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## ABSTRACTS

### Topic: Orthodontic Management of Growing Patients

#### CRANIO-POSTURAL KINESIOTHERAPY IN ORTHODONTICS

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**Maryna Bilous**

**Oleg Voytovych**

*Shupik National Medical Academy of Ukraine, Department of Orthodontics, Kiev, Ukraine*

*Aim* of this work is to establish the influence of orthodontic treatment on body posture.

*Materials and method*

83 adolescents with orthodontic pathology (mean age 16 years). All subjects underwent pre- and post-treatment orthodontic examination as well as posturometric 3D assessment of sagittal and frontal planes of the back, electromyography, dynamometry, plantography, plantometry.

*Results*

We found authentic prevailing in symptoms of musculoskeletal disorders in patients with malocclusions. During orthodontic treatment we determined structural changes in body posture regarding frontal, sagittal and transversal planes.

*Conclusions*

Stomatognathic and postural systems of human body are deeply related. During orthodontic treatment not only occlusion is changed, but body posture as well.

#### POSTERIOR BOUNDED EDENTULOUS SPACE CLOSING: PROSTHODONTIC VS. ORTHODONTIC TREATMENT METHODS

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*Objectives*

Posterior bounded edentulous space with tilted, medially/distally migrated neighbor or elongated opposite tooth are common findings in elderly patients. The aim of this review was to find and evaluate all evidence-based literature about posterior bounded edentulous areas rehabilitation after premolar or molar teeth loss by fixed partially prosthetics or orthodontic tooth movement in edentulous area.

*Methods*

A systematic search of literature was conducted in electronic databases PubMed and Google scholar in English and Lithuanian languages with the keywords: Adult; Aged; Jaw, edentulous, partially; Tooth migration; Decision making. Two reviewers independently assessed a methodological quality of studies.

*Results*

17 methodologically accepted studies were found after systematic search, 3 studies were rejected because of lack of objective measurement criteria and different evaluation of results. For literature review were selected 14 studies: 4 studies included the analysis teeth tipping after premolar and molar extraction, 4 studies – health of the teeth neighbouring the space and 9 studies compared the methods of space closing or opening.

*Conclusions*

Movement of teeth adjacent to posterior bounded edentulous space for elderly patient after premolar or molar loss is not recommended, due to undesirable alveolar bone loss, root resorption and/ or possibility of gingival recession. Posterior bounded edentulous space rehabilitation by fixed partial prosthetics of fixed dental prosthetic on implant after neighbour teeth uprighting is more successful and longer-lasting treatment than closing edentulous space by orthodontic treatment methods.

**EARLY PRE-SURGICAL FABS™ ORTHODONTICS IS DIFFERENT FROM FUNCTIONAL FACIAL ORTHOPEDICS****Nico Vrijens***Senior orthodontist in the multidisciplinary "FABS Centre", Euregio region, German-Dutch-Belgian border***Introduction**

Class II division 1 malocclusion is one of the most common orthodontic problems in growing children and it occurs in about one third of the population. In Class II division 1 treatment the main goal is an increase in mandibular prognathism to a dental class I and to produce or preserve facial attractiveness.

**Material and methods**

64 subjects (32 male, 32 female), was randomly selected from the total group of 530 treated patients. T1 is the mean age in years 11,3 of the patient when the pre-treatment lateral encephalogram was made T2 is the mean age in years 12,5 when the post treatment lateral encephalogram was taken and the active TB treatment was stopped. Corresponding Bolton normative growth objects were used as control group.

As cephalometric analysis the Arnett/Gunson FAB® was used to describe FABS changes and the McLaughlin analysis for describing skeletal and dental changes.

**Results**

Facial Harmony changes: Facial angle increased significantly. Chin to nasal base, Md base to Mx base and lower lip to upper lip distance decrease significantly

Airway change: No significant statistical change in A-P direction

Skeletal-Dental: No significant statistical change or reduction in angle SNA

The angle ANB showed a statistical significant reduction mainly due to a statistically significant increase in angle SNB. A significant reduction of the Wits. Overjet reduced from 8,5 mm to 3,6 mm. Over bite reduced with 1,4 mm. No significant change of the vertical parameters. A significant decreasing of the upper incisor to palatal plane was seen – 4,1°. Also a significant increasing of the IMPA.

