



# ICPF2018

12th World Congress of the  
International Cleft Lip and Palate Foundation

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## Abstracts





Abstracts

Poster Sessions

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# Primary Cleft Surgery I





## Early surgical reconstruction of the lips in newborn babies with cleft lip and palate

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### Objectives:

The objective of this study is to compare the impact of early and late reconstruction of complete unilateral cleft lip and palate on the growth and development of the front of the dento-alveolar arch.

### Methods:

This study was carried out in the years 2011–2017 at the National Center for Pediatric Health. Infants with unilateral complete cleft lip and palate were divided into 2 groups according to the timing of lip reconstruction. Group T1 consisted of infants with early lip reconstruction—realized in the first 29 days of life. Group T2 consisted of infants with later lip reconstruction—realized between 2 and 6 month of age. Maxillary dental casts were obtained for each child in four periods—in the first 14 days of life, in the third month, in the sixth month and in the age of one year. These were followed by the identification, measurement and evaluation of anthropometric parameters.

### Results:

Feeding methods of infants operated on in both groups were assessed. Parents of infants were given a chart to evaluate their difficulties and overall satisfaction with the course of treatment.

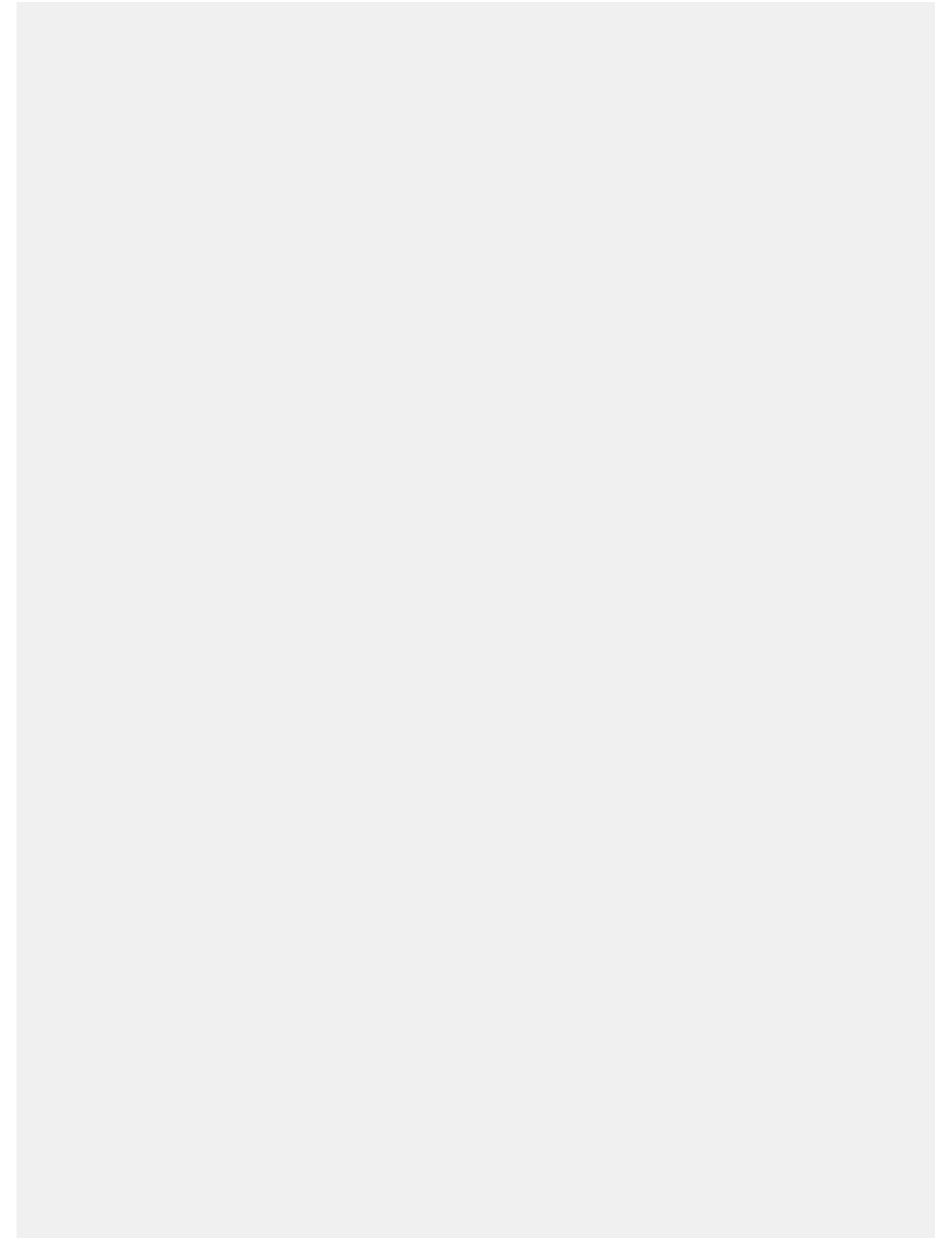
Results. Significant differences were occurred after the reconstruction of the lips in linear and angle measurements between infants in the T1 and T2 groups.

Breast feeding was possible for newborn babies was possible three days after operation, which was an important factor for the bonding of the mother and a newborn baby with cleft lip and palate.

### Conclusions:

The early surgical reconstruction of the lips in the first 29 days of life has a positive effect on the growth and development of the anterior segment of the dento-alveolar arch. Early lip reconstruction results in the earlier transformation of anatomical structures and creates appropriate conditions for the best development of this area.

## Notes





## Surgical aspects of total primary cleft care and current advances in robotic assisted cleft palate surgery; TORCS

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The fundamental goal of the treatment of children with cleft, is to restore the function and provide them with an, as much as possible, normal facial appearance. Surgery to repair a cleft of any kind is a highly individualized procedure that is intended to not only close the defect, but also to insure the child's ability to function and grow normally. Finally, we would like to make our cleft children "cleft less" by the time they enter the primary school.

Our treatment strategy for cleft lip, alveolus and palate, which is a multi-step one, is discussed in detail. The timing and the used technique in different treatment steps are of crucial importance to enhance the functional and aesthetic results. The first step in the reconstruction of a complete cleft lip & palate is the lip-adhesion combined with presurgical orthopedic, using a moulding plate. This is performed at 3 months of age.

A modified Millard cleft lip repair together with a primary correction of the nasal tip deformity is performed 3 months later. The primary nasal repair is essential. The depressed and displaced alar cartilage must be repositioned in an anatomical position at the time of the primary lip repair.

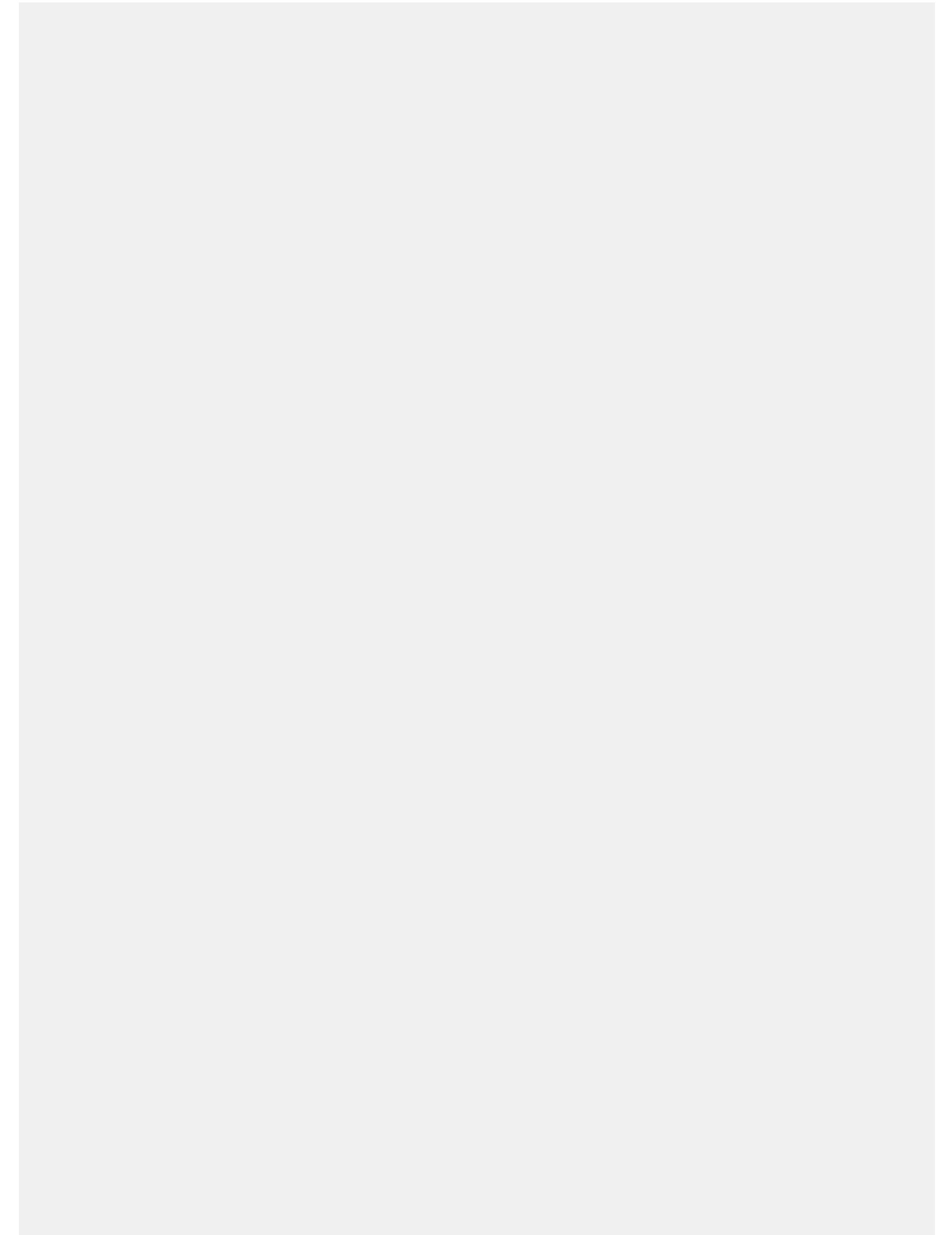
The long-term aesthetic results are presented and discussed in detail.

At nine months of age a fundamentally modified Furlow double opposing Z-plasty is performed to reconstruct the soft palate. The width of the hard palate cleft decreases significantly after the closure of the soft palate. The remaining hard palate cleft is reconstructed at the age of 18 months.

An early secondary bone grafting is performed at the age of 5 to 6. The need of maxillary expansion, before the alveolar bone grafting is discussed.

Currently the dissection and reconstruction of the palatal muscles are performed with Da Vinci Robotic System. The robotic surgical approach can be used safely for palatal surgery. We believe that the precise dissection of the palatal muscles provided by the robotic system might reduce damage to the vascularization and innervation of these muscles, as well as damage to the mucosal surfaces that could cause fistula formation. In addition, this technique might improve palatal function and Eustachian tube function in cleft palate patients. Currently TORCS is integrated in our standard protocol.

## Notes





## Anthropometric characteristics of the premaxillary and their influence to repair of bilateral complete cleft lip and palate

Lyudmila Yakovenko<sup>1</sup>, \*Nataliia Kyselova<sup>1</sup>, Vladislav Iyfyomenko<sup>1</sup>

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### Objectives:

Premaxillary anthropometric characteristics are determined, its correlation with the fragments of the upper jaw of congenital bilateral complete cleft lip and palate, to indications for vomer osteotomy.

### Methods:

Premaxillary anthropometric measurements were carried out on 50 models of children from 6 months to 4 years, 15 patients with premaxillary protrusion more than 5 mm underwent primary premaxillary setback.

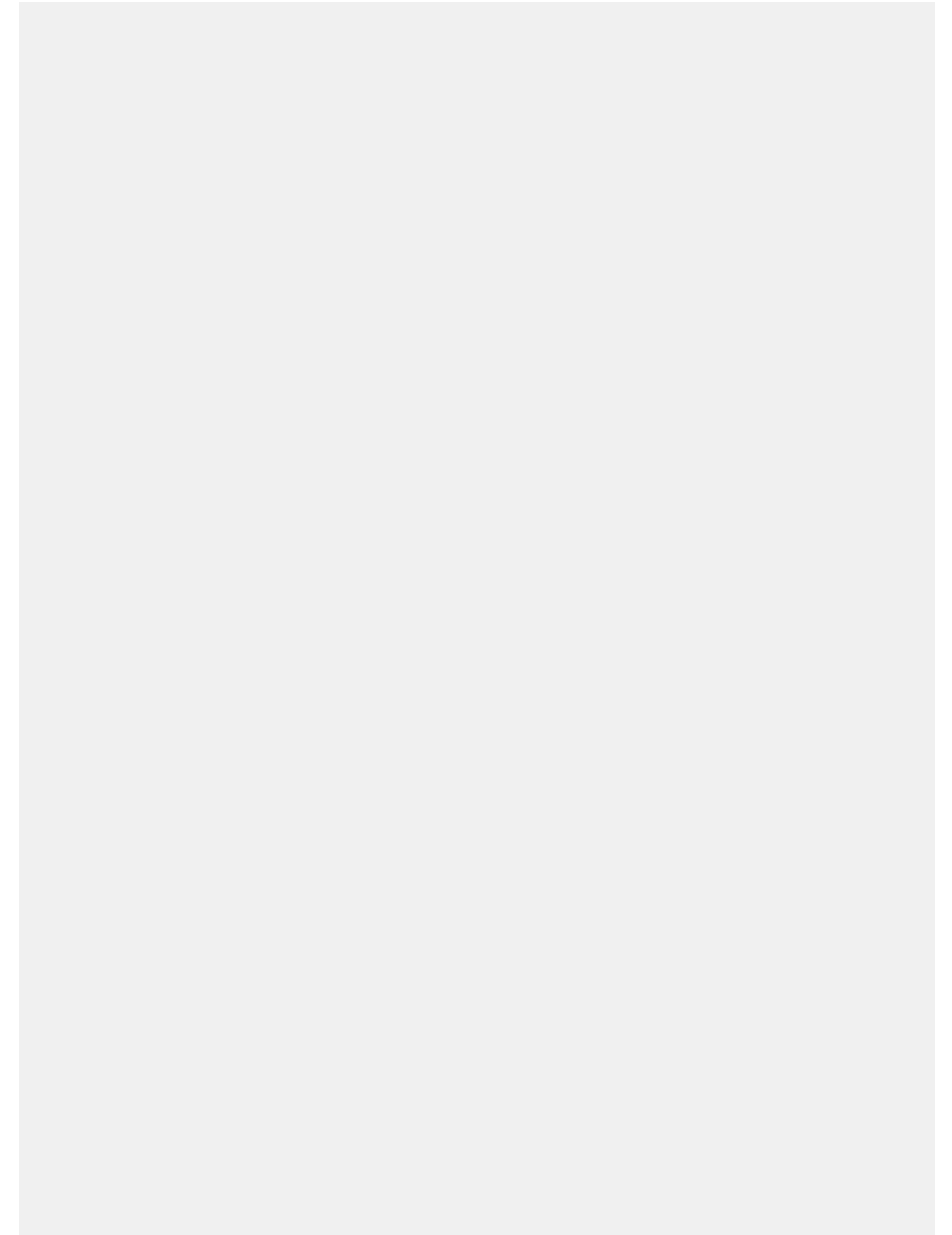
### Results:

The degree of premaxillary protrusion was in sagittal plane as follows: up to 5 mm (n=34); from 6 to 12mm (n=16), while the width of the defect increased by 2 times. Vomer osteotomy was carried out with premaxillary displacement to back and up, when premaxillary protrusion was more than 5 mm (n=15). 6 patients of them were after ineffective orthodontic treatment, 9 patients - later treatment. Positive outcome was got after osteotomy (n=14): abutting joint of fragments (n=6), gapping of premaxillary to lateral fragments (n=8). Premaxillary was returned to its former position in 1 patient.

### Conclusions:

The indication for vomer osteotomy is premaxillary protrusion greater than 5 mm in children older than 6 months, an increase size of premaxillary, the ratio of its width to the distance between the lateral fragments of two to one against the background of ineffective orthodontic treatment.

## Notes





# Orthodontics I



## Sensitivity and precision of prenatal diagnostics in children with CLP

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<sup>2</sup>Poliklinik für Kieferorthopädie LMU, München, Germany

### Objectives:

The specific examination of the face is not part of the standard prenatal screening in Germany.

And the detection of clefts depends on the skills of the examiner. Furthermore, if the face and the maxillofacial area are not pictured correctly, standardised checklists and repetitive sonographic examinations are not obliged. Precise sonographics based on the specific technical and personal resources are available in specific centers, however, they are only used in specific indication. So the detection of clefts is more or less a coincidence during a screening examination

### Methods:

Sensitivity and precision of the prenatal sonographic diagnostics of 212 patients with CLP were examined retrospectively.

The statistic analysis included general aspects of the type of the missbuilding and gender as well as datas regarding the perinatal diagnostics like time of recognition, DEGUM category of the examining clinic, the correct classification regarding cleft type shaping and the reason for submission to a prenatal center. Hereby the main focus was the qualification of the examining physician who diagnosed the cleft especially whether the diagnosis was made pre- or postnatal.

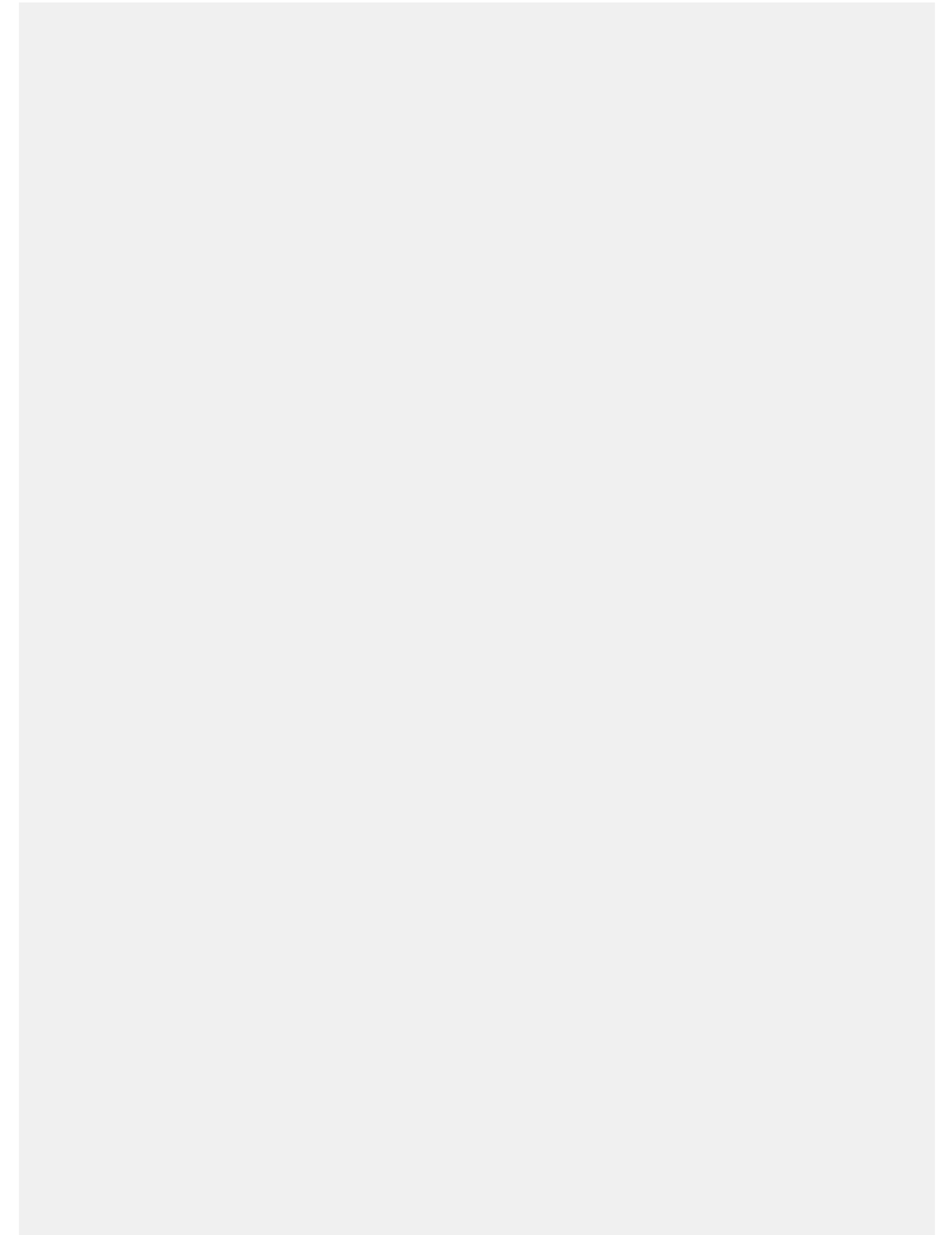
### Results:

Of the 79 clefts which were examined by a specialised prenatal physician (DGUM II or III) 93,7% were diagnosed prenatally and 6,3% postnatally. On the contrary the clefts which were examined solely by gynecologists (DGUM I) (n= 133) 82,7% were diagnosed postnatally and only 17,2% were diagnosed before birth. Prenatally isolated clefts of the soft palate were diagnosed only in 4,6% by gynecologists (DGUM I) however in 69,2% in specialised centers DGUM II/III. Cleft lips could be detected prenatally in 98,4% in specialized centers (DGUM II/III) and in 29% by DGUM I sonographics.

### Conclusions:

Specialized centers show significant higher detection rates in diagnostics of missbuildings regarding CLP

## Notes





## A prenatal index for mandibular micrognathia: Sensitivity and clinical relevance

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<sup>1</sup>University of Cologne Medical School, Department of Orthodontics, Köln, Germany

<sup>2</sup>Private Practice, Prenatal Diagnostics, Frankfurt, Germany

### Objectives:

Micro- and retrognathia of mandibular origin in connection with glossoptosis (called Pierre Robin sequence) may lead to life-threatening respiratory problems immediately after birth. An objective detection of a micrognathia during prenatal routine sonography may be possible using an index as described by Neuschulz et al. (2015). The index relates fetal mandibular length to femur length and gestational age. The aim of this study was to test the method's sensitivity and to discuss its predictive power concerning neonatal respiratory insufficiency.

### Methods:

Analyses were based on 13 patients with facial malformation associated with a mandibular micrognathia diagnosed after birth. In a first step, we applied the index to fetal sonography scans of all 13 patients: linear parameters of their mandibular lengths were compared to predicted values according to the index. In a second step, we discussed these results in the light of the later clinical appearance, relying on exemplary cases.

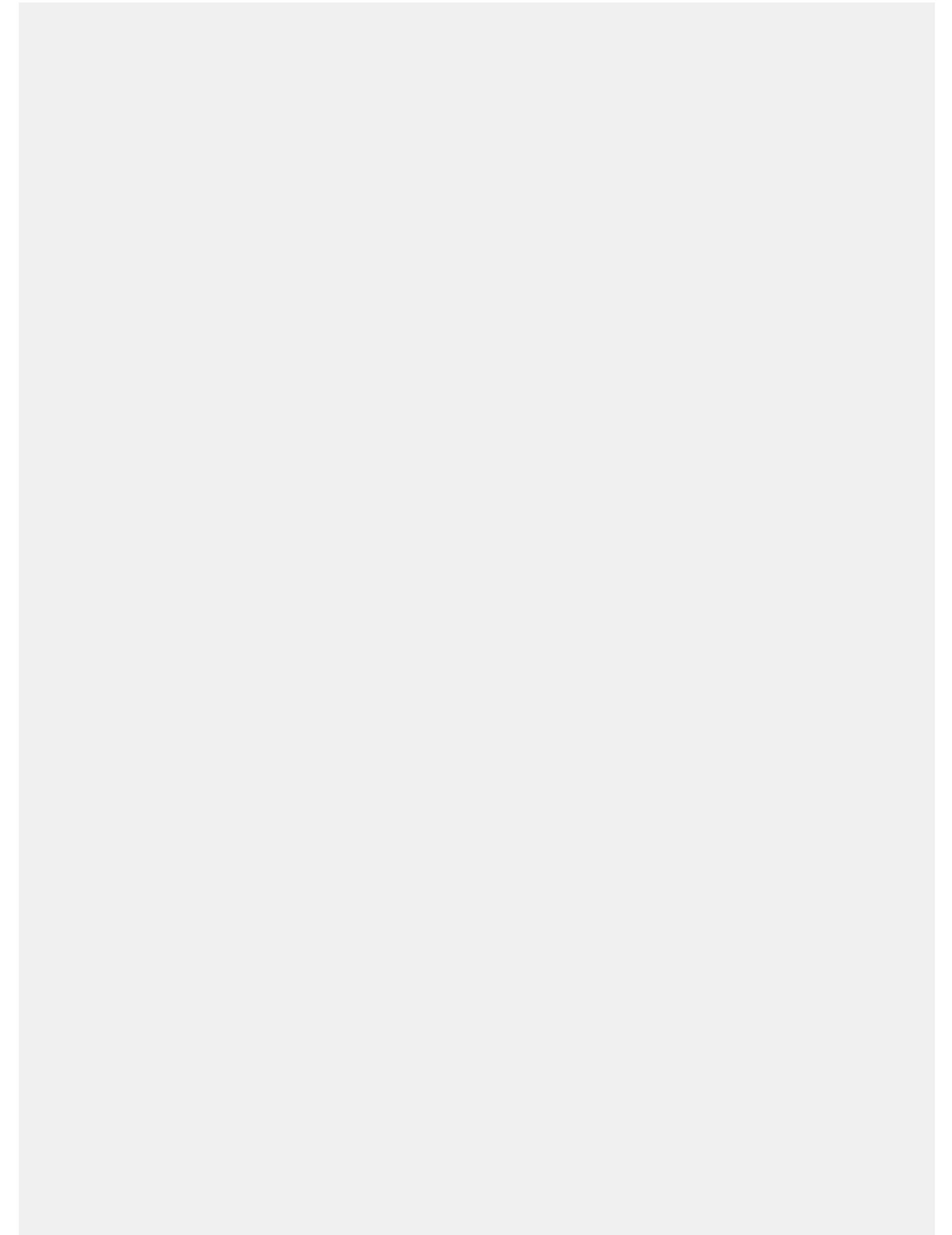
### Results:

The index showed a high sensitivity. Analysis of the relationship between fetal mandibular length and gestational age / femur length were correctly diagnosed for 12 / 11 of the 13 cases with a micrognathia (sensitivity of 92.3 % / 84.6 %). However, patients with similar index values differed strongly in terms of their clinical appearance of micrognathia, glossoptosis and upper airway obstruction.

### Conclusions:

Fetal mandibular micrognathia can be objectively evaluated with the help of the index. Given its high sensitivity, the method allows a quick and early detection of major skeletal jaw anomalies and congenital malformations during routine prenatal screening. Whereas it is not always indicative of the severity of postnatal symptoms, the method helps to take the necessary steps for proper treatment of Pierre Robin sequence.

## Notes





## The application of new cephalometric landmarks for orthognatic surgery planning in craniofacial patients

\*Chingiz Rahimov<sup>1</sup>, Gunel Hajiyeva<sup>1</sup>, Ismayil Farzaliyev<sup>1</sup>

<sup>1</sup>Azerbaijan Medical University, Oral and Maxillofacila surgery, Baku, Azerbaijan

### Objectives:

Acquired and congenital dentofacial abnormalities are the one of the most trending topics in reconstructive craniofacial surgery. Efficiency of performing reconstructive procedures is depending on clear preoperative diagnosis and preparations. Wide accepted 3D planning and diagnosis in reconstructive surgery becomes more popular in the field of orthognatic surgery. However, the methods of analysis are the same and replicate landmarks using for 2D cephalometry. The aim of current study is to demonstrate efficiency of new anatomical landmarks in preoperative planning of surgical reconstruction to the patients with dentofacial abnormalities.

### Methods:

Within current study, 50 patients with acquired and congenital abnormalities were included. Additional to the clinical evaluation - CT scan followed by virtual planning by the means of Materialise Mimics Research (Belgium) have been done. Different types of virtual functions were used in order to preplan the surgical procedure. The standard cephalometry methods were augmented by suggested by us landmarks. The accumulated virtual data was well-documented and used as guidance during the surgery.

