ADJUSTMENT OF UPPER AIR WAYS AFTER BIMAXILLARY SURGERY ON ANGLE III CLASS PATIENTS

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The aim of study was evaluation of sagital dimensions of upper air ways at nasopharyngeal, oropharyngeal and hypopharyngeal levels before and after bimaxillary surgery performed on 22 Class III female patients in period 2000 – 2002.

In all cases Le Fort I osteotomy was done combined with bilateral sagital split osteotomy in 7 cases and with bilateral vertical ramus osteotomy in 15 patients. Lateral cephalograms were done on ORTHOPHOS 3/3 (Siemens) cefalostat and analized using Dentofacial Planer computer program. Reference points were pterygo maxillary fissure (Pm), bassion (ba), upper dorsal pharyngeal wall (UPW), apex of uvula (U), dorsal oropharyngeal wall (MPW), valecula (V) and lower dorsal pharyngeal wall (IPW).

Critical sagital dimension of not operated on patients was at oropharyngeal level between MPW and U, which in Angle III Class cases was slighty diminished (11,91 ± 3,11) compared do 12,77 ± 3,22 in Angle I cases. After bimaxillary surgery there was increase of sagital dimension at nasopharyngeal level (from 24,47 ± 3,6 mm to 29,13 ± 4,1) and oropharyngeal level (from 13,5 ± 3,4 mm to 14,65 ± 3,1 mm) and decreasing at hypopharyngeal level (from 11,9 ± 4,2 mm to 9,8 ± 3,9 mm). Average cefalometric dimensions of upper air ways have statistically credible difference between Class I and Class III patients as diminished sagital width at hypopharyngeal level and increased width at nasopharyngeal level. 8 months after bimaxillary surgery statistically credible was increase of sagital width at nasopharyngeal level and some decrease of width at oropharyngeal and hypopharyngeal level.

To prevent postoperative problems from upper air ways in Class III patients it is important to evaluate sagital width of upper air ways before operation, and keep in mind choosing the methods of osteotomy and dimensions of shift.

EXPANSION OF THE ORBIT FOR CONGENITAL CLINICAL ANOPHTHALMIA

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Introduction: Congenital anophthalmia ist the most severe malformation of the eye. It has major consequences for the growth of the craniofacial skeleton and by this for the overall aesthetics of the face. Formerly it was treated by osteotomy and grafting of oral mucosa. Later on silicone expanders were recommended, but WOLFE's comment that "even in the best of circumstances the results are poor" seems still to be valid.

At the University of Rostock we developed a treatment protocol for this disorder applying a series of a new type of osmotic hydrogel expanders. The expander material is made of a co-polymer on the basis of methyl-methacrylate and Nvinylpyrrolidone. This hydrophilic substance is hard but by taking up water it increases its volume and becomes kind of a stiff gel in the end. The material applied by us is characterized by expansion factors of 6 to 10. Protocol: At age approx. 3 months: expansion of conjunctival sac by implantation of an osmotic expander of hemispheric shape with a final volume of 1 ml and a final diameter of approx. 14 mm. At age approx. 6-9 months: further expansion of the bony orbit by implantation of the first ball shaped osmotic expander with a volume of 2 ml (diameter approx. 15 mm). In addition a glass shell eye prosthesis is brought into the conjunctival sac. Whenever clinical impression dictates (reduced prominence of palpebral apparatus, i.e. "hollow eye" appearance) exchange of the ball shaped expander for a greater one (3, 4 or 5 ml).

This is a report on our experience with 22 patients during the years 1997 – 2002. In 17 of these who had not been treated before osmotic expanders were applied as the first measure. Six out of the seventeen cases had a bilateral congenital clinical anophthalmia while there were eight right sided and three left sided unilateral anophthalmias. The patients' ages at the first surgical intervention in the Rostock University Hospital varied between 1 month and 14 years (mostly in their first 5 months). In 11 patients altogether 24 computerized tomographies or magnetic resonance image scans were taken to calculate the volumes of the orbits during the various treatment phases. It became apparent that at the age of up to 6 months the anophthalmic orbits without an expander had a volume of only 52% (mean) of those orbits with a globe. After implantation of osmotic expanders the orbits grew to sizes of 70% of the normal orbital volume.

SELF-INFLATING HYDROGEL EXPANDERS FOR TREATMENT OF CONGENITAL ANOPHTHALMOS - CLINICAL OUTCOME FROM OPHTHALMOLOGICAL POINT OF VIEW

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Introduction: Children presenting with congenital anophthalmos usually develop a smaller bony orbit, a constricted mucosal socket and a short palpebral fissure. The main problem is, that these patients cannot wear an eye prosthesis and thus social integration may be endangered. Therefore the new self-inflating hydrogel expanders are a promising therapeutical option.

Patients and method: The expander is made of a hydrogel which takes up water by osmosis. The neutral gel was modified by converting it into an ionized gel to increase its swelling capacity up to 30 times. 23 consecutive patients (12 unilateral, 10 bilateral anophthalmias and 1 unilateral blind microphthalmos) were treated by implantation of an half ball shaped osmotic tissue expander into the rudimentary mucosal socket. Later a ball shaped expander was placed into the deeper soft orbital tissue.

Results: Hydrogel expanders enlarged the lids and palpebral fissures in all children with good aesthetic results. From the ophthalmological point of view the main advantage is, that this therapeutical concept allows to fit an artificial eye very early in life. Growth of the bony orbit may also be stimulated successfully by these expanders, when placed into the soft orbital tissue, but has to be confirmed by CT or MRi. In addition the orbit expander compensates for the deficit of intraorbital volume and helps to stabilize the prosthesis.

Conclusions: Clinical anophthalmos is a complex malformation wich needs an interdisciplinary treatment. Enlarging constricted mucosal sockets and short palpebral fissures by means of self-inflating hydrogel expanders is a new and successful concept in treating congenital anophthalmos.

MUSCLE PEDUNCULATED LAMELLAR SCLERAL FLAPS FOR IMPLANT COVERAGE – A MICROSURGICAL MODIFICATION TO IMPROVE PROSTHESIS MOTILITY

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Background: Volume compensation following enucleation of the eye by implants of various materials and designs is a standard procedure. The authors were using a hyxdroxyapatite-silicone implant placed into the muscle cone and fixed by crosswise suturing all the recti muscles in front of it without any extra covering material.

Patients / Method: In the last 12 years more than 300 patients have been treated this way. In the past 24 months, 22 patients had been operated with a slightly modified surgical technique. A microsurgical lamellar scleral dissection technique was developed to further improve implant motility and to also avoid pegging procedures: After careful opening of Tenon's space scleral triangles are dissected microscopically with their apex orientated towards the limbus and their base towards the recti muscle attachments. Hereby the integrity of the globe is maintained. After enucleation the scleral flaps pedicled on the muscles are sutured in front of the ceramic part of the implant forming a cap like structure of vital, blood-supplied tissue. Surgery is completed by conjunctival closure trying to interpose as little

Tenon´s tissue as possible. Large conformers are selected to ensure formation of deep superior and inferior fornices.

Results: In these 22 patients there was a considerable improvement in implant motility into all directions of gaze: 2,5 mm each in abduction and adduction (i.e. 5 mm more horizontally) and 1,5 mm each in elevation and depression (i.e. 3 mm more vertically than with the old technique). There also were no more surface

defects yet compared with an overall rate of 4% in the group with pure muscle fixation.

Conclusions: Muscle pedunculated scleral flaps are an alternative, wound healing is excellent and prosthesis motility is improved. However, this technique is not advocated for patients with intraocular malignancies.

LONG-TERM TREATMENT RESULTS IN UNILATERAL CLEFTS OF LIP, ALVEOLUS AND PALATE (UCLAP) PATIENTS IN RIGA CLEFT CENTER

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The aim of this report was to present the long-term results in UCLAP patients registered and treated in Riga Cleft Center.

