dento-alveolar atrophy. Ischemic neuropathies are well known, but we don't find publications on immunohistochemical changes in trigeminal ganglion after occlusion of carotid arteries. Aim of this study was immunohistochemical evaluation of trigeminal ganglion in rabbits after unilateral ligation of common carotid artery under general anesthesia. Euthanasia was done after 3 month by overdosage of barbiturates. Immunohistochemical investigations of both sides' trigeminal ganglions included staining with neuropeptides and neuronal structure qualitative markers. Results showed decrease of ganglionic cells, vacuolization and unhomogeneously spread rET, and relative increase of nerve fibres in trigeminal ganglion of side with previously ligated carotid artery. Sclerotic blood vessels were detected in both sides' ganglions. Neurofilaments and myelin were seen in both ganglions, however myelin marked fibres seemed to be lesser in ganglion of unligated artery side. GFAP was observed in neuronal structures from both sides with dominance in ganglion of previously unligated artery. Interestingly, substance P was not seen in any of ganglionic structures from both sides. In conclusion, it seems that carotid artery ligation raises degradation in the ligated side ganglion trigeminale, but compensatory qualitative neuronal changes in ganglion of opposite side, where carotid artery was not occluded. Absence of tachykinins in both sides' ganglions may also relate to the response of neuronal structures to the disordered blood supply. In such a way, immunohistochemical picture of trigeminal ganglion after regional ischemic have new data on pathogenesis of trigeminal neuropathies.

Keywords: Trigeminal ganglion; Carotid artery; Ischemia; Structure; Morphopathogenesis

TISSUE OXYGEN PRESSURE AND HIGH-ENERGY PHOSPHATE METABOLISM IN THE PEDICLED LATISSIMUS DORSI MUSCLE

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Introduction: Recent studies have shown a relation between recovery failure of microvascular transplants and cellular changes that are noted with ischemia and reperfusion, such as energy store depletion and intracellular acidosis. The aim of the study was to evaluate the relationship between tissue energy metabolism and tissue oxygen pressure in the mobilized latissimus dorsi muscle. **Material and Methods:** Graded hypoxia was achieved in a New Zealand rabbit model ($n=10$, 2.5 ± 0.5 kg) by a stepwise reduction of the fraction of inspired oxygen (FiO_2) from 0.3 to 0.05. Recovery and reoxygenation were achieved using FiO_2 of 0.3. After placing a flexible micro catheter oxygen tension probe (polarographic Clark-type cell O_2 -sensor, Licox) into the muscle, baseline data were obtained after an equilibration period of 40 minutes. The status of phosphorylated muscle energy metabolites was measured at 1 min intervals using a high-field ^{31}P -NMR spectrometer (4.7T, Bruker). Linear correlation was performed between ^{31}P -NMR data and tissue oxygen pressure readings. **Results:** The tissue oxygen pressure (pO_2) values correlated significantly with phosphocreatine/inorganic phosphate ratio (PCr/Pi) ($r=0.71$, $P<0.01$) and beta-adenosin triphosphate/inorganic phosphates ratio (beta-ATP/Pi) ($r=0.77$, $P<0.01$). **Conclusion:** On the basis of these findings, we conclude that tissue oxygen pressure data appears to provide a real time minimally invasive estimate of delivery-dependend muscle oxidative metabolism. Combined perfusion and tissue oxygen pressure measurements may allow extended studies related to ischemia and reperfusion deterioration in microvascular transplant surgery.

Keywords: Tissue oxygen pressure; High-energy phosphates; Hypoxia-reoxygenation; Latissimus dorsi muscle

SEGMENTAL RECONSTRUCTION OF THE MANDIBULAR ARCH WITH FREE FIBULA FLAP

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Poster Aims: Mandibular reconstruction has been historically one of the most difficult problems faced by the reconstructive or maxillofacial surgeon. Historically, a wide variety of techniques has been used. The aim of this study is to evaluate the experience in mandibular reconstruction in patients who underwent mandibulectomy for oncologic reason (squamous cell carcinoma, ameloblastoma, keratocyst) and reconstructed with free fibula flap. **Methods:** Patients records, clinical, functional and aesthetic outcome of patients who underwent mandibulectomy and reconstructed with free fibula flap were analysed. **Results:** Between 1996 and 2003, 40 patients were reconstructed primary or secondary after mandibulectomy. All the patient received a free microsurgical graft (free fibula flap). The most common underlying disease was squamous cell carcinoma. Complete flap survival was 90 percent (36 of 40 flaps). Complete loss was seen in one case. Minor postoperative complications were observed in 7 patients. **Conclusions:** Repair of long-span mandibular defects with a free fibular flap is now a routine procedure. The safety and versatility of the osteocutaneous free fibula flap provides an accurate reconstruction after mandibular resection, the advantages are: vascular supply, postoperative radiotherapy tolerance and dental osseointegrated implants that achieved an excellent appearance and masticatory function. This technique is particularly well-suited for defects of the anterior mandibular arch.

Keywords: Segmental defects; Mandibular reconstruction; Free fibula flap

TOPIC 4: SURGERY OF THE AERODIGESTIVE TRACK CANCER BETWEEN CHEMOTHERAPY AND IRRADIATION

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CARCINOMAS OF MANDIBLE GUM ABOUT 34 CASES

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Summary: Carcinomas of mandible gum are little frequent in the western countries. They represent 3.4% of the higher aero digestive tract and 10% of the oral cavity neoplasm. **Materials:** We studied retrospectively 34 cases of carcinomas mandible gum in the department of maxillo-facial surgery of SFAX lasting a period of 6 years since 1996 to 2001. 4/5 of patients were men and 55.9% had an age superior to 70 years. The local irritation of the gum by the tobacco sham (Neffa), associated to a bad oral and dental hygiene seems to be a major factor predisposing in the genesis of these cancers. At the time of the diagnosis, stadium evolutionary of tumour was very advanced: in 97%, tumours are sequenced T4 with a constant extension to the anatomical structures of neighbourhood (bone, soft parts perish-mandible). The only lymph node invasion has been noted in 64.7% of patients (N0: 35.3%, N1: 26.5%, N2: 38.2%). **Methods:** The proposed therapeutic protocol essentially based itself on the surgery-radiotherapy association. A concomitant chemo-radiotherapy has been used for 2 patients; The tumour's surgery done was large interesting the bone and the soft parts in nearly 100% of cases. The soft part repair has been achieved by a latissimus dorsi flap (8cas), a pectoralis major flap (15cas), a naso-genial flap (2cas). A free fibula flap permitted the differed bony repair in 2cas. The post operative radiotherapy has been delivered to curative dose on tumour and lymph node areas. **Results:** The middle receding was of 31 months with extremes of 18 to 72 months. The rate of survival is 90% to one year, 68% to 3 years. We don't incline a survival to 5 years for lack of receding of our patients. The functional result outside of a bone mandible repair is very insufficient notably for the previous localizations. **Objectives:** Authors put the accent through this work on difficulties of control local of extending tumours as well as the necessity of a multi-tissue repair after surgery: only guarantor of an adequate functional rehabilitation, social and professional integration of the patient.

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EVIDENCE BASED TREATMENT OF ORAL CANCER

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The Finnish Medical Society Duodecim and the Finnish Dental Society Apolloniás initiated their first mutual Evidence Based Treatment-project on Oral Cancer, published in Finnish 12/2002 (project team: Malmström, Grenman, Mäkelä, Nordblad, Ojala, Suominen, Syrjänen, Söderholm). **Aims:** To evaluate if treatment protocols commonly used are evidence based (scientifically proved) or based on clinical experiences (follow-up studies). Are

they effective in view of prognosis, function, complication rate and quality of life? **Methods:** Review of scientific literature. Outline of the project: To evaluate the treatment of squamous cell carcinoma of the oral cavity and lips, with emphasize on prevention, early detection, diagnosis, oral treatment, essentials of surgical and oncologic treatment, reconstruction of the masticary apparatus, function, complications, rehabilitation and quality of life (QOL). Results Essential messages: (a) Oral cancer give sparse symptoms in the early stage and metastasize early. (b) So far prevention and early diagnosis are the only tools to improve prognosis (c) important risk factors are tobacco and alcohol abuse, mucosal lesions with increased oral cancer risk, UV-light (lips) and HPV (d) All oral and dental infections should be eliminated before cancer treatment. Further conclusions: (a) No evidence of elimination of oral cancer risks by any available treatment of leukoplakia (b) Both oral and dermal lichen planus indicates increased oral cancer risk (c) The prerequisites for reconstruction of the masticary apparatus should be noticed in selection of bone transplant (e) Radiation is not an obstacle for dental implant treatment (f) The patients have frequently oral and general disabilities due to the disease and treatment performed, often insufficiently documented, evaluated and studied although they have a clear impact on prognosis and on QOL (g) QOL seems to reach pretreatment levels in 1–3 years. Validated tools for evaluation are available.

Abstr ID 165

444

POSTOPERATIVE COMPLICATIONS IN SQUAMOUS CELL ORAL AND OROPHARYNGEAL CARCINOMA AFTER RADIOTHERAPY

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Aim: The radical radiotherapy is the first way of treatment in over half the patients with oral and oropharynx cancer. Part of them was exposed in various terms after irradiation by operations because of a residual tumor or relapse. This retrospective study was undertaken for an estimation of frequency and weight of postoperative complications at such patients. **Materials and Methods:** In the period 1980–2003 were operated 171 patients at the Department of the Upper Aero-Digestive Tract Tumors of the Russian Cancer Center of RAMS for relapse or residual cancer of the mouth and oropharynx in age from 22 to 80 years. We made these operations in various terms after an irradiation 1 to 60 months. The dose of radiation was 50 upto 120 Gy. At the majority of the patients, the operations were executed within of 2–3 anatomic areas (66%), at 65% simultaneously with neck dissection. The plastic replacement of defects with the various flaps is carried out at 118 of 171 patients. **Results:** Major complications were associated with local morbidity in 44% of patients including 53 patients with wound necrosis. Thirty-two patients (18%) had oral cavity fistula, which was closed by conservative treatment at 13 patients, and in 19 cases the additional plastic operation was required. Arrosion bleeding took place in 2 patients, without fatal outcome. The commonest complications were seen in 10 patients and two of them have died. **Conclusions:** The frequency of local postoperative complications is high at the patients who have

undergone to radical radiotherapy. It worsens functional results of operation, represents essential threat to life of the patient, considerably extends terms of stay of the patients in hospital and increases in cost of treatment.

Keywords: Salvage surgery; Oral cancer

Abstr ID 440

445

A MANDIBULECTOMY, AIDED BY OXYGEN PARTIAL PRESSURE(PO₂) MEASUREMENT, IN A CASE OF OSTEORADIONECROSIS. A CASE REPORT

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Osteoradionecrosis still represents a challenge, in terms of therapy, for oral and maxillofacial surgeons. Until now the extension of bone resection was determined by X-rays and intraoperatively by the amount of visible bleeding. This is rather inexact, because this is merely a qualitative criterion, not a quantitative one. Therefore it seems desirable to have an apparatus as an aid with clear limit values, in order to keep the extent of the resection as small as possible. The PO₂ measurement with the Eppendorf fine needle probe represents such a possibility. It allows the existent oxygen supply in the tissue to be estimated. The aim of this case presentation is to show the suitability of this method, under the conditions of bone surgery, for giving the precise limits of the area to remove in the case of osteoradionecrosis. In the case of a 57-year-old female patient, extensive osteoradionecrosis, with a spontaneous fracture, had developed in the left mandible, following adjuvant radiochemotherapy with a total dose of up to 70 Gy, due to a histologically confirmed ductal adenocarcinoma of the left parotid gland, in addition to a radical parotidectomy. A continuity resection of the mandible was essential. During the operation the borders of the area for removal in the mandible were determined by the previously described PO₂ measurement using the Eppendorf PO₂ histograph on the mandible. Taking the ascertained normal values as a basis the resection was performed with maintenance of jaw continuity. The crater which had developed was bridged over with a titanium reconstruction plate. In the presented case the described PO₂ measurement of the bone with the Eppendorf PO₂ histograph shows its suitability in principle as an objective diagnostic adjuvant in oral and maxillofacial surgery by limiting the extension of resection and allows to maintain bone continuity.

Keywords: Osteoradionecrosis; Mandible; Oxygen partial pressure

Abstr ID 377

446

THE CHALLENGE OF BONE AND SOFT TISSUE RADIONECROSIS TREATMENT

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Objectives: Radiotherapy is an effective tool in controlling head and neck cancers. However irradiation may cause hypoxia, hypovascularity and hypocellularity which leads to tissue breakdown and a chronic nonhealing wound. Osteoradionecrosis of the maxillar bone and necrosis of soft tissues are one of the most serious complications of radiotherapy. The aim of this study is to analyze the treatment results of a systematic approach to osteoradionecrosis. **Material and Methods:** Three patients with mandibular and skin radionecrosis were treated using a systematic approach that combined antibiotic therapy, pentoxifylline, hiperbaric oxygen therapy (HBO), sequestrectomy and reconstructive surgery. **Results:** The three patients received antibiotic therapy and pentoxifylline 400 mgr. every 8 hours during 1 months and hiperbaric oxygen therapy was administered in one patient during 10 sessions before and after surgery and were well tolerated. In radiography control after limited sequestrectomy in two cases the osteoradionecrosis persisted, then radical sequestrectomy was carried out and the overlying soft tissue was radically removed. In these patients a pectoral flap and microvascular free flap were crucial to reconstruction the whole defect. **Conclusions:** Surgery still plays a major role in controlling osteoradionecrosis, while pentoxifylline and hiperbaric oxygen therapy are adjuvant managements. Newer reconstruction methods including microvascular free tissue transfer or plates with flap coverage.

Keywords: Osteoradionecrosis; Soft tissues; Pentoxifylline; Hiperbaric oxygen therapy; Surgery

Abstr ID 429

447

SPONTANEOUS OSTEONECROSIS OF THE JAWS IN CANCER PATIENTS

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Introduction: There have been recent reports of spontaneous necrosis of the jaws in patients who had undergone systemic treatment for cancer. **Patients and Methods:** We present two more cases of spontaneous necrosis of the jaws. **Case 1:** A 82 year old woman presented with a one year history of multiple myeloma treated with Melfalan, steroids and zoledronate. She was referred to us with pain and swelling in the symphysis region of the mandible. On examination, the patient was edentulous and presented a 2 × 1 ulceration with exposure of the underlying bone in the mandibular symphysis. The lesion healed after surgical curettage under local anesthesia. **Case 2:** A 70 year old man with a five year history of multiple myeloma, treated with chemotherapy (VAD) and Pamidronate, was referred to us for evaluation of gingival lesions. He had been suffering from pain in both sides of the mandible, and presented with ulceration of the gingival mucosa in both mandibular bodies. On examination, two 2 × 1 ulcerations were noted on both sides of the mandible. Panoramic radiograph revealed two bony sequestrs of the alveolar bone in both sides of the mandible. One side healed spontaneously, whereas the other was curetted. Pathological examination revealed necrotic bone with Actinomyces. **Discussion:** Osteonecrosis arising from systemic cancer

therapy either with or without steroids is rare, with under 50 cases reported in the literature. It has been associated with Docetaxel (Taxotere), Paclitaxel (Taxol), Steroids, and lately the discussed association with biphosphonate treatment.

Abstr ID 359

448

SENTINEL NODE BIOPSY AS STAGING METHOD IN HEAD AND NECK CANCER – ANALYSIS OF 70 PATIENTS

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Background: The excision of sentinel lymph nodes has a growing relevance in the diagnostics of oral and oropharyngeal cancer in case of N0 necks. The validity of sentinel node biopsy was examined as single surgical staging tool. **Patients and Methods:** Within the framework of a multi-modality treatment scheme (neoadjuvant intra-arterial chemotherapy, surgery, adjuvant chemoradiation), sentinel node biopsy without elective neck dissection was carried out in 70 previously untreated patients in the same session as the surgery of the primary. Twenty of these patients received no intra-arterial chemotherapy because of vascular disease, 50 patients did. Control of accuracy took place by observation of manifestation of neck node metastases. Adjuvant radiation was executed in case of pT3-4 tumors and positive neck lymph nodes. **Results:** 94% of sentinel nodes could be excised; nine patients (13%) had positive nodes and were treated with a therapeutic neck dissection. There was no statistically significant difference between the patients with or without neoadjuvant intra-arterial chemotherapy concerning sentinel node biopsy. There were 2 neck node metastases in the context of second primaries, the other patients remained regionally un conspicuous (median observation time: 25 months). **Conclusion:** Concerning N0 necks and T1-3 tumors, sentinel node biopsy could prove oneself a valid method. It could be integrated well into a multi-modality treatment scheme.

Keywords: Sentinel lymph node biopsy; Mouth neoplasms; Head and neck neoplasms; Multimodality treatment

Abstr ID 796

449

SENTINEL LYMPH NODE IN PATIENTS WITH ORAL CAVITY AND OROPHARYNGEAL CARCINOMA; FIRST EXPERIENCE WITH FROZEN SECTION

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Aims: Accuracy and usefulness of the sentinel node examination with frozen section in oral cavity and

oropharyngeal cancer compared to pathological lymph node stage in neck dissection specimen. **Study Design:** We included all patients with histological confirmed primary squamous cell carcinoma of the oral cavity and oropharynx with stage of the disease T1-3 N0. The N stage was determined using ultrasound, while T stage was determined with endoscopy. The day before surgery dynamic and static lymphoscintigraphy with radionuclide (Nanocol) was performed and sentinel node was marked on the skin. During the surgery subplatysmal flap was elevated and methilen blue marker was injected in peritumor area. Sentinel lymph node was then identified using gamma probe (Neoprobe 2000). Colorized lymph nodes were also removed. The removed lymph nodes were designated as cold/hot and blue. The removed lymph nodes were sent to the frozen section and later permanent serial sections with 150 microns slices. Every second slice was stained with immunohistological marker for cytokeratin. Comprehensive neck dissection was completed and all lymph nodes were examined. **Results:** In 13 patients treated according this protocol we found out that negative sentinel node correlates with negative pathological stage of the neck lymph nodes. In more than 40% we found more than one sentinel lymph node. Two sentinel lymph nodes that were identified with gamma probe haven't colorized with methilen blue. However the identification of sentinel lymph node with Methuen blue is easier and not as time consuming as lymphocytigraphy. **Conclusion:** First experience with sentinel lymph node and frozen section examination is useful. Follow up of the patients will also show the accuracy of the sentinel node for the contralateral side of the neck. More patients is needed to determine the long term usefulness of this method. We will reevaluate the patients after minimal two years follow up for regional disease with primary tumor controlled.

Abstr ID 183

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SENTINEL BIOPSY IN ORAL CANCER: PRELIMINARY RESULTS OF A PILOT STUDY

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Problem: Sentinel lymph node biopsy (SNB) is a diagnostic procedure, which allows to detect the first lymph node draining a tumor (sentinel lymph node, SLN). The methodology has been proven clinically for malignant melanoma and for breast cancer. Meanwhile, there are also first experiences for SCC of head and neck tumors. Here we present the preliminary results of a pilot study on the value of SNB in small squamous cell carcinomas of the lips and the oral cavity. **Patients and Methods:** 28 patients with tumors of the oral cavity and the lips were enrolled up to now. The main inclusion criteria were: strictly cN0 stage, tumor accessible for complete peritumoral injection, tumor size T1–T2, in the lip and the upper jaw region also T3. Lymphscintigraphy was performed preoperatively with a radiotracer (Nanokoll). The SLN were searched by means of a hand-held gamma probe. All lymph nodes with high activity were considered and examined as SLN. Patients

with positive SLN underwent MRND and/or radiation. Patients with SLN free of disease were monitored every month by clinical examination and ultrasound. **Results:** In every of the patients, a minimum of one SLN was detected, average 1.6 SLN. In five cases, pathohistological examination led to an up-staging with consecutive treatment of the neck (MRND and/or radiation). Up to now, no false negative result (concerning SNB in the meaning of lymph node metastases) has been observed (mean time of observation: 13 months), however, one local recurrence. 9 patients are more than two years under observation and local and regional free of disease. **Discussion:** Sentinel biopsy may detect lymph drainage pattern in the individual case and contributes to more targeted lymph node dissection strategies. However, randomized trials are needed to determine the value of the method for intraoral cancer.

Keywords: Oral cancer; Sentinel biopsy

Abstr ID 448

451

SENTINEL LYMPH NODE BIOPSY IN INTRAORAL CANCER-PRELIMINARY REPORT

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Aim: Evaluation of the cervical lymph node status in intraoral cancer patients is major diagnostic challenge. The aim of this study was to evaluate sentinel lymph node (SLN) biopsy as a diagnostic method and to compare it with ultrasound guided needle aspiration and histopathology of the neck dissection. **Subject and Methods:** Inclusion criteria were T1, T2 or T3 intraoral or oropharyngeal cancer with N0 clinically staged neck. We performed lymphoscintigraphy, ultrasound guided needle aspiration, imprint cytology and histopathology of the neck dissection. This study is a preliminary report of 50 patients study taking place in our department. **Results:** Fifteen patients were included in this study. Preoperative scintigraphy detected sentinel lymph nodes in 14 patients (93%). 5 patients had positive SLN biopsy. In 2 patients positive SLN was the only positive node in dissection. 1 patient (7%) had negative SLN but histopathology of the neck dissection was positive. **Conclusion:** Up to now it is hard to make conclusions from such a small sample. We can say that further investigation should be made to make sure whether to use or not SLN biopsy as a method for preoperative staging of the neck in intraoral cancer patients.

Keywords: Sentinel; Dissection; Intraoral cancer

Abstr ID 283

452

THE VALUE OF IDENTIFICATION SENTINEL NODE BY DYED METHOD IN ORAL SQUAMOUS CELL CARCINOMA

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Two methods are used for identification sentinel lymph nodes (SLN) - radiolebeled and coloured. Both of these methods are acceptable as a staging method in oral squamous cell carcinoma. The objective of this study was to evaluate the feasibility of the sentinel lymph node biopsy by using Patent blue dye lymphatic mapping technique in patients with squamous cell carcinoma of the oral cavity.

Material and Methods: The study was performed in 30 patients. Each patient underwent sentinel node biopsy guided by intraoperative injection of Patent blue dye. After sentinel node biopsy followed neck dissection. Extirpated sentinel lymph nodes were sent to frozen section biopsy. Results emphasize high percent of sensitivity of the procedure. We harvested sentinel nodes in all 30 patients. The level I was the most frequent localization of SLN (46%), then level II (38%) and III (14%). Sentinel lymph nodes identified in patient with floor of mouth carcinoma were localized at I level predominately, but with tongue carcinoma at level II. Only one nonSLN was positive. Consequently, the sensitivity was 94.1%. **Conclusion:** Sentinel lymph node can be identified in high percent. We suggested to use enough quantity of dye to color to more lymph nodes.

Keywords: Oral carcinoma; Sentinel lymph node; No neck

Abstr ID 360

453

CISPLATIN TUMOR CONCENTRATIONS AFTER INTRA-ARTERIAL CISPLATIN INFUSION OR EMBOLIZATION IN PATIENTS WITH ORAL CANCER

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Background: One neoadjuvant course of intra-arterial high dose cisplatin (cis-diamminedichloroplatinum, CDDP) tumor perfusion combined with intravenous sodium thiosulfate (STS, cisplatin neutralizer) infusion is part of a multi-modality concept for treatment of oral cancer. Recently, crystalline cisplatin embolization has been described as novel treatment variant with increased tumor response rates. **Methods:** We have compared tumor and plasma concentrations of cisplatin and STS by means of microdialysis in 10 and 6 patients with oral cancer treated either with IA cisplatin perfusion (150 mg/m² in 500 ml 0.9% NaCl) or crystalline cisplatin embolization (150 mg/m² in 45–60 ml 0.9% NaCl), respectively. The microdialysis catheter was placed into the tumor, the intra-arterial catheter into the tumor-feeding artery. Cisplatin was rapidly administered through the IA catheter and STS (9 g/m²) was infused intravenously to reduce the systemic toxicity of cisplatin. STS infusion was started 10 sec after starting the cisplatin infusion. **Results:** Following embolization, cisplatin tumor-Cmax and tumor-AUCs were about 5 times higher than those achieved after IA perfusion (Cmax: 180.3 ± 62.3 µM versus 37.6 ± 8.9 µM) whereas the opposite was true for plasma concentrations (Cmax: 0.9 ± 0.2 µM versus 4.7 ± 0.6 µM). STS plasma levels were

about three times higher than its tumor concentrations (C_{max} tumor $1685 \pm 151 \mu\text{M}$; C_{max} plasma $5051 \pm 381 \mu\text{M}$). Following the standard IA perfusion average STS/CDDP AUC ratios for tumor and plasma were 211 ± 75 and 984 ± 139 , respectively. Following cisplatin embolization the respective ratios were 48.5 ± 29.5 and 42966 ± 26728 . **Conclusion:** Molar STS/CDDP ratios of > 500 are required outside the tumor to neutralize cisplatin whereas tumor ratios should be < 100 to avoid a loss of tumor cell killing. The first goal is achieved with both treatment modalities, the second only with cisplatin embolization suggesting that crystalline cisplatin embolization is superior to IA cisplatin perfusion in terms of tumor cisplatin concentrations.

Keywords: Cisplatin; Oral cancer; Microdialysis; Intra-arterial infusion; Embolization

Abstr ID 246

454

FLUORESCENCE DIAGNOSIS OF THE ORAL 5-AMINOLEVULINIC ACID

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Aims: Topical application of 5-aminolevulinic acid results in fluorescence aided staining of oral mucosal pathologies. We want to demonstrate the practicability and diagnostic value of fluorescence diagnosis in patients with suspected, confirmed or the history of oral squamous cell carcinoma (OSCC). **Study Design:** 18 patients were included in this study. 9 patients with the history of oral squamous cell carcinoma (OSCC), including 1 patients who have received the diagnosis of oral lichen planus as well, were examined during follow-up (group 1). 4 patients with suspected OSCC were included (group 2). In 3 patients with histologically confirmed OSCC the margins of the primary tumor resection were controlled by ALA-endoscopy (group 3). 1 patient with oral leucoplakia and 1 patient with carcinoma of unknown primary disease underwent ALA-endoscopy as well. **Results:** In group 1 11 biopsies were taken in 5 patients, leading to the diagnosis of OSCC in one specimen. In group 2 13 biopsies were performed containing malignant tumor cells in 9. Specimen margins were histologically free of tumor in all 3 patients of group 3. In case of the patient with known oral leucoplakia the histological examination of tissue with fluorescence staining revealed leucoplakia with acute and chronic inflammation. The oral mucosa of the patient suffering from a carcinoma of unknown primary disease showed no suspicious staining. **Conclusion:** Fluorescence diagnosis of the oral cavity can be included at several stages in the diagnostic schedule of tumor patients. First of all, the biopsy of suspicious areas can be easily combined with fluorescence diagnosis of the entire oral cavity. Furthermore, the resection margins during tumor removal can be controlled by 5-ALA staining. During follow-up fluorescence imaging of the oral mucosa can regularly be performed.

Keywords: Fluorescence diagnosis; 5-aminolevulinic acid; Oral squamous cell carcinoma

Abstr ID 772

455

EFFECTS OF ARTEMISININ ON SQUAMOUS CELL CARCINOMA

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Artemisinin (AR), a sesquiterpene lactone isolated from the plant *Artemisia Annua* L, is a widely used for antimalarial drug. It is presently used in various countries as an antimalarial drug and has a potent effect on chloroquine-resistant malarial parasites. Recently cancer cell cytotoxicity of AR was reported, for a number of *in vitro* cancer models such as lymphoma and breast cancer cells. The purpose of this study is to evaluate the potential effects of AR on squamous cell carcinoma. A squamous cell carcinoma cell line HSC3 was used for this study. These cells were treated by dihydroartemisinin with concentrations ranging between 50 and 400 μM over multiple time periods, ranging from 6 to 96 hours. And the expression of Bcl2, p53, Bax, CD40 and CD40L were analyzed immunohistochemically. In addition, cell apoptosis was evaluated using TUNEL (TdT-mediated dUTP-biotin nick end labeling) method. The data of cell counting showed that the cytotoxic effects of AR was depending on time and dose. The immunohistochemical results demonstrated the strong positive results with Bax, p53, CD40 and CD40L in AR treated cells and negative results with Bcl2. Control cells without AR treatment exhibited slight positive with Bax, p53, CD40, CD40L and Bcl2. And the results of TUNEL showed that the rate of strongly positive cells treated with AR was over 80%. These results suggest that AR can lead HSC3 cells to apoptosis and AR may be useful as an alternative treatment for squamous cell carcinoma.

Keywords: Squamous cell carcinoma; Chemotherapy artemisinin

Abstr ID 522

456

RESULTS OF NEOADJUVANT BVM CHEMOTHERAPY + CULEVIT TABLETS FOR TREATMENT OF ORO-PHARYNGEAL CANCER

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Aim: It was previously demonstrated that 16 substances (amino acids, monosaccharides, nucleobases, etc.) of the circulatory system acting synergistically had a cytotoxic effect (inducing apoptosis) *in vitro* and *in vivo* on different tumor cell lines, but not on normal cells *in vitro* and on animals. The aim of this study was to investigate the adjuvant effect of Culevit tablets (a Hungarian food supplement) containing the above substances on the efficacy of neoadjuvant chemotherapy for oro-pharyngeal

squamous-cell cancer. **Methods:** From January 1999 we used for therapy a combination of BVM (Bleomycine-Vincristine-Methotrexate) chemotherapy + Culevit tablets (12–14 tablets per day) (BVM+ group) and BVM chemotherapy (BVM group) in randomised form. We compared the first 30 BVM+ patients to 20 BVM patients. There was no difference in T stage between the two groups before treatments. The mean T was 2.63 in the BVM+ group and 2.65 in the BVM group. The rest tumors were investigated histologically in the surgical specimens. The tumor-free survival was observed clinically in a 24 months period. **Results:** The histological results were significantly better in the BVM+ group as 23% of rest primary tumor was absent, while in the BVM group this was only 10%. The side effect was minimal in both groups. In the 24 months follow-up time, the rate of the tumor-free survival was higher in the BVM+ group (77%) than in the BVM group (55%). **Conclusions:** Based on the better histological result and higher tumor-free survival rate in the BVM+ group, we recommend the adjuvant use of Culevit tablets in BVM chemotherapy of oro-pharyngeal squamous-cell cancer to increase further the efficacy of treatment in preventing the recidivism.

Keywords: Culevit; Food supplement; Chemotherapy; Neoadjuvant chemotherapy; Squamous cell cancer

Abstr ID 303

457

CANDIDA-ASSOCIATED DENTURE STOMATITIS AND CANCER

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Aim: We investigated the frequency with which *Candida* species were isolated from both the oral mucosa and denture acrylic surface of patients with clinical denture stomatitis and cancer in the orofacial region. **Materials and Methods:** Smears from lesions of the oral mucosa and the contiguous denture surface were taken with cotton wool swabs and inoculated immediately onto Sabouraud glucose agar and CHROMagar *Candida*. After incubation, the germ tube, filamentous, and assimilation tests were done employing a commercial kit AuxaColor to identify individual yeast species. The study was carried out on 108 female and 132 male patients 54–79 years old with cancer and symptoms of denture stomatitis. Of the total number of 240 patients with partial or total dentures examined, *Candida*-associated denture stomatitis was proved in 171 individuals. **Results:** The swabs from the oral cavity lesions and denture surfaces allowed us to identify 7 *Candida* species. *C. albicans* was the yeast with the highest prevalence as it was detected in 95 cases of our patients. It was isolated from swabs of both oral mucosa and dentures in 75 cases and only from dentures in 20 cases. *C. tropicalis* was identified in 26 patients, *C. parapsilosis* in 20 patients, *C. krusei* in 14 patients, *C. guilliermondii* in 12 patients. *C. lusitanae* and *C. freyschussii* were isolated only from elderly patients with total dentures with oral cavity squamous cell carcinoma. **Conclusion:** Irradiation and radiochemotherapy of patients with head and neck tumors support the development of *Candida* stomatitis in up to 40% of these patients. However, the ordinarily innocuous

yeast infection can progress to a fulminating, disseminated, life-threatening disease, particularly in elderly persons with serious primary diseases such as cancer.

Keywords: Oral precancerous lesions; Stomatitis

Abstr ID 641

458

CONCENTRATIONS OF AMPICILLIN, SULBACTAM (UNACID) IN THE IRRADIATED MANDIBLE OF PATIENTS WITH ORAL SQUAMOUS CELL CARCINOMAS

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Introduction: As perioperative prophylaxis for ablative head and neck procedures the combination of 2g Ampicillin and 1g Sulbactam (Unacid) is widely used. Because infection of reconstruction plates after resection of the mandible is a common problem in irradiated patients, this study was undertaken to assess the amount of ampicillin and sulbactam in the irradiated mandible during tumor resection. **Material and Methods:** From 23 patients scheduled for a major resection of oral cancer, bone samples from the mandible as well as serum samples were collected. Unacid was administered prior to surgery and every 4 hours. Ampicillin and sulbactam were determined in serum and bone samples by HPLC column switching technique. **Results:** The mean values for ampicillin and sulbactam in the serum samples were 135.1 ± 66.5 and 75.6 ± 62.7 mg/g. The bone samples revealed lower concentrations for ampicillin 5.4 ± 7.5 and sulbactam 1.1 ± 2.6 mg/g. The control group consisted of 3 patients with resections of the mandible without prior irradiation. The serum values for ampicillin and sulbactam were 145.1 ± 48.5 and 76.3 ± 30.3 mg/g respectively. The corresponding values for the bone samples were 8.3 ± 8.7 for ampicillin and 3.5 ± 4 mg/g for sulbactam. **Discussion:** The concentrations of ampicillin and sulbactam measured in irradiated mandibles exceeded the minimal inhibitory concentrations of the bacteria involved in postoperative wound infections, such as *S. aureus*, coagulase-negative staphylococci and streptococci. Results from this study indicate that Unacid may be efficient in preventing infections in irradiated mandible after head and neck procedures involving clean-contaminated wounds.

Keywords: Oral cancer; Ampicillin; Sulbactam; Bone

Abstr ID 516

459

RELIEVING SYMPTOMS OF XEROSTOMIA WITH ORAL PILOCARPINE (SALAGEN) DURING IRRADIATION IN HEAD-AND-NECK CANCER

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Aims: A common complication of irradiation of the head-and-neck is xerostomy. Pilocarpine, a muscarine agonist, is long used for treating patients with postirradiative xerostomia. In our randomized study the aim was to compare the antixerostomic effectiveness of orally administered pilocarpine chloratum (Salagen) during and after irradiation. **Methods:** Between October 1999 and October 2003 we treated 60 patients with head-and-neck cancer irradiation as a part of our complex protocol. Patients were distributed randomly in two groups. They received minimum 50Gy irradiation to the head-and-neck. They had to have at least both parotids and two of their other major salivary glands retained. One group received 15 mg pilocarpine chloratum (Salagen) per os from the first day of radiotherapy, while the other group from the first postirradiative day. Saliva secretion and seven symptoms of xerostomia were assessed on a visual analogue scale questionnaire from the beginning of therapy every second week for 12 weeks. **Results:** Our results show a minor development of xerostomia symptoms and increased salivary production when pilocarpine was already administered during irradiation. The symptoms disappeared also earlier in this group. Side effects were mild and tolerable. **Conclusion:** We recommend the start of pilocarpine hydrochloride therapy at the time of beginning irradiation to minimize the developing xerostomia and discomfort related to it.

Keywords: Xerostomia; Pilocarpine; Radiotherapy

Abstr ID 352

460

COMPARISON OF 16-ROW MULTISLICE CT AND MRI IN THE ASSESSMENT OF SQUAMOUS CELL CARCINOMA OF THE ORAL CAVITY

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Purpose: To compare 16-row multislice-CT (MSCT) and dedicated MRI in the staging of malignant squamous cell carcinoma of the oral cavity. **Material and Methods:** 52 patients with histologically proven malignancies were examined with contrast enhanced MSCT and MRI at 1.5 Tesla using a new combined head and neck coil. 16-row MSCT was performed with a slice thickness of 0.75 mm and coronal and axial reformations were obtained. For MRI, axial TW, fat-saturated T2W, contrast-enhanced T1W with and without fat saturation and coronal fat-saturated T2W sequences with a slice thickness of 5 mm were acquired. Images were evaluated by two radiologists and an oromaxillofacial surgeon in consensus concerning local tumour infiltration and lymph node metastases. Results of the radiological assessment were correlated with the intra operative and histo-pathological findings in all patients. **Results:** Of all 52 tumours 36 could be depicted by MSCT whereas 44 by MRI. Concerning muscle infiltration MRI vs. MSCT showed a sensitivity of 81.8% and 72.7% respectively and a specificity of 63.4% and 61% respectively. Regarding bone invasion, the corresponding sensitivity and specificity - MRI vs. MSCT data - were 100%/71.4% and 93.3%/95.5%, for detecting lymph node metastasis 83.3%/77.8% and 62.6%/75%. Histopathologi-

cal primary tumour size and radiological findings showed significant correlation ($P<0.05$) in MRI in 86.4% and in MSCT in 75%. **Conclusions:** Primary tumour and local tissue invasion could be best depicted and demarcated with MRI ($P<0.05$). Additionally there was a trend towards a better detection of lymph node metastases with MRI.

Keywords: CT; Multislice-CT; MSCT; MRI; Squamous cell carcinoma; Staging

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MICROBIAL COLONIZATION OF INTRAORAL SQUAMOUS CELL CARCINOMAS

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Aims: Local infections may complicate the morbidity of patients with intraoral malignant tumors. This study analyses the microbial colonization of intraoral squamous cell carcinomas and the antibacterial resistance. **Methods:** Biofilm samples of 10 patients (6 male, 4 female, average age 60.5 years) with an intraoral squamous cell carcinoma were obtained with sterile cotton swabs from tumor centre, tumor circumference and from healthy mucosa as control. All samples were collected into a transport medium. The resistance analysis was performed to 11 different antibiotics. **Results:** A total of 126 bacterial strains were isolated. The ratio between aerobes and anaerobes was more than 2:1. The isolated Gram-positive aerobes from the tumor centre were Streptococcus (9x), Staphylococcus (4x) and Enterococcus (3x). The Gram-negative aerobic spectrum was dominated by members of the genera Neisseria (3x) as well as the family Enterobacteriaceae (5x). The most anaerobes were Fusobacterium (5x), Peptostreptococcus (3x) and Prevotella (2x). A difference between the colonization of tumors in comparison to healthy mucosa was found. Furthermore tumor surfaces were predominated by members Enterobacteriaceae as well as Acinetobacter. The aerobic resistance rates against antibiotics were: Penicillin G 19%, Doxycycline 35%, Erythromycin 23%, Cefotiam 5%, Ciprofloxacin 29%, Levofloxacin 4%, Moxifloxacin 0%, Amoxicillin/Clavulanic acid 23%, Imipenem 0%, Meropenem 4% and Piperacillin/Tazobactam 0%. **Conclusion:** The data revealed that, relative to normal healthy mucosa, the surface of intraoral squamous cell carcinomas harboured increased levels of aerobic Gram-negative bacteria. These bacteria provide any problems in the case of severe infections due to increased resistance to most of antibiotics commonly used in maxillofacial surgery. Modern fluorquinolones might be the antibiotics of choice due to their broad spectrum including anaerobes and aerobic Gram-positive cocci.

Keywords: Microbiology of intraoral malignant tumors; Antibiotic resistance

IMMUNOHISTOCHEMICAL EVALUATION OF VASCULAR ENDOTHELIAL GROWTH FACTOR IN HUMAN ORAL SQUAMOUS CELL CARCINOMA

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Summary: Angiogenesis is a multistage process of new blood vessels formation by proliferation of endothelium. It is controlled by many pro- and antiangiogenic factors regulating in normal course and duration time of this process. Vascular Endothelial Growth Factor (VEGF) is well known angiogenic factor produced by endotheliocytes and tumour cells. VEGF plays a pivotal role in angiogenesis in vivo. Recent studies have suggested that VEGF induces angiogenesis and helps to survive newly developed blood vessels in tumor and their density is strictly correlated with VEGF expression. **Aims:** The aim of the study was to evaluate expression and distribution of VEGF from resected tumors of oral squamous cell carcinoma in correlation with anatomical clinical character of tumor. **Material and Methods:** We studied 37 patients affected by oral squamous cell carcinoma who underwent surgery at the Department of Maxillofacial Surgery, Medical University of Bialystok. Immunohistochemical studies were performed on tissue fragments obtained from pathologically diagnosed oral squamous cell carcinoma. As controls, normal oral mucosa tissue specimens were obtained from people who had surgical extractions or exposing of retained teeth. Expression and distribution reaction were evaluated in light microscope using half quantitative method (VEGF antibody, Santa Cruz Biotechnology). Immunohistochemical reaction intensity was scored as low (+), average (++) and high (+++). However, number of stained cells was described as percentage of tumor cells proved VEGF positive immunohistochemical reaction in correlation to all neoplastic cells in specimens: 0–5%, >5% –15%, <15% –50%, <50%. Statistical analysis was performed using the Statystyka 5.0 Software. **Conclusion:** In examined tumours VEGF expression was higher in the group of patients with regional lymph nodes metastases than in the group of patients without regional lymph nodes metastases. Distribution of VEGF reaction was getting higher with the pathologic tumor stage and is the highest in stage IV.

Keywords: Angiogenesis; Vascular Endothelial Growth Factor (VEGF); Oral squamous cell carcinoma

EPIDERMAL GROWTH FACTOR AND MALIGNANT KERATINOCYTES OF THE ORAL MUCOUS MEMBRANE – A GUIDELINE FOR ORAL CANCER MULTIMODAL THERAPY OF THE FUTURE

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Summary: Epidermal growth factor (EGF) is a cytokine that among others contributes to the maintenance of mucosal integrity. It is responsible for epithelial regeneration by means of cell growth induction and regeneration. EGF has additional potent and diverse effects on cell migration and matrix synthesis. One of the major sites of EGF synthesis in humans are parotid salivary glands. Chemotherapy and irradiation contribute to decrease its salivary concentration. **Aims:** To evaluate EGF concentration and its output (ELISA) in whole resting and stimulated saliva in the presence of oral cancer and two weeks after its excision. **Results:** Decreased level of EGF in resting saliva was observed in comparison with healthy volunteers ($P=0.02$). A trend was seen with increasing EGF salivary concentration after tumour excision both in resting ($P=0.508$) and stimulated ($P=0.647$) saliva. Similar ascending tendency of EGF output in stimulated saliva of posttreatment patients was observed ($P=0.878$). **Conclusion:** Reduced salivary EGF level in oral cancer patients may make them be subject to destabilisation of tissue homeostasis. It should be taken into account both in oral cancer surgery alone and in surgery between chemotherapy and irradiation in particular because of proved low healing potential of oral epithelium and very high probability of wound healing complications (weaker EGF mitogenic effect). However, the potential use of EGF as a cytokine accelerating surgical wound healing and postradiation damage to the oral mucosa must be limited. There is now a good evidence that development and progression of epithelial malignancy is associated with the abrogation of normal cellular growth control mechanisms and salivary EGF effect on tumorigenesis and oral cancer biology is still unknown.

Keywords: Epidermal growth factor (EGF); Saliva; Oral cavity cancer

EFFICIENCY OF A COMBINATION CARBOPLATIN + 5-FLUOROURACIL AT THE PATIENTS WITH RECURRENCES OF SQUAMOUS CELL CARCINOMA OF A HEAD AND NECK

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The Aim: to estimate efficiency and toxicity of a combination of carboplatin + 5-fluorouracil at the patients with refractory and recurrences of squamous cell carcinoma of head and neck. **Materials and Methods:** 24 patients with recurrence of squamous cell carcinoma of head and neck were included in study, the average age of the patients has consisted 57 years. Localization of process: oropharynx–5, floor of a mouth–9, lower lip–1, tongue–2, alveolar ridge–1,

retromolar region–3, peristomal recurrences–3. The chemotherapy schema was: carboplatin 300 mg/m² IV infusion 1 day, 5-fluorouracil 1000 mg/m² 24-th hour IV infusion 1–4 days. Result estimated after termination of each course of chemotherapy and follow-up each month after chemotherapy. The therapy proceeded up to 3 course or ended earlier in a case of tumor progression. To 21 patient–3 courses, 1 patient–2 courses, and 2 patients–1 course. **Results:** Adverse events at realization of chemotherapy: at 13% (*n*=3) patients had neutropenia 3 grade, leucopenia 3 grade–(*n*=3) 13%, nausea 3 gr.–(*n*=1) 4%, anemia 3 gr.–(*n*=1) 4%. At (*n*=2) 8% of the patients is revealed complete response, (*n*=2) 8%–partial response, (*n*=4) 17%–minor partial response, (*n*=11) 46%–stabilization and (*n*=5) 21%–progression. Common percentage of responses was 33%. The average duration of remission was 5 months (from 1 to 5 months) and average common survival–5 months (from 1 to 12 months). **Conclusions:** the results of study give possibility to estimate efficiency of the traditional combination of palliative chemotherapy at recurrence of squamous cell carcinoma of head and neck, that specifies that the application of such treatment is possible only at complete ending of other treatment methods opportunities.

Keywords: Recurrences; Chemotherapy; Carboplatin; 5-fluorouracil

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PHARYNGEALCUTANEOUS POSTOPERATIVE DEFECTS AND THEIR TREATMENT WITH MUSCULOCUTANEOUSPECTORALIS MAJOR FLAP

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Pharyngealcutaneous postoperative defects and their treatment with musculocutaneous Pectoralis major flap. **Background:** Postoperative pharyngocutaneous defects constitute a most troublesome and challenging problem. Musculocutaneous flaps are widely accepted in treatment of postoperative defects of head and neck cancer. Pectoralis major musculocutaneous flap described initially by Arian in 1970s has broad acceptance for its versatility in head and neck cancer reconstructions. It is supplied by thoracoacromial artery, with additional circulation provided by the lateral thoracic artery. **Aim:** To analyze of the results achieved using this reconstruction technique in the patients with postoperative pharyngocutaneous defects. **Materials and Methods:** The records of 71 patients undergoing reconstruction in 14 years period from 1986 to 2000 were reviewed. All patients were treated in The Institute for ENT and Maxillofacial Surgery of Clinical center of Serbia. **Results:** From the total number of patients, successful primary closure was obtained in 60 patients, or 84.6 percent. Total necrosis of the flap for Pharyngealcutaneous reconstruction were observed in 3 patients. Partial loss of the skin flap with partial dehiscence occurred in eight patients. **Discussion and Conclusion:** According to data in the literature and the authors own experience, musculocutaneous Pectoralis major flap is very good solution for treatment of large pharyngocutaneous defects. Good vitality

and small percentage of complications are advantage. From the technical aspect it is a relatively simple and safe operation.

Keywords: Pharyngealcutaneous postoperative defects; Musculocutaneous; Pectoralis major flap

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INTRAORAL SOFT TISSUE RECONSTRUCTION WITH ALLODERM

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Background: The oral cavity is a common site for the development of squamous cell carcinoma of the head and neck. After the surgical treatment the defects are critical because the floor of the mouth, the mobility of the tongue and the oral mucosa are essential for a correct function of the oral cavity. It is necessary an immediate reconstruction of the defect in order to avoid secondary healing, fibrosis retraction and the subsequent functional alteration. We present the use of acellular human dermis graft (alloderm) for intraoral soft tissue reconstruction. **Material and Methods:** We have used Alloderm in 3 cases for intraoral soft tissue reconstruction. In case 1 Alloderm was used to reconstruct the floor of the mouth after surgical excision of an squamous cell carcinoma. In case 2 Alloderm was used to reconstruct a partial glossectomy and in case 3 it was used to reconstruct a right jugal mucosa defect following reaction of a carcinoma. Alloderm is an acellular human dermis which is cryopreserved. It is a bioactive dermal matrix in which the epidermis, the dermal cells, the vessels and the CMH I and II antigens have been eliminated while the basal membrane, proteoglycans, collagen and elastin have been preserved. **Results:** In all cases we have achieved a complete tissular reconstruction 3 weeks after surgery. We have not had any complications and we have avoided more aggressive surgery alternatives and the need of a skin graft donor site with excellent functional and aesthetic results. **Conclusions:** Alloderm is conformed by cryopreserved acellular human tissue. The surgical management is similar to a skin graft and it is safe, predictable and it avoids the need of a donor site with excellent functional and aesthetic results. Therefore it is an alternative for small and medium intraoral soft tissue defects.

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467

BILATERAL CHYLOTHORAX AFTER NECK DISSECTION

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Introduction: Neck dissection is a surgical procedure used in the management of head and neck cancer. External

chylous fistula is a frequent complication (1–3%) but chylothorax is extremely unusual. **Objective:** We present a case of bilateral chylothorax after radical neck dissection and its management. **Material and Methods:** A 73 year-old woman consulted for one year evolution tumor in the left parotid gland with rapid growth in the last month. Clinical exploration: 5 cm fixed mass in the left parotid region. No pain neither facial palsy was observed. FNAC: indifferenciaded carcinoma. CT scan: 5 cm mass located in the superficial lobe of the left parotid gland with an extension to the deep lobe. A total conservative lobectomy of the left parotid gland combined with left radical neck dissection was performed. The histology shown low grade adenocarcinoma. 10 regional nodes were affected. On the third postoperative day a chest X-ray showed massive pleural bilateral effusion. She also presented a chylous fistula. The patient complained of difficulty in breathing and bilateral chest pain. A diagnostic and therapeutic thoracentesis was performed with a result of 500 cc milky fluid. Total parenteral nutrition with somatostatin treatment was initiated and on the 35th. postoperative day the chest X-ray shown almost complete resolution. **Discussion:** Only fourteen cases of bilateral chylothorax neck dissection have been reported in the Literature. It is a serious complication because it causes important respiratory and metabolic disorders. Following ligation of the thoracic duct produces a high intraluminal pressure with secondary extravasation of fluid in the mediastinum increased by negative pressure during inspiration. General management include removal of existing chyle with chest tube drainage and decrease its formation with medium-chain triglycerides diet and somatostatin treatment.

Keywords: Chylothorax; Deck disction

Abstr ID 564

468

USE OF SAPHENOUS LOOP IN HEAD RECONSTRUCTION

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Introduction: When a free tissue transfer is required for bone reconstruction, bad quality receiver vessels in a post traumatic context require a complementary surgical step that can be either a venous bypass between pedicle and receiver vessels, or a preparation of the receiver site by vascular loop. The authors describe the use of such a solution in a total maxillary bone loss. **Patients and Methods:** A 39 year old patient with a facial and neck trauma by gunshot with a complete maxillary bone loss, a trifocal largely open mandible fracture. Emergency surgery consistent of and suture of the wounds and reduction and external fixation of the mandible. Secondly a free fibular flap reconstruction surgery was decided. No reliable receiver vessels were available locally, thus the authors proposed a two stage reconstruction, with primarily, a subcutaneous left cheek saphenous loop, with a termino-terminal anastomosis on the lateral carotid artery and termino-lateral on the medial jugular veinous. A free fibular transfer anastomosed on the divided loop was done 15 days later. **Results:** This vascular loop technique has already been described for limb reconstruction. It can be proposed

for large craniofacial bone and tissues losses. It is an alternative to venous bypass performed during the reconstruction. Several authors have advocated performing this arteriovenous loop procedure in one stage with creation of the arteriovenous loop and free tissue transfer at the same time. In order to lessen the length of the reconstruction surgery, and thus limit the risk of thrombosis, we preferred a two stage surgery. The different steps of the treatment and final result are discussed. Service de Chirurgie Maxillo-faciale et Plastique Hôpital Trousseau Tours.

Keywords: Arteriovenous loop; Fibular free flap; Facial injury

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THE USE OF SUBMENTAL TRIANGULAR ISLAND ADVANCEMENT FLAP IN TOTAL LOWER LIP RECONSTRUCTION

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Reconstruction following total excision of the lower lip is a challenge for the surgeon. The goals of lip reconstruction are fourfold: 1. Good functional competence of the lower lip with good tone at rest 2. Creation or maintenance of an adequate oral commissure to allow the insertion of a prosthesis and adequate food intake 3. Intelligible speech and lip expression 4. Aesthetic lip contour. Excision of a lesion should be followed by immediate reconstruction. Several techniques have been reported. Cheek advancement flaps (Webster, 1960), standard fan flaps (Gillies, 1920), or modified fan flaps (McGregor, 1983) have been used. In all cases the red margin of the new lip is recreated with a tongue flap (McGregor, 1966). When the lesion is extended below the lower lip sulcus on to the chin, none of these techniques afford tissue height. The proposed modification includes a submental triangular island advancement flap which improves all these recognized techniques by reducing the required width of the flaps. In this way, a more functional lower lip is achieved with an adequate height, better muscular function and adequate sensation. However, in spite of all these techniques and modifications, there is no ideal method for producing a perfect sensate mobile lower lip to give normal competence to the mouth.

Keywords: Lower lip submental triangular island advancement flap total reconstruction

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470

RADIAL FOREARM FASCIOTOMY FREE FLAP FOR PHARYNGOESOPHAGEAL RECONSTRUCTION

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Introduction: Pharyngoesophageal reconstruction is one of the most difficult challenges in head and neck surgery. There are several reconstruction methods available but there is no uniform agreement among surgeons to choose the best. Since Harii, the radial forearm free flap is the most important technique used for reconstruction of the hypopharynx. **Objectives:** we report a case of 53 year old man CHV and HIV+ who required laryngopharyngectomy combined with radiotherapy for a squamous cell carcinoma of the larynx two years before. He was remitted to us to re-establish continuity of the upper aerodigestive tract. **Material and Methods:** A modified Harii technique was used for reconstruction of the esophageal defect. In the postoperative period, he developed several pharyngocutaneous fistulas. Primary closure and a pectoralis major myocutaneous flap were used to repair then. At the present the patient is able to maintain normal oral diet. **Discussion:** The objective of pharyngoesophageal reconstruction is to restore the speech and swallowing in patients requiring laryngopharyngectomy. The advantages of the radial forearm free flap include high flap reliability, limited donor site morbidity, larger vascular pedicle and the achieve good quality speech. The main disadvantage is a high incidence of pharyngocutaneous fistulas and strictures.