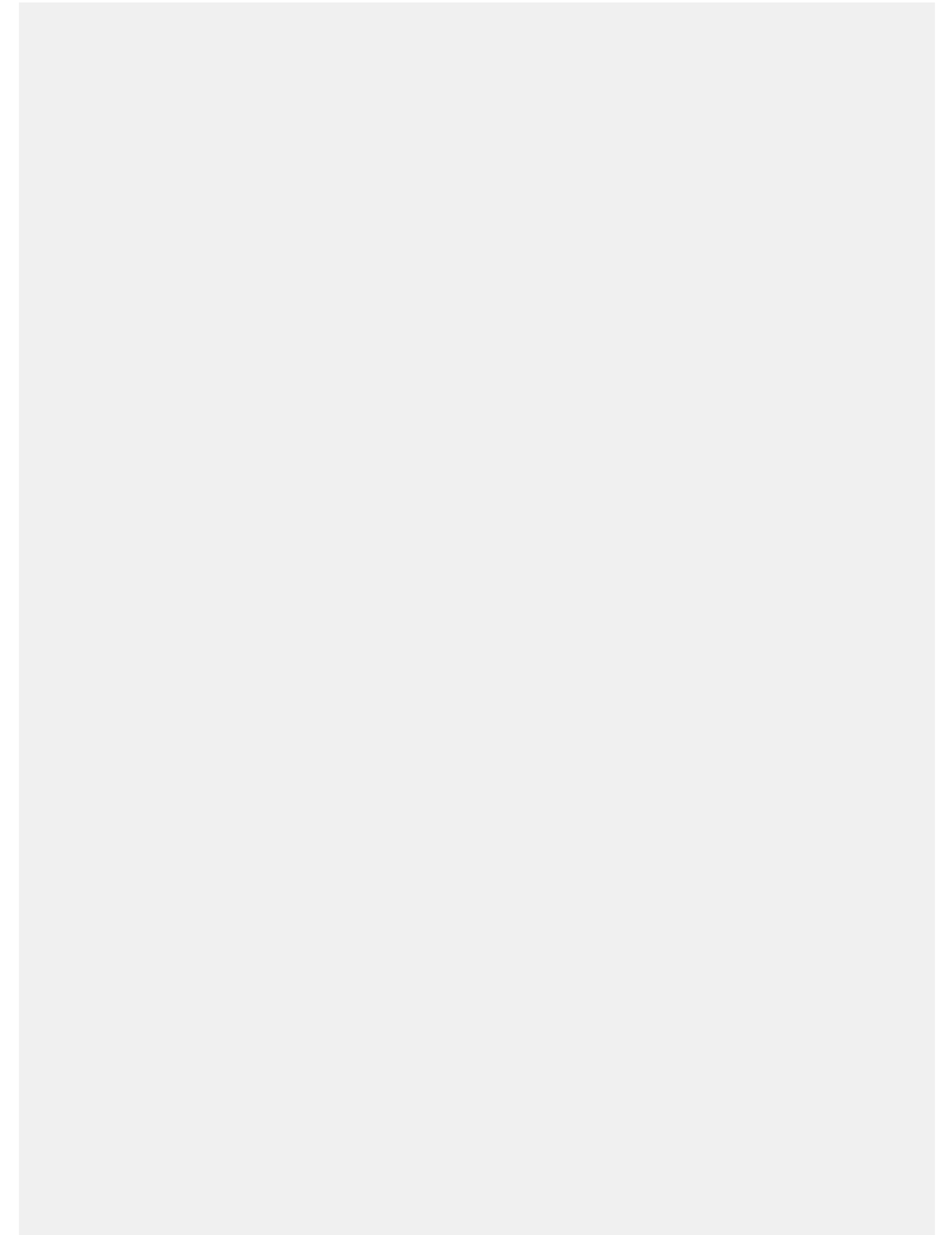
### Results:

Postoperative radiology shows concurrency of effects of surgery with virtual preoperative data. No significant complications occurred, while postoperative outcomes were reasonable from esthetic and functional point of view.

### Conclusions:

Augmentation of standard methods of 3D cephalometry could significantly improve functional and esthetic outcomes of craniofacial reconstructive procedures in the treatment of different dentofacial and craniodentofacial deformities.

## Notes



## Orthodontic burden of care: strategy for an efficient treatment of sequelae of facial clefts

\*Georges Herzog<sup>1</sup>

<sup>1</sup>CHUV, Maxillofacial surgery, Lausanne, Switzerland

### Objectives:

To identify clinical and diagnostic elements that will influence the duration of orthodontic treatment and burden of care for patients born with facial clefts.

### Methods:

Retrospective study of two groups of patients consecutively and longitudinally treated by the same orthodontist. Group 1: 47 patients with sequelae of a complete unilateral cleft of the lip and palate (UCLP). Group 2: 43 patients born with an isolated cleft of the palate (CP).

General statistics were computed and clinical factors were analysed in relation with the duration of orthodontic treatment.

### Results:

Treatment of CP last on average longer than treatment of UCLP. Orthopaedic treatment in the mixed dentition is often performed in CP patients. Orthognathic surgery is more frequently offered to UCLP patients. In group 1 (UCLP), surgery is often planned early. In group 2 (CP), surgery is less often indicated and/or planned much later, after unsuccessful orthopaedic treatment or because of poor patients' compliance.

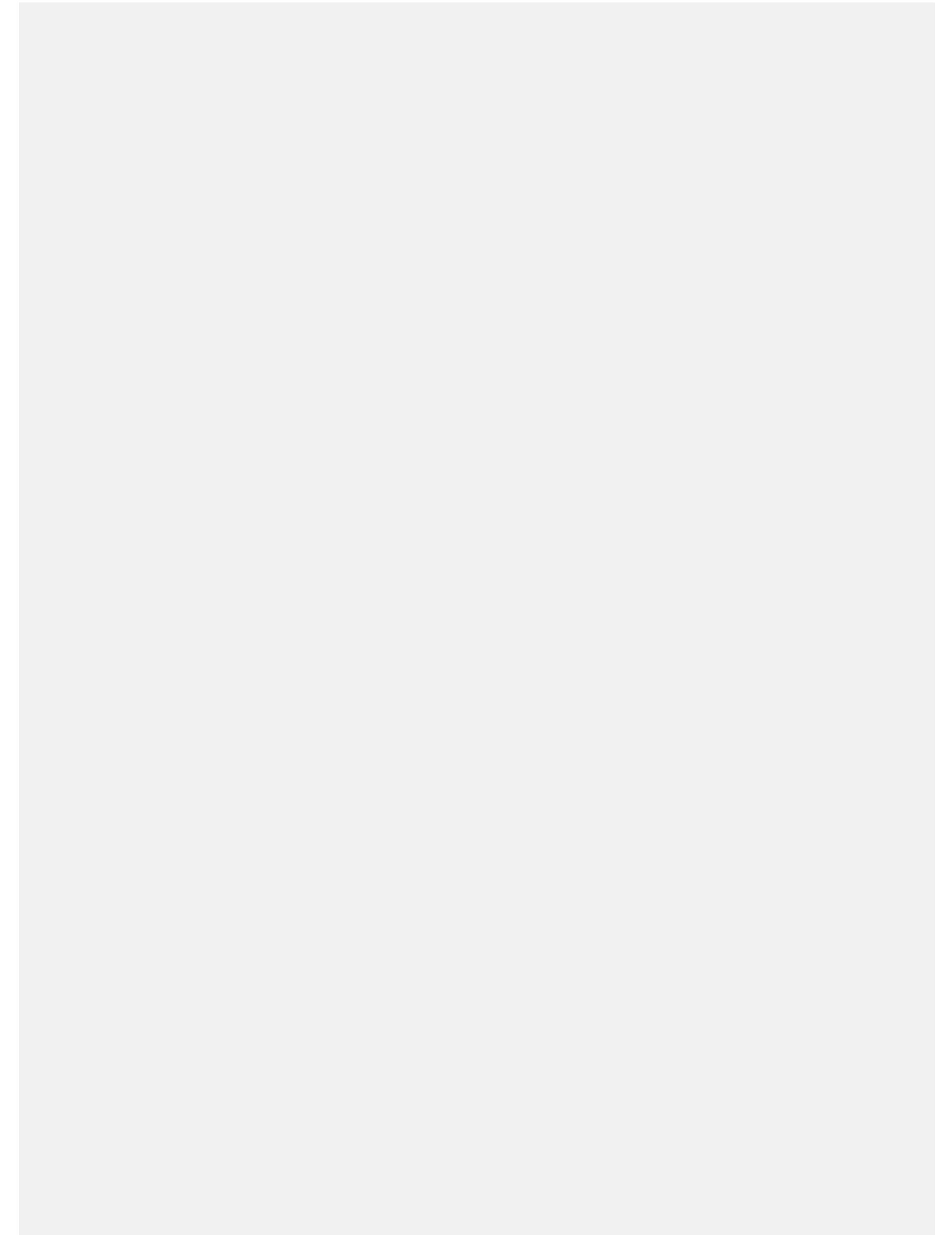
Other factors that negatively influence treatment efficiency: the presence of retained canines in UCLP and mandibular retrognathism in CP.

### Conclusions:

Combined orthodontic/orthognathic surgical treatment should be considered early for severe and borderline UCLP patients as well as for CP with mandibular retrognathism.

Vain attempts to correct or influence adverse growth patterns and orthopaedic and orthodontic dental compensations should be avoided whenever possible.

## Notes





## Comparison of maxillary sinus volume in unilateral cleft lip and palate with hypoplastic maxilla in growing Class III patients

\*Ritu Duggal<sup>1</sup>, Shailendra Rana<sup>1</sup>

<sup>1</sup>ALL India Institute of Medical Sciences, Orthodontics, CDER, New Delhi, India

### Objectives:

The objective of this study was to three-dimensionally evaluate the maxillary sinus dimensions of individuals with nonsyndromic unilateral cleft lip and palate (UCLP) using cone beam computed tomography and compared with noncleft subjects with Class III malocclusion as a result of maxillary retrusion.

### Methods:

The control group (CON) consisted of 18 noncleft adults with class III malocclusion due to maxillary retrusion, and the cleft group (UCLP) consisted of 18 individuals with UCLP and class III malocclusion as a result of maxillary retrusion. Segmentation of the maxillary sinus volume was performed manually using mimics. Maxillary sinus volume, sella–nasion–A point angle (SNA), sella–nasion–B point angle (SNB), and A point–nasion–B point angle (ANB), was assessed using Dolphin software.

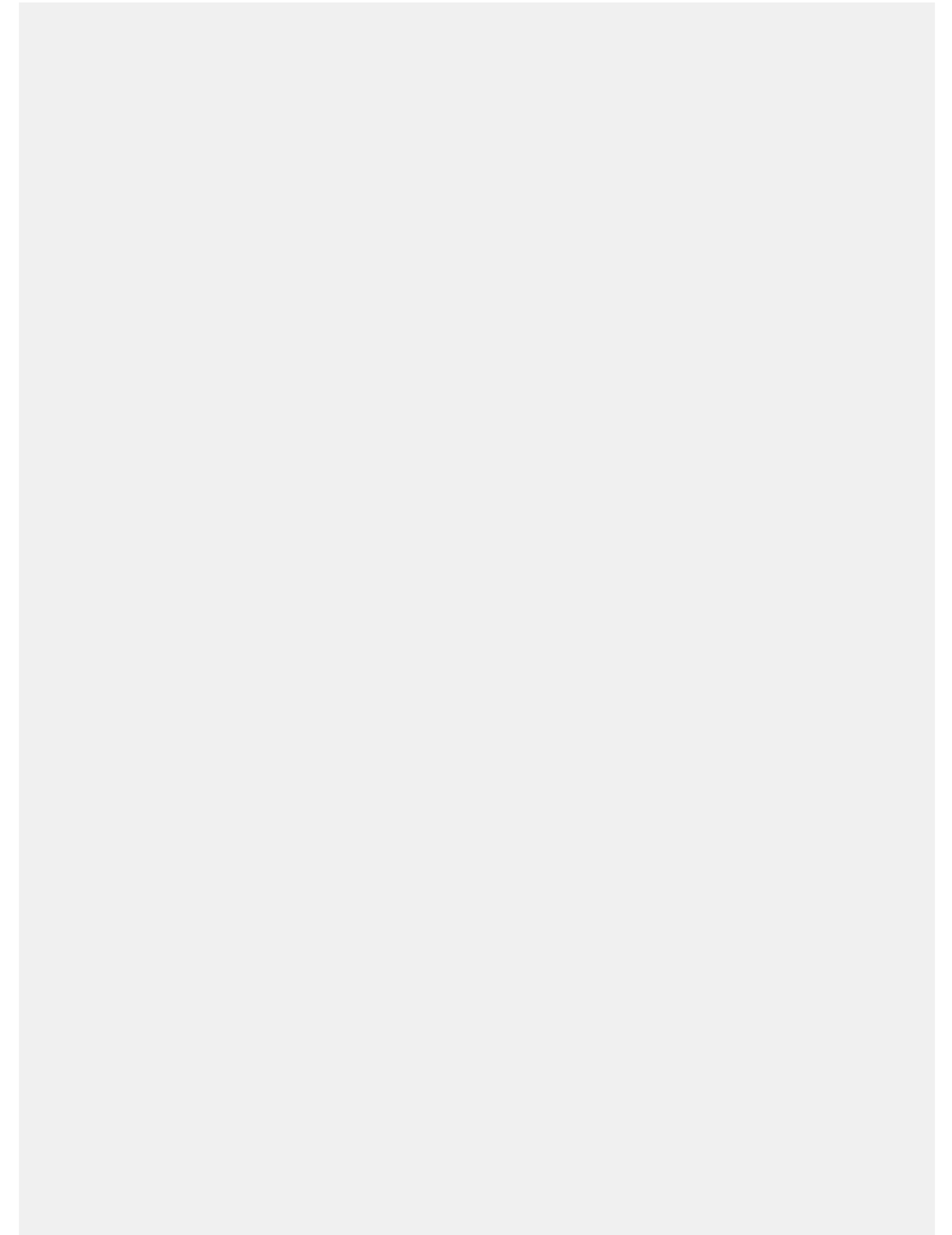
### Results:

We measured five cases maxillary sinus volume in each group and their statistically analysis show no significant difference between groups. We will present outcome of 18 cases in each group in conference.

### Conclusions:

We measured five cases maxillary sinus volume in each group and their statistically analysis show no significant difference between groups. We will present outcome of 18 cases in each group in conference.

## Notes



## Skeletal anchorage changes treatment-strategies in patients with multiple aplasia

\*Susanne Wriedt<sup>1</sup>, Maximilian Moergel<sup>2</sup>, Joachim Wegener<sup>3</sup>, Heinrich Wehrbein<sup>1</sup>

<sup>1</sup>University Medical Centre Mainz, Department of Orthodontics, Mainz, Germany

<sup>2</sup>University Medical Centre Mainz, Department of Maxillofacial Surgery, Mainz, Germany

<sup>3</sup>University Medical Centre Mainz, Department of Prosthodontics, Mainz, Germany

### Objectives:

In this study we evaluated, whether and how treatment-strategies in patients with multiple aplasia changed by using skeletal anchorage, esp. palatal implants.

### Methods:

Using the records (panoramic x-ray, lateral cephalogram, model casts, photos and interdisciplinary medical file) course of treatment of 39 patients with multiple aplasia (i.e. at least 2 aplastic teeth per quadrant) were evaluated extracting parameters such as number and place of aplasia and persisting deciduous teeth, used appliances, direction of tooth movement, place and kind of prosthetic restoration. Descriptive analyse, Chi2-, and Mann-Whitney-U-test were performed using SPSS20.

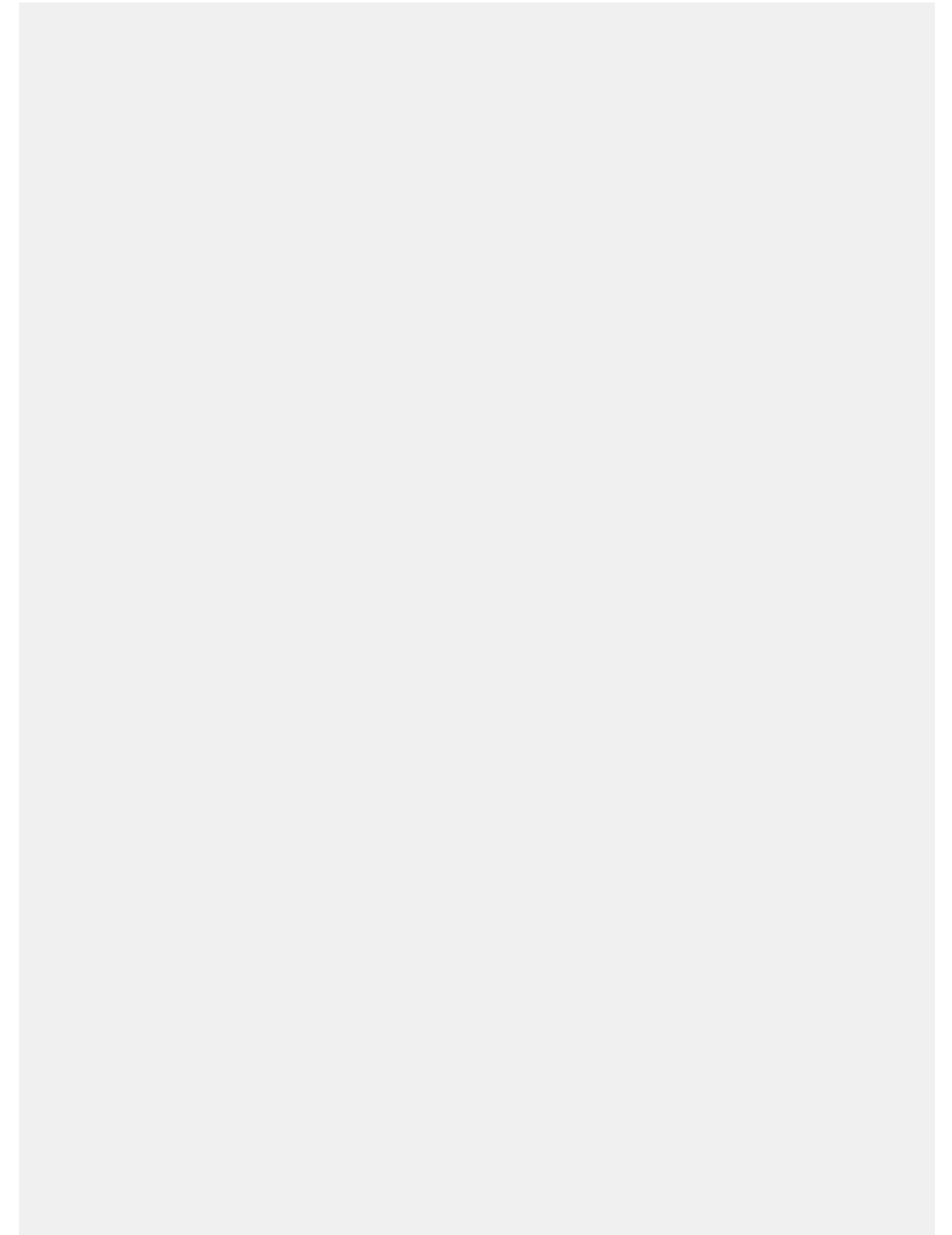
### Results:

At start of treatment patients' age was 14.6+/-4.5 years; there were aplasia of 12+/-6 permanent and persistence of 7+/-4 deciduous teeth. Used appliances were plates (26%), functional (39%) and fixed (88%) appliances, and skeletal anchorage (44%). Teeth were moved in transversal (36%), sagittal (80%), and vertical (85%) direction. Using skeletal anchorage, more spaces in the anterior (p=0.024) and posterior (p=0.030) region were closed orthodontically. Closing one tooth space per quadrant persisting deciduous teeth were left (p=0.008) or only single tooth implants were needed (p=0.018). Wider prosthetic constructions were avoided.

### Conclusions:

Using skeletal anchorage in cases with multiple aplasia more spaces are closed orthodontically or are provided by single tooth implants. By this an extensive prosthetic restoration is avoided.

## Notes



## **RapidNAM: Automated generation of nasoalveolar molding plates for cleft lip and palate treatment**

*\*Franz Xaver Bauer<sup>1</sup>, Florian Dieter Grill<sup>2</sup>, Dominik Gau<sup>1</sup>, Klaus-Dietrich Wolff<sup>2</sup>, Denys J Loeffelbein<sup>2</sup>*

<sup>1</sup>Technische Universität München, Lehrstuhl für Medizintechnik, Garching, Germany

<sup>2</sup>Technische Universität München, Klinik und Poliklinik für Mund-, Kiefer-, Gesichtschirurgie, München, Germany

### **Objectives:**

To improve the functional and aesthetic results in cleft lip and palate, different presurgical orthofacial treatment strategies were introduced over the last 4 decades. Whilst various treatment strategies did not result in significant improvements during and after therapy, recent long-term studies show the effectiveness of nasoalveolar molding (NAM). 65 % of the contacted university clinics in Germany reveal that NAM is available at 54.5 % of these centres. Still, NAM is criticized to be an elaborate and time-consuming treatment modality. Therefore, we introduce an efficient workflow to virtually generate and 3D print a series of NAM plates.

### **Methods:**

The series of patient individual NAM plates is based on an initially taken and digitalized impression and implements relative growth rates to address the newborn's natural growth. The program is subdivided into segmentation, modification and generation of NAM plates. The alveolar segments are detected using curvature analysis. To project the desired shape of a healthy newborn's maxilla, an ellipse is fitted to the alveolar segments. The cleft gap is bridged by extruding the alveolus from the cross section of the larger alveolar segment along the ellipse towards the cross section of the smaller alveolar segment.

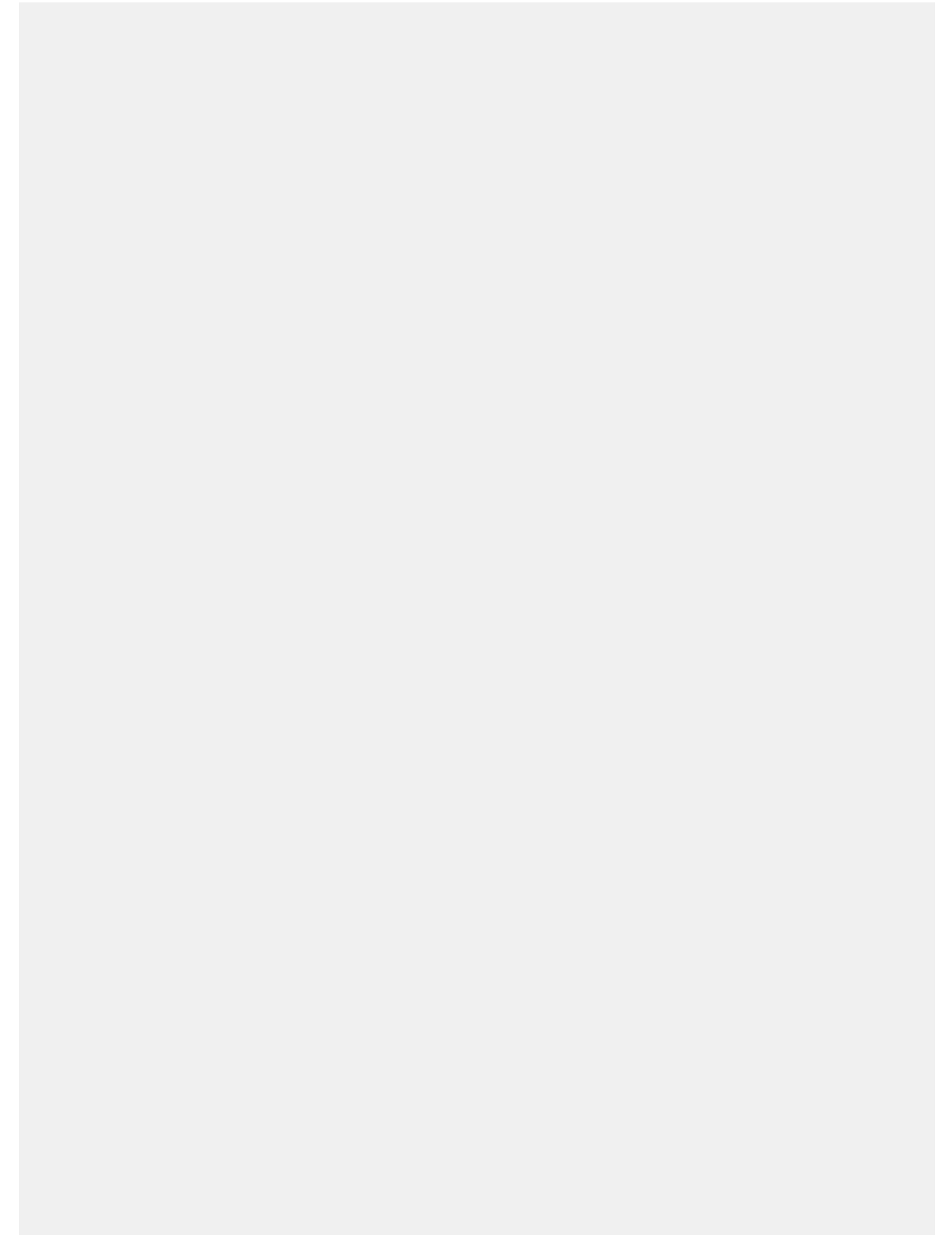
### **Results:**

The presented program enables the therapist to virtually generate a set of individualized NAM plates within 15 minutes. A graphical user interface enables the therapist to interact and modify the resulting set of NAM plates to narrow the cleft and allow an alveolar expansion resulting in a harmonic alignment without inducing forces. Finally, the generated series of NAM plates can be 3D printed. Our pilot study with 6 patients lead to clinically satisfying and comparable to (intersegmental alveolar distance,  $p < 0.05$ ) conventionally manufactured NAM plates, whereas the time-effort for the therapist and patient could be significantly reduced.

### **Conclusions:**

Our presented program minimizes the burden of numerous clinical appointments to take impressions in order to build larger NAM plates to a single initial appointment to take the first impression. Thus, the entire NAM plate series can be manufactured in advance and in a single production run in a specialized additive manufacturing laboratory. Furthermore, it encourages a more widespread use of NAM outside a specialized center where medical checkup and, if needed, an adaptation of the plate can be performed. Thus, the time-consumption and burden for the patients, parents and therapists can be reduced.

## **Notes**



## **Photometric evaluation of bilateral cleft lip and palate patients after primary columella lengthening**

*\*Giulia Rossetti<sup>1</sup>, Mario Ferrari<sup>1</sup>, Valeria Marinella Augusta Battista<sup>1</sup>, Maria Costanza Meazzini<sup>1</sup>, Carlo Chiavenna<sup>1</sup>, Luca Autelitano<sup>1</sup>*

<sup>1</sup>Asst santi paolo e carlo, Maxillofacial surgery smile house, Milano, Italy

### **Objectives:**

The objective of this study is to evaluate the results in term of nasal aesthetics of patients at preadolescence with bilateral cleft lip and palate operated with the Cutting primary columella lengthening technique, associated to a Grayson orthopedic naso-alveolar molding.

### **Methods:**

Since 1998 in the Milano cleft lip and palate center, in order to reduce nasal stigmata in bilateral cleft lip and palate patient, the surgical protocol was changed to a primary columella lengthening technique according to the Cutting and Grayson technique. The study compared with photometric evaluation two samples. Cutting group: 18 consecutive patients at 12 years of age who undergone bilateral cleft lip repair with columella elongation according to a Cutting method and presurgical orthopedics and nasal molding according to a Grayson technique. Normal children group: 39 normal children from a local school of the same age.