**Conclusions**

Even without creating an complete harmonious and balanced face, important was the fact that the correction of the bite to a class1 molar relation and overjet and overbite to normal values, were realized by extreme minor dental compensations, what makes future Orthognathic surgery for treatment of facial in-balance or OSA problems possible without extraction or de-compensation of front teeth and a second treatment with fixed appliances. But perhaps more important, it can give a nice smile and a more pleasing facial appearances, that create a real chance for adolescents on a normal pubertal social development.

**Topic: Surgical Management of Growing Patients****CONSECUTIVE MANDIBULAR DO AND ORTHOGNATHIC SURGERY FOR CORRECTION OF MANDIBULAR HYPOPLASIA IN ADOLESCENTS****Alexandre Ivanov****Georgiy Chikurov****Natalia Staricova***Central Research Institute of Stomatology and Maxillofacial Surgery, Moscow, Russian Federation***Introduction**

Deficiencies in the growth of mandible cause esthetic and functional disorders and must be corrected as soon as possible. Distraction osteogenesis (DO) is an effective method for correction mandible deficiency. However malocclusion, maxillary deformity and facial disproportions may persist after distraction. Often they are not completely correctable by orthodontics and require subsequent orthognathic surgery. An early age is the limit for reconstructive jaws surgery. Our approach was elaborated to reduce such a limit.

**Materials**

We report 3 patients aged from 14 to 17 years with unilateral (1 patient) and bilateral (2 patients) mandibular hypoplasia combined with severe malocclusion, secondary maxillary deformity. Treatment protocol included DO to correct mandibular hypoplasia (curvilinear distractor - 1 patient, single vector distractors - 2 patients), orthodontics during retention period and subsequent orthognathic surgery at the same time of distractor removal.

**Results**

The callus from 22 to 27 mm were received after the mandibular DO. The retention period was 6-8 months. The orthodontic treatment was performed to prepare dental arches for the further orthognathic surgery. All patients have undergone BSSO and Le Fort I osteotomy combined with genioplasty in 1 case. Good functional and esthetic results were achieved in all cases.

**Conclusions**

The combination of DO, orthodontic treatment and orthognathic surgery allowed to reduce the age of complete rehabilitation, to decrease the number of surgical steps and the total time of treatment. Severe mandibular hypoplasia and maxillary deformities can be corrected with mandibular DO combined with consecutive orthognathic surgery in adolescents.

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**Topic: Pre-Surgical Orthodontics****MODIFIED MINIPLATES FOR TEMPORARY SKELETAL ANCHORAGE IN ORTHODONTICS. INDICATIONS AND PRACTICAL TIPS.*****Marijus Strazdas******Albinas Gervickas****Department of Maxillofacial Surgery, Lithuanian University of Health Sciences, Kaunas, Lithuania****Introduction***

One of the most challenging problems in orthodontics is to find sufficient anchorage to achieve planned tooth movements. Temporary anchorage devices (TADs) are widely accepted. Among different types of TADs miniplates have most advantages as their fixation screws are generally placed apical to the roots, thus do not interfere with teeth movement. They can withstand bigger orthodontic power than other TADs.

***Materials and methods***

Fifty miniplates were placed in the upper jaw at the infrazygomatic crest and fifty miniplates were placed in the lower jaw between the lower canine and the lateral incisor. A total of 100 modified miniplates were placed by the same surgeon.

***Results***

Ninety eight modified miniplates could be placed with excellent primary stability. Fixation of two upper miniplates at the infrazygomatic crest with good primary stability was not feasible due to insufficient bone density and they were lost. A total of 98 modified miniplates could be used for skeletal anchorage.

***Conclusions***

Miniplates are highly effective bone anchors and their loosening is a rare occasion. Miniplates enable intrusion, distalization, and protraction of teeth, none of which can be easily achieved with traditional therapies.

## Topic: TMJ Based Orthodontic Treatment

### TREATMENT OF A PATIENT WHO HAVE ANTERIOR DISC DISPLACEMENT WITH REDUCTION USING A FIXED FUNCTIONAL APPLIANCE *FORSUS*: A CASE REPORT

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#### *Introduction*

Disc derangement disorders result from elongation of the capsular and discal ligaments coupled with thinning of the articular disc. Class II div 2 malocclusion is associated with orthopedic instability and an etiologic factor related to disc derangement. When the disc is anteriorly displaced ligaments are elongated and the condyle articulates on the retrodiscal tissues. Definitive treatment of this situation is reestablishing a normal condyle–disc relation. Functional appliances can be used as anterior repositioning splint to relocate the condyle.