Material and methods. Out of 53 registered UCLAP patients, born between 1981 and 1984, 28 came for control (22 males, 6 females). Surgical treatment included labioplasty by Millard's technique at the age of 2 to 8 months. Surgical repair of the palate varied – 16 patients were operated by a two-stage approach and 12 patients by a one-stage approach. Bone grafting of the alveolar process was done in 18 patients. Additional surgical procedures such as pharyngeal flap surgery (two patients) and lip-nose corrections (19 patients) were also performed. Orthodontic treatment was done in the deciduous dentition in some individuals and in the permanent dentition in all patients. Lateral cephalograms were used to evaluate the facial growth at the mean age of 19:4 years (range 16 – 22 years). The Goslon Yardstick index was assessed on dental casts before orthodontic treatment was started for all 28 patients in order to describe the severity of malocclusion. Speech therapy was carried out with all patients and evaluated in 22 patients. Intelligibility was rated in five levels (0-4), with level 0 meaning normal speech and level 4 – speech is not understandable. Rating included examination of sound production, nasality and nasal airflow, nasal turbulence and grimacing.

Results. Facial growth: The mean SNA angle was 76.51o ± 4.06o (range 21.10 degrees) and mandibular plane angle was 36.60o ± 7.41o (range 30.90 degrees). There was a great variability in sagittal and vertical dentofacial development. The mean Goslon index score was 2.64 ± 1.28. Fourteen patients were judged to have score 1 and 2, while seven patients had a score of 4 and 5. Speech evaluation: Intelligibility rating was as follows: level 0 – ten patients, level 1 – seven patients, level 2 – five patients, levels 3 and 4 – none. Thus speech quality could be considered as being good.

PLANNING OF A RANDOMISED CONTROLLED TRIAL IN CLEFT SURGERY - SCANDCLEFT

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Prerequisites of a trial:

1. Two or several surgical methods with which all participating surgeons feel equally comfortable.
2. A sufficient case load to give statistical power to the analysis.
3. A good personal chemistry between potential participants to bring the protocol to a successful conclusion

Details of this trial:

Basic premise of the Scandcleft trial was to compare currently employed surgical methods for closing unilateral clefts of lip, alveolus and palate (UCLAP) with a operation common to all centres. Inclusion criteria were strict and only nonsyndromic full-term babies with complete unilateral clefts are included. It was agreed that the common leg should be the Gothenburg method to close the soft palate at the time of lip closure. Surgeons of all other centres underwent training by observing live surgery, photographs and videos and using the method in pilots to standardise and to gain proficiency in the method.

Timing

The two Norwegian centres had used a sequence where the hard palate was closed first and standardisation of this operation had already been made. Stockholm, Helsinki and Linköping had closed the palate by a one-stage operation. Two surgeons had already used the minimal incision procedure, which in wide clefts could be converted into a von Langenbeck operation. The four surgeons in the three centres agreed on standardising their operations. After the trial was started surgeons met twice at one-year intervals to ensure standardisation and to discuss technical problems and details of the operations. Preliminary conclusions: Surgeons play a key role in recruiting patients for the trial. Recruitment rates were lower than exspected. Rule of thumb(slightly exaggerated): In a randomized controlled trial of cleft surgery the number of available patients is only half and the project will take twice as long from what you expected.

MALFORMATIONS-SYNDROM MIT ROBIN-SEQUENZ BEI PARTIELLER MONOSOMIE 4Q MIT PARTIELLER TRISOMIE 8Q -EINE VERLAUFSBEOBACHTUNG

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Wir möchten über eine Patientin berichten, die im Neugeborenenalter in unserer Universitätskinder- und Jugendklinik gemeinsam mit Kieferchirurgen bei Robin-Sequenz mit Glossoptose zur Hypoxievermeidung betreut wurde. Später erfolgte im Rahmen unserer Syndromdiagnostik die Klärung der Ätiologie des angeborenen Fehlbildungssyndroms unserer Patientin. Es liegt eine unbalancierte Chromosomentranslokation im Rahmen einer familiären balancierten Chromosomentranslokation vor.

Wir berichten über Phänotyp und Karyotyp.

METHODEN UND ERGEBNISSE DER TOTALEN OHRMUSCHELREKONSTRUKTION NACH AMPUTATION ODER BEI SCHWERER FEHLBILDUNG

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Einleitung: Die Rekonstruktion der gesamten Ohrmuschel nach Amputation oder bei schwerer kongenitaler Dysplasie (Mikrotie 3.° oder Anotie) stellt eine große Herausforderung für den plastisch-rekonstruktiv tätigen Kopf-Hals-Chirurgen dar und erfordert ein mehrzeitiges Vorgehen. Ziel der Behandlung ist die Schaffung einer sozial unauffälligen Ohrmuschel, die im Gegensatz zur epithetischen Versorgung keiner permanenten Nachsorge und Weiterbehandlungsbedarf.

Patienten: Während der vergangenen 15 Jahre wurde in Lübeck und Recklinghausen bei über 600 Patienten eine totale Ohrmuschelkonstruktion bzw. –rekonstruktion durchgeführt.

Methoden: In den meisten Fällen wurde ein dreistufiges Verfahren gewählt, bei dem das Ohrmuschelgerüst aus autogenem Rippenknorpel gestaltet wurde. Der Stützknorpel zur Stabilisierung der retroaurikulären Falte wurde mit einem anterior gestielten Bindegewebslappen oder mit einem Temporalisfaszienlappen sowie einem Vollhauttransplantat gedeckt. Bei voroperierten Patienten oder nach traumatischer Ohrmuschelamputation mit erheblichen Vernarbungen in der Ohrregion wurde die Haut mit einem Expander vorbehandelt oder das gesamte Knorpelgerüst mit gestielter Temporalisfaszie oder freier, mikrovaskulär reanastomosierter Radialisfaszie gedeckt. Bei gleichzeitig bestehender Atresia auris congenita und ausreichenden anatomischen Voraussetzungen im Felsenbein erfolgte eine spezielle, ebenfalls mehrstufige Tympanoplastik in Kombination mit dem Ohrmuschelaufbau.

Ergebnisse und Diskussion: Die Ergebnisse werden unter psychosozialen (Interviews und Persönlichkeitsmessungen in Kooperation mit Prof. Knölker, Kinder- und Jugendpsychiatrie, Med. Universität Lübeck), anthropometrischen, subjektiv ästhetischen und audiologischen Aspekten dargestellt. Sowohl unter subjektiven als auch unter objektiven Gesichtspunkten hat sich sowohl die mehrstufige Ohrmuschelrekonstruktion nach Amputationen als auch die Ohrmuschelkonstruktion, ggf. in Kombination mit der Tympanoplastik, als zuverlässiges chirurgisches Verfahren bewährt.

EAR RECONSTRUCTIONS WITH AUTOLOGOUS CARTILAGE FOR MICROTIA

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Introduction: Redford Tanzer started the modern era of ear reconstruction by using autologous tissue in 1959. This four-stage method consists of 1. inserting an earlike frame formed of costal cartilage into a skin pocket, 2. transposing the lobulus, 3. forming a tragus and deepening the conchal fossa, and 4. creating a posterior sulcus by transplanting skin behind the elevated ear. This method has been refined by Burt Brent. Satoru Nagata improved ear reconstruction by a two-stage method: His first stage accomplishes stages 1-3 of the previous technique. The posterior sulcus was improved by including a cartilage graft to wedge the ear into an elevated position.

An alternative method is to replace the missing ear with an epithesis. Here the ear is made of silicone and attached to a bone-anchored rail on the mastoid area. The main advantages of using an epithesis are that the operations are smaller and the learning curve of the surgeon previously familiar with bone-anchored implants is faster than when forming ears out of autologous tissue. There is no significant difference in the prices between both types of operations. Epitheses require replacement every year because of wear and loss of colour. In the long run ear reconstructions with epithesis becomes the much more expensive alternative.