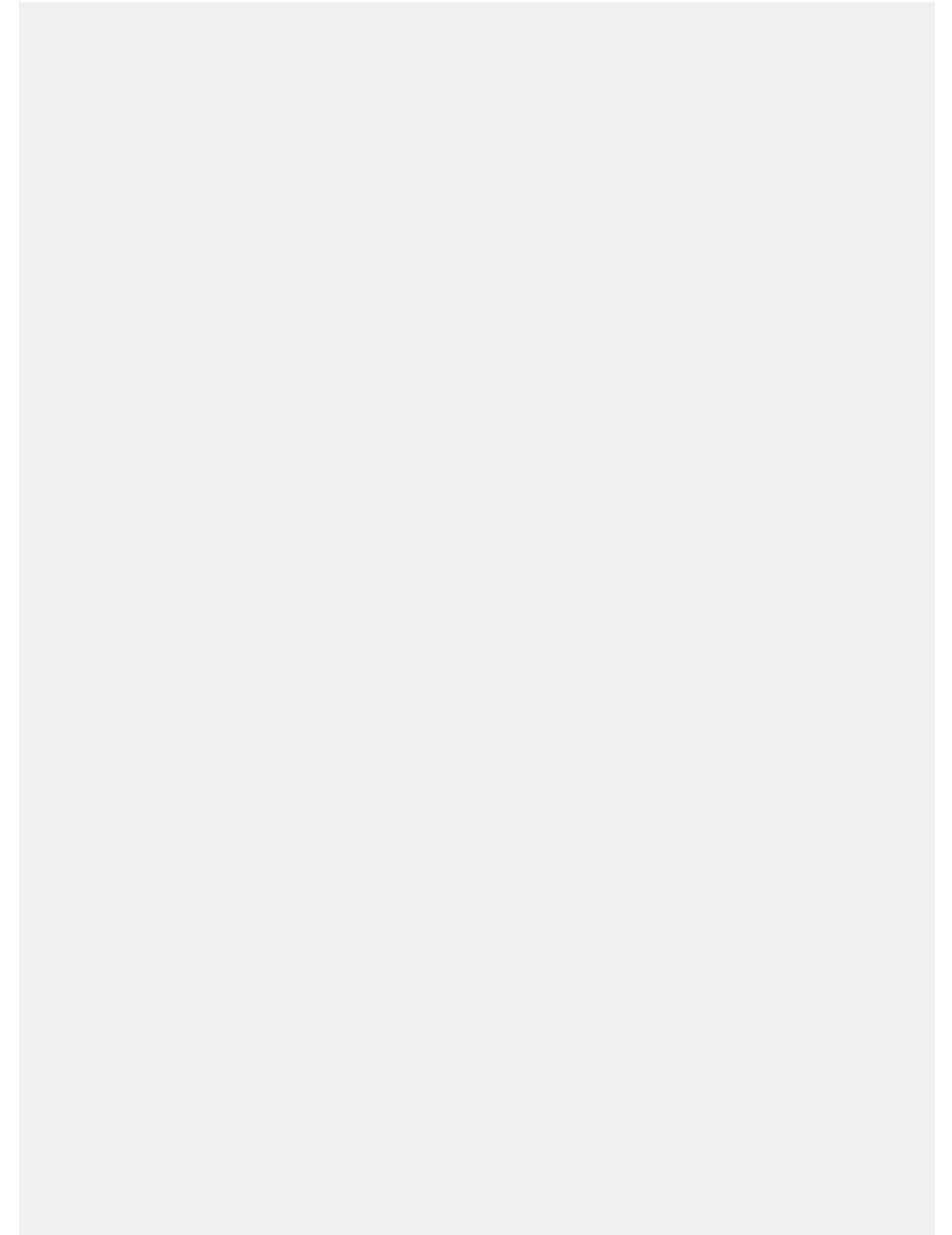
### **Results:**

The length of the columella in Cutting group was very close to the length of normal children. Tip protrusion was very similar in both groups. Naso-labial angle and nostril width were significantly larger in Cutting group.

### **Conclusions:**

The combination of the orthopedic naso-alveolar molding and the surgical primary lengthening of the columella allows for an improvement in nasal aesthetics which is maintained during preadolescence. Although interalar distance and naso-labial angle are still too large, this approach reduces of surgical burden in bilateral cleft lip and palate patient. At this time none of the patient operated with this technique have needed secondary columella lengthening.

## **Notes**





## Classification of final restoration for the created alveolar space by maxillary anterior segmental distraction osteogenesis

\*Jung Yul Cha<sup>1</sup>, Sung-Hwan Choi<sup>1</sup>, Jin Ho Park<sup>1</sup>, Da So Mi Kim<sup>1</sup>, Kyung Hee Ko<sup>1</sup>

<sup>1</sup>College of dentistry, Yonsei University, Orthodontic department, Seoul, South Korea

### Objectives:

Maxillary anterior segmental distraction osteogenesis (DO) for cleft and palate patients has been the alternative treatment option to correct malocclusion with maxillary arch deficiency and severe crowding. The objectives of this study were to investigate the final restoration type for created alveolar space by maxillary anterior segmental DO.

### Methods:

Nine patients (mean age, 16 years 7 months) with unilateral cleft lip and palate were examined for skeletal dental changes in maxillary segmental DO. All patients were treated with intraoral appliance or rigid external distractor (RED). The created space by DO and skeletal measurement were obtained for Pre-DO, Post DO, and final restoration type and presence of bone graft in newly created alveolar bone were evaluated,

### Results:

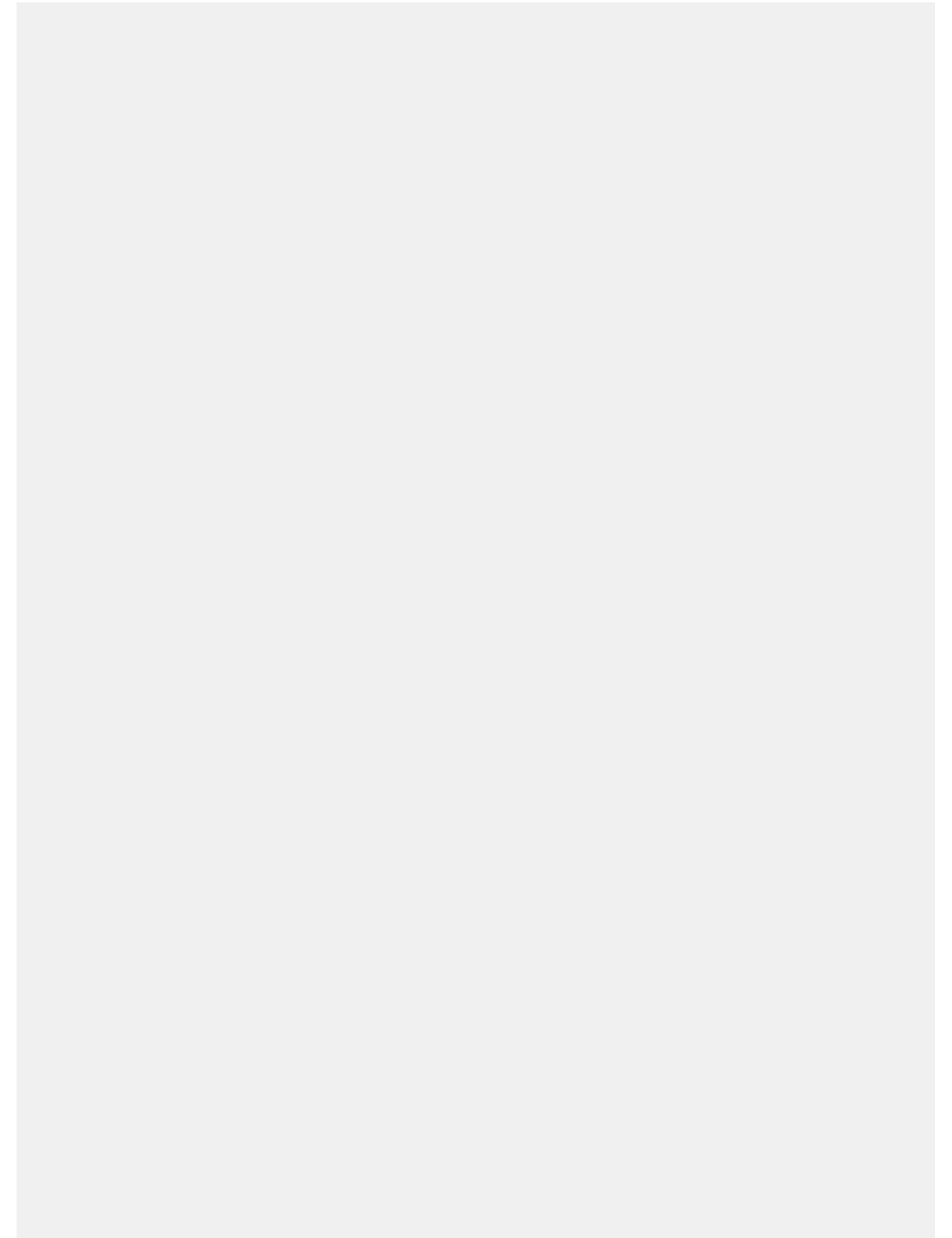
An average of 9.5 mm alveolar bone was created for 17 created alveolar spaces. For final restoration, implants were implanted in six spaces (35%), and bone grafting was performed in four of them. Three spaces (18%) were restored with a bridge and the remaining eight spaces (47%) were closed by orthodontic tooth movement.

### Conclusions:

Maxillary segmental DO can provide enough space for resolving crowding in dentition, and it can be restored with implants or prosthesis. However, additional bone grafting can be necessary if sufficient bone is not created.

Acknowledgement: The material is based upon work supported the Ministry of Trade, Industry & Energy (MOTIE, Korea) under Advanced Technology Center Program. No.10077361, 'Integrated System for Dental Diagnosis, Treatment Simulation & PSI(Patient Specific Instrument) Design'.

## Notes





## **Long-term treatment results on craniofacial development during pubertal growth in patients with bilateral complete CLAP**

*Juliane Neubert<sup>1</sup>, \*Jan-Hendrik Lenz<sup>2</sup>, Karsten Gundlach<sup>2</sup>, Koos Bernd<sup>3</sup>, Franka Stahl<sup>1</sup>*

<sup>1</sup>Rostock University-Medical Faculty, Department of Orthodontics, Rostock, Germany

<sup>2</sup>Rostock University - Medical Faculty, Department of Oral, Maxillofacial and Facial Plastic Surgery, Rostock, Germany

<sup>3</sup>Tübingen University - Medical Faculty, Department of Orthodontics, Tübingen, Germany

### **Objectives:**

To study craniofacial development in male patients with bilateral CLAP from prepubertal to postpubertal stage of development in a retrospective study of serial lateral cephalograms from one cleft palate centre.

### **Methods:**

Materials of 19 Caucasian male patients´ were retrieved (T1: aged 12 years, SD 1.3) having been treated acc. one treatment protocol only. 14 matched untreated individuals with normal occlusion made up for control group. The treatment protocol included presurgical orthop., labioplasty, two-stage palatoplasty, soft tissue closure of the alveolar cleft. Continuous functional orthodontic treatment was conducted with removable and fixed appliances until the age of 18 years. Long-term changes in craniofacial development were measured (T2: aged 17.9 years, SD 1.4) by cephalometrics and tensor analysis.

Statistics: Kolmogorow-Smirnow, t-test

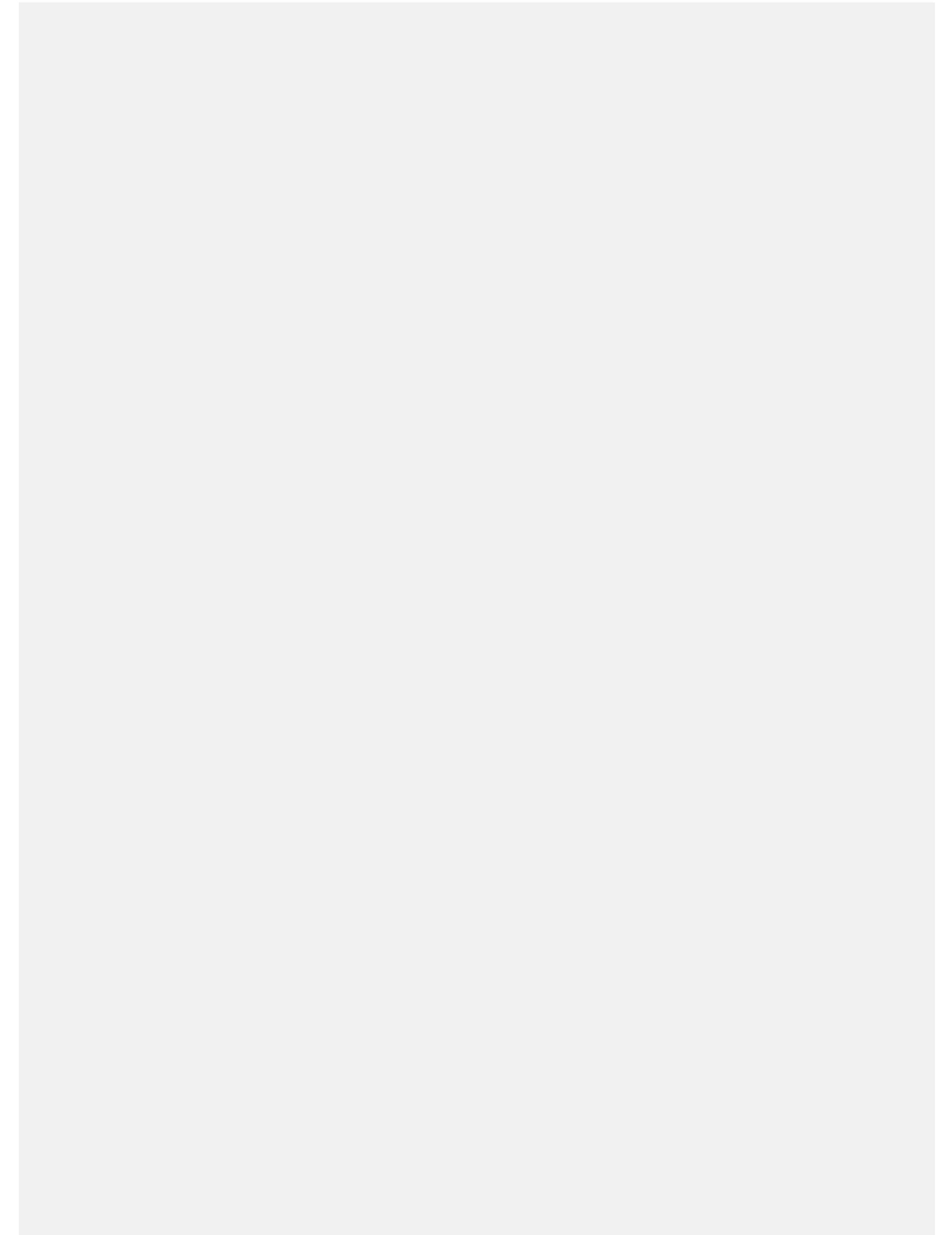
### **Results:**

Initially great differences have been found between the study group and control samples in sagittal dimensions of cranial base, maxilla and mandible. They decreased towards more physiological relations during the treatment.

### **Conclusions:**

The main outcome was an improvement in the sagittal relation between maxilla and mandibula and in relation to the cranial base due to continuous growth stimulation of the initially protrusive postnatal maxilla, instead of retracting the protrusive maxillary segment position in early years.

## **Notes**





## Iatrogenicity v/s Morbidity in surgically treated and untreated complete unilateral cleft lip and palate

\*Rohit Khanna<sup>1</sup>, Tripti Tikku<sup>1</sup>

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### Objectives:

This cross-sectional retrospective cephalometric study was designed to evaluate the maxillo-mandibular relationship by comparing the craniofacial morphology in surgically treated and untreated adult individuals with non-syndromic complete unilateral cleft lip and palate on lateral and postero-anterior cephalogram. Furthermore, the consecutive effect of morbidity and iatrogenicity on size, position and orientation of maxilla and its effect on mandible were also compared

### Methods:

100 nonsyndromic individuals with complete unilateral cleft lip and palate in the age range of 12 to 20 years . The subjects were categorized in Group 1 (50 patients with mean age 17.65 years with no surgical intervention) and Group 2 (50 patients with mean age 17.50 years who had been surgically treated ). Digital lateral and frontal cephalograms were taken and analyzed in all planes with the help of Nemoceph Software. 17 linear and 15 angular parameters on lateral cephalogram and 11 linear and 2 angular parameters on frontal cephalograms were measured. The data so obtained was subjected to statistical analysis.

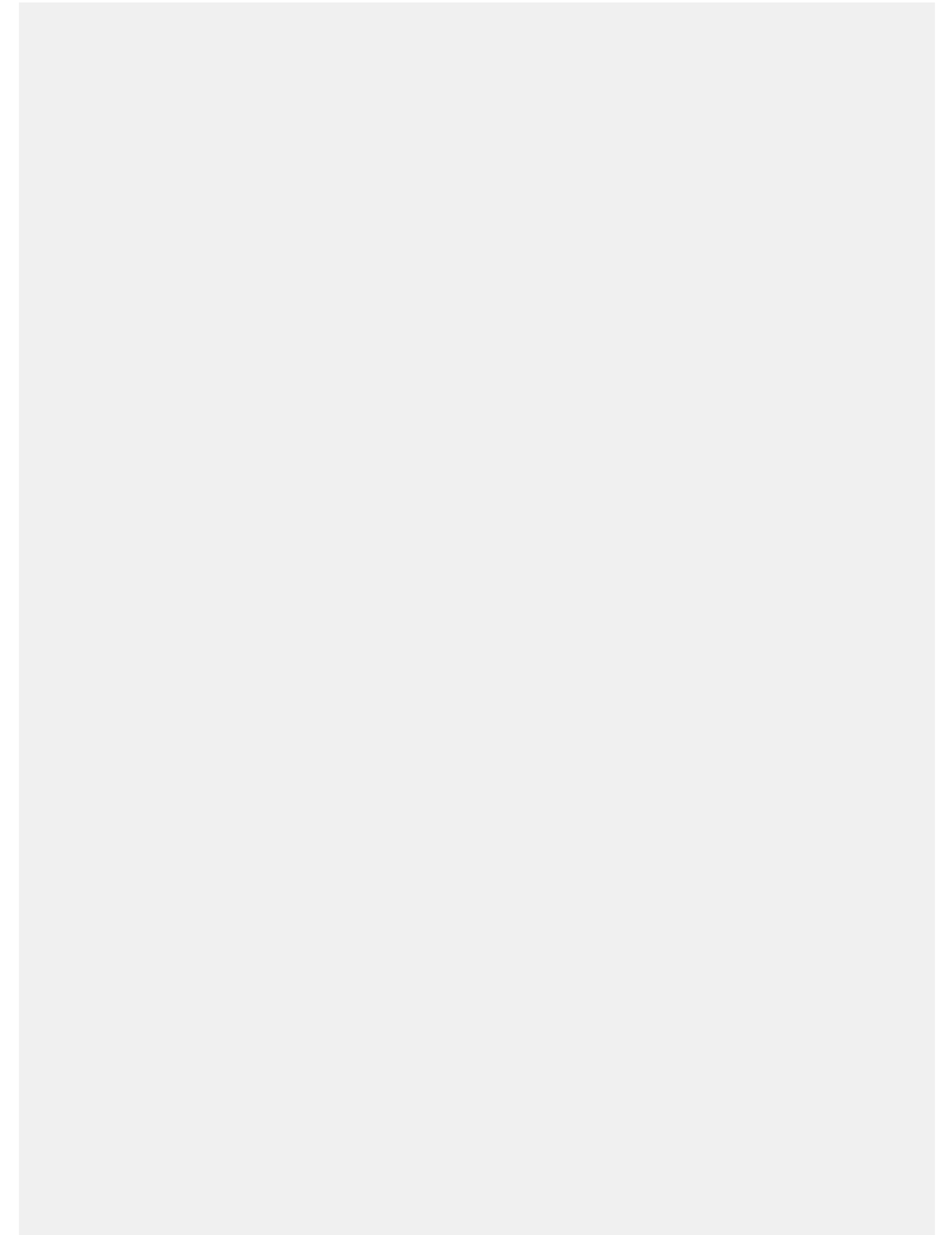
### Results:

This implies surgical intervention does interfere with growth in facial region. This could be attributed to formation of fibrous scar tissue in lip and palate region which had a restraining effect in the form of altered functional matrices of perioral structures which in turn affects the growth of maxilla and mid-face. Definite changes were seen both in the sagittal and frontal plane in the surgically treated group .The findings suggest no sexual dimorphism was present in surgically untreated and treated unilateral complete cleft lip and palate patients for various parameters evaluated

### Conclusions:

This implies surgical intervention does interfere with growth in facial region. This could be attributed to formation of fibrous scar tissue in lip and palate region which had a restraining effect in the form of altered functional matrices of perioral structures which in turn affects the growth of maxilla and mid-face. Definite changes were seen both in the sagittal and frontal plane in the surgically treated group

## Notes





# Cleft Alveolar Osteoplasty





## The choice of the optimal age for carrying out bone plasty of the alveolar process in children with a born cleft lip and palate

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<sup>1</sup>Moscow State University of Medicine and Dentistry, Moscow, Russian Federation

### Objectives:

The period of temporary and replaceable occlusion is the most attractive age period for bone grafting of the alveolar process in order to improve the rehabilitation of children with congenital cleft lip and palate for the following reasons:

- Ability to control the eruption and further movement of the lateral incisor.
- Stabilization of fragments of the upper jaw, absence of roto-nasal anastomosis;
- the regenerative capacity of the body is much higher at this age;
- less pronounced deformation of fragments of the upper jaw;
- the rudiment of the permanent canine is still in the stage of formation

### Methods:

Under supervision in the clinic there were 67 children, aged 4 to 18 years, with a congenital full cleft upper lip and palate. All patients underwent a clinical and radiological study (MSCT) to prepare for the bone plasty of the alveolar sprout. Preparatory stages: orthodontic treatment and closing of the Croton-nasal anastomosis. Bone plastic surgery was performed by an autograft from the iliac crest in the form of a spongy substance mixed with xeno material, and a resorbed collagen membrane was used.

### Results:

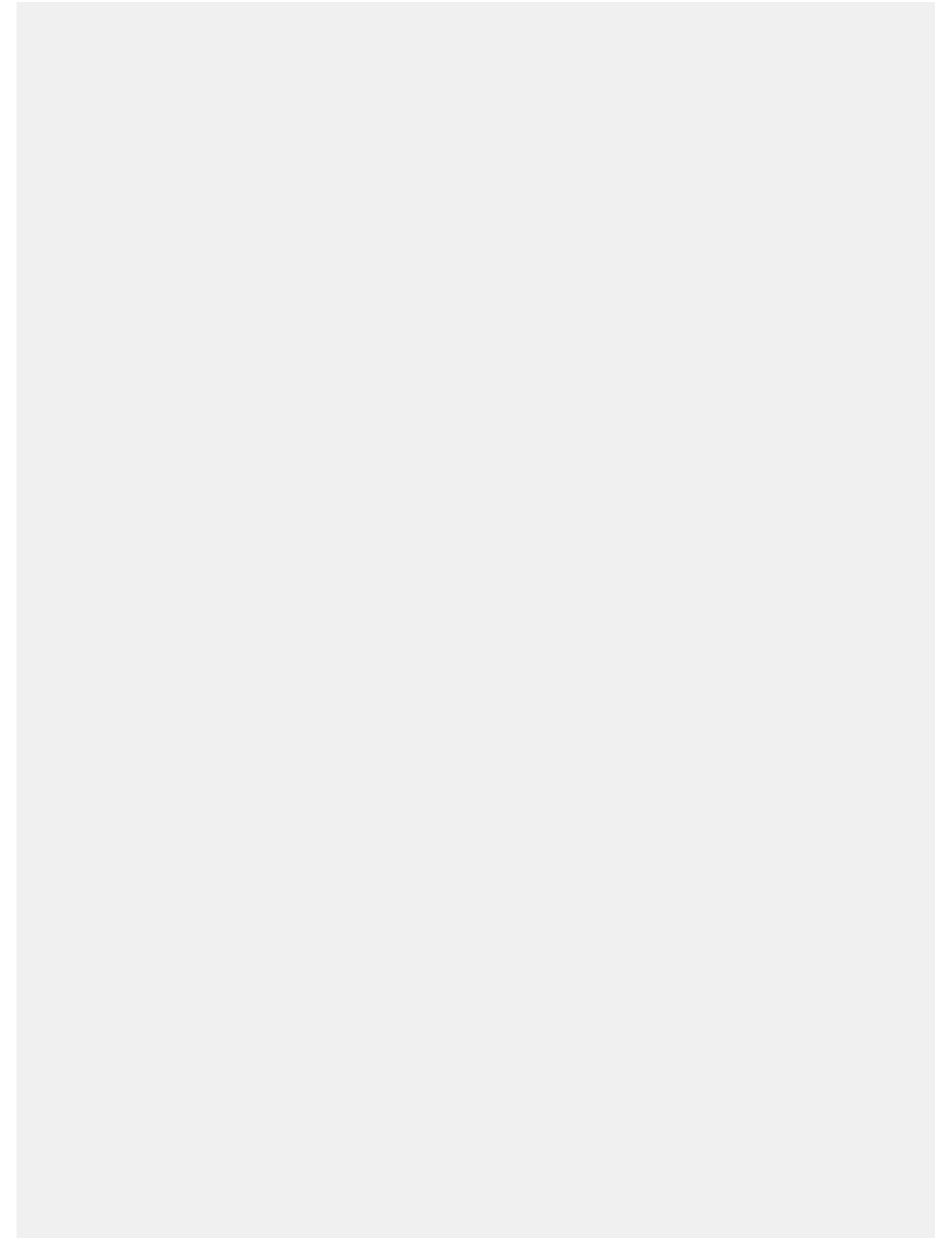
Six months after the bone grafting, all patients underwent X-ray examination - MSCT.

The residual volume of the transplant at the age of 10-18 years was not more than 53%, the residual volume of bone regenerate after the 4-6 years old was about 60%. The total lysis of the transplant was not more than 2%.

### Conclusions:

- On the basis of the results of X-ray control - it can be concluded that the bone-plastic surgery at the age of 4-6 years is more effective, but it is impossible to exclude the possibility of carrying out bone plastic surgery at an older age.
- The earliest timing of bone fracture of the alveolar cleft allows bite stabilization, provide conditions for tusk eruption and reduce the degree of secondary deformities

## Notes





## Volumetric measurement of alveolar bone defect in Chinese patients aged 9 to 12 years

\*Yongqian Wang<sup>1</sup>, Ningbei Yin<sup>1</sup>, Fengzhou Du<sup>1</sup>, Jing Liu<sup>1</sup>, Shuxiu Chen<sup>1</sup>

<sup>1</sup>Plastic Surgery Hospital, Peking Union Medical College, Center for Cleft lip and palate repair, Beijing, China

### Objectives:

Evaluate the volume of a graft is essential in alveolar defect repair. This study investigated the precise volume of alveolar bone defect in Chinese patients aged 9 to 12 years.

### Methods:

26 unilateral alveolar cleft patients were enrolled in this study, including 16 male and 10 female. 2 advanced pre-operative volumetric measurement methods were applied to measure the volume of alveolar bone defect. One was three-dimensional (3D) printing and the other was computer-aided engineering (CAE). The computed tomographic data of the enrolled patients were sent to 3D printing and CAE software. A simulated graft was used on the 3D-printed model, and the graft volume was measured by water displacement. The volume calculated by CAE software used mirror-reverses technique. The actual volumes of the simulated grafts were compared with the CAE software-derived volumes.