Keywords: Radial forearm; Pharyngoesophageal reconstruction

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471

NASAL TURBINATES MUCOSAL FLAP: APPLICATIONS IN NASAL RECONSTRUCTION

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Introduction: Reconstruction of head and neck oncologic defects is still considered as a challenge for maxillofacial surgeons. Nasal reconstruction is specifically difficult according to anatomical complexity and esthetical significance. The use of locoregional pedicled inferior nasal turbinate mucosal flap is evaluated in this presentation.

Case reports:

- A 67 years old man was admitted in our department to consider treatment of recurrent squamous cell carcinoma of the nose. Previous radiotherapeutic and surgical treatment had been accomplished 6 years ago. An ulcerative lesion in anterior upper buccal mucosa was observed, involving bone and nasal floor. A total columellar defect and retractile fibrous scars were considered as sequelae of previous reconstructive surgical attempts with nasolabial, frontoglabellar and Abbe flaps. An intraoral approach with partial maxillectomy, hard palate and nasal floor resection was performed. Reconstruction with temporalis muscle flap was selected to provide lining cover for palate, upper vestibule and anterior nasal floor. The remaining nasal floor defect was reconstructed by means of bilateral nasal turbinates flap.

- A 70 years old presented in our consults with a squamous cell carcinoma of dorsum, alae and columella of his nose. Cervical node metastases were objectified at IB and IIA levels. Surgical procedure consisted on radical excision of the tumour mass involving nasal dorsum, mucosa and anterior septum, and labial cutaneous infiltration. A frontoglabellar flap and an alar nose plasty were associated to bilateral nasal turbinate flaps and oral mucosal flap to protect septal cartilage graft for columella reconstruction. Sentinel node biopsy was accomplished in both sides of the neck.

Discussion: Nasal turbinate flaps have been initially used in reconstructive surgery to close septum perforations. However, other applications have been posteriorly described to close cerebrospinal fluid leakage, secondary reconstruction of labiopalatal clefts, and recently in oncologic reconstruction of the nose. In our experience, these flaps are adequate in selected cases of nasal floor reconstruction. **Results:** Both cases reported show good results, as observed in the illustrations. **Conclusions:** Inferior turbinate nasal flap should be considered as surgical options for mucosal reconstruction of nasal cavity. These flaps provide a vast amount of vascularized mucosal tissue.

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ACINIC CELL CARCINOMA OF THE PAROTID GLAND METASTATIC TO THE EPIDERMIS OF THE BACK

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Aim: To report on a case of acinic cell carcinoma (ACC) of the right parotid with multiple metastases including the epidermis of the back and the contralateral orbit. **Subject:** A 54 year old Caucasian female presented with a right parotid mass of 2 month's duration. Histology for partial parotidectomy reported ACC. A postoperative MRI scan of the head and neck could not exclude residual tumour and an incidental finding was a 1 cm lesion in the contralateral orbit. A right total parotidectomy and excision of the contents of the right submandibular triangle plus supra-mental node sampling were performed. Histology reported an island of tumour within the excised right submandibular gland. Postoperative adjuvant radiotherapy was provided. Progressive diplopia developed during the following four months. A repeat MRI scan demonstrated an enlargement of the orbital lesion and biopsy reported ACC. CT scan of abdomen and chest excluded any other primary source and radiotherapy was performed to the left orbit. 18 months later a mass on her lower back was histologically demonstrated as being metastatic disease. 2 months later a further mass presented on her upper back. **Conclusions:** This is a rare case of ACC of the parotid with metastases to the epidermis of the back. 2 previous reported cases of distant metastasis from parotid tumour to the orbit have been found in the English literature.

SURGICAL TREATMENT OF LARGE PLEOMORPHIC ADENOMAS**Naumovski S, Benedetti A, Popovic-Monevska D, Kirkov A***Clinic for Maxillofacial Surgery, Skopje, Macedonia*
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Aim: To present and describe various cases of adenoma pleomorphic tumor mixtus, which are recognizable by their age (10–20 years) and size, and select the right surgical approach. **Subject:** There were three (3) various patho-histologically proven cases of adenoma pleomorphic treated. Two of the three cases were located in the soft palate, the region of the para-pharynx and retro-pharynx, and partially in the region of the glandula parotis. The third tumor, which had enormous proportions and weight (1.3 kg), consumed the entire right facial area (the region of the glandula parotis, over and under the lower jaw), entire palatine bone, and the region of the para-pharynx and retro-pharynx. **Results:** The analysis of these three cases points out that in the first two cases, the adenoma started to develop in the soft palate, while in the third case it was from the glandula parotis. In the first two cases the tumor was removed by means of resection of the mandible. The tumor in the third case was twenty years old and there was visible mandible osteolysis, thus a hemi-resection and exarticulation of the mandible were performed. A complete extirpation of the tumor was reached without technical problems and complications related to the function of the facial nerves, except in the third case, which already had a paralysis diagnosed to the facial nerves due to the long-term existence of the tumor. **Conclusion:** The surgical removal of these tumors is not a special problem, except in cases where they have enormous dimensions and/or parapharyngeal localisation. Selection of the appropriate surgical approach and technique are essential.

Keywords: Pleomorphic adenoma; Glandula parotis; Tumor

EXTREMELY LARGE PLEOMORPHIC ADENOMA PAROTID SALIVARY GLANDS WITHOUT MALIGNANT ALTERNATION**Zivkovic S, Janjatov B***Department of Maxillofacial Surgery, Department of Maxillofacial Surgery, Sremska Mitrovica, SCG*
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This paper has been used to show the case the patient of 72 old women who has extremely large tumor of the left parotid salivary gland without malignant alternation. It can be deduced by clinical and ultrasonographic diagnostic methods that the tumor is localized in the parotid section and its surrounding. During twenty years evolution the tumor was becoming extremely large. It has been doubted about malignant alternation because of the largeness tumor, intensive venous skin pattern, paresis of four final branches of the facial nerve and because of the pains in the left ear. The subtotal parotidectomy operation was done with preservation of the face nerve and excision of skin

above the tumor. The reconstruction of the large post-operatively defect could be done with the local rotation and transposition flaps. There were no complications after surgery and the histopathological features were typical for benign adenoma. The postoperative recovery is passing orderly without any unfunctional reverse. The case observed was interesting due to a long period of the tumor persistence, its expansive growth and clinical findings which in the first place suggested its malignant nature. The histological features confirm the benign character of this tumor and there was no recurrence at follow-up 3 years later.

Keywords: Salivary glands; Pleomorphic adenoma

ACINIC CELL CARCINOMA OF MINOR SALIVARY GLANDS. REPORT OF FOUR CASES**Triantafyllidou A, Psomadakis K, Kalimeras E***Thessaloniki, Greece*
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Aim: In this paper we present four cases of acinic cell carcinoma (ACC) of minor salivary glands. The histopathological and immunohistochemical features, as well as the results after treatment of this rare neoplasm are presented. **Materials and Methods:** Four cases of ACC are presented. All patients were female and the mean age at first admittance was 67 years old (range 46–79). Two of the tumors occurred at the border of soft and hard palate, one at the lower lip and one at the buccal area. The treatment for all patients was wide local excision. Additionally, one patient underwent adjuvant postoperative radiotherapy. **Results:** Three patients are free of disease. The mean follow-up period is 7.3 years (range 2–15). The fourth patient died ten years after the excision from another cause but free of disease. **Conclusions:** Acinic cell carcinoma (ACC) is a relatively rare low-grade malignant neoplasm of the salivary glands, with “a small number of occasional” cases that develop recurrences, nodal or distant metastasis. Treatment of choice for ACC remains the wide surgical excision with clear histological surgical margins, in order to eliminate the chance for recurrence. Although, ACC has an initial good prognosis about 80 to 90% on the basis of 5 year follow-up, it remains a malignant neoplasm, which can metastasize.

Keywords: Acinic cell carcinoma; Minor salivary glands; Oral cavity

CARCINOMA EX PLEOMORPHIC ADENOMA OF THE SALIVARY GLANDS**González-García R, Capote A, Naval L, Rodríguez-Campo FJ, Escorial V, Martos P, Muñoz-Guerra M, Sastre-Pérez J, Díaz-González FJ***Oral & Maxillofacial Surgery, University Hospital La Princesa, Madrid, Spain*
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Aim: The carcinoma ex-pleomorphic adenoma (CXPA) is a rare, aggressive and poorly differentiated neoplasm which represents most of the malignant mixed tumours. Metastases and recurrences are common. We present an unusual case in the submaxillar gland and a serie of eight cases of CXPA. **Subject:** A 59-year-old man was remitted to our Department with a history of a right submaxillar mass during 15 years. A Fine Needle Aspiration suggested the presence of some malignant cells and cells typical for pleomorphic adenoma. A cervicofacial Magnetic Resonance confirmed the existence of a mass of 2.8 cm in the posterior side of the right submaxillar gland. A submaxillectomy was performed with the definitive diagnosis of adenocarcinoma ex pleomorphic adenoma. **Results:** Aetiopathogenesis is still unclear, although most authors think that CXPA develops from a pleomorphic adenoma which degenerates in to a malignant tumour. Our serie have shown an equal sex predilection and a preponderance of the parotid gland (75%). Most cases (75%) were diagnosed at initial stages. A homolateral functional cervical dissection was practised in 12.5% of the cases, while a radical cervical dissection was performed in 25%. The margins of the pieces were correct in 37.5% of the cases. A 62.5% of the patients received post-surgical radiotherapy. Four years after the surgery there was a 57.1% of patients without residual disease. The recurrence rate was estimated in 42.8% during this period. The most important prognostic factor for survival is the extracapsular extension of the tumour. The treatment of choice is the extirpation of the gland with surgical margins. The adjuvant postsurgical radiotherapy has demonstrated a major efficacy than surgery alone. **Conclusion:** All the pleomorphic adenomas have the potential for malignization. The best prevention for the CXPA is the early resection of the benign neoplasm.

Keywords: Carcinoma ex pleomorphic adenoma salivary glands

Abstr ID 252

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MALIGNANT MYOEPIITHELIOMA OF PALATAL MINOR SALIVARY GLAND

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Introduction: Myoepithelial tumours are less than 1% of the total of salivary gland tumours. Malignant myoepithelioma (or myoepithelial carcinoma) is an especially rare type of these neoplasias (until the moment have been described approximately 40 cases in the international literature). It is considered low grade of malignancy, according the revised WHO classification of salivary gland tumours. Its treatment is surgical. **Patients and Methods:** It is showed the case of a 54 years old female patient with a palatal mass from the last 2 months, diagnosed with a biopsy of malignant myoepithelioma, with invasion of the maxillary sinus and progressive growth. The patient underwent surgery, been performed a high maxillectomy according with Brown classification. For the reconstruction of the defect we chose a pedicled temporal flap and a pedicled temporoparietal fascia flap in conjunction with outer calvarial parietal bone to make a new infraorbital rim. After 1 year from the

surgery, the patient is free of her disease and she has been oclusally rehabilitated with a removable prosthesis with excellent both aesthetical and functional results. **Discussion** Malignant myoepithelioma is an extremely rare tumour of the salivary glands. Its most typical localization is the parotid gland, although localizations like mandible and minor glands have been described. Classified as a low grade of malignancy tumour, majority of cases develop in pre-existing pleomorphic adenomas or benign myoepitheliomas. The predominant differentiation of the tumoral cells is myoepithelial without true glandular or luminal elements. Positivity for S-100 protein, vimentin and broad-spectrum cytokeratin antisera is the rule. The therapy for this kind of tumour is surgical, with wide resection and reconstruction if necessary. Cervical surgery is performed only when suspicious cervical nodes are present. Role of radio and chemotherapy is not yet established and are not routinely used.

Abstr ID 292

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MANAGEMENT OF A HUGE PAROTID MASS WITHOUT FACIAL PALSY

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Subject: A 38 years old man, living in the remote area, presents with a large swelling of the right parotid gland which had been present for 10 years, with slow development. Clinical examination notes a huge mass in the right parotid gland and upper neck area. There are no others clinical findings: no pain, no facial palsy, and the oral examination is normal. The CT scan shows a voluminous mass with a vascular overflow, and the RMI revealed a process developed from the superficial lobe of the parotid gland, well delimited and high T2 higher intensity. Chest X-ray and liver CT are negative. **Operative procedure:** The patient underwent a total conservative parotidectomy. The facial nerve branches were stretched until their origin but well individualised and functional. The excised mass measured 22 × 18 × 14 cm and weight 2150 g. It appeared lobulated and encapsulated. The cut surface is 90% a solid greyish-white soft mass with irregular cystic areas. **Histology:** Pleomorphic adenoma with undergo malignant transformation (multifocal adenocarcinoma.) There is no evidence of residual normal parotid parenchyma. No capsular involvement. **Postoperative care:** The patient received a course of potentialized radiotherapy. **Results:** Restitutio ad integrum of the post therapeutic facial palsy. 3 years after diagnosis the patient is free of disease; **Conclusions:** A malignant tumor may arise within a pleomorphic adenoma. This has been reported to occur in 2–7% of cases. Long evolution increased the risk of malignancy. Uncommon malignant lesions associated with pleomorphic adenomas are carcinoma and malignant mixed tumors. The total parotidectomy is the first step of the treatment. Chemotherapy and radiotherapy are delivered according to the histological findings. A long survey is necessary, it's aim is to detect a recurrence of the disease.

Keywords: Cancer; Salivary gland

CENTRAL SALIVARY GLAND TUMORS OF THE MANDIBLE

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Aims: The authors report three cases of central salivary gland tumors of the mandible. A review of the comprehensive literature summarize the histogenesis, treatment and prognosis of these tumors. **Subject and Method:** For the 3 patients, the diagnosis was done between 2003 and 2004. The patients ranged in age from 42 to 72 years (mean 57 years) with two males and one female. All the patients had a surgical course. For these cases, two adenocarcinoma and one mucoepidermoid carcinoma were found out. In anyone case the diagnosis was done or only summoned before the surgery. Each patient underwent a metastasis check-up secondary: for one patient the liver was invaded by multiple metastasis. The only treatment was chemotherapy and the patient died quickly. The two others underwent an large surgical removing followed by radiotherapy. **Discussion:** The central salivary gland tumors of the mandible are rare observation. An acute literature review reported 230 cases from 1939 to 2003. The mean age at presentation is 50-60 years, males and females are almost equally affected. Clinical and X-ray appearance of these lesions aren't specific, they mimic other osteolytic and odontogenic processes. Their proper diagnosis support with histologic analysis. The ideal treatment seems to be a large surgery followed by radiotherapy and chemotherapy. For each histologic tumor case, no correlation between tumor grade and prognosis is found. However these prognosis is more grim than in salivary localizations. Several theories have been proposed to explain the occurrence of such tumors: metaplastic or neoplastic transformation of dentigerous cysts or odontogenic epithelium, neoplastic transformation of ectopic salivary gland tissue. **Conclusion:** Diagnosis of central salivary gland tumors within the mandible is often a surprise. If the treatment is consensual, theories to explain these lesions are the subject of debates.

Keywords: Salivary gland; Cancer; Mandible

SYMPTOMS OF MULTIPLE MYELOMA IN THE ORAL CAVE

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Multiple myeloma (plasmocytoma) is a malignant neoplasm with hyperplasia plasma cells of marrow. The symptoms of disease are in 14% cases in the oral cave. It's characterized by the following diagnostic triad:

increased tendency for hemorrhage, osteolytic defects and Bence-Jones proteinuria. Diagnosis is difficult and treatment is combined. On base of literature there are difference between myeloma multiple and plasmocytoma. On base of radiological investigations, laboratory and puncture of marrow is diagnosed advanced form of myeloma. **Material and Methods:** During last 15 years the three cases of myeloma in Department of Oral and Maxillofacial Surgery in Katowice were described, which were localized in premaxillary bone and corpus of mandibulae of patients who were after 60-years old. Deformity anterior part of maxille with swelling and pain with pathological fracturae were causes invited our department. Another case-60 year's old woman with twice bleeding of tumor mandible during myeloma was described. The bleeding was first symptom this disease. It was advanced case of multiple myeloma. A lot of pictures and X-rays were presented. **Conclusion:** You have to take to attention risk enlarged of bleeding at ills with myeloma multiple during making of straight dental interventions. There are larger risk of fractures, inflammations and bleeding in tractu myeloma.

Keywords: Department of Maxillofacial Surgery-Katowice; Plasmocytoma; Oral cave; Myeloma multiple

RENAL CELL CARCINOMA METASTATIC TO THE LOWER LIP: A CASE REPORT

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Approximately 1% of all malignant oral tumours are due to metastases, the kidney, lung, breast and skin being the commonest sites of origin. Renal cell carcinoma is the seventh commonest malignancy seen in males and the third commonest to metastasise to the head and neck region. Metastatic renal cell carcinoma to the head and neck has been previously reported as the initial presentation of the disease. However our case is the first described of a lesion in the lower lip leading to the diagnosis being made. **Materials and Methods:** A 77 year old male was referred to our department from the urology team with a lump of the right lower lip. The patient had been under their care following a prostatectomy some years previously for a locally advanced adenocarcinoma of the prostate. Examination revealed a hard, ill-defined lump beneath the mucosa of the right lower lip as well as two palpable lymph nodes in the right submandibular region. Chest X-ray revealed no metastases to the lungs. The patient underwent an excisional biopsy under local anaesthetic of the lesion of the lower lip and histopathology revealed this to be metastatic clear cell renal carcinoma. Further investigation demonstrated a lesion of the pole of the right kidney later confirmed to be the primary site. The patient is currently undergoing palliative chemotherapy. **Conclusion:** Only 15% of renal cell carcinoma metastases are found in the head and neck region. Of these the lymph nodes of the neck and mandible are most commonly affected. We present a case of metastatic renal cell carcinoma of the lower lip as the presenting feature of the disease.

Keywords: Renal cell carcinoma; Oral mucosa; Metastatic

Abstr ID 716

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MAXILLO FACIAL PLASMABLASTIC LYMPHOMAS (PL)**Toure G^{*1}, Roucayrol A-M², Rossarie R¹, Blanchard P¹, Guyot S¹***Maxillofacial surgery, Paris, France**E-mail: gtoure@voila.fr*

Aim: To report an unusual human immunodeficiency virus (HIV) – associated lymphoma **Subject:** A 42 years old male inmate, heterosexual, with maxillary oedema was referred for evaluation and treatment of “an odontogenic cellulitis”. Previously he was known as infected by human immunodeficiency virus (HIV 1) and hepatitis C. He had developed a painful, purple red voluminous mass in the right maxillary, palate and tonsillar pillar since at least “several weeks”. The tumor was ulcerated with surinfection which mimicked odontogenic cellulitis, with right hemifacial thickening and infiltration of the subcutaneous fat. All of the teeth in the right superior quadrant were mobile and slightly painful to percussion. Cervical examination revealed numerous lymphadenopathies. A computed tomography scan and IRM disclosed a large mass on the right maxillary which infiltrates maxillary sinus with aggressive and extensive bone destruction. Although oral Kaposi's sarcoma (KS) was suspected, a biopsy was performed. Histopathologic examination revealed a malignant lymphoid neoplasm consistent with a plasmablastic lymphoma (PL). Immunologic study showed positive reactions: anti Ig G human herpes virus 8, anti Ig G cytomegalovirus, and Epstein-Barr virus; with a peripheral blood CD4 T cell count of 30/ml, CD8 of 109/ml. **Discussion:** PL is a relatively new entity that is considered to be a neoplasm arising in the oral cavity and jaws of HIV-infected patients. It is a special kind of diffuse large B-cell lymphoma, frequently associated with EBV. **Conclusion:** Non Hodgkin lymphoma (NHL) is the second most frequent neoplasm in HIV disease, after KS. PL of oral cavity is a subcategory of HIV – related NHL and has a poor pronostic.

Keywords: HIV; Plasmablastic lymphoma; Subcategory of lymphoma; EBV; HHV8; Oral cavity

Abstr ID 794

483

SURGICAL PREDICTION OF METASTASES OF THE ORAL MUCOSA CANCER**Bakirov R***Russia**E-mail: fanny20031@yandex.ru*

The aim of our study is to develop a surgical approach to oral mucosa cancer T1-4NXMO in order to perform an organ- preserving lymph node dissection in accordance with the organ-preservance principle and observing the radical nature of surgical treatment of primary disease, and also to minimize postoperative complications and to predict potential occurrence of metastases. 41 patients (24 males) with tongue, mouth floor, mandibular alveolar ridge and retromolar area cancers with T2-4NXMO being more prevalent were included into the study group (aged 30–76).

In 37 cases histologically confirmed squamous cell keratinous cancer and 4 cases showed nonkeratinous cancer. The approach consists in a combined resection of an affected organ with lymph node dissection and simultaneous reconstruction of resected tissues. Following operations 18 patients (44%) showed subclinical metastases to regional lymph nodes. In 9 of them involvement of several lymph nodes was found. All patients histologically confirmed squamous cell keratinous cancer. Both in T1 and T3 patients metastases were found in 40% of cases: in the age group 51–60 ? 16.6%, 61–70 ? 71.4%. Metastasizing was higher in cancers of the alveolar ridge of mandible, in tongue and oral floor cancers ? 50%, respectively, no metastases were in retromolar area cancer. The frequency of metastases depends on the degree of tumor infiltration: in submucosal infiltration ? 27.3%, in infiltration of the muscular layer- 45.5%, hyoid salivary gland and bone of mandible infiltration- 66.7% equally. Thus, organic lymph node dissection allows to control the stage of metastatic tumor, predict further course of disease and plan adequate treatment of the oral mucosa cancer.

Abstr ID 18

484

COMPARATIVE VALUATION POSSIBILITIES OF TWO VARIANTS OF CHEMORADIOTHERAPY IN LOCALLY ADVANCED NASOPHARYNGEAL CANCER**Alieva S, Matyakin E, Tkachev S, Kondratyeva A, Romanov I***Radiology, Cancer Research Center, Moscow, Russia**E-mail: ilia.romanov@cancercenter.ru*

Aim: To compare five-year results and find rational treatment tactic for locally advanced undifferentiated nasopharyngeal cancer. **Methods:** 52 patients with undifferentiated nasopharyngeal cancer treated by chemoradiotherapy (CH-RT) were divided into 2 groups depending on variants of chemotherapy. Group A (34 patients): 1 cycle of chemotherapy with CDDP 100 mg/m² intra venous in 4 day, in combination with CHOP (adriamycinum 35 mg/m² intra venous, cyclophosphanum 750 mg/m² intra venous, vincristinum 14 mg/m² i.v., prednisolonum 100 mg/m² per oral 1–5days). One or two days after finishing chemotherapy began radiotherapy, splite-course. Radiotherapy performed with single dose 2 GY a day for 5 days a week, total dose 40 Gy. The second course of chemotherapy patients received after finishing first phase of radiotherapy. After interruption during two weeks and estimation of effect radiotherapy was continued to total dose 60–70 Gy. Group B (18 pts.): instead of CHOP was used 5 FU 1000 mg, intra venous push and the same course of radiotherapy. **Results:** Five-years survival and relaps free survival were 85%, 63% and 83%, 56% consequently. Frequencies and expressions of radiotherapeutics reactions were the same. **Conclusion:** The rational treatment tactic for locally advanced undifferentiated nasopharyngeal cancer is CH-RT using 2 cycles of CT (concurrent and adjuvant) with CHOP (adriamycinum 35 mg/m² intra venous, cyclophosphanum 750 mg/m² intra venous, vincristinum 1.4 mg/m² i.v., prednisolonum 100 mg/m² per oral 1–5 days) and 5FU.

Keywords: Chemotherapy; Radiotherapy; Nasopharynx

MALIGNANT GRANULAR CELL TUMOR (GCT) – CASE REPORT

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The aim of this study was presentation of diagnostics and surgical treatment of rare malignant form of Granular Cell Tumor – GCT. We present case of malignant GCT in 39 years old patient operated at II Department of Maxillo-Facial Surgery. Tumor was located in alveolar and palatal process of the maxilla. The initial biopsy revealed Granular Cell Tumor. Patient refused suggested treatment. Within 3 months rapid growth of the tumor and pain located in midface made the patient report to us again. Diagnostics consisted of detailed clinical examination, standard cranial radiograms, panoramic X-ray, CT, and histopathological including immuno-histochemical examination revealed malignancy within non malignant texture of the tumor. CT revealed vast infiltration embracing the entire right maxillar sinus up to the orbital floor, frontal part of nasal cavity, alveolar process and palatal process of the maxilla. Tumor was totally removed what was evaluated during operation by surgeon and confirmed with histopathological examination. Tele-radiotherapy was applied after operation. After 18 months past operation metastasis in lymph node in neck group III was reported followed by neck dissection and wide surgical control of borders of site after tumor excision where no metastasis were reported. Follow up after second operation is 6 months without signs of recurrence.

Keywords: Granular Cell Tumor; Therapy

EFFICACY OF PREOPERATIVE ORAL ROFECOCIB IN WISDOM TOOTH SURGERY

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Background: Non-steroidal anti-inflammatory drugs (NSAIDs) are commonly prescribed for post-operative pain after wisdom tooth surgery. Rofecoxib is a selective cyclooxygenase-2 inhibitor with pain inhibitory effects sustaining up to 24 hours after a single dose. The pre-operative oral rofecoxib may prevent nociceptive activation during surgery and may reduce post-operative pain. **Objective:** The study compared the analgesic efficacy of pre-operative oral rofecoxib 50 mg, ibuprofen 400 mg and placebo for post-operative pain after wisdom tooth surgery. **Methods:** This was a clinical randomized double-blind study. The lower wisdom teeth of the patients were randomized into 3 groups and were given a single dose of rofecoxib 50 mg, ibuprofen 400 mg or placebo 30–60 minutes before the surgery. The patients were asked to quantify their post-operative pain. A rescue medication,

acetaminophen 500 mg, was prescribed. The quantity and time of consumption of the rescue tablets were recorded. **Results:** A total of 49 patients completed the study. The 98 lower wisdom teeth were randomized to 3 groups: 33 received rofecoxib, 33 received ibuprofen, and 32 received placebo. The baseline characteristics among these 3 groups were similar. The pain scores within the first 6 hours post-operatively in the rofecoxib group were significantly lower than the placebo ($P < 0.05$). Regarding the post-operative requirement of rescue medication, the rofecoxib group required significantly less rescue medication in the first 12 hours after the surgery ($P < 0.05$). The post-operative total intake of rescue medication was statistically different between the rofecoxib group and the ibuprofen group ($P < 0.05$). **Conclusion:** The pre-operative oral rofecoxib 50 mg provides a significantly better analgesic benefit than the placebo for post-operative pain relief in the first 6 hours after wisdom tooth surgery. The requirement for additional post-operative analgesic was also reduced.

Keywords: Rofecoxib; Vioxx; Anti-inflammatory agents; Non-steroidal; Cyclooxygenase inhibitor; Ibuprofen; Propionates

TREATMENT OF A CASE OF SYNOVIAL CHONDROMATOSIS OF THE TEMPOROMANDIBULAR JOINT

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Introduction: Temporomandibular joint (TMJ) is an unusual site of involvement of synovial chondromatosis with approximately 100 cases reported in the literature. Extracapsular extension with involvement of surrounding structures is exceptional (9 cases reported). We present a case of synovial chondromatosis of the TMJ with extension in the infratemporal region. Management of extracapsular synovial chondromatosis are discussed according to the review of the literature. **Case report:** A 35 years old man presented with left meniscal luxation signs. We have proposed him occlusal prosthesis. Then we have lost sight of him. He presented with a left preauricular mass 4 years and a half later. A biopsy diagnose synovial chondromatosis. At surgery, through a combined intracranial and infratemporal exploration, a large mass has been removed, because we were afraid of chondrosarcoma. In spite of this treatment, tumoral signs have reappear few months later. We have proposed a complete resection of the mass which was extending into infratemporal region. **Discussion:** The treatment is always surgical according to the review of the literature. Neither radiotherapy nor chemotherapy have been tried. For 6 cases, there was an intracranial extension and the dural defect has been closed with a graft (1, 2, 3, 4, 5, 6). In one case, disease extend into the external auditory canal (7). In another case, tumor extend into the parotid gland (8). For the last case, parotid and infratemporal region were invaded (9). **Conclusion:** Synovial chondromatosis symptoms commonly include TMJ pain, preauricular swelling and TMJ dysfunction (9). Conventional radiography reveals no finding in 50% of the cases. Magnetic

resonance imaging (MR) and computed tomography (CT) played complementary roles in synovial chondromatosis (5). The differential diagnosis is chondrosarcoma. The treatment is surgery.

Keywords: Synovial chondromatosis; Temporomandibular joint; Surgical treatment

Abstr ID 312

488

SMALL CELL CARCINOMA METASTATIC TO THE MEDIAL PTERYGOID MUSCLE PRESENTING AS NEW ONSET TRISMUS: CASE REPORT

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Aim: Metastatic malignant neoplasms of the head and neck soft tissues are rare. We present a case of metastatic small cell carcinoma of the medial pterygoid. **Materials and Methods:** A 59 year old female presented to our department complaining of trismus of short duration of onset. On examination mouth opening was restricted to 10mm though there were no other physical findings of note. The patient had a history of small cell carcinoma of the lung previously treated though no other significant medical history. Plain films of the temporomandibular joint were unremarkable and a CT was requested. **Results:** The CT showed a mass within the medial pterygoid muscle consistent with metastatic small cell carcinoma. **Conclusion:** Lung carcinomas are recognised to metastasise to the head and neck region. Previously a case of small cell carcinoma has been reported within the masseter muscle. Bronchogenic carcinomas are the commonest malignancy to metastasise to the head and neck region. Mandibular metastases from prostate carcinoma have in the past presented with pain mimicking temporomandibular dysfunction though no trismus on examination. We present this case as the first case described of small cell carcinoma metastatic to the medial pterygoid muscle presenting as new onset trismus. The case emphasises the importance of thorough investigation of any elderly patient presenting with acute onset of trismus to exclude the possibility of extra-articular metastases.

Keywords: Metastatic small cell carcinoma; Medial Pterygoid muscle; Trismus

Abstr ID 61

489

PRESENTATION OF FOUR CLINICAL CASE OF METASTATIC TUMORS TO THE MAXILLA AND MANDIBULA

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Aims: To show group of the most interesting cases treated at our clinic during last years, for distant jaws metastasis from prostate, vesica urinaria and breast carcinoma. The affected bones by extraoral tumors are mandibla and maxilla and the most frequent form of tumor is breast

cancer. Metastatic lesions to the hard and soft tissues of the maxillofacial region are rare and represent only 1% of all orofacial tumors. The mandible is the most common bony site and when this disease occurs, it is usually unilateral but sometimes bilateral metastases have been recorded. Probably because it is most common of all female-specific malignancies, metastatic disease of the breast to the jaws, particularly the mandible, it is most common of maxillofacial metastases. The first evidence of bone metastasis is paresthesia, followed by enlargement covered by normal soft tissues and only later is there pain. **Methods:** In this retrospective study from 1994–2004 of the patient treated at the Clinic for Maxillofacial Surgery in Skopje we present four cases of jaws metastasis. One of them is female with breast carcinoma with mandibular metastasis. Second is male breast cancer metastatic to maxilla. Third is male with prostata carcinoma with mandibular metastasis. And the last one was the male presented with a maxillary metastases from a vesica urinaria cancer. **Results:** All four patients were confirmed clinically, radiographically and histopathologically before and after treatment. They were treated with good operative success in maxillofacial regia but the diagnosis permitted treatment of original cancer.

Keywords: Cancer; Jaws metastasis; Prostata; Breast; Vesica urinaria

Abstr ID 791

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CARCINOMA OF THE THYROID METASTATIC TO THE MANDIBLE

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Aims: To report on a case of carcinoma of the thyroid metastatic to the mandible and to draw attention to the follicular variant of papillary carcinoma. **Subject:** A 76 year old lady, whom 5 years previously had undergone partial thyroidectomy for follicular carcinoma of the thyroid, was referred with a 4 month history of pain from the anterior of her mandible. Radiographic examination revealed a non specific 4cm diameter periapical radiolucency in the midline of the mandible involving the apices of the lower incisor teeth consistent with a radicular cyst, keratocyst or metastases. **Results:** Histopathology demonstrated typical features of papillary thyroid metastatic disease. A review of the original histopathology resulted in a revised diagnosis of follicular variant of papillary carcinoma. This diagnosis was further supported with immunostaining and focal but strong expression of cytokeratin polypeptide (CK)19. Management was with iodine131. Post therapy radio-iodine scans demonstrated no metastatic disease. 18 months later she required laryngectomy and partial resection of the pharynx for the management of further metastases. **Conclusion:** This case acts as a reminder of the importance of maintaining a broad outlook when faced with routine clinical and radiographic findings. Attention is drawn to a rare variant of papillary carcinoma. The prognosis of carcinoma of the thyroid and its management varies according to histological type. The immunohistochemical localisation of CK19 is a useful adjunct in the histopathological diagnosis of a thyroid lesion.

A CASE REPORT: EMBRYONAL RHABDOMYOSARCOMA IN A TWO MONTHS CHILD

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We present the case of a two months child with a tumor on the bottom of the mouth. The anatomopathologic diagnosis was embryonal rhabdomyosarcoma. This is the youngest patient with a RMS described in the medical literature. Rhabdomyosarcoma (RMS) is a malignant tumor consisted of neoplastic mesenchymal cells, with varying degrees of striated muscle cell differentiation. It is considered to be the most common malignant soft tissue tumor, which counts 5–10% of all childhood malignances. The frequency of RMS in U.S.A. is 4.4 cases per million of population each year. In children has a relative predilection to the head and neck region (28%). In the oral cavity represent 10–12% of the tumors in head and neck region. The vast majority of cases of rhabdomyosarcoma occur sporadically with no recognized predisposing or risk factor, although a small proportion are associated with genetic conditions. Clinically, it usually presents such a mucosal mass without pain and has typically a rapidly enlarging. Rhabdomyosarcoma is treated by radical surgical excision followed by multi-agent chemotherapy. Postoperative radiotherapy is used for those cases which cannot be completely resected. The prognosis for a child or adolescent with rhabdomyosarcoma is related to the site of origin, extent and histopathology of disease.

Keywords: Embryonal rhabdomyosarcoma oral cavity tumors childhood tumors

PALATE PRIMARY LOCALIZATION OF AN ESTHESIONEUROBLASTOMA. A CASE REPORT

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Aim: To present an extraordinary rare case due to its primary localization. Esthesioneuroblastoma originates from the neuroectodermic cells of the olfactory epithelium, so it may arise from the cribriform plate, the superior or supreme turbinates, or the upper third of the nasal septum. Clinical staging is usually carried out following Kadish et al. criteria. (Group A includes tumors confined to the nasal cavity, B tumors that involve paranasal sinuses, C tumors extended beyond). The patient is a young woman, with a hard palate esthesioneuroblastoma without any relationship with the nasal cavity. Subject A 26 years old woman, with a healthy medical record, affected by a painless fast growing mass in the palate for 2 months. The

tumor has a pinky smooth surface with some degree of congestion, it ranges 2 × 4 cm, and it is localized in the left hard palate posterior third. She also complains of some mobility of the first and second upper molars. The performed biopsy is informed as esthesioneuroblastoma. The CT shows no tumor beyond the palate. We performed a modified hemimaxilectomy of the left maxillary infrastructure without resection of the anterior portion. A temporalis myofascial pedicled flap accomplished the reconstruction. The patient was discharged 14 days after operation. The treatment was completed with external beam radiotherapy. Result Post-operative pathologic report confirms preop **Diagnosis:** Olfactory neuroblastoma without continuity with olfactory epithelium. **Conclusion:** In world literature, there is no experience in treatment of this type of esthesioneuroblastoma. We decided to follow treatment guidelines for standard esthesioneuroblastoma: This case represents a tumor locally confined, equivalent to type A or B of Kadish criteria for standard esthesioneuroblastomas. Therefore, we performed a surgical resection followed by radiation therapy.

Keywords: Esthesioneuroblastoma; Atypical; Origin

ATYPICAL GLOMUS TUMOR IN MAXILLOFACIAL AREA

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Paraganglioma is the name for tumours of specialised tissue originating from the neural tube. Another name is glomus tumour. These tumours are very uncommon. They are usually found in the head and neck. We find them in the carotid bifurcation, in the jugular and tympanic area. In histological terms, they are round or polygonal epitheloid cells organised as a nest. They are very much like normal paraganglia except that the nests are larger and irregular in shape. The tumour is typically vascular and may be enclosed in a thin fibrous capsule. These are tumours that in 6–9% of the cases metastasise into regional lymph nodes. They are treated surgically and with radiotherapy. In the past few years, pathologists have observed glomus tumours with unusual characteristics that were named atypical glomus tumours and constitute a relatively new entity. The unusual features include large size, deep location, infiltrative growth, irregular mitotic activity, nuclear pleomorphism and necrosis. This paper deals with the case of a fifteen-year-old boy with a tumour in the temporal and infratemporal area, with the clinical and histological characteristics of the atypical glomus tumour. Preoperatively we used radiological methods, US, CT, NMR, scintigraphy and embolisation. We removed tumor that infiltrated temporal muscle and spread in the infratemporal and retromaxillary area in a radical surgical act. Post-operatively combined radio and haemotherapy was used. Two years after the treatment our patient is feeling well, without recidives or methastases.

Keywords: Paraganglioma; Glomus tumor; Atypical glomus tumor

Abstr ID 684

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ORAL METASTASIS OF ADENOCARCINOMA COLON*Jarrosson C, Bakhos D, Brygo A, Sury F, Goga D**Tours, France**E-mail: sury@compaenet.fr*

Introduction: Four cases of metastasis of adenocarcinoma colon localized on the level of the upper maxillary are described in literature. In front of a mass mucous membranes or osseous of the upper maxillary the diagnosis of a metastasis must be evoked, all the more if the person presents a cancerous medical history. **Case report:** The case is about a nonrevealing metastasis adenocarcinoma colon of a 53 years old woman. The metastasis was located at the upper maxilla level and was associated with a pulmonary and a mediastinal metastasis. The interrogation found no moan. After discussion of the case in multidisciplinary consultation, it was decided to continue the protocol of exclusive chemotherapy. Eight months later, there was a tumour reduction more than 50 percent. **Discussion:** The metastases of maxillary represent 1 percent of the affections of the oral cavity. The lower maxillary is affected more frequently than the upper maxillary. The primitive cancer is exceptionally the colon, only four cases of colorectal origin were reported in the literature. The symptomatology is not specific. Functional and clinical symptomatology described in the literature is listed. Only a histological examination allows the diagnosis of certainty. The treatment is adapted to each case according to the nature and the evolution of primitive cancer.

Keywords: Upper jawbow; Oral cavity; Metastasis; Colon; Adenocarcinoma

Abstr ID 333

495

MYOEPIHELIAL CARCINOMA IN THE MANDIBLE*Karakinaris G, Tzarou V, Antoniadis V, Hatzipetrou L, Antoniadis K*

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The epithelial-myoeplithelial carcinoma is a rare salivary gland tumor, representing approximately 1.1% of salivary neoplasms. Most prevalent in the major salivary glands, this tumor is found specially in parotid while in minor salivary accounts from 10% to 15%. A 33 years old man, presented a huge, painless, rapidly growing tumor in the mandible, 4 days after removal of the left first molar. After C.T. examination and biopsy performed, the patient underwent marginal left mandibulectomy and ipsilateral Radical Neck Dissection. Histopathological study revealed a tumor composed entirely of myoeplithelial like cells with multiple mitoses, infiltrating both nervous and lymph tracts. Immunohistochemical confirmation showed diffuse strong positivity for vimentin and smooth muscle actin and focal positivity for cytokeratins while s-100 protein expression was not confirmed. Although it's classified as an epithelial neoplasia of low histological grade of malignancy

nevertheless presents a high incidence of recurrence. Cervical metastasis in about 18% of cases and long distance metastasis and death in about 8% of cases.

Keywords: Myoeplithelial carcinoma; Minor salivary glands

Abstr ID 627

496

ADULT RHABDOMYOMA AFFECTING THE FLOOR OF THE MOUTH. REPORT OF A NEW CASE AND REVIEW OF THE LITERATURE*Sahuquillo-Arce E, Heredia-Oliva L, Baquero Ruiz de la Hermosa MC, Vera-Sempere F, Salom-Alonso L, Batlles-Sebastian JM, Alemany-Roig F, Buj-Jorda H, Floria Garcia LM, Senis LM, Hammad P*

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Aims: Rhabdomyoma is a rare, benign neoplasm that originates from mesenchymal tissue—skeletal muscle—and it occurs predominantly in the head and neck area when its location is other than the cardiac muscle. The most common sites within the head and neck are the pharyngeal and oral areas and its adjacent structures. **Subject:** We report one case affecting a 54 year-old caucasian male diagnosed of rhabdomyoma of the floor of the mouth—adult type—found as a slow-growing mass bulging under the right side of the tongue during routine examination for chronic dysphonia. **Methods:** Clinical anamnesis, physical examination, MRI and Fine-Needle aspiration cytology was planned. Later on, incisional biopsy was performed for differential diagnosis. **Results:** MRI imaging showed a 41 × 20 mm mass lying on the floor of the mouth—right side—arising from the tongue toward submandibular space, resting on the mylohyoid muscle in contiguity of the right submaxillary gland. The mass displaced the submaxillary gland's drainage duct laterally and cephalad. Fine-needle aspiration cytology was not conclusive at first so incisional biopsy was performed. Once the biopsy confirmed the diagnose and the benign nature of the mass, simple enucleation of the lesion was planned supporting our decision on image tests. Histological features of the surgical specimen matched the previous results. **Conclusions:** Since these tumours' incidence is very low, a correct diagnosis may prevent unnecessary and more aggressive surgical treatments.

Keywords: Oral Adult Rhabdomyoma; Rare head and neck tumours

Abstr ID 285

497

CLINICAL SIGNIFICANT OF VASCULAR ENDOTHELIAL GROWTH FACTOR (VEGF) IN TUMOR TISSUE OF PATIENTS WITH TONGUE CANCER*Imai Y*, Sasaki T, Kawamata H, Sakai H, Asano K, Shinagawa Y, Narikawa K*

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Aim: The growth of any solid tumor depends on angiogenesis, including oral cancer. Vascular endothelial growth factor (VEGF) is one of the most potent angiogenic factors and is becoming of increasing interest as major regulators of cancer cell growth and metastasis. The purpose of this study was to elucidate the clinicopathological significance of VEGF in tumor tissue of patients with tongue cancer.

Patients and Method: We studied 40 patients with tongue cancer who under went therapy at our department, obtaining one tumor biopsy specimen from each patients. VEGF were immunohistochemically stained. **Results:** Eleven of 40 (27.5%) patients with tongue cancer were positive for VEGF. There were no significant correlations between VEGF expression and T classification, regional lymph metastasis, clinical stage, differentiation, mode of invasion, or depth of tumor invasion. There was a significant correlation between pathological lymph node metastases and VEGF expression ($P=0.0216$). **Conclusion:** These results suggest that VEGF expression in tongue cancer may have important consequences for metastasis and may be useful approach in obtaining information concerning the metastasis of tongue cancer. And also, suppression of VEGF may be a feasible strategy for tongue cancer treatment in future.

Keywords: VEGF; Angiogenic factors; Cancer cell growth and metastasis

Abstr ID 813

498

ORAL LEIOMYOMA: A CASE REPORT

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Introduction: Leiomyoma is a benign tumour originated on smooth muscle. It appears most frequently in uterine myometrium, gastrointestinal tract and skin. Oral cavity is an uncommon location being the tongue, lips and palate the most usual places. Although oral leiomyoma may occurs at any age it uses to be between 40 and 49 years old. It's more usual to be presented on male than on female. Most of them are asymptomatic lesions but sometimes there are unspecific symptoms such as local pain or difficulty on chewing. The diagnosis of these kind of oral tumours is based on histological studies, using specifics stains. The only treatment that is demonstrated to be effective is surgical excision. It's extremely difficult to have a recurrence making a correct resection of the tumour. **Case report:** In this article we report a case of a 25 year-old man, with a history of three weeks of a leiomyoma placed in his right retromolar area. The case reported show good results **Discussion:** We present the clinical characteristics, diagnosis and treatment of this type of tumours.

Abstr ID 130

499

LARGE CYSTS OF THE MANDIBLE

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Cysts are common in mandible, but could be challenging when exceed more than 5 cm of mandibular length. During last ten years at the Clinic for maxillofacial Surgery of the Military Medical Academy - Belgrade there was 98 patients with large mandibular cysts: 40 developmental (25 dentigerous, 12 keratocysts, 1 eruption, 2 calcifying odontogenic cyst); 57 inflammatory (56 radicular and 1 residual cyst) and one aneurysmatic cyst. There was 67 males and 31 females; 11–62 years old (mean age 35 years). Most of cysts involve angular region (37), mandibular body (31), ascendent ramus (3), symphysis (7) and two or more of these regions (22). Two patients had two different cysts, and two patients simultaneously had some other intraoral lesion: fibroma and hemangioma. More than half caused external visible asymmetry, pain and drainage. All of them were enucleated and residual defect has been reconstructed with aloplastic material (Osteovit), rarely marsupialized (8) or mandibula enhanced with metallic plate over remaining buccolabial cortex. In three cases reoperation was needed after two-seven years. In two cases of keratocyst nevoid basal cell carcinoma syndrome (Gorlin syndrome) has been present: 59 years old woman (keratocyst found after several excisions of facial basalioma) and 35 years old man (keratocyst operated 12 years before occurrence of multiple facial basaliomas); both with epidermal cysts, enlarged head circumference, rib anomalies and mild hypertelorism, as well as pectus excavatum at male, but without evidence of calcification of cerebral falx.

Keywords: Cystis; Mandible

Abstr ID 378

500

INTRANASAL CALCITONIN THERAPY FOR CENTRAL GIANT CELL GRANULOMA

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Objectives: Conventional treatment for the central giant cell granuloma (CGCG) has been local curettage with a high success rate and low recurrence rate, however a number of alternative nonsurgical therapies have been advocated in recent years. These alternative treatments include intralesional steroid injections, the use of alpha-interferon administrated via subcutaneous injection and subcutaneous or intranasal calcitonin therapy. This report provides the results of calcitonin therapy via intranasal spray. **Material and Methods:** Three patients with biopsy proved central giant cell granuloma received intranasal calcitonin therapy. All the patients were treated with 100 international units of salmon calcitonin per day and all of them have been followed for at least 12 months after the discontinuation of treatment. Therapy continued until there was no further resolution of the lesion radiographically. **Results:** In three cases the lesions resolved completely after 12–19 months of intranasal calcitonin treatment. **Conclusions:** Initial studies indicate that a medical approach to the treatment central giant cell granuloma is feasible. Intranasal calcitonin treatment appears to be a viable option for the management

of the giant cell granuloma but should probably be reserved for some cases (patients with pathology associated and high surgery risk), because of the length of treatment time.

Keywords: Central giant cell granuloma; Intranasal; Calcitonin

Abstr ID 561

501

CHEEK MINOR SALIVARY GLANDS TUMORS OF THE CHEEK

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Cheek minor salivary glands tumors are entity and are rare. Malign formations are extremely aggressive and with bad prognosis. **Aim:** Is to present the results of cheek minor salivary glands tumors treatment. **Material and Method:** By retrospective analysis of patients files at Clinic for Maxillofacial surgery, Faculty of Stomatologu in Belgrade in period from 1995 to 2000 following parameters were observed and analysed: gender, age, period passed from the appearance of the first symptoms to the moment patient came to the clinic, clinical findings, auxiliary diagnostic method used, type of surgical treatment, histopathological findings, relapses, complications. **Results:** In period from 1995 to 2000, 605 patients were treated for salivary glands tumors. 6 (1%) had tumors of cheek minor salivary glands origin. 4 of them (66%) were female while 2 (34%) were male. Majority were over 60 years old (4 patients). One patient was earlier operated in another institution. 66% of patients (4) came to clinic after more then one year since the appearance of the first symptoms. Tumors size were average 3.1 cm. With 5 patients tumors were movable and not fixed to the underlying tissue. 3 patients (50%) reported pain sensation. Excision was performed with 5 (83%) while biopsy was performed with 1 patient. Selective dissection of the neck was performed with one patient. There were 3 patients (50%) with histopathologically verified malign changes of minor salivary glands origin (2 acinar cell carcinomas and adenoid cystic carcinoma. Postoperative complications were not registered. **Conclusion:** 1% of all tumors of salivary glands in our casuistry are cheek minor salivary glands tumors. Detailed clinical examination including all auxiliary diagnostic methods is necessary. Surgical treatment with pathohistological verification is method of choice. Depending on pathohistological diagnosis other methods of treating, such as radiological and chemotherapy, are often necessary.

Keywords: Oral cavity tumors; Minor salivary glands

Abstr ID 562

502

SALIVARY GLAND TUMORS OF THE SOFT PALATE: A RETROSPECTIVE STUDY

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In a retrospective study, the cases of salivary gland tumors of the soft palate that were treated in our Clinic have been evaluated regarding the age, sex, period between first symptoms and surgical treatment, clinical features, histological diagnosis, metastasis in a cases of malignant tumors and type of operation. From 1992 to 2001 at the Clinic for Maxillofacial Surgery in Belgrade, there were 908 patients with the salivary gland tumors, and 12 patients (1.3%) were treated from salivary gland tumors of the soft palate. Their sex distribution was: 8 male and 4 female. Most of them (6 patients) were between 31 and 40 years old. In 8 patients (66%) the final diagnosis was made up to six months after the first onset of symptoms. In most of the cases (75%) the size of the lesion was between 2 and 3 cm. On clinical examination the lesions were fixed in 8 patients, and only one patient experienced pain locally. Diagnostic examination with biopsy was done in 5 cases, and in 2 cases a CT scan. All patients underwent complete surgical excision of the lesion in general anesthesia. Pathologically, in 6 patients benign lesions were found (pleomorphic adenoma was the most common finding – in 5 patients) and in 6 cases malignant tumors were revealed (adenoid cystic ca and mucoepidermoid were found). Postoperative complications were not found. In cases with malignant tumors adequate protocols were applied postoperatively.

Keywords: Oral cavity tumors; Minor salivary gland

Abstr ID 774

503

ACINIC CELL CARCINOMA OF ORAL FLOOR WHICH REVEALED SPECIFIC HISTOPATHOLOGICAL FINDINGS: REPORT OF A CASE

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Acinic cell carcinoma is a tumor of the salivary gland that is characterized by the proliferation of cells that resemble serous acinic cells. The tumor frequently arises from the parotid gland and very rarely from other salivary glands. We encountered a case of acinic cell carcinoma that arose from the sublingual gland and indicated a specific histopathological picture. A 39-year-old woman came to our department of the hospital because of swelling of the right submandibular triangle on December 17 in 2001. A small egg-shaped movable rigid tumor was detected in the submucosal region of the right oral floor. An MRI examination revealed an approximately 3 cm well-defined tumor located anteriorly to the submandibular gland. A diagnosis of salivary-gland tumor arising from the right oral floor was made, and according to the diagnosis, the tumor together with the sublingual gland and the submandibular gland was resected in the patient under general anesthesia on February 25, 2002. The resected tumor had a covering and no adhesion to the surrounding tissues. The tumor was 3.5 × 3.5 × 2 cm in size, evenly flat on its surface, and dark-red, with a thin covering. Histopathological examination showed it to be a solid tumor with a fibrous covering, which chiefly consisted of a lobular structure surrounded by capillary stroma, partly with duct formation. Tumor cells had circular or oval nuclei and

predominantly had acidophilic granular cytoplasm, among which mucous cells were seen here and there. The tumor cells were positive for PAS staining, and positive for Éø-amylase and mitochondria on immunostaining. On the basis of the above findings, low-malignancy acidophilic acinic cell carcinoma was diagnosed.

Keywords: Acinic cell carcinoma; Sublingual gland; Pathology; Salivary tumor

Abstr ID 53

504

HYPERPARATHYROIDISM-JAW TUMOR SYNDROME

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Hyperparathyroidism frequently has bone effects, and, in a subset of patients, mainly on the facial bones (hyperparathyroidism-jaw tumor syndrome (HPT-JT)). These patients suffer from hereditary primary hyperparathyroidism (caused by parathyroid adenomas) and ossifying fibromas of the jaws, and may suffer of a multitude of other neoplasias, particularly of the kidney. This syndrome is one of those presenting with familial hyperparathyroidism, being less frequent than the Multiple Endocrine Neoplasia Syndromes (MEN). It is an autosomic dominant disease associated with a gene located on the chromosome 1. The hyperparathyroidism and the ossifying fibromas appear in an earlier age than in the sporadic cases of these diseases. The parathyroid adenomas are frequently multiple and show cystic changes, and in an appreciable proportion suffer malignant degeneration. The authors describe a family from Central Portugal, with seven affected elements, among which five had ossifying fibromas that were treated at the Maxillofacial Surgery Service of the Coimbra University Hospitals. Of these five with jaw tumours, three had single parathyroid adenomas, one had multiple adenomas, and one had a parathyroid carcinoma. The authors focus on the treatment provided for the facial tumours and recall the existing knowledge upon this disease still badly known, and which can appear initially as a facial tumour, and so be initially diagnosed by the maxillofacial surgeon.