#### *Materials*

Patient presenting with pain and joint sound, deviation in the opening pathway (15 years 2 months) came to the Orthodontic Department of Ege University for orthodontic evaluation. He had minimal crowding, C II div 2 dental relationship, retroclined incisor, severe deep bite and increased curve of Spee.

#### *Results*

At the beginning of the treatment leveling was carried out with a concomitant resolution of deep bite and curve of Spee. After correcting retroclined incisors, the level of joint pain was reduced. After one appointment of applying the stabilization arc wire (17x25 SS) fixed functional orthodontic appliance (*Forsus*) was used. After 9 months of using *forsus*, the complaint of patient was eliminated. Dental C I relationship was achieved.

#### *Conclusions*

Fixed functional orthodontic appliance can be used like anterior repositioning splint to protrude mandible for recapturing the disc and providing time for retrodiscal tissue to be repaired.

## Topic: Ultimate Aesthetics in Orthodontics

### APPLICATION OF THE SOFT TISSUE CEPHALOMETRIC ANALYSIS IN CLINICAL PRACTICE

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#### *Introduction*

One of the aims of orthodontic treatment is to achieve optimal facial esthetics. Planning of facial beauty making is quite a difficult process, especially if it concurs with the correction of malocclusion. Sometimes correction of the malocclusion cannot improve but even worsen facial esthetics. Treatment planning based on dentoskeletal analysis allows approaching esthetic problems in such cases. However soft tissues that cover bones and teeth can vary significantly so that dentoskeletal parameters not always can be a valid guide for solving a problem of facial disharmony.

#### *Aim*

Clinical trial of soft tissue cephalometric analysis and creation of an analytic data base of mean normal parameters for Russian population.

#### *Materials*

To create an analytic data base 42 subjects (20 male and 22 female), natives from central Russia, were selected. All subjects had normal occlusion and harmonious facial pattern. Examination was performed in natural head position and correct condylar position. To identify soft tissue landmarks of the middle face that are normally not visible on a standard cephalometric evaluation metallic markers were used. These markers were positioned on the alar base of the nose, orbital ridge, zygomatic bone and subpupillary point.

#### *Results*

As a result of the present study dental, skeletal and soft tissue normal parameters for central Russian population were determined.

#### *Conclusions*

Arnett's soft tissue cephalometric analysis is a handy instrument for orthodontic diagnostics and can be used as a criterion for decision making between orthodontic and surgical treatment modes.

### ADJUNCTIVE PROTOCOLS FOR ATTAINING OPTIMAL AESTHETICS

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#### *Introduction*

An esthetic smile is the result of the interaction of different smile components and requires an understanding of the principles that manage the balance between teeth and soft tissues. Establishing ideal function and esthetics may be mutually exclusive and requires careful and detailed consideration during orthodontic treatment. Most of the patients seek orthodontic care because of esthetic reasons, that is, the desire to look more attractive by improving their smile. Thus an attractive smile should be the goal at the end of orthodontic treatment. The purpose of this presentation is to examine some cosmetic ideas and present new ways in which we can improve the smiles of our orthodontic patients and achieve optimal micro esthetics

#### *Materials*

Materials and methods consisted of pre and post-treatment records of patient who came for orthodontic treatment in order to enhance their smile esthetics. Current presentation demonstrates radically different cases where in esthetic considerations have been employed to augment post-treatment smile

#### *Results*

The orthodontic treatment in adult patients is an increasingly frequent reality. A directed and effective treatment approach is necessary to meet the expectations of these patients, which are usually related to the search for enhanced esthetics, reduced treatment time and minimum discomfort during utilization of orthodontic appliances

#### *Conclusions*

This contemporaneous presentation demonstrates that consistent mechanics, guided by enhanced objectives, are essential and may be achieved rapidly, providing esthetic quality of smile and potential occlusal stability.

## Topic: Orthognathic Surgery

### ANALYSIS OF COMPLICATIONS DURING BSSO

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#### *Introduction*

One of the main problems of BSSO is bad split of mandible.

#### *Materials*

The aim of this study was to review complications of the orthognathic surgery in series of 56 patients who were operated during recent 10 years (2004- 2014). Complications were calculated and compared with data of two osteotomy methods with surgical bore or oscillating saw.

#### *Results*

More complications (bad splits) were documented in cases of osteotomy using oscillating saw for osteotomy of narrow intercortical bone of the mandibular ramus (22 %). Using the surgical bore we can get deeper gather on the ramus and body of the mandible, what's result in better split and less complications (8 %).