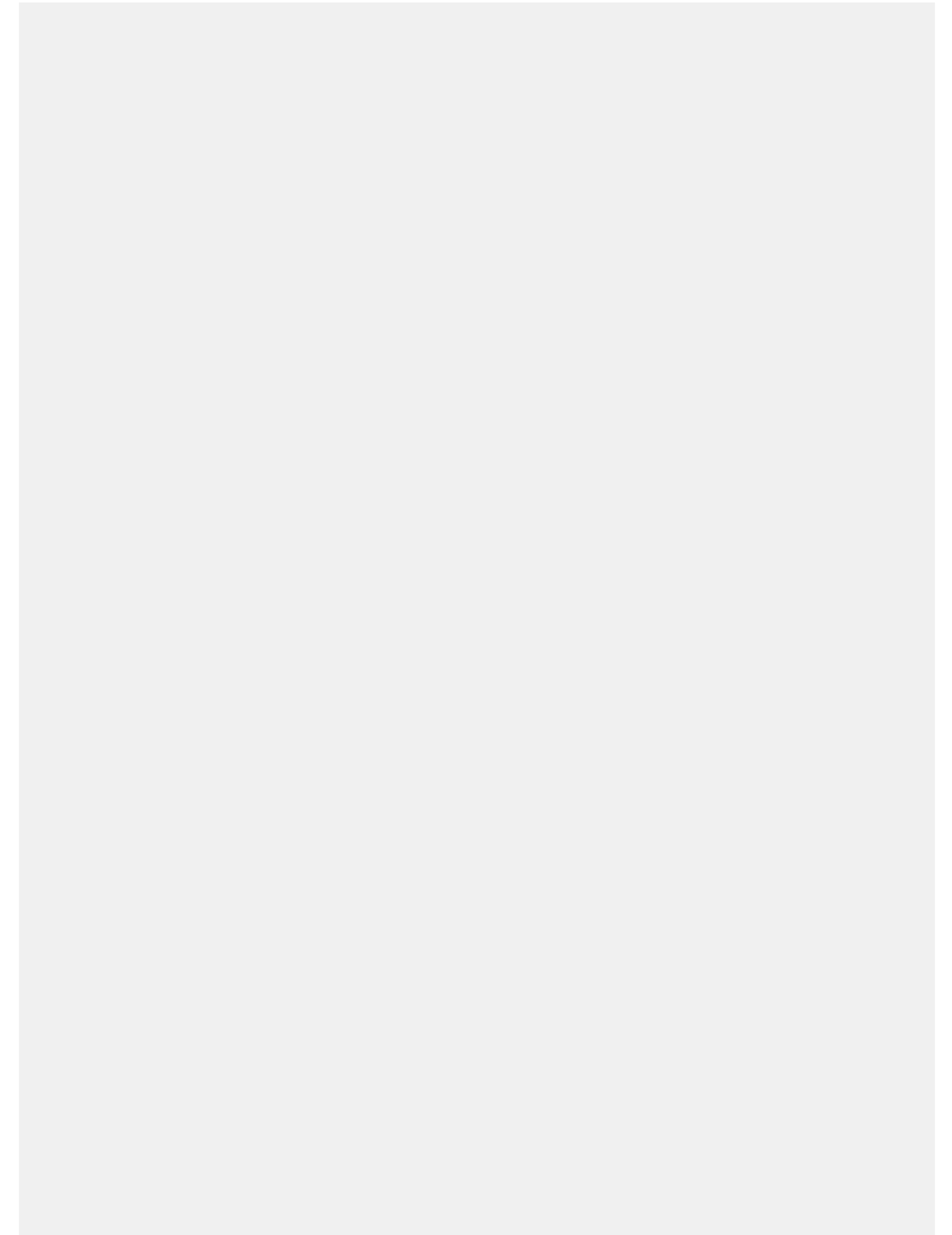
### Results:

The average volume of the simulated bone grafts by 3D-printed models was 1.61 mL, higher than the mean volume of 1.60 calculated by CAE software. The difference between the 2 volumes was from -0.34 to 0.54 ml. The difference in ratio varied from 0.86% to 38.57%. The paired Student t test showed no statistically significant difference between the volumes derived from the 2 methods.

### Conclusions:

This study demonstrated that the mean volume of alveolar bone defect was about 1.6 ml in Chinese patients aged 9 to 12 years. The mirror-reversed technique by CAE software is as accurate as the simulated operation on 3D-printed models in unilateral alveolar cleft patients. These findings further validate the use of 3D printing and CAE technique in alveolar defect repairing.

## Notes





## Clinical application of maxillary distraction osteogenesis in the treatment of extensive alveolar cleft: our experience

\*Bin Zhang<sup>1</sup>, Xiaofeng Bai<sup>1</sup>, Zhenjin Zhao<sup>1</sup>, Zengjian Li<sup>1</sup>, Qiang Liu<sup>1</sup>

<sup>1</sup>China Medical University Stomatological Hospital, Shenyang, China

### Objectives:

Share the experience of the horizontal distraction osteogenesis in the treatment of extensive alveolar cleft of maxilla.

### Methods:

Five patients of complete cleft lip and palate involved in the program, average 14.8 years old. All the patients have received orthodontic treatment for one year to arrange the teeth in proper position. And the same problem was an extensive alveolar cleft average 7.68mm. All the cases in this program were treated by maxillary distraction osteogenesis. Four of the cases were used interdental bone anchored distraction devices, only one case used dental anchored distraction device. Distraction began on 5 days after the operation at a rate of 0.5-1mm per day till the both ends of alveolar cleft contact. Further orthodontic treatment and prosthetics were carried out after distraction.

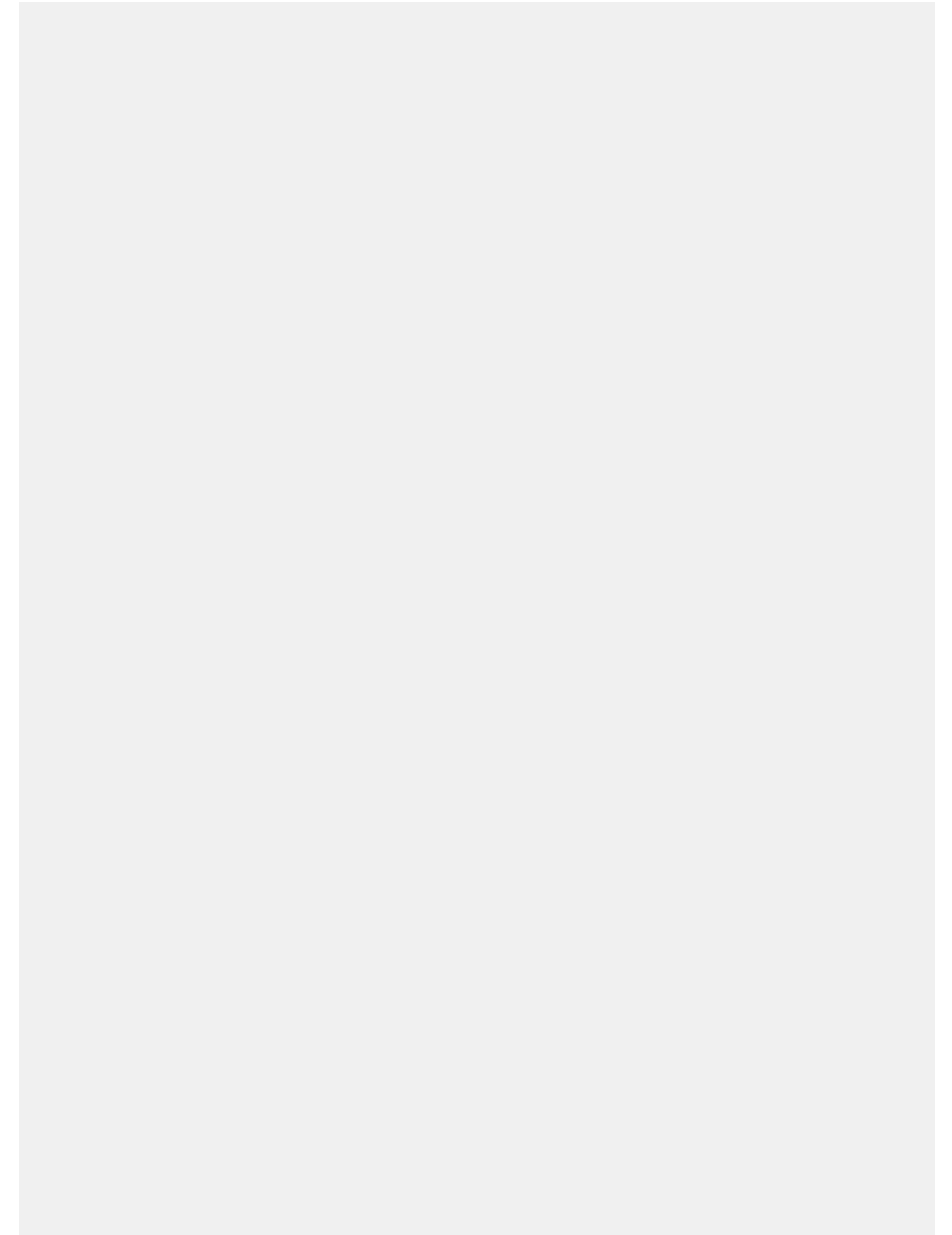
### Results:

Almost all the case need more than 10 days distraction, and three of them completely closed the cleft by interdental bone anchored distraction devices. One case with the interdental bone anchored distraction devices had a complication of screws loosening because of the thin maxilla bone, then the distraction devices were removal. The dental anchored distraction device case in our program failed to close the cleft completely due to the anchore teeth tilted severe forward. However, the osteogenesis of the maxillar alveolar arch also provide sufficient bone tissue to finish the orthodontic treatment and the left gap can be closed by bone graft.

### Conclusions:

Maxillary distraction osteogenesis is effective and feasible in the treatment of extensive alveolar cleft. It can provide sufficient bone tissue for the following orthodontic and implant, and get rid of the restriction of the insufficient soft tissue and the low survival ratio of the iliac bone graft.

## Notes



## A rare case of congenital abnormality of maxillofacial area

\*Yulia Stepanova<sup>1</sup>, Alexey Baidurashvili<sup>1</sup>, Margarita Tsyplakova<sup>1</sup>, Anna Usoltseva<sup>1</sup>

<sup>1</sup>Turner Research Institute for Children's Orthopedics, maxillofacial surgery, Saint-Petersburg Pushkin, Russian Federation

### Objectives:

Optimization of treatment of children with rare forms of congenital abnormalities of maxillofacial area. Treatment of such patients with rare forms of facial cleft is a challenge, first because of the severity of anatomical and functional disorders, and secondly because of the small number of publications in the world literature.

### Methods:

A girl (3 m.o.) with congenital full bilateral cleft lip, transverse cleft of the face on both sides, congenital skin-cartilage rudiment of buccal region, atypical cleft palate, micrognathia, was admitted. She had a disrupted function of breathing, feeding, swallowing, she was fed through a probe. X-ray examination revealed a moderate underdevelopment of the middle face zone. 1 stage of surgery: closure of transverse cleft, removal of skin-cartilage rudiment, formation of oral cavity, closure of congenital atypical cleft of the soft palate. In 3 months, the 2nd stage: rhinocheyloplasty of congenital bilateral cleft.

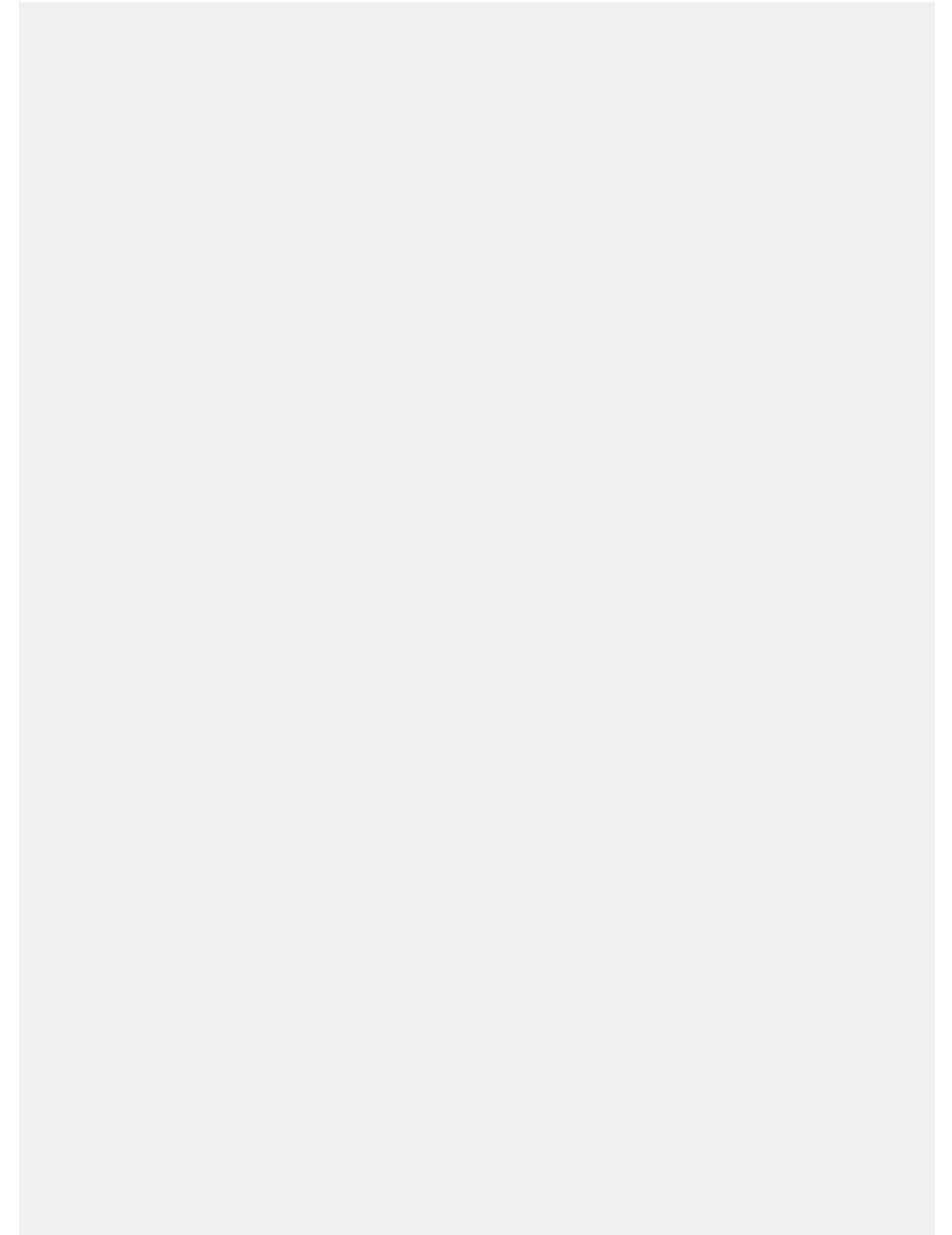
### Results:

As a result of the surgical treatment not only cosmetic disorders were eliminated, conditions for normal growth of the mandible were created, and the function of nutrition was restored. Even after the first operation, the child was able to eat from the horn, and in later times also eat solid food. The follow-up period for the child was 1.5 years. In the postoperative period, a massage of postoperative scars was used. The child undergoes orthodontic treatment. The child was examined regularly every 2 months. A persistent cosmetic and functional result has been obtained.

### Conclusions:

Despite the severity of abnormalities in children with atypical forms of orofacial clefts, an integrated approach is necessary. Orthodontic treatment from the first days of a child's life and until the end of the formation of a person, conservative measures to prevent gross scarring, constant long-term monitoring and active participation of parents significantly improve the results of treatment of children with atypical forms of face clefts.

## Notes





## Mini-screws in presurgical orthodontic protocol in treatment of children with unilateral cleft lip and palate

\*Lina Mazurina<sup>1,2</sup>, Adil Mamedov<sup>1,2</sup>, Anastasiya Maclennan<sup>1,2</sup>, Natalia Morozova<sup>1,2</sup>, Yriy Volkov<sup>1,2</sup>, Anna Kalinina<sup>1,2</sup>

<sup>1</sup>First Medical University named I.M.Sechenov, Pediatric dentistry and orthodontics, Moscow, Russian Federation

<sup>2</sup>I.M.Sechenov Moscow Medical State University, Pediatric Dentistry and orthodontics, Moscow, Russian Federation

### Objectives:

To increase the efficiency of surgical treatment of children with unilateral cleft lip and palate by reducing the size of the defect and reduction in the period of rehabilitation.

### Methods:

During the period from 2015-2017 an orthodontist and maxillo facial surgeon working in collaboration have developed an algorithm for presurgical orthodontic treatment of children with unilateral CLP and have treated 20 patients aged from 3 days to one year. Dental casts were obtained from every patient before and after treatment. During two weeks period, they have attached mini-screws to the big fragment of the upper jaw, projection of the lateral incisor and the small fragment of the upper jaw projection of the canine. On the implant supra-structure were fixed the orthodontic elastic chain. After one week we activate an elastic chain.

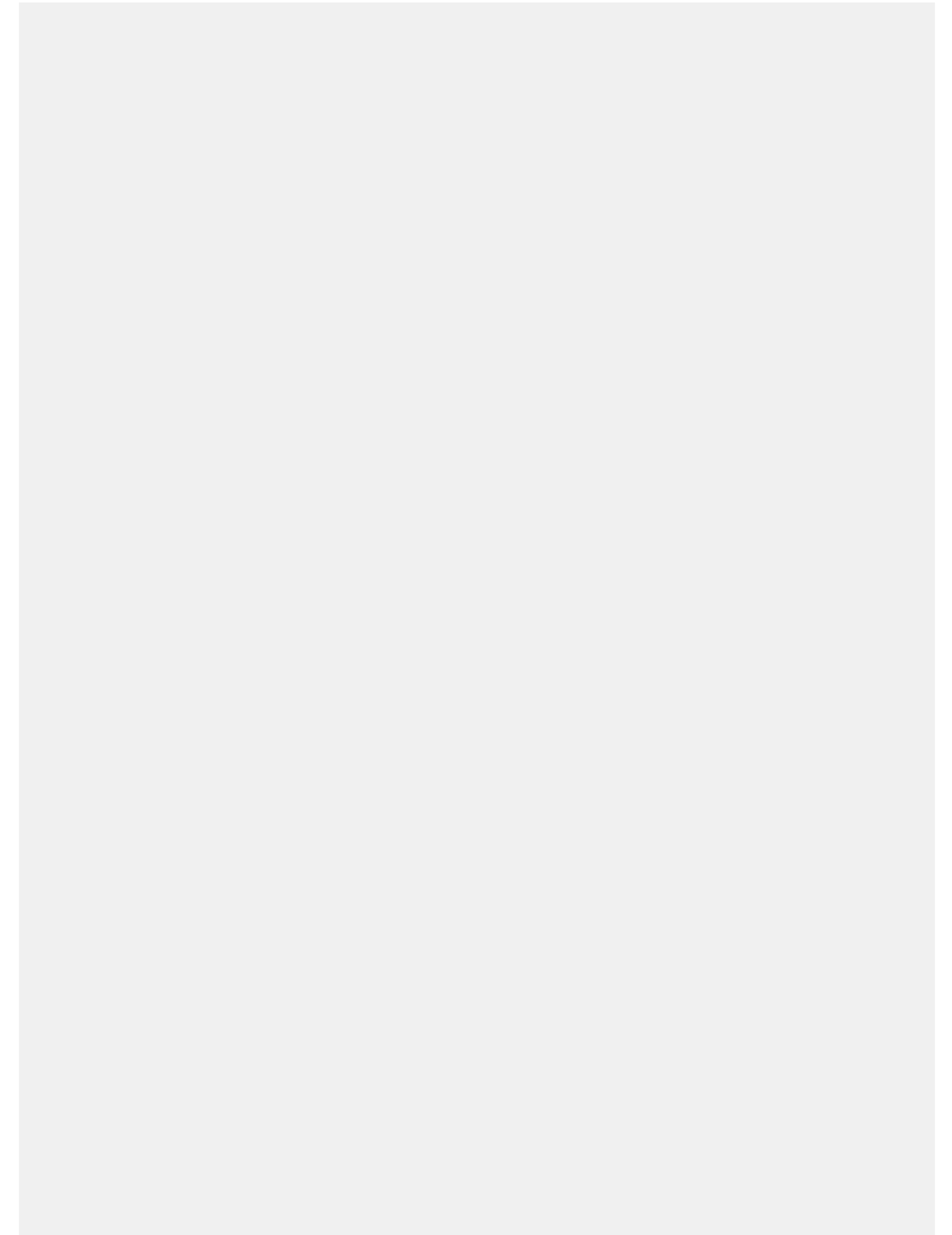
### Results:

Significant changes occurred after presurgical orthodontic treatment. The size of diastasis between fragments of the alveolar fragments decreased from the 12 mm to 6 mm. Treatment protocol was followed by the primary-stage cheiloplasty.

### Conclusions:

The use of the mini-screws helps to reduce the diastasis between the fragments of the upper jaw; reduce the time of the beginning of the primary operation; create a favorable situation for the surgical intervention; create a favorable situation for the nutrition, respiration, swallowing.

## Notes







## Alveolar bone grafting in cleft patients. Function and Aesthetic

\*Aysegul Mine Tuzuner-Oncul

<sup>1</sup>Ankara University, Faculty of Dentistry, Department of Oral & Maxillofacial Surgery, Ankara, Turkey

Alveolar bone grafting is an important part of the reconstructive journey for many cleft lip and palate patients.

The reconstruction of the alveolar cleft can provide both aesthetic and functional benefits to the patient. To be able to effectively treat alveolar clefts, it is essential to possess an understanding of several aspects of the problem. Acquiring this knowledge will allow the surgeon to treat the different variants of the cleft alveolus.

The reconstruction of the alveolar cleft can provide both aesthetic and functional benefits to the patient. To be able to effectively treat alveolar clefts, it is essential to possess an understanding of several aspects of the problem. Acquiring this knowledge will allow the provider to treat the different variants of the cleft alveolus.

The goals of alveolar bone grafts are as follows:

To achieve closure of vestibular and palatal oral nasal fistula

To provide adequate bone stock for the permanent maxillary central incisor, lateral incisor and canine teeth

To establish the nasal skeletal base

To provide a suitable bony architecture on which to perform symmetric nasolabial muscle reconstruction

To establish a functional floor of the nose and nasal airway on the cleft side

To provide adequate bone stock for placement of an osseointegrated dental implant

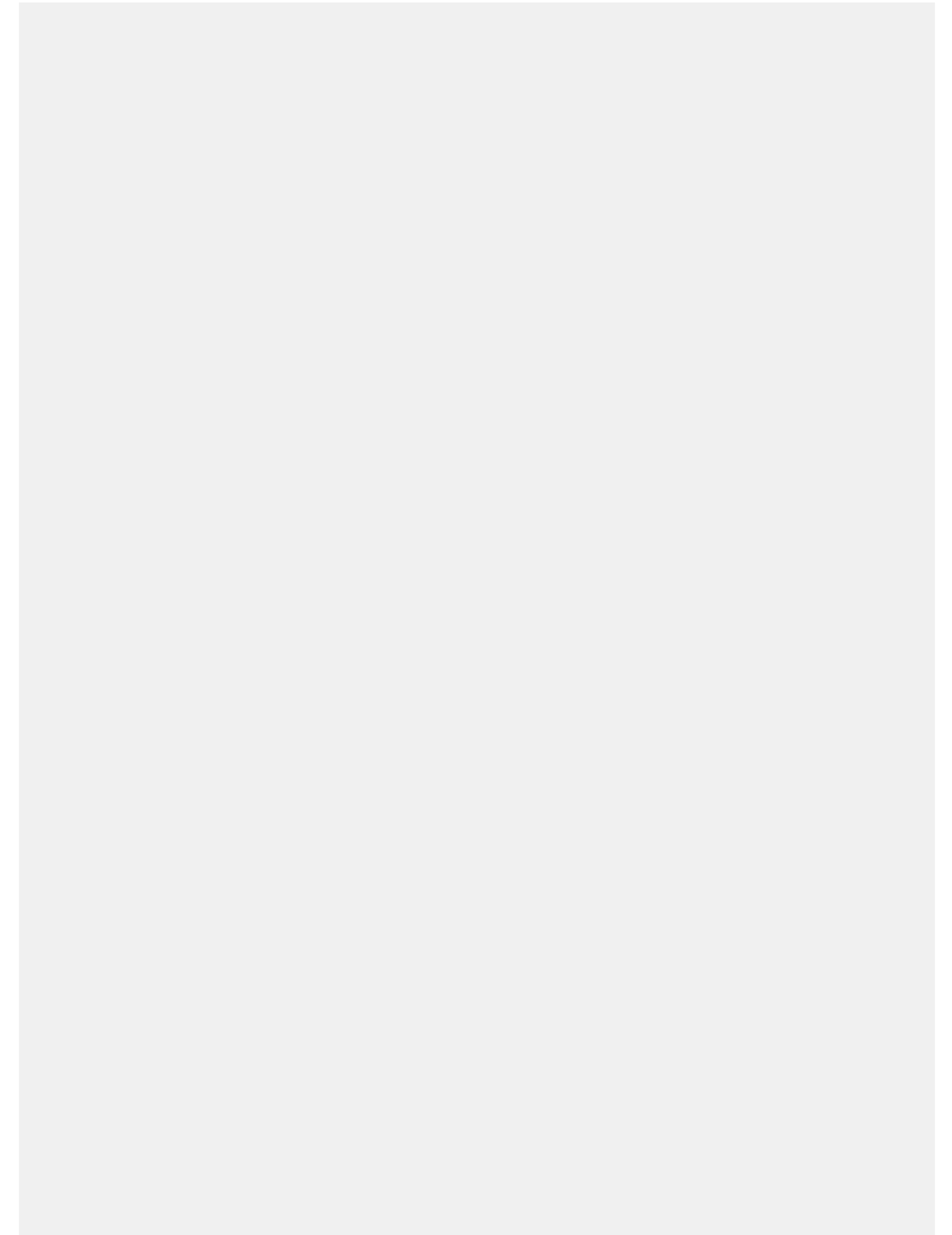
To improve oral hygiene and speech

To minimize growth disturbances

To promote periodontal health with keratinized gingival.

In this lecture controversies and benefits in terms of function and aesthetics will be revealed.

## Notes





# Treatment Concepts and Results



## Factors Affecting Mid-facial Growth Outcome in UCLP Patients - Surgical Techniques in One UK Centre as a Factor Influencing Mid-face Growth Outcome

\*Sukhi Atwal<sup>1</sup>, Thomas Dietrich<sup>2</sup>, Lars Enocson<sup>3</sup>, Rona Slator<sup>3</sup>, Bruce Richard<sup>3</sup>

<sup>1</sup>Queen Alexandra Hospital, Orthodontics, Portsmouth, United Kingdom

<sup>2</sup>Birmingham Dental Hospital, Birmingham, United Kingdom

<sup>3</sup>Birmingham Children's Hospital, Birmingham, United Kingdom

### Objectives:

To investigate factors associated with facial growth evaluated with the 5-year index.

Facial growth outcomes in children with complete unilateral cleft lip and palate (cUCLP) are assessed nationally each year and reported by CRANE. Outcomes vary between centres. Surgical technique and skill have been implicated as factors that might affect facial growth outcomes. Three "primary" cleft surgeons using different techniques contribute West Midlands Cleft Centre (WMCC) data to CRANE. We looked for an association between surgeon or technique and facial growth in our centre.

### Methods:

This was a retrospective study of 138 patients with cUCLP born between 2000 to 2009 with externally assessed 5 year index scores. Factors investigated included surgeon, surgical technique, morphology of the infant cleft, and anomalies of deciduous lateral incisors. WMCC clinical notes, the cleft database, and dental study models were reviewed.