Report: Over 200 ear reconstructions with autologous tissue have been performed in Helsinki since 1985. With training and experience brought by a sufficient caseload fairly consistent results can be achieved with ear reconstructions using autologous tissue in congenital microtia. This method is usually preferred to epithesis by our patients. Results, complications, problems and the learning curve are discussed.

ORTHOGNATHIC SURGERY: EXPERIENCE OF TARTU UNIVERSITY HOSPITAL

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Aims: The population of Estonia is slightly above 1.4 million persons and the need for advanced craniofacial surgery is limited. The aim of this study was to analyze the cases of orthognathic surgery performed at the Department of Maxillofacial Surgery of Tartu University Hospital between March 1998 and March 2003.

Methods: Before orthognathic surgery all patients underwent orthodontic treatment and psychological profiling; preoperative photographs, pretreatment moulages and cephalometric analysis. Deformities of the lower jaw were corrected by the intraoral bilateral sagittal splitting technique described by H. Obwegeser. Between 1998 and 2003, 24 patients who required orthognathic surgery were treated this way in our department. In cases of major jaw discrepancy (2 cases) bimaxillary surgery was performed by using a Le Fort I osteotomy in addition. In 1 case a maxillary impaction was applied to correct a “gummy smile” and in another case a deformation of the maxilla was corrected. In another case the maxilla was distracted to correct micrognathia of the upper jaw.

Results: All patients had good facial appearance and oral function after treatment.

Conclusions: Orthognathic surgery is a multifactorial process which requires an interdisciplinary approach to the planning of treatment for each patient.

VERTICAL RAMUS OSTEOTOMIES FOR CORRECTION OF CLASS III DYSGNATHIAS: TWO YEAR FOLLOW UP

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Introduction: Vertical ramus osteotomy was introduced in our department as an alternative method for correction of class III malocclusion in the year 2000 applying the Norwegian modification recommended by Prof.Thomas Lyberg.

Material and methods: Twenty eight vertical ramus osteotomies have been performed using an extraoral approach by 4 surgeons (retromandibular approach, 3 cm skin incision, L shaped osteotomy, and rigid bone fixation). 26 patients underwent bimaxillary and 2 single jaw operations. The greatest set back was 10 mm. Light elastics were used from 1 to 4 weeks postoperatively. Postoperative orthopantomograms and lateral cephalograms were taken and analyzed right after the operation, 2 months, 6 months, 1 year and two years postoperatively. Clinical examinations of the patients were performed at the same times using special charts for evaluating patient’s complaints and objective findings of the TMJ, occlusion, masticatory muscles and relapse.

Results: Three patients were re-operated during the first week postoperatively to correct malocclusion. Two patients had minor postoperative hematomas and parotid swelling. Maximum interincisal distances were 38 – 60 mm postoperatively. 6 patients had unilateral TMJ sounds, one patient had slight dislocation of the disc and another patient an unilateral slight atrophy of the masseter muscle. No TMJ pain or musculoskeletal disturbances were diagnosed. No infection or nerve damage were found. There was a slight relapse of 1-2 mm in 4 cases that was compensated by dentoalveloar settling. All patients were satisfied with the outcome of the operation.

Conclusions: This operation is significantly less difficult and time consuming than the sagittal split ramus osteotomy for mandibular setback. Bone healing was established after 6 months. After 1 year more matured bone was found in the osteotomy line. Our first results at 2 years using this method showed only few complications and a high predictability of the postoperative outcome. It appears to be a good option for patients with TMJ problems and mandibular sagittal excess.

THE INFLUENCE OF PRE- AND INTRAOPERATIVE CONDYLE POSITIONING ON DISC POSITION IN ORTHOGNATHIC SURGERY

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Objective. In this study the structures in the temporomandibular joint following bilateral sagittal split osteotomy of the mandible for orthognathic surgery were investigated. It was looked for the influence of pre- and intraoperative positioning of the condylar process into the centre of the fossa articularis on preventing TMJ changes postoperatively.

Study design. A total of 28 patients with mandibular retrognathia underwent bilateral sagittal split osteotomy for mandibular advancement. In one group of 14 patients (28 TMJs) the condyles were placed into the centre of the fossa pre- and intraoperatively by using plates to fix the small fragments, in the other group (n=14) this was not done. Pre- and postoperative differences were calculated by evaluating MRIs.

Results. In 15 TMJs (54 %) of the non-positioning group the disc position changed from physiologic to anterior disc displacement with or without reduction postoperatively. In the positioning group such changes were found in only 3 TMJs (11 %) postoperatively ($p < 0.05$).

Conclusion. The results revealed that fixing the condylar process in the centre of the fossa articularis intraoperatively before bilateral sagittal split osteotomy may prevent intraarticular derangement postoperatively.

DER EINFLUß EINER CHIRURGISCHEN RÜCKVERLAGERUNG DES UNTERKIEFERS AUF DAS MYOFUNKTIONALE OROFAZIALE SYSTEM – EINE PROSPEKTIVE ANALYSE BEI PATIENTEN MIT EINER MANDIBULÄREN PROGNATHIE

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Einleitung: Die plötzliche Veränderung der räumlichen Relation des Oberkiefers zum Unterkiefer führt nach einem dysgnathiechirurgischen Eingriff zu einer Veränderung der funktionellen Regelkreise im Bereich des Gesichtes. Eine Physiologisierung der Bissverhältnisse nach einem solchen Eingriff könnte zu einer Linderung myofunktioneller Beschwerden führen. Das Ziel dieser Arbeit bestand in der Überprüfung dieser These. Material und Methode: Bei 26 Patientinnen mit einer mandibulären

Prognathie, die sich einer Unterkieferrückverlagerung nach Obwegeser-Dal Pont unterziehen lassen mussten, wurde präoperativ und 6 Monate postoperativ die Kiefergelenkfunktion sowie der Tonus des M. masseter klinisch bewertet. Zusätzlich sind auch die Lippenkraft gemessen und das Schluckmuster sowie die Zungenruhelage mittels der Payne-Technik bestimmt worden. 40 Patienten mit einer Neutralokklusion bildeten die Kontrollgruppe. Die statistische Analyse erfolgte mittels Chi-Quadrattest. Als Signifikanzniveau wurde $p<0,05$ gewählt.

Ergebnisse: Die untersuchten Parameter zeigten 6 Monaten postoperativ vermehrt physiologische Werte und entsprachen damit der Kontrollgruppe. Zum Beispiel betrug die Lippenkraft im Durchschnitt präoperativ 0,56 kp, 6 Monate später 1,04 kp (Kontrollgruppe: 1,2kp). Dieser Unterschied war signifikant.

Schlussfolgerung: Eingriffe im Rahmen der Dysgnathiechirurgie können pathologische Bewegungsmuster im MKG-Bereich korrigieren. Eine zusätzliche myofunktionelle Therapie wirkt sich dabei günstig aus.

ERGEBNISSE NACH SEKUNDÄRREKONSTRUKTION BEI KOMPLEXEN MITTELGESICHTSSCHÄDELVERLETZUNGEN

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Bei ausgedehnten Verletzungen des Mittelgesichts ist manchmal keine optimale Primärversorgung möglich, so dass sich sekundäre Rekonstruktionen notwendig machen. Bei 18 Patienten wurde aufgrund von Ästhetik, Asymmetrie, Bulbusfehlstellung und Diplopie die Indikation zur Rekonstruktion gestellt. Es wurden Visus, Binokularfunktion und Enophthalmus sowie das ästhetische Resultat und die Zufriedenheit des Patienten vor und nach der Rekonstruktion beurteilt. Als Verfahren kamen Osteotomien (Jochbein, Jochbogen, Naso-Orbito-Ethmoidkomplex, Oberkiefer, Nase) sowie Augmentation (Orbitawände, Nase) zum Einsatz. Die Hälfte der Patienten erhielt mehrere rekonstruktive Verfahren. Bei 13 der 18 Patienten wurde die Binokularfunktion beurteilt. Vier Patienten hatten vor der Rekonstruktion keine Doppelbilder und gaben postoperativ ebenfalls keine an. Bei 5 Patienten hatte sich die Diplopie gebessert, und bei 4 Patienten konnte der präoperative Befund nicht verändert werden. Eine Verschlechterung war in keinem Fall aufgetreten. Ein signifikanter Enophthalmus >2mm lag bei 12 der 18 Patienten präoperativ vor, postoperativ hatten noch 4 Patienten einen Enophthalmus.