Keywords: Hyperparathyroidism; Jaw tumours; Ossifying fibromas; HPT-JT syndrome

Abstr ID 120

505

ANGIOMYOLIPOMA OF THE BUCCAL MUCOSA: REPORT OF A CASE

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Angiomyolipoma is a benign tumour that usually affects the kidney. It is rare for this type of tumour to present in

the oral cavity. The authors report a case of a 61 year old man who presented with a well circumscribed left sided swelling in his cheek. The initial presumed diagnosis was thought to be that of a minor salivary gland tumour. However the histological examination of the lesion was found to consist of thick walled blood vessels surrounded by a coat of proliferating smooth cells in a background of mature adipocytes. This suggested a diagnosis of angiomyolipoma. As far as we are aware there have only been 4 reported cases of oral angiomyolipoma. We discuss the clinical presentation and surgical management of this tumour along with the differential diagnosis and prognosis.

References:

- Angiomyolipoma of the oral cavity: report of two cases. Yamamoto K, Nakamine H, Osaki T. *J Oral Maxillofac Surg.* 1995 Apr;53(4):459-461.
- Angiomyolipomatous hamartoma of the tongue. Ide F, Shimoyama T, Horie N. *Oral Surg Oral Med Oral Pathology Oral Radiology Endodontics.* 1998 May;85(5):581-584.
- Angiomyolipoma of the palate. Report of a case. Piattelli A, Fioroni M, Rubini C, Fiera E. *Oral Oncology.* 2001 Apr;37(3):323-325.

Keywords: Angiomyolipoma; Buccal submucosal benign

Abstr ID 131

506

ASPERGILLOSIS OF MAXILLARY SINUS AFTER REMOVAL OF TRANSITIONAL-CELL CARCINOMA OF ITS MUCOUS MEMBRANE – A CASE REPORT

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Background: Aspergillosis is chronic or recurrent disease characterized with granulomatous inflammation followed by skin, orbital, antral, bronchial, pulmonary and brain lesions. In 90% of cases is it caused by *Aspergillus fumigatus*, and the rest of 10% of cases is caused by *Aspergillus flavus* and *Aspergillus niger*. **Case report:** This paper presents a case of 67 years old female who developed proliferative, noninvasive form of aspergillosis of maxillary sinus three years after removal of transitional-cell carcinoma of its mucous membrane. Preoperative clinical and radiographic findings, as well as CT scans have been nonspecific, indicating chronic mucositis or tumor relapse. Intraoperatively the sinus has been found filled up with black-gray loose mass with single white and yellow spots, fixed to a roof and almost reaching the floor of the sinus that had been completely removed, without any attempt of primary reconstruction, although pathohistologic ex tempore result declared it as a benign lesion. Definitive pathohistology confirmed aspergillosis that has been also proved by serologic Ouchterlony's method of immunodiffusion and Latex agglutination for verification of *Aspergillus* antigens in serum. **Conclusion:** This is our only case of intraantral aspergillosis after surgical removal of its mucous membrane transitional-cell carcinoma. Four years long clinical, radiographic and mycotic follow-up does not

reveal any sign of local relaps or distant dissemination neither of carcinoma, nor aspergillosis.

Keywords: Aspergillosis; Sinus maxillaris

Abstr ID 149

507

THE EXPERIENCE IN ORAL CANCER RECONSTRUCTIVE SURGERY

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Background: Considering the experience in oncological plastic surgery, the simultaneous reconstruction of defects after extended operations in oral cancer is expedient to improve the patients quality of life. **Method and Materials:** The primary extended operations with simultaneous reconstruction have been performed to 333 patients with advanced and residual oral cancer in our hospital between 1981 and 2002. Tumor localizations were following: tongue in 134 (40.2%) cases, mouth floor 133 (40.2%), mandible 40 (12%), buccal mucosa 16 (4.8%) and retromolar area 10 (3%). Following flaps were used most frequently for defect substitution: major pectoral muscle in 137 (41.1%) patients, sterno-cleido-mastoide muscle 47 (14.1%), platysma 46 (13.8%), nasolabial flap 37 (11.1%), other flaps applied 66 (14.8%) patients. Combined plastic approach (mostly major pectoral muscle with another flap) have been used in 17 (5.1%) patients. Different kinds of mandible resections have been carried out in 263 (79%) cases. In this group the rib mandible resections underwent 71 (27%) patients, segmental resections 180 (68.4%), with exarticulation 12 (4.6%). Mandible continuity were reconstructed in 34 cases mostly by titan implants. **Results:** Partial flap necrosis and suture disclosure were the most frequent complications in 141 (42.3%) patients. Those followed by permanent orostomas and fistulas, in 16.8% which need further plastic and temporal fistulas in 6%, closed by conservative treatment. The uneventful results were mostly in major pectoral flap (58.4%), combined plastic (53%) and nasolabial flap (84%). **Conclusions:** Results of simultaneous reconstructive operations in oral cancer might be improved by advancing surgical techniques and analyzing reasons of complications.

Keywords: Oral cancer reconstructive surgery

Abstr ID 302

508

CHARACTERIZATION OF ORAL CANDIDA LEUKOPLAKIAS

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Aim: The aim of this study was to detect Candida hyphae present in bioptic samples originating from the buccal leukoplakias and to characterize histopathological changes

in these samples. **Materials and Methods:** Sixty-four male patients with signs of chronic candidal leukoplakia were selected for the study. The changes to the mucosae were observed in the course of two years – from February 1999 to January 2001. Three of them were insulin-dependent diabetic males, 41 were smokers and 46 wore partial or total dentures. Nine of them had previously been subjected to chemotherapy and radiotherapy because of neoplastic diseases in the orofacial region and five received antifungal drugs. Smears of leukoplakias were obtained with dry sterile cotton wool swabs and plated onto Sabouraud's agar. The isolated organisms were identified as *C. albicans* by the germ tube test, chlamydospore production, and sugar assimilation reaction. Transverse sections of 5-m thickness were cut from each of the specimens. They were stained with PAS, and by Grocott's silver stain method, identified under a light microscope. **Results:** The cultivation showed that *C. albicans* was the dominant organism in all 64 patients but fungal hyphae were proved histologically in only 23 of them. The buccal mucosa was the predominant site of Candida invasion of the leukoplakias. Leukoplakias of our patients were characterized by a flattened, somewhat ovoid, hyperplastic, white central portion surrounded by an erythematous periphery. **Conclusion:** Oral leukoplakia is considered to be a precancerous lesion that occurs in the oral cavity. Oral leukoplakia occurs in 3–4 % of the adult population, and, if untreated, 5–10 % of the cases will develop into carcinoma.

Keywords: Oral candida; Leucoplakia

Abstr ID 306

509

BONE CELL TRANSPLANTATION IN RECONSTRUCTIVE SURGERY IN OROFACIAL REGION

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Aim: Defects of facial bones have a variety of causes (trauma, cysts, benign osteodestructive tumors, malignant tumors, atrophic loss of bones, congenital deformities). The aim of this study is to evaluate possibilities of reconstruction of these defects. **Materials and Methods:** There are three types of bone grafts used in reconstruction surgery of hard tissue defects in orofacial region. Autogenous grafts which are composed of tissues of the same individual. Allogeneic grafts which are taken from another individual of the same species. Xenogeneic bone grafts, taken from one species and grafted to another are not very frequently used in human medicine. In the period within 1998–2003, 150 patients were treated at our clinic. In 82 cases autografts were used. In 68 cases the allografts were used. Xenogenic bone grafts were not used. In 64% of cases supporting of osteointegration with autogenic osteoblasts was used. **Results:** Time after operation was in range 6–48 months. The healing success was in 73% of cases, but in combination with autogenic osteoblasts was more than 91% and the period of healing activated and time decrease to 32%. **Conclusion:** Using a bone grafts in hard tissue reconstruction surgery in orofacial region is very popular in these days. The correct choice of type of bone graft depends on many factors (evaluation of the defect, type of surgical intervention,

possibility of supportive therapy using a autogenic osteoblasts). One of the biggest disadvantages of autografting is the mutilation of the patients. But allografting is linked with technical problems and the healing phase is longer and healing success is not as big as in autografting.

Keywords: Demineralised bone matrix; Bone cell transplantation; Osteoblasts; Bone grafting

Abstr ID 313

510

FOLLICULAR LYMPHOID HYPERPLASIA OF THE PALATE: CASE REPORT

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Follicular lymphoid hyperplasia of the palate is a very rare non-neoplastic lymphoproliferative disease of the oral mucosa. Follicular lymphoid hyperplasia is a condition which may be confused clinically and histologically with malignant lymphoma. The first published report of cases in which the disease affected the oral mucosa was by Adkins in 1973. Follicular lymphoid hyperplasia most commonly affects elderly patients and presents as a painless, slowly growing non-ulcerated mass situated in the posterior of the hard palate. An age range of 38 to 79 years with a mean age of 61 years has been reported (including this case) with a male to female ratio of 6:15. We present a case of a 44 year old male referred by his general dental practitioner with an ulcerated area of the soft palate. The ulcer had been intermittently present for 12 years. He was otherwise fit and well. Examination revealed a non indurated ulcer approximately 15mm in diameter of the right side of the soft palate. A biopsy was performed which following immunohistochemical examination for bcl 2 and CD 20 excluded the possibility of lymphoma and led to the diagnosis of follicular lymphoid hyperplasia. Follicular lymphoid hyperplasia is an extremely rare condition with only 20 previously reported cases in addition to the original report of Adkins. Our case was unique as it involved the soft palate as opposed to the hard palate and that the patient experienced pain from it. Clinicians should be aware of this condition when considering palatal pathology as the correct diagnosis using immunohistochemistry may prevent unnecessary investigation and aggressive treatment for lymphoma.

Keywords: Follicular lymphoid hyperplasia; Soft palate

Abstr ID 406

511

"NON IMMUNOCOMPROMISED LYMPH NODAL KAPOSÍ'S SARCOMA OF THE PAROTID GLAND"

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Kaposi's sarcoma was described at first as multiple, slowly progressing, pigmented skin plaques in Mediterranean men

and as a vasoformative lesion in microscopic findings. Since then, there have been suggested several forms of the disease: (1) sporadic (2) transplantation associated (3) endemic African (4) epidemic, acquired immunodeficiency syndrome (AIDS)-related. These forms can be either mucocutaneous or lymph nodal. Although lymph node involvement may be seen in all four clinical forms and sometimes can precede the development of skin lesions or may even occur in their absence, it is more frequently seen in the AIDS-related form. There are a number of AIDS-defining diseases including malignancies, of which KS is one of the most specific. In addition, Kaposi sarcoma-associated herpesvirus (KSHV) or else HHV-8 is believed to play an etiologic role in the development of KS in patients either with or without evidence of HIV infection. In the head and neck region many disorders of major salivary glands have an increased association with HIV infection. However, KS of parotid tissue or intraparotid lymph node is extremely rare in HIV-negative patients. We report a case of right parotid mass as an early sign of KS infection of a 57-year-old patient. The problems related to the diagnosis, the management strategy of such a rare condition and prognosis are also discussed.

Keywords: Kaposi's sarcoma intraparotid lymph node

Abstr ID 423

512

A PARTICULAR CASE OF LYMPHANGIOMA OF THE LINGUAL MUCOSA—CASE REPORT

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Subject: Patient S.I., 12 years old was referred to the department of Oral Pathology of the Faculty of Dentistry Bucharest for a proliferative lesion of the tongue. The age of onset of the lesion was at 2 years old with a continuous development until the age of 9, when it became symptomatic and produced swallowing impairment. The local clinical examination revealed a pink-redish verrucous exophytic lesion, unclear borders and keratosis areas on the surface, located in the posterior 2/3 of the dorsal surface of the tongue (size of 6 × 4 cm) and at the basis of the anterior pillar of the right tonsil. The diagnosis was established as lymphangioma or oral papillomatosis. The differential diagnosis included, viral tumour, verrucous carcinoma and granular type lesion. Blood test parameters were in normal limits, and serology and viral identification by PCR were negative. Histopathological test: sub epithelial lymphatic proliferation in hypervascularised corion. The epithelium showed unequal and irregular acanthosis, and significant papillomatosis at the epithelial-connective tissue junction (inverted papillomatosis). The therapeutically approach was surgical. The lesions were completely removed, without difficulties. **Discussion:** Lymphangioma is lymphatic vessels hyperplasia of uncertain origin, being considered as congenital malformation of the lymphatic vessels resulting in impaired communication with the rest of the normal lymphatic vessels. **Conclusion:** The present case was surprising by the degree of extension at this very young age as well as by the uncommon clinical appearance with multifocal onset. Statistically is the first case of oral mucosa lymphangioma among 3000 new

patients referred in our department in the period of 1996–2004.

Keywords: Proliferative lesion; Lymphangioma; Connective tissue

Abstr ID 463

513

REASSESSMENT OF CONSERVATIVE TREATMENT FOR THE MANDIBULAR AMELOBLASTOMAS

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Aims: Various methods of treatment for the mandibular ameloblastomas are applied in the world. These are divided into two major groups, segmental resection or hemimandiblectomy (amputation group) and conservative treatment of the continuity of the inferior border of the mandible (conservative group). Conservative group was consisted of enucleation followed by curettage, enucleation followed by cryosurgery and marginal resection. Purpose of this paper is to analyze a usefulness of the conservative group which were followed up long period. **Materials and Methods:** One-hundred and twenty-four cases of the primary mandibular ameloblastomas treated at Second Department of Oral and Maxillofacial Surgery, Osaka Dental University in Japan and followed over ten years from initial treatment were analyzed. These were composed of 11 amputation and 113 conservative cases (enucleation followed by curettage: 66, enucleation followed by cryosurgery: 31, marginal resection: 16). Moreover radiographic and histological features were examined. **Results:** We found six cases of recurrence. All were treated by enucleation followed by curettage and each two cases were found in unilocular, multilocular and honey-comb type radiographically. Histologically five cases showed follicular pattern and one plexiform pattern. **Conclusion:** The usefulness of the conservative treatment for the mandibular ameloblastomas was reconfirmed. Especially, this type of treatment must be initially applied the younger age of patients.

Keywords: Odontogenic tumor; Mandibular ameloblastoma, conservative treatment

Abstr ID 538

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REINCLUDED DECIDUOUS MOLARS – DIAGNOSIS AND SURGICAL TREATMENT

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Aim: The aim of this study was to demonstrate diagnosis and treatment of 13 patients with 18 reincluded deciduous second molars. **Material and Methods:** Between 1999 and 2003 thirteen individuals were diagnosed and treated in the Department of Oral Surgery at the Medical College of the

Jagiellonian University in Krakow, Poland. Eighteen reincluded deciduous second molars were identified in total. Ten males and three females were treated. The mean age of the patients was 14 years. **Results:** The main complaints were: a persistent deciduous tooth, the absence of a permanent tooth or inflammation in the area of a reincluded tooth. Clinical and radiological examinations were performed, followed by orthodontic consultation. All of the patients were diagnosed with fifth deciduous molar reinclusion (12 in the maxilla and 6 in the mandible). Total reinclusion was diagnosed in 3 cases while partial reinclusion in 15. Concomitant occlusal disturbances were frequently diagnosed, mostly lateral open bite, displacement of permanent teeth or their retention. After orthodontic consultation either reincluded deciduous teeth or retained permanent teeth were extracted if there was no possibility of pulling the permanent tooth to the right position. After the surgical procedures, patients were reported either to orthodontic or to prosthetic treatment. **Conclusions:** (1) Reinclusion of deciduous teeth is a very rare disturbance, usually involving upper deciduous molars (2) Most frequent consequences of the reinclusion were: impaction of the second premolar, displacement of the adjacent teeth and gingivitis (3) Reinclusion of deciduous teeth is often observed in females (4) The general treatment recommendation is an extraction of the reincluded tooth and impacted premolar when necessary (5) The extraction of the reincluded tooth is often very complicated and needs high surgical skills and proper equipment.

Keywords: Reinclusion; Deciduous teeth; Oral surgery; Orthodontics

Abstr ID 581

515

TREATMENT OF TUMORS OF THE UPPER CHEST APERTURE

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Aims: Tumors of upper chest aperture arise from the anterior part of the neck and spread into the mediastinum. There are different kind of the tumors of upper chest aperture such as thyroid cancer, head and neck tumors metastasis, cylindroma of upper and medium parts of the trachea. **Methods:** 46 patients (pts) with these diagnosis were operated on at our clinic. 34 (73.9 %) pts out of them had primary thyroid cancer or its metastasis 26 (56.5%) cases of papillary, 4 (8.7%) - medullary, 2 (4.3%) - nondifferentiated cancer, 1 (2.15%) follicular carcinoma, 1 (2.15%) - insular carcinoma). Surgery was performed in 4 (8.7%) pts of intrachest goiter, 2 - cylindroma of the larynx, 2 cancer of larynx, 1 - thymoma, 1 - neuroblastoma, 1 - leiomyoma of the esophagus. **Results:** Sternotomy with mediastinum lymphnode dissection is the first step of operation in case of thyroid cancer with mediastinum lymphnode metastasis. This kind of surgery can combine with additionally laryngectomy or tracheal rings resection if necessary. So resection of trachea from 4 up to 9 rings was performed in 10 cases with further plastic reconstruction in 7 cases, laryngectomy was performed in 2 pts due to tumor spreading. 36 pts (78 %) are alive with follow-up from 3

months to 12 years. 10 (22%) patients have died. 7 pts out of them had the tumor progression, 2 - erosive bleeding, 1 - mediastinitis due to the trachea suture disclosure. **Conclusions:** Our treatment experience demonstrated that surgical treatment of the tumors of upper chest aperture is necessary in these kind of patients.

Keywords: Tumors of the upper chest aperture.

Abstr ID 588

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BILATERAL PAROTID METASTASIS FROM A LUNG CARCINOID TUMOR

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Introduction: Carcinoid tumors originates from the diffuse neuroendocrine system cells. (APUD system). They have a low grade malignancy and a poor metastatic capacity. **Objective:** We present a case of bilateral parotid metastasis from a lung carcinoid tumor origin. **Material and Methods:** A 45 year old woman with history of upper right lung lobectomy in the 1993 for a bronchogenic carcinoma. She is consulting now for bilateral parotid masses. **Examination:** Solid nodules, movable of 1 and 2 cm located in right preauricular and the tail of parotid gland; solid nodule, mobile of 1 cm located in left tail of parotid gland. There was no pain. CT scan: 0.7 cm and 2 cm masses located in preauricular and the tail of the right parotid gland. 0.8 cm mass located in tail of the left parotid gland. Cytology: epithelial carcinoma. A total lobectomy conservative of the right parotid gland was performed with a histology of metastatic carcinoid tumor. We completed extension diagnosis studies with chest and abdominal CT scan: small hepatic nodular masses similar to previous studies. SPECT: no findings. A total lobectomy conservative of the left parotid gland was then performed with a histology of metastatic carcinoid tumor. **Discussion:** Carcinoid tumors are very unusual. 90% of them are located in gastro intestinal tract and 10 % in extradiagnostic sites, being lung carcinoid, the most frequent of them. They are usually asymptomatic. Only 3% express with a carcinoid syndrome due to neurotransmitter secretion. The treatment of choice is surgical removal; if it is not possible, then, symptomatic treatment is performed. Sometimes it is an histologic finding, then it is obligated to complete extension studies and treatment depending on his location.

Keywords: Carcinoid tumours; Metastasis; Parotid

Abstr ID 630

517

PAPILLARY CARCINOMA IN THYROID GLAND IN A PREGNANT PATIENT

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Introduction: Thyroglossal cysts derives from the anomalous persistence of the Bochdaleck channel that should involutinate in the 6 th gestational week. Malignant neoplasms arising in the thyroglossal cysts are rare (1%) and 80% of these cases are papillary carcinomas of the thyroid gland type. **Objective:** We present a case of papillary carcinoma arising in a thyroglossal duct cyst in the 5th gestational month patient and discuss the optimal management of this condition. **Material and Methods:** A 36-year-old woman in the 5th gestational month presented a rapid increase size mass in the midline of the neck. Clinic examination showed a 2 cm mass below the hyoid which moved with deglutition but had restricted intrinsic mobility. FNAC: revealed neoplastic cells. MRI: mass compatible with thyroglossal cyst. After a preoperative anesthesiologists and obstetric evaluation a Sistrunk procedure was performed. The intraoperative histology confirmed a papillary carcinoma and a total thyroidectomy was made. Adjuvant therapy will be completed at the end of pregnancy with I131. **Discussion:** In the thyroglossal cyst malignant neoplasms are extremely rare. Only 215 cases have been reported in the literature. The most frequent histological type is papillary carcinoma. The treatment and prognosis of those are the same that papillary carcinoma of the thyroid gland. A complete treatment requires total ablation with postoperative I131 to avoid local recurrences. The pregnancy is an unusual condition and may contribute to the confusion for an optimal treatment.

Keywords: Papillary carcinoma; Thyroglossal cyst

Abstr ID 648

518

TREATMENT OF A PATIENT WITH GINGIVAL FIBROMATOSIS USING SILICONE MEMBRANE

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Introduction: Gingival fibromatosis (GF) associates with progressive fibrous enlargement of the gingivae of both maxillaes. Recent data confirm hereditary nature of GF. Surgical methodics of GF treatment need further development. Plastics of alveolar bone with local tissues make worse conditions for fixation of removable prosthetics basis. Closing the defects with mucosa autotransplants is problematic. Regenerative conditions under iodoform gauze are not optimal. **Material:** After cutting fibromatous lesions to the level of healthy tissues alveolar bone was covered by sterile silicone membrane ("MEDSIL", Russia). Membranes were properly formed, placed on wound surface and sutured to the edges of mucosa. Membranes were taken off after 10 days by cutting the sutures. **Results:** Result of using non-resorbable silicone membranes for covering large areas of alveolar bone showed the better results than expected. After one week after operation on maxilla clinical state of the patient allowed to operate on mandible. 10 days after taking off the membranes alveolar bone was covered by epithelium granulations with no evidence of infiltration. Methodics of fixing the membranes are easy because of initial adhesion of membrane to wound surface. Observed results of regeneration showed that

membranes are biocompatible, impenetrable for infection, do not fear bacterial contamination. Post-operative care is traditional. Membranes have enough strength. Use of defensive plates is not necessary. It is possible to cover with silicone membranes the bone and mucosa defects of any area and for any time without negative influence to surrounding tissues. We suppose optimal duration of using the membrane is 10–14 days. Additionally we noted low cost of silicone membrane comparing to other commercially available membranes. **Conclusion:** Silicone resin is a material with unique set of features for the mouth. Silicone membranes allow to cover various defects of bone and mucosa and to create optimal conditions for regeneration.

Keywords: Gingival fibromatosis; Surgery; Membrane; Silicone

Abstr ID 660

519

ADENOMATOID ODONTOGENIC TUMOR: A CASE REPORT OF A SELDOM SEEN LESION IN THE MANDIBLE

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The adenomatoid odontogenic tumors (AOT) make up only 3% of odontogenic tumors. This tumor is a slow growing benign bony lesion of the jaws mostly diagnosed in the second decade of life and there is a female bias in occurrence. Clinically silent, it is often noticed either during routine radiological examinations or by a deformity in the jaws. It originates from epithelial cells of the dental lamina complex or its remnants. Frequently, there is a tooth embedded in the tumor, which most likely is a canine. The tumor is more likely to be found in the maxilla than the mandible. The treatment consists of simple conservative surgical removal of the tumor. Recurrence is uncommon. A case of an adenomatoid odontogenic tumor (AOT) associated with an impacted tooth located in the anterior mandible of a 16-year old male patient is presented. Clinically, there was a missing lower canine and the adjacent teeth were bent towards the missing tooth's anatomical place. The radiological examinations showed a well-defined radiolucent lesion about 2.5 cm and 2.0 cm and 1.5 cm in size and associated with an impacted tooth. The lesion and the impacted tooth were removed under local anesthesia. Histopathological examination revealed whorls of ovoid-spindle shaped tumoral cells. Within these areas, there were adenoid structures, lined by cuboidal cells. These cells were positive for cytokeratin-antigen. A homogeneous eosinophilic material was observed in the stroma. Kongo reaction was negative. Focally, solid epithelial islands containing calcification were also seen. No recurrence was observed at the 6-months follow-up.

Keywords: Odontogenic tumors; Mandible; Dental lamina complex

Abstr ID 672

520

THE CLINICAL ANALYSIS AND RESULTS OF TREATMENT OF 140 CYSTS OF THE JAWS USING THE TWO-STAGE SURGICAL THERAPY

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The aim of this study is the clinical analysis of the course and results of treatment of 140 cysts of the jaws using the two-stage surgical therapy in 133 patients treated in the Department of Oral Surgery at the Medical College of the Jagiellonian University in Krakow, Poland, between 1997 and 2002. There were 79 cysts (56.4%) in males and 61 cysts (43.6%) in females; mean age was 36.3 years. Localization: the mandible – 77 cysts (55.0%), the maxilla – 63 cysts (45.0%). Among 140 cyst, there were 132 (94.3%) odontogenic cysts (85 inflammatory cysts and 47 developmental cysts) and 8 (5.7%) nonodontogenic cysts (4 traumatic bone cysts, 2 solitary bone cysts, 2 developmental cysts). The two-stage surgical therapy is a procedure of decompression with histopathological examination of biopsy specimen from the cyst wall (the first stage), carrying the obturator, and extirpation of the cyst (the second stage) after the bone hollow has decreased. The main indications: large cysts of the mandible threatened with injury of the inferior alveolar neurovascular bundle or with pathologic fracture; cysts of maxilla close to the nasal cavity; cysts which extirpation threatens with necrosis of the pulp of adjacent teeth or with injury of follicles or the growth bone centers in children; suppurative cysts. The course and results of treatment will be presented and - also radiograms and photographs of patients before-, during and after treatment in selected cases. In the conclusion, the authors underline the advantages of the two-stage surgical therapy of the cysts as a method worth recommendation in indications mentioned above and promising good results of treatment. Malignant transformation in the cyst wall wasn't observed in any case. The only disadvantage of this method is the prolonged period of treatment and necessity of carrying the obturator.

Keywords: Cysts of the jaws; Two-stage therapy

Abstr ID 708

521

CLINICAL STUDY OF MULTICENTRIC CANCER IN ORAL MUCOSA

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Purpose: The risk of developing multicentric cancers in oral mucosa is higher than that in other areas of the body as a result of field cancerization. We examined retrospectively on the patients with multicentric cancer? Who received therapy in our department from 1992 to 2003. **Methods:** In this study, we tried to define the criteria of

multicentric cancer in oral mucosa, each tumors of the identical histological type developing in the oral cavity including the lips, (1) Tumors anatomically excluding the possibility of metastasis or direct invasion. (2) Tumors thought to originate from the mucosal epithelium specific to the organs based on histopathological observation of invasion into the surrounding tissues and the front of the normal mucosa. (3) Tumors lacking histopathological continuity in and under the epithelium. **Results:** 7 Patients (24 primaries) with multicentric cancers, all squamous cell carcinoma, in oral mucosa were treated in our hospital. The details of 24 primaries were 2 primaries (3 cases), 3 primaries (1 case), 4 primaries (1 case), 5 primaries (1 case) and 6 primaries (1 case). Clinical precursor lesion was found in 62.5% (15/24 primaries) of these cancers. 73.4% (11 of 15 primaries) of all precursor lesions were leukoplakia. In 7 to 11 (63.6%) lesions, the moderate or severe dysplasia (WHO) were showed. **Conclusion:** Occurrence of dysplasia in the periphery of the surgical margin is a risk factor for multicentric cancerogenesis. However, some cases experience cancerogenesis without apparent dysplasia in the surrounding tissues or any clinical precursor lesion. Further investigation by molecular biological approach is necessary. For additional cancers including the third cancer and later, surgical treatment is primarily adopted with due consideration for multicentric cancerogenesis. This strategy seems to be adequate because radiotherapy and chemotherapy have adverse effects on the surrounding mucosa, which may impair the hosts.

Keywords: Multicentric cancer; Oral mucosa; Squamous cell carcinoma; Leukoplakia

Abstr ID 725

522

GLOBULOMAXILLARY CYST. DOES IT EXIST AS A DISTINCT ENTITY?

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Introduction: The globulomaxillary cyst occupies the bony region of the upper jaw between the lateral incisor and the canine teeth. Radiographically it is a well-defined, inverted pear-shaped radiolucency which frequently causes the roots of the adjacent teeth to diverge. The idea that globulomaxillary cyst is a fissural one, has been seriously questioned. It has been formulated that the majority of these cysts represent a range of other varieties, but there are still some of them which can not be placed in any of these other categories. We present a case of globulomaxillary cyst. **Case report:** A 15 years old boy was referred to the Department of OMS of Alexandroupolis University Hospital with a complaint of unilateral unipainful swelling of the left nasolabial region. Oral examination revealed a swelling the upper left alveolar process with severe diverging of 22 and 23 teeth. All upper involved teeth were vital. Radiographic examination showed a large cystic formation. Under general anaesthesia the lesion was enucleated and the defect was filled with bone graft. 6 months after operation the patient is asymptomatic and the teeth remain vital. **Conclusion:** There are some cysts with no other specific characteristics which can be classified as globulomaxillary.

Keywords: Globulomaxillary cyst

Abstr ID 750

523

PAROTID GLAND LIPOMAS: A CASE SERIES

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Parotid gland lipoma is a rare non epithelial tumour of the salivary gland and only form up to 3 percent of all parotid tumours (1,2). These lesions, therefore, often do not enter into the differential diagnosis of parotid gland lumps. There have been few case reports of this lesion and its management in the literature. As a result of a retrospective audit from 1974 to 2003, 638 parotidectomies were undertaken with eight parotid lipomas identified. We will present a case series of seven patients with eight lipomatous lesions of the parotid gland. Interestingly, although benign, patients may present with facial nerve palsy, although this did not occur in our series (3). Therefore the clinical presentation, diagnosis and management will be discussed as well as a review of the literature. This is by comparison one of the larger series presented of this rare lesion.

References

1. Wener GM, Pahor AL. Deep lobe parotid gland lipoma: a case report. *J Laryngol Otol* 1995 Aug;109(8):449-450.
2. Ozcan C, Unal M, Talas D, Gorur K. Deep lobe parotid gland lipoma. *J Oral Maxillofac Surg* 2002 Apr;60(4):449-450.
3. Srinivasan V, Ganesan, Premachandra DJ. Lipoma of the parotid gland presenting with facial nerve palsy. *J Laryngol Otol* Jan;110(1):93-95.

Keywords: Parotid Gland, Lipomas, Salivary gland tumours

Abstr ID 786

524

MULTIPLE RECURRENT CENTRAL GIANT CELL GRANULOMA (CGCG) IN THE MANDIBLE

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Aim: We present a case and discuss the presence of multiple recurrent CGCG in the mandible focusing not only at the treatment but also at the adherent end stage renal disease of the patient. **Subject:** We refer to the case of a 15 years old female patient presenting with a painless swelling located in the left premolar region of the mandible. Imaging of the swelling showed the presence of an osteolytic lesion. Biopsy specimen revealed CGCG. After 18 months of the initial operation and in a follow up panoramic X-ray recurrence of the lesion was observed and excised. After one year a second lesion was found in the premolar region of the right mandible was found.

Histopathologic examination of the excised lesion revealed CGCG. The patient is in end stage renal failure waiting for transplantation with no sign of hyperparathyroidism until now and 4 years after initial treatment is free of disease and continues to be under control. **Conclusion:** Central giant cell granuloma (CGCG) is known to recur at the site of its first appearance usually as a result of incomplete removal. The age of the patient, the size and the site of the lesion and anatomic reasons are among the considerations that may obscure radical surgery at the first time. Renal disease and its subsequences should be taken under thought when present.

Abstr ID 789

525

A STUDY OF THE USE OF "COLLOGENGRAFT" IN THE REPAIR OF MANDIBULAR BONE DEFECTS FOLLOWING ENUCLEATION OF ODONTOGENIC CYSTS

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Aim: To assess the use of the bone substitute "Collogen-graft" in the repair of mandibular bone defects following the enucleation of odontogenic cysts. **Method:** A prospective study of eight consecutive patients undergoing the enucleation of mandibular odontogenic cysts and the repair of the cyst cavity with collogengraft. The cases were followed in the post operative period clinically and radiographically for a period of eighteen months. Surgical complications were recorded. "Collogengraft" is a synthetic bone substitute comprising of purified type 1 bovine collagen and hydroxyapatite (65%) and tricalcium phosphate (35%). In this study Collagen is used in the form of strips which is rehydrated with autologous blood just prior to use.

Abstr ID 790

526

EPITHELIOD HAEMANGIOENDOTHELIOMA ARISING IN THE ORAL CAVITY

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Aims: To report on a rare case of epithelioid haemangioendothelioma (EHE) of the gingival epithelium. **Subject:** A 26 year old caucasian male presented with a 4 month history of an irregular erythematous lesion buccal to his upper left canine and first premolar teeth. Radiographic examination revealed no bony involvement. An incisional biopsy reported a relatively well circumscribed lesion of vascular origin of uncertain malignant potential. Cells stained positively for an endothelial marker. Radical excision of the lesion was undertaken and this was reported on as EHE. **Discussion:** Haemangioendothelioma is a soft tissue vascular tumour with histological and clinical features intermediate between those of a haemangioma

and angiosarcoma. It was first applied by Weiss and Enzinger in 1982 to define a special entity among vascular tumours. It occurs during adulthood and typically as here as a well-delimited mass. Up to 2001 only 8 previous cases had been reported in the oral cavity (Orsini et al 2001) and of these only 3 had involved the gingivae (Araujo et al 1987). The aetiology is unknown but possible associations are trauma, therapeutic radiation and hormonal factors. Management options include are reviewed.

Abstr ID 792

527

SOLITARY FIBROUS TUMOUR OF THE PAROTID GLAND

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Introduction: Solitary fibrous tumours are rarely lesions arising from the visceral pulmonar pleura, although several extrapulmonar head and neck cases have been published like nasal fossa, paranasal sinus, orbit, epiglottis, thyroid and salivary glands. We present a case report of SFT placed in the parotid gland in a 43 years old patient who presented a 2.5 cms slowly enlarging mass. **Case report:** Woman 43 years old with a tumour in the parotid area, noticed four months ago, without clinical signs of malignancy. MRI and ECO: confirm the presence of the 2.5 cms mass into the parotid gland. FNA shows a cellular group of rounded cells in a vascular stroma, nuclear cells presented few pleomorphism without mitotic activity, so total parotidectomy preserving facial nerve was recommended. Final histological examination showed a SFT arising in the parotid gland. **Discussion and Conclusion:** SFT are rarely tumours, arising from serosal surfaces and extremely rare in head and neck region. It occurs in adult patients. Symptoms and clinic signs are in close relationship with the anatomic location and other systemic symptoms can be associated. Most of SFT have a benign behaviour although malignant transformation have been published. Diagnosis is based in histological findings with positive immunohistochemical markers like CD 34 and Vimentine. The differential diagnosis includes haemangiopericytoma, schwannoma, fibrous histiocytoma and sarcoma. Recommended treatment is complete surgical excision. Chemotherapy and radiotherapy can be used in non complete exeresis and aggressive lesions. Follow up long term must be done.

Abstr ID 806

528

AMELOBLASTOMA IN A YOUNG PATIENT. A CLINICAL, DIAGNOSTIC, TREATMENT AND PROGNOSTIC APPROACH

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The ameloblastoma is the most common of all odontogenic epithelial tumours. However, in spite of this is, it is relatively rare, given that, it accounts for approximately 1% of all cystic maxillary lesions. It can emerge from the

epithelial cover of a dentigerous cyst, from the remains of the dental lamina and from enamel or from the basal lamina of the oral mucosa, occasionally with a multicentric pattern. 80% occur in the jaw and 70% of these in the molar area. The majority of them appear in patients between 30 and 50 years of age, although there have been cases in children. The following is a selected case of a 19 year old young man, who was sent to the Oral and Maxillofacial Service from his dentist due to the radiological discovery of a cyst in the right jaw angle in relation to dental inclusions (17,18). The patient displayed a swelling of the right horizontal section of the jaw. He did not reveal any pain, nor paresthesias or any other associated symptom. We performed cystectomy under general anaesthesia preserving the inferior dental nerve. The defect was filled with shattered osseous graft from the left tibia, hydroxyapatite and platelet rich plasma. The histological diagnosis of the lesion was accantomatous ameloblastoma. We present the radiological, cytological, histological images along with the surgical procedure and the evolution of the case; and an argument about the therapeutic approach to the management of these tumours in young patients.

Abstr ID 287

529

TUMOR EXPANDED CHEEK FLAP FOR ORAL RECONSTRUCTION

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Aim: This poster shows how to rebuild a watertight palatal side of the oral cavity with an naturally expanded cheek flap. **Subject and Method:** A 16 years old patient is seen at the oral and maxillo-facial department of Vientiane Friendship Hospital (RPDL) for a huge tumor of the right maxilla. The exam shows an involvement of the maxilla, floor of the orbit, nasal cavity, palatal and cheek sides of the mouth. The right eye is functional. The oral aperture is lowered by the tumor expansion. The CT scan shows a benign tumor of the jaws. An excision under anesthesia is scheduled. A lateral nose and lip incision is done. A thin but large musculo-cutaneous flap is released from the anterior side of the tumor which is well encapsulated. A resection of the hemifacial bone components is performed: maxilla from the oral part to the floor of the orbit with the lateral wall of the nasal cavity, medial part of the zygomatic bone. Stayed a huge hole between the oral cavity (from the soft palate to the superior lip), the nasal septum and the floor of the orbit. Besides was an large musculo-cutaneous flap from the cheek with a lateral pedicle. The skin is removed from the muscle in the medial part of the flap. The distal part of the flap allows to close the oral cavity from the nasal and maxillary cavities. A septal flap allows to rebuild the floor of the orbit. **Result:** The healing was done 8 days later with a good swallowing and speech result. This reconstruction, in the tight conditions of the surgery in Laos gave a good benefit for a little chance of necrosis of the flap and make useful the tumor expanded tissue.

Keywords: Giant ameloblastoma; Palatal reconstruction

Abstr ID 677

530

UNIQUE HUGE FORM OF PERIPHERAL ODONTOGENIC FIBROMA (COMPLEX TYPE) – REPORT OF A CASE AND CLINICOPATHOLOGICAL ANALYSIS

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Peripheral form of odontogenic fibroma (complex type) is a rarely occurring tumor, benign, usually unencapsulated, painless and composed predominantly of fibrous tissue, with varying amount of intratumoral odontogenic epithelium and mineralized material. Histogenesis of the tumor is unclear, but it is assumed, that it is derived from periodontium cells, which makes the tumor occurs exclusively in the alveolar process of jaws. It affects mainly patients in the third decade of life with mild predilection to females and to black race individuals. The tumor is much more frequently located on mandibular than maxillary gingiva, usually laterally, i.e. in the area of molar teeth. Its growth is usually slow (2 months–5 years) and diameter is rather small, up to 1 cm. This case study presents unique, huge form (5 cm in diameter) of peripheral odontogenic fibroma (complex type) which occurred on the floor of the mouth in patient presented to the Department of Oral Surgery at the Medical College of Jagiellonian University in Krakow, Poland. Surgical procedures and histopathological findings will be described. The differences between the peripheral odontogenic fibroma and other odontogenic tumors (such as peripheral ossifying fibroma and fibrous epulis) as well as the clinicopathological analysis will be introduced.

Keywords: Odontogenic fibroma; Cementoossifying fibroma; Epulis; Oral surgery

Abstr ID 678

531

“EMPTY CYSTS” OF THE MANDIBLE – CLINICAL AND HISTOPATHOLOGICAL ANALYSIS OF 21 CASES IN OWN MATERIAL

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The aim of the study is to analyse 21 cases of so-called “empty cysts” of the mandible, which are rarely observed and cause either diagnostic or therapeutic problems. Between 1996 and 2004 in the Department of Oral Surgery at the Medical College of the Jagiellonian University in Krakow, twenty one patients (14 females, 7 males) were diagnosed and/or treated because of a cystic lesion of the mandible, called in literature as “empty cysts”. The mean age was 22 years and the lesion was very often observed in girls during pubescence. The traumatic aetiology was also taken into account. The most common localisation was

paramedial and premolar area of the mandible. The lesion was not observed in the maxilla. In most cases the lesion was discovered accidentally because of its asymptomatic progress and vitality of the adjacent teeth. During surgery, almost no capsule and profuse bleeding were observed. The histopathological examination did not reveal the presence of a cyst. The two-stage cystectomy was performed in 8 cases, one-stage cystectomy in 1 case. Eight patients are observed after the first stage of surgery and in 4 cases no surgery was performed. The most representative cases will be presented with their X-ray and histopathological picture.

Keywords: Cysts of the jaws; Empty cyst; Post-traumatic cyst; Oral surgery

Abstr ID 308

532

HUMAN PAPILLOMAVIRUS ASSOCIATION WITH THE ORAL CAVITY AND OROPHARYNX CARCINOMA

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Aim: Human papillomavirus (HPV) is the cause of some benign lesions as papillomas, but some types, especially HPV 16, has been associated with squamous cell carcinoma of the head and neck and it is an area of intensive investigation. The aims of this study were to investigate the presence and type of human papillomavirus in the squamous cell carcinoma tissue of the oral cavity and oropharynx and determine if there is a correlation-association between the presence of HPV infection and carcinoma of the oral cavity and oropharynx. **Methods:** We examined 45 paraffin-embedded squamous cell carcinoma tissues of the head and neck, including 36 men and 9 women. The majority of tumors were located in the oral cavity and oropharynx. *In situ* hybridization technique was used for the detection and typing of the HPV (REMBRANDT *In Situ* Hybridization and Detection Kit, from KREATECH diagnostics). **Results:** Until present we analyzed only 15 of the squamous cell carcinoma tissues, including 13 men and 2 women. Considering the site of the malignancy, majority were from the oral cavity (11) and (4) from the oropharynx and tonsil. All of the samples were negative to the presence of HPV. The research will be finished and we will have the definitive results until the date of the congress. **Conclusion:** With this preliminary results so far we can conclude that the presence of human papillomavirus infection does not reveal the significant correlation with development of malignancy of oral cavity and oropharynx. We expect some positive results during the rest of the research considering that the majority of HPV infections are found in the tonsil and oropharynx of which we have examined only 4 samples.

Keywords: Human papillomavirus; Squamous cell carcinoma of the oral cavity and oropharynx; Head and neck; *In situ* hybridization

Abstr ID 628

102

SENTINEL NODE LOCALIZATION IN ORAL CANCER

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Aims: To evaluate the feasibility and predictive ability of the sentinel node (SN) localization-biopsy technique for patients with squamous cell carcinoma of the oral cavity and clinically negative necks. **Methods:** We realized a prospective study of 21 consecutive patients at present, with squamous cell carcinoma oral and clinically negative necks. These patients had not received treatment against tumor and they were assisted by Maxillofacial Surgery Service of HUVM from Seville. All patients received a cervical Tc99m-lymphoscintigraphy to localize the sentinel node and a new dose before surgery. Intraoperatively, the sentinel node was localized with a gamma probe and it was removed before tumor resection and functional neck dissection. The different anatomic specimens were sent for independent histological examination by two doctors of Histology Department (they were the same). The specimens were analyzed by hematoxylin and eosin staining and cytokeratin immunohistochemical staining (AE1/AE3). **Results:** lympholocalization 91%, radiolocalization 100%, false negative 0%, sensitivity and NPV 100%, likely hood ratios >10 and likely negative ratios <0.1 **Conclusions:** The technique allows identification of SN-metastases and shows promise in guiding functional neck dissection.

Keywords: Sentinel node; Cervical lymphoscintigraphy; Neck dissection; Oral cancer

Abstr ID 520

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EFFECT OF EPIDERMAL GROWTH FACTOR ON THE INVASION ACTIVITY OF ORAL CANCER CELL LINE ORAL

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Aims: Epidermal growth factor (EGF) is excreted in high concentration in the human saliva and modulates growth and differentiation of various cancer cells. In the present study, we analyzed the effects of EGF on the invasion activity of a cultured oral cancer cell line, HSC3, and assessed the transcription of MMP9. **Methods:** Cells were grown in the presence or absence of EGF. Matrigel invasion assays were performed. Gelatin-zymography and Northern blot analysis quantified invasiveness and tumorigenicity. Chloramphenicol acetyltransferase assay

determined EGF stimulation of matrix metalloproteinase expression. **Results:** (1) Invasiveness and tumorigenicity: The number of HSC3 cells penetrating the Matrigel membrane was approximately three fold higher in EGF-stimulated cells than in unstimulated HSC3 cells. (2) Gelatin-zymography: EGF markedly stimulated HSC3 to produce pro MMP9, while the effect of the growth factor on the production of pro MMP2 by this line was negligible. (3) Northern blot analysis: We analyzed expression of MMP 9, MMP2 and ets1 to investigate the relationship with and without EGF. Upon EGF stimulation of HSC3 cells, no MMP2 transcriptional levels changed. In contrast, the expression of MMP9 and ets1 was increased

dramatically by EGF. (4) EGF stimulates MMP expression: As EGF increased invasive function of the HSC3 oral cancer cell line, we assessed whether it would also modulate the expression of MMP9. CAT reporter genes driven by the MMP9 promoters, were transiently transfected into HSC3 cells. MMP9-CAT activities were increased 4.16-fold by EGF-stimulation as compared to controls. **Conclusion:** These results suggest that EGF increases the invasion activity of oral cancer cells partly by increasing MMP 9.

Keywords: Epidermal growth factor; Oral cancer cell line; MMP

TOPIC 5: TISSUES ENGINEERING AND CELL THERAPY

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3-D LASER SCAN RECONSTRUCTION OF THE FACE AND JAWS: PRELIMINARY REPORT

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Aim: The aim of this study was to fine adjust a method for the construction of a 3-D digital model of the face and dental arches of the maxilla and mandible from a laser scan of the face and plaster casts of the mouth and dental arches of dysgnathic patients. This is motivated by the need to obtain a virtual copy of the dysgnathic patient's face at no biological cost as an alternative to the method which involves using CT. **Materials and Methods:** The 3-D Laser scanner Konica MinoltaVIVID 910 is used to scan the surface of the patient's face from different perspectives. A bite fork adapted to the purpose, is used as the 3-D reference mark for repositioning the scan of the maxillar and mandibular arch plaster casts within the face model. The acquisition method was validated by verifying the consistency of several anthropometric measurements recorded *in vivo* with the corresponding measurements recorded on the virtual computer model. **Results:** This virtual model is used not only to extrapolate isoparametric curves reproducing facial sections in the three spatial planes, but also to obtain further metric information regarding surface and volumes. This enables the patient's profile to be studied in the usual way, but also provides other useful anthropometric features, its volumetric characteristics and the changes induced by orthognathic surgery. **Conclusions:** The proposed method proves an excellent way to study all the morphological facial features of patients suffering from skeletal malocclusions. The collection of an appropriate database of case studies, before and after surgical treatment, will enable us to implement a software for correlating dental arch displacements with changes in the corresponding facial surface.

Keywords: 3-D digital model; Facial laser reconstruction

MINIMALLY INVASIVE IMAGE-GUIDED EXCISION OF A CRANIAL BONE LESION

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Introduction: Skull bone tumours are highly complicated to resect, especially that originates between external and internal tabula. The primary treatment is surgical excision. Traditionally surgical approaches are associated with significant bone deformity. We introduce and outline the clinical advantages of a navigation-assisted approach to lateral skull bone lesion using image-guided surgery.

Material and Methods: Our experience includes one patient with a skull bone tumour. Skull radiographic computed tomography revealed bone lesion in the right temporo-parietal region. Computed tomographic scan indicated a destructive structure involving external and internal bone layer. The patient was scheduled for image-guided surgery by use of a wireless passive infrared surgical navigation system (VectorVisionTM, BrainLAB). The preoperative high-resolution multi slice computed tomography (CT) data was obtained before (Somatom Sensation 16). After attaching the skull reference to the patients head, the patient-to-image registration was performed using laser surface scanning. The registration accuracy was expressed by a calculated value, the root mean square (RMS) and while for system validation the intraoperative accuracy was visually checked with identification of anatomical landmarks. **Results:** The procedure was successful and the tumour was minimally invasive removed, with no peri- and postoperative complications. The patient was ready for discharge 2 days after surgery. Postoperative imaging scans show no recurrent tumour process. **Conclusion:** Traditional surgical approaches to skull bone tumours may result in significant cranial deformity and morbidity. Image-guided excision with surgical navigation technique is a safe and effective minimally invasive surgical treatment.

Keywords: Craniofacial bone lesion; Image-guided surgery; Minimally invasive approach

CUSTOM IMPLANTS OBTAINED USING SILICONE RUBBER MOULDS

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Aims: Custom implants are individually designed prosthetic pieces produced for the detailed reconstruction of neural or visceral cranium defects. Over the past years, they have been produced using 3D modelling techniques along with different types of casting procedures. In this study we aimed to manufacture some custom implants by casting polyethyl or polymethyl methacrylate with or without hydroxyapatite into silicone rubber moulds. **Methods:** Virtual 3D models of patients with various unilateral defects of neural or visceral cranium were obtained by reconstructing the CT data. By mirroring the healthy side and by Boolean operations the virtual 3D model of the custom implant was obtained. The real three-dimensional model of the custom implant was made by selective laser sintering procedures (SLS). Vacuum-cast silicone rubber moulds were produced using the SLS 3D model of the custom implants. The implant itself was cast into the silicone rubber from polyethyl or polymethyl methacrylate. **Results:** The 3D real model of the implant fitted exactly, on the SLS model, the defect to be reconstructed. So did the cast implant into the silicone rubber mould. The advantage of the silicone rubber was that being elastic, very thin details (margins) of the implant could be kept during the unmoulding procedure. At the time of the surgery, the

custom implants fitted exactly into the defects for which they were meant, no secondary adaptation being needed. Postoperatively, the morphology of the reconstructed segment was similar to the healthy side. The recovery period was uneventful, the material being well tolerated. **Conclusions:** Silicone rubber moulds allow the reproduction of very thin details, being very important especially for the reconstruction of the visceral cranium. The operation time was significantly shortened, needing no secondary adaptation of the implant.

Keywords: Custom implants; Silicone rubber moulds; Three-dimensional medical models

Abstr ID 425

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FACE DETECTION AND RECOGNITION

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Introduction: In cranio-maxillofacial surgery face detection and recognition methods become increasingly accepted, using the patients facial skin for registration between preoperative imaging (CT, MRI) and the intraoperative surgical site. However, a changing position or mimic activity may change the skin's geometry, generating an incongruence between the preoperatively and intraoperatively recorded facial contours, which leads to inaccuracies during the computer-assisted intervention. **Patients, Materials and Methods:** In the present study, face detection and recognition was metrically determined and its influence on the accuracy of patient registration for a navigation system was evaluated. For this purpose, skin laser-scans were made of twelve conscious persons, both in sitting and in supine positions, as well as under mimic activity. Then the laser-scans were referenced to the corresponding CT data-set. The accuracy of data set alignment was checked by artificial landmarks. **Results:** Face detection and recognition was reduced by 0.4 mm during severe mimic activity. Mass related skin shifts reduced the mean accuracy of face detection and recognition by 0.5 mm. The accuracy of face detection ranged between 0.4 and 1.7 mm with an average on 1.1 mm. **Conclusion:** In markerless computer-assisted surgery it is important to make sure that the position during CT-acquisition is identical to the position during intraoperative laser-scan registration. Mimic activity during CT acquisition should be avoided.

Keywords: Face detection; Data set alignment; Calibration; Navigation; Computer-assisted surgery; Markerless patient registration

Abstr ID 431

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MECHANICAL ANALYSIS OF THE HUMAN TEMPOROMANDIBULAR JOINT WITH ANTERIOR DISC DISPLACEMENT BY FINITE ELEMENT METHOD

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Aim: The purpose of this study was to investigate the stress distributions of mandibular fossa and condyle in human temporomandibular joint (TMJ) with or without anterior disc displacement by three-dimensional finite element method (FEM). **Methods:** The mandible including TMJ of a volunteer with normal occlusion was recorded by means of CT and MRI recording device. The subject gave his informed consent after receiving a full explanation of the goals and structure of the current study. FEM was performed by using Cosmos/M (Ver.2.7, SRAC, USA). Two-dimensional coordinate components were extracted for each CT image by using image processing software (NIH Image). No sliding was allowed along the disk-condyle and the disk-fossa interfaces. It was assumed that the CT values on the image were proportional to the bone mineral density and the elastic modulus of each bone were proportional to the cube root of the bone mineral density. In estimating muscle forces, the occlusal force was measured by occlusal force recording system (Dental-Precale, Japan). The force of temporal, masseter and lateral and medial pterygoid muscles was calculated from the equation of equilibrium of moment. **Results:** In the case of the articular disc shifting to anterior direction, the distributions of von Mises stress on the surface of the mandibular fossa were almost similar and far smaller than those on the surface of condyle, although peaks of the stress were found out at the anterior and posterior regions of condyle. **Conclusion:** These results suggest that such a method may reflect phenomena observed in patients with anterior disc displacement.