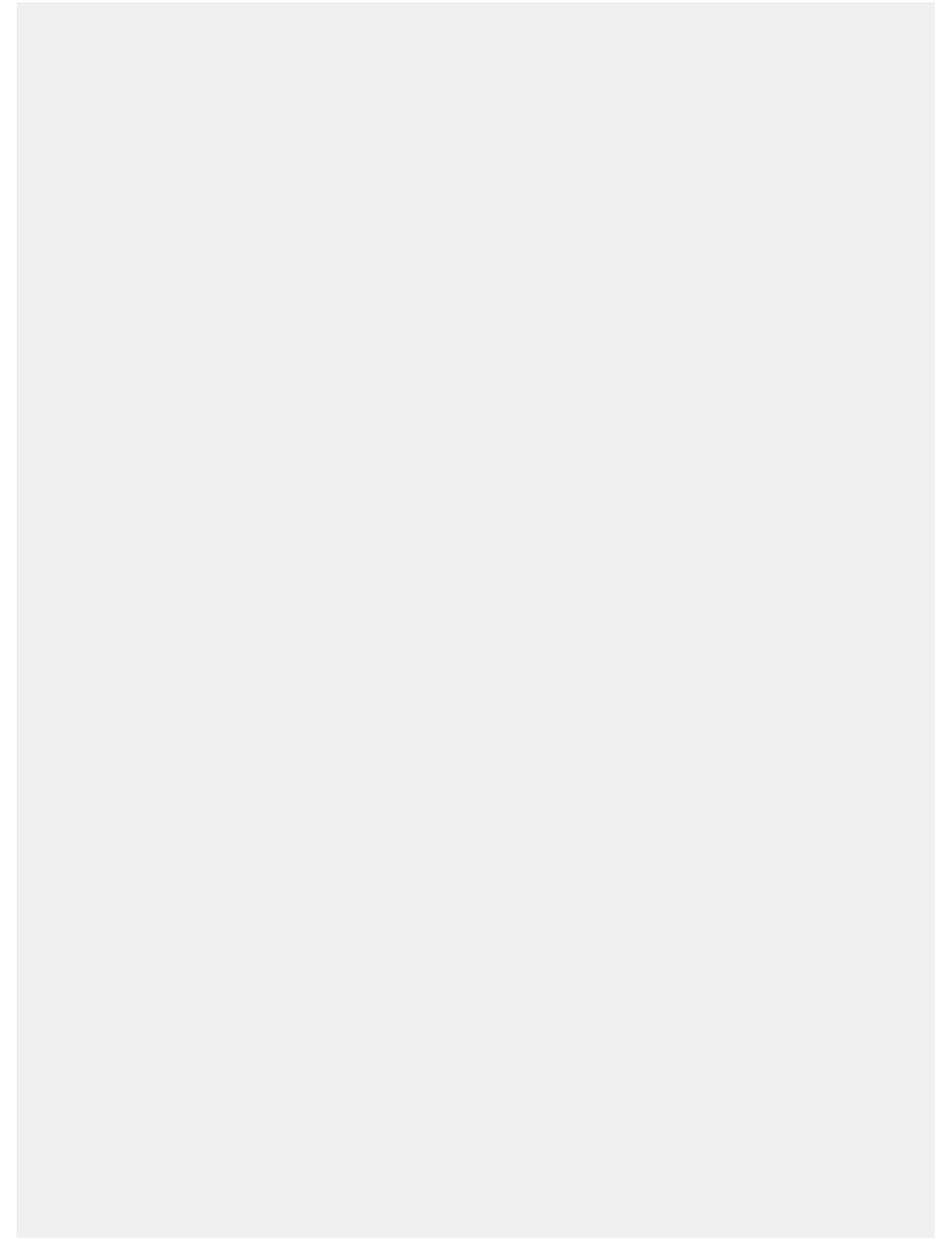
### Results:

2 different surgical techniques for primary closure of the cleft were identified but surgeon and technique were confounded. Technique ( $p=0.001$ ) and the morphology of the cleft ( $p=0.018$ ) were significantly associated with outcome. Anomalies of deciduous lateral incisors were not significantly related to outcome but a trend was identified.

### Conclusions:

There are differences in facial growth outcomes between centres. This study showed differences in outcome associated with morphology of the cleft, and between different surgical techniques used by different surgeons in one centre. We suggest that facial growth outcomes need reporting by surgeon and that further multi centre investigation of the effect of the primary surgery on outcome is needed.

## Notes



## Trial Telepractice for speech

*\*Toko Hayakawa<sup>1,2</sup>, Fuko Yamauchi<sup>3</sup>, Hideto Imura<sup>2,3</sup>, Chisako Inoue<sup>2,3</sup>, Yoshiko Aihara<sup>2,3</sup>, Yoshikazu Nagase<sup>3</sup>, Naoki Saito<sup>2,3</sup>, Nagato Natsume<sup>2,3</sup>*

<sup>1</sup>Aichi Gakuin University, Faculty of Psychological and Physical Science, Nisshin, Japan

<sup>2</sup>Aichi Gakuin University Hospital, Cleft Lip and Palate Center, Nagoya, Japan

<sup>3</sup>Aichi Gakuin University, Division of Research and Treatment for Oral and Maxillofacial Congenital Anomalies, School of Dentistry, Nagoya, Japan

### Objectives:

Telepractice (TP) is officially approved as a form of providing speech therapies in some countries. Children with CP are eligible for follow-ups/speech therapy. When speech errors are developed, it should be eliminated through therapies. We are trying to find proper tools and modify a protocol, and introduce TP to clinical sites. This study was performed to clarify if ST could perceive resonance or articulation errors through a speaker and how TP could work for infants and adolescent with/without not only cleft but also diagnosis of autism, ADHD and else.

### Methods:

We have provided TP to children with CP with several free-apps and seen the frequency of TP varied to patients' degree of speech improvement and of need. The number of participants, whom we had provided TP to, was 27 in total. The age range of participants was 11m-17yo.

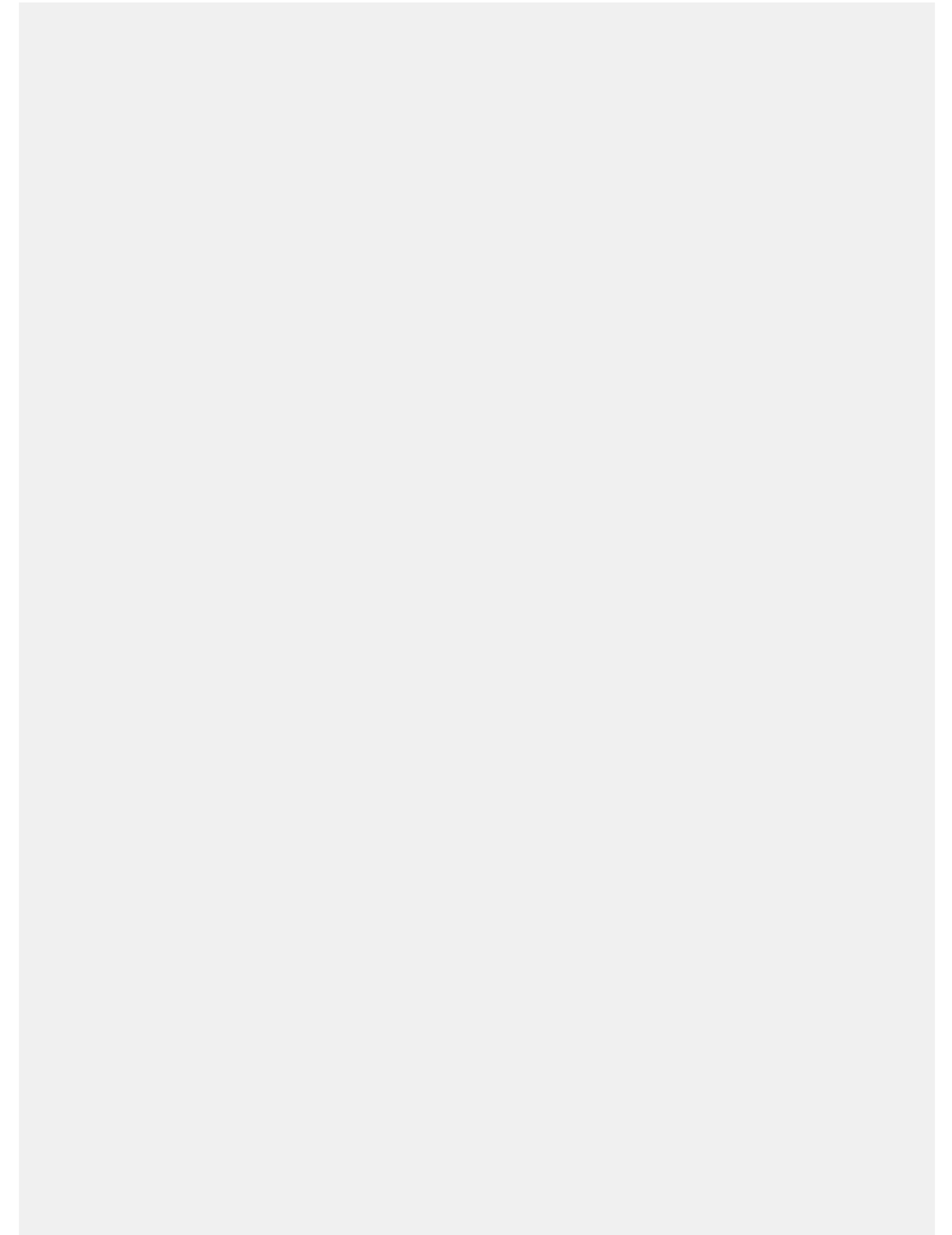
### Results:

ST could perceive hypernasality, other resonance abnormality or compensatory misarticulation through speaker and could provide TP effectively to all patients enrolled. Once the improvement of hypernasality was detected by ST through TP, the patient was sent to our Cleft Center to receive an endoscopy and speech check-up. The endoscopic view and the result form speech check in person could prove the improvement of hypernasality. TP for infants, who did not have a first word, resulted in to-do/not-to-do session to caregivers and developmental check-up. Patients with autism, ADHD, mental retardation could have TP with shorter sessions.

### Conclusions:

TP was effective to eliminate articulation and resonance errors. We conclude this form providing speech therapy and service may be effective and very patient centered careful care, at the same time we had several no-show in a screen at the appointed time and transition from TP to therapy in person seemed uneasy. TP were provided during night or weekends when patients and caregivers were off from their duties, so ST providing TP did overtime every time. Establishing a certain system of TP including ethical aspects is good for both patients and clinicians. This study was supported by Grant-in-Aid for Scientific Research (C) 15K01398

## Notes





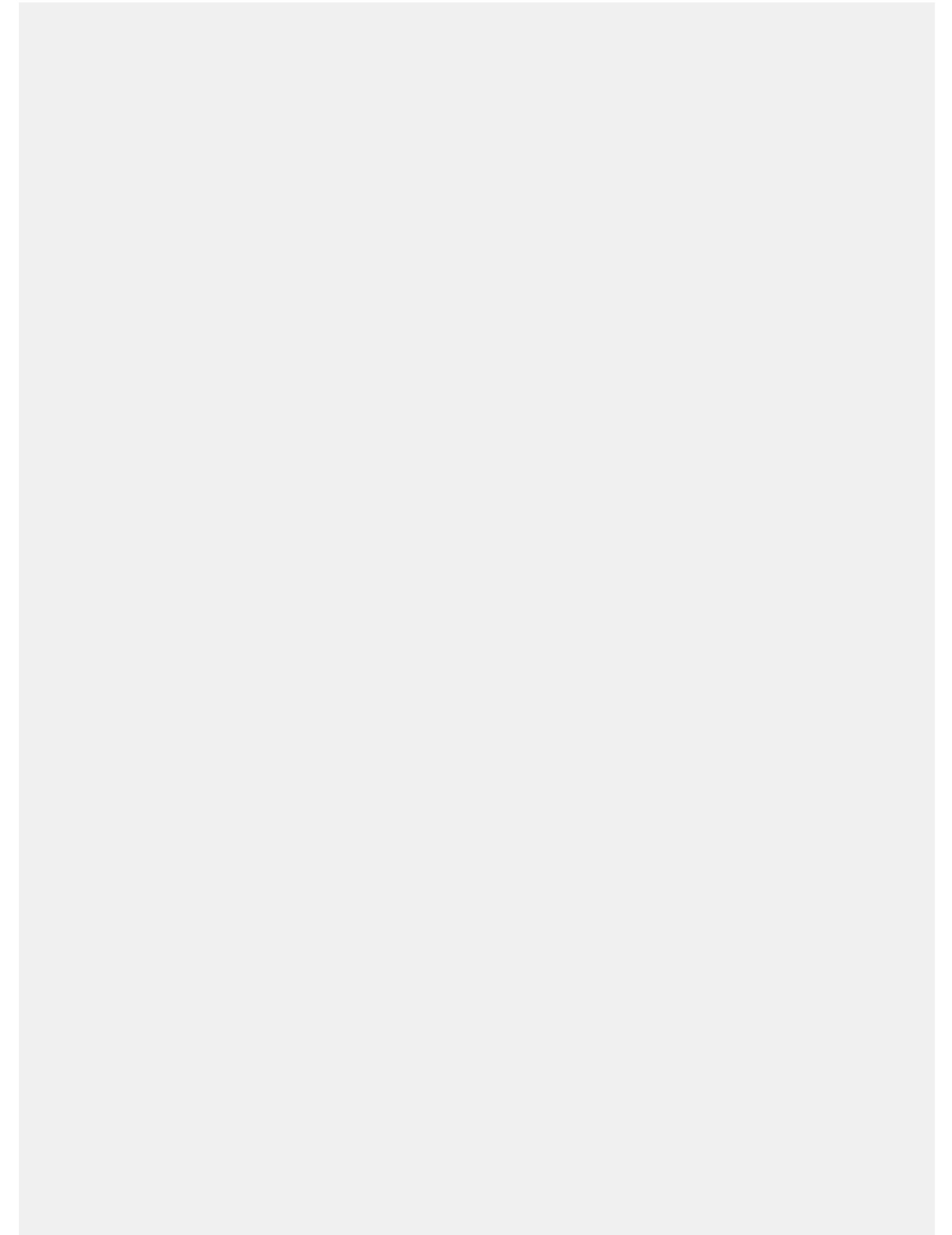
## Experience of Implementing survey sheets to evaluate the efficiency of prenatal diagnostics and consulation

\*A. B. MacLennan<sup>1</sup>, Adil Mamedov<sup>1</sup>, O.I Admakin<sup>1</sup>, N.S Morozova<sup>1</sup>, L.A. Mazurina<sup>1</sup>

<sup>1</sup>Sechenov University, Department of pediatric dentistry and orthodontics, Moscow, Russian Federation

The problem of treating children with cleft lip and palate (CLP) remains an issue requiring specialized complex medical care, including the efforts of specialists in various fields (pediatrician, speech therapist, otorhinolaryngologist, orthodontist, surgeon, educator, psychologist, psychiatrist, surdologist, rehabilitologist, etc.) whose task is to provide comprehensive rehabilitation of patients in a specialized center. Despite the prevalence of this pathology, the quality of life of children with cleft lip and palate in different age periods, the impact of early rehabilitation programs and the terms of surgical rehabilitation on the quality of life of children with a pathology of the maxillofacial region and their families remains poorly understood. Understanding the impact of oro-facial clefts on the quality of life of children with CLP and their families, as well as determining their need for medical care, are necessary to improve the algorithms for providing comprehensive health care in the health care system, improving the results of care provided to patients and their families, leading to simplification of social adaptation of this category of patients.

## Notes





## Multicentric Collaborative Interdisciplinary Research in Cleft Lip and Palate: Experience from a Pilot Study

\*Ashoo Grover<sup>1</sup>, O P Kharbanda<sup>1,2</sup>, R S Dhaliwal<sup>1,2</sup>

<sup>1</sup>Indian Council of Medical Research, Department of Health Research, MOHFW, New Delhi, India

<sup>2</sup>CDER AIIMS, Orthodontics, Delhi, India

### Objectives:

To

Identify pattern of the cleft lip and palate (CLP) in India.

Establish the baseline data of spectrum of problems of cleft patients, protocols of treatment given to these children and their actual treatment needs.

Ascertain risk factors associated with CLP: nutritional, environmental and genetic.

### Methods:

A pilot project was undertaken at three centers two of which were public funded and one private funded hospital. At each of the centers, the Departments of Plastic surgery, Orthodontics and ENT were the major input holders for support and coordination of the study. At each of the centers, the Departments of Plastic surgery, Orthodontics and ENT were the major input holders for support and coordination of the study. The collection of the data was carried out by the specifically designated Indicleft Team. After prior consent and approval, each patient inducted in the study was subjected to the certain evaluations, of non invasive type.

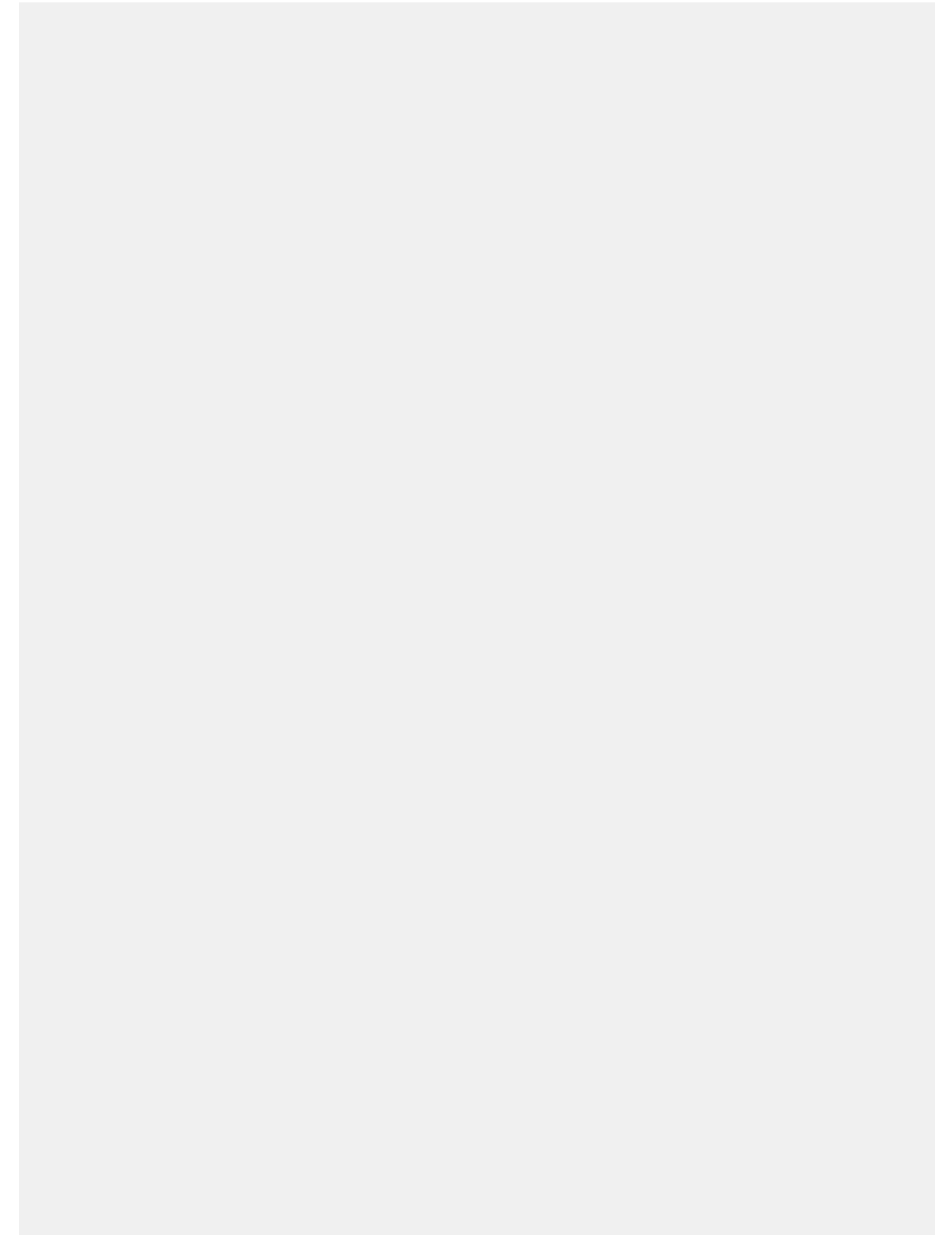
### Results:

A total of 164 cases with cleft lip and palate anomaly were recorded from three hospitals involved in the project. The Key observations of the study included, Wide variation in age at primary lip (range 2 to 180 months) and palatal surgery (3 to 228 months) was noted; a significant percentage of cases required lip and nose revision surgeries (36% and 35% respectively); fifty five percent cases had a post-surgical oro-nasal fistula; and a large proportion (77.5%) of the operated UCLP cases had complex orthodontic treatment needs. Thus, in the sample of cleft patients assessed in the pilot project, the treatment needs were high.

### Conclusions:

The results of the pilot study indicate a lack of uniform protocol followed in providing care to cleft patients and a great variation was found in the quality of treatment received by many of the patients. There is a need to have a country wide data to identify various patterns of care, treatment needs and then devise strategies for improving the delivery of highest quality of surgical outcome for this group of patients.

## Notes





## Big data analysis from Korean National Health Insurance for Cleft Lip and Palate Patients

*\*Mihee Hong<sup>1</sup>*

<sup>1</sup>Kyungpook National University, Orthodontic department, Daegu, South Korea

### Objectives:

Korean National Health Insurance (KNHI) is going to cover insurance benefits for orthodontic treatment of cleft lip and palate (CLP) patients from 2018. At present, medical expenditure for surgical procedures for them is being supported by KNHI. In this study, using the national big data from Korea health insurance statistics, utilization of insurance services was analyzed during the last ten years according to the types of cleft lip and palate as well as overall.

### Methods:

Claim data of ICD codes for CLP were gathered by age. First, the data for CLP patients aged less than 1, were traced as a proxy of prevalence for 10 year trends of proxy. Secondly, ICD-10 codes of CLP were grouped into clinically meaningful classification of CLP; 10-year utilization trend of each type for the sample was analysed. Third, under each type of CLP, the percentage of individual ICD codes was analyzed.

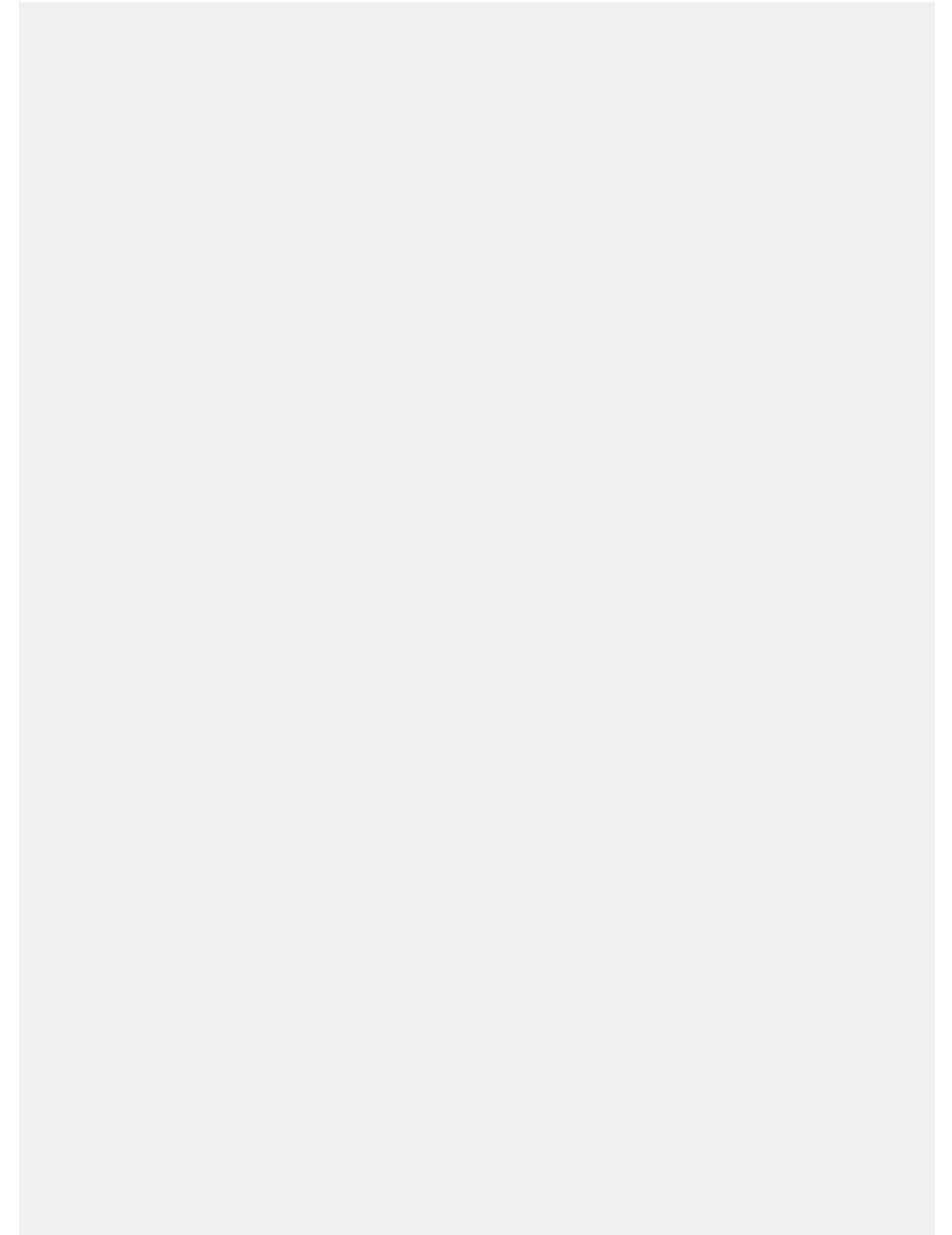
### Results:

In 2016, the claim was doubled over the past 10 years. 19 codes were grouped into cleft palate, cleft lip, and cleft lip and palate. The 45.3% of claims was related to Cleft palate patients, 35.5% was for cleft lip and the 19.2 % was claimed for cleft lip with palate. 82.6% of the cleft lip presented unilateral cleft lip. 40.5% of the CLP was unilateral CLP. 65.9% of cleft pate was belonged to unspecified cleft palate.

### Conclusions:

Data from KNHI presented continuous increment in number of claims of new-born with CLP during the last ten years. Understanding of the CLP population would be prior to the new era of orthodontic benefits for CLP.

## Notes





# Long Term Results I







## Nostril Retainers In Primary And Secondary Cheilorhinoplasty In Cleft Patients – 7 years experience

Alexander Ivanov<sup>1</sup>, Veronica Pavlovich<sup>1</sup>, \*Evgeniia Igorevna Reshetnyak<sup>1</sup>

<sup>1</sup>Central Research Institute of Somatology and Maxillofacial Surgery, Moscow, Russian Federation

### Objectives:

Good functional and esthetic results of cleft patients treatment is a big challenge. Nowadays there is no consensus on best procedures types, timing and philosophy. After the primary or secondary lip nose surgery a range of complications can occur: nostril stenosis, septum deviation, alar deformation and others. In this study we present different techniques of using anatomically shaped nostril retainers after cheilorhinoplasties.

### Methods:

The study included 525 cleft patients between the ages of 3 months and 18 years, who underwent primary and secondary cheilorhinoplasty. Modification of the Delaire's Technique was used for primary cheilorhinoplasty. Nostril retainers (NR) were placed at the end of surgery and wore during 6 months. The NR have standardized shape received by using reverse 3D modeling of healthy nostrils made of soft silicone. We produced a range of retainers numbered from 0 to 14. There are two types of retainers for unilateral and bilateral cleft. Control group included 40 patients with no history of NR use after surgery performed by different surgeons.