Nach der Rekonstruktion wurde das ästhetische Ergebnis mit „gut“, „befriedigend“ oder „unbefriedigend“ bewertet. Bei 12 Patienten machten sich aufgrund des unbefriedigenden Resultates noch weitere Korrekturen (Narbenkorrektur, Blepharoplastik, erneute Augmentation) notwendig. Zum letzten Kontrolltermin hatten 6 Patienten ein gutes ästhetisches Resultat, 7 ein befriedigendes und 5 ein unbefriedigendes Resultat. Nach Befragung waren 5 der 18 Patienten trotz mehrfacher Korrekturen nicht mit dem Resultat zufrieden.

Limitierender Faktor für ein gutes ästhetisches und funktionelles Ergebnis und somit für die Zufriedenheit des Patienten ist das Weichgewebe.

DIE PLASTISCHE REKONSTRUKTION BEI SKALPDEFEKTEN MITTELS UNTERSCHIEDLICHER PLASTISCHER METHODEN

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Einleitung

Ursachen von Skalpdefekten sind vorrangig Traumata sowie benigne und maligne Tumoren.

Auf Grund der begrenzten Verschieblichkeit der Kopfhaut sind Defekte ab 2 cm Durchmesser nicht primär zu decken. Weiterhin ergibt sich das Problem, dass das spezialisierte Gewebe der Kopfhaut nicht durch alle Methoden der plastischen Chirurgie ersetzbar ist.

Material und Methoden

Im Zeitraum von 1992 – 2002 wurden an der Klinik für Mund-, Kiefer- und Gesichtschirurgie/Plastische Chirurgie der FSU Jena Skalpdefekte bei 23 Patienten versorgt. Dabei waren 3 Verbrennungen, 3 Verletzungen, 5 BCC, 4 SCC, 1 Neurofibrom, 2 blaue Naevi, 1 malignes Schwannom, 2 Dermatofibrosarkome, 2 Spiegler-Tumoren für einen Skalpdefekt über 5 cm ursächlich.

Zur Defektdeckung wurden eingesetzt:

-Spalthaut- bzw. Vollhauttransplantate,
-Rotationslappenplastik im Sinne Bananenschalenplastik,
-Expandertechnik,
-mikrochirurgische Lappenplastik.

Bei zwei Patienten handelte es sich um Tumoren (malignes Schwannom, Basalioma terebrans), wo ein kombinierter Skalp-, Kalotten- und Duradefekt vorlag.

Ergebnisse

Die Differentialdiagnostische Indikation zur Anwendung dieser Methoden wird an Fallbeispielen erläutert. Dabei wird besonders auf die Defektdeckung bei Tumoren, die das Neurocranium tangieren, eingegangen.

NASOLABIAL FLAPS IN RECONSTRUCTION OF THE ORAL CAVITY

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Reconstruction of the floor of the mouth with transbuccal nasolabial flap was first described by Cohen and Edgerton in 1971 and later recommended by Cramer and Culf. We retrospectively studied 17 patients (13 males and 4 females, age 28 – 82 years) who had undergone excision of oral cancer and reconstruction using inferiorly based nasolabial flaps between 1993 and 2001. The tumors were located in the floor of mouth, tongue, lower alveolus, lower lip or the commissure with T1 tumors in 3 patients, T2 tumors in 8 and T3 tumors in 6 patients (N0 6 patients, N1 6 patients, N2a 5 patients). Unilateral flaps were used for intraoral defects in 8 and bilateral flaps in 4 patients in a two stage procedure. For lip and commissural defects in 5 patients the flap was transposed in a single stage. 2 patients underwent concomitant (ipsilateral) functional, 4 ipsilateral supraomohyoid and 3 bilateral neck dissections. In 6 cases the facial artery had to be ligated. There was no total flap necrosis, partial necrosis occurred in 3 patients. Out of the 6 cases in whom the facial artery was ligated, only 1 partial flap necrosis was noted. The flaps were divided 3 – 4 weeks postoperatively. 4 patients developed a locoregional recurrence, 2 of which were treated surgically. 10 out of the 17 cases had good speech, 5 patients intelligible speech and 2 patients a non–intelligible (poor) speech after complete wound healing. All were able to swallow both solid and liquid food. Hypertrophic scars were observed in 3 donor sites, orocutaneous fistulae were seen in 1 patient which required surgical closure. The lips reconstructed with nasolabial flaps were mobile, contacted the opposite lip in action, participated in all dynamic movements, and retained liquids in the mouth even under the highest pressure. Mobility and sensibility in the newly formed lip prevented the uncontrolled dribbling of liquid and saliva; no patient had drooling.

DIE REKONSTRUKTION PERFORIERENDER WANGENDEFEKTE MIT EINEM PRÄLAMINIERTEN OBERARMLAPPEN

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Bei der Resektion von ausgedehnten Tumoren im Bereich der Wange, der Oberlippe oder der Nase entstehen perforierende Defekte, die den Ersatz von Haut und Schleimhaut notwendig machen. Für die adäquate plastische Rekonstruktion sollte die Rückseite des gestielten oder mikrochirurgischen Hautlappens mit Schleimhaut beschichtet sein. Wir verwendeten den prälaminierten lateralen Oberarmlappen zur Deckung extra-intraoraler Defekte. Eine Woche vor der geplanten Tumoroperation wurde der Lappen am Oberarm teilweise umschnitten und die Rückseite dargestellt. Auf eine Silikonfolie wurden Mundschleimhauttransplantate vom Gaumen aufgelegt und fixiert. Die Folie wurde auf die Lappenrückseite aufgebracht und die Wunde anschließend

verschlossen. Nach der Tumorresektion wurde der prälaminierte Lappen gehoben und der Wangendefekt gedeckt. Die Silikonfolie diente zum Schutz der noch einheilenden Schleimhauttransplantate und wurde mit dem Rand des Defektes in der Mundschleimhaut vernäht. Nach der mikrochirurgischen Anastomosierung heilte das Transplantat komplikationslos ein. Die Silikonfolie wurde nach drei Wochen entfernt. Die Narbenbildung in der Mundhöhle war vergleichsweise gering und die Mundöffnung nur unwesentlich eingeschränkt. Der prälaminierte Oberarmlappen eignet sich gut zum Ersatz von Haut und Schleimhaut bei perforierenden Defekten im Gesichtsbereich.

FREE FLAP RECONSTRUCTION FOR DEFECTS IN THE HEAD AND NECK AREA - A CLINICAL REVIEW OF 20 YEARS

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Introduction:Tissue defects in the head and neck region have long been a challenge for reconstructive surgery. Substantial patient morbidity and high surgical complication rates were common consequences of pedicled, staged flaps. During the last three decades, tremendous progress has been made in the field of reconstructive surgery, in particular due to the introduction of free vascularized tissue transfer. Various flaps are available today for defect repair of the oral cavity/oropharynx.

Patients and Methods: Between March 1982 and December 2002 a total of 570 free flap reconstructions were performed in 529 patients. Among these 480 patients suffered from head and neck tumors of various types. In 49 patients free flap reconstructions were performed for other conditions like trauma, osteoradionecrosis or congenital defects.