#### *Conclusions*

Best way to improve situation is to use piezosurgical device.

Good knowledge of technical complications` reasons should help to reduce their incidence. Overall, osteotomy of the jaws remains safe procedure.

### EXAMPLE OF PROCEDURE OF A COMBINED ORTHODONTIC-SURGICAL THERAPY BY A CLASS III PATIENT TREATED WITH STRAIGHT WIRE TECHNIQUE, MBT PRESCRIPTION

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#### *Introduction*

The aim of the case report was to introduce the interdisciplinary cooperation between orthodontist and maxillofacial surgeon in the treatment of skeletal Class III patient with follow-ups in the retention phase.

#### *Materials*

A 27-years old woman with diagnosis of skeletal class III (ANB=-0.8°/WITS=-8,5 mm), anterior bite edge-to-edge, bilateral cross-bite, mid-face hypoplasia. The patient was treated with combined therapy in cooperation with the maxillofacial surgeon. In the first phase there was an orthodontic decompensation with a fixed appliance. Extratorque braces on the upper front teeth were used. The operation was bimaxillary: Le Fort I in the maxilla with clockwise rotation and BSSO in the mandible with counterclockwise rotation. The post-operative articulation on molars was planned as second class. After finishing and fixed appliance removal there were small spaces left in the lower frontal region, with predicted tertiary crowding and relapse of the third class, which in the retention phase was truly observed.

#### *Results*

The patient with skeletal class III was treated by combined orthodontic-surgical procedure with a satisfying outcome and good resulting occlusion. The articulation was overcorrected from the initial class III into the slight class II. In the retention phase the occlusion has experienced a relapse into the class I. The aesthetic outcome was satisfactory for the patient.

#### *Conclusions*

There is a necessity of good cooperation in a combined orthodontic-surgical therapy, sufficient decompensation in the pre-surgical orthodontic treatment, the need of respecting following changes in the sense of relapse - the need of overcorrection.



## TREATMENT OF A PATIENT WITH CLEFT LIP AND PALATE USING INTERNAL MAXILLARY DISTRACTION OSTEOGENESIS: A CASE REPORT

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### *Aim*

Multidisciplinary approach is important in the treatment of CLP patient. Internal maxillary distraction osteogenesis comes with the most commonly used method to promote maxillary bone in patient who underwent surgical and orthodontic treatment. In this study, 18 years old unilateral complete cleft lip and palate patient will be offered treatment with the internal maxillary distraction osteogenesis.

### *Method*

Patient who had severe crowding and posterior cross-bite (11 years) came to the Orthodontic Department of Ege University for orthodontic evaluation. He was born with unilateral left CLP. The lip was repaired at 4 months, and the palate (palatoplasty) was repaired at 1.5 years of age. The patient had a straight profile with a retrusive upper lip. He had bilateral posterior cross-bite. Left central incisor was congenitally missed and left lateral incisor was located at the cleft side. Midlines were not coincident. The lower arch had crowding.

### *Results*

The modified spring jet apparatus was applied to 11 years patient who admitted to our clinic for resolving the transversal problem and upper jaw was expanded. After secondary alveolar bone grafting leveling and decompensation of teeth was achieved by fixed orthodontic treatment and at 18 patient was ready to distraction. After distraction osteogenesis jaw relationships were corrected and orthodontic treatment completed. After removal of fixed orthodontic appliances aesthetic composite laminates were applied to anterior teeth in order to achieve aesthetics. In the first year of retention treatment results are preserved and stable.

### *Conclusions*

In cases of CLP patients with maxillary deficiency, internal maxillary distraction osteogenesis is an alternative treatment to conventional orthognathic surgery.

## USING MODIFIED HUNSUCK'S PROCEDURE TO CONTOUR MANDIBULAR ANGLE WITH ORTHOGNATHIC SURGERY

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### *Introduction*

Square face is much often in Asian population. Orthognathic surgery is not only deal with the oral function but also the aesthetic consideration. We modified Hunsuck's procedure of BSSO which allows the whole mandibular angle included in proximal segment. Using this technique, the mandibular angle can be resected or contoured at the same time to achieve a better facial appearance.

### *Materials & Results*

We describe our technique and the way we evaluate the patients.

No complications were noted with this additional procedure. The recovery time was the same as the patients underwent orthognathic surgery only.

### *Conclusions*

Using this technique, better facial appearance can be obtained. Asymmetric resection can be avoided under visible surgical field.