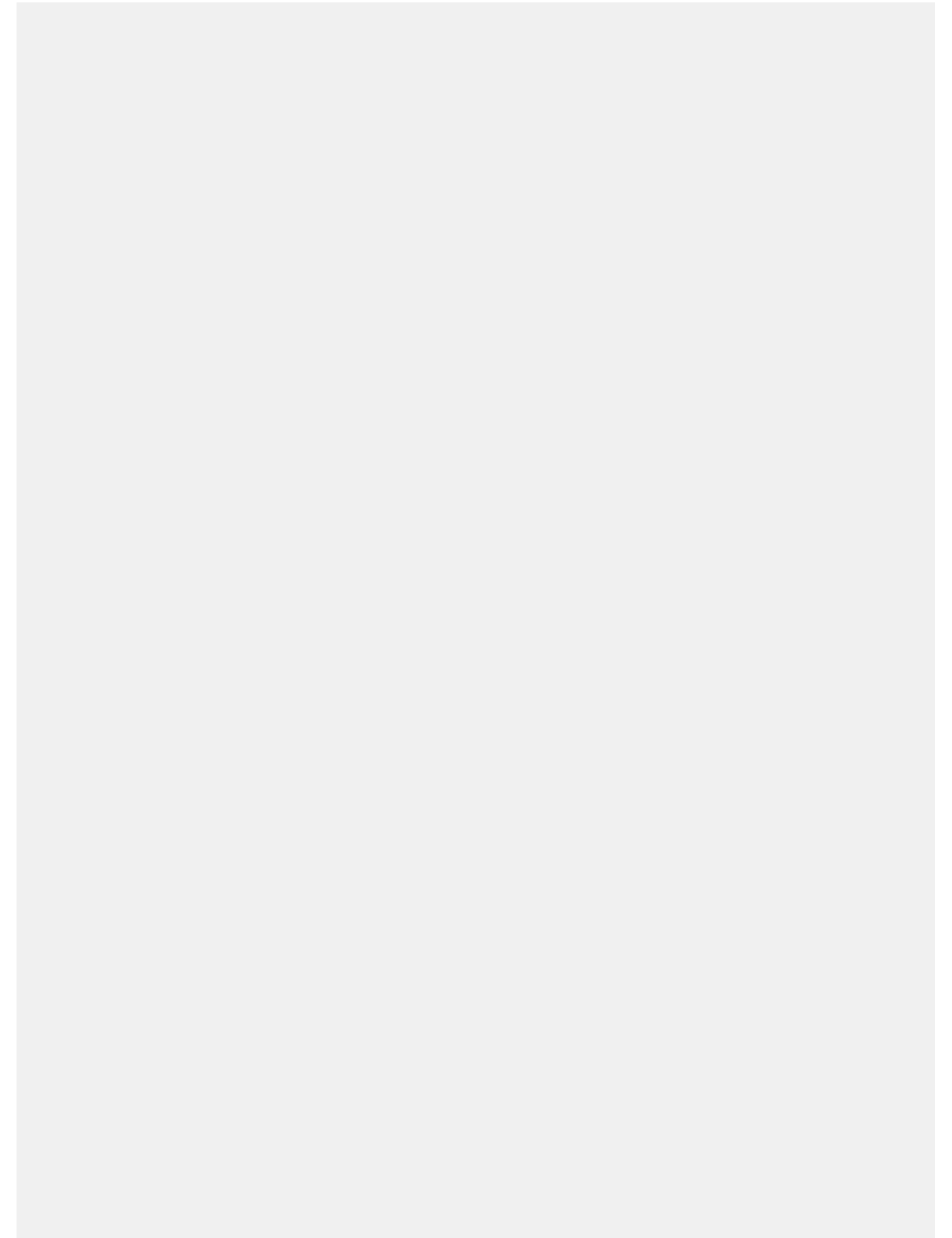
### Results:

All patients have used NR after cheilorhinoplasties. Average 3 changes by bigger size of NR were required after the surgery. In total, about 1400 NR were used. The results have shown the positive effect of progressive increase of nostril stents comparable with Nasoalveolar Molding. This allowed avoid complications: deformation alae and septum position and prevent nostril stenosis. In case of bilateral clefts, we used special type of NR and we made a replacement for the normal type of NR in the first month of using, which allowed to improve the shape of the nose. In the control group there was deformation of the alar cartilage in 100% of cases.

### Conclusions:

The NR helped to keep the nostrils and the septum in a natural position after surgery and allowed immediate nasal breathing. Due to its shape, they do not require type or suture fixation and were well tolerated by patients in all age groups. When in position the device is fully inserted in the nasal cavities and is practically invisible. Parents can use the NR after surgery at home on their own. Compared to control group we had no hematomas, nostril stenosis and bad scarring. The use of anatomical NR significantly simplifies the postsurgical care requiring much less professional follow up and getting better functional and esthetic results.

## Notes





## Choice of Skin Incision for Primary Repair of Unilateral Complete Cleft Lip: A Comparative Study of Outcomes in 90 Patients

\*Eduard Gidea Paraschivescu<sup>1</sup>, Eugen Boia<sup>2</sup>, Emil Nicolae Urtila<sup>3</sup>, Mihai Ioan<sup>4</sup>

<sup>1</sup>EMERGENCY UNIVERSITY MUNICIPAL HOSPITAL, ORAL AND MAXILLOFACIAL SURGERY , TIMISOARA, Romania

<sup>2</sup>Louis Turcanu "Pediatric Hospital , Pediatric Surgery, Timisoara, Romania

<sup>3</sup>Emil Urtila Private Practice , maxillofacial surgery, Timisoara, Romania

<sup>4</sup>EMERGENCY UNIVERSITY MUNICIPAL HOSPITAL, ORAL AND MAXILLOFACIAL SURGERY, Timisoara, Romania

### Objectives:

The main goal of any cleft lip repair is to achieve good aesthetic and functional results, yet no surgical technique for cleft lip, close to produce consistently ideal aesthetic and functional results has been described. This study was conducted in our cleft center in Timisoara, with an average of 70 new cleft cases per year, of which approximately 65% include cleft lip. We compared three different designs for the skin incision, aiming to identify the most appropriate procedure for the large variety of unilateral cleft lip.

### Methods:

Ninety patients with complete cleft lip were entered into our study, distributed in three groups, in accordance with the method that has been used for the repair. In two groups, the principles of Delaire for the underlying tissues was respected, whilst the skin incision was either Millard's or Pfeiffer's and in the third group the Le Mesurier method of repair was used.

Soft-tissue measurements of the lip and nose were recorded preoperatively. Analysis was based on postoperative assessment of the white roll, vermilion border, scar, Cupid's bow, lip length, and nostril symmetry and appearance of the alar dome and base.

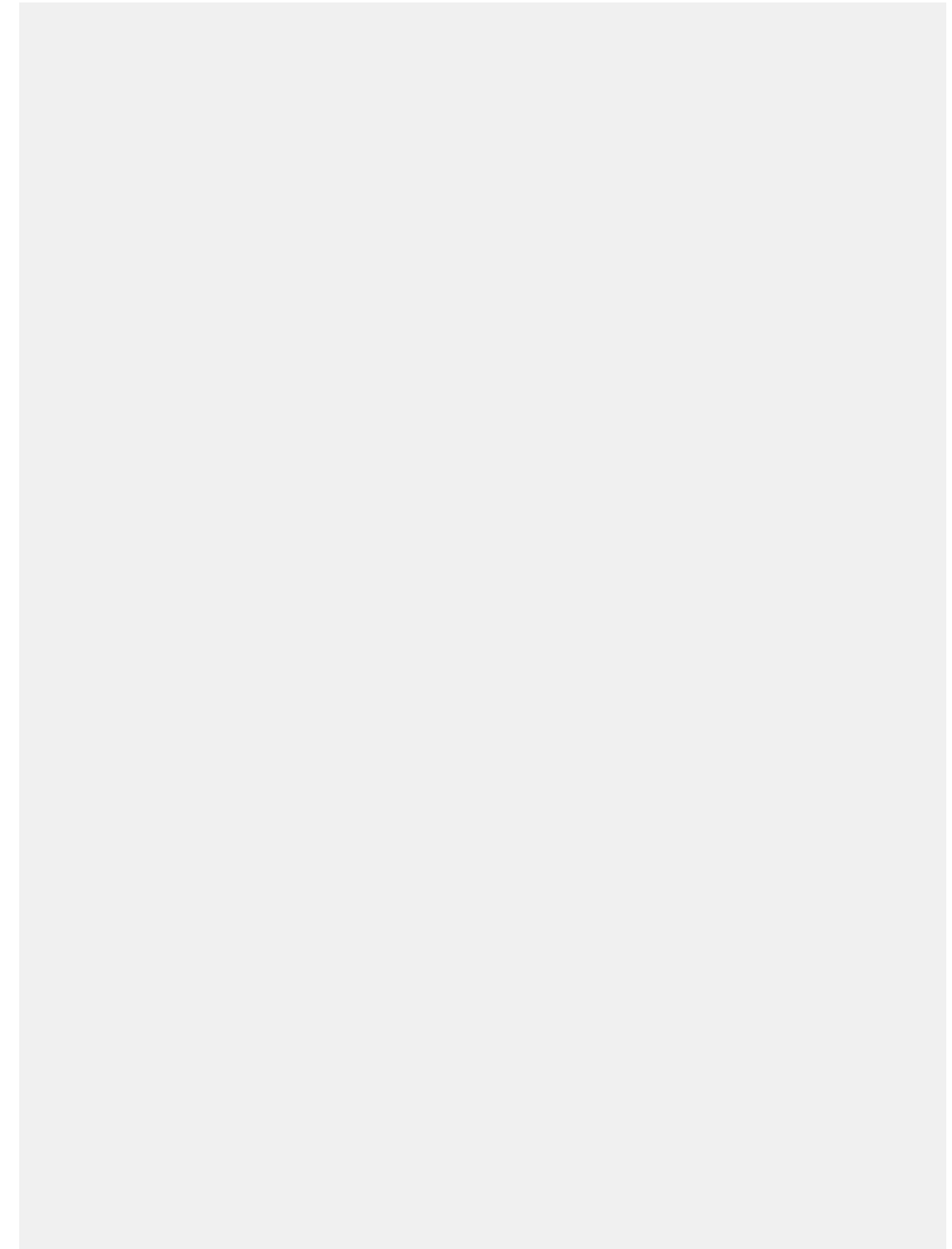
### Results:

Comparison of the three cohorts found the Millard incision to give significantly better results for vermilion match, whereas the Pfeifer method led to a better postoperative lip length. Le Mesurier technique was associated with a large number of problems, of which notching, Cupid's bow mismatch, severe nasal asymmetry and naso - alveolar fistulas were noticed the most often. Preconceptions that one particular technique was better suited to certain preoperative cleft anatomical forms were not proven statistically

### Conclusions:

Most of the cleft surgeons choose a particular technique, that suits them well for all types of cleft lip, and try to get the best result possible with it. No goal of our approach should prevail in front of the other. Neither a good appearing lip but with a poorer functionality, nor an unaesthetic lip but with a good functionality could be accepted. Le Mesurier method was associated with the most numerous problems .One of the most important conclusions of our study is that the choice of closure of the underlying structures is probably of more importance than the choice for the skin incision.

## Notes



## Long-term analysis of palatal development over of 16 years respectively in children with different forms of orofacial clefts

\*Konstanze Scheller<sup>1</sup>, Johannes Schubert<sup>1</sup>

<sup>1</sup>University of Halle-Wittenberg, Department of Oral and Maxillofacial Plastic Surgery, Halle, Germany

### Objectives:

The palatal reconstruction in children with cleft palate is done at different times of facial development using different common operation techniques. We do the palatoplasty by Furlow at the age of 15-18 month and the simultaneous hard palate reconstruction (hard palate cleft distance posterior < 1cm). The propagated method of Schwendieck is so fully respected: an early palatoplasty for improved speech and a delayed hard palatal repair for undisturbed facial growth.

### Methods:

184 patients with CLP were clinically examined every year (1-16/17 years). The development of the primary palate was analyzed by the distance of the canine teeth and the development of the secondary palate by the distance of the second molar in milk teeth and the first molar in permanent teeth. All distances, noted over a 16 year-period, in 184 patients were statistically evaluated (SPSS Statistics 23). A control group with continuous measurement of the palatal distances in the normal population could not be found. So patients with a solitary cleft lip and no cleft of the palate or alveolus were used in this study alternatively as control.

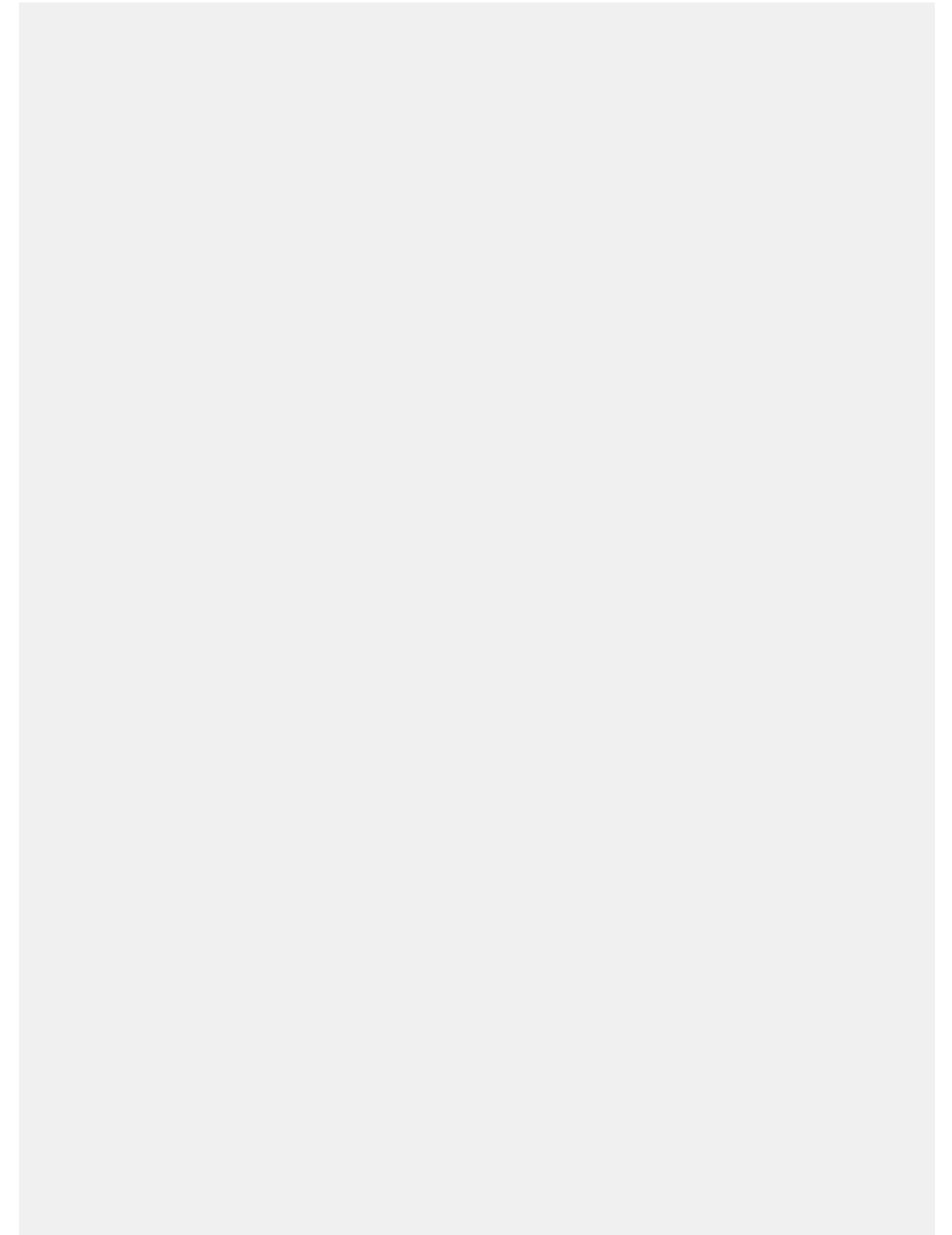
### Results:

In unilateral cleft lip and palate (CLP) patients we found a continuous transversal palatal development from the 1st to the 16th/17th year of age. Patients with bilateral CLP-manifestation showed an obvious inhibition of the transversal palatal development, especially during puberty (10.-13th age of life). At the end of puberty the palatal development in patients with bilateral CLP could not reach the transversal distance like patients with unilateral CLP (Boxplot-analyses).

### Conclusions:

The transversal palatal development is mainly influenced by the scar formations in the hard palate. So we found a clear inhibition of transversal palatal development in patients with bilateral CLP. The premaxilla showed the most vulnerability during the development. A sufficient interdisciplinary care of these patients by maxillofacial surgeons and orthodontics may prevent the inhibition of transversal development by an early – even already in primary dentition - cross-bite correction.

## Notes



## Three Surgical Techniques as Factors Affecting Mid-Facial Growth Outcome in Bilateral Cleft Lip and Palate Patients in One UK Centre

\*Sukhi Atwal<sup>1</sup>, Thomas Dietrich<sup>2</sup>, Lars Enocson<sup>3</sup>, Rona Slator<sup>3</sup>, Bruce Richard<sup>3</sup>

<sup>1</sup>Queen Alexandra Hospital, Orthodontics, Portsmouth, United Kingdom

<sup>2</sup>Birmingham Dental Hospital, Birmingham, United Kingdom

<sup>3</sup>Birmingham Children's Hospital, Birmingham, United Kingdom

### Objectives:

To investigate if surgical technique is associated with facial growth evaluated with the 5-year index in bilateral cleft lip and palate patients.

### Methods:

This was a retrospective study of 49 patients with BCLP who had received their primary cleft surgery between 2000 to 2009. Their facial growth was assessed externally with the 5-year index. Factors investigated included surgical technique, gender and anomalies of deciduous lateral incisors. West Midlands Cleft Centre clinical notes, the cleft database, and dental study models were reviewed.

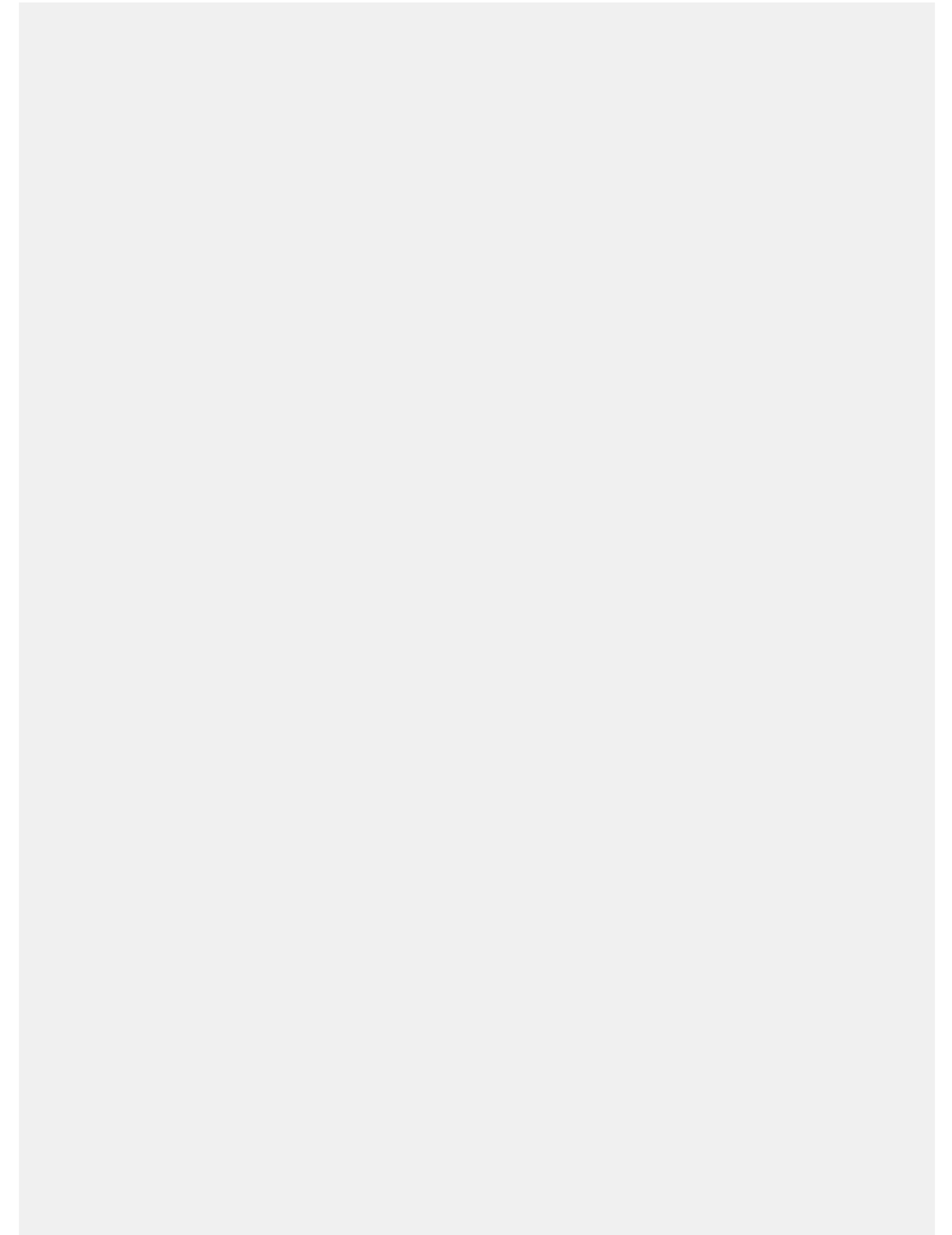
### Results:

Three different surgical techniques for primary closure of the cleft were identified but surgeon and technique were confounded. Technique ( $p=0.045$ ) was significantly associated with worse mid-facial growth, assessed using the 5-year index. Gender and anomalies of deciduous lateral incisors were not significantly associated with mid-facial growth.

### Conclusions:

This study recognised that there is an association between the surgical technique used and mid-facial growth in BCLP patients, assessed using the 5-year index. Collecting further data from multiple cleft centres and surgeons would help to separate the confounding factors of surgeon and technique.

## Notes





# Orthodontics II



## Fully digital workflow for presurgical orthodontic plate in cleft lip and palate patients

*\*Karl-Friedrich Krey<sup>1</sup>, Anja Ratzmann<sup>1</sup>, Philine Metelmann<sup>1</sup>, Marcel Hartmann<sup>1</sup>, Sebastian Ruge<sup>2</sup>, Bernd Kordaß<sup>3</sup>*

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### Objectives:

Objective: In most cases, according to our treatment concept, a pre-surgical orthodontic treatment (POT) is performed on patients with cleft lip and palate. The aim of this work was the demonstration of a completely digital workflow for the production of a palatal plate.

### Methods:

Material and Methods: For the assessment of the upper jaw shape a digital impression was made on two patients with an intraoral scanner (Omniscam Ortho, Sirona Dental GmbH, Wals near Salzburg, Austria). After reconstruction of a virtual model from the scan data, appropriate areas of the jaw could be blocked out and a palate plate constructed. This was printed with a DLP 3D printer (SHERA eco print D30, Materials Technology GmbH & Co. KG, Lemförde, Germany) with class IIa biocompatible material. After only a minor postprocessing, the plate could be incorporated in the patient.

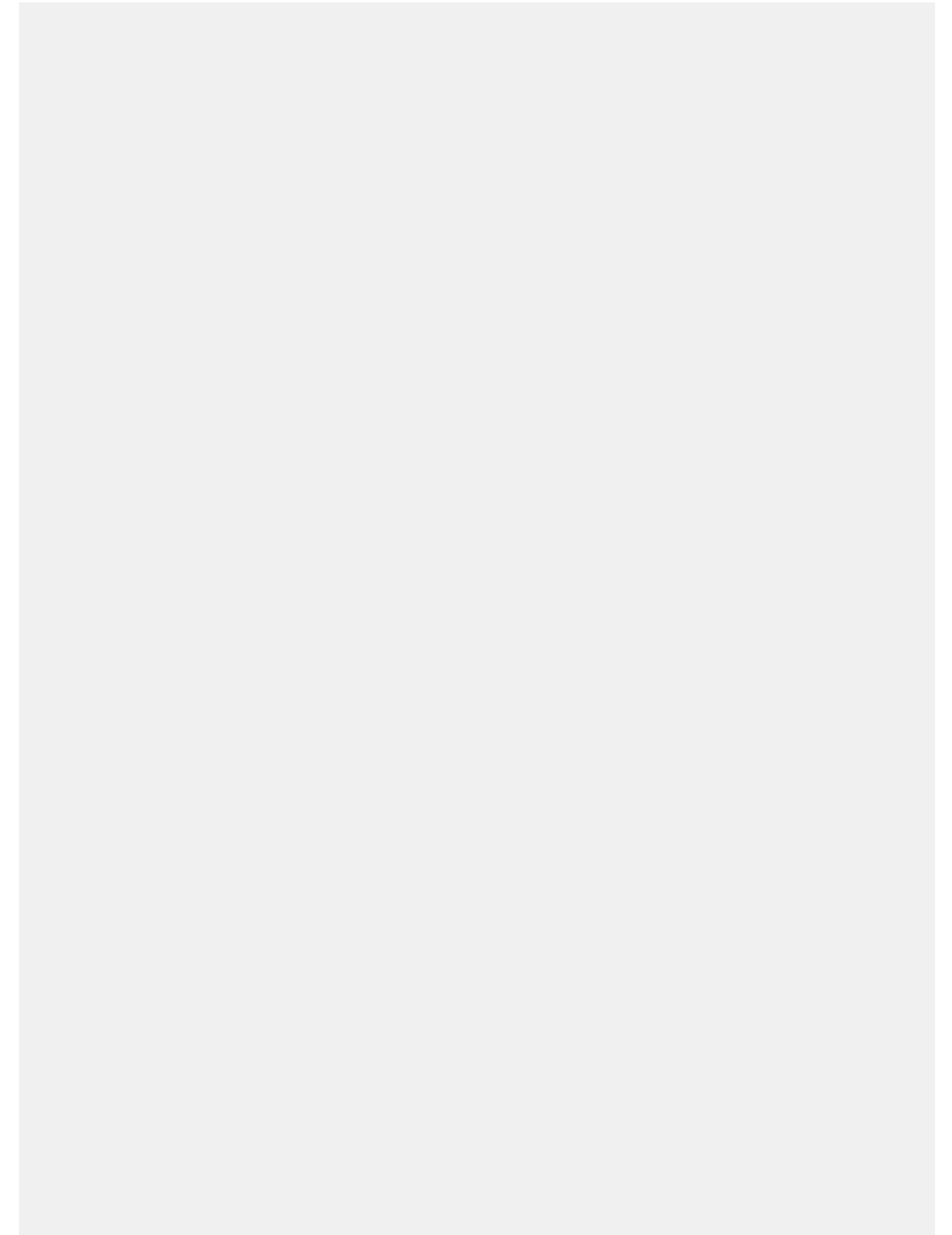
### Results:

Results: The scan could be performed in a short time without affecting the small patient. All clinically relevant areas for the production and digital measurement of the models could be recorded. The plate showed an extremely good fit and no differences in wear compared to a conventionally manufactured plate.

### Conclusions:

Conclusions: For the first time a risk-free digital impression of the edentulous jaw in a baby with a subsequently completely digitally constructed and 3D printed palate plate could be shown.

## Notes



## Cephalometric Assessment of Craniofacial Structures in Patients with Cleft Lip and Palate

*\*Philine Metelmann<sup>1</sup>, Karl-Heinz Dannhauer<sup>2</sup>, Gottfried-Walter Mühler<sup>3</sup>, David NedreLOW<sup>4</sup>, Norbert Hosten<sup>5</sup>, Karl-Friedrich Krey<sup>1</sup>*

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<sup>5</sup>Greifswald University, Department of Radiology, Greifswald, Germany

### Objectives:

This study aims to describe the craniofacial architecture of post-pubertal patients with cleft lip and palate by using DELAIRE whole skull analysis along with the analysis by SEGNER and HASUND.

### Methods:

For this retrospective study, 177 cephalometric X-Ray films from a group of patients (114 male, 63 female) of the former Wolfgang Rosenthal Clinic Thallwitz were analyzed. Patients were treated according to the concept of late palate closure (hard palate closure at 4-7 years of age). The X-ray films were scanned with a VIDAR Diagnostic Pro Advantage (Vidar Systems, Herndon, United States) and evaluated in Onyx Ceph (Image Instruments, Chemnitz, Germany) with the cephalometric analysis by 1) SEGNER and HASUND, and 2) DELAIRE (whole skull analysis). Statistical differences ( $\alpha=0.05$ ) were evaluated using one-sample and two-sample t-tests.