Results: Regarding donor site selection the free jejunum predominated with 181 reconstructions (32,9%), followed by the radial forearm flap in 170 reconstructions (30,9%). Oral cavity and oropharynx were the predominant recipient sites in 340 patients (61%). In 80% the reconstructions were performed immediately following resection of the tumor. The complication rate is comparable with those reported in the literature ranging from 2% to 12%. In our group of patients surgical re-exploration was necessary in 39 patients (7,3%); the total failure rate with flap necrosis was 6%. The overall success rate therefore was 94%. At our institution the radial forearm flap, the latissimus dorsi flap, and the fibula have become the workhorse donor sites for most defects. Significant risk factors for developing local graft-related complications were age =60 years (p=0.021) and surgery time = 8 hours (p=0.043).

Conclusion: In advanced head and neck tumors microvascular free tissue transfer can be regarded as a "gold standard" today and is a safe and reliable procedure in carefully selected patients.

LONG-TERM OUTCOME AFTER RECONSTRUCTION OF THE MANDIBLE USING MICROVASCULAR FIBULA GRAFTS

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At present microvascular fibula transfer is a method of first choice for reconstruction of the mandible and surrounding soft tissue. A retrospective study has been carried out in order to evaluate the longterm results following this reconstructive procedure. 76 patients who have received a microvascular fibula graft for orofacial reconstruction with a follow-up of at least 12 months (12-99, mean 36 months) were enrolled in this study. The following characteristics were proven to have a positive correlation with early (up to 3 months postoperatively) or late complications respectively with partial or total loss of the graft: Kind of graft, underlying pathology, nicotine and alcohol consumption, diabetes, arteriosclerosis, radiotherapy and chemotherapy. Analysis of the patient charts was conducted using Fischer's exact test and Chi square test. A statistical positive correlation could be assessed between the features "diagnosis malignant tumor", "composite kind of flap", "nicotine consumption" as well as "pre-/postoperative radiotherapy".

SUPRAPERIOSTEAL PREPARATION OF ALVEOLAR MUCOSA FLAPS APPLYING THE WATER-JET TECHNIQUE

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Aims: Surgery of soft tissue and raising alveolar and dermal flaps 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 this technique in comparison with conventional methods.

Material/Methods: 20 pigs were operated in general anaesthesia and followed up for 40 days: In 5 juvenile and 5 adult animals mucoperiosteal oral mucosa flaps were prepared in the right upper vestibulum of the mouth using a scalpel (control group). In the study group (5 juvenile and 5 adult animals) an oral mucosa flap was reflected supraperiosteally with the jet-scalpel on the left side. All flaps were repositioned and sutured. After the follow-up period radiological, histological and histomorphological examinations were carried out.

Results: Preparation of supraperiosteal oral mucosa flaps was easy when applying the jet-scalpel. In the study group all anatomical structures were always clearly visible. The little intraoperative blood loss and the short duration of all the operative procedures were impressing. This technique made possible easy preparation of all selected tissues even when sparing the periosteum. No postoperative complications were observed. Microscopical and histochemical findings in the study group have proven that selected tissue structures were less traumatized when compared with the control group. Computed histomorphometrical analysis revealed – to our surprise - an increase in periosteally based formation of bone following water-jet surgery.

Summary: In juvenile as well as in adult animals the water-jet technique seems to be a real alternative to raise alveolar tissue flaps. This may be of interest for cleft surgery.

RELATIONSHIP BETWEEN SWALLOWING AND GAS EXCHANGE DURING DAY AND NIGHT FOLLOWING ORAL TUMOR RESECTION

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Aims:

1. To evaluate arterial oxygen saturation and pulse rate during swallowing and during sleep, after tumour resection with or without reconstruction
1. To estimate swallowing efficiency and quality of sleep in patients with the lowest SpO2 level

Patients and methods:

- 35 patients were investigated after resection of lateral, anterior or medial parts of the oral cavity by means of pulse oxymeter during 1,5 hour daytime and overnight
- Rtg-video swallowing investigation (Dodd's method) was made in 16 patients
- Polysomnography (EEG,EOG,EKG) was made in 9 patients

Results: A significant decline in SpO2 levels was found during swallowing when compared with prefeeding SpO2 levels in all patients. After lateral mouth zone resection SpO2 levels during swallowing were the lowest. A significant decline in SpO2 levels during the night was found in most patients. After anterior zone of mouth resection SpO2 levels during sleep were the lowest. Rtg-video investigation of swallowing was inefficient in 6 out of 16 patients. In these synchronisation of pharyngeal phase activities was estimated. Prolonged apnoea did not prevent aspiration. There weren no relations found between incidence of aspiration and range of tumour excision in these 6 patients. Sleep disturbances were diagnosed in all 9 patients investigated. There were: short or absent III, IV and REM phases of sleep, prolongation of I and II phases. Obstructive sleep apnoea syndrome was diagnosed in 2 patients.

CIRCULATORY DISTURBANCES AND DYSPNOEA RESULTING FROM RESECTION OF ORAL CAVITY STRUCTURES IN CONJUNCTION WITH RESECTION OF TUMORS

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Surgical treatment of oral cavity neoplasms consists of resection of the tumor surrounded by a healthy tissue margin.The removal of tissues may lead to breathing disturbances such as apnoea resulting from the fact that the airways and the upper part of the digestive tract meet in the lower part of the throat. Apnoea episodes cause a drop in the arterial oxygen saturation and may lead to symptoms of myocardial ischaemia.

This study was aimed at an objective, qualitative and quantitative evaluation of circulatory disturbances and dyspnoea after resection of oral cavity structures, suprahyoid muscles and hyoid bone displacement. For evaluating the abovementioned disturbances spirometric and pulsoximetric examinations and continuous ECG monitoring (ECG Holter) were carried out. Breathing was also examined in sleeping patients. 50 persons were divided into three groups according to the type of structures removed: lateral part of mandible; mental part of mandible; part of tongue. The spirometric examination consisted of measuring the lung capacity (air composition) as well as the inspiratory and expiratory flow rates. Pulsoximetry is a relatively simple, cheap and non-invasive sort of examination used for determining both the degree of saturation of erythrocyte haemoglobin with oxygen and the pulse. A continuous electrocardiographic monitoring may reveal circulartory disturbances and allow a quantitative assessment thereof. Breathing dysfunctions in sleeping patients make it possible to diagnose obstructive sleep apnoea syndrome.

The results were:

1) key spirometric parameters both static and dynamic dropped;

2) pulsoximetric examination revealed an increased incidence of blood desaturation episodes and a decrease in minimum saturation level;

3) most patients suffered from obstructive sleep apnoea;

4) major functional disorders occurred in patients who had undergone surgical treatment of the anterior part of the oral cavity.

DIFFICULTIES IN DIAGNOSIS AND TREATMENT OF ORBITAL TUMORS – INTERDISCIPLINARY ASPECTS.

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The objective of this paper was to present the authors' experience in the field of diagnosing and treating orbital tumors. 144 patients (56 men and 88 women) were treated in the Department of Maxillofacial Surgery at the Pomeranian Medical Academy in Szczecin in the years 1990-2001. The reason for surgical treatment was a suspicion of existence of a tumor in the orbital area. All patients underwent an ophthalmological examination followed by neurological and laryngological ones where appropriate. In 128 cases, it was necessary to carry out radiographic examinations of the orbital cavities such as: ultrasound, Doppler ultrasound, computerized tomography, magnetic resonance imaging and plain X-ray radiography. The patients were divided into three groups according to tumor location. To arrive at a final orbital tumor diagnosis is rather difficult. There is a wide variety of clinical symptoms constituting obstacles to early recognition of tumor type. The average period from occurrence of the first clinical symptoms to establishment of the final diagnosis was 33 months. In about 98% of cases, the computer tomography allows confirming the existence of pathological masses in the orbital cavity. The intra- and postoperative macroscopical observations were of a key importance for verifying the diagnoses. These observations confirmed the diagnosis in 97 % of the patients.