Keywords: Finite element method (FEM); Temporomandibular joint (TMJ); Oral medicine; Stress distribution; Masticatory muscles; Elastic modulus; Biomechanics

Abstr ID 535

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3D VIRTUAL TMJ MODEL

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Aims: The present work introduces a biomechanical model in a virtual reality ambient with the integration of 3D reconstruction of a cranium (static visualization) and the articular movements of the TMJ (animation). **Methods:** the starting point of the project is high fidelity digital acquisition of a human dry skull. The cooperation between the Maxillo-Facial surgeon and the cartoonist enables the reconstruction of the fibro-connective components of the TMJ that are the key stone for comprehension of the anatomical and functional features of the mandible. The skeletal model is customized with the apposition of the temporo-mandibular ligament, the articular disc, the retrodiscal tissue, the medial and the lateral ligament of the disc. The simulation of TMJ movement is the result of the integration of up to date data on biomechanical restrictions. **Results:** The temporo-mandibular joint (TMJ) is a complex anatomical and functional entity. TMJ's function

depends on the correct postural and functional relationship of its parts. The synergy of such components of the stomatognathic system plays a major role in TMJ's dynamics. The correct function of the TMJ depends on the neuromuscular function and the biomechanical restrictions that initiate and guide mandibular motility as the TMJ ligament, the retrodiscal tissue, the articular disc, the lateral ligament of the disc, and the synovial membrane and fluid. **Conclusion:** The 3D TMJ model is an easy-to-use application which may be run on a personal computer for the study of the TMJ and its biomechanics.

Keywords: TMJ; Virtual reality; Biomechanics

Abstr ID 228

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THE CARBULAT A REVOLUTIONARY NEW IMPLANT-MATERIAL FOR MANDIBULAR RECONSTRUCTION

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Background and Aims: Carbon – based polymers have been used in reconstruction of head and neck defects for decades. The latest development in carbon implant technology is considered “CarBulat”, a carbon material where polymer matrix is replaced by carbon (the prosthesis consisting of 100% carbon). The aim of the lecture to present this new material, with which we have performed successful mandibular reconstructions for 3 years. **Material and Method:** Mandibular reconstruction with CarBulat was performed in 20 patients. These were cases where primarily living bone implantation was not possible (extensive tumors, vascular changes after chemotherapy, previously unsuccessful microvascular reconstruction etc.). The preformed prostheses were fixed to the mandibular stumps only with screws, or with thin titanium plates (depending on the size of the defect). Very little radiation is absorbed by CarBulat, and thus the necessary irradiation treatment after implantation can be carried out without problem. **Results:** In 15 of the 20 cases, the CarBulat prosthesis functioning excellently. It was not necessary to remove it in any case because of reoperation (tumor recurrence). Its tissular integration has always appeared better than that of any of the alloplastic materials we have applied to date. Dermal necrosis above it has never been observed. In 4 of the 20 cases, the prosthesis had to be removed because the implant became free towards the oral cavity. These cases involved post-irradiation disturbances of wound healing. **Conclusions:** Our results to date indicate that CarBulat, which contains 100% carbon, is more suitable for mandibular reconstruction than any other alloplastic material. This can be ascribed to its excellent tissular integration, its extremely high strength, and the possibility of simple intraoperative correction.

Keywords: Carbon; Mandibular reconstruction

Abstr ID 387

540

A NEW SECURE SUBMENTAL ORO-ENDOTRACHEAL INTUBATION PATH IN MAXILLO-FACIAL SURGERY

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Aim: Submental intubation was reported originally by Hernandez Altemir et al. in 1986. It presents undeniable advantages and near zero morbidity as in comparison to tracheostomy in facial trauma patients. We have used our modified version of this technique otherwise described, during the past 4 years. This method was performed on patients undergoing combined osteotomies and septo-rhinoplasty, thus avoiding double intubation during the surgical procedure, and enabling adequate inter-maxillary fixation post-operatively and reducing substantially patient discomfort. **Technique:** A small incision is made in the submental groove. The tube is directed obliquely through the buccal floor and medially between the m. genii far from the internal side of the mandibular bone, vascular and glandular structures. The tube position is median, between the sublingual glands, in the smoothest part of the oral floor. Patients are weaned the following day and the detubation is performed at the bedside in sterile conditions rinsing the wound with iodized polyvidone solution. The residual submental scar is imperceptible. **Conclusion:** We avoided complications seen previously, such as the mucosal tear of the buccal floor, the tear of the tube itself during mental osteotomy. It is easier to perform and obtain a better symmetrization of the face during the surgical phase.

Keywords: Submental intubation; Maxillo-mandibular osteotomies; Septo-rhinoplasty

Abstr ID 409

541

CHITOSANE MEMBRANES IN WOUND HEALING. EXPERIMENTAL STUDY IN RATS

Mäki T, Laine A, Muhonen J, Enislidis G, Ylikomi T, Lindqvist C, Kellomäki M, Suuronen R

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Introduction: Chitosan is produced through deacetylation from naturally occurring polymer, chitin. When chitin is deacetylated 50% or more the term chitosan is used. Chitosan can be processed to various physical forms such as membranes, solutions, fibers and sponges. These are applied in drug delivery vehicles, wound dressings, cell encapsulation, just to name a few. Biologically it's totally biocompatible with no toxic degradation products in the human body. It is also considered accelerate bone formation, have regenerative effect on connective gum tissue and have wound-healing property. The biological effect of chitosan is based on its deacetylation degree and its molecular weight. Membranes can also be processed with different organic acids. In international publications there has been very little systematic effort to really evaluate the effect of these parameters. **Aim of the study:** The purpose of this study is to examine chitosan membrane as a wound-healing accelerator and define the optimum

combination of the parameters mentioned above. **Materials and Methods:** In this work we will prepare three different membranes and compare their wound-healing efficacy with each other. The membranes will be placed in surgically induced skin and mucosal defects in adult rats. The follow-up times are 1, 3 and 6 months. The tissues are evaluated with histology and immunohistochemistry. **Results:** The material seems clinically very promising. However, since the follow up is at the moment still ongoing, the first results will be presented at the meeting. **Conclusions:** There is an urgent need to study what is the optimum combination of the parameters for each specific medical purpose. When this is done one can expect more commercial products from chitosan.

Keywords: Chitosane; Wound-healing; Deacetylation degree; Molecular weight; Organic acids

Abstr ID 619

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A TRIAL OF DIFFERENTIATION BETWEEN PERIAPICAL GRANULOMAS AND RADICULAR CYSTS ON THE BASIS OF DIGITAL RADIOGRAPHY DENSITY MEASUREMENTS

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The decision whether a periapical radiolucency of inflammatory origin is a granuloma or a radicular cyst plays an important role in choice of conservative or surgical treatment thus influencing the treatment success and long-term results. Radiograms are a valuable tool in evaluation of these lesions but the differences between radiological diagnosis and patomorphology range from 30 to 60%. Therefore relying solely on the evaluation of these images may lead to mistakes in the choice of treatment. The purpose of the study was to conduct a trial of differentiation between periapical granulomas and radicular cysts of inflammatory origin on the basis of digital radiography density measurements. The material comprised 355 direct digital periapical radiograms taken in patients aged 20 to 84, divided into two groups: 259 granulomas and 102 radicular cysts. Using the Digora 2.0 software there were measured maximum and minimum densities along a line, then there was calculated the difference between maximum and minimum density. The largest dimensions of the lesions were measured – perpendicular and parallel to the root canal axis. It was possible to differentiate cystic granulomas and radicular cysts on the basis of the difference between maximum and minimum density in linear measurement in a certain range – when the difference exceeded 85.6 the lesion was a cyst and when it was below 45.9 a granuloma was diagnosed. Combined application of two criteria - the calculated difference between densities and the largest dimension, increased diagnostic possibilities of radiological differentiation of granulomas and radicular cysts. It was concluded that to some extent it was possible to differentiate cystic granulomas and radicular cysts basing on digital radiography measurements, however final differentiation is not yet possible. The study was financed using the State Committee for Scientific Research grant KBN no. 3 PO5E 032 25.

Keywords: Periapical granuloma; Radicular cyst; Digital radiography

Abstr ID 654

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OSTEOMYELITIS – DIAGNOSTIC POSSIBILITIES OF CONE-BEAM COMPUTED TOMOGRAPHY (CBCT)

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Purpose: To show the diagnostic possibilities of CBCT concerning osteomyelitis and demonstrate typical anatomical landmarks and their pathologic changes due to osteomyelitis. **Method and Materials:** CBCT was acquired from 20 patients with clinical symptoms of mandibular osteomyelitis using a NewTom QR-DVT 9000 (NIM s.r.l., Verona, Italy). Primary reconstructions were computed and subsequently imported into the DICOM viewer eFilm 1.8.3 (Merge eFilm, Milwaukee, WI, USA) for post-processing and diagnostic purposes. Radiologic records were correlated with histologic examinations. **Results:** In all cases typical signs of osteomyelitis like osteolytic lesions of the bony cortex and the bone marrow next to the cortex as well as osteosclerotic marrow changes can be clearly visualized. Especially secondary reconstructions in sagittal, coronal or oblique planes seemed to be very useful for the detection of small osteolytic lesions. In comparison to the conventional imaging CBCT allows better differentiation of cortical and marrow structures because of three-dimensional imaging capabilities. Metal artefacts due to dental crowns and fillings are dramatically reduced comparing with similar CT examinations. **Conclusions:** CBCT enhances diagnostic possibilities in the detection of mandibular osteomyelitis. It allows better pre-operative planning and local antibiotic therapy. Regarding the lower radiation exposure compared with CT CBCT can also be considered as a justified follow-up examination.

Keywords: Cone-beam computed tomography; Osteomyelitis; Osteolytic lesions; Multiplanar reconstructions; Three-dimensional imaging

Abstr ID 270

544

TREATMENT OF FACIAL PORT-WINE STAINS WITH INTENSED PULSED LIGHT (IPL)-TECHNOLOGY

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Objective: Port-wine stains (PWS) occur with an incidence of 0.3% of all vascular malformations and are mainly situated in the head and neck region. The conventional pulsed-dye laser is seen as the standard treatment. Other treatment options like intensified pulsed light sources (IPL) have currently been evaluated especially for PWS unresponsive to laser therapy. **Patients and Methods:** On 10 patients with PWS in the head and neck region, therapeutic efficacy was estimated after multiple treatment sessions.

The following treatment parameters were chosen at a uniform spot size of 8×35 mm: 515, 550 or 590 nm cut-off-filter depending on the darkness of the lesion (lower filter for pink lesions, higher filter for purple lesions), energy between 30 and 50 J/cm², pulse time between 3 and 8 msec (shorter pulses for small vessels, longer pulses for large vessels), pulse mode according to depth of the lesion (single pulse for superficial, double or triple pulses for deeper lesions). The clearance as well as side effects were evaluated.

Results: Within the range suggested above, secure treatment of PWS is possible and the premier goal, not to harm the patient in terms of scarring, crusting and changes in pigmentation can be approached. After an average of 6 treatment sessions, obvious progress with lightning of the PWS was perceptible in all patients with small pink lesions responding notably better to therapy than darker PWS. In 75% patients showed intermittend purpura and slight crusting in 24%. Scarring was not experienced. **Conclusion:** With aid of intensified pulsed light systems PWS can be effectively handled. The wide range of parameters to be chosen of allows treatment of PWS of all sizes, shapes and depths. In repetitive sessions, parameters can then be adapted to the individual situation to achieve best results.

Keywords: Vascular malformations; Facial port-wine stains; Intense pulsed light treatment

Abstr ID 761

545

DIFFERENTIATION POTENTIAL OF MESENCHYMAL STEM CELLS DERIVED FROM ADULT ADIPOSE TISSUE

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Aims: Future cell based therapies such as tissue engineering will benefit from a source of autologous pluripotent stem cells. The methodes to isolate mesenchymal stem cells (MCS) from the bone marrow compartment has some potential and practical limitations. An alternative source for MCS is the human adipose tissue, which is obtainable in large quantities with minimal discomfort for the patient.

Material and Methods: The human adipose tissue was obtained by surgical practice during routine operations. The isolated fibroblast-like cells were cultured and maintained in vitro for an extended period with stable population doubling. **Results:** Immunhistological staining of the MCS showed the expression of the typical stem cell markers SH2, SH3 and SH4. The histological and immunhistological stainig, as well as the flow cytometrie (FACS) showed that the isolated MCS have the potential to differentiate into myogenic (alpha-actin and myoD1 expression), adipogenic (accumulation of lipid droplets, sudan-staining, leptin-expression) and osteogenic (von-Kossa staining, osteocalcin expression, AP-activity) cells in the presence of lineage-specific induction factors. Even in the three-dimensional cultures adipose and osteogenic tissue like aggregates could be differentiated and immunhistological analysed. Futher more molecular studies of the expression characteristics during the differentiation are still in progress.

Keywords: Tissue engineering; Adipose tissue; Autologous stem cell differentiation

Abstr ID 685

546

MACHINE VISION SYSTEMS IN AUTOMATIC BIOLOGICAL ANALYSIS IN TESTING NEW MATERIALS FOR FIXATION AND TISSUE ENGINEERING

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When new materials are to be tested for suitability for use in humans, often animal experiments are required not only to test whether the material has sufficient physical properties, but also to find out the biocompatibility of the material. However, to examine what is actually happening inside the cell, many different methods have been developed. Fluorescence is an excellent way of measuring specific reactions happening inside the cell. Still, labeling needs several different manual operations before the final result can be seen. Often this requires special hardware and skilled personnel. The use of exogenous reporter proteins like Green Fluorescent Protein (GFP) carries a risk of interfering with the measured cell function itself. Due to these facts, if there could be a possibility to measure the behavior of the cells without any labeling, it would certainly be a better way to detect, whether a foreign substance has an adverse effect on e.g. cell vitality. The possibility to directly measure the alterations in the cell functions and morphology on line from living cells (not just endpoints like cell death or molecular reactions) would certainly result in more specific and sensitive measurements. Chip-Man Technologies together with VTT, University of Tampere, Tampere University of Technology and Helsinki University of Technology, has developed a system capable of detecting features from cellular actions by a way of detecting on line changes in cell morphology and functions. This is a non-invasive technique using no labels. The system can also operate autonomously for long periods of time. The system is still in development phase, but the results achieved so far are promising and they indicate that it is possible to evaluate the cells well-being automatically, without the use of markers or labels and with less manual work.

Keywords: Machine vision; Biomaterials; Biocompatibility; Automatic analysis; Digital imaging

Abstr ID 85

547

PROLIFERATION AND ATTACHMENT OF ENDOTHELIAL CELLS ON A TITANIUM SURFACE

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The influence of surface properties and biological systems is critically important to many areas of medicine, technology and research. Generally, only the surface of an implant is in direct contact with the host tissue, and this portion of the material plays a crucial role in repair and integration. A desirable feature of scaffolds is the ability to support new

blood vessel growth. With the present investigation, we examined the behavior of endothelial cells (ECs) on an titanium surface, using histological and immunocytochemical methods. The endothelial cells were isolated from umbilical cord veins and were identified as endothelial by staining with a panel of antibodies endothelial-specific. Cells, after two passages, were seeded in a standard density on commercially pure titanium in the form of plates. These were maintained for 1, 7, or 14 days. Standard plastic slips for cell culture were used as control surfaces. After 14 days, we could observe a confluent monolayer of ECs, the cells not only have attached to the surface, but also proliferated. Our results showed that ECs have produced fibronectin and used it as an adhesion substrate on the titanium. Two integrins normally involved in vascularisation were related to the adhesion of ECs to titanium: $\alpha 5 \beta 1$ (fibronectin receptor) and $\alpha (v) \beta 3$ (vitronectin receptor).

Keywords: Endothelial cells; Titanium; Integrins; Fibronectin

Abstr ID 353

548

CHARACTERISATION OF HUMAN MESENCHYMAL STEM CELLS BY FOUR-COLOR IMMUNOFLUORESCENCE

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Introduction: Human mesenchymal stem cells (hMSCs) are most suitable for tissue engineering applications. However, because they lack distinctive phenotypic features, their identification is only possible retrospectively, i.e. by differentiation assays. Until now, no specific marker is known that allows the definitive characterization of undifferentiated stem cells. **Materials and Methods:** In order to characterize hMSCs without performing differentiation assays, we established a simultaneous four-color immunofluorescence of the putative stem cell markers CD 44, CD 105, CD 106, and collagen IV. Detection of antibody binding was performed by immunofluorescence using fluorochrome conjugated secondary antibodies (AMCA, TexasRed, FITC, and Alexa546, respectively). Because a clear distinction of more than three different fluorochromes is not possible with conventional image analysis systems, we performed spectral image acquisition that enables discrimination of four fluorescent spectra plus nuclear stain (DAPI). **Results:** We found that the surface proteins CD 44, CD 105, and CD 106 were positive on almost every cell within the hMSC population. In contrast, collagen IV revealed heterogeneous labeling results. **Conclusions:** We present a four-color immunofluorescence of human mesenchymal stem cells with a characteristic labeling profile. This technique appears a suitable approach in order to characterize mesenchymal stem cells on single cell level without performing differentiation assays.

Keywords: Spectral image analysis; Stem cells; Multicolor fluorescence; Immunocytochemistry

Abstr ID 636

549

MIB-1 EXPRESSION IN ODONTOGENIC EPITHELIAL RESTS, EPITHELIUM OF HEALTHY ORAL MUCOSA AND EPITHELIUM OF SELECTED ODONTOGENIC CYSTS

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Aims: The aim of this study is to investigate the cycling status of rests of odontogenic epithelium found in follicles of unerupted teeth, epithelium of oral mucosa and epithelial linings of various odontogenic cysts. **Methods:** MIB-1 expression was studied in the rests of odontogenic epithelium ($n=10$), healthy oral mucosa ($n=10$), odontogenic keratocysts ($n=10$) and other odontogenic cysts ($n=10$) using an avidin-biotin peroxidase technique on paraffin sections. The number of positively stained cells was counted on 10 representative areas of epithelium using a $\times 40$ objective. The average number of MIB-1 positive cells in each group was calculated. **Results:** No MIB-1 positive cells were seen in the rests of odontogenic epithelium. The mean numbers of MIB-1 positive cells detected within the epithelium of oral mucosa, and of radicular and dentigerous cysts were similar. The number of MIB-1 positive cells was found to be increased in the presence of marked inflammatory cell infiltration. The highest number of MIB-1 positive cells was seen in the keratocysts. **Conclusion:** These findings suggest that removal of an unerupted tooth to prevent the possibility of neoplastic transformation within rests of odontogenic epithelium may not be justifiable rationale.

Keywords: MIB-1; Remnants of immature odontogenic epithelium; Odontogenic cysts; Cycling status

Abstr ID 186

550

THE HISTOLOGICAL STUDY OF PERIOSTEAL CELL DIFFERENTIATION AFTER SURGICAL STIMULATION

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Aims: Periosteum is known to play a major role in periosteal bone formation after fracture. The advanced study indicated that periosteum on tibia and calvaria displayed different patterns in bone healing. Tibial periosteum displays the combination of intramembraneous and endochondral ossification. On the contrary, calvarial periosteum displays intramembraneous ossification. We hypothesized that the differential potential of mesenchymal cells in periosteum determined on bone formed patterns. Several authors reported that Run $\times 2$ /Cbfa1 and So $\times 9$, a transcription factor, regulated the mesenchymal cells for osteogenic/chondrogenic differentiation. We observed the histological appearance and the immunolocalization of Run $\times 2$ /Cbfa1 and So $\times 9$ after periosteum released, to

discuss the contribution of these molecular signals with new bone formation. **Methods:** An experimental group composed of adult male Sprague-Dawley rats at seven weeks old. One group, released surgery performed on the tibia. Another group, released surgery performed on calvaria. Rats were killed and fixed at 7, 10, 14, 28 days post-operatively. **Results:** Released periosteum on calvaria displayed additional bone formation by intramembraneous ossification. Released periosteum on tibia displayed endochondral bone formation. Intact periosteum beyond released site was thickened and displayed intramembraneous bone formation. By 7 days postoperatively, osteoblasts derived from periosteum located on calvaria and expressed immunolocalization of Run \times 2/Cbfa1 and without immunolocalization of So \times 9. At the same time, fibroblasts and chondrocytes derived from tibial periosteum located around endochondral bone formation and expressed immunolocalization of both Run \times 2/Cbfa1 and So \times 9. **Conclusion:** These results indicated that periosteal cells displayed the different appearance of bone formation on tibia and calvaria in bone healing.

Keywords: Periosteum; Run \times 2/Cbfa1; So \times 9

Abstr ID 347

551

HUMAN MESENCHYMAL STEM AND PROGENITOR CELLS (hMSC): POTENTIAL FOR CHEMOTACTIC ACTIVATION OF HOMING AND MIGRATION BY BLOOD PLASMA AND BONE MORPHOGENETIC PROTEINS

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Aim: Cells which can give rise to a multitude of mesenchymal lineages (MSC) have been successfully re-infused into patients in clinical studies. However, their homing and migration behaviour is largely unknown, and its regulation is unclear. We asked for conditions to influence and optimize migration and homing of hMSC to sites of tissue repair. **Method:** hMSC were cultivated from bone marrow samples and characterized for their multilineage differentiation capability. A modified Boyden Chamber assay was developed to analyze chemotactic migration. Homing behaviour was examined in a NOD/SCID mouse model. **Result:** Generally activation of hMSC migration proved difficult. Platelet Derived Growth Factor (PDGF), which was shown to induce chemotaxis of mature fibroblasts and osteocytes, stimulated MSC migration only to limited degrees and under selected conditions. Stromal Cell-Derived Factor 1 (SDF1) inducing chemotaxis of hematopoietic stem cells could not stimulate hMSC migration. In contrast, blood plasma efficiently induced the transmigration of hMSC through 8 μ m micropores within 4 h. Furthermore the transmigration upon blood plasma could be modulated by bone morphogenetic proteins and differentiation of hMSC to osteoblasts. When immunodeficient NOD/SCID mice were infused i.v. with 1×10^6 MSC, human cells detected at 24h were still contained in the lungs, but very little signal was found in other organs. **Conclusion:** This study shows, that activa-

tion of hMSC migration may follow very different mechanisms compared with those known for hematopoietic stem cells or mature fibroblasts. The modulation of the hMSC migration by bone morphogenetic proteins may lead to new insights into the multistep model of bone regeneration. It may require previous activation of MSC.

Keywords: Mesenchymal stem and progenitor cells; Migration and homing

Abstr ID 363

552

PROLIFERATION AND DIFFERENTIATION OF PERIOSTEUM-DERIVED OSTEOPROGENITOR CELLS DEPEND ON THE INDIVIDUAL AGE

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Purpose of the study was a phenotypic characterization of periosteum-derived osteoprogenitor cells related to the age of an organism. Periosteum-derived cells from fetal, immature and adult rat were isolated by enzymatic digestion and cultured. Proliferation was assessed by WST-Assay; (pre-)osteoblastic differentiation was controlled microscopically by the formation of bone nodules and by western blot of osteopontin and osteocalcin by western blot. The expression of BMP-2 and BMP-7-mRNA was documented by RT-PCR. The results were analysed statistically by log rank tests. Periosteal cells derived from fetal donors exhibited the highest proliferation rate. The synthesis of osteopontin and osteocalcin was most intense in these cultures. The expression of BMP-2 and BMP-7-mRNA was more enhanced than in other donor ages. Proliferation was reduced in cells derived from immature donors. The synthesis of Osteocalcin and Osteopontin and Expression of the BMP-mRNA was much lower than in fetal cells. While cells of fetal and immature donors formed bone nodules as expression of their osteoblastic phenotype, cells derived from adult donors did not. The synthesis of Osteopontin, Osteocalcin and expression of BMP-2 and BMP-7-mRNA were significantly reduced when compared to fetal or immature donors. Cells derived from the periosteum capable to osteoblastic differentiation exhibit in vitro a reduced potential of proliferation and differentiation, which is similar to marrow-derived osteoprogenitor cells. It seems likely that in older individuals these characteristics will interfere with the application of periosteum-derived osteoprogenitor cells for the formation of vital bone substitutes by tissue engineering.

Keywords: Tissue Engineering; Bone Osteoblasts; Age Periosteum

Abstr ID 150

553

A NEW TECHNOLOGY FOR THE STEAM STERILISATION OF BONE MATERIAL

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Bone augmentation with transplants and bone substitutes is a standard technique in maxillofacial surgery today. Allogenic bone transplants show superior ingrowth properties compared to bone substitutes. Microbiological risks are limiting the use of allogenic materials. Steam sterilisation would be a simple and safe technique to solve these problems. But steam sterilized bone material shows limited bone augmentation with transplants and bone substitutes is a standard technique in maxillofacial surgery today. Allogenic bone transplants show superior ingrowth properties compared to bone substitutes. Microbiological risks are limiting the use of allogenic materials. Steam sterilisation would be a simple and safe technique to solve these problems. But steamsterilized bone material shows limited osseointegration, local inflammation and low mechanical stability. We developed a new technology to preserve the mechanical stability and reduce antigenicity by a new process for a subsequent steam sterilisation. We studied the ingrowth properties of the pretreated and steam sterilized bone material in an animal study with 17 rabbits in the patella groove model. Samples were taken after 30 and 100 days. The fluorescence microscopy shows a regular osseointegration, resorption, remodelling, and ingrowth depth of the marked samples. Additional PMMA-embedded histology proved these results and an immunoreactivity equal to the allogenic control group in all samples compared. The overall ingrowth of the bone is excellent. Experiments with xenogenic transplants were also successful and promise further interesting results. The technology provides a steam sterilized, fully mineralized, allogenic biomatrix with the original microstructure and composition of the donor bone with superior biological and mechanical properties.

Keywords: Bone transplant; Steam sterilisation; Allogenic; Xenogenic; Animal study

Abstr ID 187

554

EXPERIMENTAL STUDY OF PREFABRICATED VASCULARIZED BONE GRAFT USING BONE MARROW CELLS

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Aims: Vascularized bone grafts have been widely used in replacing bone lost by disease or trauma. While this approach has been generally successful, some problems remain. Autologous bone grafts are limited in supply and known to occasionally result in severe surgical trauma. Recently, some studies were undertaken to evaluate the potential of using osteoblasts differentiated from bone marrow as a means to produce tissue engineered bone. This study was designed to create prefabricated vascularized bone grafts in the femur of rats by the combined use of collagen scaffold, osteoblasts, and a vascular bundle in a diffusion chamber. **Materials and Methods:** The saphenous vessels of 8-week-old Fischer rats were exposed under general anaesthesia and placed on the slits cut into the chambers. Then, collagen scaffold seeded with osteoblasts was packed into the chamber. In the control group, this was performed

without the placement of vessels. After 1, 3, 6, and 9 weeks in site, the implants were harvested and bone formation was assessed histologically and biochemically. **Results:** Histological analysis showed active bone formation in the chamber. Bone formation was confirmed by the presence of osteoblasts lining on the new bone surface. Substantial alkaline phosphatase activity in the composites was detected at early periods. In contrast, there was no significant bone formation in the control group. **Conclusion:** These results suggest that the combination of collagen scaffold, osteoblasts, and a vascular bundle in the chamber may be a useful method to prefabricate vascularized bone grafts.

Keywords: Prefabricated vascularized bone grafts; Osteoblasts scaffold tissue engineered bone diffusion chamber

Abstr ID 174

555

EXPERIMENTAL RECONSTRUCTION OF CRANIAL SKELETON

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Reconstruction of cranial bones is a problem of today. It was suggested a method for reconstruction of skull defects with autoplasmic material and hydroxyapatite (HAP). Biocompatibility and bioavailability of HAP implantation to reconstruct cranial defect were studied in experiments. To investigate the biocompatibility were used HAP samples with high adhesive properties. In experiment *in vivo* was used a model of implantation for repairing cranial defects. HAP granules with absorbed fibroblast culture were implanted in cranial defect of female BDF1 mice. In 7, 10, 17, 24 and 31 days a pair of animals were sacrificed and ceramic samples were extracted. One of the samples was to evaluate of autologous fibroblast population density on ceramic using adopted for this goal MTT-method, other for visual assessment and light microscopy. The stain was with hematoxylin-eosin and special for connective tissue dyes. Implant taking was in all of the cases. MTT-test demonstrated that HAP have no acute cytotoxicity relatively to cell culture of fibroblasts. There were no macro- and microsinings of implant's rejection and inflammatory reaction, that testifies to biocompatibility of the HAP samples. In 10 days after implantation the complex of HAP granules was surrounded by thin capsule formed from connective tissue and closely contacted with sublayered connective tissue. Spaces between the granules were filled with fibroblasts, surrounded by deposits of intracellular connective tissue matrix. An active neovascularization of implant and forming of wide capillary net was registered inside and outside of samples. Based on received *in vitro* and *in vivo* experimental results HAP samples are considered to be potential matrix for allogenic and autologous cell culture to reconstruct the wide tissue defects.

Keywords: Reconstruction; Cranial bones; Hydroxyapatite (HAP)

MULTIFUNCTIONAL CIPROFLOXACIN-RELEASING TACKS: ASSESSMENT OF PULLOUT STRENGTH

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The aim of this study was to compare the pullout forces of recently developed bioabsorbable ciprofloxacin-releasing and plain self-reinforced polylactide/polyglycolide (SR-PLGA) 80/20 tacks in human cadaver parietal bones. Parietal bone pieces (approximately 6 × 20 cm) were collected from five human male cadavers (29–77 years of age). Fifty plain SR-PLGA 80/20 tacks (diameter = 2 mm, length = 6.0 mm) and 50 ciprofloxacin-releasing SR-PLGA 80/20 tacks of similar dimensions were applied to drill holes using a special tack-shooter without tapping the drill holes. The force needed to pull the tacks from human parietal cadaver bones was measured using a universal tensile testing machine. The tack pullout speed was 10 mm/min. Means and standard deviations (SDs) were calculated and analyzed using the Student t test (SPSS version 10.0 for Windows). The pullout forces of the ciprofloxacin-releasing and plain tacks were 147 ± 10.3 N and 141.4 ± 12.6 N respectively (insignificant difference, $P < 0.001$). The main cause of failure was the breakage of tack barbs (95% in the both cases). Ciprofloxacin-releasing SR-PLGA tacks have a pullout strength similar to corresponding plain conventional SR-PLGA tacks and they can be applied in cranial bone fixation.

Keywords: Bioabsorbable; Ciprofloxacin; Osteofixation; Tack

P21 CELL CYCLE PROTEIN INHIBITS THE PROLIFERATION OF SALIVARY GLAND TUMOUR

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Objectives: The HSG (human submandibular gland) salivary cell line is a good experimental model of salivary gland tumours. Our objectives were to investigate the effect of protein kinase C activation on the proliferation of this cell line and to detect how these changes influence the cell cycle in the cells. **Materials and Methods:** HSG cells were cultured in flasks and PMA, an aspecific protein kinase C (PKC) activator, was added to the cells in a concentration of 10–8 M. DNA synthesis was assessed by measuring the 3H-thymidine incorporation of the cells. Cell cycle analysis was performed with flow-cytometry, changes in the expression of cell cycle proteins were investigated by Western blotting. **Results:** Adding PMA to the cells reduced the DNA synthesis in a biphasic manner. PMA treatment had a short and a long-term effect on DNA synthesis. Long-term PMA treatment reduced the expression of PKC delta, while

inhibiting the PKC delta isoform alone also reduced the DNA synthesis of HSG cells. After PKC activation, HSG cells could not enter the S phase of the cell cycle. Cell cycle protein analysis showed that PMA treatment increased the expression of p21 tumour suppressor protein, while it had no effect on other cell cycle proteins. **Conclusion:** Our data suggest that PKC activation blocks the cell cycle of HSG cells at the G1/S transition and this inhibitory effect is due to the elevation of p21 cell cycle protein level. Since both inhibition and downregulation of active PKC delta isoforms had the same effect, it seems that this isoform has a crucial role in the proliferation of the HSG cell line.

Keywords: Salivary gland; Tumour proliferation; Growth inhibition; Cell cycle

EXPRESSION OF GENE BAX IN ORAL PATHOLOGY

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The Bax is a proapoptotic molecule which induces the process of programmed cell death. Immunohistochemical analysis of Bax expression patterns was evaluated mainly on mammalian cell lines and tissues. Our research is the first molecular analysis of Bax expression in oral pathology. 45 patients with gingival and mucosal hyperplasia and neoplastic hypertrophy were included in our study. Bax expression in the above mentioned tissues was determined by molecular analysis and compared with healthy tissues taken from the same subjects. The analyzed material was obtained by biopsy of the line of cut, from section of tumor and of healthy tissues. Molecular analysis consisted of three stages: RNA extraction, amplification and quantitative detection of amplification products and evaluation of specificity products of the amplification. Expression of Bax gene was evaluated depending on the biopsy region and on final histopathological diagnosis within three groups (I-hyperplasia, II-neoplasm locally malignant, III-carcinoma) and within four subgroups of the first group. Statistical analysis was performed by ANOVA and Tukey tests. A significant difference in expression of Bax gene within the three of basic investigative groups ($P = 0.001$) was found. It was most weakly expressed between the group with cancer and the group with hyperplasia ($P = 0.002$). Statistically significant differences in expression of Bax gene were dependent on the biopsy region ($P = 0.0002$). There were large differences in expression of Bax gene between the inside of the tumor and the edge of tumor ($P = 0.0001$) and between the edge of the tumor and the region of healthy tissue ($P = 0.0001$) in the group with cancer and the group with locally malignant neoplasm. **Conclusion:** Evaluation of the expression of Bax gene might be helpful in predicting the development of hyperplastic and hypertrophic changes of the oral cave.

Keywords: Bax; Carcinoma; Dysplasia; Oral cave

Abstr ID 504

559

EXPRESSION OF BCL-2-ONCOGENE IN ORAL PATHOLOGY

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The Bcl-2 gene belongs to antiapoptotic proteins, which are oncogenes in the process of the programmed cell death. For the first time it was described in cell-B-lymphomas by Tsujimoto. The immunohistochemical analysis of the expression of this gene was performed mainly on healthy tissues and on pathological tissues of oral pathology. The applied molecular researches are more expensive but more exact. 45 patients with gingival and mucosal hyperplasia and neoplastic hypertrophy were included in our study. Bcl-2 expression in the above mentioned tissues was determined by molecular analysis and compared with healthy tissues taken from the same subjects. The analyzed material was obtained by biopsy of the line of cut, from section of tumor and of healthy tissues. Molecular analysis consisted of three stages: RNA extraction, PCR amplification and quantitative detection of amplification products and evaluation of specificity products of the amplification. Expression of Bcl-2 gene was evaluated depending on the biopsy region and on final histopathological diagnosis within three groups (I-hyperplasia, II-neoplasm locally malignant, III-carcinoma) and within four subgroups of the first group. Statistical analysis was performed by ANOVA and Tukey tests. There were no statistically significant differences in expression of Bcl-2 gene within four subgroups of hyperplasia. Statistically significant difference in expression of Bcl-2 gene was found within four basic investigative groups ($P=0.00002$) and in groups of various biopsy regions ($P=0.002$). The expression of Bcl-2 gene on the edge of tumor was higher comparing to the inside of the tumor mostly in cancers and in smaller degree in locally malignant types of neoplasm was found. **Conclusions:** Evaluation of the expression of the Bcl-2 gene might be helpful in estimation of the degree of malignancy of the oral pathology.

Keywords: Bcl-2; Carcinoma; Dysplasia; Oral cancer

Abstr ID 241

560

EFFECT OF SCCA1 AND SCCA2 ON SUPPRESSION OF TNF-ALPHA INDUCED CELL DEATH BY IMPEDING MITOCHONDRIAL RELEASE OF CYTOCHROME C

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Background and Aim: Squamous cell carcinoma antigen (SCCA) is well-known as a serum tumor marker of

squamous cell carcinoma. This is comprised of two highly homologous proteins, SCCA1 and SCCA2. Both SCCAs are thought to play a role in the rescue of carcinoma cells from apoptosis. However, it still remains unclear how SCCA1 and SCCA2 perform the functional roles in the apoptosis-resistant mechanism. We detected SCCA1 and SCCA2 as the differentially expressed genes between two human oral squamous cell carcinoma cell lines (MISK81-5 and sMISK) derived from the same tumor tissue. Both SCCAs were expressed stronger in MISK81-5 than in sMISK. Therefore, in this study, we analyzed the function of the SCCAs in the apoptotic pathway in oral squamous cell carcinoma cell lines by inducing the cell death using the anti-cancer agent, TNF-alpha, in MISK81-5 and sMISK *in vitro*. **Methods:** We examined the cell viability of MISK81-5 and sMISK after the treatment with TNF-alpha. Then, we established the stable sMISK clones over-expressing SCCAs and investigated the relationship between cell viability and intracellular localization of cytochrome C in the transfectants after the treatment with TNF-alpha. **Results and Discussion:** The cell death induced by treating with TNF-alpha was suppressed not only in SCCA1 over-expressing cells, but also in SCCA2 over-expressing cells compared with control cells. Immunohistochemical staining for cytochrome C showed apparent punctate pattern in the cytoplasm of the TNF-alpha-untreated cells. After the treatment with TNF-alpha, staining pattern of cytochrome C became completely absent or diffuse in the control cells. Meanwhile, the positive punctate staining was preserved in the transfected cells. These observations suggest that both SCCA1 and SCCA2 participate in a preventive mechanism for the TNF-alpha induced cell death *in vitro*, by inhibiting the release of mitochondrial cytochrome C.

Keywords: Squamous cell carcinoma antigen; Head and neck cancer; Apoptosis; TNF-alpha; Mitochondria

Abstr ID 172

561

IMMUNOHISTOCHEMICAL ANALYSIS OF P16, P21 AND P27 IN ORAL CARCINOMA

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Objective: Cyclin-dependent kinases (CDKs) and a number of cyclin-dependent kinase inhibitors (CDKIs) such as p16, p21 and p27, exert a direct control on the cell cycle. P16, p21 and p27 are negative regulators of cyclin-dependent kinases and in this function they are negative regulators of the cell cycle. This is one checkpoint in tumor progression. Therefore, p16, p21 and p27 expression in oral carcinoma were evaluated in relation to the clinicopathological features in order to determine the value as a prognostic marker. **Material and Method:** 180 patients with histologically proven squamous cell carcinoma of the oral cavity treated surgically were eligible for the study. Surgical tumour therapy included radical tumour resection and neck dissection, if necessary. All tumours were classified postsurgically according to the pTNM system. Radiotherapy was performed when lymph node metastases were detected histologically. Patient were clinically

evaluated in our routine follow-up. Tumor specimen of all 180 patients were investigated for the expression of p16, p21 and p27. Core needle biopsies from paraffin wax embedded tissue blocks were re-embedded in a tissue array. Immunohistochemical screening under identical condition were carried out with p16, p21 and p27 antibodies. Correlation between clinical features and the expression of the antibodies were evaluated statistically by Kaplan-Meier curves, Log-Rank- and chi-square Tests. **Results:** The expression of p16 correlate significant with a poor survival rate ($P=0.01$). The expression of p21 correlate significant with a better prognosis in the Log-Rang test ($P=0.04$). No significant correlation were found between the expression of p27 and the survival rate. **Conclusion:** p16 and p21 in carcinoma of oral cavity seems to be different predictive parameters in regulation and prognosis of squamous cell carcinomas.

Keywords: p16; p21; p27; Prognosis; Oral cancer

Abstr ID 706

562

EFFECTS OF ETS-1 ON THE INVASIVE PROPERTIES OF ORAL SQUAMOUS CARCINOMA CELLS

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Aims: Metastasis in invasive carcinoma is closely associated with the production of extracellular matrix catabolic enzymes such as matrix metalloproteinases (MMPs), as well as with enhanced cell motility and growth. It is known that ets oncogenes exist in transcriptional regulation regions of MMPs, such as AP1 sites, and enhance or inhibit MMPs transcription. ETS-1 protein, a gene product of ets-1, have an important role both in tumor angiogenesis and in the invasion and metastasis of carcinoma cells. However, the function of ETS-1 in oral squamous carcinoma cells and the relationship of ETS-1 with invasive ability are unknown. In this study, we investigated the effect of ets-1, a member of the ets oncogene family, on the invasive properties of oral cancer from a molecular biological perspective. **Methods:** Using pSG5, a eukaryotic expression vector, an ets-1 expression vector were made and introduced into the oral squamous carcinoma cell line HSC-3 by lipofection. Expression of ets-1 and Cytokeratins(CK)19 in the transfected cells was analyzed with RT-PCR. The invasive ability of the transfected cells was determined using a matrigel invasion assay and MMP-9 production was measured using gelatin zymography. **Results:** Clear expression of ets-1 was apparent in the transfected HSC-3 cells. On the other hands the expression of CK19 was reduced. Matrigel invasion assay revealed that the transfected cells were shown to have higher invasive ability than that of normal cultured cells, and gelatin zymography demonstrated that their MMP-9 production increased. **Conclusion:** These results suggested that ets-1 are involved with enhanced invasive ability in oral squamous carcinoma cells. In the present study, we identified two pathways of ets-1 effects on oral cancer invasive properties. First, expression of proteinases, including

MMP-9, results in degradation of the extracellular matrix. Second, changes in cytoskeletal proteins such as CK19 may allow changes in morphology that promote high invasive ability.

Keywords: ETS-1, Oncogene, MMP

Abstr ID 318

563

COMPARISON OF DNA-PLOIDY AND S-PHASE FRACTION IN PAIRED TISSUE BIOPSIES PRETREATMENT AND SURGICAL RESECTIONS FROM ORAL SQUAMOUS CELL CARCINOMA

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Aims: For appropriate clinical application of DNA measurements, it is essential that the cell samples analyzed are representative of the whole tumor. In this case, cellular DNA characteristics from pretreatment biopsy (PTB) may become important for predicting treatment outcomes in patients with oral squamous cell carcinoma. **Study Design:** Were examined the value of flow cytometric analysis of DNA ploidy and S-phase fraction (SPF) in 42 patients with oral carcinoma in which the PTB and the surgical resection (SR) met the following criteria: PTB and SR were from the same site, and surgical resection was obtained within 4 weeks of PTB with no intervening treatments. DNA histograms with single or multiple Go/G1 peaks having a DNA index of <1.2 were considered DNA aneuploid. **Results:** Twenty-six percent (11 of 42) of tumors were DNA aneuploid. Of the 11 DNA aneuploid tumors, 1 were associated with DNA diploid PTB. The 10 DNA aneuploid PTB were associated with DNA aneuploid in subsequent surgical resection. The SPF ranged from 1.5% to 95% in SR, and 3% to 97% in PTB (Pearson, $P<0.001$). **Conclusion:** With respect to DNA ploidy and S-phase fraction, pretreatment biopsy are representative of surgical specimens resection in oral squamous cell carcinoma. SPF in PTB is relatively stable and can be correlated with SR.

Keywords: Squamous cell carcinoma, DNA-ploidy, S-phase fraction, Flow cytometry

Abstr ID 637

564

DETERMINATION OF THERAPEUTIC DIRECTION DUE TO IDENTIFICATION OF TELOMERASE ACTIVITY (TA) AND HTERT MRNA EXPRESSION IN A CASE SUSPECTED MALIGNANT TUMOUR

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Introduction: The identified profile of clinical aspects and histopathological findings is important to determine a

therapeutic direction. We occasionally come across a lesion, which indicates no definite evidence of malignancy in histopathologically, instead of malignant aspects in clinically. In this study, we report the usefulness of the detection of TA and hTERT mRNA expression in order to diagnose malignancy in a case, which was not detected a obvious evidence of malignancy instead of 2 times biopsies before the operation. **Case:** Patient; 62-year-old, female. Chief complaint; swelling of cheek mucosa on the left. Findings; the tumour showed irregular surface with slight redness, elastic soft with clear border, 4 × 5 cm in size, and given the stem. The first biopsy indicated the only dysplastic change, but not malignant change. The second biopsy also demonstrated it above. **Method:** TA and hTERT mRNA expression were calibrated by using TRAP assay and RT-PCR methods, respectively. The proper tumour, adjacent area and safety margin in second biopsy were diagnosed by above tests and histopathological examination. On the other hand, surgically extirpated tumour was divided into 8 sections, and examined histopathologically. **Result:** TA and hTERT mRNA expression were detected in proper tumour and adjacent area, but not in the margin of tumour as normal mucosa. Histopathological finding of the extirpated tumour revealed the cells with atypical change, consequently the tumour was diagnosed as squamous cell carcinoma. Discussion and **Conclusion:** TA and the expression of hTERT mRNA are detected about 75% and 90% in oral carcinomas, respectively. This tumour was extirpated with enough safety margin as well as malignant tumour according to the above result. Detection of TA and hTERT mRNA expression is considered the useful strategy in differential diagnosis of malignancy or not.

Keywords: Keywords: Telomerase activity; hTERT mRNA; Diagnosis of malignancy

Abstr ID 1

565

ESTABLISHMENT OF A NOVEL LYMPH NODE METASTASIS MODEL OF RAT TONGUE SQUAMOUS CARCINOMA CELLS TAGGED WITH GREEN FLUORESCENCE PROTEIN (GFP)

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Lymph node metastasis is the major cause of recurrence in tongue carcinoma. In order to investigate the mechanism of lymph node (LN) metastasis of tongue carcinoma, we established a green fluorescent protein (GFP) high-expressing tongue squamous carcinoma cell line with LN metastatic potential (RSC3 LM-GFP) from 4NQO-induced rat tongue squamous cell carcinoma (RSC3). When RSC3 LM-GFP cells (1×10^6) were injected into the tongue orthotopically or the foot pad ectopically in nude mice, LM-GFP cells were found to reproducibly metastasize to the cervical LN (4/5) and popliteal LN (5/5), respectively. Fluorescence microscopic observation for cervical and popliteal LN revealed that GFP was detected only in the popliteal LN immediately after injection of tumor cells. In

addition, intravital videomicroscopy demonstrated that LM-GFP cells migrated to the popliteal LN through lymphatic vessels 1 hour after injection of tumor cells only into the foot pad. These results indicate that popliteal LN metastasis after injection into the foot pad is experimental metastasis and that cervical LN metastasis after tongue injection is spontaneous metastasis. The development of LN metastasis can be monitored noninvasively through blue light irradiation from outside the body and LN metastasis can also be detected at the cellular level (micrometastatic level). This model could well be useful to investigate the mechanism of lymphatic metastasis of tongue carcinoma cell as well as to assess the therapeutic effects of an anti-cancer drug on LN metastasis.

Keywords: Keywords: Metastasis; Lymph node; Tongue squamous carcinoma

Abstr ID 328

566

CYCLOOXYGENASE-2 IS A POSSIBLE TARGET OF TREATMENT APPROACH INCONJUNCTION WITH PHOTODYNAMIC THERAPY FOR ORAL PRECANCER.

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5-aminolaevulinic acid (ALA)-based photodynamic therapy (PDT) for treating patients with oral diseases is a highly sophisticated procedure, but the incidence of disease recurrence after treatment is rather significant. Anti-cancer effects of cyclooxygenase (COX)-2 inhibitors have been reported, but not fully investigated in oral cancer and pre-cancer. To confirm that COX-2 could be a molecular target in adjunct therapy to ALA-based PDT, we investigated (1) COX-2 expression in a total of 39 biopsy samples from hyperplasia and dysplasia of oral mucosa immunohistochemically, and (2) inhibitory effects of cellular growth by COX-2 selective inhibitor (nimesulide), ALA-based PDT, and their combination on two human oral squamous cell carcinoma (SCC) cell lines, HSC-2 and HSC-4. Among the oral mucosal biopsies, proportion of COX-2 high expressers increased gradually from hyperplasia (1/6, 17%) to mild dysplasia (5/8, 63%) to moderate dysplasia (20/23, 87%) to severe dysplasia (2/2, 100%). Nimesulide had an inhibitory effect in vitro on HSC-2 (proven to be a COX-2 high expresser), but not on HSC-4 (a COX-2 non-expresser). While ALA-based PDT showed an inhibitory effect on both HSC-2 and HSC-4. Most importantly the combination of nimesulide and ALA-based PDT demonstrated a significant synergistic effect on the cellular growth inhibition of only HSC-2, but not of HSC-4. Present study strongly suggests that COX-2 can make one of the molecular targets in treating oral cancer and pre-cancer. The results from our in vitro experiments also prompt us to develop a new protocol with a combination of COX-2 selective inhibitor and ALA-based PDT for more effective treatment of those diseases.

Keywords: Cyclooxygenase-2 oral precancer photodynamic therapy

TOPIC 6: OSTEOSYNTHESIS AND TRAUMATOLOGY

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Abstr ID 267

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ORBITAL WALL FRACTURES: HOW PRECISELY CAN THEY BE PREDICTED WITH 16-SLICE COMPUTED TOMOGRAPHY?

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Objective: Orbital wall fractures often occur together with lateral midfacial fractures. For the surgeon it is important to precisely evaluate the need for exploration of the orbit. If no intervention is necessary, access to the infraorbital rim can often be avoided and risk of iatrogenic injury to structures in this area be reduced. **Patients and Methods:** In a prospective clinical setting we compared primary coronary scans from 1-slice-CT with primary axial scans and following secondary reconstructed coronary and sagittal layers from 16-slice-CT. Furthermore, in 50 patients with orbital wall fractures connected to midfacial fractures, we opposed the intraoperative findings (fracture extend, orbital wall disruption and dislocation, herniation of peribulbar tissue) to the radiologic judgement. The bony orbit was divided in 4 quadrants and evaluation of each was done separately by radiologists and oral and maxillofacial surgeons in the sense of a “blinded reading” and without knowledge of the intraoperative findings. **Results:** In 80% sagittal reconstructions were interpreted exactly the same by all investigators, in coronary reconstructions the same results were achieved in 75.6%. Again, best results could be achieved in sagittal reconstructions where the fractures were classified the same degree in 69%, compared to 61% in coronary layers. A false-negative assessment of CT-scans going along with underestimation of the real fracture degree was met in 7.4% of sagittal and 20.8% of coronary layers. Moreover reduced radiation dosage and less motion artefacts due to faster examinations resulted from use of the 16-slice CT scanner. **Discussion:** Primary axial layers in 16slice-CT lead to highly precise sagittal and coronary reconstructions. These aid in properly estimating the extend of orbital wall disruption and deliver important information to the surgeon whether or not to perform orbital exploration.

Keywords: Orbital fractures, Computed tomography, Prediction, Fracture extension

Abstr ID 509

568

APPLICATION OF OPTICAL 3D IMAGING FOR EXOPHTHALMOMETRY IN ZYGOMATIC FRACTURES

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Purpose: In clinical practice, relative exophthalmometry to assess asymmetry of protrusion between the two eyes of the same person causes some problems. It is the aim to introduce non-contact, non-invasive optical 3D imaging to relative exophthalmometry. **Patients and Methods:** 20 patients without orbital pathology and seven patients with zygomatic fractures were included in the study. For the determination of the relative exophthalmos, Hertel exophthalmometry, CT scans and optical 3D data of the facial surface were used. For the latter the corneal apices of both sides were projected onto this plane. The distance between the two points was determined in anteroposterior direction. **Results:** For patients without orbital pathology relative exophthalmometry data were 1.4 ± 1.1 mm for the Hertel instrument, 0.92 ± 0.99 mm for computed tomography and 0.549 ± 0.504 mm for optical 3D imaging. The values for Hertel exophthalmometry and computed tomography did not differ statistically significantly ($P_{Hertel/CT} = 0.284$), while there was a significant difference between Hertel exophthalmometry and optical 3D imaging ($P_{Hertel/optical} = 0.008$). In the cases of zygomatic fractures, Hertel exophthalmometry revealed less pronounced relative differences in globe position than CT and optical 3D imaging data (Hertel 0.7 ± 1.1 mm, CT 1.94 ± 0.98 mm, optical 3D imaging 1.891 ± 0.959 mm, $P_{Hertel/CT} = 0.150$, $P_{Hertel/optical} = 0.176$, $P_{CT/optical} = 0.735$). Postoperatively, relative Hertel exophthalmometry showed an increased value revealing a more pronounced enophthalmos (1.7 ± 1.0 mm, $P_{Hertel\ preop/Hertel\ postop} = 0.167$), while the corresponding value of the optical 3D images decreased as a sign for normalisation of the globe position (1.104 ± 0.654 mm, $P_{optical\ preop/optical\ postop} = 0.018$). However, the values assessed by the two different techniques did not differ statistically significantly ($P = 0.237$). **Conclusion:** The combination of computed tomography as baseline measurement and optical 3D imaging for the follow-up examinations reveals more realistic data in cases of zygomatic fractures than Hertel exophthalmometry.

Keywords: Exophthalmometry; Relative enophthalmos; Orbital floor fracture; Zygomatic fracture; 3D imaging

Abstr ID 632

569

EPIDEMIOLOGY AND TREATMENT OF ZYGOMATIC-ORBITAL FRACTURES (ZOF)—OWN EXPERIENCES

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The aim of this study was clinical and radiological evaluation of patients and their treatment for Zygomatic - Orbital Fractures (ZOF). This retrospective study is based on the data of Zygomatic - Orbital Fractures (ZOF) in 617 patients treated at the IIInd Department of Maxillo-Facial Surgery Medical University of Warsaw between 1990–2002. The studied group included 120–(19.4%) females and 497–(80.6%) males. The mean age of treated patients was 34 years. Among the causes of ZOF incidence the most frequent were assaults–(64.2%), followed by road traffic accidents–(17.4%). The diagnosis was based on evaluation of the mechanisms of the injury, clinical features of the

fractures and accompanying complications and the radiological image. Analysis of results showed that the clinical features of Zygomatic-Orbital Fractures supplemented by a typical radiological image captured on standard plain film radiography spotted on paranasal sinuses allows not only for their diagnosis, but also can determine management at the same time. In this way we observed excellent cosmetic and functional results in total of 617 patients with ZOF who were treated in over 13 years period. We present some of cases of ZOF had been treated in our clinic.