**INVESTIGATION OF FUNCTIONAL NEED FOR ORTHOGNATHIC TREATMENT BETWEEN ADULT PATIENTS IN LUHSH CLINIC OF ORTHODONTICS**

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**Introduction**

Combined orthodontic-orthognathic treatment could be a solution for an adult orthodontic patient. Determination of indications for combine treatment is important for successful results.

**Objectives**

To investigate patients applying for orthodontic treatment.

To assess adult patients according to Index of Orthognathic Functional Treatment Need (IOFTN).

To evaluate inter-rater and intra-rater reliability of IOFTN.

**Materials**

Patients were assessed according to demographic data (age, sex). Two examiners investigated diagnostic models, extra- and intra-oral photographs of adult patients who matched the inclusion criteria, and evaluated them using IOFTN index. The results were analyzed using R3.1.2 statistical software.

**Results**

During a period of 1 September - 1 December 2014, 666 patients were registered for orthodontic consultation. Age distribution: 3-45 years old, 615 preadolescents/adolescents (92.3%), 51 adults (7.7%); gender distribution: 385 females, 281 males. 52 patients did not arrive and 24 arrived for repeated consultation.

17 adult patients matched the inclusion criteria. Evaluation according to IOFTN: 1 patient (5.9%) had very great treatment need, 5 (29.4%) – great treatment need, 1 (5.9%) - moderate treatment need; 9 (52.9%) - mild treatment need; 1 patient (5.9%) had no orthognathic treatment need.

The Cohen's weighted kappa scores were very good for the inter-rater (0.8101- 0.9022,  $p < 0.0001$ ) and intra-rater (0.9012,  $p < 0.0001$ ) concordances.

**Conclusions**

Most of registered patients for orthodontic consultation in LUHSH Clinic of Orthodontics were preadolescents and adolescents. IOFTN is a reliable and easy-to-use orthodontic index for adult patients.

**HOW THE AMOUNT OF BSSO ADVANCEMENT AND OCCLUSAL PLANE CHANGES INFLUENCE UPPER AIRWAYS VOLUME IN CLASS II FEMALES – PROSPECTIVE STUDY**

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**Introduction**

Advancing of maxilla-mandibular complex during orthognathic surgery is considered to be a procedure increasing of upper airways (UA) volume. Influence of amount of maxillo-mandibular movement and changes of occlusal plane to this, is still not clear.

**Materials**

Cohort of 28 non sleep apnoe females average age 21.6 years with class II skeletal malocclusion, treated with BSSO advancement. They had taken CBCT before (T1), 6 weeks after (T2) and 9 months after (T3) orthognathic surgery. On Dolphin™ we measure upper airways volume changes.

**Results**

In group of 13 females with CCW BSSO advancement rotation was average UA volume before surgery 16366 mm<sup>3</sup>. In BSSO advancement with CCW rotation UA volume changes were: between T1-T2 – UA increase about 5218 mm<sup>3</sup> in average, between T2-T3 – UA volume decrease about 1143 mm<sup>3</sup> in average, between T3-T1 UA volume increase about 4075 mm<sup>3</sup> in average.

15 females with BSSO advancement without CCW occlusal plane rotation was UA volume before surgery 19071 mm<sup>3</sup>. In BSSO advancement without CCW rotation UA volume changes were: between T1-T2 UA volume increase about 11170 mm<sup>3</sup>, between T2-T3 – UA volume decrease about 2309 mm<sup>3</sup> between T1-T3 UA volume increase about 8860 mm<sup>3</sup>. Results are statistically significant  $P < 0.05$ .

**Conclusions**

BSSO advancement increased UA volume significantly. Early postoperative changes are unstable and we must consider their decrease in long term period after surgery. We will discuss relation between amount of occlusion plane changes and BSSO advancement to UA changes and compare this with bimaxillary surgeries.

**ASSESSMENT OF ORTHOGNATHIC SURGERY OUTCOMES BY USING OF A PASSIVE ROBOT ARM****Esam Omar<sup>1</sup>****M. Bamber<sup>2</sup>**<sup>1</sup>Taibah University, Madinah, Saudi Arabia<sup>2</sup>Eastman Dental Institute, London, United Kingdom*Null hypothesis*

In Orthognathic Surgery the accuracy of Model Surgery is reflecting in Surgical outcome.