EPITHETISCHE REHABILITATION MIT IMPLANTATEN IM TRANSPLANTAT BEI AUSGEDEHNTEN GESICHTSDEFEKTEN

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Problem:

Die Rekonstruktion bei ausgedehnten Gesichtsdefekten im abwehrschwachen Lager infolge Radiatio stellt höchste Ansprüche an die Wiederherstellungstechnik. Darüber hinaus wird bei ausgedehnten Gesichtsdefekten die Verankerung konventioneller Epithesen häufig durch Retentionsmangel verhindert. Ohne knöchernes Lager sind Implantate nicht zu fixieren.

Methode:

Die Befestigung von Augenschalen und Gesichtsepithesen mit dentalen Implantaten bietet mit sicherer Verankerung ein breites Spektrum der fazialen Rehabilitation in Form, Ästhetik und Funktion. Durch den Einsatz der mikrochirurgischen Technik wird durch ausgedehnten Knochen- und Weichgewebstransfer auch im abwehrschwachen Lager die sichere Verankerung der Implantate ermöglicht. Zur Anwendung kommen das mikrovaskulär reanastomosierte Beckenkamm-, Fibula- und Skapula-Transplantat.

Fallvorstellungen:

Es werden einige exemplarische Fälle demonstriert:

1. Epithetische Verankerung einer Gesichtsepithese mittels mikrovaskulären Skapulatransplantats bei ausgedehntem Gesichtsdefekt nach radikaler Resektion eines Kieferhöhlenkarzinoms mit Exenteratio orbitae
2. Augenschalenverankerung im mikrovaskulären Beckenkammtransplantat bei Orbitadefekt nach jugendlicher Radiatio eines malignen Orbitahämangioepithelioms
3. Ohrepithese bei Nichtanlage aufgrund einer Dysostosis mandibulofacialis Franceschetti
4. Nasen-Augenepithese nach Resektion eines fortgeschrittenen Oberkieferkarzinoms
5. Nasenepithese nach Ulcus terebrans

Fazit:

Die Verankerung von Gesichtsepithesen im abwehrschwachen Lager kann durch die Verankerung auf dentalen Implantaten ermöglicht werden, wenn das Fundament durch eine mikrovaskuläre Knochentransplantation geschaffen wurde.

BIOMATERIALIEN IN DER KIEFER- UND GESICHTSCHIRURGIE - EINE ÜBERSICHT

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Für die Versorgung von Mittelgesichtsfrakturen und zur Überbrückung von Knochendefekten stehen zahlreiche Transplantat- und Implantatmaterialien zur Verfügung. Die Entwicklung von Implantaten ist ausgesprochen komplex und interdisziplinär. Die Materialauswahl, die mechanischen, chemischen und biologischen Aspekte erfordern eine ganzheitliche Betrachtung des Implantatsystems. Die Erfahrungen mit der Verwendung von natürlichen Transplantaten, Metallimplantaten, nichtresorbierbaren und resorbierbaren Keramik- und Polymerimplantaten und deren Vor- und Nachteile zeigen, daß am Ende immer eine Kompromißlösung gefunden werden muß. Kein Material kann allein den Anspruch auf Erfüllung der vielseitigen Anforderungen an das Implantat erheben. Es sind daher Implantatsysteme notwendig, die durch Materialkombination und Design dem jeweiligen medizinischen Anforderungsprofil angepaßt werden können.

Gegenüber den nichtresorbierbaren Implantatmaterialien bieten die bioresorbierbaren Implantatmaterialien Vorteile wie z. B. durch die Möglichkeit der Übernahme der Implantatfunktion durch neu gebildetes Gewebe. Bei Kindern können durch den Festigkeits- und Steifigkeitsverlust -im Zuge der Degradation - Schädeldeformationen während des Wachstums vermieden werden. Eine Zweitoperation zur Entfernung der Implantate entfällt aufgrund ihrer Metabolisierung im Körper.

FILLING BONE DEFECTS WITH A NEW KIND OF COMPOSITE CERAMICS – FIRST RESULTS OF A LONGTERM INVESTIGATION

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Summary
Purpose: Up to now hydroxyapatite (HA) and ß-tricalciumphosphate (ß-TCP) ceramics are routinely sintered at temperatures between 1100ţ and 1500ţ Celsius. Our new calcium-ceramic is fabricated by a sol-gel-process at only 120ţ Celsius. The aim of this investigation was to test the biodegradation of and the induction of bone formation by this material .

Material and Methods: 18 one year old Goettingen minipigs were divided into three groups. In all 3 groups critical size defects (>5ccm) in the mandible were filled by different materials (group 1- 40% ß-TCP plus 60% HA; group 2- only HA; group 3- control, without any ceramics). Eight months postoperatively clinical, histological and morphological investigations of the former defects were made.

Results: In groups 1 and 2 biodegradation of ceramics was considered to be very good with resorption rates of more than 96% eight months postoperatively. Pure HA (group 2) seems to have been slightly better resorbed (rate of 99%) than the combination of HA and ß-TCP (group 1; 96%; p=0.093).

Conclusion: Calcium phosphate ceramics, produced by a sol-gel method at 120ţC seems to be suitable for filling bone defects and is of interest for orthopedic surgery, traumatology, craniomaxillofacial surgery and dentistry.

ADSORPTION OF PROTEINS ON THE SURFACE OF HYDROXYAPATITE CERAMICS

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Hydroxyapatite (HA) is a prevailing compound of bone tissue and also the main arteficial bone substitute. The use of HA ceramics as biotechnological material, e.g. in processes of synthesis in the living body, has already been mastered. Complicated physicochemical processes, including adsorption, take place on the interfaces of implants. In this paper it is reported upon albumin adsorption on HA surfaces.

HA ceramics are synthesized at the Biomaterials R&D Laboratory of Riga Technical University. Adsorption on the surface of powder (Ų 0.16 ± 0.5 mm), granules (Ų 0.5 ± 1.0 mm, Ų 1.0 ± 2.5 mm) and ceramic tiles (15×10×2 mm) was investigated. The porosity of HA ceramics was between 33 and 45%. Bovine serum albumin (BSA) was chosen as model protein and amilosubthilyne as model enzyme for adsorption of proteins. Adsorption was measured as adsorption capacity, which was calculated on one weight unit of HA. The calibration curve of BSA and amilosubthyline was taken before each measurement. The purpose of the experiment was to determine optimal pH values for adsorption, to investigate adsorption kinetics and isotherms, desorption, as well as to evaluate the influence of saline ions. Increasing concentration of albumin increased the capacity for adsorption. There was no significant difference between HA powder and HA granules. When adding NaCl to the BSA solution the capacity of adsorption slightly declined. By adding fluorine ions to amilosubthyline, the results of adsorption rapidly declined to 28%. It was found that adsorption capacity started to decrease at pH 7. Therefore, the pH value for desorption was chosen at pH>8. Absolute desorption was not reached in any of the experiments. Intensive adsorption of albumin and amilosubthyline took place during the first 30 minutes, reaching a maximum capacity. During the next half an hour stabilization and the maximum of adsorption capacity was reached. This saturation level was kept until the end of the experiment (2 hours). A significant slowdown of these processes in the presence of fluorine ions can be explained by the tendency of moisturized fluorine ion to join the basic groups of albumin, thus diminishing their capacity to adsorb to surfaces.