Keywords: Zygomatic-Orbital Fractures; Treatment

Abstr ID 756

570

CLINICAL AND PATHOLOGICAL CLASSIFICATION OF FRACTURES OF THE CRANIO-FACIAL SKELETON

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An analysis was performed of 1694 patients treated surgically between 1988 and 2003 (15 years) due to various fractures of the cranio-facial skeleton. The analysis took into account the specific anatomic and architectonic build, as well as biomechanics. Fractures were evaluated on the basis of: the area where the traumatic force was applied, the picture of the bone damage which was obtained visually during the surgical procedure, the clinical and radiological image of the fracture and the accompanying morphological, functional and aesthetic complications. Having determined in each patient the area where the traumatic force was applied, as well as the type, localization and extent of the injuries, fractures with a similar mechanism of trauma and intra-surgical image of the injury were divided into pathological groups. At the next stage, a characteristic clinical image and picture of the accompanying complications was determined for each group of fractures. Although such a procedure was time-consuming, it allowed for 7 separate clinical and pathological groups of fractures of the cranio-facial skeleton to be identified. These groups differed among themselves in the area to which the traumatic force was applied, the area of bone damage as assessed by vision intra-surgically, the clinical and radiological picture, the accompanying complications and management.

Keywords: Fractures; Cranio-facial skeleton; Diagnostics; Classification

Abstr ID 203

571

ANALYSIS OF 3385 PEDIATRIC CRANIO-MAXILLOFACIAL TRAUMA CASES

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The goal of this study was to assess the impact of the five main causes of accidents resulting in facial injury on the severity of cranio-maxillofacial trauma in children and teenagers. Between 1991 and 2000, 3385 patients below 15 years of age were admitted for cranio-maxillofacial trauma. Data of patients were prospectively recorded according to frequency and type of injury, age and gender distribution, monthly and yearly distribution, nationality of patients, and cause of accidents. Statistical analyses performed included Chi² tests, Fisher's exact test, and Mann-Whitney U test, as appropriate. This was followed by logistic regression analyses for the three injury types to determine the impact of the five main causes of craniomaxillofacial injury. The median age of patients at the time of injury 7 ± 4.36 years of age and boys : girls ratio was 5:3. A total of 389 patients (11.5%) had 615 facial bone fractures, 2582 patients (76.3%) suffered from 3384 dentoalveolar injuries, and 1697 patients (50.1%) showed 2061 soft tissue injuries. The risk to sustain bone fractures in facial trauma of children increases with every year of age by 14%, yet there exist no gender differences. There was a 2.38-fold risk (238%) for bone fractures in children involved in traffic accidents in comparison to other injury types. Violence and sport accidents did not reveal statistically significant differences for bone fractures in children when compared with other injury mechanisms or types. In contrast, the probability of suffering bone fractures is diminished in play-related accidents by 40% ($P < 0.005$). In children, the probability of suffering facial bone fractures varies with statistically highly significant differences depending on the injury mechanism ($P < 0.001$). Our pertinent documentation is an important steering tool to assess the improvement of treatment outcomes using osteosyntheses in children with cranio-maxillofacial trauma.

Keywords: Cranio-maxillofacial trauma; Pediatric trauma, epidemiology; Data bases; Risk factors; Treatment outcomes

Abstr ID 782

572

RESULT OF TREATMENT OF LARGE MANDIBULAR AND SOFT-TISSUES DEFECTS WITH DISTRACTION WITH BONE TRANSPORT IN GUNSHOTS

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Aim: The aim of this study was to report the restoration of large mandibular and soft-tissues defects by transport distraction. **Patients and Methods:** All 6 patients were men with a mean age of 42 years. Under general anaesthesia osteotomy sites and pin positions were marked. Pins were percutaneously inserted. The distractor was placed in the axis of the bone defect and the planned bicortical osteotomy preserving the periosteum was done. After a period of latency of 5 days distraction was done about 1 mm per day. At the end of the distraction, the bone is stabilised with plates during the consolidation phase. The distractor was removed after the consolidation phase. **Results:** One patients had a bifocal distraction and 6 a

trifocal one. The average of osseous defects was 10.6 cm (2.8–15). In all cases reconstruction of soft-tissues was obtained. In 2 patients had partial bone necrosis and limited iliac bone graft was done with success. All patients resumed an acceptable quality of life. **Conclusions:** This technique has many advantages: A micro-invasive surgery without sequels linked to the donor site; A reliable and not complicated technique compatible with fragile patients; The regenerated osseous may support oral rehabilitation.

Keywords: Mandibular reconstruction; Distraction; Bone transport

Abstr ID 395

573

ZYGOMA OSTEOTOMY FOR SECONDARY CORRECTION OF POST-TRAUMATIC FACIAL DEFORMITY: A CASE REPORT

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Fractures of zygomatic complex are very common and can result in functional and aesthetic deficits. In severe cases of trauma at the zygoma region, anatomic reduction could be impossible at the primary operation. Therefore, a secondary corrective procedure should be carried out, the technique of which is not standard but it is individualized according to the tissue distortion and symptoms of each case. We present a zygoma osteotomy technique that was utilized to treat deformity and enophthalmos following the first post-operative period of severe facial trauma. The patient was a 27 years old female patient who tried to commit suicide with a fall from height. Soon after emergency operation residual functional and aesthetic problems were apparent. Careful preoperative planning indicated osteotomy of the zygoma as a second operation. A vertical slice of bone was removed from the orbital rim and an infraorbital fracture was made at the posterior border of the zygomatic arch. Following the second post-operative period, there was a satisfactory aesthetic result and correction of enophthalmos. Various techniques have been described in the literature for osteotomy of the zygoma in cosmetic or orthognathic surgery. This case report describes another technique for osteotomy of the zygoma that can offer effective reconstruction and can be used as a secondary corrective procedure in severe facial trauma.

Keywords: Zygoma osteotomy; Facial trauma; Secondary reconstruction

Abstr ID 607

574

COLLAGEN TYPE I AND III METABOLISM IN ASSESMENT OF MANDIBLE FRACTURES HEALING

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Summary: During bone fracture healing a regenerating tissue contains mainly collagen type I and III in variable quantitative relations. C-terminal propeptide of procollagen type I (PICP) is accepted as a marker of synthesis of collagen type I, C-terminal telopeptide of collagen type I (ICTP) - the marker of collagen degradation and the N-terminal propeptide of procollagen type III (PIIINP) is an accepted marker of collagen type III metabolism. **Aims:** To estimate of the PIIINP, PICP and ICTP concentrations in blood serum during non-complicated mandible fracture healing by radioimmunological method; To determine potential relationship between kinetics of examined markers serum levels in particular bone fracture healing phases and applied treatment methods; To determine the usefulness of collagen type I and III markers metabolism for the monitoring of mandibular fracture healing. The material was blood serum of men aged 20–30 years with mandible fracture. Depending on the treating method patients were divided into two groups: I group consisted of patients treated with non-operative method, and II group—of patients surgically treated (stable osteosynthesis). **Results:** (1) Non-complicated mandible fracture healing in different periods underwent with variable concentrations of PICP, ICTP and PIIINP in blood serum. (2) Dissimilar dynamics of PIIINP and PICP serum levels in patients from both of the groups and lack of correlation between concentrations of these substances were noted. **Conclusions:** It may be suggested that intensity of local processes is reflected on changes of examined collagen type I and III markers metabolism in blood serum. Mandible fracture healing treated with non-operative method is more dynamic process than using of stable osteosynthesis. We suppose that mechanism of mandible fracture healing by spontaneous concrescence in I group differs from group II (primary and/or indirect concrescence).

Keywords: Type I and III collagen; Mandible fracture healing

Abstr ID 608

575

FREE BONE GRAFTS OF ALVEOLAR CLEFTS TREATMENT IN PATIENTS OF THE MAXILLOFAICAL DEPARTMENT, MEDICAL UNIVERSITY OF BIALYSTOK

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Summary: Bone grafting of the alveolus has become an essential part of the contemporary surgical management of many orofacial cleft deformities. Any patient born with a complete cleft should be considered for alveolar grafting. Alveolar bone defect causes disfigurement of alveolar arch, disturbs face aesthetics (collapse of ala nasi basis), teeth number, structure, location and teeth buds. **Aims:** The aim of the study was to evaluate the treatment results in patients with primary palate cleft using free autogenous

bone grafts. **Methods:** The material was 29 patients with an alveolar cleft which were treated in Maxillofacial Department of Medical University of Bialystok between years 2000 and 2003. All patients underwent secondary bone grafting by using autogenous iliac crest bone grafts. **Results:** Non-complicated healing of bone grafts was observed in 23 patients. Six patients presented complicated healing: five had partial wound dehiscence with partial bone graft resorption and in one patient lysis of bone graft was observed. **Conclusion:** The results of the study indicate that alveolar bone grafting is a very useful procedure. Successful grafting improves the stability of cleft maxillary segments, increases bone support for teeth close to the cleft, stabilizes erupted teeth and corrects facial aesthetic by ala nasi elevation.

Keywords: alveolar cleft; Seconadry bone grafts

Abstr ID 401

576

INTRAOPERATIVE NAVIGATION AS A GUIDE FOR RECONSTRUCTION OF ORBITAL WALL DEFECTS EMPLOYING CALCIUM PHOSPHATE CEMENT VS. CALVARIA SPLIT BONE GRAFTS. CLINICAL AND RADIOLOGICAL FINDINGS IN A SHEEP MODEL – A PILOT STUDY

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The aim of this study in adult sheep was to evaluate the use of intraoperative navigation and calcium phosphate cement for surgical treatment of orbital wall defect fractures. In adult sheep a single sided orbital wall defect was set. Utilizing symmetry of the orbits the healthy side was mirrored to get a virtual reconstruction leading the surgeon to identify correct position of the reconstruction material. For reconstruction calvaria split bone grafts and calcium phosphate cement were used both alone and simultaneously. Clinical, radiological and histological examinations were performed to evaluate the accuracy of navigation controlled reconstruction and to compare both reconstruction materials. Navigation showed to raise precision of reconstruction especially in difficult situations and cement was first class material to realize this “virtual” increase of accuracy. The reconstruction was precise regarding position of the orbital walls, the orbital volume and clinical results. Additionally cement proved to be osseointegrative and both materials were successfully used in combination. The period of time between trauma and reconstruction was identified as a parameter for as well eye globe motility as the formation of new bone tissue. In contrast to animals treated one week after trauma, those treated after four weeks showed impaired eye globe motility but increased and accelerated bone formation. In conclusion a raise of precision was proven for the reconstruction of the orbital region using intraoperative navigation combined with an easy to mould material as calcium phosphate cement. The potential of calcium phosphate cement as a useful biomaterial for the reconstruction of the orbital region was evidenced.

Keywords: Navigation; Volumetry; Orbita; Defect fracture; Calcium phosphate cement; Calvaria split graft; Sheep

Abstr ID 139

577

POROUS HYDROXYAPATITE CUSTOM MADE COMPONENT FOR THE RECONSTRUCTION OF CRANIAL DEFECTS : A FIVE YEAR FOLLOW-UP STUDY

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Introduction: The reconstruction of cranial bone defects has two principal technical targets : a satisfactory cosmetic result and optimal implant biocompatibility. Calcium Phosphate Ceramics, particularly hydroxyapatite, appear to be the most promising biomaterials. **Materials and Methods:** During the past 60 months 16 patients with post-surgical cranial bone defects were selected. Patient inclusion criteria were: extremely large defect, previous infection, and rejection of cranial implants. Each patient had a custom made resin stereolithographic model. Porous hydroxyapatite blocks (FIN-Ceramica) are machined to obtain a custom made implant in order to match the bone defect in shape and thickness. The implants were positioned in contact with the edge of the bone defect, fixed with a resorbable suture, being careful to minimize the residual bone-implant gap. All our patients had clinical follow-up every 6 months and a CT scan after 6 to 18 months. The mean follow up was 38 months (range 12–60) **Results:** One of our patients developed an infection which required to remove the implant during the first post-operative week. One year later after ethmoidal cell follow-up bi-frontal reconstruction was achieved with a new implant. In all patients the cosmetic results were excellent. CT scan follow-up 1 year after implants revealed possible ossification of the reconstruction boundary areas. **Discussion:** Analysis of the cancellous bone porosity demonstrated that the porosity was related to mechanical stress and the haematopoietic activity. In the calvarium the mean porosity ranged from 55% to 65%. The challenge was to achieve good mechanical resistance and satisfactory macroporosity to promote osteoconductivity. A bi-modal porosity of 10–75 µm and 125–625 µm was selected based on its bioactivity characteristics (osteoconductivity and osteoinductivity). Initial clinical and radiological results have confirmed our hypothesis however further research is warranted.

Keywords: Cranial defect; Implant; Custom made

Abstr ID 355

578

CLINICAL USE OF OZONE-OXYGEN THERAPY IN TREATMENT FOR MANDIBLE FRACTURES

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Aims: The number of *in vivo* and *in vitro* studies was performed with an aim to recognize the prospects of ozone usage in patients with mandible fractures. **Materials and Methods:** The antibacterial effect of ozone-containing solutions on main oral microorganisms was estimated *in vitro* in comparison with other traditionally used antiseptics. The clinical efficacy of ozonotherapy was studied in two groups. In 35 patients (the main group) with closed reduction and intermaxillary fixation of mandible fractures the local ozone-oxygen therapy was used. 16 patients with the same pathology formed the control group. Microbiological, immunological and biochemical studies of oral liquid were performed in both groups. **Results:** Clinical studies in both groups showed the suppression of local immune status and the increase of oral microorganisms content in oral liquid after trauma. In patients that were treated with the use of ozone we observed the decrease in oral microorganisms number, improvement of the secretory IgA level on 27% and normalization of serum immunoglobulins content in saliva to the 5-th day of observation. The general state of patients improved; the inflammatory process of oral mucous reduced. In control group the changes in immunological indexes were noted significantly later, the number of microorganisms remained higher than in the main group during all the observation period. Comparison of *in vitro* studies with the clinical data showed that antibacterial action of ozone *in vivo* is more pronounced. It gives an evidence of the important role of ozone-induced immunoactivation in the resulted clinical effect. **Conclusions:** Local ozone therapy is a prospective method that allows to improve the results of mandible fractures treatment.

Keywords: Mandible fractures; Oxygen therapy; Complications

Abstr ID 83

579

FRACTURES OF THE MANDIBLE IN IRELAND – CHANGING TRENDS IN CAUSATION AND SURGICAL MANAGEMENT AT THE NATIONAL MAXILLOFACIAL UNIT, DUBLIN.

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Introduction: Fractures of the mandible are a common clinical presentation following Maxillofacial trauma. Changes in aetiology and surgical management of these fractures have been noted in recent times in many centres worldwide. **Aim:** To analyse the changing aetiology pattern of isolated mandibular fractures referred to the National Maxillofacial Unit, Dublin, Ireland over a 20 year period. Furthermore to demonstrate the changing surgical treatment trend from a more traditional closed reduction technique to a greater emphasis on open reduction methods over this period. **Method:** This is a retrospective study comparing the aetiology and surgical management of mandibular fractures in the years 1981 and 1982 (Group 1) with the years 2001 and 2002 (Group 2). **Results:** There were 442 fractures in Group 1 and 487 fractures in Group 2. All of these fractures were isolated mandibular fractures and did not include other associated facial fractures. Changes in aetiology were noted. RTA's (43%) was the

commonest cause in 1981–82. This dramatically reduced to 23% in 2001–2. However Interpersonal violence doubled from 18% in 1981–82 to 36% in 2001–2. 88% of Group 1 were managed by closed reduction compared to 93% of Group 2 by open reduction **Conclusion:** Interpersonal violence, as a cause of mandibular fractures, has dramatically increased over the past 20 years. It has replaced road traffic accidents as the single largest cause of such fractures. With the advent of a safe and reliable bone-plating system, it is now the treatment of choice in the management of these fractures.

Keywords: Mandibular fractures; Aetiology; Management

Abstr ID 764

580

RAPID IMF: DOES IT IMPROVE CROSS INFECTION CONTROL IN MAXILLOFACIAL TRAUMA SURGERY?

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The treatment of maxillofacial fractures is an exposure prone procedure, with glove perforation occurring in up to 50% of cases. The glove perforations are predominantly associated with wire penetration, holding the suture needle, and snagging gloves on arch bars. There is a lower reported incidence of glove perforation when mandibular fractures are reduced manually whilst plated compared to the use of intraoperative intermaxillary fixation (IMF) such as eyelet wires or arch bars to achieve reduction. However, intraoperative IMF is often needed to stabilise difficult cases. A number of IMF methods have been suggested as an alternative to conventional wiring techniques to reduce the risk of needlestick injuries. Rapid IMF (Zygomatix Ltd.) is a system that employs flexible plastic anchorage ties which are passed under the dental contact points. The application of intermaxillary traction is carried out with the use of an elastic chain. **Subjects and Methods:** 120 dentate patients with mandibular fractures were recruited into a randomised controlled trial. All fractures were treated by open reduction and internal miniplate fixation. Temporary intraoperative IMF was achieved with either Rapid IMF or eyelet wires. All gloves were tested postoperatively with water inflation to detect perforations. **Results:** Glove perforations per operation were significantly lower in the group using Rapid IMF (0.53) compared to the eyelet wire group (1.42). The time required for application was significantly lower using Rapid IMF (mean 13 minutes) compared to eyelet wires (mean 19 minutes). There was a reduction in the number of perforations for the assistant and scrub nurse when Rapid IMF was used. **Conclusions:** Rapid IMF is an effective method of achieving temporary IMF and our study shows it to be a quicker, and more importantly, safer method over conventional wire IMF.

Keywords: Intermaxillary fixation; Mandibular fractures; Cross infection

Abstr ID 762

581

FACIAL FOREIGN BODY INJURIES AFTER BOMB ATTACK*Werkmeister R, Boros G, Schulte Th, Ruhe A**Koblenz, Germany**E-mail: Rwerkmeis@aol.com*

After suicidal bomb attack in Kabul/Afghanistan in June 2003 four soldiers died from the blast injuries. Besides traumatic injuries of the ears and eyes the 25 bomb-blast survivors had sustained facial injuries caused by direct mechanical trauma and soft-tissue injuries caused by foreign body penetrations. Some of the patients also sustained facial burns. The soft-tissue injuries ranged from small grazes to deep lacerations sometimes reaching the large cervical vessels. On conventional radiographs only a small part of the foreign bodies could be located. Only CT scans showed the site of the foreign bodies. During surgical intervention it turned out that foreign bodies penetrated the tissue up to 3 cm. Exploration of all facial wounds, even the smallest, were mandatory, since in the depth of each wound glass and/or metal fragments were found. This led to surgical interventions of up to 7 hrs duration. In addition 4 patients presented fractures of the midface which were treated by osteosynthesis. The injury pattern, the diagnostic procedures and therapeutic principles applied in facial lesions due to foreign body injuries caused by bomb explosion will be discussed. Moreover, the difficult healing process due to facial burns in addition to the great number of foreign bodies will be described.

Keywords: Bomb attack; Traumatology

Abstr ID 824

582

UTILIZATION OF BIO-ALCAMID IN RECONSTRUCTIVE SURGERY OF THE MAXILLO-FACIAL DISTRICT*Indrizzi E, Covelli E, Leonardi A, Terenzi V, Fini G**Department of Maxillo-Facial Surgery, S. Andrea Hospital, II Faculty of Medicine, University of Rome "La Sapienza", Rome, Italy**E-mail: v.terenzi@libero.it*

Aims: Degenerative or malformative syndromes, demolitive surgery or traumas' outcomes can led to the loss of thickness and/or mass of the soft tissues of the face. For that's concerning with the treatment of these affections, a definitive and satisfactory aesthetic result depends on the utilization of a biocompatible, inert, permanent and soft to palpation biomaterial. For the treatment of our patients, we decided to try to utilize Bio-Alcamid, and we obtained very good results. **Methods:** We treated in our surgery about 200 patients affected by degenerative or malformative syndromes, or traumas' outcomes, with a variable follow-up from three months to three years. We selectionated the most significant 15 cases of them, and we sottoposed these patients to echographic test (high resolution sound 75–13 Hz) to control biomaterial's integration at an early (1–3 months) and later time (3 years), its stability and to evaluate the presence of eventual alterations of near tissues.

Results: Bio-Alcamid is anaechogene and it appears like water in recent implants; later, it appears more corpuscular, sometimes vacuolated, more in particular in case of soft tissues' degenerative pathology: it is probably due to the presence of fibrosis that's typical of these syndromes.

Conclusions: On the basis of our experience, Bio-Alcamid is a very good filling system: in fact, it demonstrated to be biocompatible, stable from a temporal point of view, inert, with a very good anatomic integration, and we obtained more than satisfactory aesthetic results using it.

Abstr ID 266

583

SONOGRAPHIC LONG TERM FOLLOW UP OF AN AMORPHOUS POLYMER IN CRANIO-MAXILLOFACIAL SURGERY*Adam C, Hoffmann J, Gülicher D, Troitzsch D, Reinert S**Klinik und Poliklinik für Mund-, Kiefer- und Gesichtschirurgie, Universitätsklinikum Tübingen, Eberhard-Karls-Universität, Tübingen, Germany
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Objective: We describe the results of sonographic long term follow-up after fixation of midfacial fractures with resorbable osteosynthesis material. The specific goal was to evaluate the biocompatibility and degradation process with aid of sonographic findings over a 2.5 year period. **Subjects and Methods:** In terms of a prospective clinical study 28 patients with orbitozygomatic and frontal sinus fractures were treated using 50:50 Poly (D,L) lactide (PDLA). Long term follow up was done with a 13.5MHz multifrequency ultrasound transducer up to 29 months postoperatively so far. Periimplant tissue reaction, local vascularisation and plate thickness were especially evaluated. **Results:** All patients showed complete healing of the fractures. In 2 cases, plates could not be detected sonographically after 24 months suggesting complete resorption. In other patients plate residuums were still visible 29 months postoperatively. In one patient, plate removal due to fracture and following infection had to performed 10 days after implantation. Allmost all patients showed intermittend swelling in areas with thin overlying soft tissue. In few cases the swelling is long lasting. **Conclusion:** In general, the amorphous polymer used shows good biocomapitilby with resorption times between 24 months and at least 29 months. Common problems are screw fractures during operation and intermittend swelling. Sonography reveals to be a good instrument for control of the degradation process and soft tissue reactions.

Keywords: Resorbable osteosynthesis; Midface fracture reduction; Sonographic long term follow up

Abstr ID 547

584

TREATMENT OF TRAUMATIC FACIAL ARTERIOVENOUS FISTULA WITH SURGICAL EXCISION AFTER FAILED EMBOLIZATION*Patiño Seijas B, Lorenzo Franco F, Gómez Oliveira G, García-Rozado A, Luaces Rey R, Martínez A, López-Cedrún JL*

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Poster Introduction: Traumatic arteriovenous communications of the face and scalp are rare lesions characterized by multiple endothelial-lined channels between the arterial and venous system. The main symptoms are swelling of the face and exophthalmus. Noninvasive procedures as ultrasounds will confirm diagnosis and are helpful but angiography remains the main radiologic examination. **Case report:** We present the case of a 70 year-old man with swelling of the right half of the face after a minimal facial trauma. CT first and angiography afterwards showed an arteriovenous fistula between the transverse facial artery and the facial vein, with anomalous drainage to the superior ophthalmic vein, cavernous sinus, and contralateral external jugular vein. **Results:** Embolization of the arteriovenous fistula was tried twice, through catheterization of the femoral right artery. The first time, embolization was only partially successful, due to an anatomical obstacle, and so the patient suffered relapse of the symptoms. After a second failed attempt, surgical ligation of the feeding vessels was performed, with intraoperative catheterization of the common carotid artery to confirm the success of the surgery. **Conclusions:** Embolization is nowadays the preferred method of treatment of craniofacial arteriovenous fistulae. Nevertheless, surgical treatment is the definitive treatment method after either failure of the interventional radiology or a successful embolization.

Keywords: Arteriovenous fistula; craniofacial fistulae

Abstr ID 404

585

DEVITALIZATION OR ONLY DENERVATION OF TEETH AFTER JAW FRACTURES

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Aims: Mandibular nerve injury is the most frequent complication of mandibular fractures and its consequence of the teeth sensibility occurs. The purpose of this investigation was to find out the reinnervation period, the number of denervated and devitalized teeth and their clinical importance. Study design 50 patients with mandibular fractures were prospectively analyzed. This investigation included patients with fractures mesially of foremen mandibulae, initially "avital" teeth, complete follow-up (clinical examination, sensibility testing by electrical stimuli and radiologic findings) up to reinnervation or to three-year period in patients in whom reinnervation of all teeth did not occur. **Results:** There were 73 fractures in 50 patients (1.46 fractures per patient). Three years after the injury, 7.6% (17/222) of teeth remain denervated. The most denervated teeth are molars (18.5%) while the least denervated are incisors (4.6%). Reinnervation occurred after 6 weeks and was complete one year after the injury. One year after the injury 95.3% of the incisors, 93.8% of the premolars and 81.5% of the molars were reinnervated. During the second

and the third year following injury 3 teeth were devitalized which is 1.35% of the initially "avital" teeth or 17.6% of those denervated after one year. Good reposition is no guaranty for reinnervation. Denervation may occur even without dislocation. **Conclusion:** The dental pulp is vitally stable one year after the mandibular fracture. Denervated tooth is not devitalized and should not be treated if neither clinical nor radiologic signs of devitalization are present.

Keywords: Mandibular fractures; Tooth sensibility; Tooth vitality

Abstr ID 107

586

CONDYLAR FRACTURES. THE RETROMANDIBULAR APPROACH IN SUBCONDYLAR DISPLACED FRACTURES. A 10 YEAR EXPERIENCE

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Aims: Subcondylar fractures with displacement can be operated in order to improve aesthetical and functional outcomes. If no operation is performed, the patients can suffer from occlusal troubles due to the decrease of the molar ipsilateral height and from chin deviation during mouth opening, especially in toothless patients). Several approaches have been described, such as the preauricular approach or the submandibular Ridson approach. Because these approaches did not give good access on the operating field the authors have tried the retromandibular approach in the subcondylar fracture with displacement. **Material and Methods:** More than 70 fractures have been operated using this approach during the last 10 years. The authors describe the technique step by step. The operating time is between 30 minutes and 1 hour. **Results:** The condyle is well reduced in nearly 100% of cases. The rate of complications decreases with the surgeon experience (i.e. facial palsy, salivary fistula, bad reduction, secondary displacement). This rate is low (i.e. less than 10% of transient facial palsy). If necessary, miniplate can be removed using the retromandibular approach but we do not recommend to do it because it is hard to perform. **Conclusion:** Retromandibular approach is a convenient approach in subcondylar fracture with displacement which gives a low rate of complications and good results for reduction and stabilization of the fracture.

Keywords: Subcondylar fractures; Retromandibular approach

Abstr ID 518

587

AN ANALYSIS OF MAXILLOFACIAL TRAUMA IN THE OVER 65 POPULATION IN IRELAND

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As the population ages, the elderly constitute a larger proportion and subsequently a larger proportion of maxillofacial trauma. The elderly usually suffer more severe consequences from relatively minor trauma, but they don't require as much operative intervention. They do however require more social input after their discharge and this results in increased use of resources. In the management of maxillofacial trauma in the over 65-age group it is important to consider likely probabilities of cause and effect. Pre-existing co-morbid disease and multiple medications can complicate their management. Identifying their underlying health problems helps guide the most appropriate care. We present a thirteen-month review of maxillofacial trauma in the over 65-year-old population presenting to the national maxillofacial department in St James Hospital, Dublin, Eire. A daily trauma clinic is held from Monday to Friday and all referrals are assessed by one of the maxillofacial registrars. 74 patients were reviewed, 41 female 33 male. Data were collected for all patients. This included age, sex, time since referral, loss of consciousness, alcohol intoxication, mode of injury, presenting complaint, clinical findings and subsequent management. Falls were the most common aetiological factor. Alcohol was a contributing factor in 15 cases. The majority of patients were managed conservatively. The findings are presented and discussed.

Keywords: Maxillofacial trauma; Elderly; Management

Abstr ID 184

588

CAUSES AND TREATMENT OF PATIENTS WITH FRACTURES OF THE ZYGOMA: ANALYSIS OF 911 CONSECUTIVE PATIENTS

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The treatment of zygomatic fractures is a common task for maxillofacial surgeons. Approaches to the bone and treatment concepts differ between trauma centers. The aim of this study was to evaluate the treatment results of patients with zygomatic fractures following a standardized approach. This approach was chosen as a safe method especially for young surgeons educated in a university department. We investigated 911 patients who were treated between 1989 and 2000 for fractures of the zygoma, excluding patients with isolated fractures of the orbital floor and complex midfacial fractures. A standardized interview was completed with 410 of these 911 patients in order to collect self-reports on the treatment results and residual damages. The bone was exposed via an infraorbital approach, following external reduction and osteosynthesis with miniplates. **Results:** Criminal assaults were the most frequent causes of a fracture (35.8%), followed by traffic accidents (20%). Patients who experienced a fracture as a result of violence had consumed alcohol in almost every second patient (40%). Time that elapsed from trauma to surgery was 6.6 days. Open reduction was chosen in 75% and the fragments fixation with 1 or 2 miniplates was used in 88.5%, predominantly at the infraorbital rim. Follow-up control revealed sensory disturbances in 25.6% (severe: 7.3%). The patients reported impaired eye mobility in 1%, reduction of visual acuity in 3.9%, an ectropion in 1%,

hypersensitivity of the affected eye in 6.8, and tears dropping in 5.8%. The patients assessed their face as asymmetric following trauma in 2.2% and reported that the maxillary sinus caused complaints in 3.7%. **Conclusion:** The rate of complaints following zygoma fracture (attributable to trauma) is in the range of other reports. The infraorbital approach is a safe technique. We prefer this approach in particular for the training of young surgeons.

Keywords: Fractures of the zygoma; Trauma; Infraorbital approach

Abstr ID 647

589

STABILITY OF THE MANDIBULAR POSITION FOLLOWING HIGH SAGITTAL SUPRAFORAMINAL OSTEOTOMY (HSSO) OF THE MANDIBLE

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Aim: The aim of this study was to investigate the stability of mandibular advancement and set back procedures using the high sagittal supraforaminal osteotomy (HSSO) of the mandibular ramus, according to Hoeltje and Scheuer (1992). In this type of osteotomy the bone cut leaves the buccal cortical surface already at the antilingula prominence in order to preserve neural function. **Material and Methods:** Computerized cephalometric X-rays of 102 patients, taken at four different times during treatment, were evaluated. Statistical evaluations were carried out using the SPSS statistical program. Intraindividual differences, correlations and regression analyses were established to find predictors within the preoperative data for the expected stability. **Results:** The mean post-surgical relapse was 20%. The post-surgical relapse depended on the amount of the surgical correction (correlation coefficient: 0.68). Mandibular set back gave more stability than mandibular advancement. Excessive mandibular advancement was shown to be less stable than a moderate amount of advancement. Posterior rotation of the mandible increased stability of the mandibular advancement. The type of osteosynthesis (positional screw combined with miniplate osteosynthesis or intermaxillary fixation) did not influence stability. Unimaxillary mandibular osteotomies are more stable than bimaxillary procedures ($P < 0.001$). **Conclusion:** These findings are relevant for presurgical orthodontic treatment and surgical planning of orthognathic surgery outcome.

Keywords: Orthognathic surgery; High sagittal supraforaminal osteotomy (HSSO); Stability; Cephalometry

Abstr ID 47

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POSTTRAUMATIC LOWER LIP RECONSTRUCTION WITH FAMM FLAP IN A 2 YRS OLD PATIENT: CASE REPORT

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Introduction: The lips are complex, laminated structures consisting of skin, subcutaneous tissue, muscle, submucosa and mucosa. Clearly when the lip is lost through injury or disease, it presents a complex reconstructive challenge. The facial artery muscular mucosal flap (FAMM), harvested from lateral cheek, is a composite flap with many features which make it an excellent option for lip and vermilion reconstruction. The authors present a case of a 2 yrs old girl with medial lower lip avulsion reconstructed with FAMM flap. **Materials and Methods:** In February 2003 a 2 yrs old girl was treated in Maxillo-Facial Department of Galeazzi Institute of Milan (Italy) for total traumatic avulsion of lower lip vermilion. After an accurate wound toilette, the lips defect was reconstructed with left FAMM flap. After 20 days from first time we performed the pedicle section and a cheiloplasty. **Results:** After 4 months control we obtained a good functional and aesthetic result with a good competence and normal movements of reconstructed lip. **Discussion:** The FAMM flap is one of the possible surgical technique for reconstruction of lips and vermilion in case of injury or tumors defects. In our patient, it was the only reliable choice which gives us a lot of advantages: a free mouth opening, the pedicle is safe of the mastication (it is outside of dental arch), overall in a young patient. The needs of patient's collaboration in others reconstructive technique such as cross-lip or tongue-lip flaps, which is difficult for a baby, makes the FAMM flap a perfect choice.

Keywords: Famm flap

Abstr ID 242

591

MANAGEMENT OF ACUTE HAEMORRHAGE OF THE MAXILLOFACIAL REGION WITH TRANSCATHETER EMBOLISATION: A CASE REPORT

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Transcatheter embolisation guided by the aid of radiography has been well documented to be used in the treatment of vascular tumours and traumatic haemorrhage of the gastrointestinal, renal and neurological systems. There have also been several reports of this technique being used to control acute haemorrhage of the maxillofacial region following trauma and orthognathic surgery. The more common method of controlling acute post-traumatic haemorrhage from the maxillofacial region by way of anterior and posterior nasal packs, occasionally supplemented by ligation of the external carotid artery has been reported to have variable results, possibly due to the collateral blood supply of the face. The case presented involves unilateral post-traumatic haemorrhage from the internal maxillary artery following an assault which severely comminuted the zygomatic complex and posterior wall of the maxilla. The value of transcatheter embolisation is discussed, and the limitations, rate of success and morbidity of both ligation of the external carotid artery

and transcatheter embolisation are compared. The current literature is reviewed briefly. In conclusion, transcatheter embolisation is a safe and effective alternative to control acute haemorrhage of the maxillofacial region and its use should be advocated more widely so that the threshold for utilising this technique is lower.

Keywords: Trauma surgery; Maxillofacial trauma; Interventional radiography; Transcatheter embolisation; Haemorrhage; Maxillary artery; External carotid artery ligation; Orthognathic surgery

Abstr ID 412

592

USEFULNESS OF TITANIUM SCREW PREPARED BY THE BLAST COATING METHOD

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Aims: The blast coating method is a new apatite coating method to titanium at room temperature using a sand-blaster. The aim of this study is to examine usefulness of titanium screw treated by the blast coating method. **Method:** Seven-week-old male rats of the Wister strain were used for the experiments. Apatite coated screw prepared by the blast coating method (AS) and titanium screw (TS) were inserted in the tibiae. The screws were excised with surrounding bone at regular intervals. Undecalcified specimens were made and stained with toluidine blue for histological examination. The contact ratio was measured as an index of osteoconductivity, and removal torque test was performed on implants with a torque gauge instrument. **Results and Conclusion:** The coating layer did not scrape off even after the implantation procedure. The contact ratio of TS increased gradually with time. In contrast, AS showed a higher contact ratio from the initial stage. Similarly, removal torque value of AS was higher than that of TS. We found that AS showed good bone response, good osteoconductivity and bonding strength between the bone and the screw. These results suggest that titanium screws prepared by the blast coating method may be useful for clinic use.

Keywords: Blast coating method; Titanium screw apatite

Abstr ID 148

593

MANDIBULAR FRACTURES-A RETROSPECTIVE STUDY-POSTER

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Aim: The purpose of this study was epidemiological assessment of mandibular fractures and methods of their treatment. **Material and Methods:** The research was based on documentation of 2247 patients treated due to

mandibular fractures between years 1988–2003 in the Department of Oral and Maxillofacial Surgery of University Hospital in Lublin. The study was based on analysis of questionnaires prepared on the basis of patients' documentation treated due to mandibular fractures. The subject of the study focused on age, gender, causes of fractures, type of injuries, methods of their treatment, time of treatment and duration of period spent in the hospital by the patient. Collected data were analysed using statistical program. **Results:** Based on analysis of collected data it was concluded that males suffered 88.4 percent of mandibular fractures cases. Assault was the most frequent cause among the men, whereas traffic accident was the main cause among the women. Most frequently mandibular fractures suffered

patients aged between 19–40. The highest percentage of mandibular multiple fractures was recorded as an after effect of traffic accidents and accidents at workplace. Analysis of mandibular fractures treatment revealed gradually decreasing percentage of cases treated conservatively, in favour of surgical methods, as well as rapid increase of surgery performed intraorally. During the time span of sixteen years the average time of mandibular fractures treatment was reduced from 8 to 4 days. **Conclusions:** Implementation of new methods of mandibular fractures treatment, with intraoral osteosynthesis reduces duration of period spent in the hospital by the patient.

Keywords: Fracture; Treatment; Mandible

TOPIC 7: SKIN TUMORS OF THE HEAD AND NECK

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601	DUMBBELL-FORMED LIPOMA UNDER ZYGOMATIC ARCH Kakudo N, Kusumoto K, Takemoto T, Tanaka Y, Kurokawa I, Nakahigashi Y, Ogawa Y
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606	INCONTINENTIA PIGMENT AND ITS ORAL MANIFESTATIONS Escuder O, Luelmo J, Sàbat M, Vert-Klok E, Aboul-Hosn S, Lluch JM
607	MINIMALLY INVASIVE PERCUTANEOUS PUNCTURE APPROACH TO ORBITAL VASCULAR MALFORMATIONS USING SURGICAL NAVIGATION Ernemann U, Hoffmann J, Troitzsch D, Westendorff C, Reinert S

NON-MELANOMA SKIN CANCERS OF THE HEAD AND NECK**Rybak S, Borys J, Balicki R, Grabowska SZ***Maxillofacial Department, Medical University of Bialystok, Bialystok, Poland**E-mail: euuu@wp.pl*

Summary: Non-melanoma skin cancers of the head and neck account for approximately 80% of all skin cancers in this area. The most often they are located within the face, neck and scalp. According to WHO classification among cancers of epithelial origin basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) are distinguished and their numerous subtypes. Separate group of non-melanoma cancers are carcinomas derived from skin appendages: 1/ hair follicles, 2/ eccrine 3/sebaceous and 4/ apocrine glands. BCC is the most frequently diagnosed skin cancer (approximately 65–75% of all skin cancers) and concerns people in 5 and 6 decade of their life. **Aims:** The aim of this study was to analyze clinical documentation of 59 patients in the aspect of type, localization and treatment results of non-melanoma skin cancers of the head and neck. Investigative material was determined by the clinical records of 59 patients that were hospitalized between 1993–2003 in Maxillofacial Department of Medical University of Bialystok. There were 21 men and 28 women included, aged from 23 to 84 years. **Results:** In analyzed material BCC constituted 34% and SCC 31% of all cancers. Cancers derived from skin appendages in individual cases were stated. 9 patients had simultaneous cancers in head and neck area. The most often site of tumours was: lip, eyelid, nose and cheek. The size of cancers hesitated from 0.5 cm to 7 cm. Some lesions included and infiltrated neighbouring structures in the range of soft tissues and bones. All tumours were surgically treated. Depending on the extensiveness of skin removal defects they were closed by means of primary closure or local plasty, using flaps, grafts or combination of these methods. **Conclusion:** BCC and SCC constituted the most often founded lesions in our material. Obtained functional and aesthetical surgical treatment results were to find satisfactory.

Keywords: Non-melanoma skin cancer; Head and neck

TUMORS OF THE NASAL ALA**Mandic B, Petrovic M, Stevanovic Z***

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The nose is the most prominent feature on the face. Tumors of the nasal ala requires radical removal and complex reconstruction of the resulting defect. **Aim:** To present results in treatment of the nasal ala tumors at Clinic for Maxillofacial surgery, Faculty of Stomatology in Belgrade. **Material and Method:** By retrospective analysis of patients files at Clinic for Maxillofacial surgery, Faculty of Stomatology in Belgrade in period from 1997 to 2001, it

was determined that 6 patients had been stationary treated for tumors of the nasal ala. The following parameters were observed and analysed: gender, age, the localization, the period passed from the appearance of the first symptoms to the moment patients came to the clinic, clinical findings, type of surgical treatment, histopathological finding, the appearance of relapses, complications. **Results:** Total number of 258 patients was being treated for head and neck skin tumours in the above mentioned period. 6 patients (2%) were being treated for tumors of the nasal ala. There were 4 male patients average age 66.75 years. The largest number of patients, came to the clinic in period between 1 and 5 years after the appearance of the first symptoms. In all patients tumours had size from 2 to 3 cm (average size 2.16 cm). Excision of the tumour with reconstruction by local skin flap was done in 5 patients, while composite chondrocutaneous graft was used in 1 case. Postoperative complications in form of infections were registered in 1 patient. **Conclusion:** Tumours of the nasal ala present 2% of the skin tumours in the head and neck region in casuistry of our Clinic. By careful planning it is possible to reconstruct nasal ala defects with good esthetic results.

Keywords: Skin tumors; Nasal ala

EXTENSIVE AND HORRIFYING SQUAMOUS CELL CARCINOMA ARISING ON AN OLD BURN SCAR – MARJOLINS ULCER. A CASE REPORT**Videnovic G, Stanisavljevic G, Bjelogrljic G, Mutavdzic A**

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Background: The term Marjolin ulcer is synonym with malignant transformation of chronic ulcers, sinus tracts and burn scars. They behave aggressively and have a propensity for local recurrence and lymph node metastases. Sometimes they appear after 50 years of the previous accident. **Aim:** To illustrate the importance of biopsies in cases of suspected burn scar squamous cell carcinoma in early stage. **Methods:** Case report and review of the literature. We present patient who had been admitted to Department for Maxillofacial surgery Medical Faculty of Pristina. **Results and Discussion:** In this report we present the patient who developed squamous cell carcinoma in scar 45 years of the previous burn accident. Horrifying, inoperable, extensive carcinoma on the left side of the face with orbital and intracranial invasion. Upon histological examination, the case was confirmed as squamous cell carcinoma. **Discussion and Conclusion:** Marjolin ulcer is an uncommon tumor in the developed world. These lesions are frequently overlooked and often inadequately treated. The squamous cell carcinoma of Marjolin ulcer seems to have a worse prognosis than other squamous cell carcinomas and it requires aggressive treatment. The burn scar that occurs in elderly patients especially requires more adequate treatment and close observation. Early recognition and proper staging offers the best chance for cure.

Keywords: Squamous cell carcinoma; Marjolin ulcer; Case report

Abstr ID 584

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SUPERFICIAL ANGIOMYXOMA OF THE PAROTID REGION. A CASE REPORT*Psomaderis K, Triantfillidou A, Karakasis D**Thessaloniki, Greece**E-mail: kostpsom@hotmail.com*

Aim: In this presentation we discuss the entity of superficial angiomyxoma (SA). Due to its rare occurrence it has been not studied enough in order to be widely accepted. The dissimilarity in the used terminology as long as its poor recognition is also discussed. **Materials and Methods:** We present a case of SA at the parotid region. The patient, a 45-year old male presented complaining about a painless swelling posterior to his left mandibular ramus. The CT revealed a subcutaneous multinodal soft tissue mass in proximity to the parotid gland. The tumor was resected via a parotidectomy incision. **Results:** The biopsy of the specimen revealed SA. The patient is free of disease for the last 2 years. **Conclusions:** SA is a rare cutaneous benign neoplasm with a high rate of local recurrence (30%–40%). Despite being first described in 1988, SA is still a poorly recognized cutaneous tumor. Although its histological features are distinctive, its existence seems not to be widely accepted. Is it characterized by a conglomerate of multiple, moderately to sparsely cellular angiomyxoid nodules with scattered small to medium-sized blood vessels. The term “superficial” is used in order to distinguish SA from aggressive angiomyxoma which is locally aggressive.

Keywords: Superficial angiomyxoma; Head; Face

Abstr ID 434

598

METASTATIC DERMATOFIBROSARCOMA – A CASE STUDY AND DIFFERENTIAL DIAGNOSIS OF A RARE TUMOR*Schneider M, Fischer, R, Pilling E, Lauer G, Eckelt U**Department of Maxillofacial Surgery, Universitätsklinikum der TU-Dresden, Dresden, Germany**E-mail: mschneid@rcs.urz.tu-dresden.de*

Aims: Dermatofibrosarcoma, described for the first time by Darier and Ferrand, is a fibrous tumor with a distinct recurring tendency. Metastases are only rarely recorded. Treatment is mainly surgical. Radiotherapy with a curative and palliative purpose can be considered by a recurrence. Contrary to most soft tissue tumors, an effective chemotherapy is unknown. Just recently, treatment using the Tyrosine Kinase Inhibitor STI571 (Imatinib, Glivec®) has been discussed. **Subject:** Reported here is the case of a 28 year old patient with Dermatofibrosarcoma of the scalp. The tumor was removed. The edges of the incision were histologically checked. 12 months after the surgical removal of the tumor and within an interval of 5 months, a widespread lymph node metastasis on the throat had occurred. Further diagnosis revealed several lung nodules and a huge metastasis in the left inferior lobe area. The metastasis on the throat and in the lungs were surgically removed. The dermatofibrosarcoma should be removed through radical surgery while monitoring the incision

edges. **Conclusion:** During the histological examination and classification, a fibrosarcomatous variant of dermatofibrosarcoma should be differentiated with which, aside from the known risk of local recurrence, an additionally higher metastasis frequency may be expected.

Keywords: Dermatofibrosarcoma; Tyrosine Kinase Inhibitor

Abstr ID 549

599

NON-AIDS KAPOSI SARCOMA IN THE HEAD & NECK AREA*Patrikidou A, Vahtsevanos K, Charalambidou M, Toliou T, Antoniadou K**Thessaloniki, Greece**E-mail: anna.patrikidou@kcl.ac.uk*

Aims: To report three rare cases of Kaposi sarcoma in HIV-negative individuals presenting in the head and neck region. To review the international literature on similar cases. **Subject:** Kaposi sarcoma (KS) is currently classified in four types: classic, epidemic, African (endemic) and immunosuppressive treatment-related (mainly in renal transplant recipients). All types share the same histological features but differ in the epidemiology and clinical presentation and behaviour. Type I Kaposi sarcoma (classic, non-AIDS) is a rare neoplasm with mixed vascular and fibroblastic component. It typically manifests as cutaneous lesions of the lower extremities and trunk with a slow, indolent course and a tendency to develop multifocally. In contrast to Type II Kaposi (epidemic, AIDS-associated), non-AIDS Kaposi seldom affects mucous membranes, and head and neck mucosal involvement is even rarer. **Results:** Our review of the literature revealed approximately 20 cases worldwide. This might be skewed by the intricacy of achieving an accurate histopathological distinction from a spectrum of other vascular proliferations, especially prior to the characterisation of HHV8 (KSHV) as a useful differential diagnostic marker for all KS types. This report features another two Type II and one Type IV head and neck KS cases in HIV-negative individuals. One of the Type II cases featured oral KS without past or concurrent cutaneous lesions, unusual to the common multifocal presentation of this type. The renal transplant patient featured multiple synchronous and metachronous oral and cutaneous lesions while on immunosuppressive treatment. Pathogenesis, biological aspects, clinical and histopathological diagnostic difficulties, investigation protocols and available management modalities are discussed. **Conclusion:** Non-AIDS Kaposi sarcoma infrequently localises in the head and neck region. HHV8 might be used as an adjunct diagnostic tool in such cases.

Keywords: Kaposi sarcoma; Non-AIDS; Head and neck; HHV8

Abstr ID 393

600

CUTANEOUS MALIGNANT TUMOURS OF THE HEAD AND NECK; UNUSUAL CLINICAL CASES*Moraru L, Carabela M, Ivana A*

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Introduction: The resection of malignant skin tumours of the head and neck requires usual techniques, although the reconstruction could be sometimes difficult, regardless of the progress taken by aesthetic surgery. It is not always easy to choose between several reconstruction techniques. **Material and Methods:** The paper presents a few interesting cases of skin malignancies associated with other skin disorders: xeroderma pigmentosum, seborrheic dermatitis, chronic radiodermatitis. The authors emphasise the difficulties of the ablation time and of the reconstruction time. Between 1999 and 2004 we operated 445 cases of malignant skin tumours: 371 basal cell carcinomas; 42 squamous cell carcinomas; 26 melanomas; 6 fibrosarcomas 127 patients have had previous interventions: electrosurgery or radiotherapy; From the total number of 445 patients 64 had other skin disorders associated: seborrheic dermatitis: 25 cases; radiodermatitis: 37 cases; xeroderma pigmentosum: 2 cases. **Conclusions:** The management of cutaneous malignant tumours, when associated with other skin disorders is more difficult because it is hard to decide on the right free of tumour resection and also because of the trophic changes of the skin (less reserves for reconstruction and also could lead to delays in the wound healing process). It is mandatory to have regular follow-ups of these patients, this way any eventual problem-recurrence or another tumour has a better chance for right away treatment A good team work with the dermatologist is necessary in order to treat the chronic skin disorder

Keywords: Skin malignancies; Xeroderma pigmentosum; Seborrheic dermatitis; Chronic radiodermatitis

Abstr ID 324

601

DUMBBELL-FORMED LIPOMA UNDER ZYGOMATIC ARCH

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Aims: Lipoma is the most common benign mesenchymal neoplasm in the subcutaneous tissue of any sites of the whole body. To date, however, lipoma under zygomatic arch has been hardly reported. In this time, two cases of dumbbell-formed lipoma and the surgical treatment are described and the etiological thought is reported. **Subject:** Case 1: A 53-year-old man had complained of a right cheek subcutaneous tumor, which had grown gradually for two years. The soft lipoma, which was totally encapsulated, was located under zygomatic arch. At the portion the tumor was narrow. However, the tumor was relatively smooth dissected mainly with manual dissection. The tumor was completely removed. Case 2: A 81-year-old man had had a right temporal subcutaneous tumor without pain for twenty years. In addition, the right cheek subcutaneous tumor had grown gradually. On magnetic resonance imaging the tumor was dumbbell-formed under the zygomatic arch. Via a temporal and a short cheek incisions, the tumor was

excised divided in two parts. Both cases were cured smoothly after the operation. **Results:** In both cases, the dumbbell-form and the localization were accurately diagnosed using magnetic resonance imaging. Two lipomas were excised completely via temporal and small cheek incision and no complications have remained after their operations. The spaces under the zygomatic arch were quite narrow. The tumors were histologically homogenous masses with matured lipocytes. **Conclusion:** The diagnosis, the treatment and the etiology of the dumbbell-formed lipoma under zygomatic arch are presented.

Keywords: Dumbbell-formed; Lipoma; Zygomatic arch

Abstr ID 21

602

COMPLEX NASAL RECONSTRUCTION WITH TISSUE EXPANSION: A CASE REPORT

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Aim: Complex craniofacial defects requires well-planned reconstructive techniques to achieve satisfactory aesthetic and functional results. Tissue expansion offers an excellent alternative to reconstruct important defects that affects the skin. This procedure consists on progressive expansion of a region, by using a dispositive filled with sterile water, until the size achieved is enough to cover the skin defect. **Method:** A 69-year-old caucasian man with a local advanced basal cell carcinoma of the nose tip, extended to both nostril flares and the collumela, is presented. A tissue expander was placed on the frontal region to obtain enough skin to reconstruct the nasal defect in a second surgery. A nasal amputation was performed after the expansion time and a frontal rotational flap was transposed to the nasal region to create the new tip and nostrils. The nose flap was remodeled to reduce soft tissue volume and create a new collumela with ear cartilage graft. **Results:** Satisfactory aesthetic and functional results were obtained. There were no local recurrences in the 10-month follow-up period after the first surgery. **Conclusions:** Tissue expansion is a method that provides enough full-thickness skin flaps to reconstruct craniofacial defects of variable volume and location. The rate of complications in our experience is low that includes infection, ulceration of the skin, perforation and exposure of the expander and crystallization of the expander liquid. The main disadvantage of this technique is the two-stage surgery that has to be performed in these patients.

Keywords: Tissue expansion; Nasal reconstruction

Abstr ID 338

603

RHEOGRAPHIC INVESTIGATIONS OF SKIN FLAPS

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Aims: The plastic replacement of perforating face and neck defects has been solving by using of the flat graft with double epithelial surfaces. The readiness for transplantation was determined rheographically. **Methods:** The rheograms of 10 flaps prepared for the replacement of the penetrating defects were studied. The tetrapolar technique and rheoplethysmograph RPG 2-02 were used. The bloodfilling of the flaps was observed on the 3, 7, 10, 14, 18 and 27 day after their formation. **Results:** On the 3 day the ascending and descending parts of the rheographic wave were slope, the dirotic wave was not pronounced, there were many additional waves. The basic amplitude amounted to 2.4 ± 0.3 mm, the control – 5.2 ± 0.2 mm. After 7 days the blood supply intensity improved, the vessel diameter became wider and the tonic tension increased. 10 days after the operation the rheogram shape and the rheogram amplitude stabilized due to the vascular anastomosis function activation. In the time period from the 7 to 14 day the blood supply of flaps increased twice, comparing with the blood supply on the 3 day. 14 days after the operation the hemodynamic indices were increasing but more slowly. After 14 days the elastic properties of vessels improved, the abrupt ascending rheogram part appeared and the amplitude of the blood filling increased. The rheographic index, the maximal amplitude and the relative volume pulse reached their maximal values in this period. **Conclusion:** In the period of flaps formation their blood supply significantly increases during the period from the 7 day to the 14. By the 14–18 day, the rheographic properties are stabilized, the united blood system begins to operate-the blood comes into flaps through the feeding pedicles and the well-developed anastomosis between them.