*Method*

17 cases were recruited from the orthognathic work up clinic at the Eastman Dental Hospital, University College London. The study was approved by University College London Hospital joint Research and Ethics Committee on application No99/E027 and was registered with the Research and Development Directorate. Patients were initially recruited when they came in for their work up before their operation. The study was explained to them and they were given an information sheet and asked to sign a consent form. The distribution of the patients was as follows: 76% female and 17 % male. The mean age was 23 years with an age range between 22 and 27. Four patients were excluded from the study and not included in total number of patients. The pre-operative measurements were taken when the patients were called one week before the operation at time of wafer try in, the post-operative measurements taken two to three weeks after the Surgery when the patient condition become suitable for taking measurements.

*Results*

There is no relationship between the accuracy of model surgery and actual surgical procedure in all X.Y and Z axes movements. This mean that the accuracy of model surgery is not reflected in the surgical outcome.

*Conclusions*

The only important relationship between the model surgery and actual surgical procedure is representation of the planned occlusion

**RIGID EXTERNAL DISTRACTION (RED) TREATMENT OF A PATIENT WITH CLEFT PALATE INDUCED MAXILLARY DEFICIENCY: A CASE REPORT****Özün Karahmetoğlu****Abbascan Kortmaz****Mervenur Kadioğlu****Ayşe Tuba Altuğ****Aslı Şenol****Ayşegül Mine Tüzüner öncül**

Ankara, Turkey

*Introduction*

Distraction osteogenesis with an external distraction device such as the rigid external distraction (RED) frame has become an established method for treating midface hypoplasia. It allows for greater advancement of the midface than achievable with traditional Le Fort III osteotomies;

*Materials*

Twenty-one-year-old female patient with hard and soft palate cleft was operated at an early age. Patient, applied to our clinic with severe maxillary deficiency, had a large number of missing teeth in the mandible was found to be very low vertical face dimension. Pre-surgical orthodontic treatment was applied to patient. Le Fort I osteotomy was performed under general anesthesia, including pterygomaxillary disjunction, and the maxilla was mobilized. Once the osteotomy was completed and the oral mucosa was sutured, device was fixed to lacking of teeth region of the upper lateral and premolar with IMF screws. The heading part of the RED device was adapted

*Results*

Immediately following DO, the average amount of distraction was 18mm. A significant advancement of the maxilla and correction of the sagittal Class III skeletal relationship was achieved. Negative 17° ANB angle increased to a positive 1.5° as a result of 3 weeks RED activation. Nperp-A showed an improvement of 10.4 mm (Beginning of RED; -4.4mm, End of RED; 6mm). Unfavorable rotations and dental compensations were eliminated during maxillary advancement.

*Conclusions*

There was no problem with stability of the device. Unfavorable tooth movements were prevented.

**COMBINED ORTHODONTICS AND ORTHOGNATHIC SURGERY FOR THE CORRECTION OF CLASS II SKELETAL MALOCCLUSION IN AN ADULT PATIENT****Barbara Mady Maricic<sup>1</sup>****Robert Cerovic<sup>2</sup>****Mirna Juretic<sup>2</sup>**<sup>1</sup>Dental Polyclinic Mady Maricic, Rijeka, Croatia (Local Name: Hrvatska)<sup>2</sup>Department of Maxillofacial Surgery, School of Dentistry, Medical Faculty, University of Rijeka, Clinical Hospital Centre Rijeka, Croatia, Rijeka (Local Name: Hrvatska)*Introduction*

Correction of skeletal deformities in adult patients only with orthodontics is limited. Orthodontics combined with orthognathic surgery is the best option for cases when camouflage treatment is questionable and growth modulation is not possible. This case report illustrates the benefit of the team approach in correcting vertical maxillary excess along with class II skeletal deformity.

*Materials*

The present case report is about a 22-year-old female patient with a chief complaint of severely protruding upper front teeth, inability to close the lips and excessive visibility of gums in the upper arch during smile. The case was started with pre adjusted edgewise appliance using 0.022 slot MBT prescription. Upper premolars were extracted as planned for pre-surgical orthodontics. Superior repositioning of the maxilla was done with Le Fort I osteotomy to reduce the vertical excess and allows the mandible to rotate upward and forward, which simultaneously shortens facial height. To provide much more chin prominence advancement genioplasty was done.

*Results*

The patient's facial appearance was markedly improved along with functional and stable occlusion. The pre-surgical and post-surgical cephalometric values and superimpositions showed a dramatic skeletal and dental improvement.