THE OUTCOME AFTER ONE STAGE SINUS FLOOR ELEVATION WITH HYDROXYAPATITE GRANULES AND SEMADOS IMPLANT INSERTION

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Hydroxyapatite (HA) was produced in the RTU Laboratory of Biomaterials as a pure calcium phosphate, synthesized by the reaction of Ca(OH)2 and H3PO4, in aqueous solution followed by calcination of powder at 800°C for 1h. After that it was passed and sintered for 1h at 1150-1200°C in blocks and ground to Ų 0,5 ± 1.0 mm granules. Porosity of such biomaterial is 35-45% and Ca/P ratio is 1,66 ± 0,02. During the years 1997 – 2003, 142 SEMADOS implants were inserted into 79 sinuses of 71 patients as one stage operation. The height of residual alveolar bone was at least 5 mm. The SEMADOS Ų 3,75 mm implants (89) inserted into the residual bone by approximately one third to one half and one half to two thirds into the augmented sinus were 13 mm long in 34 cases, 11,5 mm in 21 cases, 15 mm in 20 cases, and 10 mm in 14 cases. 47 implants were 3,25 mm and 6 implants 4,5 mm in diameter. The primary stability (ratchet's torque force) was 15-30 N/cm². No serious complications were observed in wound healing or from the sinus. The second stage surgery was done 6,1 ± 2,4 months later. At this stage three implants were not osseointegrated and taken out followed by repeated augmentation with HA granules. The reason of implant loss was poor bone quality, i.e. soft and hypervascular bone. Evaluation of radiodensity in the residual alveolar bone and the augmented sinus floor confirmed increasing optical density in both of them. One stage insertion of dental implants and sinus floor elevation with HA granules could be a method of choice in implant-based prosthetic rehabilitation of posterior maxilla when there is enough residual alveolar bone to provide primary stability of implant. This in turn would provide the appropriate functional loading in the molar region of the maxilla. Elaborately planned functional load will provide maintenance of stability and possibly increased bone to implant contact. However, excessive loading may lead to bone loss and/or implant failure.

PROSPECTIVE 8-YEAR ANALYSIS FOLLOWING INSERTION OF 137 ZL-DURAPLANT IMPLANTS

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Aim: To assess the success of ZL-Duraplant implants after prosthodontic rehabilitation regarding various treatment indications.

Patients and methods: A prospective study was carried out to analyse the long-term results in 65 patients after insertion of 137 ZL-Duraplant implants over a period of 8 years. The most frequent indications were distally edentulous area (54.6 %) and singular missing tooth (31,2 %).

Results: Five years after insertion 97 % of all implants used for prosthodontic rehabilitation were in good function and did not reveal any clinical sign of inflammation.

Conclusions: The ZL-Duraplant implant system showed a good survival rate and can be recommended for various treatment indications. Implants with a diameter of 2,9 mm are suitable for atrophic alveolar ridges and for frontal teeth.

BIOKOMPATIBILITÄT VON DENTALMATERIALIEN: IN-VITRO-UNTERSUCHUNGEN

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Einleitung: In-vitro-Untersuchungen mit Zellkulturen stellen eine Möglichkeit zur Beurteilung der Biokompatibilität von zahnärztlichen Werkstoffen dar. Verschiedene Dentalmaterialien wurden mittels Direktkontakttestung und Testung von Extrakten hinsichtlich ihrer Biokompatibilität mit NIH-3T3-Zellkulturen untersucht. Dabei wurden sowohl „unbehandelte" als auch künstlich

gealterte Prüfkörper getestet.

Methoden: Direktkontakttest: 5 x 103 NIH-3T3-Zellen wurden pro Well einer 24-Well-Platte ausgesät. In die Zellsuspension wurden die Prüfkörper gelegt und der Versuchsansatz für 48 Stunden bei 37 °C, 5 % CO2 und 95 % rel. Feuchte inkubiert. Für die Extrakttestung wurden die Prüfkörper 14 Tage in Kunstspeichel gelagert und die Extrakte in verschiedenen Konzentrationen mit NIH-3T3-Zellen für 2 Tage inkubiert. Zur Bestimmung der metabolischen Aktivität nach Inkubation wurde ein MTS-Test duchgeführt [Cell Titer 96. AQueous MTS Reagent Powder (Promega)]. Die Prüfkörperherstellung erfolgte in PTFE-Gießformen, welche zur Vermeidung einer „inhibierten" Schicht beidseitig mit einer lichtdurchlässigen Hostaphan-Folie abgedeckt wurden. Die Aushärtung wurde mit einem UV-Halogenlichtgerät Polofil-Lux (VOCO GmbH) mit einer Lichtintensität von 750 mW/cm2 durchgeführt. Jede Seite wurde jeweils 60 s belichtet.

Ergebnis: Die hier gewählten In-vitro-Untersuchungsmethoden Direktkontakttest und Extrakttest mit anschließender Beurteilung der metabolischen Aktivität der verwendeten Zellen mittels MTS-Test erwiesen sich als geeignet für die Beurteilung der Biokompatibilität von zahnärztlichen Werkstoffen. Der Extrakttest ermöglicht zusätzlich eine Beurteilung der Zytotoxizität in Abhängigkeit von der Konzentration. Es konnte zum Teil eine deutliche Verbesserung der Zellverträglichkeit durch eine Alterung der Probekörper über 14 Tage in Kunstspeichel nachgewiesen werden.

BIPHOSPHONATE TREATMENT FOR METASTATIC BONE LESIONS

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Osteolytic bone lesions are a major cause of morbidity in patients with multiple myeloma or metastatic solid tumors such as breast and prostate cancer. Until recent years, local irradiation as well as surgery were the only treatment options available for osteolytic bone lesions. However, our understanding of the pathogenesis of bone metastasis has increased substantially during the past decade and new treatment options such as biphosphonates became available.

This is a review of the RANK/RANKL/osteoprotegerin system. Its interaction with other cellular mechanisms is described by which malignant tumor cells achieve osteolysis, and how bisphosphonates can be used to block this. There also is supporting evidence that bisphosphonates are the treatment of choice for patients with bone complications related to osteolysis and that they positively influence survival. Preclinical and indirect clinical data support direct antitumor activity of biphosphonates. Finally, possible future developments for a tailored therapy and for preventing osteolytic bone disease are discussed.

RECONSTRUCTIVE SURGERY FOR ANKYLOSIS OF THE TEMPOROMANDIBULAR JOINT

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This study was aimed at evaluating the outcome including joint function, occlusion and aesthetics following reconstructive surgery in patients operated more than one year ago for ankylosis.

Between 1997 and 2002 10 patients (6 men, 4 women) aged 11 – 32 years were operated for TMJ ankylosis. Trauma was the cause in six and suppurative arthritis in four cases. In 9 cases a preauricular and/or submandibular approach was chosen for a wide resection of bone including condyle, coronoid, and upper part of ramus followed by smoothing the residual glenoid fossa and reconstruction of the ramus with a costochondral graft. In one case with posttraumatic extraarticular ankylosis simple coronoidectomy was the only treatment. In some patients a contralateral coronoidectomy, sagittal split, vertical ramus or inverted L-osteotomies were performed as supplementary operations.

As second stage operations for aesthetic purposes, chin osteotomy (2) and hydroxyapatite bloc implantation (2) for angle and/or ramus augmentation were performed. In six cases postoperative orthodontic treatment was applied.

Long-term results of this treatment were evaluated using a questionnaire for TMJ patients. Two patients complained about crepitation, slight pain at maximal opening of mouth. All patients were satisfied with the amount of the mouth opening which was between 32 and 54 mm and depended upon age, body height and body mass. Laterotrusion was 2 – 10 mm and more but limited to the ankylosis side. Angle class I occlusion was noted in 6 cases, class II in 3 and cross bite in 2 cases. Some facial asymmetry remained in all patients. Wide release of bony structures with full and easy opening of mouth on the operation table, reconstruction with a costochondral graft, supplementary osteotomies, augmentations and orthodontic treatment resulted in good functional and suitable aesthetic long-term outcome. As a rule the patients' satisfaction was better than objective evaluation of dentofacial morphology, function and aesthetic result.