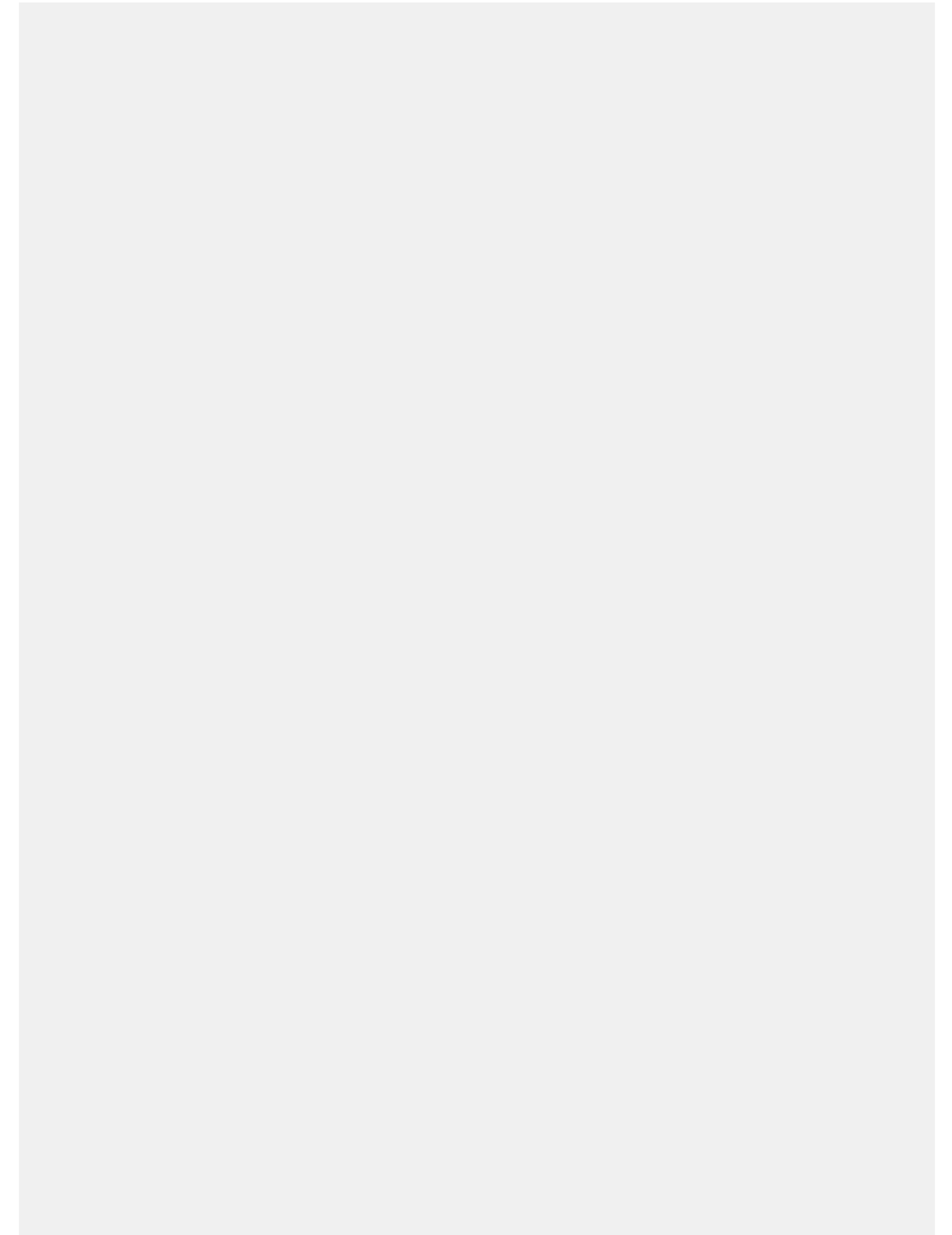
### Results:

The viscerocranium showed a significant retroposition of the maxilla and mandible in combination with a vertical basal open relation. In the whole skull analysis a small cranial height and small craniofacial base line were conspicuous. Furthermore, it revealed a reduced anterior cranial base angle and enlarged posterior cranial base angle. The midface showed deficits in the sagittal plane and a reduced height in favor of the lower face.

### Conclusions:

In patients with cleft lip and palate, typical changes in the viscerocranium were accompanied by changes to the neurocranium. Cleft lip and palate along with late-closure corrective surgery may cause complex effects on the entire craniofacial architecture including, but not limited to the facial region. In these patients, the use of a whole skull analysis could benefit clinical assessment.

## Notes





## The GOSLON Yardstick Applied to a Consecutive Series of Patients with Unilateral Cleft Lip and Palate

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<sup>1</sup>JAYPEE SUPERSPECIALITY HOSPITAL, Orthodontics and Dentofacial Orthopaedics, New Delhi, India

<sup>2</sup>Institute of Dental Studies and Technologies, Orthodontics and Dentofacial Orthopedics, Uttar Pradesh, Germany

### Objectives:

The aim of this retrospective study was to assess the dental arch relationship using the GOSLON Yardstick to score the outcome of surgical repair in patients with complete unilateral cleft lip and palate (UCLP).

### Methods:

The treatment outcome in terms of dentofacial development was investigated with respect to GOSLON score. Photographs of study models of 48 consecutively treated children (21 Male, 27 Female) with repaired complete UCLP were taken from the records held at GLOBAL Hospital, Rajasthan. The patients were treated by one surgeon following a standard protocol. The dental arch relationships were assessed by applying the GOSLON yardstick. Three individual assessors did GOSLON scoring and a repeat scoring was done after one week. The linear weighted Kappa statistical test was used to evaluate intra- and inter-rater reliability scores for the assessors.

### Results:

Of the patients, 57% were rated as belonging to GOSLON group 1 or 2 (good result), 32% to group 3 (fair result) and 11% to group 4 or 5 (poor result). There were no significant differences between the different raters and the ratings.

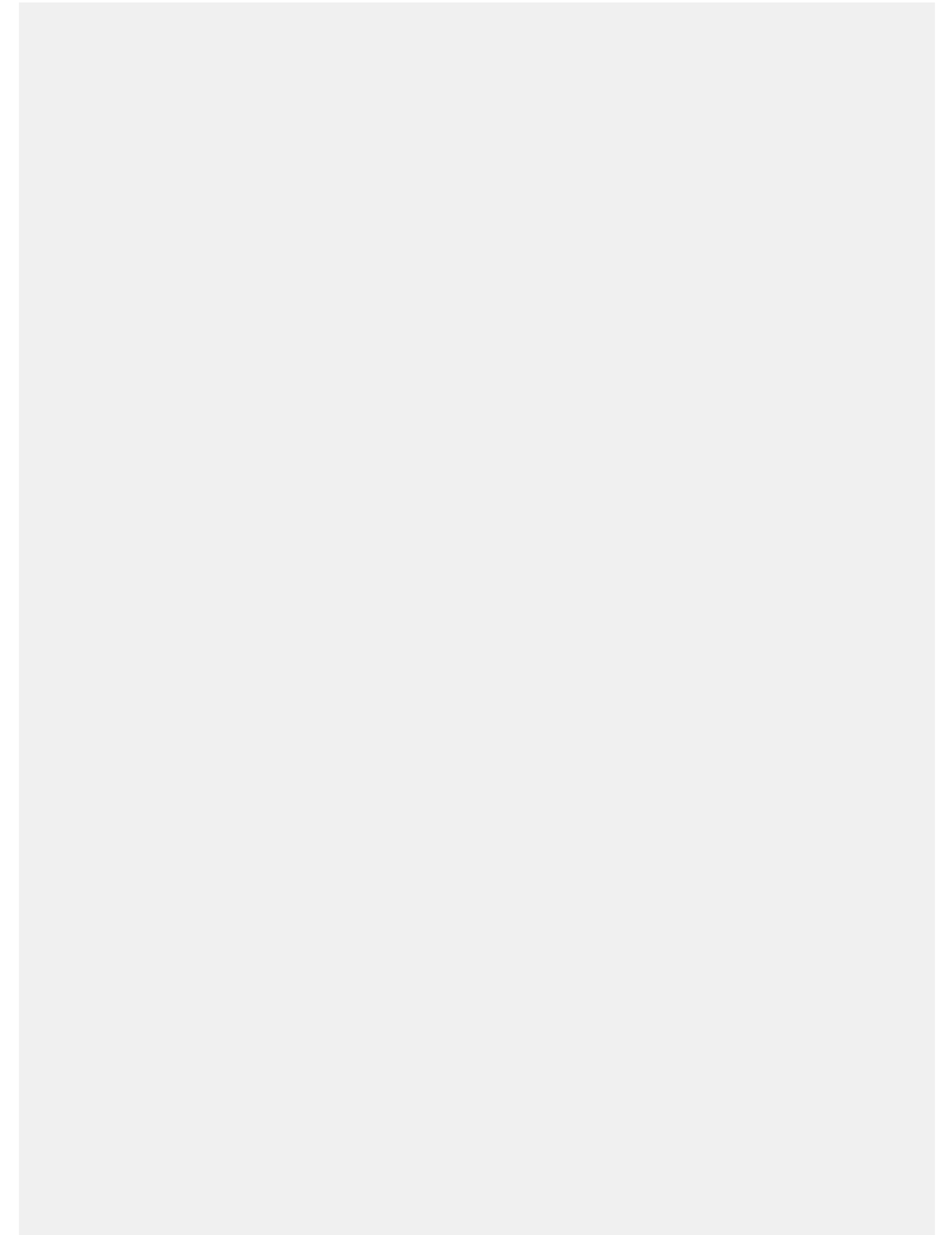
Great Ormond street had only 31% of patients in the more favourable group. The GOSLON grouping of our total sample and comparison with the Eurocleft centers (Mars et al, 1992) and the centers of Northern Ireland and Yorkshire showed that, both the results of the present study and Northern Ireland had significantly higher patients in the favourable group.

### Conclusions:

The GOSLON yardstick was applied to a consecutive series of unilateral cleft lip and palate patients treated at Global Hospital and Research centre by one surgeon, showing a high proportion of good dental arch relationships.

This suggests a satisfactory treatment outcome, particularly when compared to a similar group of patients treated at other centres. These results help to quantify the burden of care imposed by respective protocols and provide useful baseline data against which progress in achieving improved treatment outcome can be determined by future research for Global Hospital and Research Centre, Mount Abu, Rajasthan.

## Notes







## Orthodontic Management of Cleft Lip and Palate Patients

\*Ayse Tuba Altug<sup>1</sup>

<sup>1</sup>University of Ankara, School of Dentistry, Orthodontics, Ankara, Turkey

### Objectives:

Management of cleft lip and palate is one of the most challenging, long-termed and at the same time spiritually satisfactory patient care for a dentist. The multidisciplinary treatment protocol frequently extends over many years; starting with primary lip and palate closure surgeries during infancy up to adulthood. Therefore, the aim of the current lecture is to summarize the challenges of dental management of cleft lip and palate patients starting from infancy through permanent dentition.

### Methods:

In this prospective study, the orthodontic management of 5 CLCP patients at different stages of dentition will be presented. A detailed treatment protocol of nasoalveolar molding (NAM) will be described on a male infant and the treatment progress of the same patient will be presented in a 13 year follow-up period. A female patient in deciduous dentition, a male adolescent in mixed dentition and 2 female patients in permanent dentition will be presented with all details of their treatment challenges.

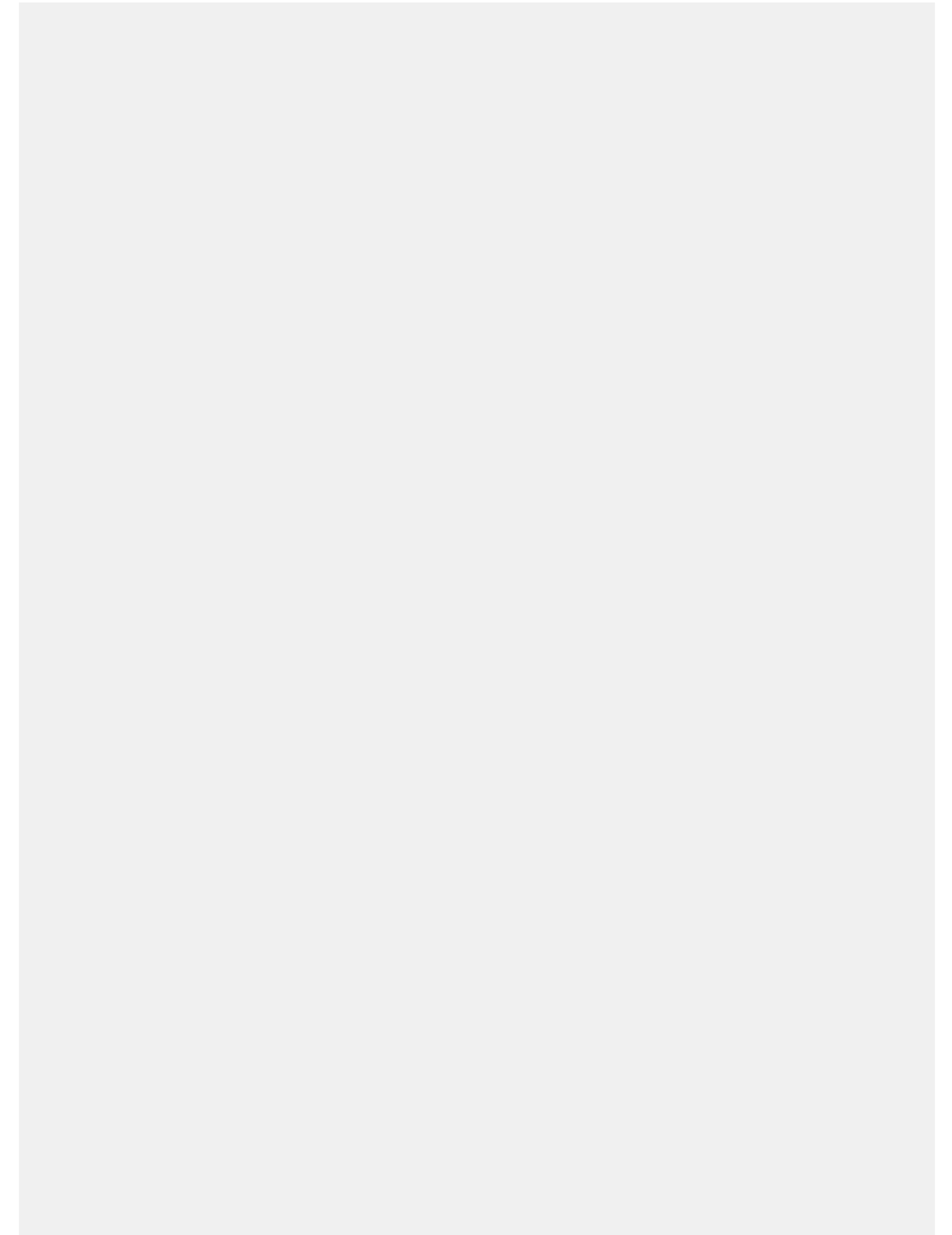
### Results:

As orthodontists, our treatment usually starts with presurgical infant orthopedics and we follow our young patients' facial growth and dental development periodically until the eruption of the first permanent incisors. Alveolar bone grafting before the completion of the permanent dentition is an important part of the reconstructive journey for most of the cleft lip and palate patients. After an intact alveolar bone has achieved, a decision has to be made whether our patient would need a maxillary advancement surgery or not. Either way, the alignment of teeth with an adequate dental relationship is definitely required.

### Conclusions:

Although we never leave our patients unattended during this deciduous to mixed dentitions transition phase, our aim is almost always to improve the *permanent dentition* and the *facial esthetic balance*.

## Notes



## **Corticotomy Assisted Maxillary Advancement of Alveolar Cleft Patients during Early Childhood**

*\*Mehmet Emre Yurttutan<sup>1</sup>, Ayşe Tuba Altuğ Demiralp<sup>2</sup>, Ayşegül Mine Tüzüner Öncül<sup>1</sup>*

<sup>1</sup>Ankara University, Faculty of Dentistry, Oral and Maxillofacial Surgery, Ankara, Turkey

<sup>2</sup>Ankara University, Faculty of Dentistry, Orthodontics, Ankara, Turkey

### **Objectives:**

Cleft lip and palate is the most common congenital deformity affecting craniofacial structures. The patients undergo several procedures at different ages. Although intraoral and extraoral distraction osteogenesis could be used for maxillary advancement at different developmental stages, it is still not common and considered to be very invasive during deciduous and early mixed dentition stages. Therefore, the aim of this case report is to present maxillary advancement by corticotomy and orthopedic facemask therapy.

### **Methods:**

Two subjects with complete bilateral cleft lip and palate deformity who had bone grafting previously (Subject 1: 12 years old; Subject 2: 13 years old) and one subject with ectodermal dysplasia without clefting (Subject 3: 10 years old) were included in this series of case reports. Surgical corticotomy was performed for each patient followed by placement of zygomatic plates for the use of anchorage units during protraction. The zygomatic plates were screwed to the perinasal areas of the maxilla and orthodontic face masks were used for the traction of the maxilla. 400-500 grams of elastic force was used during protraction.

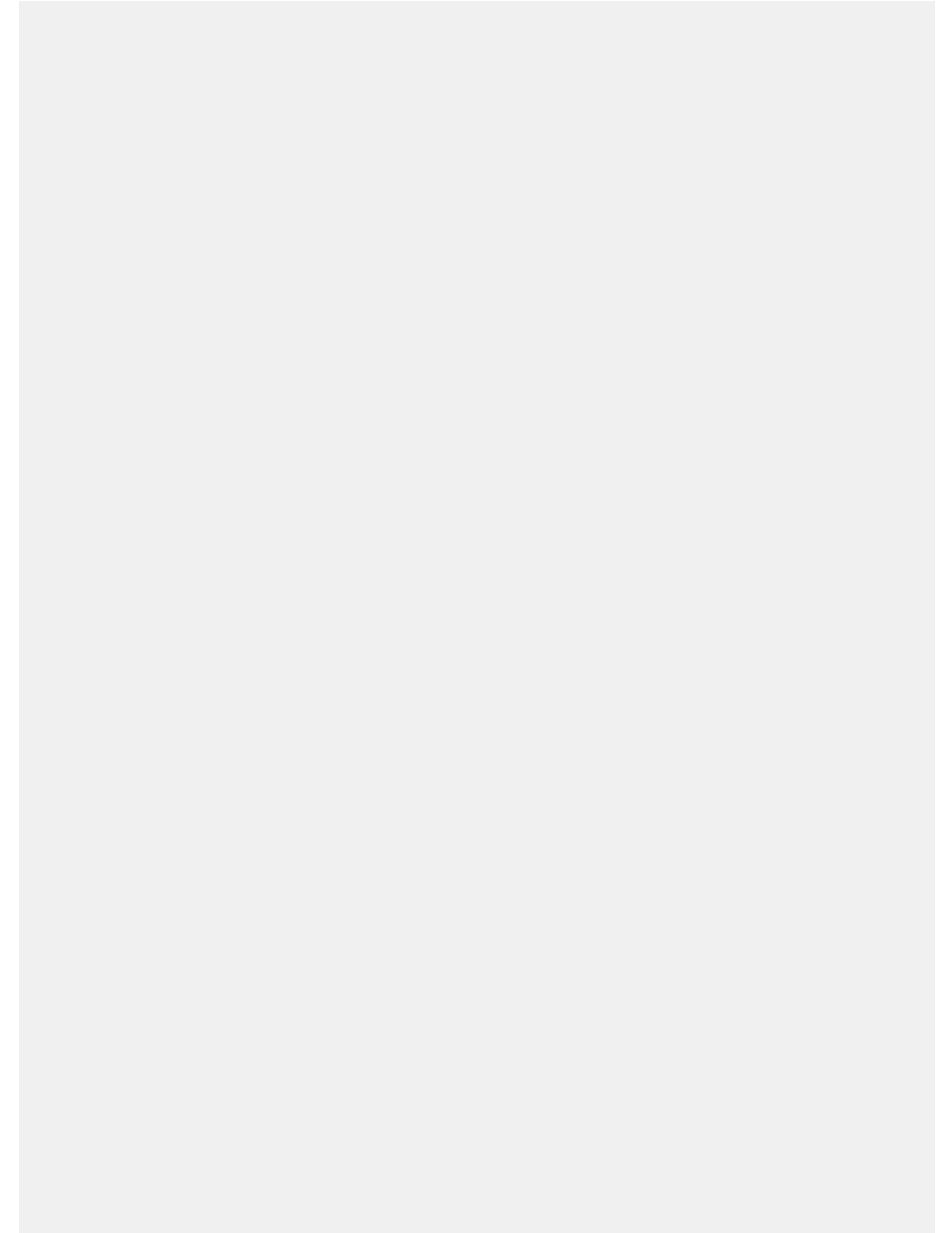
### **Results:**

The mean protraction duration was 3 months. Positive overjet was obtained for each and every patient.

### **Conclusions:**

Corticotomy assisted maxillary advancement with facemask is an acceptable method for the treatment of maxillary retrusion in cleft and other craniofacial patients.

## **Notes**





## Alignment Strategy for Constricted Maxillary Dental Arch in Patients with Unilateral Cleft Lip and Palate using Fixed Orthodontic Appliance

\*Seung-Hak Baek<sup>1</sup>

<sup>1</sup>Seoul National University School of Dentistry, Orthodontics, Seoul, South Korea

### Objectives:

The purpose of this study was to compare the alignment pattern of the constricted maxillary dental arch by fixed orthodontic treatment (FOT) in the well-aligned and constricted arches of unilateral cleft lip and palate (UCLP) patients.

### Methods:

19 UCLP patients were divided into Group 1 (well-aligned arch, n=9) and Group 2 (constricted arch, n=10). After the cephalometric and maxillary dental arch variables before (T1) and after FOT (T2) were measured, statistical analysis was performed. There were no differences in the surgical timing of cheiloplasty, palatoplasty, and secondary ABG and in the surgical method of cheiloplasty between the two groups.

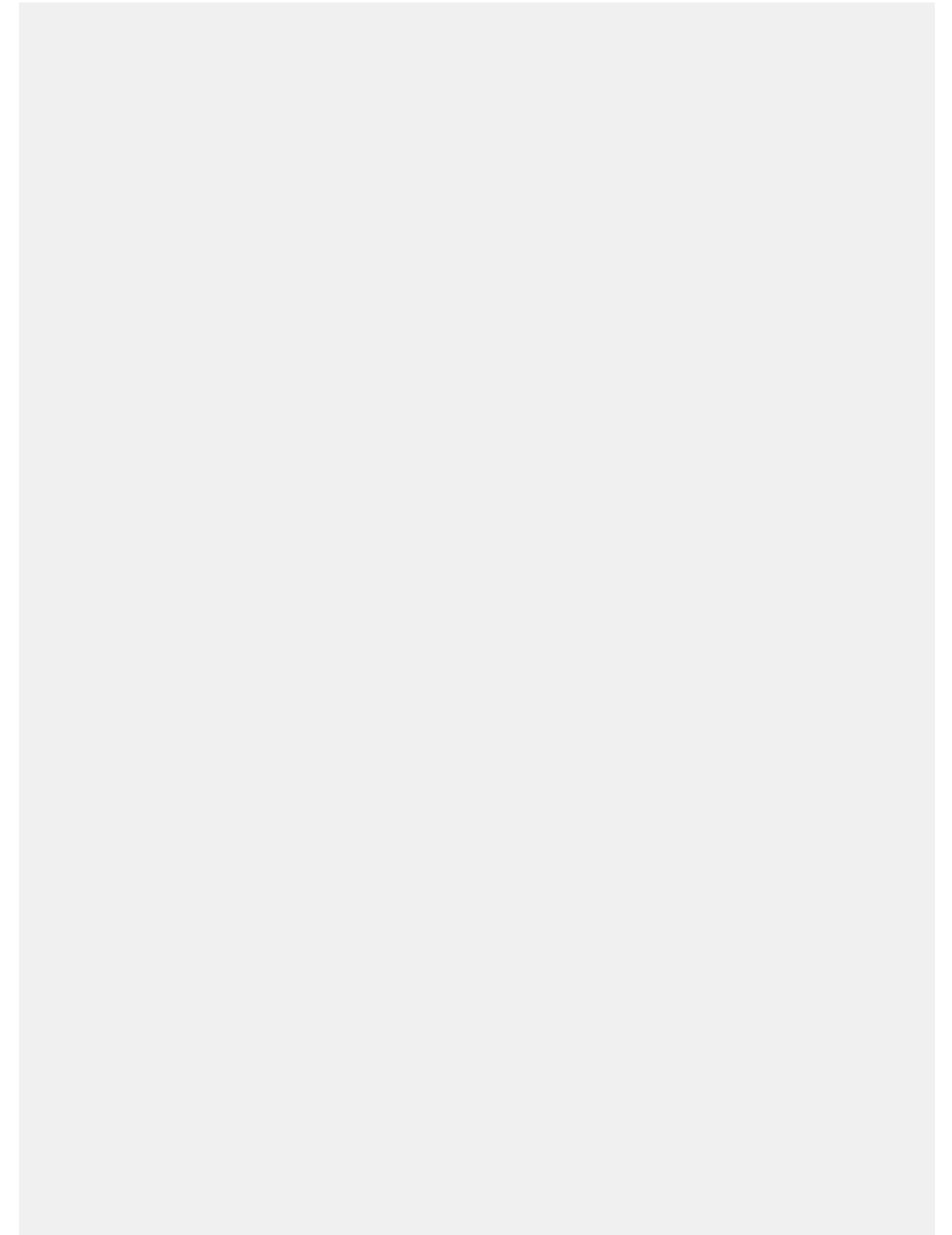
### Results:

Group 2 had a higher percentage of palatoplasty method which could leave the denuded bone for secondary healing than Group 1. Although Group 2 showed more constriction and asymmetry in the maxillary dental arch compared to Group 1 at the T1 stage (IP2W, GSA, and LSA), these problems could be effectively resolved by FOT. As a result, at the stage T2, there was no significant difference in all the variables between the two groups. During T1-T2, there was a different pattern in change of variables between Groups 1 and 2 (ASA in the greater segment in Group 1 and U1-SN, Inter-molar width, GSA, and LSA in Group 2).

### Conclusions:

Therefore, according to the maxillary dental arch shape, different strategy is necessary to obtain proper alignment by FOT.

## Notes



## Cephalometric evaluation of complete UCLP patients with Early Secondary Gingivo-Alveolo-plasty performed at the time of hard palate closure

\*Andreja Eberlinc<sup>1</sup>, Alja Plut<sup>1</sup>, Miha Kočar<sup>1</sup>, Martina Drevenšek<sup>1</sup>

<sup>1</sup>University medical centre Ljubljana, Department of Orthodontics, Ljubljana, Slovenia

### Objectives:

In 2004 the new surgical protocol for unilateral cleft lip and palate (UCLP) patients was introduced in the cleft center in Ljubljana. Lip repair is performed at the age of 6 months, soft palate repair at the age of 12 months, hard palate and alveolus closure with early secondary gingivo-alveoloplasty (ESGAP) at the age of 30 months. Before 2004 the ESGAP was not carried out. The goal of this study was to compare maxillary and mandibular growth in a group of complete UCLP patients operated without ESGAP, with the group where ESGAP was performed.

### Methods:

Cephalometric analysis was performed on lateral cephalogram of 13 consecutive complete UCLP patients without ESGAP (non ESGAP group, mean age  $9.77 \pm 0.84$  years) and on lateral cephalograms of 16 consecutive patients with complete UCLP in which ESGAP was performed (ESGAP group, mean age  $9.96 \pm 2.13$  years). An unpaired Student's t test was used to compare the significance of differences in the cephalometric results of two samples.