*Conclusions*

Orthognathic surgery is a possible option in patients with severe skeletal deformities. This case illustrates the importance of proper diagnosis and treatment planning. A team approach with the orthodontist and surgeon before the initiation of treatment is the best way to achieve stable, functional, and esthetic results. Through this combined approach, the patient had an excellent skeletal, dental, and occlusal improvement.

**CHANGES IN THE SHAPE OF NOSE AND UPPER LIP AFTER LE FORT I OSTEOTOMIES****Antons Vostroilovs<sup>1</sup>****Ģirts Šalms<sup>2</sup>****Gundega Jākobsone<sup>3</sup>**<sup>1</sup>Rīgas Stradins University, Institute of Stomatology, Clinic of Oral and Maxillofacial surgery, Riga, Latvia<sup>2</sup>Rīgas Stradins University, Department of Oral and Maxillofacial surgery, Riga, Latvia<sup>3</sup>Rīgas Stradins University, Department of Orthodontics, Riga, Latvia*Introduction*

One of the goals for orthognathic surgery is to maintain or improve the facial aesthetics.

It is important to understand the soft tissue changes after orthognathic surgery in order to plan the treatment outcome.

*Methods*

This is a retrospective study on 25 consecutively operated patients in the time period between October 2011 and October 2013. All patients had Le Fort I operation, with or without mandibular osteotomies. Facial 3D photos were taken 1 week before surgery and 1 year after. Following changes were assessed: changes in the nasal width, nasal length, upper lip length and in the nasolabial angle.

*Results*

The nasal width increased on average by  $2.1 \pm 1.5$  mm. No significant correlation between the amount of the maxillary advancement and any change of the measurements of the nose after operation was detected. However, there was an average correlation between the change in the nasal width and vertical repositioning of the maxilla ( $r = -0.392$ ;  $p = 0.05$ ). There was a difference in the nasal length changes between male and female patients.

*Conclusions*

Le Fort I operation has a significant influence on the shape of the nose due to the increase in the nasal width without changes in the nasal length. Some factors, like surgical technique could affect the changes in the nasal width.

**ACCURACY OF DETERMINATION OF ROTATION AXIS OF THE MANDIBLE COMPARING THE RESULT OF MECHANICAL AXIOGRAPH AND OPTICAL MODEL DOUBLE SCAN METHODS. PILOT STUDY.**

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***Aim of study***

To compare mechanical axiography (MA) and optical model double scan method (OMS) results in determining localisation of rotation axis of mandible (RAM).

***Materials and Methods***

RAM determined by MA for eight patients, fiducial markers attached. Patients bited 1-2/6-8 mm wax-bite during computed tomography (CT). Impressions taken of both arches, models put into wax-bites and scanned. Scans superimposed on CT providing positions: lower teeth open 1-2/6-8 mm. Intersection of two lower occlusal planes assumed clinical RAM. Rotating first lower teeth around each axis, distance from second lower teeth was determinant of accuracy of determined RAM.

***Results***

1. First set of lower teeth rotated around RAM determined by MA matched second set of lower teeth at distance 0.74 mm (range 0.1-0.9,  $p>0.05$ )
2. OMS determined RAM at distance 8.9 mm from RAM determined by MA (range 5-23,  $p>0.05$ )
3. First set of lower teeth rotated around RAM determined by OMS matched second set of lower teeth at distance 2.8 mm (range 0.2-5.1,  $p>0.05$ )

***Conclusions***

1. RAM determined by OMS is not accurate for clinical usage.
2. MA proved to be more accurate method for determining RAM.

## Topic: TMJ Surgery

### **PREAURICULAR APPROACH WITH ZYGOMATIC ARCH OSTEOTOMY FOR PARTIAL RESECTION OF THE MANDIBLE CONDYLE IN CASES OF ITS BENIGN TUMOR LESIONS**

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#### *Introduction*

Mandible condyle tumors – osteoma, osteochondroma - are rare localizations of such pathologies. Spreading of the tumor under the cranial base into the infratemporal fossa causes difficulties of the surgical access.

#### *Materials*

Since 2009, 5 patients (35-54 years old, 1 – male, 4 – female) with tumors of the mandible condyle underwent surgical treatment. All of them suffered from disocclusion – crossbite, mandible deviation and limitation of the mouth opening. After 3-D CT evaluation tumors of the mandible condyle were revealed. Four of them spread from medial aspect of the condyle into the infratemporal fossa, in one case it was tumor that circumferentially grew around condyle. In all cases preauricular approach was used in combination with zygomatic arch osteotomy for access to the medial aspect of the condylar head. Partial resection of the part of the condyle evolved in the tumor process performed and tumor was removed radically. After that osteosynthesis of zygomatic arch with titanium or epoxy-polyurethane plates was done.