THE RESULTS OF SURGICAL TREATMENT OF CONGENITAL TEMPOROMANDIBULAR JOINT ANKYLOSIS

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Introduction. Congenital ankylosis of the temporomandibular joint (TMJ) is rare and usually found with hemifacial microsomia. The treatment goals are re-establishment of jaw mobility, correction of facial asymmetry and of occlusion. Simple mandibular osteotomies allow only improvement of mouth opening, while leaving occlusion and facial asymmetry unchanged.

Purpose. The purpose of this study was to evaluate the effectiveness of costochondral grafts in the treatment of TMJ ankylosis with hemifacial microsomia.

Material and methods. Between 1997 and 2001 5 children with TMJ ankylosis have been operated upon, 2 of them had bilateral pathology, 3 an unilateral ankylosis with hemifacial microsomia. The age varied from 7 to 9 years. In all cases the ankylotic masses of the affected joints were dissected, the height of defect measured and appropriate autologous costochondral transplants rigidly fixed to the ramus. Postoperatively rehabilitation of jaw mobility was aimed at using mouth opening exercises with Therabite® .

Results. In all cases a significant improvement of facial symmetry and occlusion was noted, remaining stable for the whole postoperative period (2 – 6 years). But the reconstructed TMJ mobility was sufficient only for 1 year after surgery. The symptoms of re-ankylosis progressed

in all the operated joints. Despite of good aesthetical appearance suggesting growth of the costochondral transplant, all the joints had to be reoperated because of severely reduced mouth opening. No additional transplantation was needed and articular surfaces were recreated with the existing bone in place. After the second operation joint mobility was reestablished and facial symmetry and occlusion remained acceptable.

Conclusions. Costochondral reconstruction of the ascending ramus in case of ankylosis with hemifacial microsomia gives good aesthetical results with significant improvement of occlusion. The recurrence of ankylosis is expected in all joints requiring secondary repair. This asks for further research in the treatment of congenital TMJ pathology, developing surgical methods resulting in long-term stable results of jaw mobility, facial symmetry and correction of occlusion.

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 degrees of cleft formation make classification difficult and require individually adjusted surgical strategies. If the neurocranium is involved in the cleft formation or severe dysmorphia is affecting the upper airway, intensive postoperative care is usually necessary. This paper reviews our experience in surgical management of rare facial clefts under Third World conditions applied within twelve charity missions in Africa,

Asia and Central America. 13 children out of a total of 351 patients treated with a cleft lip, alveolus and palate suffered from rare complex facial clefts. Among these there were 6 lateral clefts

(Tessier no. 7), 3 oro-nasal clefts (Tessier nos. 0 and 3), 2 oroocular clefts (Tessier no. 5) and 2 cranial clefts (Tessier no. 14).

The paper focuses on the clinical findings, preoperative diagnostics and classification of these cases. The surgical management modified for the conditions of charity missions as well as the outcome of these patients are presented and discussed.

MEDICAL HYPNOSIS IN RECONSTRUCTIVE MAXILLOFACIAL SURGERY – BASICS AND CLINICAL EXPERIENCE

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Surgical treatment of diseases in the oral and maxillofacial region under local anesthesia is quite commonly limitated by the compliance of the patient. An alternative to general anesthesia or pharmacological sedation could be the sole or adjuvant application of "medical hypnosis". With this method, both autosuggestive and ectosuggestive procedures are used for anxiolysis, relaxation, sedation and analgesia of the patient. Until now this has been used to a very limited extent only in various surgical disciplines. Statistical analysis of own data indicated differing attitudes concerning medical hypnosis in patients. Therefore the adjuvant use of this treatment option was established in this department in February 2002. So far, over 200 surgical procedures were performed under a combination of local anesthesia and medical hypnosis: oral surgery, maxillofacial surgery and plastic/reconstructive maxillofacial surgery. During these first clinical applications, 94% of all patients reported mental and physical relaxation, anxiolysis, amnestic effects and time loss of individual distinction. On the part of the surgeon medical hypnosis turned out to be a very effective, reliable and standardisable method free of side-effects, by which remarkable improvement of treatment conditions for both patient and surgeon was achievable. Consequently, the use of medical hypnosis was used more often with surgical therapy of patients. As the positive effects of hypnosis were most striking in purely soft tissue surgery, the adjuvant use of hypnosis is considered to be especially useful in reconstructive facial procedures.

ELEKTRONENMIKROSKOPISCHE UNTERSUCHUNGEN DER GLANDULA PAROTIS DES HUNDES NACH BILDUNG EINER INTRAORALEN STENOTISCHEN FISTEL DES SPEICHELDRÜSENAUSFÜHRUNGSGANGES

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In der Literatur wird nur wenig über den morphologischen Zustand der Kopfspeicheldrüsen bei Fisteln oder Stenosen der Speichelgänge berichtet. Diese Forschung ist von Bedeutung für die Auswahl der Methoden zur operativen Rekonstruktion der Speichelgänge. Es wurden in Experimenten an Hunden Speichelgangfisteln gebildet. Dabei wurden der Parotisgang von intraoral 1 cm proximal der Papille durchtrennt und der distale Abschnitt ligiert. Danach entwickelte sich eine stenotische intraorale Fistel am proximalen Abschnitt des Speichelganges. 15 Tage nach der Operation wurden elektronenmikroskopische Untersuchungen der operierten Drüsen durchgeführt und die Resultate mit einer gesunden Drüse verglichen. Dabei wurden die Struktur der zentralen alveolären Kanälchen und die lateralen Kontakte der alveolären serösen Zellen analysiert. In der Drüse mit der stenotischen Fistel des Hauptganges wurde eine deutliche Erweiterung der zentralen alveolären Kanälchen (durchschnittlich in 1 – 2 Fällen von 10 – 12 Kanälchen) gefunden. Die erweiterten Kanälchen besaßen kürzere, nicht regelrecht strukturierte Mikrovilli. Die laterale Fläche der serösen Zellen wurde in 3 Regionen eingeteilt:

1. Die laterobasale Region: mit gut ausgeprägten Interdigitationen.
2. Die lateromediale Region: mit ordinären Desmosomen. Bei Gangfistelung wurden lokale Veränderungen der Zellmembranen gefunden.
3. Die lateroapikale Region: mit der Zonula occludens, die infolge des Experiments in keinem Fall geschädigt war.

Die elektronenmikroskopische Untersuchung hat gezeigt, daß auch bei relativ leichten Störungen des Speichelabflusses die Morphologie der Parotisdrüse des Hundes beeinflußt wird. Im Lumen der alveolären Kanälchen besteht ein unterschiedlicher Grad der Adaptation an die Abflußstörungen. Bei stenotischen Fisteln des Hauptganges wies die Struktur der serösen Zellen keine wesentlichen Veränderungen auf.

POTENTIALS OF ULTRASOUND IN THE DIAGNOSIS OF MIDFACIAL FRACTURES

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The aim of this study was to evaluate the possibility for and limitation of ultrasound in the diagnosis of midfacial fractures. 81 patients with radiologically proved fractures of the facial skeleton were examined. Ultrasound was applied by using a 7.5 MHz smallpart applicator. Another 10 patients without facial fractures served as controls for normal sono-anatomical findings. The most important deficiency of using sonography in the diagnosis of midfacial fractures is the difficulty of detecting non-dislocated fractures. According to our own experience, the application of ultrasound in midfacial fractures is most useful for visualizing the zygomatic arch and the anterior wall of the frontal sinus. Thus immediate imaging after closed reduction is possible avoiding Xray exposure. Moreover, it is possible to look for fractures of the orbital margin and the nasal bones. If ultrasound is performed by an experienced investigator as the first imaging modality in suspects of facial fractures, the visualization of fracture lines can avoid conventional X-ray imaging, so that only a CT scanning is to be added if necessary. In doubtful cases an individually composed set of conventional radiographs could be the next step. This protocol may reduce the overall X-ray exposure of patients.