Keywords: Rheography skin flaps; Perforating face and neck defects

Abstr ID 552

604

SUPERIOR LARINGEAL NERVE PARAGANGLIOMA. A CASE REPORT

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Aim: To show a cranial base paraganglioma, localized in the proximal portion of laryngeal superior nerve. **Subject:** We present a 39 year-old patient, referred from the Oncology Service due to cervical relapse suspicion of a cavum linfoepithelioma treated with radiotherapy 6 years before. The patient only complains of cervical left pain. Image diagnosis includes a CT scan and an RMN. They evidences a 2×1 cm mass, that seems to include the internal carotid artery, next to the left anterior palatoglossal arch, and dorsally located to the faringo-basilar fascia. Due to filiation needs, a neuro-vascular dissection of carotid internal artery and adjacent structures is performed. **Result:** Dissection of the vasculo-nervous package is performed, requiring Hinds type mandibular ramus osteotomy, estiloid apofisis and digastric muscle resection, reaching the skull base. An independent mass of the internal carotid archery is evidenced, next to the vagus nerve, with a nervous structure entering and exiting in it. Intraop Biopsy informs as paraganglioma. The mass is resected and the neural

structure is sacrificed. The patient had an standard post-operative evolution. Revision one year later shows mild marginal nerve paresia with no other nerve deficits. **Conclusion:** The mass seems to had been in laryngeal superior nerve cause no postoperative neurological deficits were observed.

Keywords: Paraganglioma; Superior laryngeal nerve; Skull base

Abstr ID 815

605

NASAL CAVITY MELANOMA. CASE REPORT

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Aim: Malignant melanoma of the nasal cavity and paranasal sinuses is a rare entity with an aggressive behaviour and high recurrence, finding across the literature a mean survival time of 3.5 years. Clinically most patients displays initial non-specific symptoms of unilateral nasal obstruction or epistaxis. Therapy usually consist on surgical resection with or without adjuvant radiotherapy. **Subject:** We present a clinical case of a nasal melanoma from our department complaining about streaming eyes and epistaxis. During clinical examination, a black mass in the right nasal cavity was seen and non cervical nodes were found. CT scan was informed as a mass in the right nasal cavity, paranasal area and extension to the internal right eye cantus, producing a lacrymal duct obliteration. The extension study was negative. **Results:** Resection of the primitive tumor was performed by transfacial (Weber Ferguson modified) approach with lateral right rhinostomy, ostectomy of anterior maxilar sinus wall and resection of lateral right nasal cavity wall and paranasal area, preserving right orbirary content and superior maxillary. An intraoperative histology was made with the result of a mucosal melanoma with free margins. **Conclusion:** In the revision of the patient nine month after surgery, no lesion was found and extension study continued negative.

Abstr ID 830

606

INCONTINENTIA PIGMENT AND ITS ORAL MANIFESTATIONS

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Incontinentia pigmenti (IP) is a rare, genetic disorder characterized by unusual patterns of discolored skin. The disorder is caused by excessive deposits of melanin. Skin

abnormalities of IP develops typically in four stages. They usually disappear by adolescence or adulthood without treatment. The genetic transmission is X-linked dominant but IP may also arise as a spontaneous mutation. Almost all cases are among females and the condition may be lethal in males. In rare cases of IP, hair loss with scarring and non-dermatological symptoms such as dental problems (delayed tooth growth or decay, missing or malformed teeth), diminished vision, seizures, muscle spasms, absent or hypoplastic breasts or slight paralysis may occur. Developmental abnormalities including dwarfism or short stature, club foot, spina bifida, skull and ear deformities, cleft lip or palate, atrophy on one side of the body, abnormal development of cartilage, congenital dislocation of hip, incomplete development of one side of the spinal bones, and extra ribs or webbed fingers may occur with the disorder but are not characteristic. In a few cases of IP, extremely wooly or kinky hair and an immune system dysfunction may also appear. IP treatment is multidisciplinary and sometimes very time-consuming. In this poster we present some cases of IP with oral and dental manifestations.

Abstr ID 273

607

MINIMALLY INVASIVE PERCUTANEOUS PUNCTURE APPROACH TO ORBITAL VASCULAR MALFORMATIONS USING SURGICAL NAVIGATION

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Introduction: Percutaneous navigation-assisted puncture is a new minimally invasive approach to vascular malformation, especially in the orbital area. We studied the utility of image data-guided puncture and needle placement in a patient with orbital vascular malformation. **Material and Methods:** A patient with increased vascular malformation was studied. Preoperative magnetic resonance tomography image data were acquired using a standard protocol. The puncture locations and puncture route was planned according the 3-D image data reconstruction. The passive tracking technique (VectorVision, BrainLAB) was employed to visualize the puncture needle. **Results:** Under navigation-assisted guidance the needle was successfully navigated to multiple planned target locations. High anatomic target precision was found. The cannula's tip was precisely and quickly placed into the preoperatively colour-coded cystic structures. Correct position of the cannula could easily be detected at any time. All anticipated vascular structures could precise reached with no complication. Postoperatively, a transient edema but no major complications, like nerve damage or vascular damage were seen. Follow-up evaluation was performed monthly after sclerotherapy and initially revealed an acceptable reduction of the bulbar protrusion with symptomatic improvement. Some of the lesions had shrunk to fibrous tissue. The sclerosing therapy was then followed by recurrence motivating surgical removal. **Conclusion:** Percutaneous navigation-assisted puncture is a new route of access for vascular malformation treatment that has many potential applications.

Keywords: Orbital vascular malformation; Percutaneous puncture; Image-guided minimally invasive therapy

TOPIC 8: AESTHETIC SURGERY OF THE FACE

Prog. no.	Title/Authors
608	THE ERBIUM:YAG LASER IN MAXILLOFACIAL SURGERY Moreno JC, De Argila D, Chaves A, Silván A, Mateo J
609	PALPEBRAL PTOSIS: AN OVERVIEW CLASSIFICATION, DIAGNOSIS AND SURGICAL GUIDELINES Clauser L, Dallera V, Sarti E, Piersanti L

THE ERBIUM:YAG LASER IN MAXILLOFACIAL SURGERY

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Introduction: The erbium:yag laser creates a precise superrficial ablation of the epidermis and subsequent reepithelization with minimal thermally induced damage. This effect is usefull in differents skin pathologies. **Objective:** To evaluate the indications and technique for the treatment of different types of cutaneous pathologies with erbium:yag laser. **Methods:** The results obtained in the treatment of 71 patients who underwent erbium:yag laser treatment were retrospectively analyzed. Diagnosis, treatment parameters, extent of ablation, presence of complications and final result were tabulated. **Results:** 71 patients were treated, presenting 86 cutaneous lesions. The diagnosis were: Nevus (27), lentigo (19), seborrheic keratosis (14), perioral rhytids (8), hand dorsum resurfacing (6), xanthelasma (4), cheek resurfacing (3), periorbital resurfacing (2), syringoma (2) and tattoo (1). These lesions were treated with specific parameters: fluence, diameter of spot, frequency of pulses and number of sessions. The ablation of the lesion was complete in the 100 percent of the cases. The mosf frecuent complications were: temporary hyperpigmentation (22%), recurrence of melanocytic lesions (10%), scar (6%) and hypopigmentation (2%). **Conclusion:** The laser of erbium:yag is a simple and effective treatment in different cutaneous lesions, with low complication rate. In melanocytic nevus the recurrence of melanocytic lesion is frequent. The occurrence of scar is related to depth of tissue ablation.

Keywords: Erbium:yag laser; Skin lesions; Aesthetic surgery; Laser resurfacing.

PALPEBRAL PTOSIS: AN OVERVIEW CLASSIFICATION, DIAGNOSIS AND SURGICAL GUIDELINES

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Aims: The term palpebral ptosis indicates the abnormal drooping of the upper lid, caused by partial or total reduction in levator muscle function. It may be congenital or acquired and due to various pathologies. Based on a review of the literature and our clinical experience we propose a classification, differential diagnosis between ptosis and pseudoptosis as well as some surgical guidelines in relation to age of onset and etiopathogenesis. Ptosis are divided into neurogenic, myogenic, aponeurotic and mechanical forms. The aim of surgery is twofold: functional, to correct the limitation in the visual field, and aesthetic. **Methods:** Thirty-three patients (January 1998–January 2003) were treated at the Department of Cranio-Maxillofacial Surgery and Orbital Surgery Unit, St. Anna Hospital, Ferrara, Italy. Six congenitals and 27 acquired forms (11 monolateral, 22 bilateral for total of 55 orbits) The most widely used surgical techniques were levator muscle recession and frontalis suspension according to the etiopathogenesis. **Results:** In all cases we have had satisfactory results. Hypercorrection may cause aesthetic flaws and lagophthalmos, which can be corrected by further surgery. Others complications include: hypocorrections, palpebral deformities (entropion or ectropion), infections or hypertrophic scars. **Conclusion:** Surgical treatment of palpebral ptosis is a very complex task and requires precise evaluation and indications in relation to clinical examination and pathogenesis. Results are often unpredictable.

Keywords: Palpebral ptosis; Congenital ptosis; Acquired ptosis

TOPIC 9: ASYMETRY, DYSYMETRY OF THE FACE

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PLANNING OF BIMAXILLARY OSTEOTOMIES USING 3D-OSS (3D-ORTHOGNATHIC SURGERY SIMULATOR) AND INTRAOPERATIVE TRANSFER WITH THE "FACE-O-METER"

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Aim: Repositioning of the mandible or maxilla are standardized operations in Maxillofacial Surgery. Not the technical part but the planning is most important for a good outcome. The common methods of preoperative planning do not address migration of chin and incisal point. Furthermore it is not possible to simulate the bony contact after the osteotomy of the jaws. In particular bony gaps or elongation of the ramus are responsible for not stable results. The 3D-OSS System was established to diminish these pitfalls. It has been tested as a mechanical navigation system and proved to be indispensable in our clinical routine. **Method:** Since almost 10 years we have used the three-dimensional orthognathic surgery simulator (3D-OSS). During mock surgery it is possible to reflect the change of several reference points in all three dimensions. The model simulation includes rotation and translational movement in all three plains. The final position of the maxilla is only be determine by the change of the incisal point within three planes. This is controlled by a bone borne navigation device named Face-o-meter. **Results:** We have applied this technique in our departments and overview about 800 cases. In all cases we were able to transfer the planned results precisely (<1mm) from the 3D-OSS simulator with the Face-o-meter intraoperatively. Especially in patients with mandibular laterotrusion e.g. facial scoliosis facial contours as well as the occlusion has been levelled out and because of precise planning the bony attachment led to good long term results. **Conclusion:** The application of the 3D-OSS-System can provide information about expected intraoperative problems and provide their solution. The results of mock surgery can be transferred precisely by the Face-o-meter. The method leads to an improved and predictable outcome in bimaxillary surgery.

Keywords: Bimaxillary osteotomies 3D-OSS; Face-o-meter

Abstr ID 730

611

CHANGE IN CONDYLAR LONG AXIS AND SKELETAL STABILITY FOLLOWING SAGITTAL SPLIT RAMUS OSTEOTOMY AND INTRA ORAL VERTICAL RAMUS OSTEOTOMY FOR MANDIBULAR PROGNATHIA

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Occlusal stability, which is one of the most important factors in the prevention of postoperative relapse in

orthognathic surgery, results from good dental occlusion and normal postoperative condylar position. There have been many reports describing stability following SSRO for class III, but there have been few reports describing stability following IVRO. The purpose of this study was to compare post-surgical time-course changes in condylar long axis and skeletal stability between sagittal split ramus osteotomy (SSRO) and intraoral vertical ramus osteotomy (IVRO). Of 40 Japanese patients with a diagnosed jaw deformity, 20 underwent IVRO without internal fixation and 20 underwent SSRO with rigid internal fixation. At the time of orthognathic surgery, the patients ranged in age from 15 to 35 years, with a mean age of 23.1 years. The time-course change in condylar long axis and skeletal stability were assessed with axial, frontal and lateral cephalograms. A significant difference in the rotation direction of condylar long axis was seen in horizontal axial cephalogram images ($P<0.01$). There were significant differences between the groups in gonial angle, ramus inclination, and mandibular length (Co-Gn). In, Pog-N perpendicular to SN, IVRO group showed gradual decrease, although SSRO group showed gradual increase in lateral cephalogram ($P<0.05$). In conclusion, the present results suggest a significant difference between SSRO and IVRO in time-course changes in proximal segment including condyle and distal segment.

Keywords: Condylar long axis; Stability; Sagittal split ramus osteotomy; Intraoral vertical ramus osteotomy

Abstr ID 38

612

DISTRACTION PATTERNS FOR CORRECTION OF MANDIBULAR DEFORMITIES

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Early TMJ ankylosis, affecting the mandibular growth centers, can result in mandibular micrognathia. The condition can be associated with severe respiratory and feeding problems, functional disorders in speech, mouth opening and facial deformity. The multidisciplinary approach, including orthodontic and surgical therapy is mandatory in achieving a valid result. In a patient group of 4 female patients (ages from 7–14 years), diagnosed with TMJ ankylosis in early childhood, a combined orthodontic, physical therapy and surgical protocol was established in order to improve all affected functions of the dento-maxillary system. Two of the patients had hypoplasia of the left ramus, one presented hypoplasia of the right ramus and the fourth patient developed mandibular micrognathia with breathing disorders requiring tracheostomy. Diagnosis and planning of the combined orthodontic and distraction osteogenesis treatment were supported by 3D imaging and rapid prototype model simulation. In two of the cases, the ankylosis had been managed surgically, the remaining two were treated by long-term active and passive joint physical therapy. Distraction osteogenesis was planned as an interdisciplinary decision. Activation of the devices was made electively in the cases with bilateral osteotomy. Complete rehabilitation was obtained without

any adverse effects or recurrences and was evaluated clinically and radiographically. An excellent compliance with the treatment and time schedule was encountered in all patients. The correct choice of the distraction pattern and vector in the symmetric and asymmetric deformed mandible, associated with an adequately scheduled orthodontic treatment plan allows controlled, rapid management for mandibular micrognathia, offering stable results.

Keywords: Distraction osteogenesis; TMJ ankylosis; Micrognathia

Abstr ID 48

613

TREATMENT OF TMJ ANKYLOSIS IN A YOUNG BOY USING STUCKI MCCORNICK TECHNIQUE (CASE REPORT)

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Introduction: The temporomandibular joint ankylosis is the more common complication of unknown or untreated mandibular condyle fracture. Patients with bone TMJ ankylosis have various functional and aesthetic facial deformities. The reconstruction of human mandibular condyle using transport distraction osteogenesis is one of the method to treat TMJ ankylosis. The authors present a successful case of a boy of 13 yrs old, with TMJ ankylosis treated with bone-transport technique. **Materials and Methods:** In november 2003, a 13 yrs old boy was admitted for post-traumatic left TMJ ankylosis. Clinical examination showed: retrognathic and asymmetry of the mandible, limited mouth opening, occlusal plane cant and left chin deviation. The surgical technique consists of ankylosis' release and reconstruction with bone transport technique distracting 1 mm/day until we got gonial angles symmetry. **Results:** In a long-term control (10 months after), thanks of this technique, we obtained satisfactory joint function, correct mandibular contour and posterior facial high, associated with a regular occlusal plane. **Discussion:** The main goals of treatment are successful surgical resection of ankylosis, prevention of its recurrence and re-establishment of an harmonious jaw relationship and functional occlusion. Lengthening of bone by distraction osteogenesis is a standard procedure in the endochondral bones of the extremities. In 1997 Stucki McCormick reported on reconstruction of mandibular condyle using bone transport technique. This technique, in our opinion, offers a lot of advantages such as; avoiding costal-condylar graft, reconstruction with a vacuumated bone, controlling amount of bone growth and the possibility of secondary reconstruction in the future.

Keywords: TMJ

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615

SYMPTOMATIC VENOUS THROMBOEMBOLISM IN ORTHOGNATHIC SURGICAL PATIENTS

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Objective: Evaluate incidence of symptomatic venous thromboembolism (V.T.E.) in a single surgeon's cohort of orthognathic surgery patients between 1998–2002. **Design:** Retrospective cohort database study. **Outcome Measures:** Symptomatic V.T.E. confirmed by contrast venography within 3 months of surgery. **Results:** 2 (1.6%) deep vein thrombosis (D.V.T.) episodes occurred within 3 months post-operatively in 129 consecutive orthognathic surgery patients; 1 (0.8%) was proximal D.V.T.; there were no symptomatic pulmonary V.T.E. This is greater than Lowry's (1995) estimation of incidence of 0.00035% and that reported within 48 hours of surgery by Van de Perre of 0.15%. Neither bimaxillary osteotomy nor hip graft procedures were significantly associated with V.T.E. ($P=0.52$ and $P=0.14$; Fisher's Exact test). **Level of Evidence:** Level 2b. **Conclusion:** This incidence is low risk (THRIFT II classification). Until prospective studies quantify the true prevalence of asymptomatic V.T.E. and thromboprophylactic efficacy in orthognathic surgery, the guidelines for general surgery from consensus groups guide local thromboprophylaxis protocol.

Abstr ID 111

617

INTRAORAL DISTRACTION OSTEOGENESIS FOR THE CORRECTION OF FACIAL ASYMMETRY IN CHILDREN

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Aim: Intraoral distraction osteogenesis was first proposed for the correction of skeletal malformations in the maxillofacial region by Diner in 1996, in order to avoid the discomfort caused by the extraoral appliances. The aim of this paper is to present the experience of the authors with the use of intraoral distraction osteogenesis for the correction of facial asymmetry in children. **Materials and Methods:** During the last three years, four children presented at the Oral and Maxillofacial Surgery Department of the University of Athens, Children's Hospital P. and A. Kyriakou with facial asymmetry were treated with intraoral distraction osteogenesis. All patients were female aged between 5 and 7 years old and were diagnosed with Goldenhar syndrome. Treatment was orthodontic and surgical in all cases. Surgical treatment consisted of the elongation of the compromised side of the mandible with the use of an intraoral two dimensional distractor. The intra- and postoperative course of these patients was evaluated by comparing the preoperative and postoperative situations using orthopantomographs and 3D CT scans. **Results:** Although in all four cases the expected elongation of the mandible was achieved, the asymmetry was not totally corrected. The hospitalization period did not exceed three days and no major post operative complications were observed. **Conclusions:** The use of intraoral distraction osteogenesis offers a great contribution to the aesthetic improvement in severe cases of facial asymmetry. However, the possibility of orthognathic surgery during puberty for further correction should not be excluded.

Keywords: Intraoral distraction osteogenesis; Facial asymmetry

Abstr ID 141

618

DO JAW MUSCLES ADAPT AFTER BILATERAL SAGITTAL SPLIT OSTEOTOMY

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Aim: Today, surgical mandibular advancement is a frequently used treatment modality to correct mandibular deficiency. Treatment results are unfortunately not always stable and especially patients with a long-face morphology are prone to relapse. Among other factors, this relapse has been associated with the geometry of the jaw closing muscles. In this study we investigated jaw muscle adaptation following osteotomies. **Material and Methods:** For this purpose axial MRI scans (slice thickness 5 mm) were used, taken pre- and 1–2 years post operatively of 11 adult patients with varying vertical craniofacial morphology. The cross-sectional areas (CSA) of the Masseter and Medial pterygoid muscles were measured using a customized software program VISIAN that enabled semi-automatic segmentation of the muscular outlines. Maximum cross-sectional area data were used since these are an indication of the maximum strength the muscle can generate. Both the inter, as well as the intra observers error were determined, and proved to be 4.5 and 5%, respectively. **Results:** It was found that in all subjects the CSA of the masseter decreased significantly after surgery. The mean decrease was 12.6% (± 13.5). For the medial pterygoid muscle this decrease was less pronounced, i.e. 4% (± 7). **Conclusions:** One of the objectives of orthognathic treatment is improvement of the function of the masticatory system. Increased efficiency of this system could explain postoperative decrease of maximum muscle strength as found in this study. Conversely reduction of maximum muscle strength could be explained as atrophy as a result of impaired function of the masticatory system.

Keywords: Masseter muscle; Medial pterygoid muscle; Cross sectional areas (CSA); Postoperative changes; Bilateral sagittal split osteotomy (BSSO)

Abstr ID 147

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UNILATERAL CORONOID HYPERPLASIA

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Aim: Tumors of the coronoid process can be bilateral or unilateral. Authors will present a case of unilateral enlargement of coronoid process. **Material and Methods:** A 43-years old woman, healthy, was referred to our Department with the complaints of severely limited mouth opening and facial asymmetry. The patients could not remember when these symptoms began. Pain and limited mouth opening developed gradually over time. Half year ago she discovered that she could not longer open her mouth. On physical examination the interincisal opening was 10 mm.

The patient had pain during mouth opening. On palpation there was no crepitation and pain in TMJs. On the patients panoramic radiograph enlarged coronoid process was seen. On CT examination, an axial CT scan revealed unilateral enlargement of coronoid process and close relationship of this process with inner side of zygomatic arch. An extraoral unilateral coronoidectomy after osteotomy of zygomatic arch was performed under general anesthesia. Mouth opening after surgery was 43 mm and was maintained following physiotherapy for 6 weeks. Histopathological examination revealed that the mass was: Osteofibroma. **Results:** Symptomatic masses of coronoid process are very rare. Follow-up of more than 6 months shown a 41 mm mouth opening, no recurrence and no TMJ limitation.

Keywords: Coronoid process; Hyperplasia; Mouth opening

Abstr ID 315

620

FACIAL PLEXIFORM NEUROFIBROMA IN NEUROFIBROMATOSIS TYPE 1

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Plexiform neurofibroma is almost exclusively associated with neurofibromatosis type 1 (NF1) but potentially devastating manifestation. Surgical management is the therapy, but the head and neck region is limited by the infiltrating plexiform neurofibroma (PNP). **Method:** we introduce a case of a 15-year-old boy affected with neurofibromatosis type 1 and midfacial neurofibroma, referred to our hospital for diagnosis and therapeutic valuation, operated on this tumor several times in the country, Paraguay. **Result:** The patient described in this case presents a massive skeletal facial deformity and other tissue injuries due to the plexiform neurofibroma, extending from right orbit, auricular region to right cervical region without affection cerebellar meningo-encephalocele. We described from diagnosis before surgical excision of the tumor. The massive facial deformity was assessed on plain radiographs (OPG), computed or magnetic resonance images (MRI). **Conclusion:** Malformations of the face are frequently presented as case report in the literature. This case provides evidence that in the midfacial region the overgrowth is predominantly caused by the plexiform neurofibroma compared to the unaffected side. When functional-aesthetic disturbances appear, neurofibroma indicated treatment is the surgical excision of the tumor and esthetical reconstruction of the facial deformity.

Keywords: Facial plexiform neurinoma; Neurofibromatosis type 1; Neck and head

Abstr ID 202

621

THE CENTRAL ROLE OF MECHANICAL STRAIN IN ORTHODONTIC-ORTHOGNATHIC PROCEDURES AND DISTRACTION

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Statement of the Problem: Biomechanical stimuli regulate bone homeostasis, which is well recognizable in the field of oral and maxillofacial surgery. Our long term goals are to understand how mechanical signals are converted into biochemical events that result in bone formation and remodeling. The aim of this study was to examine the effects of mechanical strain on bone synthesis. This is of particular interest in human osteoblast-like periodontal ligament (PDL) cells, which induce bone resorption at compression sites and bone deposition at tension sites. It was our hypothesis that intracellular actions of tensile strain may inhibit IL-1b/fn-actions and induce bone synthesis associated proteins, thus inducing bone synthesis at tension sites. **Materials and Methods:** The examination of the mRNA expression for multiple IL-1b-dependent proinflammatory genes was assessed by reverse transcriptase/polymerase chain reaction. Protein synthesis was assessed by Western blot analysis, and the nuclear translocation of NF-kB was examined by immunofluorescence. **Results:** Equibiaxial cyclic tensile strain (TENS) is a critical determinant of osteoblast-like PDL cell metabolic functions, and inhibits mRNA expression and synthesis of multiple IL-1b/fn induced proinflammatory genes, such as cyclooxygenase-2, matrix metalloproteinase (MMP)-1 and MMP-3 synthesis. Additionally, TENS as a potent antagonist of IL-1b/fn actions, inhibits the IL-1b signal transduction cascade. Specifically, TENS inhibits nuclear transactivation of NF-kB. Furthermore, the inhibition of proinflammatory genes was paralleled by concurrent expression of mRNA for osteoinductive proteins such as collagen type I $\alpha 1$, TGF- $\beta 1$, osteocalcin, and alkaline phosphatase in PDL cells. **Conclusions:** These intracellular events may be critical during bone formation at the sites experiencing mechanical strain in response to applied mechanical forces, which are important peri- and intra-operative effects in oral and maxillofacial surgery aiming for symmetry and harmony.

Keywords: Oral presentation oral and maxillofacial surgery; Mechanical strain; Bone formation; Intracellular events; PDL cells

Abstr ID 846

622

PALATAL OSTEOSYNTHESIS AFTER SEGMENTED LE FORT I IN TRANSVERSE MAXILLARY DEFICIENCY. AN ALTERNATIVE OF STABILITY

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Introduction: Transverse maxillary deficiencies in the grown-up can be corrected by different approaches,

depending on the magnitude of the defect and the association with other different deformities. Betts et al (1995) designed a treatment planning, according to these criteria: if the transversal deficiency is lesser than 5 mm, they proposed an orthodontic/orthopedic expansion. If it is 5 mm or greater, they proposed a surgical-assisted fast maxillary expansion. In transverse maxillary deficiencies lesser than 6 mm but associated with other deformity (anteroposterior or vertical) they proposed a segmented Le Fort I osteotomy. In the same cases, if the deficiency was greater than 6 mm, they suggested a fast expansion first, and a Le Fort I osteotomy afterwards. **Case report:** We present the case of a 23-year old woman initially seen at our department in 2000 with a transverse and anteroposterior maxillary hypoplasia, associated with a vertical and transverse asymmetry. The deformity required combined orthodontic-surgical treatment. The patient initiated orthodontic presurgical treatment consisting of alignment and leveling of arches with removal of transverse and sagittal dental compensations. She rejected a two-stage surgical treatment so in view of the transverse deficiency we planned a palatal rigid fixation with X-shape miniplates between segments, with the aim of preventing the relapse. Segmental Le Fort I superior maxillary osteotomy into four segments was performed. Molar expansion achieved was 12 mm, asymmetric advancement was 8 mm in the left side and 10 mm in the right side, and posterior repositioning was 3 mm in the left side. Also a mandibular setback of 2 mm and midline reposition was performed. Six months after surgical treatment no transversal relapse was observed. **Conclusions:** 11–50% of the segmental Le Fort I osteotomies in transverse maxillary deficiencies develop a relapse, according to the literature (Stephens 1986, Phillips et al. 1992), these percentages being much higher than those reported with fast expansions (Bay et al. 1992). That is the reason why we consider that palatal stabilization with osteosynthesis provides added safety in the final result of this kind of surgeries.

Abstr ID 330

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COMPARATIVE STUDY ON CONDYLAR POSITION CHANGE OF PATIENT TREATED BY BILATERAL RAMUS SAGITTAL SPLIT OSTEOTOMY WITH OR WITHOUT BONE GRAFT

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Sagittal Split Ramus Osteotomy (SSRO) is one of the surgical procedures to treat mandibular asymmetry and mandibular deformity, and occlusal stability is one of the essential elements to prevent recurrence after the surgery. Occlusal stability is obtained through stable occlusion and appropriate condylar position after the surgery. Normal occlusion is determined by normal Temporo Mandibular joint (TMJ). When the condylar position is normal, dental malocclusion can be treated by orthodontic treatment after the SSRO even if the patient has abnormal interdigitation. However, if the condylar position is abnormal, it is not adjustable after the SSRO and causes occlusal instability and damage after-surgery stability. Elements affecting the condylar position after the surgery, which is essential for

prevention of reoccurrence of the symptom, includes following; ‡@ surgeons experience ‡A movement of mandibular distal segment (forward, backward, rotational), ‡B anatomic shape and orientation of mandibular proximal segment, ‡C fixation method Objective of this study is to secure the stability of treatment for facial deformity by precisely analyzing the change of condylar position using 3D Computed Tomography, comparing surgical cases with or without bone graft, under the premise that change of condylar position, probable after the SSRO, can be reduced by bone graft and that the result of the surgery would be more stable.

Keywords: Condylar position; BSSRO; Bone graft

Abstr ID 339

624

STUDY ON THE EFFECT OF MANDIBULAR ANGLE RESECTION ON THE SKELETAL RELAPSE AFTER ORTHOGNATHIC SURGERY

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The mandibular contour determines the shape of the lower part of face and thus influences the appearance of head and neck. In class III patient, if mandibular sagittal split ramus osteotomy(SSRO)with setback surgery influences mandibular angle, it becomes more prominent and excessive. So operative correction (eg, angle resection) is indicated for aesthetic and slender lower facial appearance. But orthognathic surgery has some complications and one of complications is relapse. The skeletal relapse after orthognathic surgery is multifactorial result of those: presurgical orthodontics, duration of MMF, type of MMF, musculoskeletal adaptation, condylar displacement, postsurgical occlusal stability and etc. The purpose of this study is to prove that simultaneous angle resection with BSSRO could reduce the tendency of postoperative skeletal relapse by means of shortening pterygomasseteric sling. All subject comprised 40 patients underwent BSSRO in Daegu Fatima hospital dept. of oral and maxillofacial surgery. We divided the subject into two groups, One: the experimental group after BSSRO and simultaneous mandibular angle resection, Lingual cortex is included to the proximal segment as Wolfsoeds modification for sagittal split ramus osteotomy. And angle is resected with reciprocating saw under the direct vision The other: the controlled group after BSSRO only. Lateral cephalometric studies of immediate postoperative and 6-month-follow up periods were performed to be statistically analyzed with paired *t* test ($P<0.05$) to estimate the amount of skeletal relapse.

Keywords: BSSRO; Angle resection; Relapse

Abstr ID 457

627

MODALITIES TO AVOID THE PRE-ANGULAR NOTCH IN THE SAGITTAL SPLIT OSTEOTOMY OF THE RAMUS FOR MANDIBULAR ADVANCEMENT – TECHNICAL NOTE

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This presentation is focused to the technical details performed at the time of the osteotomy for the mandibular advancement, with the view to eliminate the causative factors of the pre-angular notch. The techniques of the sagittal split osteotomy of the ramus have achieved a widely approval due to their post-operative benefits, clearly described in the literature, especially after the improvements introduced by Epker in 1977. Recording the remarkable aesthetic and functional results, we have also to consider the importance of knowing the complications and the some ungracious effects which can still occur. The modalities to avoid the unaesthetic manifestation of the pre-angular notch are connected either to the accuracy of the operative steps, or to the certain modifications in the classical Epker's technique, precisely at the moment of the basilar border section. The essential difference consist of preserving the most part of the lingual cortical and of minimizing in this way the osseous gap which can determine the appearance of the pre-angular notch. On the other hand, the role of the technical execution is integrated in the context of the anatomical and physiological determinatives represented by the response of each patient at the surgical act. Preoperative, immediate postoperative and long term follow-up photos, cephalometric radiographs and orthopantomogrammes of the patients operated in our department were retrospectively analyzed to evaluate the clinical and the radiological expression of pre-angular notch. The comparative study distinguishes the advantages from the aesthetical point of view obtained by respecting several technical aspects of the operative procedure, namely using our modification at the level of the basilar osteotomy.

Keywords: Pre-angular notch; Sagittal split osteotomy; Mandibular advancement; Class II skeletal deformities; Basilar border section

Abstr ID 477

628

FACTORS RELEVANT TO AIR EMBOLISM IN ORAL AND MAXILLOFACIAL SURGERY

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Aim: To review the literature for procedures at risk for air embolism in oral and maxillofacial surgery. **Results:** Air embolism is a rare, but possibly fatal event. There are two predominant sites and mechanisms of possible air entry relevant to oral and maxillofacial surgery:

1. bone vessels
2. maxillary sinus

Air-driven handpieces as well as irrigating water and coolant air to the drill have been described as origin of

air embolism during insertion of endosseous oral implants. Use of any device creating a spray mixture of air and water for external or internal irrigation of the drill is at risk for gas embolism during dental procedures. This mechanism is not restricted to oral implantology. Displacement of saline after antral lavage by insufflation of air especially through the natural ostium and inferior meatus by the syringe used for lavage has been found to be highly associated with air embolism fatalities. A considerable resistance met during the attempt to force saline into the antrum has also been described as observation in connection with fatalities and near fatalities caused by air embolism. This complication is therefore not excluded during a normal lavage procedure, but inflation of air following a lavage of the maxillary sinus is obsolete. Anecdotal case reports describe open venous lakes of the skull during craniofacial surgical procedures as well as open large veins during scalp flap raising as sites enabling air entry especially when patients are in the elevated head position. Bag mask-ventilation after patients have undergone operations involving nasal and pharyngeal mucosa mobilisation as well as operations opening the maxillary sinuses such as during orthognatic surgery may be causes of air embolism as well. **Conclusion:** Three factors that facilitate air embolism should be controlled:

1. Open vessels
2. Extravascular/intravascular venous gradient
3. Possible sources of air

Keywords: Air embolism; Mechanism, Surgical procedures

Abstr ID 527

629

FACIAL ANTHROPOMETRIC ANALYSIS IN PATIENTS WITH "ADENOID FACES"

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"Adenoid face" is a facial dysmorphism observed in children with a predominant oral breathing. The name of "adenoid faces" is given because the chronic nasal obstruction is often related to an hypertrophy of the adenoids. Characterizations of this dysmorphism is often made of clinical impressions, and we didn't find quantitative data in the literature. Anthropometry, with elaboration of anthropometric profiles made of several facial measurements, allows to compare a facial dysmorphism to a referring population, and to stroke the modified facial characteristics. The purpose of this study is to report the preliminary results of a detailed analysis of anthropometric data (24 measurements) in 16 patients with a clinical aspect of "adenoid face". Objective anthropometric study showed that 11 measurements and 5 indexes were significantly different between "adenoid face" patients and normative database. The typical face showed: few modifications of the frontal area, no anterior vertical excess (this vertical excess is described in the clinical analysis but may be due to the aspect of the children breathing with open mouth), a smaller anterior projection and a smaller width of the middle face, a larger width of the mandible, a pinched and projected nose, downslanting eyes. There is no significant modification of the mouth and the ears area.

Keywords: Adenoid face; Anthropometry; Facial dysmorphism; Nasal obstruction

Abstr ID 545

630

INTERMEDIATE SURGICAL SPLINT IN BIMAXILLARY ORTHOGNATIC SURGERY. A SIMPLE METHOD OF OBTENTION

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The employment of the intermediate surgical splint in bimaxillary orthognatic surgery is a common procedure. The utility, aid and confidence provided are unquestionable. Anyway the classic procedure of attainment of the splint is complex because it needs of many previous complex clinic procedures with great probability of committing unnoticed errors which modify in a fatal way the final shape of the splint. We propose to simplify the manufacturing of the splint without renouncing to its accuracy and reliability but gaining simplicity and quickness. We must question some concepts about the attainment method of this splint and consider the following basic concept: the vertical preoperative craneomandibular dimension is the same as the vertical postoperative craneomandibular dimension with the splint in position. Therefore, the assemblment in the articulator is not necessary (adjustable or anatomic) because the concept of spatial relations with the temporomandibular joint won't affect us and much less that of the condyl's movement. It will be enough to dispose of a device which maintaining the jaw-bone in a constant position, allows us to move the maxillary in a way which follows the movement designed in the previous study. To manufacture it we have designed a new device called: MAXILLARY PLACET.

Keywords: Intermediate surgical splint; Bimaxillary orthognatic surgery

Abstr ID 123

634

INFLUENCE OF DENTAL/PERIODONTAL DAMAGE ON THE MANDIBULAR DISTRACTION CALLUS

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Aim: To evaluate the influence of deliberately induced dental lesions on callus formation in a canine model of mandibular osteodistraction. **Material and Methods:** An osteotomy between the 2nd lateral incisor and canine was performed and a Transmandibular Distractor placed in 6 adult Beagles. The proximal roots were deliberately damaged by the reciprocating saw and chisel. The attached gingiva was safeguarded. A standard osteodistraction protocol was used (latency of 7 days, rhythm of distraction

1 mm/day for 5 days). Vital staining was done with tetracycline, xylenol orange and calcein green. The dogs were sacrificed after 12 weeks of consolidation and the specimens evaluated with light microscopy (native, polarized light, fluorescence, and after toluidine blue staining). **Results:** The periodontal ligament consistently regenerated. Cementum and dentin lesions were consistently repaired by cellular cementum. Loose dentin and cementum-dentin fragments were consistently embedded in regenerated periodontal ligament and their surface repaired by cementum. The pulp remained viable when not damaged. Extensive pulp exposure and destruction resulted in ingrowth of the periodontal ligament and woven bone. The dentin surface of the pulp canal was also lined by cellular cementum. Loss of attached gingiva in an inadvertently traumatized dog resulted in 10mm pathological pocket formation with histological signs of inflammation. In none of the dogs, the distraction callus was jeopardized by the root lesions. **Conclusions:** Although there was an extensive reparative response to the lesions induced, none of the changes observed could evidence a loss of functional integrity at the periodontal level on the distraction site.

Keywords: Distraction Osteogenesis; Mandible; Periodontal Ligament

Abstr ID 645

635

INTERNAL AND EXTERNAL MANDIBULAR DISTRACTION: A COMPARISON OF TWO GROUPS

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Distraction osteogenesis is a recognized treatment for craniofacial and mandibular deformities. Traditionally external multi- vector distraction has been the most common technique. However, internal distraction presents several advantages such as decreased scarring and less patient morbidity. Surgeons have been reluctant to use this technique because it generally has been univectoral and control of the bone position uncertain. Multi vector internal distractors can solve this problem and we present the results of an internal curvilinear distractor based on the logarithmic growth principals of the mandible of Moss and Ricketts. A group of nine patients distracted with an external multivector distractor were compared to a group of fifteen patients distracted by the internal Logic distractor. All surgeries were performed by one surgeon at the same center. Patients were studied in relation to the desired outcome based on the distracted amount and end occlusion. Morbidity and complications were also examined. The average initial distraction was similar in both groups at 25 and 26 mm, however the internal group showed a better long term result at the average follow up time. The final occlusion was also better in the internal group. More of the external group needed repeat distractions but this may be related to the younger age of initial distraction. In sum the internal distractor was better tolerated by the patient and the composite result was superior.

Keywords: Mandibular distraction; Internal distraction
External distraction

Abstr ID 901

636

HYPOCAPNIA DECREASES SURGICAL FIELD BLEEDING DURING MANDIBULAR OSTEOTOMY

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A bloodless surgical field is required for Mandibular osteotomy. Several factors have been shown to affect surgical bleeding : patient position, venous and mean arterial blood pressure (MAP), heart rate (HR), temperature (T) [Br J Anesth 1992; 69: 498–507]. Because hypocapnia (hypoCO₂) decreases muscle blood flow [Int J Microcirc Clin Exp 1993; 12: 131–41], it may potentially affect surgical bleeding. The aim of our study was to assess the effect of mild hypocapnia to provide a bloodless field during Mandibular osteotomy. **Methods:** 16 patients ASA1(15–35 years) scheduled for double mandibular osteotomy were prospectively included. Patient position, anesthesia, hypnosis depth (Bispectral index: BIS 30–50), Curarisation (train of four: 0/4), temperature (36–37°C), MAP (50–60 mmHg), were standardised during the surgery. Each patient was randomly allocated to one of the two following sequences: first osteotomy with normocapnia (normoCO₂) (35 **Results:** 1 patient was excluded for inadequate PETCO₂ values. The NS score was significantly decreased during hypocapnia (Chi²: P=0.005) (see Table 1) whereas MAP, HR, BIS, T were similar in the both groups. **Discussion:** Our study shows that hypocapnia decreases the surgical field bleeding during mandibular osteotomy.

Abstr ID 24

637

CRANIOFACIAL FIBROUS DYSPLASIA. CONSERVATIVE MANAGEMENT: REPORT OF A CASE

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A case of craniofacial fibrous dysplasia attenuating the orbit and the nasal airway, which was treated by conservative surgical approaches, is presented. Nasal and orbital decompression, and facial recontouring were performed simultaneously. The functional and aesthetic results were good. Conservative surgical treatment of craniofacial dysplasia in adults with stable disease is recommended. The treatment of craniofacial fibrous dysplasia is still controversial. This is mostly due to the great variety of clinical presentations. There is no doubt that when there are symptoms of optic canal compression or other vital structure involvement an early and aggressive decompression should be performed. Optic decompression should not be done routinely and only for symptomatic cases for therapeutic reasons and not for prophylaxis. However, in clinically stable cases in adult patients a more conservative, palliative approach should be considered. This is supported by the case presented here, which

regardless of the massive involvement of the osseous orbit did not present any symptoms of visual deterioration. The patient had a marked proptosis, which was corrected surgically via orbital volume expansion through osteotomies of the medial, inferior and lateral walls. Due to the stability of the lesion it was decided to debulk the lesion rather than radically remove it. This would have been much more technically challenging and with questionable difference in the clinical outcome.

Keywords: Fibrous dysplasia; Recklinghausens disease; Hemifacial neurofibromatosis; Craniofacial fibrous dysplasia; Orbital decompression; Nasal decompression; Management in adults; Outcomes

Abstr ID 137

640

SEGMENTAL DISTRACTION OSTEOGENESIS OF THE ANTERIOR ALVEOLAR PROCESS FOLLOW-UP OF 12 PATIENTS

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Aim: The scope of this article is to describe a therapy for patients with unfavourable relation between the skeletal base and the anterior dentoalveolar area. The reposition of the dentate segment is possible by use of distraction osteogenesis obtained with two vertical interdental osteotomy between the root of the theet and a dento-basal osteotomy performed 5 mm deeper the apex of teeth to mobilize the segment. So that the segment can rotate long a lateral plane. **Patients and Methods:** We present the results obtained in 12 patients. 4 patients was affected by Class II with crowding, four patients was affected by Class I with crowding and Class III requiring decompensation before orthognathic surgery will perform. The mean follow-up is 2 years. A special hinge-joint bone plate was used to allow the rotation of the anterior bone segment into the desired position. The gradual repositioning was achieved with orthodontic appliances with a lingual approach avoiding aesthetics disturbance. **Results:** The procedure was successful in all patients. The advancement at the incisal edge was 2 to 5 mm and the degree of the rotation of the fragment was between 2 and 7 degrees. The ossification was obtained in all patients and histological finding are reported **Conclusion:** With this method is no necessary soft or hard tissue grafting, and it represents a alternative approach to resolve dento-alveolar discrepancy. Diminishing the morbidity of the patient and improving the aesthetics results avoid often the extraction of bicuspid each side promoting non favourable aesthetics results.

Keywords: Segmental distraction osteogenesis of the anterior alveolar process

Abstr ID 161

642

PEDICLED SANDWICH PLASTY—A NEW DISTRACTION OSTEOGENESIS OPERATING METHOD

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Aims: According to Ilisarov et al. (1989) we have performed 74 vertical distraction osteogenesis (GDO) with different distraction devices (Chin 1997, Hidding et al. 1999). **Method:** During this operations we had the idea to expand the transported bone segment to its desired position immediately and stabilize this bone segment with micro- or microplus osteosynthesis materials. This idea, to expand the bone immediately follows the principle of the sandwich plasty described by Schettler 1976. However the transported bone segment has always to be vascularised as if it would be gradual distracted. Therefore it also can be called pedicled sandwich plasty (PSP). We expanded the bone between 8 to 9 mm and stabilized this lifted bone segment with micro- or microplus osteosynthesis plates. The gap we filled either with PRP alone or mixed it together with the bone forming material Algipore®; which is produced out of the natural vegetarian resource red algae. We operate this procedure as if we would perform a distraction osteogenesis. Especially, we preserve the lingual vascularisation of the transported bone segment as we would proceed with a GDO device. **Results:** The clinical, radiological and especially the histomorphometical evaluation showed similar new bone formation as in GDO. We will show on our 21 immediate ostegenesis cases histomorphometric analyses compared to them of 77 vertical gradual osteogenesis cases. **Conclusion:** Also the bone formation is a little bit less vascularised and shows a little bit poorer ossification there is enough bone to stabilize our implants with this new method we avoid a second operation and have the guarantee of an exact position of the transported bone segment and we had significant less complications, especially no perforations of the mucosa due to the distraction device.

Abstr ID 200

643

BONE TRANSPORT IN IRRADIATED CANINE MANDIBLE

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Purpose of the Study: To demonstrate the feasibility of mandibular reconstruction using distraction osteogenesis (bone trnasport), in the full-dose irradiated canine mandible (65 Gy); and state the influence of receiving previous or simultaneous radiation therapy. **Methods and Materials:** we present our experimental study results with the first 12 adult beagle dogs (out of a total of 18 dogs). All dogs underwent teeth extractions in the righth hemimandible, preserving the canine tooth. Three months later, after being separates in three groups of four dogs: four (control group) non irradiated dogs underwent a 30 mms. Segmental mandibulectomy with posterior bone transport. Other four dogs underwent 25 mms. segmental mandibulectomy and bone transport simultaneously wit 50 Gy irradiation (20 fractions); the last four dogs underwent 25 mms segmental

mandibulectomy and bone transport six months after a complete 65 Gy dose of radiotherapy (30 fractions). Mandibular defects were stabilized with an AO 2.4 mm titanium Unilock plate; a proximal transport disk 18–20 mm in size was designed and then we started the bone transport procedure (1mm/24 hrs), with the disk linked to an intraoral mandibular Synthes distractor, 7 days after the resection.

Results: In ten dogs the mandibular defect was regenerated with bone transport protocol, in the remaining two dogs (one of the controls and one with irradiation and bone transport simultaneously) presented exposure, infection and partial loss of the transport disk during the first month of the consolidation period, thus achieving only partial defect reconstruction. All the hemimandibles operated had new bone with good quality and structure with differences between different groups, in the regenerated area. Our clinical, radiological, histological and biomechanical results encourage us to complete our study and get definitive conclusions.

Keywords: Irradiated; Distraction; Canine; Beagle

Abstr ID 251

646

VERTICAL DISTRACTION IN WIDE MAXILLO-FACIAL RECONSTRUCTIONS

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In the last years, the application of vertical distraction techniques has made possible to solve important faults of the maxillo-facial complex, even bony defects of the alveolar ridge. We present here one case of vertical bony distraction and subsequent rehabilitation with dental implants in a patient with wide maxillo-facial complex defects. The patient is a woman affected by an epidermoid carcinoma of mouth floor, treated by resection, including marginal mandibulectomy, and reconstruction with a radial fasciocutaneous free flap. Several months after the resection and reconstruction surgery the patient underwent bony vertical distraction and rehabilitation with four dental implants. Using vertical bony distraction we were able to increase the mandibular height in ten millimeters. After a healing period of three months we placed the implants. Initial osteointegration was 100%. Post-surgical and long-term mechanical stability was achieved in all implants, without implant loss after twenty-two months follow up, and even after the use of a prothesis. Combined use of vertical bony distraction and micro-surgical reconstructive techniques has made possible to improve the way we can treat patients with wide maxillo-facial faults. Low mandibular height is not a trouble now, thanks to the vertical bony distraction used like a previous step to the rehabilitation with dental implants.

Abstr ID 258

647

MANDIBULAR RECONSTRUCTION USING MULTIDIRECTIONAL INTERNAL DISTRACTOR

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Aims: Reconstructing large segmental defects of the mandible is a challenging problem. As a possible solution bone transport technique of distraction osteogenesis has been tried. Although there are many distraction devices available, most of internal ones are unidirectional. Multidirectional control is possible with external ones, which cause various problems. We therefore developed a new internal distraction device for multidirectional bone transport. **Distractor:** The distraction device consists of a bridging reconstruction plate with two longitudinal grooves, brackets with miniplates to fix transport disks, cylindrical traction mechanics including a screw rod, and wires for connecting the bracket and the rod through the grooves. Activating the traction mechanics leads the bracket to slide on the bridging rail of the reconstruction plate. Most part of the device is settled subcutaneously except the distal part of the traction mechanics which is transcutaneous at the retromandibular region. **Case:** Patients, 59- and 61-year-old males, had each segmental defect 7-cm and 9-cm long in the body of the mandibles. Preoperative planning employed their three-dimensional models constructed with stereolithography from computed tomographic data. The distractor including the plates pre-shaped was installed on the model to simulate operation and distraction. Operation was performed from the submandibular approach and the distractor was fixed to the mandible. Distraction began on the 7th postoperative day and continued at the ratio of 1 mm per day. The patients achieved bilateral and unilateral bone transport, respectively. Series of radiograms showed radiopacity in the distracted zones gradually increased. Residual ridges were restored with regenerative bone and covering mucosa. **Conclusion:** The distractor enables the bone transport as an internal technique and is effective in reconstructing a segmental defect of the mandible without grafting procedure.

Keywords: Distraction osteogenesis; Bone transport; Internal distractor; Multidirectional distractor

Abstr ID 383

648

INTERMEDIATE OSTEOTOMY, COMPUTER AIDED SURGERY AND DISTRACTION OSTEOGENESIS IN THE TREATMENT OF CROUZON SYNDROME IN THE ADULT

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Introduction: The authors present one clinical case concerning a 23 years-old female patient with an untreated Crouzon Syndrome. Distraction osteogenesis of the mid-facial complex was performed to achieve a 15 mm advancement. **Materials and Methods:** The surgical intervention was planned and performed with the help of a Computer Aided Surgery (CAS) system (stealth station). 2 surgical accesses (subciliary and intraoral) allowed a subperiosteal dissection. The osteotomy trace was made

and the osteotomy was completely mobilised. One rigid external device (RED II – KLS Martin, Tuttlingen; Germany) was fixed, according to the planned distraction vectors. Distraction began in the 4th postoperative day, at a rate of 1 mm/day. The vectors were modified during distraction. A final advancement of 15 mm was achieved. A consolidation period of 45 days was observed. **Results:** Surgical intervention and the postoperative period were uneventful. The skeletal result was considered clinically and radiologically stable after 6 months. One secondary intervention, three months after primary surgery was necessary to correct a mild orbital asymmetry. The results were judged satisfactory by the patient and the surgical team. **Discussion:** Early treatment in Crouzon patients, with LeFort III osteotomy and distraction osteogenesis, has been frequently reported in the past. Surgical protocols have been clearly established. In the adult, intermediate osteomies allow midfacial advancement without advancing the nasal pyramid. This technique is indicated in untreated facial craniostenosis. CAS systems allows to complete minimally invasive and precise surgery. The surgical accesses are limited and symmetry is optimal. The RED could be considered uncomfortable, but as vector correction during distraction is easily achieved, occlusal results are excellent. **Conclusion:** Distraction Osteogenesis and CAS systems simplify the treatment of facial craniostenosis.

Keywords: Osteotomy; Computed aided surgery; Distraction osteogenesis; Crouzon syndrome

Abstr ID 452

649

FACIAL PROFILE CHANGES AFTER DISTRACTION OSTEOGENESIS

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Aim: Since more than 10 years distraction osteogenesis is a well-established method in the treatment of severe craniofacial anomalies. The purpose of this study is to evaluate the skeletal and soft tissue profile changes associated with distraction osteogenesis in craniofacial skeleton. **Materials and Methods:** Between the period 1999 to 2002, 64 patients have been operated on for treatment of congenital craniofacial deformities with distraction osteogenesis. From those 42 patients had mandible distraction and 22 patients midfacial distraction. Lateral and P-A cephalometric radiographs and facial photographs were obtained preoperatively, 3, 6 and 12 months after distraction. To describe the average positional changes, horizontal and vertical reference lines were used. The horizontal line was defined as a line through nasion rotated 7 degrees upwards from the SN-plane. Vertical values were measured from this horizontal line. For sagittal measurements, the vertical line was defined as the line perpendicular to the horizontal line through sella. Twenty linear and 12 angular variables were calculated. **Results:** - Significant improvement in facial aesthetics was achieved in all patients. The analysis reflected the improvement of most evaluated parameters (both linear and angular). **Conclusion:** Based upon the results of this study we conclude

that, distraction osteogenesis is the valuable methods for improving skeletal relations and soft tissue profiles.

Keywords: Facial profile; Distraction osteogenesis

Abstr ID 489

651

EFFECT OF DISTRACTION OSTEOGENESIS IN CAT MANDIBLE ON THE INFERIOR ALVEOLAR NERVE

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Aims: The distraction osteogenesis has been applied to the jaw deformity and the macrognathia. The benefit of this technique is to be able to lengthening the soft tissue and bone. We performed distraction osteogenesis on the mandibles of cats and investigated its effect on the distracted inferior alveolar nerve. **Material and Methods:** The mandibles of cats has been distracted at a rate of 1mm/day. The mandibles has distracted in 7 days. After it had distracted, we observed the appearance of GAP-43 at inferior alveolar nerve and the digastric electromyogram response evoked from the jaw opening reflex were assessed in the inferior alveolar nerve before surgery, immediately after surgery, at the completion of distraction, and 1, 2, 3, 4, 12 and 24 weeks after completion of distraction. **Results:** Latency periods of the digastric electromyogram response significantly increased, especially immediately after distraction of mandible. However, after that, it recovered time-dependent, in 24 weeks after the distraction recovered to value before operation. The appearance of GAP-43 after distraction was recognized most strongly in 2 weeks, but, after that revelation had attenuated gradually. immunological examinations confirmed. **Conclusion:** This suggests that although nerve function in the inferior alveolar nerve was degenerated by distraction osteogenesis of the mandible, it tended to recover during the time frame of the experiment.