#### *Results*

Preauricular approach in combination with zygomatic arch osteotomy provided sufficient visibility for surgical treatment of the mandible condyle tumors spreading under the cranial base into the infratemporal fossa. We observe recovery of the regular occlusion in all cases in early postoperative period. No facial nerve iatrogenic damage was evident. One patient suffered from contracture of the mandible postoperatively. The signs were resolved after 1 month of mechanotherapy. In 4 cases 1- 5 years observation did not reveal evidence of tumor recurrence. In 1 case postoperative period is too short to make a conclusion about tumor recurrence.

#### *Conclusions*

Preauricular approach in combination with zygomatic arch osteotomy is highly recommended for surgery of the medial aspect of the mandible condyle tumors.

### **PLATELET RICH PLASMA IN THE THERAPY OF THE OSTEOARTHRITIS OF THE TEMPOROMANDIBULAR JOINT. 6 MONTH FOLLOW UP STUDY**

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#### *Introduction*

There are some literature data about using platelet rich plasma (PRP) in treatment of osteoarthritis of big joints in orthopedics. Therefore use of PRP in treatment of TMJ arthrosis give us is a new possibility in therapy of the arthritis of the temporomandibular joint. Literature data about this application are not sufficient.

#### *Methods*

Authors present experiences with PRP applications in 135 patients with arthritis or early stages of osteoarthritis in 6 months follow up study. All patients in this study are patients after unsuccessful conservative and mini-invasive therapy (arthrocentesis or arthroscopy). All patients in this study underwent applications of PRP intraarticular.

#### *Results*

The main effect in therapy is in decreasing of pain (85%). Moreover, no complications were recorded during the 6 months after the application of PRP.

#### *Conclusions*

In therapy of arthritis or early stages of osteoarthritis of TMJ are problematic patients with pain after unsuccessful conservative and min-invasive methods. These patients are not indicated for open surgery, PRP is a possible alternative treatment.



**TEMPOROMANDIBULAR JOINT SYNOVIAL FLUID COMPONENTS LEVELS: IMPLICATIONS FOR ARTHROCENTESIS OUTCOME****Edvitar Leibur<sup>1</sup>****Oksana Ivask<sup>2</sup>****Per Alstergren<sup>3</sup>****Sigvard Kopp<sup>4</sup>****Ülle Voog-Oras<sup>1</sup>**<sup>1</sup>*Dept. of Internal Medicine, University of Tartu, Tartu, Estonia*<sup>2</sup>*Dept. of Stomatology, University of Tartu, Tartu, Estonia*<sup>3</sup>*Dept. of Orofacial Pain and Jaw Function, Malmö Univeristy, Malmö, Sweden*<sup>4</sup>*Dept. of Clinical Oral Physiology, Karolinska Institutet, Stockholm, Sweden***Introduction**

The aim was to estimate the effect of arthrocentesis in the treatment of temporomandibular joint (TMJ) disorders and to compare cytological and biochemical findings in the synovial fluid (SF) as well in blood samples.

**Materials**

Twenty three patients with a diagnosis of TMJ osteoarthritis (group I) and 11 rheumatoid arthritis (RA) patients (group II) with TMJ involvement were treated with arthrocentesis using push and pull technique. The SF aspirate was analyzed for viscosity, presence of crystals, rheumatoid factor (RF), CRP (group I) and for PGE2 (group II). In both groups the level of RF, CRP and ESR in blood was analyzed. The maximal interincisal opening (MIO) and visual analogue scale (VAS) for pain estimation was performed.

**Results**

After 6 months in group I MIO improved significantly ( $p < 0.05$ ) and pain decreased ( $p < 0.01$ ). Viscosity of the aspirate was 0.78 (medium), crystals were found in 5 patients (21.7%). There was no statistical significant differences between SF RF and plasma RF values ( $p > 0.05$ ). In group II PGE2 was found in 5/6 joint washings (range=25 pg/mL).

**Conclusions**

Arthrocentesis offers favorable results with regard to increasing MIO, reducing pain and dysfunction. The presence of PGE2, crystals in the synovial fluid and increased viscosity of the synovial fluid indicates a pathological condition of an inflammatory nature. Acknowledgement. This study was supported by grants IUT2 -8, ETF9255 and Karolinska International Research and Training Committee.

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