Keywords: Distraction osteogenesis; Inferior alveolar nerve; Nerve function

Abstr ID 857

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NEUROVASCULAR STRUCTURE TRANSPOSITION IN STEPFORM OSTEOTOMY OF THE MANDIBLE

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Aim: The osteotomy on the lower chin in cases of makrognothy presupposes the change of the angle and shortening of the body of the mandible. If there is a necessity of moving the fragment more than 0,5 cm there should be a transposition of the mandibular nerve and vessels. **Materials and Methods:** 21 patients with

macrognathia have been operated. Among them 12 women and 9 men aged 17 to 21 years. All the patients have undergone a step-form osteotomy. The region of the angle was skeletonized and osteotomy of the cortical layers was made separately in different places from outside and inside of the angle, so between the osteotomy lines there was a distance of nearly 2 cm. The fragments were shortened by 0.5 to 1 cm. In the inner cortical layer there was made a hole for the transposition of the neurovascular structure. After the reposition of the fragments the nerve and vessels were placed in the prepared hole to avoid compression. This was followed by osteosynthesis. **Results:** In all the patients operated there was achieved good functional and aesthetic result. There was no complication. During 2 years of follow up there were no neurological malfunctioning. **Conclusions:** The method of neurovascular structure transposition in step-form osteotomy of the mandible enables to achieve optimal results from the functional and aesthetic points of views in surgical treatment of the patients with mandibular macrognathia.

Abstr ID 859

658

THE STEPFORM OSTEOTOMY IN TREATMENT OF PATIENTS WITH MANDIBULAR MACROGNATHIA

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Aim: The sagittal osteotomy in the case of mandibular macrognathia is a universally accepted treatment. The stability of the osteosynthesis often needs an immobilization of the chin. In some cases it is difficult to achieve a tight contact between the fragments and a reliable stability. This allows a functional treatment without immobilization in the postoperational period. The aim of this study is to get a stability of the osteosynthesis in surgical treatment of patients with mandibular macrognathia, which provides functional treatment without intraoral immobilization. **Materials and Methods:** In accordance with the above method 36 patients got surgical treatment for the macrognathia of the mandible. There were 20 women and 16 men aged 17 to 25 years. The operation was a step-form osteotomy of the mandible angle. The external cortical layer has been cut behind the angle, whereas the medial cortical layer—before the mandible angle. The osteotomy lines then were connected and the fragments were splitted. This was done on both sides. After osteotomy there was made the reposition of the mandible with the simultaneous immobilization of the bite. The edges of the fragments have

been shortened to achieve tight contact on the whole surface. Then the osteosynthesis has been made by titan-miniplates. After finishing the operation the immobilization has been removed. **Results:** In all cases there was achieved a good functional and aesthetic result. There were no complications. In the follow up of 2 years there was no change of the bite. The S-rays made 1, 3, 6 and 12 months after the operation showed a physiological regeneration of the bone. **Conclusion:** By the method of step-form osteotomy in cases of mandibular macrognathia it is the stability of the osteosynthesis allows to avoid intraoral immobilization and provides early functioning of the mandible.

Abstr ID 868

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ADDITIONAL BONE FORMATION IN CALVARIAL DISTRACTION OSTEOGENESIS IS RELATED TO MATRIX VESICLE CALCIFICATION

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Aims: The purpose of this study was to clarify the process of new bone formation in rat calvarial distraction osteogenesis by ultrastructural observation. **Methods:** Osteotomy was performed on the coronal suture of 40 SD rats (age, 8 weeks). The rats were maintained without treatment for 7 days after the operation. Distraction was then performed 7 days at a rate of 0.4 mm/day. Calvariae were examined at 3, 7, 10, 14, 28 and 42 days after osteotomy by light and electron microscopy. **Results:** New bone formed on the surfaces, including the bone edges of the osteotomy line and in the distraction gap where osteogenic cells were activated. Cell organelles were well developed. The newly formed bone matrix contained matrix vesicles. **Conclusion:** Matrix vesicles are present in primary calcification of infants. Recently, it was reported that matrix vesicles are involved in ossification in processes such as fracture healing, and that they are present in some tumors. In the present model, we detected matrix vesicles in ossification in the distraction gap and on the bone surfaces of newly formed bone. This indicates that the rapid formation of new bone in distraction osteogenesis involves matrix vesicle calcification. Cell organelles were better developed in the distraction gap than in the control group. We postulate that the mechanical stress of distraction induces differentiation of mesenchymal cells into osteogenic cells.

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SIMPLICITY OF DIAGNOSIS AND PROGNOSIS IN IMPLANT OPERATIONS IS OFFERED BY IMAGE PROCESSING

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Aims: The implant is useful for functional recovery from loss of oral function. When planning an implant operation, the examination and diagnosis of the bone and mucosa is extremely important to improve the prognosis. We often experience irregular thickness of the oral mucosa, and sufficient palpation cannot be performed from anatomical reasons, so the diagnosis and the appropriateness of an operation are difficult in some cases. Therefore, in some cases, computer tomography (CT) and tomography images have been taken and studied rather than X-ray findings alone. In this presentation, we introduce the method of diagnosis based on X-ray findings obtained from a digital X-ray system, software, and a personal computer. These data should be examined together with the CT and tomography findings. **Subjects and Methods:** Fifteen patients were chosen at random from among those who had presented at the YODC Implant Institute over the past two years. We classified these patients based on how the implant operation was managed as, difficult cases, control groups of periodontal disease patients, and healthy controls. We used a personal computer and the UTHSCSA Image Tool for the software. The measurement values were calculated by the Image Tool from all pictures of the patients. We determined the diagnostic standard (YODC standard) from these measurement values. Based on this YODC standard, the degree of difficulty and necessity for pre-treatments for the implant operation were examined in those patients in whom an implant operation was being planned. **Results:** Diagnosis of the difficulty of, and necessity of pre-treatments for an operation were simply attained based on the YODC standard, which moreover, corresponded well with the actual clinical findings. We concluded that these methods and the YODC standard in this presentation may have worked at the same level as other diagnostic methods.

Keywords: Implant image processing

Abstr ID 268

661

SURGICAL NAVIGATION-GUIDED CRANIOFACIAL ENOSSEOUS IMPLANT INSERTION

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Introduction: Craniofacial implants have been shown to provide excellent stability and retention for auricular prosthodontic rehabilitation. The locations of implant placement are critical to achieve optimal prosthetic results. We used image-guided navigation for implant positioning

to test their feasibility and practical impacts. **Material and Methods:** All patients undergoing navigation-assisted craniofacial implant treatment were included. Image-guided surgery was performed by use of a passive infrared surgical navigation system (VectorVisionTM, BrainLAB). The preoperative computed tomography (CT) data was obtained using the Somatom Sensation 16 multislice-scanner (Siemens). After skull reference attachment, the patient-to-image registration was performed using surface laser scanning technique. **Results:** A total of 8 implants were placed in the mastoid area and various other craniofacial locations. The implant positions were conventional planned and updated after image-guided measurements in conjunction with the bone thickness. After registration axial, coronal and sagittal reconstructions of the pointer tip position in the region of interests were displayed in real time. The proper location and positioning of implants in the craniofacial area could strongly improve and controlled. **Conclusion:** Navigation-assisted surgical technique can assist in proper positioning of craniofacial implants, which in turn can complement the prosthetic result. The clinical benefits emerging from technological advances in surgical navigation are well known. Yet, the complexity of the new technical environment needs to be evaluated carefully taking different types of errors into particular consideration.

Keywords: Image-guided surgery; Craniofacial implants; intraoperative guidance

Abstr ID 533

662

MULTIDISCIPLINARY APPROACH TO ALVEOLAR DISTRACTION OSTEOGENESIS: A CASE REPORT

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13-year-old girl presented loss of upper left central and lateral, all lower incisors with upper part of lower anterior alveolar bone and lower left cuspid after a bicycle accident applied to Istanbul University, Faculty of Dentistry, Department of Orthodontics. After teeth extractions, necessary endodontic and restorative restorations were performed. Treatment planning included orthodontic levelling, aligning and creating space for distraction osteogenesis of the lower anterior alveolar arch segment in vertical direction with unidirectional alveolar ridge distractor device, followed by the placement of implants and prosthetic approach to restore the occlusion. After orthodontic levelling and aligning, a U-shaped osteotomy of the alveolar ridge was performed under local anesthesia, forming a bone segment for vertical transport and the distractor was placed. The distraction was begun at the seventh day of latency period and alveolar distraction was achieved at a rate of 1mm per day for 11 consecutive days. The alveolar bone was distracted approximately 11 mm. After 12 weeks of consolidation period, radiographs revealed a vertical translation of the transport segment and new bone formation in the distraction gap. The distractor was removed under local anesthesia. At the

reentry operation newly formed bone was observed in the distraction site. The dental implants were successfully placed into the augmented alveolar bone. Orthodontic treatment was finished and prosthetic restorations were done. Good occlusion, function and favorable esthetics were established.

Keywords: Alveolar distraction osteogenesis; Orthodontics; Implantology

Abstr ID 294

663

AN ANALYSIS OF PRESENT STATUS OF FACIAL PROSTHESES FOR FACIAL DEFECTS IN JAPAN

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Purpose: Prosthetic management of facial defects that result from trauma or surgery has been well-documented. Facial prostheses can reestablish esthetic form, often more effectively than by surgical reconstruction. However, it does not come into wide use yet in Japan. The purpose of this article is to investigate the present status of facial prostheses. **Method:** We used the method of questionnaire surveys on facial prostheses. The questionnaire was completed by outpatients above forty with or without head and neck cancer, with or without facial defects in our department; 36 cases with head and neck cancer (12 cases with facial defects), 623 cases without head and neck cancer. **Results:** As a result of our investigation, there is only a few patients with knowledge of the facial prostheses about 3% and the patients' knowledge of them is low. Only a few patients (11.4%) want to undergo the treatment of facial prostheses rather than surgical reconstruction or covering by gauze patch. The reasons why they do not wish to treat by facial prostheses, are aesthetic problem; especially color differences between the facial prostheses and the surrounding skin; retention of them and great cost. **Conclusion:** To come into wide use in the future, it is necessary for us to give more information about the facial prostheses to the patients.

Keywords: Facial prostheses

Abstr ID 16

664

OPERATIVE PROTOCOL FOR ALVEOLAR DISTRACTION OSTEOGENESIS

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Alveolar process defects represent a challenging surgical problem. Onlay bone grafting is often unsuccessful because of graft exposure resulting from excessive tension on sutures. Distraction osteogenesis appears to be a good alternative to onlay bone grafting. Based on their experience the authors describe their operating protocol for alveolar distraction. There are 6 steps: diagnosis by clinic

and dentascanner examination for sound evaluation of the transport bone. surgery including: sulcus incision, distractor fitting, osteotomy, distractor fixation, and suture. Distractor vector and osteotomy line direction are important factors for good displacement of the distracted bone waiting period (7 days). Distraction period (rate=0.5 mm per day, twice a day). Alveolar distraction should be proceed at a slower rate than mandibular or maxillary distraction. Consolidation period (10 weeks). Simultaneous distractor removal and implant placement. It is important to remove the distractor at the same time as implant placement. Bone relapse is still possible even after 10 weeks of consolidation. Following this distraction protocol, good alveolar reconstruction for dental implant rehabilitation can be achieved. Vertical distraction of the alveolar process allows effective simultaneous expansion of bone and soft tissue. This is important since soft tissue can be a limiting factor for successful onlay bone grafting.

Keywords: alveolar distraction; Operating protocol; Distraction osteogenesis

Abstr ID 450

665

THE PROVISORY PROSTHETIC RESTORATION OF FRONTAL UNIDENTAL EDENTATIONS IN ORAL IMPLANTOLOGY USING THE PREFABRICATE SUPERIOSTEAL IMPLANT

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Introduction: The frontal single tooth edentation raises difficulties in rehabilitation. Nowadays, one of the most used techniques is rehabilitation using implants. **Method:** The insertion of osteointegrated implants could be done immediately post extraction or delayed insertion. In both situations it is necessary to realize a provisory prosthesis, to be used until the definitive prosthetic charge of implants. For this reason, there were used removable prosthesis (Kemenny) which have the disadvantage of periodontal irritation and of a non physiologic load of implant. None of other existing techniques (dentatus screws, parapulpal screws) solved positively the need of provisory prosthesis. This poster presents the method patented by our dental clinic which consists in realizing titanium preformed single tooth subperiosteal implant. There are many advantages for this system: (1) the insertion is done together with the endosteal implant (2) if the peri-implant region needs to be grafted the system works as a rigid membrane (3) it might be used for all clinical cases (4) a provisory crown could be cemented on the abutment of the subperiosteal implant After the osteointegration of endosteal implant, when the prosthetic charge of implant is done, the subperiosteal implant can be easily removed. **Conclusions:** The existence and use of the prefabricate subperiosteal implants solved the problem of temporary restoration of maxillary frontal unidental edentation. This technique avoids interventions on other teeth (dentatus screws, parapulpal screws) or the use of mobile prostheses (Kemenny).

Keywords: Prefabricate superiosteal implant

Abstr ID 198

666

POTENTIAL SUCCESS AND RISK FACTORS FOR IMPLANT USE IN TEMPOROMANDIBULAR DISORDERS PATIENTS

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The aim of this study was to evaluate the effects of abnormal occlusal forces on dental implants in patients with temporomandibular disorders (TMD), and to focus on concepts and the clinical procedures to reduce the potential risk factors for implant failure. The heavy force of compression, clenching and grinding, as in bruxism, simultaneously applies strong pressures to the implants, crestal bone, restorations and temporomandibular joints. This is a potential risk factor for crestal bone loss, loss of integration before and after restoration, abutment screw loosening and fracture, implant fracture, decementation of restorations and fracture of the porcelain. 28 TMD patients were compared to 28 no-TMD patients in which were inserted 267 implants with the same features as number, size, position, design. Besides, were considered type of restoration, cemented or screwed, malocclusion type, smoking, load timing. The results indicate that increasing the number of implants and reducing cantilevers decreases the stress on each one; using the longest and widest implant possible increases implant/bone surface area and reduces also strain on the restorations. Also implant design, occlusal table size, the direction, duration and magnification of the forces influences the stress at the crestal bone/implant surface. Anterior guidance during excursive movements reduces forces and eliminate all lateral occlusal contact. Developing treatment plan that control the chronic bruxism through night-guards and modify the occlusal forces on implants and their restorations, patients with temporomandibular disorders and bruxism can be candidates for implants.

Keywords: Implants temporomandibular disorders bruxism

Abstr ID 863

667

MAXILLARY ATROPHY REHABILITATION BY COMBINED IMPLANT-ORTHOGNATHIC SURGERY AND OSSEOUS REGENERATION PROCEDURE USING AUTOLOGOUS PLATELET GEL

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Implanto-orthognathic surgery is not a new concept; SAILER has advocated, in 1989 a "two-stage" procedure, consisting of a "three-in-one" surgical pre-prosthetic procedure, involving a LeFort I osteotomy, autologous bone graft sinus lift, and endo-osseous axial implants insertion. Later on, BUTOW has called this strategy: "Implanto-Orthognathic Reconstructive Surgery" – I.O.R.S. **Aims:** Confronted to patients inquiries, refusing long-time consuming treatment, or invasive potential complicated surgery such autologous bone grafting, and

wishing for a prompt masticatory functions recovery by fixed bridge, we conceived a procedure benefiting from up-to-date technical improvements in Implantology and Maxillo-facial Reconstructive procedures using especially human growth factors. This conservative approach aim is to achieve, in "one stage" a "Dento-Implanto-Orthognathic Rehabilitation" D.I.O.R. For this purpose, we propound the combination of basal implantology and orthognathic surgery distinct techniques, according to a revisited common protocole, involving orthognathic correction of interarch discrepancy, basal and axial implants equipment insertion, and their early loading with transitional fixed bridge, in harmonious inter-arch relationship, in a first step. **Method:** Basal osteointegrated implant – B.O.I. is concerned by the Diskimplant, developed in France by SCORTECCI. The T-shape, monobloc unit, pure grade II titanium fixture is designed to engage both lateral and crestal cortical bone. Its impaction into an osteotomy site affords initial stability by bi-cortical support. To ensure harmonious masticatory stress sharing, the early loading protocole requires more implants – eight to twelve – than conventionally, and axially microthreaded root-form screw-type "Structure" implants insertion adding, thus creating a "multicortical anchorage unit". When this "unit" is coupled with biomechanical splinting by a rigid prosthesis, one stage predictable implant procedure is feasible, offering early patient masticatory function restoration, in selected cases.

IMPLANT-ORTHOGNATHIC COMBINED SURGERY PROTOCOL:

Preparative stage Pre-operative planning is based on clinical, radiographic, tomodensitometric findings, and dento-maxillary orthopaedic study. Operative simulation is undergone by computer navigation using special software called "Simplant-8-CMF". **Outcoming,** a plan for implant-orthognathic surgery can be formulated, for pre-operative use devices are prepared, as scan-guide, single surgical implant-occlusal guide fabricated on stereolithographic model, and immediate dental prosthesis. **Operative procedure:** Surgery is performed according to a unified revisited chronology, intrincating each technique distinct steps while punctual modifications surveining. When finishing osteotomy, "Structure" axial implants screwed up to maxillary fixed mesostructure may serve as means of osteosynthesis instead of standard miniplates; then after for ready use osseous-inductive autologous graft is prepared by mixing platelets rich in protein – P.R.P. – suction collected bone chips and hydroxy-apatite granules – Interpore-, and gelifying the whole by biologic glue – Tissucol-; and then this gel is generously apposed onto vestibular aspects, sinus floor and inter-osseous gap filling. At the end of the operation, fabricated dental prosthesis is suspended to sus-jacent osseous fixed structure bridging mobilised maxillary infrastructure and implant equipment within; no post-operative intermaxillary fixation is instituted. **Results:** Seven patients presenting partial or total maxillary deficiency, whatever its etiology, have been selected and considered fit to undergo the procedure after informed consent was obtained. Seventeen diskimplants and fifteen "structure" implants were placed into the osteotomised segments and two diskimplants and one Structure were placed in non-osteotomised maxillary area; all implants were well initially anchored and bony fixed, thereafter no one had been removed, replaced or lost. Bone regeneration and implants osteointegration are survey regularly by clinical, X-ray, ultrasound examinations, and 3D scanner. Two months post-operatively, during removal of osteosynthesis screwed miniplates, if any, bone healing and implant

osteointegration are checked, and then implant-supported transitional acrylic resin dental bridge is fabricated. The follow up assessment ranged from one to nine months; as patients are very pleased functionally and aesthetically, transitional denture remains in place. Between six to twelve months post-operatively, permanent fixed implant-supported denture were fabricated, signing the end of the procedure. **Conclusion:** Basal implanto-orthognathic combined surgery appears as a constructive approach, achieving "in one stage" procedure the hole maxillary deficiency rehabilitation. This short time consuming approach characteristics are constituted by less invasive surgery, avoiding autologous bone grafting, no need of intermaxillary post-operative fixation, immediate masticatory functions recovery, early implant loading, positive psychologic effects. In the contrary, early loading protocole requires more implants insertion than with conventionnal axial implantology technique, then is more expensive technique, aware surgical praticien and skilled prosthodontist As primary results are quite convincing, D.I.O.R. may constitute an eventual conservative, up-to-date alternative to I.O.R.S., in selected cases.

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FACIAL ARTERY MUSCULO-MUCOSAL BUCCINATOR AXIAL FLAP FOR PRE IMPLANT SURGERY:RETROSPECTIVE STUDY OF THREE CASES

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Because of initial traumatism or surgery, serious maxillary bone defects can be associated to a scarred fibro-mucosae. In these cases, bone grafting needs restoration of the covering mucosae to allow future implants. Three patients have taken advantage of this musculo-mucosal axial flap, one inferiorly based on the facial vessels for mandibulae and two superiorly based for the maxillae. The treatment plane was as follows : buccinator axial flap, pedicle section at the 15th day, autologous bone grafts three months later and dental implants three months later. The three operated patients have effective implanted prosthesis with an excellent functional and aesthetic result.

Abstr ID 205

669

THE ALVEOLAR ZYGOMATIC CREST: A NEW DONOR SITE FOR LIMITED PREIMPLANTOLOGICAL AUGMENTATION PROCEDURES

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Rehabilitation of bony anterior maxillary alveolar crest defects with endosseous implants still poses a challenge to the implantologist. Preceding traumatic loss of teeth in the upper front often goes parallel with significant loss of original alveolar crest bone. The aim of the preimplantologic treatment is to recontour the hard tissue as far as possible true to original, which is the prerequisite for a later optimum in positioning the dental implants according to prosthodontic requirements and to functional loading. This report gives a new perspective for a minimal invasive reconstruction of limited upper maxillary frontal alveolar crest defects in respect of vertical and horizontal augmentation by using bone transplants from the alveolar zygomatic crest region. The latter provides a natural convex shape of the harvested bone, which is especially advantageous in the frontal alveolar process area, thus avoiding later fibrous tissue transplantation to give more projection to the frontal teeth area. The donor site morbidity is minimal, the bony quality and form is good, so that the reconstructive result is predictable and leads to good 360 degree osseointegration of dental implants. Bone harvesting was done with the piezo-electric device thus avoiding any harm to the mucosal membrane of the maxillary sinus. The presented new method is a good contribution especially to reconstruct vestibular single tooth bony defects prior to dental implant insertion, with a restoration of vestibular hard tissue projection true to original.

Keywords: Bone graft; Augmentation; Alveolar ridge defect; Dental implant; Alveolar zygomatic crest; Piezo-surgery

Abstr ID 592

670

DIGITAL RADIODENSITOMETRIC EVALUATION OF MANDIBULAR ALVEOLAR RIDGE OSTEOGENESIS AFTER DISTRACTION PROCESS

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Aim: To perform objective radiological analysis of a new bone formation within distraction defect area. **Subject:** In 48-years old patient presented with edentulous mandible, a distraction osteogenesis of atrophied lower alveolar process was performed. The surgery was done in out-patient basis and the intraoral distraction device (TRACK 1.5, KLS Martin) was used. After 7-days latency period, distraction was started with 1.0 cm per day (twice a day with 0.5 mm). The distractor was removed after 8-weeks. Implant treatment was implemented 5 months after the end of activation of the distraction process. Two Branemark implants (13 mm × 3.75 mm) were placed in the region 32 and 42 and the primary stabilization was obtained. Prosthetic treatment with complete overdenture prosthesis supported on two implants connected with bar was performed 6 months later. Control radiographs were taken 2, 3, 5, 7 and 12 months after the end of activation. Evaluation of radiological signs of a new bone formation was performed with own methodology based on DIGORA 2.1 computer programme. Optical density of radiological image within distraction defect was evaluated. Linear density profile and

graphic density distribution were assessed. **Results/Conclusions:** None post surgical complications were observed. Elongation of 6mm of alveolar ridge was obtained. After distraction removal transported segment was stable. Radiological control examinations confirmed gradual increase in optical density of bone within distracted zone (I d mean = 65.88, II d mean = 94.6, III d mean = 82.5), as well as osseointegration of implants.

Keywords: Distraction osteogenesis; Atrophied alveolar process

Abstr ID 362

671

IMPLANT INSERTION IN AN EIGHT YEARS OLD BOY WITH ECTODERMAL DYSPLASIA

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The replacement of teeth by implants is usually restricted to patients with completed craniofacial growth and development. Implant insertions in children or adolescents are circumvented due to several unfavorable potential effects including trauma to tooth germs, tooth eruption disorders, multidimensional restrictions of skeletal craniofacial growth. Moreover, the functional and esthetic results of the oral rehabilitation is only temporary acceptable. However, to a small number of pediatric patients suffering congenitally from severe hypodontia caused by syndromes such as ectodermal dysplasia, conventional prosthodontic rehabilitations are insufficient. We report the case of a boy with ectodermal dysplasia (MIM #305100) who exhibited a severe hypodontia of both deciduous and permanent dentition and who was treated with implants inserted into the anterior mandible at the age of eight years. The implants were functionally loaded and resulted in a high patient satisfaction. The boy became easily accustomed to the new rehabilitation and performed an excellent oral hygiene. The parents reported that the dietary intake of the patient had changed significantly. Despite many aspects of implant treatment in pediatric patients such as ideal timing, patient selection and selection the insertion site remain open we recommend the early insertion of dental implants in children with severe hypodontia.

Keywords: Ectodermal dysplasia pediatrics dental implant hypodontia

Abstr ID 565

672

TOLERANCE OF FACIAL MASKS USED FOR POSITIVE PRESSURE VENTILATION IN CHILDREN

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Introduction: Noninvasive positive pressure ventilation (NPPV) is an important advance in the management of acute and chronic respiratory failure in children because it often avoids tracheotomy. The nasal interface represents a crucial determinant of the success of NPPV. The aim of the study was to prospectively evaluate the skin and facial tolerance of facial industrial or custom made masks in children. **Patients and Methods:** Forty patients were included in the study (Obstructive Sleep Apnea $n=16$; NeuroMuscular disorders: $n=14$, Cystic Fibrosis: $n=10$). Skin tolerance and facial hypoplasia were quoted with an appropriate score by a maxillofacial surgeon. **Results:** The mask caused a transient erythema in 8 (20%) patients, a prolonged erythema in 9 (23%) and a skin necrosis in 12 (30%) patients. Skin injury was more frequent in older patients ($P=0.04$). Custom made masks were associated with less skin problems than industrial masks ($P<0.00008$). The occurrence of skin injury was related to the cumulative but not to the daily use of NPPV. Facial flattening was observed in 68% of the patients. There was a trend toward a correlation between the facial flattening and the cumulative use ($P=0.04$) of NPPV. No correlation was observed with the underlying disease, the age of the patient, the daily use of NPPV, and the type of mask. A maxilla retrusion was observed in 37% of the patients and was more frequent in younger patients ($P=0.04$). Six patients had an associated disease that favored maxilla retrusion. A correlation was observed between the maxilla retrusion and the cumulative ($P=0.02$) and daily use ($P=0.04$) of NPPV. Systematic maxillofacial follow up is required for these patients.

Keywords: Non invasive positive pressure ventilation; Facial mask, Child; Skin tolerance; Facial hypoplasia

Abstr ID 154

673

TREATMENT PLANNING AND SUBSEQUENT SURGERY IN PATIENTS WITH DENTAL IMPLANTS APPLICATION USING A THREE-DIMENSIONAL JAW COMPUTER MODELS

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Aims: The abstract aims to performing a planning of dental implantation by new method of computed tomographic scanner (CTS) data assessment using a personal computer. Three-dimensional (3D) CTS scanning allows to receive a spatial image from the particular point of observation which considerably facilitates spatial orientation. **Materials:** Planning of dental implantation and installation of implants of 16 patients with secondary incomplete adentia on maxilla and mandibula was performed using computer program coDiagnostiX. **Results:** 3D models of maxilla and mandible were constructed using CTS, implants of different systems were virtually installed and extent of osteoplastic preparation in the reduced teeth region was calculated. Orthopedic and surgical templates were made by a laboratory method, titanic cylinders for bed forming and implants installing were set using coordinate table gonyX. Implant installation was performed according to the appointed protocol using

individual splints. Operations were performed in the outpatient setting under local anesthesia with pharmacological preparation. 124 dental implants were installed. Prosthetic constructions were made for these implants. The results of treatment have been observed for 3 years. Complications were not registered. **Conclusion:** Due to the computer program coDiagnostiX, clear 3D virtual models can be obtained and implantation using special templates could be performed, taking into account anatomical features and the prosthesis construction that was planned.

Keywords: Dental implants; 3D models of jaws; Planning of treatment

Abstr ID 560

674

REDUCED HEALING TIMES IN THE EDENTULOUS MANDIBLE USING NON-SUBMERGED TITANIUM IMPLANTS WITH A SAND-BLASTED AND ACID-ETCHED (SLA-) SURFACE: 3-YEAR RESULTS OF A PROSPECTIVE STUDY

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Aims: To evaluate the reliability and success rate of early loaded non-submerged titanium implants with a sand-blasted and acid-etched surface in the edentulous mandible following a healing period of six weeks. **Method:** In this prospective study a total of 64 solid screw implants were placed in 15 patients with edentulous mandibles in regions with varying bone qualities (density classes 1, 2 and 3). After a healing period of 6 weeks all implants were functionally loaded. 14 patients received bar borne restorations supported by 4 interforaminal implants. One patient was restored with a telescope retained removable bridge-work on 8 implants. Once prosthodontic rehabilitation was completed, the patients were recalled at 3, 12, 24 and 36 months for clinical and radiographic examination. **Results:** 2 implants were lost prior to loading. One patient was considered a drop-out as she failed to show up for the follow-up examinations after uneventful osseointegration of the implants and completed prosthetic rehabilitation. The remaining 58 implants are considered successful due to stable soft tissue conditions and unchanged radiographic bone levels surrounding the implants at the 3-year follow-up as indicated by no changes of the mean probing depths and mean attachment levels. This resulted in a 3-year success rate of 96.7%. Prosthetic rehabilitation was carried out as planned in all patients. The implant-retained removable dentures showed no signs of failure except for one patient who repeatedly experienced a fracture of the distal cantilever of the bar attachments due to bruxism. **Conclusion:** The results of this prospective cohort study show that reduced healing times and therefore early loading of titanium implants with SLA-surface have a high success rate in terms of osseointegration and stability of the soft and hard tissues. Bar borne and implant supported removable restorations offer highly predictable results in edentulous patients.

Keywords: Implants; Edentulous mandible; SLA-surface; Reduced healing times; Early loading; Prosthetic rehabilitation

Abstr ID 374

675

MICROBIOLOGIC ANALYSIS OF BONE COLLECTED DURING IMPLANT SURGERY WITH A BONE COLLECTOR

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Aim: Simultaneous implantation and augmentation using autogenous bone collected during implant surgery is a well-established procedure in oral implantology. The aim of this study is (1) to identify possible bacterial contamination of bone obtained with a bone collector and (2) to verify the antimicrobial effect of rinsing the bone collector with 0.1% chlorhexidine prior to augmentation. **Material and Methods:** 39 patients with simultaneous implantation and augmentation procedures were examined. All patients rinsed their mouths with 0.1% chlorhexidine solution for 2 minutes prior to surgery. Bone collection was performed using the Osseous Coagulum Trap whereas saliva was collected with a separate suction tip. After bone collection was completed a microbiological swab was taken from the bone collector (sample 1). The collector was then rinsed with 200 ml 0.1% chlorhexidine solution. The bone was removed and the collector sieve was sent for microbiological analysis (sample 2). The microbiological analysis comprised (1) Aerobic and anaerobic cultivation of microorganisms and their identification, (2) Semiquantitative assessment of microbial growth. **Results:** (1) Before rinsing the collector with chlorhexidine 34 of the 39 samples (87.2%) showed microbial contamination. (2) 37 different microbial species could be identified. (3) After rinsing the collector with 200 ml 0.1% chlorhexidine a significant reduction of microbial contamination was found: 66.7% of samples 2 were sterile. **Conclusions:** (1) Despite separate suction (bone dust/saliva) bacterial contamination of bone obtained with a bone collector is the rule. (2) Rinsing the bone collector with 200 ml 0.1% chlorhexidine solution significantly reduces microbial contamination and is strongly recommended. (3) A perioperative antibiotic prophylaxis seems to be indicated if collected bone is used for simultaneous implantation and augmentation.

Keywords: Implantology; Bone collector; Microbiologic analysis; Augmentation; Chlorhexidine

Abstr ID 838

676

POSTERIOR ILIAC CREST BONE GRAFT IN THE PREPROTHESIC REHABILITARY

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Aim: The ageing is originating an increase of edentulous patients with a great alveolar ridge atrophy that difficulty the possibility of carry a removable prosthesis. The request of a best life quality of these patients has generated the

appearance of several therapeutics options to recuperate the lost function. To solve this problem exist many techniques that bring bone tissue of several localizations to give the height and the width necessary to port a prosthesis or to place osseointegrated implants. **Method:** We present 4 cases with alveolar ridge atrophy. In all of them we operated in a first time to obtain bone tissue of the posterior iliac crest and to place it in the alveolar ridge of the superior maxillary: in three cases we made onlay bone grafts to give enough width and in the other one we made a saddle bone graft to increase the longitudinal and the transversal bone volume. After 4–6 months were placed the osseointegrated implants. We analyze the difficulty of the surgery technique, the associated morbidity, the bone quality and osseous resorption. **Results:** We observed that it is an easy and safe technique but the problem is the necessity of have to move the patient during surgery which prolongs this one. In all the cases we obtain a great quantity of bone with good quality and with little morbidity: we control the pain with minor analgesics and begin to walk the day after the surgery. There is a little osseous resorption, that originated only in one case the decreased of the number of osseointegrated implants. **Conclusion:** The design of the technique before the surgery makes this one simple and safe. We can obtain a great quantity bone with good quality without pain and walk consequence. It presents certain grade of bone reabsorption, similar to other techniques, but with the advantage of great quantity of bone obtained. The main problem is the request of have to move the patient during the surgery.

Abstr ID 499

677

ATROPHIC MAXILLAE RECONSTRUCTION WITH COLLOSS AND OSSEOINTEGRATED IMPLANTS

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Background: Colloss is conformed by lyophilized collagen extracted out of bovine osteoid matrix. Due to its compatibility it stimulates the growth of endogenous bone. **Material and Methods:** We present 3 cases of severe atrophy of the upper jaw in which unilateral or bilateral sinus lift was carried out with Colloss. 8 weeks later, bone formation could be seen in the panorex X-rays. 12 weeks after the sinus lift we placed dental implants of 15 mm of height. 6 months later the patients were rehabilitated with

an implant fixed prosthesis. **Results:** 8 weeks after the sinus lift bone formation could be seen in the X-rays. We placed the dental implants 12 weeks after the sinus lift. By the time of placing the dental implants a biopsy was taken with a trephine at showed the presence of immature bone formation. All dental implants developed a correct primary osseointegration and with 2 years of follow up no bone resorption or perimplantitis have been observed. **Conclusions:** Colloss is conformed by lyophilized bovine collagen type I. It is radiolucent, hemostatic, and biocompatible. Bone formation can be seen 8 weeks after surgery and it is remodelled by biomechanical strengths. It induces the osteogenesis and it is ideal for osseointegrative bone regeneration.

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MANDIBULAR RECONSTRUCTION WITH A FIBULA OSTEOSEPTOCUTANEOUS FREE FLAP AND OSSEOINTEGRATED DENTAL IMPLANTS

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Introduction: In large mandibular resections it is important to restore not only the anatomical defect, but also functional and aesthetic oral rehabilitation, particularly in patients with better prognosis. The use of free fibular flap and implant-supported prosthesis has demonstrated to be a good solution for this purpose. **Patients and Methods:** We show the results in six patients who underwent mandibular resection reconstructed with fibular free flap and posterior oral rehabilitation with endosseous implants. Our protocol consisted in a two-step surgery, first doing the reconstruction of the mandibular resection with free fibular flap and in a second time (four months later) implant placement simultaneously to reconstruction plate removal. Four months later, when osseointegration has taken place, the implants were loaded with a dental rehabilitation. **Results:** A total of forty implants have been placed on the fibular free flap bone. The success rate of loaded implants was 100 per cent. All patients underwent oral rehabilitation with dental prosthesis and recovered masticatory function without incidences. **Conclusions:** Free fibular flaps have proved to be one of the best solutions for mandibular reconstruction and the use of osseointegrated implants is an important technique for oral rehabilitation in these patients. The use of the two-step procedure related before give us a more predictable result by shortening the surgical time of the fibular free flap placement and having the possibility to choose the best implant position for posterior dental rehabilitation.

TOPIC 11: SKULL BASE AND ORBITAL SURGERY

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679	CRANIO-ORBITO-FACIAL DISORDERS: AN INTEGRATED APPROACH Clauser L, Galiè M, Curioni C
680	OUR EXPERIENCE WITH OSTEOGENIC DISTRACTION IN TREATMENT OF ANTERIOR CRANIOSYNOSTOSIS Romance A, Esparza J, García Recuero I, Hinojosa J, Fernandez A, Martín Ferro M
681	UNUSUAL PLAGIOCEPHALIES Ricbourg B, Czorny A
682	RECURRENCE OF AMELOBLASTOMA WITH INTRACRANEAL AFFECTION (COMUNICATION POSTER) Díaz-Mauriño JC, Fernandez M, Perez JE, Belinchon E, Alaman N
683	CASE OF NEURILEMNOMA OF RETROMAXILLARY REGION Loncarevic S, Stosic S, Vukelic-Markovic S
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685	OSTEOPLASTY IN DISSEMINATED CALVARIAL DEFECTS TREATED WITH AUTOLOGOUS ADIPOSE DERIVED STEM CELLS AND AUTOLOGOUS FIBRIN GLUE: CASE REPORT Lendeckel S, Schaaf H, Howaldt H-P
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DEFORMATIVE SPECTRUM OF THE SKULL: FROM PLAGIOCEPHALY TO PLATYCEPHALY

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Subject: currently in the paediatric population the deformation of the skull are very frequent and in almost all cases they are asymmetric (plagiocephaly). In some case the deformation are more or less bilateral with a flattening of the posterior skull (platycephaly). The aim of this study was to test the hypothesis that there are a continuum between these different deformations. **Material and Method:** The 112 child (73 boys, 39 girls) were grouped in three groups according to the shape of the calvaria in the superior view of the calvaria on the 3D Ct-scan: the fronto-occipital plagiocephaly ($n=68$), the occipital plagiocephaly ($n=20$), and the platycephaly ($n=24$). In each case neonatal data were collected, neck muscles checkup was done, the cephalic index was calculated, and the skull deformation was analysed. **Results:** The neonatal factors were similar in each group. There were a torticollis in 66% of fronto-occipital plagiocephaly, in 35% of the occipital plagiocephaly, and in 25% of the platycephaly. It was secondary to a retraction of the sternocleidomastoid muscle in 51%, 15% and 0% respectively. For the platycephaly it was only secondary to an asymmetrical tonus. The cephalic index was 85% for the fronto-occipital plagiocephaly, 93% for the occipital plagiocephaly and 98% for the platycephaly. The compression of the occipital flattening is particularly important in platycephaly. **Conclusion:** The traction and compression are the two mechanical factors of the deformative skull in children. This two factors act together or in isolation. In the fronto-occipital plagiocephaly the torticollis with muscle retraction are the main factor, in the occipital plagiocephaly muscle tonus are asymmetric and there are a brachycephaly secondary to the compression, and in platycephaly the compression factor is the main factor and the skull is ultra-brachycephale.

Keywords: Plagiocephaly; Platycephaly; Torticollis; Skull deformation; Scan 3D

CRANIO-ORBITO-FACIAL DISORDERS: AN INTEGRATED APPROACH.

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Aims: The treatment of complex Craniofacial disorders (Craniofacial Dysostosis) is surgical, even if the indications and the timing, type and effectiveness of reconstruction have not been well evaluated. The management of the total midfacial deformity in children is still debated (Le Fort III, Le Fort III minus Le Fort I, Le Fort III minus nose plus Le Fort I, monobloc, bipartition, distraction osteogenesis).

The aims of this study is to focus on the relationship between the timing of surgery and the growth pattern. **Study Design:** The Authors overview 91 cases of craniofacial dysostosis treated in the last 20 years (1983–2003. Crouzon 40, Apert 18, B.E.T.S. type 10, Pfeiffer 8, Saethre-Chotzen 7, Kleeblattschadel 3, Others 5). **Results:** Some basic management guidelines can be proposed-INFANCY–cranio orbital decompression, remodeling, advancement bandeau. CHILDHOOD – interceptive orthodontics, Le Fort III or frontofacial monobloc plus bipartition (in Apert). In selected cases distraction osteogenesis may be effective. TEENS-ADULTHOOD – orthodontics, orthognathic surgery, ancillary procedures, re-evaluation. **Conclusion:** Early cranio orbital remodeling does not push forward the midface, however the depth of the orbits is increased resulting in brain growth and proptosis reduction. (1) These patients have altered craniofacial growth pattern. (2) Functional and morphological results should be evaluated until adulthood. (3) Distraction osteogenesis must be considered in selected cases. (4) Stable and long term results are unpredictable, particularly in Apert. Staged surgical procedures performed at intervals to coincide with craniofacial growth, visceral functions and psychological development are the current approach to the correction of the deformities associated with complex craniofacial disorders.

Keywords: Craniofacial dysostosis; Orbital surgery; Craniofacial growth

OUR EXPERIENCE WITH OSTEOGENIC DISTRACTION IN TREATMENT OF ANTERIOR CRANIOSYNOSTOSIS

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Introduction: The fronto-orbital symmetry is one of the main goals of surgical treatment in anterior craniosynostosis. Traditional fronto-orbital bilateral advancements are the gold standar in the surgical treatment of anterior craniosynostosis to get this symmetry. We present our experience during the last two years using distraction osteogenesis techniques and devices in the treatment of anterior craniosynostosis. **Methods and Materials:** We present 12 patients, medium age of 6 months. 2 patients with braquicephaly, 5 with braqui-turriccephaly and 5 with frontal unilateral plagiocephaly. Marchac (Martin (R)) cranial unidirectional distractors were used. Ecography of the callus and Ct scans were used for control and clinical follow up of the patients. The medium follow up period was 6 months. **Results:** In all the patients the fronto-orbital advancement was stable, with no recurrence during the follow up period. No serious local or systemic infections was registred. The aesthetic results were satisfactory in all the cases with bilateral coronal synostosis and two of the cases with anterior plagiocephly. In three cases with anterior plagiocephly the aesthetic results were insufficient. **Conclusions:** Distraction osteogenesis is a new and powerful surgical treatment in craniosynostosis; avoid osseous cranial vault defects in fronto-orbital advancements, with

low rate of complications and with possibility of combination with classic fronto-orbital advancement procedures. We need new and multidirectional distractors to get symmetry and good aesthetic results in our patients.

Keywords: Craniosynostosis; Distraction

Abstr ID 839

681

UNUSUAL PLAGIOCEPHALIES

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Plagiocephaly is a descriptive term that connotes an asymmetrically oblique or twisted head. This abnormality is due to synostosis of the coronal suture (unilaterally). There is:

- in the side of synostosis: flat forehead;
- flat posterior cranial vault;
- temporo-pterionic bulging;
- in the opposite side : frontal bulging.

About 19 cases were treated in Besançon and one reported from the Musée de l'Homme in Paris. From this cases, we noted 4 cases of abnormal plagiocephaly (including 3 Turkish child). If the external aspect is the same, the 3D CT Scanner is different. Fronto-parietal synostosis is reported on 3 of 4 patients. All of them have the ethmoid deviated to the opposite side of the synostosis suture in 3D CT Scanner. Usually the bolt of the external orbital pillar stop the expansion of the skull in the side of synostosed suture. In these 4 cases we showed the ethmoidal cribriform plate turned to the opposition side of the synostosis. The angle between the petrus bone and midline is not the same as seen in usual plagiocephaly. **Discussion:** Authors try in these cases to explain the changement in the base of the skull.

Abstr ID 140

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RECURRENCE OF AMELOBLASTOMA WITH INTRACRANEAL AFFECTION

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Introduction: The ameloblastoma is an odontogenic epithelial tumor developed from the amelogenic cells of the teeth, but it may come from part of these ones as epithelial rest. Its a locally invasive tumor which aims to infiltrate the bone medular region and which present three microscopical patterns of forecasts, with different modality of treatment. **Objectives:** We present a case of recurrence of amelo-

blastoma in the temporal-infratemporal fossa, including the zygomatic arch, sphenoidal mayor wing, without any intracranial extension. **Material and methods:** We present a 72 years old patient operated for the first time 40 years ago. A marginal mandibulectomy from premolar area to the mandibular angle was undertaken, for the treatment of a right hemimandible ameloblastoma. She was operated in four times during the past, the last time 15 years ago, to increase the margins of resection because local recurrences, including right condilectomy in the last operation. In March of 2003 it was detected a new recurrence which affects the zygomatic arch, temporal and infratemporal fossa, including sphenoidal mayor wing. She was operated in conjunction with neurosurgery department, by lateral orbitotomy including zygomatic arch, and temporal craniotomy to get the temporal and infratemporal fossa and to clear the margins in the resection. **Conclusions:** The ameloblastoma has a high rate of recurrence in the follow up period. This type of tumor has to be treated from the beginning in an aggressive way, knowing that the locally atypical ameloblastoma increase the risk of local spreading and recurrence. The sphenoidal affection is a rare finding.

Keywords: Ameloblastoma; Sphenoidal affection; Intracranial affection

Abstr ID 134

683

CASE OF NEURILEMNOMA OF RETROMAXILLARY REGION

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Background: Neurilemnoma or Schwannoma is a benign soft tissue tumor originated from peripheral nerves, that can be hypercellular (Antoni A) or hypocellular (Antoni B). It practically never undergo malignant transformation and it permanently and slowly grows up. **Case Report:** This is a case of a 42 years old lady without changes of her external or intraoral appearance two years suffered of right-sided headaches, with progressively reduced airway conduction of the right nostril. Standard radiographies (Waters and Caldwell projection) were unhelpful, CT finding revealed pterygopalatal tumor in close contact to skull base, orbit and posterior maxillary wall, but MRI examination revealed clearly limited, oval, 4 cm wide tumor without infiltration into these structures. This is why the operation has been performed via transmaxillary approach—but ready for eventual craniotomy—so far this vulnerable and highly vascular tumor has been removed as a whole, and pathohistologically verified as neurilemnoma Antoni type A. Except headache and nausea during the first post-operative month, there was no other complications, nor relapse during two postoperative years. **Conclusion:** Neurilemnoma is relatively rare benign tumor that appears mostly in the neck, but this is a case of neurilemnoma with such a localisation that presented high diagnostic and surgical challenge.

Keywords: Neurilemnoma; Retromaxillary region

HYPOPHOSPHATURIC MESENCHYMAL TUMOR OF THE ETHMOID ASSOCIATED WITH ONCOGENIC OSTEOMALACIA

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Introduction: Oncogenic osteomalacia is a rare clinico-pathological condition characterized by mineral metabolism abnormalities that disappear after resection of an associated neoplasm. In terms of frequency, the head and the neck represent the second most common area of mesenchymal tumor localization. Tumors associated to osteomalacia appear in soft tissues or in bone and, according to their histological features, seem to be heterogeneous; they have been classified in four groups, the most representative being the "mixed connective tissue variant of phosphaturic mesenchymal tumors" which is discussed in this article. **Materials and Methods:** Two patients (24 year old male and 45 years old female) were referred in our department with a diagnosis of "hypophosphatemic rickets with multiple pathological fractures". Clinical history and clinical aspects of patients were similar; CT scan and MR scan showed the presence of an expansive neoformation in the ethmoidal cells. Therefore, the patients underwent surgery removal of the ethmoido-orbital neoformation. Surgical approach to the neoformation was ensured by means of a bony fronto-orbito-nasal box. Ethmoidectomy was carried out as well as removal, on the transcranial way, of the sphenoidal sinus and of its mucosa. The neoformation appeared entirely inside the removed ethmoid. **Results:** The definitive result of the histological examination was: mesenchymal phosphaturic tumor with featuring haemangiopericytoma aspect. Following neoplasm removal, symptoms of osteomalacia and metabolic alterations rapidly improve. Conclusion Bone pain, hypophosphatemia and low plasma concentration of 1,25-dihydroxyvitamin D are good indicators of neoplastic activity; the persistence of the above mentioned conditions after tumor removal may be the consequence of partial resection of the same tumor or of its recurrence. We believe that the neoplasm must be surgically excised with a wide margin of resection because, following neoplasm removal, symptoms of osteomalacia and metabolic alterations rapidly improve.

Keywords: Ethmoidal tumors; Oncogenic osteomalacia

OSTEOPLASTY IN DISSEMINATED CALVARIAL DEFECTS TREATED WITH AUTOLOGOUS ADIPOSE DERIVED STEM CELLS AND AUTOLOGOUS FIBRIN GLUE: CASE REPORT

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Aim: Report of a 7-year-old girl suffering from disseminated calvarial defects after severe head injury. Decompressive craniectomy and replantation of cryopreserved skull fragments resulted in chronic infection and marked bone defects. Two years after the initial injury reconstruction were performed with the use of adipose derived stem cells, autologous fibrin glue and a limited amount of autogenous bone from the iliac crest. **Methods:** In the present case, the total calvarial defect size was about 120 cm². Due to the limited amount of autologous cancellous bone, simultaneously autologous adipose derived stem cells were processed and applied to the calvarial defects in a single operative procedure. The stem cells were kept in place using autologous fibrin glue. Mechanical fixation was achieved by two large resorbable macroporous sheets acting as a soft tissue barrier at the same time. **Results:** The postoperative course was uneventful and CT-scans showed marked new bone formation and near complete calvarial continuity three months after the repair. **Conclusion:** The simultaneous stem cell transplantation together with bone harvesting and skull reconstruction in one surgical procedure was only made possible by an innovative processing protocol which made the stem cells available within 2 hours only. Obviously, one cannot determine how much of the effect was due to the conventional bone graft versus that related to the combination of autologous adipose derived stem cell transplantation and autologous fibrin glue application. Further studies, both *in vitro* and *in vivo*, are needed to turn this first case into a reproducible and reliable treatment regimen in craniofacial bone reconstruction.

Keywords: Stem cells; Osteoplasty; Autologous fibrin glue

A CASE OF EXTRACRANEAL MALIGNANT MENINGIOMA

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Introduction: Meningiomas are primary central nervous system tumors. They have a mesodermal origin. Represent approximately 15% of adult primary intracranial neoplasms. Generally located in the skull base, being his extracranial location, exceptional. The World Health Organization classification divides meningiomas into: benign (90%), atypical (6.3%) and malignant (1.7%) this one with an aggressive behavior. **Objective:** To present a rare case of an extracranial malignant meningioma. Material and methods: A 33 year old woman with a left laterocervical 6 month evolution tumor. Examination: 3 × 5 cm left laterocervical tumor, elastic band consistence and mobile. No pain. Ultrasound scan: solid heterogeneous mass of 6 × 42.6 cm CT scan: solid hiperrecruitment left parapharynx location mass. No relation with the parotid gland but very near of neurovascular structures. MR scan: solid hiperrecruitment 5.5 × 3 cm mass, from the carotid junction to the skull base with displacement of the carotid artery. Angiography: external carotid artery stenosis. **Preoperative diagnostic:** Vagus nerve neurinoma. **Treatment:** Surgical removal of a 4 cm tumor which included X and XII

cranial nerves. The tumor was adhered to the carotid artery. **Histology:** Malignant meningothelial meningioma. **Results:** Immediate post surgery: left palpebral ptosis, swallowing and pronunciation problems. MR scan: rest of tumor of 1 cm in the left agujero rasgado posterior. We complete treatment with fractionated radiotherapy with no response. Subsequently the patient underwent to stereotactic radiosurgery. **Discussion:** Extracranial malignant

meningiomas are exceptional, that makes it difficult their preoperative diagnosis. They are locally aggressive, with difficult surgical removal due to their proximity or adherence to critical structures and with a poor response to adjuvant treatment (radiotherapy or stereotactic radiosurgery).

Keywords: Malignant meningioma; Radiosurgery

OUT OF TOPICS

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Abstr ID 28

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ANTERIOR DISC DISPLACEMENT WITH REDUCTION: AN UP-TO-DATE SURGICAL TECHNIQUE FOR DISC REPOSITIONING

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Many authors report different surgical techniques for the stabilization of the condylar disc in the treatment of anterior disc displacement with reduction. Aim of this work is to present clinical cases of patients with anterior disc displacement with reduction treated in the Department of Maxillo-Facial Surgery of the University of Rome "La Sapienza" from 2002 to 2004 with a resorbable screw through the condylar disc and the supero-lateral condylar pole. Clinical and instrumental diagnosis of anterior disc displacement with reduction was stated for all patients treated with this surgical technique. Furthermore, those patients who required occlusal dental stability, an occlusal-functional pre-operative treatment was performed. Patients underwent surgery under general anaesthesia, a preauricular retro-tragic incision was performed to expose the articular capsule of the TMJ. A superior joint space arthroscopy of the temporo-mandibular joint was performed to exclude discal or retro-discal tissue perforations. Once any perforation of the disc or the retro-discal tissue were excluded, the disc is repositioned in its physiologic position using a little surgical hook. After repositioning of the condylar disc, a absorbable screw was passed throughout the postero-lateral aspect of the articular disc and the supero-lateral aspect of the mandibular condyle. This surgical technique is executed without opening the articular capsule and allows day-surgery and fast efficient recovery of mandibular function.

Keywords: Anterior disc displacement with reduction; TMJ surgery; Resorbable screw

Abstr ID 46

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TMJ ENDOSCOPIC SURGERY: OUR EXPERIENCE IN TEMPOROMANDIBULAR DYSFUNCTION

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Introduction: Temporomandibular dysfunction is a pathology quite frequent and difficult to treat, because clinical signs are rarely correlated with radiological evidence. **Materials and Methods:** From May 2002 to May 2004 we performed 27 temporomandibular arthroscopies in 19 patients affected by dysfunctional joint pathology, 13 patients of them with chronic close locking and 12 also with chronic pain. 8 patients had bilateral procedure and 11 patient monolateral. We performed: 14 diagnostic arthroscopies (only lavage) and 13 surgical arthroscopies (8 lysis of adhesions in early stages of synovitis and 5 ultrasound treatment of condromalacia areas.)

Results: Maximal mouth opening was 26.42 mm (range = 20–50 mm) before treatment; after treatment we obtained improvement (about +1.3 cm) in 89.50% of patient (17 patient of 19) and pain disappeared in all but one patients. In one case we had failure of endoscopes insertion. No patients referred worsening in function or joint pain.

Discussion: Arthroscopy offers us a direct close vision of the joint and gives us the possibility of a direct lavage, to treat the joint with ultrasound and to remove adhesions in first stages. In the end of the treatment even with disc dislocation, better joint function was obtained with this technique and pain disappeared in most of our cases.

Keywords: TMJ

Abstr ID 301

689

NECROTIZING FASCIITIS OF THE PERIORBITAL REGION. REPORT OF THREE CASES

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Aim: Necrotizing fasciitis of the eyelids and periorbital region is reported rarely. These 3 cases demonstrate the aggressive and invasive nature of these infections. **Subject and Method:** We study three cases of necrotizing fasciitis of the eyelids and periorbital region with clinical manifestation distinguishable from common non necrotizing orbital infections. The essentials of successful treatment include early diagnostic, aggressive surgical debridement and antibiotics. **Results and Discussion:** We present three cases of periorbital necrotizing fasciitis, managed with early surgical removing of necrotic tissues and drainage of abscess. Necrotizing fasciitis is a deep infection of the subcutaneous tissues that results in progressive destruction of fat and fascia. We describe the clinical manifestations and microbiological characteristics. Group-A Streptococcus pyogenes was the most common cause of necrotizing fasciitis. Untreated, it can destroy massive amounts of tissue in a short period of time. Surgical removals of dead tissue are required and appropriated intravenous antibiotics are limited the extensive necrosis and potentially fatal systemic consequences. Reconstruction of the eyelids with flaps and skin grafts was necessary to avoid such complications as eyelid retraction or wrong position, and eye watering. We study the reconstructive procedure. **Conclusion:** Necrotizing fasciitis is a potentially fatal infection. Early recognition of its particular signs and aggressive surgical management are paramount.

Keywords: Fasciitis necrotizing eyelid

Abstr ID 309

690

INTENTIONAL SURGICAL AUTOTRANSPLANTATION OF THE TOOTH

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Autotransplantation of tooth has become a well-established surgical treatment modality in cases of early loss of the teeth or aplasia. Recently, a transplantation of third molars has been mainly performed to replace first or second molars. In some patients, the permanent tooth fail to erupt and become impacted within the alveolus, due to a insufficient interdental space of the dental arch or a pathologic change surrounding the permanent tooth. In individuals with unfavorable impactions, surgical replantation may be considered to be a reasonable solution eliminating the pathologic condition. Oroantral communication or fistula is a clinical complication commonly encountered by oral and maxillofacial surgeons. Various techniques have been proposed for the closure of the oroantral communication. However, these procedures require subsequent prosthodontic treatment for the missing teeth, even after successful closure of the oroantral communication. This clinical case describes a promising and unique method for the immediate closure of the oroantral communication after tooth extraction by means of a transplanted molar and spontaneous bone formation in the maxillary sinus after transplantation. Also, the aim of this study is to summarize the surgically compromised or assisted cases of the autotransplantation. For example, the impacted tooth and cyst-related tooth. Indication, technique and prognosis will be discussed additionally.

Keywords: Autotransplantation impacted tooth oroantral communication

Abstr ID 320

691

ASSESSMENT OF THE EFFECTIVENESS OF PROPHYLACTIC ADMINISTRATION OF AZITHROMYCIN AS ANTIBIOTIC COVER FOR SURGICAL EXTRACTIONS OF RETAINED THIRD MOLAR TEETH

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Aim: The aim of the study was to evaluate the effectiveness of the use of azithromycin in the prevention of inflammatory complications after the surgical extraction of retained third molar teeth and comparison of their occurrence in the case of the absence of antibiotic cover. **Material and Methods:** The research was carried out in 220 patients who underwent surgical extraction of retained third molar teeth in the Department of Oral Surgery at the Medical College of the Jagiellonian University in Krakow, Poland. The patients were randomly divided into two parallel groups: study and control group. Patients in the study group ($n=120$) took 3-day azithromycin regimen (500 mg once daily), starting from the day before surgery. Patients in the control group ($n=100$) underwent the same procedures without any antibiotic cover. The level of intensity of inflammatory complications was assessed according to the following criteria: post-extraction pain, swelling, body temperature, trismus and the state of lymphatic nodes. **Results:** The analysis of the results shows the effectiveness of azithromycin's administration as antibiotic cover for surgical extractions of retained third

molar teeth. Adverse events concerning gastrointestinal tract occurred in one case. **Conclusions:**

- (1) Our clinical observations indicate high efficiency of azithromycin in prophylaxis of complications after surgical extractions of retained third molar teeth.
- (2) None of the patients in the study group suffered from purulent alveolitis, while 11.0% of those in the control group did.
- (3) Azithromycin can be an effective alternative for commonly used antibiotics in this situation.

Keywords: Azithromycin; Oral surgery; Surgical extraction; Antibiotic cover

Abstr ID 321

692

DOES THE ADDITION OF MORPHINE TO LOCAL ANAESTHETIC IMPROVE ANALGESIA DURING AND AFTER SURGERY IN INFLAMED ORAL AND MAXILLOFACIAL TISSUES?

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Aim: The controversy surrounding clinical trials of peripherally applied morphine with local anaesthetic and the attendant ambiguous results led to a study of our own clinical material. The aim of the study was to assess the effectiveness of peripheral administration of morphine with local articaine anaesthesia in inflamed oral and maxillofacial tissues. **Material and Methods:** The research was carried out in 60 patients who underwent oral surgery in inflamed oral and maxillofacial tissues in the Department of Oral Surgery at the Medical College of Jagiellonian University in Krakow, Poland. The patients that qualified for the experiment were randomly divided into two groups: the examined group and the control group. None of the patient was informed in which group he was qualified. The method of modification of local anaesthesia in the examined group was an addition of 0.1 mg morphine into 1.8 ml of 4% solution of articaine with adrenaline. The patients in the control group received the 4% solution of articaine with adrenaline without morphine. **Results:** There is considerable evidence that the modified local anaesthetic, containing trace elements of morphine, can be an effective way of alleviating pain resulting from inflammatory processes in the maxillofacial region. Particular results will be presented.

Keywords: Morphine; Regional anaesthesia; Opioid analgesia; Oral surgery

Abstr ID 323

693

HPLC ANALYSIS OF SYNOVIAL HYALULURONIC ACID AFTER ARTHROSCOPIC SURGERY WITH ELECTROCAUTERY IN SHEEP TMJ

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Aims: To evaluate HPLC analysis of synovial hyaluronic acid (HA) after arthroscopic lysis with electrocautery in the temporomandibular joint (TMJ) of sheep. **Method:** Thirteen adult merino sheep were used. The instruments used in this study were a newly developed arthroscope with a channel (1.1 mm in diameter) for TMJ surgery (Int. J. Oral Maxillofac. Surg. 26S:159, 1997). Electrocautery was inserted into the inner channel and the tip placed directly against the synovial membrane of the posterior pouch and the surface was injured from medial to lateral walls by electrocautery with a power of 125 watts. At the 2nd, 4th, 8th, 12th week after the initial operation, the sheep were sacrificed by an anesthetic overdose. TMJ synovial fluid was collected from the upper joint space. The HPLC conditions established for estimation of HA molecular weight were as follows: the sample solution was applied to a combination of TSK-gel G6000PW and TSK-gel PWXL, and eluted with 10 mM acetate buffer (pH 6.5) at a flow-rate of 1.0 ml/min. **Results:** The peak for synovial fluid HA at 2nd, 4th, 8th, 12th week after the initial operation by HPLC was eluted later than normal samples, indicating that synovial fluid HA had a lower molecular weight. At the 4th week after the initial operation, all discs were perforated. At the 12th week after the initial operation, the condylar articular surface was partly denuded in some areas, and part of the surface showed fibrous repair, and the disc was displaced to the anterior portion. These changes were radiographically and histologically similar to advanced osteoarthritis. **Conclusion:** It was suggested that an arthroscopic lysis with electrocautery against the synovial membrane of the posterior pouch was induced the osteoarthritic change of sheep TMJ.

Keywords: TMJ; Hyaluronic acid; Arthroscopic surgery

Abstr ID 350

694

EXPERIMENTAL STUDY ON REGENERATION OF THE TEMPOROMANDIBULAR JOINT(TMJ) DISC USING IN SITU TISSUE ENGINEERING

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Clinically once the temporomandibular joint (TMJ) disc perforates, spontaneous recovery does not occur. The purpose of this study is to induce the regeneration of the TMJ disc and to evaluate it histologically. **Material and Methods:** Japanese white rabbits weighting 2.5 to 3.0 kg were used. The TMJ was surgically exposed and a round full-thickness perforation with a diameter of 1.6 mm was made in the center of the disc. Animals were divided into two groups (A and B). In group A, a collagen sponge was placed in the perforation. In group B, a collagen sponge mixed with autologous bone marrow was placed in the same methods. In both groups, a control perforation was made on the opposite side and left unfilled. Animals were sacrificed 2, 4 and 8 weeks after surgery and the TMJ was removed en bloc with surrounding tissues. **Results:** In group A, after 8 weeks the size of perforation was reduced, but after 12 weeks, the perforation was still not completely closed. In group B, after 2 weeks, regeneration of the disc

was seen and the site of the perforation was completely filled by new connective tissue. In the control group, it was still not completely closed even after 12 weeks. **Conclusion:** This result may indicate that the collagen sponge with autologous bone marrow has a potential to induce the regeneration of the damaged TMJ disc.

Keywords: TMJ disc; Regeneration; Mesenchymal stem cell

Abstr ID 372

695

PRIMARY TREATMENT FOR TMJ OSTEOARTHRITIS: COMBINATION THERAPY OF TWO CONSECUTIVE ARTHROCENTESES AND MOUTH OPENING EXERCISE UNDER NSAIDS ADMINISTRATION.

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Aim: Osteoarthritis is an advanced stage of TMJ disorders and arthrocentesis is a surgical treatment of choice for the disease. No previous statement, however, touched on multiple arthrocenteses to the osteoarthritic TMJ. The purpose of this study is to evaluate the efficacy of two consecutive arthrocenteses followed by mouth opening exercise under NSAIDs administration for osteoarthritic TMJ. **Methods:** Subjects were chosen from a consecutive series of new TMJ osteoarthritis patients with moderate to severe dysfunction. Thirty-six patients with MRI documentation of osteoarthritis underwent two consecutive arthrocenteses at an interval of 2 weeks followed by two-digit distraction physical exercise and NSAIDs administration. The patients were post-operatively seen every 2 weeks for 12 weeks. The patients were clinically evaluated with pain-related measures on visual analog scales (VAS, range: 0-100) and range of motion at each follow-up visit. The NSAIDs and mouth-opening exercises were continued for a maximum of 12 weeks unless TMJ symptoms improve. **Results:** Of the 36 patients with TMJ osteoarthritis, 28 patients reacted favorably on follow-up of 12 weeks. Range of motion (median) increased from 28 mm to 39.5 mm. VAS pain-scores (median, range: 0-100) on mouth opening and chewing were reduced from 54 and 53 to 10 and 7, respectively. Score on interference with daily life (median, range: 0-100) was also reduced from 33.5 to 9. Duration of symptoms before the procedure was found to affect the outcome. **Conclusion:** Two consecutive arthrocenteses appeared to be effective in alleviating moderate to severe dysfunction of TMJ osteoarthritis. Pain-relieved TMJ function was restored in 78% of the patients within 12 post-operative weeks.

Keywords: TMJ; Osteoarthritis; Arthrocentesis

Abstr ID 405

696

OUR OPENED-SURGERY OF THE TMJ: A 8-YEAR RETROSPECTIVE STUDY

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Purpose: We evaluate the results of our TMJ opened surgical procedure using 2 per-operative guides: dental occlusion and 3D MRI references. Background TMJ, hung to the posterior basicranium, does never support compression. Occlusal anomalies induced by dental treatments, craniofacial dysmorphism and/or anomalies of the head holding cause intra-joint damages. We developed a 3D MRI procedure to evaluate the intra-joint areas of compression and a per-operative control of occlusion. **Patients and Method:** 194 patients, from 13 to 72 (22 male, 172 female), underwent our surgical procedure. They were selected between 06/96 to 06/03 among 3780 TMJ patients. Inclusion factors: severe pains, short mouth-opening, no improvement with dental splint, 6 months (min) after the surgery. Scales: *patients judgement: good, intermediate, bad *Relief pain: no, relative or severe *Recovered function: -mouth-opening: <35 mms, 30 to 34 mms, <29 mms Food consistence: hard, soft, liquid Added scores give 3 ranges of global results (G.R.): perfect, quite good, poor **Results:** We received 169/194 answers. G.R.: perfect = 75.74%, quite good = 30.77%, poor = 3.55%. **Conclusion:** Compared with a previous evaluation, this study shows an improvement of good results, confirming the interest of our 2 per-operative guides: 3D MRI + control of intra-joint areas of compression causing by dental occlusion and/or abnormal movements of the jaw. A close collaboration between the radiologist, the surgeon and the occlusodontist, before, and after the surgery, is the required condition for the best approach.

Keywords: Temporomandibular joint surgery; Internal derangement

Abstr ID 428

697

REHABILITATION TREATMENT FOR TEMPOROMANDIBULAR JOINT DYSFUNCTION

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Introduction: Conservative treatment of temporomandibular joint dysfunction (TMJD) includes medications, splints, relaxation techniques, psychological support and rehabilitation. Conservative treatment is our first step in the treatment of temporomandibular joint dysfunction before arthroscopy or open surgery. The selected conservative treatment for each patient depends on several factors: distance from hospital at patient home, working timetable, age and economy position. **Material and Methods:** We present a study on 90 patients with TMJD treated by rehabilitation as first option or as failure of the splint therapy. These patients were treated between 1999 and 2002. Integral rehabilitation consists in relaxation and awareness techniques, kinesiotherapy and specific electrothermotherapy. The patients were evaluated before treatment and classified following Wilkes staging and maximal

interincisal opening. Initial Wilkes staging were 19% stage I, 52% stage II, 26% stage III and 3% stage IV. Unilateral dysfunction was in 56% and bilateral in 44%. **Results:** From 90 patients, a 13% of them abandoned the rehabilitation treatment due to different reasons, most of them for living far away from hospital and labour troubles. The average number of sessions per patient was 29. After treatment the Wilkes stage improved significantly ($P < 0.001$). The distribution of stages of rehabilitation was: stage I 55%, stage II 9% and 41% were free of symptoms. The average opening was 48 mm with a significant improvement ($P < 0.001$). **Conclusions:** Rehabilitation is a good alternative for treatment of TMJD in early stage with a significant improvement in function, pain relief and noises of temporomandibular joint

Keywords: Temporomandibular joint dysfunction; Rehabilitation

Abstr ID 435

698

MRI IMAGING OF TISSUE ENGINEERED IMPLANTS REPLACING TEMPOROMANDIBULAR JOINT DISC IN RABBITS

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At the moment there are no reliable implants available to replace temporomandibular joint disc. The aim of this study is to evaluate the long term effects of bioresorbable PLDLA 96/4-implants replacing temporomandibular joint discs in rabbits. Bilateral discectomy was performed to ten New Zealand White rabbits. In one joint a PLDLA implant was used to replace the disc. Five rabbits had also the surface of the condyle denuded in both joints. Two unoperated rabbits were used as controls for MRI-imaging. After nine months MRI-images were taken using normal TMJ-coil under general anesthesia. The group with bilateral discectomy and PLDLA implant had a thin neodisc in the control joint and two had thin implant remnants and three thicker implant remnants in the test joints. Minimal to modest synovial proliferation was detected similarly on both sides in two cases and some more on the implant side in two cases. One rabbit showed no synovial proliferation. The group with denuded condylar surface had some irregularities of the condyle head. In the control side a neodisc and in the implant side remnants of implants were detectable. Synovial proliferation was minimal in three cases bilaterally and in two cases it was slightly pronounced in the control joint. The control rabbits showed normal disc position in three joints and anterior disc dislocation in one joint with no synovial proliferation. The use of a PLDLA 96/4-implant in TMJ after discectomy promotes similar healing compared to normal discectomy. A small increase in synovial proliferation is detectable in the joints with an implant. When the surface of the condyle is denuded there is less synovial proliferation with an implant than without and small irregularities of the condylar surfaces are evident on both condyles.

Keywords: Tissue engineering; Temporomandibular joint disc; MRI imaging; Bioresorbable implant

Abstr ID 465

699

TEMPORAL ARTERY BIOPSY—A SERVICE FOR MAXILLOFACIAL SURGERY?

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Background: Temporal Arteritis is an uncommon but important disease entity affecting large and medium sized arteries. The presenting signs and symptoms can often be quite vague. Clinical and laboratory findings may be misleading. An open diagnostic biopsy is therefore regarded as mandatory to confirm or refute the diagnosis. It had become apparent that some biopsies may be avoided and we therefore established a prospective audit of the open access temporal artery biopsy service in order to identify factors which may influence the chance of a positive biopsy. **Materials and Methods:** All patients referred for a temporal artery biopsy between January 2000 and December 2003 were prospectively audited. Demographic details, symptoms, signs, laboratory investigation results and steroid therapy were noted. The biopsy length and grade of surgeon were also recorded. **Results:** 110 cases were prospectively audited. Audited variables were analysed using standard statistical tools. Pre-operative ESR values and presence of localised tenderness over the temporal artery were identified as having a statistically significant correlation with the biopsy result. The other variable factors showed no significant positive correlation. The implications of these findings will be discussed and the role of the maxillofacial team in providing an open access biopsy service will be highlighted.

Keywords: Temporal artery biopsy temporal arteritis open access service positive predictive factors

Abstr ID 471

700

DYNAMICS OF ELEMENT CONTENTS IN STOMATIC LIQUID DURING TREATMENT OF INFLAMMATORY DISEASES OF MAXILLOFACIAL AREA WITH USE OF A NEW BEEBREAD DRUG

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Aims: To investigate change of P, Ca, Si, Sr and Zn concentrations in a stomatic liquid at complex treatment of acute odontogenic periostitis and acute odontogenic osteomyelitis with use of "VINIBIS" tablets consisting of beebread. Determination of characteristic concentration ratios of the elements and using it as criterion for diagnostic and treatment. **Method:** Direct graphite furnace atomic

absorption analysis of a stomatic liquid. Course of "VINIBIS" intake is 5 days by 1 tablet 2 times a day. **Results:** Measurement of the elements concentration and their ratios has revealed characteristic changes only for Ca/Sr relation at periostitis and for P concentration at osteomyelitis. Concentration of Sr increases during "VINIBIS" treatment of acute odontogenic periostitis and therefore Ca/Sr relation decreases from 1881 ± 378 up to 513 ± 170 ($P < 0.05$). Without use of "VINIBIS" the Ca/Sr relation decreases insignificantly ($P > 0.05$). During complex "VINIBIS" treatment of acute odontogenic osteomyelitis the concentration of P does not change. It equal to level in control group of healthy people 192.77 ± 29.67 mg/l ($P > 0.05$). In the case of usual treatment the concentration authentically increases from 196.47 ± 33.12 up to 302.73 ± 14.27 mg/l ($P < 0.05$). **Conclusion:** Use "VINIBIS" promotes recovery in the cases of both diseases. At treatment of acute odontogenic periostitis it removes Sr from a bone in stomatic liquid. In a case of acute odontogenic osteomyelitis "VINIBIS" warns development of a bony rarefaction and as consequence—increases concentration of P in stomatic liquid. Therefore the atomic absorption analysis of Ca, Sr and P in stomatic liquid can be used for the express control of the treatment processes.

Keywords: Periostitis osteomyelitis stomatic liquid phosphorus calcium strontium

Abstr ID 479

701

CLONIDINE AS AN ADJUNCTIVE MEDICATION FOR LOCAL ANAESTHESIA IN ORAL AND MAXILLOFACIAL SURGERY

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Aim and Methods: Modern concepts of anxiolysis and analgesia include a premedication for patients scheduled for operations under regional anesthesia. The literature was reviewed for clonidine as adjunct for operations under local anaesthesia focussing on maxillofacial surgery. **Results:** Clonidine is an α_2 -adrenoceptor agonist exerting central and peripheral effects acting as analgesic and an adjunct extending opioid induced analgesia. Clonidine dose dependently reduces blood pressure and heart rate with a maximum effect after 90 minutes. It has a maximum sedative effect after 120 minutes. Oral clonidine administered preoperatively at 150–300 μ g to effectively blunts the stress response to surgical stimuli. Dizziness, vertigo or coordination problems have not been observed in young patients after oral clonidine 3–5 μ g/kg BW. Elderly patients, however, might experience unwanted hypotension after doses exceeding 2–3 μ g/kg BW. Premedication with oral clonidine may reduce myocardial ischemia in patients with coronary artery disease. Respiratory depression has not been observed after clonidine administration. An opioid induced decrease of the respiratory drive is not enhanced. After adjunctive clonidine a dose reduction of other sedatives of $>40\%$ may be achieved. After IV doses of 1.5–2 μ g/kg BW hardly any residual sedative effect will be observed postoperatively. Clonidine at a dose of 2 μ g/kg

BW has an antiemetic effect. A reduction of salivary flow is a side effect that can be of advantage in dentistry, oral and maxillofacial surgery. Adjunctive use of clonidine to local anaesthetics for infiltration anaesthesia and peripheral nerve blocks has been described to extend the duration of anaesthetic and analgesic effects. **Conclusion:** Clonidine 2–2.5 µg/kg BW should be an adequate oral premedication dose for young and healthy patients scheduled for dental and facial surgery procedures performed under local anaesthesia in the ambulatory setting. In elderly patients clonidine 2 µg/kg BW should not be exceeded to avoid excessive hypotension and sedation.

Keywords: Anxiolysis; Analgesia; Sedation; Premedication; Regional anaesthesia

Abstr ID 639

702

PUMPING WITH INJECTION OF SODIUM HYALURONATE FOR NONREDUCING DISC DISPLACEMENT OF THE TEMPOROMANDIBULAR JOINT: CLINICAL OUTCOME IN DROP-OUT PATIENTS

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Aims: The purpose of this investigation was to examine clinical outcome in patients with nonreducing disc displacement of the temporomandibular joint (TMJ) who did not return for clinical examination in the subsequent course after treatment of pumping with injection of sodium hyaluronate. **Study Design:** One hundred and eight patients with nonreducing disc displacement of the TMJ underwent pumping with injection of sodium hyaluronate into the superior space of the joint. After treatment their clinical signs and symptoms were observed monthly. Seventeen of 108 patients did not return for clinical examination less than 6 months after treatment (drop-out patients group). They were all females and their mean age was 28.8 years (range 16 to 72 years). Ninety-one patients continued to come to our clinic for clinical examination for 6 months or more after treatment (non-drop-out patients group). They consisted of 9 males and 82 females and their mean age was 33 years (range 13 to 74 years). In both patients groups, clinical evaluation was conducted according to the criteria presented by the American Association of Oral and Maxillofacial Surgeons Ad Hoc Study Group on TMJ Meniscus Surgery. Cumulative rate of patients with good outcome during 6 months after treatment was estimated by the Kaplan-Meier method and was compared between the two patients groups by using the log-rank test. **Results:** Cumulative rate of the patients with good outcome was significantly greater in the drop-out patients group (78.3%) than in the non-drop-out patients group (54.9%) ($P < 0.05$). **Conclusion:** Drop-out patients had better clinical outcome than non-drop-out patients did.

Keywords: Temporomandibular joint; Nonreducing disc displacement; Pumping injection of sodium hyaluronate; Drop-out patients

Abstr ID 657

703

LOW INVASIVE OPTIONS IN EMINECTOMY FOR HABITUAL DISLOCATION OF THE TEMPOROMANDIBULAR JOINT

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Eminectomy might be one of the most reliable surgery for patients with habitual dislocation of the temporomandibular joint (TMJ). The therapeutic mechanism is quite simple to make the condylar movement smoother by reduction of the height of the articular eminence. This paper introduces two modified approach techniques, arthroscopic eminoplasty and direct skin incision technique in open eminectomy. (1) Arthroscopic eminoplasty; Shaving the eminence for 4 to 6mm via arthroscopic triangulation technique using electric motorizing shaver and bone files. It takes place under general anesthesia for approximately 1 hour in 1 joint. In the experience of 25 TMJs in 14 cases, the similar success rate was obtained to the conventional open eminectomy without any complication. (2) Direct skin incision technique; A 2 cm vertical skin incision above the articular eminence and careful blunt abrasion subcutaneously enables entry into the superior compartment, followed by shaving of the eminence in the conventional manner. It is performed under local anesthesia for 20–30 minutes in 1 joint, indicated for the patient with contraindication or great risk for general anesthesia due to serious diseases. Our experience of 11 TMJs in 7 cases resulted no recurrence of dislocation without any facial nerve palsy. These two techniques may contribute to apply eminectomy for the patients required a less invasive surgical modality.

Keywords: Low invasive surgery; Habitual dislocation TMJ

Abstr ID 704

704

A COMPARATIVE STUDY OF SURGICAL METHODS IN ADVANCED STAGE INTERNAL DERANGEMENT OF THE TEMPOROMANDIBULAR JOINT

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Aims: Minimum invasive surgeries are recommended for treatment of internal derangement of the temporomandibular joint. Advancement of arthroscopic procedures was introduced by the use of laser, electrocautery, and shaver system. The present study was purposed to evaluate the usefulness of modified arthroscopic surgery, compared to conventional open arthrotomy or simple arthroscopic lysis and lavage. **Subjects and Method:** A total 50 patients who have classified as Wilkes stage IV or V were involved in the present study. Surgical modality comprised of 25 patients with open arthrotomy, 13 patients with arthroscopic lysis

and lavage, and 12 patients with advanced arthroscopic surgery. Open arthrotomy was carried out by the method according to Dolwick advocated. Modified arthroscopic surgery was carried out under the double puncture method, using electrocautery and shaver system. Pre- and post-operative conditions were evaluated by clinical and MRI assessment. The clinical assessment consisted of maxillo-mandibular range of open (MMO mm) and TMJ pain during mandibular function by subjective visual analogue scale of pain (VAS; 0–100). **Results:** More than 1-year postoperation, average MMO of the open arthrotomy group increased from 26 mm to 41 mm, conversely VAS decreased from 80 to 35. In the lysis and lavage arthroscopy group MMO increased from 28 mm to 41 mm, thus VAS decreased from 68 to 32. More than 6 months post-operation in the modified arthroscopy group MMO increased from 27 mm to 39 mm, thus VAS decreased from 60–28 mm. Over all success rate of them was 90, 75, 100%, respectively. **Conclusion:** Open arthrotomy is a choice of established surgical modality for advanced stage internal derangement. However, indication of modified arthroscopy also showed a satisfactory results, therefore, this minimum invasive procedure should be primarily selected for the treatment.

Keywords: Internal derangement temporomandibular joint arthrotomy arthroscope

Abstr ID 746

705

HIV ASSOCIATED FACIAL LIPODYSTROPHY TREATED WITH SUBCUTANEOUS SYNTHETIC FILLER

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Background: HIV infection is no longer the death sentence it was once thought to be and its management lies within the remit of a chronic disease. The advent of highly active antiretroviral therapy using protease inhibitors has lipodystrophy syndrome as a common complication. The facial wasting can be quite a traumatic experience for patients and relatives and is increasingly being seen. Management of facial lipodystrophy has included the use of silicone implantable prostheses, injectable silicone, injectable hyaluronic acid and autologous dermofat transplantation. Injectable polylactic acid has also been used and is the authors preferred method for treating this condition. **Aim:** To highlight the management of HIV associated facial lipodystrophy presenting to a District General Hospital Maxillofacial Unit. **Methods:** 5 HIV positive patients were referred to the Department of Oral and Maxillofacial Surgery Royal Surrey County Hospital Guildford UK from the Department of Genito-Urinary Medicine for assessment and treatment of facial lipodystrophy. All patients were managed for their disease using protease inhibitor therapy and all patients were seen and treated by the senior author between 2001–2004. This series reports our experience with serial injections of subcutaneous polylactic acid filler in the management of HIV associated facial lipodystrophy. **Results:** The results and evaluation of our experience will be presented.

Keywords: HIV; Facial Lipodystrophy; Aesthetics; Subcutaneous Filler

Abstr ID 763

706

WEGENERS GRANULOMATOSIS LOCALIZED TO THE HEAD AND NECK: A CASE REPORT

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Aim: Wegeners granulomatosis is a rare but potentially lethal vasculitis. Although the oral cavity is often involved, the presence of oral lesions as the initial complaint is rare. We present such a case and describe the challenges involved in reaching a diagnosis. **Material and Methods:** A 39 year old female presented with a slowly enlarging non-healing ulcer of the hard and soft palate which had been present for several months duration. An initial incisional biopsy was only diagnostically significant to exclude neoplasia. A further examination under anaesthetic and re-biopsy was undertaken which showed the presence of granulomas and small vessel vasculitis. Subsequent investigations showed raised inflammatory markers, a pancytopenia, and non-reactivity to ANCA. There appeared to be no renal or thoracic involvement. A CT scan showed thickened maxillary antral lining. **Results:** Following the diagnosis of Wegeners granulomatosis, the patient was commenced on oral steroid therapy. Further progression of the oral ulceration along with the development of nasal and pharyngeal lesions led to hospitalisation. Co-trimoxazole along with pulsed cyclophosphamide therapy has led to an improvement in the lesions. **Conclusion:** Wegeners granulomatosis typically affects the renal and lung parenchyma. Other sites in the head and neck region are frequently involved. A loco-regional form of the disease affects a third of patients and has an improved prognosis, although systemic progression or recurrence may occur at later stages. Reactivity to ANCA is highly specific for Wegeners granulomatosis but is only present in 60% of locoregional cases. Diagnosis of locoregional disease presents a challenge as histopathological features are easily confused with other reactive inflammatory conditions such as T.B., sarcoidosis, or lymphoma.

Keywords: Wegeners granulomatosis

Abstr ID 793

707

SUBMANDIBULAR THYROID ECTOPY

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Subject: Lateral, aberrant thyroid tissue in adults is sometimes found as a part of the evaluation of endocrine dysfunction. More common cases of metastatic thyroid carcinoma are described. Rarely benign ectopic thyroid presents as a primary mass in the submandibular region.

However, if aberrant, benign ectopic thyroid tissue does occur, it is most commonly diagnosed by endocrinopathology. We present two cases of submandibular located nodules, which were diagnosed as ectopic thyroid nodes by microscopic finding only because of the absence of any endocrine pathology. Both were located in the submandibular region, and indicated for biopsy as a chronic submandibular mass without any other symptoms.

Results: Histological examination and immunohistochemical studies confirmed the presence of aberrant, benign ectopic thyroid tissue. The patients had no endocrine problems, and both had a normally located and functioning thyroid gland. **Conclusion:** The presented cases of submandibular thyroid ectopy shows the need for careful preoperative examination including ultrasonography, CT scans, MRI mainly in uncommon clinical findings, because not all aberrant thyroid tissues in adults are malignant or associated with endocrine disorders. There is a possibility of ectopic thyroid and a normally located and functioning thyroid gland. Also postoperatively an endocrinology examination is to be performed to avoid possible hypothyroidism.

Abstr ID 814

708

ECHINOCOCCAL CYST IN RIGHT PAROTID GLAND

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This 52 year-old man, a native of Mauritania, noted an asymptomatic swelling under his right ear for 15 years prior to his admission. This painless tumor grew slowly and was associated with a progressive palsy of the frontal branch of the facial nerve. A needle biopsy did not provide enough information for the diagnosis. No biopsy of the tumor was performed. On CT examination this lesion appeared as a well circumscribed cystic lesion in the right parotid gland. Hemogram and thorax X-ray were normal. In May 2003 the right parotid gland was excised. During the surgical procedure the facial nerve trunk was located. Then, the nerve dissection was performed anteriorly towards the bifurcation and it was detected that the mass surrounded the nerve completely. In this way, the capsule was perforated and a clear liquid spilt. The histopathologic study of the membrane showed a echinococcal cyst. No other echinococcal cysts were detected in liver, lung, brain or bladder. The patient did not return for follow-up and no postoperative therapy was given.

Abstr ID 835

709

CLINICAL COURSE FOLLOWING VISUALLY GUIDED IRRIGATION (VGIR) FOR CLOSED LOCK OF THE TEMPOROMANDIBULAR JOINT

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Introduction: Visually guided irrigation (VGIR) of the TMJ involves a simple irrigation of the superior joint compartment (SJC) with arthroscopic inspection using 1.2 mm-diameter rod-lens arthroscopy. This technique under local anesthesia and out-patient setting can be performed. The goal of this study was to explore the clinical course and the correlation between arthroscopic findings and clinical outcome of VGIR for the treatment of chronic closed-lock of the TMJ. **Patients:** Fifty-two TMJs of patients with unilateral chronic closed-lock who underwent VGIR were enrolled in this study. **Methods:** Retrospective analysis of the clinical data following VGIR was performed. The success rate of single VGIR at 1 year follow up and that of VGIR (including the patients who underwent 2nd VGIR as an additional treatment) were calculated. All 52 patients were classified into either good outcome (GO) group or poor outcome (PO) group, and the arthroscopic findings obtained during 1st VGIR of the GO group were compared with those of the PO group. **Results:** The success rate of single VGIR was 71.2% (37/52 joints). Seven joints were performed 2nd therapeutic VGIR. Six of the 7 joints achieved GO criteria, and the success rate of VGIR was 82.7% (43/52 joints). In 5 joints which were failures of VGIR, open TMJ plasty were performed. The pain and dysfunction were completely relieved in 4 of the 5 joints. On the other hand, 4 cases with persistent myofascial pain and dysfunction have not achieved GO criteria without applying additional modality. There are no significant differences in the severity of arthroscopic lesions between GO and PO groups. **Conclusion:** VGIR was considered as an effective modality for chronic closed-lock of the TMJ. It was suggested that clinical outcome of TMJ irrigation is not always.

Abstr ID 573

710

COMPLEX TREATMENT COMBINED WITH LASER ACUPUNCTURE AFTER ALLOGENIC RHINOPLASTY

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Aesthetic surgery of innate and acquired nose pathology takes 58.90% of the total amount of aesthetic operations made in cranio-maxillofacial area. It makes to look for new methods of complications prophylaxis, complex treatment and rehabilitation procedure of pathology mentioned above after the operation. **Aim:** Study of effectiveness of laser acupuncture application as a part of complex allogenic rhinoplasty postoperative treatment. **Methods:** We examined 42 patients in clinic. They have had rhinoplasty surgery of innate and acquired nose pathology. Patients with divided into two groups. Laser acupuncture was included into the complex of postoperative treatment for the patients of 1-st group (22 persons). Laser acupuncture treatment course consisted of 10 sessions carried out either daily or every other day. The following acupoints were irritated by special acupuncture needle with optical glass fiber: GI4, GI10, GI11, VB20, GI19, GI20, IG18, E1, E2,

V1, V2, VG25, VG26. Power density of light flow was not more than 5 mW/cm² for one AP. Time of its irritation consisted of 7–10 seconds to one AP. One session lasted 2 minutes at maximum. **Results:** For the patients of 1-st group clinical treatment course consisted of 10–12 days. For the patients of 2-nd group that period composed 12–14 days. 2-nd group patients kept nose swelling while 4–6

months. Patients of the 1-st group did not have nose swellings 4 weeks postoperatively. Patients of the 1-st group passed in clinic 7 days less than 2-nd group patients. **Conclusion:** Laser acupuncture treatment is effective and is to be included into the postoperative rehabilitation course for the patients after allogenic rhinoplasty.

MASTER CLASSES

Prog. no.	Title/Authors
M1	CONDYLE MANDIBULAR INJURIES Delcampe P, Huet P, Perrin JP
M2	EXTERNAL APPROACH AND CARTILAGE GRAFTS Aiach G
M3	CLEFT LIP AND PALATE SURGERY Gundlach K
M4	POST-TRAUMATIC ENOPHTALMOS: ETIOLOGY AND PRINCIPLES OF RECONSTRUCTION AND CORRECTIONS Clauser L
M5	BLISTER DISEASES OF THE ORAL MUCOSA Vaillant L
M6	TREATMENT OF OSTEORADIONECROSIS Fossion E
M7	3 D PLANNING IN ORTHOGNATHIC SURGERY, THE GRAZ CONCEPT Santler G
M8	BONE GRAFTING IN MAXILLOFACIAL SURGERY, AIMING IMPLANTS INSERTION Ferri J
M9	SKULL BASE SURGERY: THE CONTRIBUTION OF THE MAXILLOFACIAL SURGEON Beziat JL
M10	AESTHETIC AND ORTHOGNATHIC SURGERY. TIPS AND TRICKS Richter M
M11	RECONSTRUCTION FOR THE ALVEOLAR RIDGE: PLACE FOR DISTRACTION OSTEOGENESIS ? Isuka T

M1

CONDYLE MANDIBULAR INJURIES**Delcampe P*, Huet P**, Perrin JP****

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Condylar fractures are the most common in mandibular fractures as they occur at a rate of 35%. The symptoms of these fractures have been described exhaustively in the literature. Therefore, the latter will not be the subject of discussion in this course. However, we will present the sequelae which render these fractures unique and dictate their management. There are two types of condylar fracture sequelae: functional and architectural. The functional ones present as a partial or a complete ankylosis and the architectural ones present as a shortening of the mandibular ramus. The first will be prevented by a functional treatment and the latter with a surgical or an orthopedic way. The functional treatment will be discussed further in detail. It basically consists of immediate mobilization with passive, active or reinforced active reeducation. The surgical or orthopedic procedures will be elaborated as well. The above mentioned treatments could be used alone or in combination depending on the indication. We will propose a new classification of condylar fractures which is based on function rather than on anatomical criteria. It consists of two types of fractures: fractures with articular repercussions and without articular repercussions. Contrary to common belief, this classification is different than the ones that differentiate between intracapsular and extracapsular fractures. In conclusion, the indications of condylar fractures treatment will be presented depending on the type of fracture (classification) and the type of patient.

M2

EXTERNAL APPROACH AND CARTILAGE GRAFTS**Aiach G**

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Since several decades, philosophy of rhinoplasty was modified by two important things: In one hand, a more conservative conception in the willing to have a more harmonious and balanced nose and in an other hand the more frequent use of the open transcollumelar approach. The best indications of the transcollumelar approach are certainly the narrow nose, but also the deformation of the nasaltip and middle part of the nose which could be through this approach perfectly exposed and analysed. That is also the case for the septum. The surgical correction could be easily and more precisely performed whatever there are, they can reinforce the tip of the nose, correct the middle part or improve the projection. The surgery of the septum is also easier to correct the form or to harvest cartilage graft. The innovating techniques suture of cartilages are also improved by this direct approach, especially on the alar cartilage in the way to modify the shape or their position. There are frequently associated to cartilage grafts in an aesthetic or functional purpose. The opened approach allows a precise control not only of the receptor site of the graft which could be carefully prepared but also the fixation

of the grafts in correct position. Opened approaches and cartilage grafts are often strictly linked particularly in secondary rhinoplasties, but also in primary rhinoplasties where deformations of the alar cartilage could sometimes constitute very tricky problems.

References

- Aiach G.: – Atlas de Rhinoplastie et de la voie d'abord externe – 2ème Ed., Masson, Paris 1996.
Daniel R.K.: Rhinoplasty: an atlas of surgical techniques. Springer Verlag New-York, 1999.
Gunter J.P., Rohrich R.J.: – The external approach for secondary rhinoplasty.
Guyuron B: Secondary rhinoplasty in plastic surgery—indications, operations and Outcomes, edited by Guyuron B. Philadelphia: Mosby, 2000, p. 2673–2680.
Tebbetts J.B. Shaping and positioning the nasal tip without structural disruption: a new systematic. PRS 1994; 94; 61.
Toriumi D.M.: : Caudal extension graft for retraction of the retracted columella. Operative techniques in otolaryngology-head and neck surgery, Vol 6, No 4(dec), 1995; 311–318.

M3

CLEFT LIP AND PALATE SURGERY**Gundlach K**

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Several philosophies, various reasoning, different procedures, several schools – but everybody “knows that he is right and is doing it correctly”. There is no evidence based knowledge regarding the “best” way to care for our cleft patients, yet. This is why every maxillofacial surgeon likes his way best – and so do I, I am afraid.

In this lecture the pros and cons will be brought forward for –pre-surgical orthodontics,
–staged or non-staged cleft repair,
–various techniques for labioplasty,
–various procedures for palatoplasty,
–timing and techniques for alveolar cleft repair,
–different ways of pharyngoplasty,
–different approaches for correction of the so-called cleft nose,
–necessity for myringotomy and drommets.

The red thread will be the philosophy, the time table and the techniques favoured by us at the Rostock Cleft Center. The reasoning for these will be discussed, research data favouring one or the other procedures presented and an open mind will be expected not only of all the participants but I will also try to accept convincing contributions to the discussion.

The following list is referring to some of those highlights (list in accordance without answers to the questionnaire sent out by the Department of Pediatric & Adult Plastic and Reconstructive Surgery, Baylor College of Medicine, Houston, Texas, USA in April 2004):

Cleft Lip:

- presurgical appliance (no Latham type)

- no lip adhesion, Pfeifer's waveline procedure at 4–6 months of age,
- simultaneous repair of bilateral cleft

Cleft Nose:

- repositioning of lower lateral cartilage at time of initial lip repair
- final septorhinoplasty at 15 (female) or 17 (male) years of age

Cleft Palate:

- soft palate at 6–9 months
- Kriens' intravelar veloplasty
- hard palate repair when deciduous second molars have erupted
- von Langenbeck's bridge flaps
- speech therapy starts as "coaching" at first contact with patient's parents
- pharyngeal flap at speech pathologist's advice only

Cleft Alveolus:

- osteoplasty at age 10–14 years (depending on teeth adjacent to cleft)
- dental implant at age 17 years

M4

POST-TRAUMATIC ENOPHTHALMOS: ETIOLOGY AND PRINCIPLES OF RECONSTRUCTION AND CORRECTIONS

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Introduction: Post-traumatic enophthalmos is a poorly understood condition that challenges the surgical talent of the most experienced surgeons. Recent research has provided a better understanding of the mechanisms of the condition and has provided a basis for improved surgical correction. Enophthalmos is simply defined as a backward (and usually downward) displacement of the globe into the bony orbit. Converse and Smith, attributed post-traumatic enophthalmos to two mechanisms: (1) the enlargement of the orbital cavity; and (2) the escape of orbital fat into the maxillary sinus. Since then, several additional mechanisms have been proposed to explain the condition. These include fat atrophy, loss of ligament support, and scar contracture. Koorneef recently suggested that entrapment of the fine ligament system that extends throughout orbital soft tissue could hold the globe in a displaced position. Of the postulated etiologies, orbital enlargement, fat displacement, and fat atrophy have received the most attention in the literature, but only recently, with the advent of volumetric studies and three-dimensional computerized tomographic imaging capabilities, have the mechanisms of post-traumatic enophthalmos been more accurately evaluated. There are three basic structures that determine globe position: (1) the bony orbits, (2) the ligament system; (3) orbital fat. **Surgical Techniques:** Given that the volumes of orbital soft tissue are not changed in the usual post-traumatic orbit, eye position may be restored by releasing the adherence of soft tissue to the displaced bony walls of the orbit and squeezing this soft tissue mass forward and upward by restructuring the bony orbit to its preinjury dimensions. Such a bone reconstruction will then determine proper globe position by reshaping the orbital soft tissue. The reduction of the bony orbital volume and the

replacement of missing wall segments is usually accomplished by both introduction of autogenous bone grafts in the posterior orbit and by rim osteotomy in the anterior orbit. Alternatively, alloplastic materials may be utilized. Orbital rim osteotomies reposition the orbital rim to its preinjury dimensions and provide exposure of the deep bony orbit after the method of Tessier, "marginal" osteotomy. A coronal incision is utilized if the upper portion of the medial orbit requires exposure or if the superior orbit requires reconstruction. The lower orbit is approached with a subciliary incision with mobilization of the lateral canthus. **Summary:** If one looks critically at the results of enophthalmos surgery, it is evident that a perfect correction of the deformity is difficult to achieve. Often soft-tissue changes limit the aesthetic result despite adequate bone correction. Nevertheless, significant improvement can be obtained and is appreciated by the patient.

References

1. Bite U, Jackson IT, Forbes GS, et al. Orbital volume measurements in enophthalmos using three dimensional CT imaging. *Plast Reconstr Surg* 1985; 75: 502–507.
2. Converse JM, Cole G, Smith B. Enophthalmos and diplopia in fractures of the orbital floor. *Br J Plast Surg* 1957; 9: 265–274.
3. Kawamoto HK Jr. Late post-traumatic enophthalmos: a correctable deformity? *Plast Reconstr Surg* 1982; 69: 423–430.
4. Koorneef OL. Spatial aspects of musculo-fibrous tissue in man: a new anatomical and histological approach. Amsterdam: Swets & Zeitlinger, 1977.

M5

BLISTER DISEASES OF THE ORAL MUCOSA

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Bullous diseases of the oral cavity cause painful, erosive lesions. These must be distinguished from aphthous ulcers and vesicles with which they are often confused. The causes of post-bullous erosions are varied. Acute lesions can be due to trauma, erythema multiforme or drug-induced (particularly Stevens–Johnson syndrome). The examination of the skin and the medical history are the keys to diagnosis. Chronic bullous diseases can be due to congenital diseases (epidermolysis bullosa or lymphangioma), which are easily evoked by the age at which the symptoms appear and the clinical picture. Acquired chronic bullous diseases include lichen planus and bullous auto-immune diseases. Autoimmune bullous diseases (AIBD) are characterized by autoantibodies targeted against adhesion molecules, impairing their formation. According to localization criteria, pemphigus (intraepidermal blister and desmosomal involvement) and pemphigoid (subepidermal blister and dermoepidermal junction involvement) can be distinguished. Pemphigus vulgaris usually begins with oral lesions before skin lesions. Excepting paraneoplastic pemphigus, oral lesions are uncommon in other types of pemphigus. Cicatricial pemphigoid mainly involves oral mucosa, frequently other mucous membranes, and rarely the skin. In case of desquamative gingivitis, the clip sign gives the diagnosis of cicatricial pemphigoid. Ocular involvement causes blindness. Epidermolysis bullosa

acquisita, bullous lupus and IgA linear dermatosis are rare. Diagnosis requires a biopsy within the mucosal membrane lesion for pathology examination and another biopsy in a lesion-free area for direct immunofluorescence detection of antibody fixation. Immunoelectron microscopy may be needed for positive diagnosis. Corticosteroids are used to treat pemphigus and dapsone is used for cicatricial pemphigoid. Immunosuppressive therapy is rarely needed. The symptomatic treatment of oral bullous lesions includes the following of a specific diet, use of analgesics and the prevention or treatment of superimposed infection.

M6

TREATMENT OF OSTEORADIONECROSIS

Fossion E

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Osteoradionecrosis (ORN) is a rather unpredictable and yet very disabling complications of radiotherapy in the head and neck region. Between different theories the exact pathogenesis of ORN is not yet fully clear. However, the more important contributions seem to converge into some basic concepts, which have enabled us in the last few decades to better treat patients and to improve their condition. The purpose of this master class is to indicate how we can possibly prevent and treat ORN of the maxillofacial bones. After a short review of to-day's most accepted theories on the pathogenesis of ORN and on the biology of irradiated bone, the clinical classification will be presented with reference to the actual treatment possibilities. Finally the treatment policies will be discussed in detail:

- preventive measures: extraction of teeth before radiotherapy: which and when? how to protect bone during radiotherapy?
- the danger of infection and/or trauma in irradiated bones; early versus late
- the place of hyperbaric oxygen in the prevention and in the treatment of ORN
- antibiotics and/or curettage versus decortication
- the role of the surrounding soft tissues in the prevention and the treatment of ORN
- periosteum, periosteal grafts and periosteal flaps (pedicled / revascularised)
- free bone grafting in a previously irradiated area
- revascularised bone grafting in a previously irradiated area
- implants and previous radiotherapy

M7

3 D PLANNING IN ORTHOGNATHIC SURGERY, THE GRAZ CONCEPT

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Aims: In this presentation the technique and advantages of 3d models, 3d simulation surgery and intraoperative navigation in orthognathic surgery are described, overcoming the limitations and shortcomings of conventional planning and positioning tools. **Methods:** Individual CT-

based three-dimensional models are an exact reproduction of the patient's skull. After having replaced the dental arches with plaster models the 3d model becomes an articulator demonstrating not only teeth and occlusion but also the entire facial skeleton. A computer controlled digitizer enables 3d measurements refining the diagnosis of the patient's deformity. Landmarks from the skull base (sella, nasion, external auditory meatus) are used as reference for determining the symmetry plane. 6d tracker for upper and lower jaw register all movements during simulation surgery enabling precise measurements and simultaneous the graphical display on the PC screen. A mechanical navigation system with a neurosurgical head-frame as fixation on the patient and a bite fork connected via a base plate and connection rods, programmed on the 3d-model, is used for positioning the upper jaw during surgery. The 3d COSMOS system was used in 49 patients with bimaxillary corrections in the time between 1997 till 2003. **Results:** The digitizer shows a high precision in this special application with mean deviations of less than 0.11 mm and a standard deviation of 0.014 mm. The navigation system works easy and fast with a mean three-dimensional inaccuracy of 0.05 mm (SD: 0.144 mm), the additional time necessary during surgery is limited to 10 to 15 minutes. **Conclusion:** Asymmetrical deformities, severe vertical discrepancies and complex malocclusions demanding rotations for correction are very difficult to plan and to correct by means of conventional planning and positioning tools. A computerised three-dimensional measuring and navigation system enables the simultaneous precise 3d representation of all landmarks, osteotomy lines and movements, guiding the jaws into correct position during surgery.

M8

BONE GRAFTING IN MAXILLOFACIAL SURGERY, AIMING IMPLANTS INSERTION

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Implants are more and more used. However new limits appear which are due to bony deficits. The maxillofacial surgeons have to answer to the requirements of many implantologists who need bone in specific area. Despite many bony substitutes available, bony grafts stay the gold standard of maxillofacial reconstruction. The implant preprosthetic surgery doesnot waive to this principle. In addition membranous bone have less resorption than the cancellous one. Depending of the defect location, the final prosthetic rehabilitation and the jaw relationship different surgical procedures can be used. In the premaxilla the only grafting with a framework reconstruction give the best results avoiding important resorptions which are common is this place when other techniques are used. In the molar and premolar areas, the sinus floor grafting is the required procedure. In case of total maxillary atrophies and malpositions the use of lefort 1 osteotomy is done to provide good jaw relationship and bringing bone. In the mandibular symphysis the only grafting with frameworks procedures or horizontal sandwich osteotomies must be used. The corpus deficits are solved by only grafting \pm nerve lateralization. Regardless of the procedures themselves, some rules must be kept in mind for the success of the graft: No motion Reduction of inflammatory process

Good vascularisation from the surrounding tissues No buccal or nasal exposure A physiologic ratio Graft/host However, despite the respect of all these principles, some bad results could be present. Most of them are due to a lack of the final bony density. A better understanding of the phosphocalcic metabolism should help us to reduce the rate of these bad results.

M9

SKULL BASE SURGERY: THE CONTRIBUTION OF THE MAXILLOFACIAL SURGEON

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The skull base is a complex area limited by the frontal bone forward and the occipital bone backward.

The skull base is made of three levels from back to front. Cranial nerves and encephalic vessels cross it and there is intimate relationships between the skull base and the brain which reposes over it. Downwards, it is in relation with the facial sinuses and the cervical spine. Many pathologies can concern the skull base. They can be either tumoral or non-tumoral, for example, fistulae, degenerative diseases, malformations etc. To each skull base level belongs a specific histological kind of tumor, but all kinds of tumors can be found non regarding their localisation, for example, metastases, sarcomae, benign tumors, local malignant tumors derived from the facial tissues. Skull base surgery is a complex enterprise. Access to the skull base can be achieved in 4 directions: superior, transfacial, transoral and lateral. Beside neurosurgical approaches, maxillofacial ones have been described. The most famous are:

- frontal trans-sinusal approach which allows to explore the anterior level of the skull base.
- transoropharyngeal approach which gives a direct view of the clivus and cranio-vertebral hinge.
- Lefort I osteotomy which allows to explore the inferior side of the anterior and medial level.
- lateral pterionique approach which exposes the lateral part of the anterior and medial level.

M10

AESTHETIC AND ORTHOGNATIC SURGERY. TIPS AND TRICKS

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More than for any other surgery, orthognatic procedures should fulfil the objectives of the treatment planning proposed to the patient.

It means to minimize the risks of complications during surgery, the discomfort and the potential relapses after the operation.

It means also to optimize the results in terms of adequate correction of form and function. According to the planification, bone displacements must restore the facial harmony by moving mandible, maxilla and chin in the three planes of space.

In addition, some tips and tricks, before and during the procedure, may help to shorten and secure the operation. These complementary surgical gestures also improve the esthetic results, allowing the patient to get more self-confidence and the surgeon more satisfaction.

M11

RECONSTRUCTION FOR THE ALVEOLAR RIDGE: PLACE FOR DISTRACTION OSTEOGENESIS?

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Alveolar distraction osteogenesis is a process that forms new alveolar bone to correct deformities in height and width. Its goal is to create a bone segment in the exact position needed for the insertion of dental implants for subsequent oral rehabilitation. Another application for this purpose is augmentation using bone grafts. However, a distinction can be made between indications for reconstruction using bone grafts and indications for reconstruction using distraction osteogenesis. Correct selection of indications for distraction or augmentation is essential for satisfactory treatment outcome.

In cases of alveolar distraction, the vector of the vertical distraction represents the long axis of the distraction device. In fact, this vector is influenced by the shape and inclination of the anterior bone surface in which the device is installed. Our radiographic analysis has shown that there is often a bone deficit along the anterior (labial and buccal) surface of atrophic jaws, forming a marked posterior inclination. Consequently, most conventional devices, which are fixed at the outer bone surface, tend to lingual tipping. With these devices, the direction initially selected for the distraction cannot be corrected during treatment. There is a strong need for additional anterior distraction to compensate for lingual tipping.

It is possible to control the distraction vector using various methods in order to avoid lingual tipping. One option is to use a two-directional device which allows a vector to be changed in anterior-posterior directions by a total of 40 degrees during active distraction.

In this lecture, indications for and limitations of alveolar ridge distraction are highlighted based on our clinical experience. Surgical technique using a two-directional distraction device is demonstrated in detail. Practical information about treatment planning, surgical technique, distraction procedure, and postoperative care is presented through clinical data and cases.