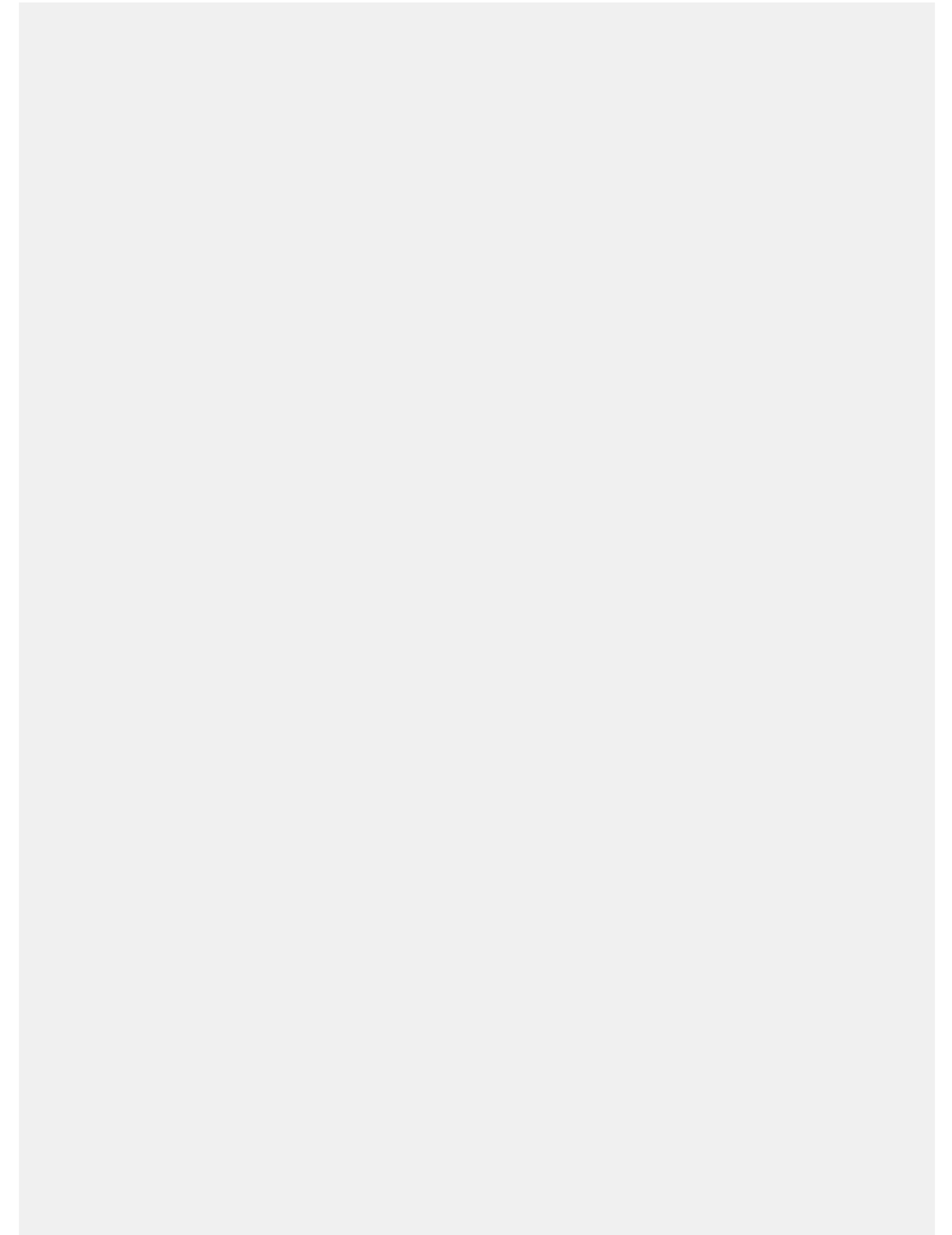
### Results:

SNA angle was slightly decreased in ESGAP group ( $75.8^\circ \pm 3.4^\circ$ ) compared to non ESGAP group ( $77.2^\circ \pm 2.7^\circ$ ). In ESGAP group SNB angle averaged  $74.3^\circ \pm 2.8^\circ$  and SNPg angle  $75.7^\circ \pm 3.3^\circ$ , while in non ESGAP group SNB angle measured  $72.7^\circ \pm 2.1^\circ$  and SNPg angle  $73.6^\circ \pm 1.9^\circ$ . The differences were not statistically significant. However, consequently both ANB angle ( $1.5^\circ \pm 3.3^\circ$  in ESGAP;  $4.4^\circ \pm 2.2^\circ$  in non ESGAP) and distance between point A and NPg line ( $0.2 \text{ mm} \pm 3.6 \text{ mm}$  in ESGAP;  $3.1 \text{ mm} \pm 2.2 \text{ mm}$  in non ESGAP) were significantly decreased in ESGAP group in comparison to non ESGAP group ( $P < 0.05$ ). We also observed more retrusive position of the upper lip in regard to the aesthetic line in ESGAP group ( $-6.6 \text{ mm} \pm 3.1 \text{ mm}$  in ESGAP group compared to  $-4.0 \text{ mm} \pm 1.9 \text{ mm}$  in non ESGAP group;  $P < 0.05$ ). Interestingly, in ESGAP group gonial angle ( $129.8^\circ \pm 7.3^\circ$ ) was significantly decreased ( $P < 0.05$ ) compared to non ESGAP group ( $134.9^\circ \pm 5.3^\circ$ ).

### Conclusions:

Decreased ANB angle and distance between point A and NPg line indicate more pronounced skeletal class III relationship in ESGAP group. The data indicate slightly more retrognathic maxilla and prominent mandible in ESGAP group compared to non ESGAP patients.

## Notes



## **Treatment outcome of dental arch relationships and craniofacial characteristics in adult patients with unilateral and bilateral cleft lip and palate**

*\*Theodosia Bartzela<sup>1</sup>, Charlotte Opitz<sup>1</sup>*

<sup>1</sup>Center for Dental and Craniofacial Sciences, Charité - Universitätsmedizin Berlin, Berlin, Germany, Department of Orthodontics, Dentofacial Orthopedics and Pedodontics, Berlin, Germany

### **Objectives:**

In this retrospective study, we are presenting the dental, and craniofacial characteristics of patients with complete unilateral (CUCLP) and complete bilateral cleft lip and palate (CBCLP) treated in the Cleft Palate Center of Charite Berlin (Campus Mitte). These results were compared with those of a control group of non-cleft patients.

### **Methods:**

30 patients from each group (CUCLP, CBCLP and control) were included in this study. All patients from birth till the end of their growth were treated in the same center. Dental casts, orthopantomograms and lateral cephalograms of the patients were measured. 30 hard tissue and 26 soft tissue landmarks were traced. Orthodontic treatment protocol and the surgical procedures of the patients are presented.

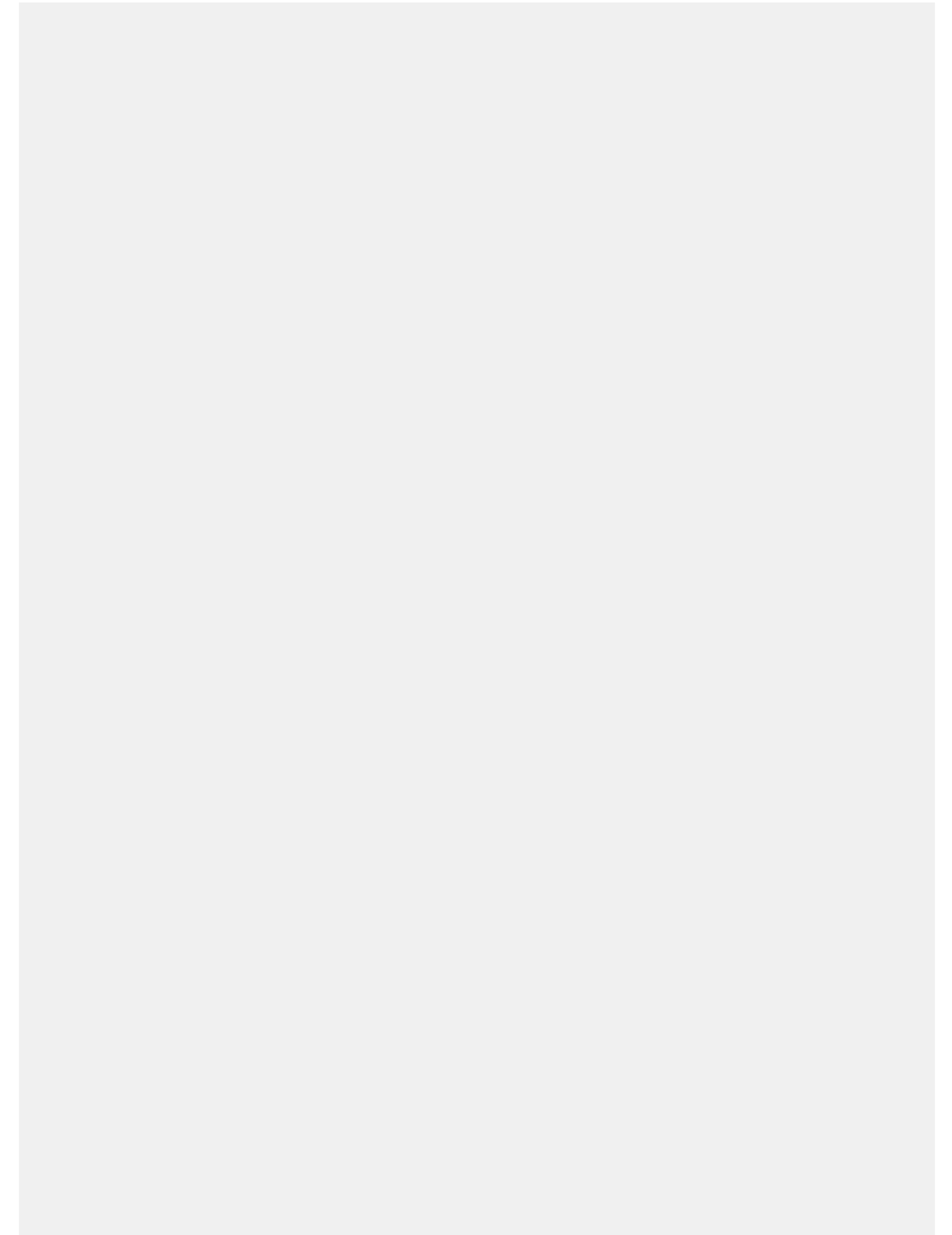
### **Results:**

The main differences among the groups were backward position of the maxilla and mandible in the CUCLP group; larger ANB in the CBCLP group with backward rotation of the mandible; increased lower facial height in both Cleft Lip and Palate (CLP) groups. Because of the inclination of the maxilla, it is observed an open bite tendency in the CUCLP and a deep bite tendency in the CBCLP patients. 70% of the CLP patients had a CI I or CI II soft tissue profile. The upper lip in the CUCLP and CBCLP patients was behind the E-Line. 76,7 % of CUCLP and 58,6% of CBCLP patients had secondary bone grafting between the age 8-12 .

### **Conclusions:**

The CLP patients had symmetric sagittal and transverse dental relationships. The final treatment outcome of the cephalometric characteristics of patients with CUCLP and CBCLP in comparison to the control group and to results presented in the existing literature were good. ANB, NL-NSL were slightly bigger in the group of patients from Berlin indicating a slightly better profile outcome.

## **Notes**





# Genetics





## Cleft prevention in the era of personalized and precision medicine – advantages and limitations

\*Marie Tolarova<sup>1</sup>

<sup>1</sup>University of the Pacific Arthur A. Dugoni School of Dentistry, Orthodontics, San Francisco, United States

### Objectives:

About 7 million of individuals with orofacial cleft (OFC) live on our planet at present. Conservatively estimated, 1 with a cleft per 1,000 inhabitants. Only a proportion of those are fortunate to receive complete interdisciplinary treatment that gives them the same opportunities in the society as those without cleft. The others are heavily dependent on NGOs providing at least minimal part of treatment – cleft surgeries. Vast majority of them – with a risk of recurrence of clefts 40 times higher compared to general population - will have children. It is long time overdue to go beyond providing a treatment only and focus on prevention.

### Methods:

It is well understood that about 65% of all orofacial clefts are nonsyndromic (NCLP) with multifactorial etiology involving interactions of genetic and nongenetic/environmental factors. During 50 Rotaplast cleft medical missions in South America, Asia, and India, we collected blood specimens for genetic studies and used Food Frequency Questionnaire (FFQ) and General Genetic Questionnaire (GGQ) to gather data from individuals with a cleft and their families and also from controls from the same locations. Several gene polymorphisms and variables from FFQ and GGQ were analyzed and compared between cases and controls.

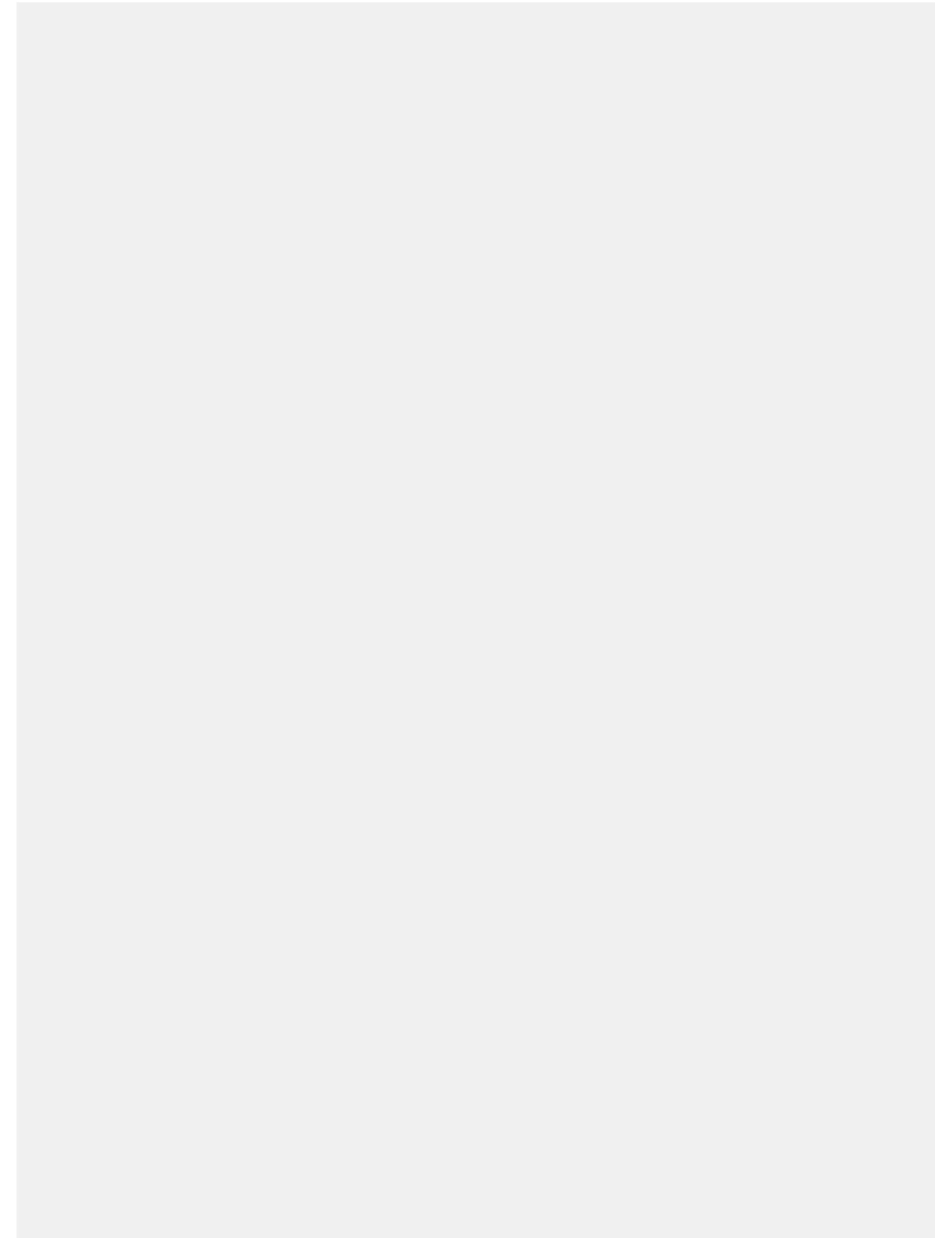
### Results:

Our results clearly demonstrated that there were different genetic factors involved in etiology of NCLP in different populations (countries, cities, locations, ethnicities). Specifically, polymorphisms of folate related genes MTHFR 677CT and RFC1 80AG were found significantly different in cases and controls in some locations and not different in others. Differences in mothers' consumption of folic acid and other critical nutrients and lifestyle characteristics were also found. Many differences in these findings may have had roots in differences in cultural background, dietary habits, religion, climate zone and similar factors.

### Conclusions:

At present, emphasis in research of etiology and mechanisms of development of NCLP is on epigenetics, especially, if applied to prevention. Specific genotypes of an individual include "susceptibility" genes for NCLP – in a mother and in a fetus. Epigenetics is coming in play determining, whether these genes are turned on or off in a critical period of embryonic development and contribute to development of a cleft. We can modify or exclude – in the personalized approach - factors with epigenetic influences like nutrition and lifestyle habits – toward cleft prevention.

## Notes



## Genome wide association study in nonsyndromic orofacial cleft lip with or without cleft palate patients

\*Abhilash Pasare Ravindranath<sup>1</sup>, S.J. Bergé,<sup>2</sup> Henning Schliephake<sup>3</sup>, Srinivas Gosla Reddy<sup>1</sup>, Franz-Josef Kramer<sup>3</sup>, Bernd Wollnik<sup>4</sup>

<sup>1</sup>GSR Institute of Craniomaxillofacial and Facial Plastic Surgery,, Department of Oral and Maxillofacial Surgery, Hyderabad, India

<sup>2</sup>Radboud University Nijmegen Medical Center, Department of Oral and Maxillofacial Surgery, Nijmegen,, Netherlands

<sup>3</sup>UNIVERSITÄTSMEDIZIN GÖTTINGEN GEORG-AUGUST-UNIVERSITÄT , Department of Oral and Maxillofacial Surgery, Göttingen, Germany

<sup>4</sup>Universitätsmedizin Göttingen, Institute of Human Genetics, Göttingen, Germany

### Objectives:

To evaluate genotype distribution in multiplex families with a history of NSCL/P by GWAS. A family with three generations taken into consideration.

To identify any variant in the gene encoding any transcription factors among NSCL/P families.

To identify any specific gene mutation and correlate its association with NSCL/P families.

To do functional studies on the stability of the proteins or to show the impaired protein function among these NSCL/P patients.

### Methods:

Blood samples among 27 NSCL/P families were collected at GSR institute, India. Blood Sampling, Storage, packing and shipment to Institute of Human Genetics, University of Göttingen done as per International Standards. Processing & Analysis was performed in this Institute. Affected child/siblings/parents/grandparents (Three generations taken into considerations) (Study Group) NSCL/P patients, unaffected family members of NSCL/P patients (Control Group) were included. Syndromic CL/P patients were excluded. **Written consent** was taken from the Families Participating. **Ethical committee clearance** was obtained.

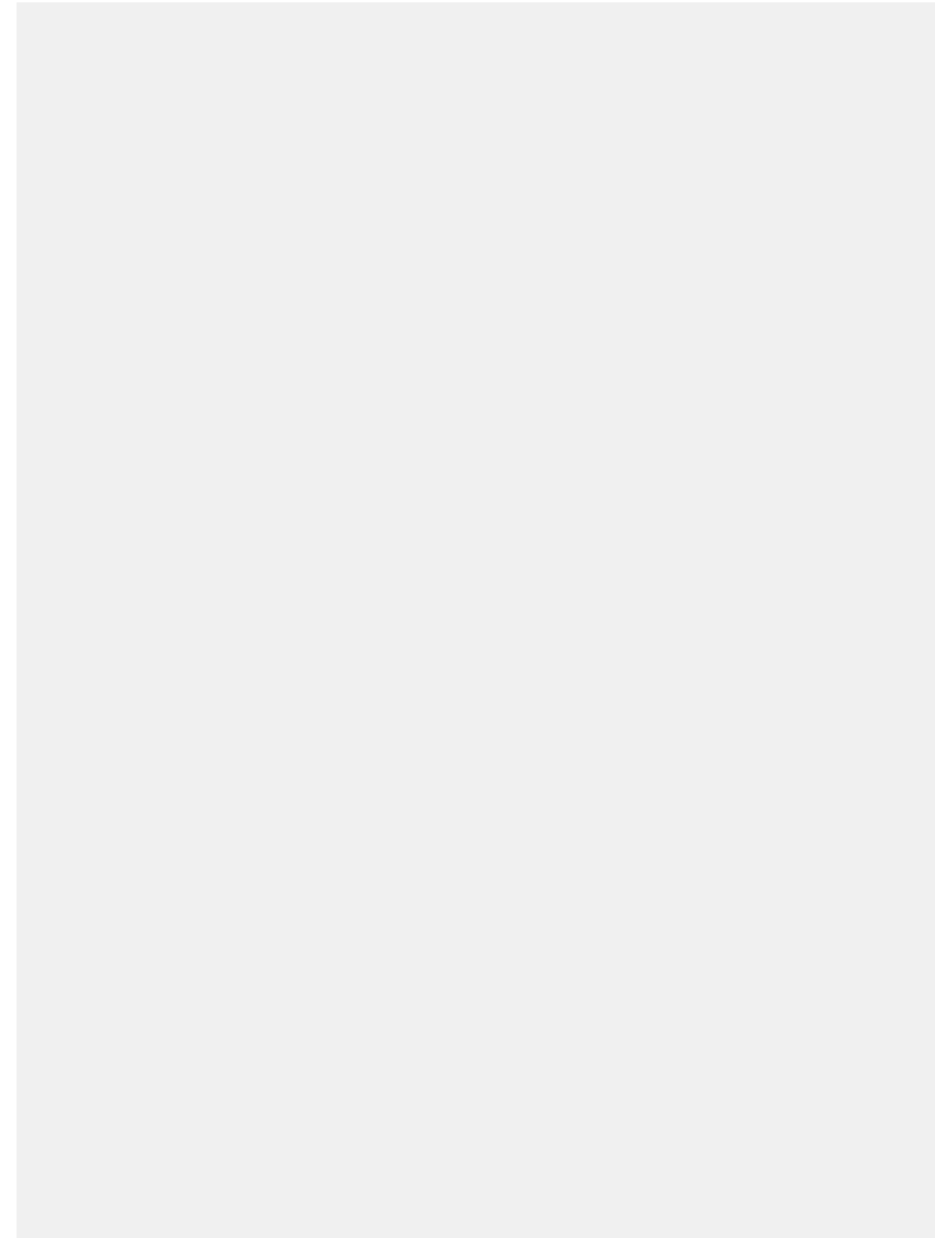
### Results:

GWAS, Bioinformatic analysis was done. Fine mapping was performed to identify approx. 25,000 variants in the coding region of all 19,000 genes. Tested, filtered to determine gene variants. Functional studies were done. We identified a variant in the gene encoding the transcription factor PAX7. The variant is predicted to substitute a highly conserved amino acid at position 77 within the highly conserved paired domain of PAX7 (p.R77C). We identified the p.S184F mutation in the NEDD4L gene. The putative mutation co-segregates with the disease in the family and is not present in 120,000 alleles in the ExAc database.

### Conclusions:

The study was designed to understand and identify genetic causes in multiplex families of NSCLP with GWAS and to draw an objective outcome parameter in understanding unsolved genetic diagnosis or causes (denovo) for NSCLP in affected child and family covering three generations especially in Indian population. To date no studies have been conducted to identify genetic susceptibility for NSCL/P by GWAS among Indian multiplex families.

## Notes







## Cellular homeostasis and pathogenesis of nonsyndromic cleft lip and/or palate

\*Miroslav Tolar<sup>1</sup>, Marie Tolarova<sup>1</sup>

<sup>1</sup>University of the Pacific, Arthur A. Dugoni School of Dentistry, Biomedical Sciences, Orthodontics, San Francisco, United States

### Objectives:

In etiology of nonsyndromic cleft lip and/or palate (NCLP), genetic and environmental factors interact at a cellular level. Mutations slightly influencing functions of multiple genes constitute increased susceptibility (lower resilience) to fluctuations of cellular microenvironment. For example, decreased level of active cellular folate can be due to loss-of-function mutations of folate-cycle enzymes, limited supply of dietary folate, or both, resulting in a slower cell proliferation or migration rate.

Our goal was to expose cultured cells to hypoxia and investigate, if folic acid supply may influence a survival rate of stressed cells.

### Methods:

Cells of an adult or developing organism constantly cope with fluctuations of their microenvironment. They may be exposed to a lower supply of oxygen and/or essential nutrients, to environmental toxins, or influenced by mechanical forces. Cells react to factors that are out of a normal range by endoplasmic reticulum stress and by a set of adaptational mechanisms called unfolded protein response. The outcome is either cell survival or cell death.

Human dental pulp derived stem cells (DPSC, Celprogen) cultivated in MEMα with 10% human serum, were exposed to 0.5% oxygen for 4-12 hours. Cultivation medium contained 0.002 – 20 μg/mL folic acid.

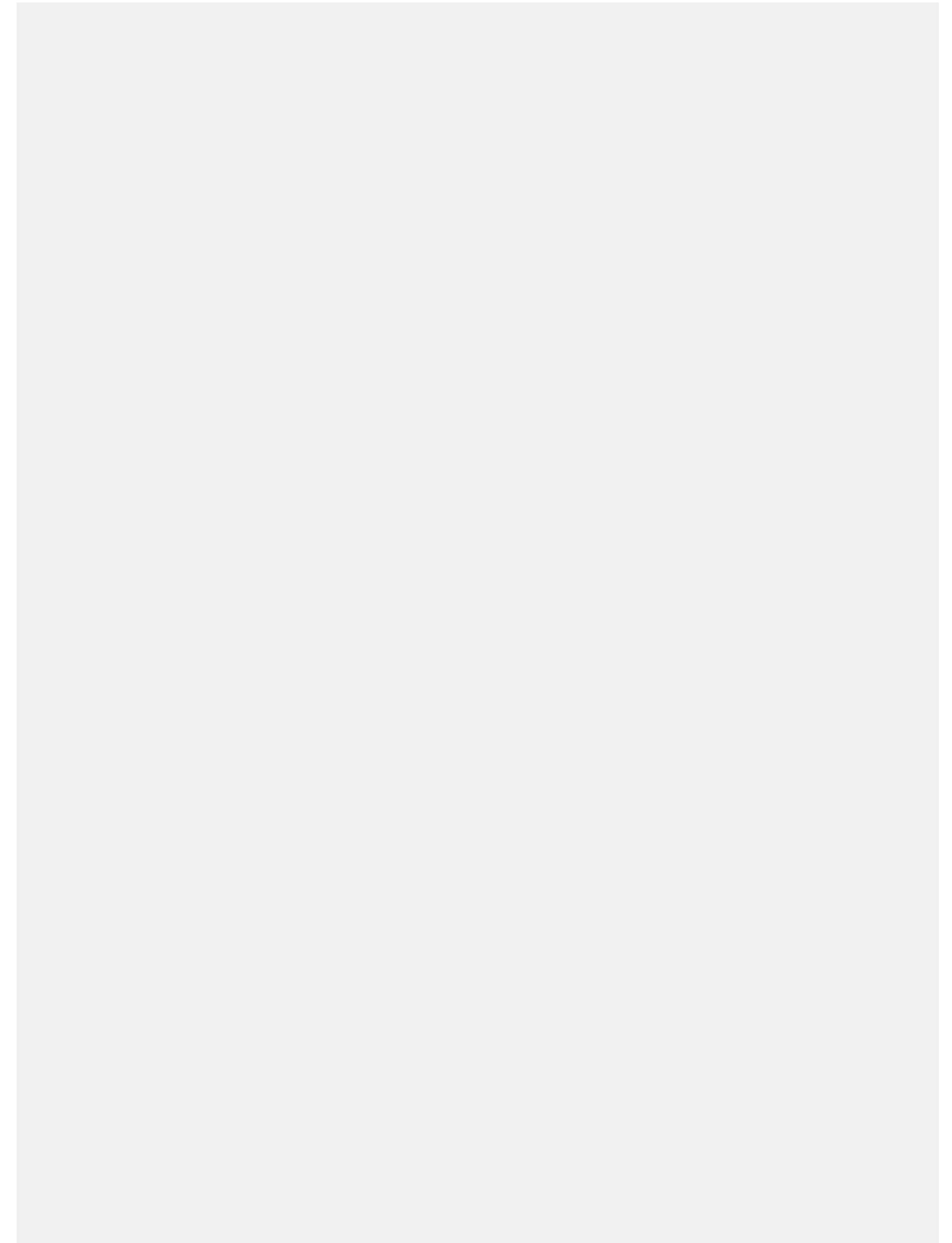
### Results:

A substantial number of DPSC died after exposure to prolonged severe hypoxia. The death rate was significantly lower in cultures maintained in medium containing 2-20 μg/mL of folate.

### Conclusions:

This pilot project showed that deleterious consequences of severe cell stress could be mitigated by increased cellular availability of folate. DPSC are derived from neural crest, same as cells forming facial processes. Decreased cellular functions (migration, proliferation) or death of cells can negatively influence growth of facial embryonic processes that has to occur in a limited time of a critical period for lip and palate formation. Further examination of this model may contribute to our understanding of etiology of NCLP on cellular level and prevention of NCLP by periconceptional supplementation of folic acid to mothers.

## Notes



## New aspects in the mechanism of the prevention of oromaxillofacial clefts by B-vitamins

\*Konstanze Scheller<sup>1</sup>, Florian Kalmring<sup>1</sup>, Johannes Schubert<sup>1</sup>

<sup>1</sup>University of Halle-Wittenberg, Department of Oral and Maxillofacial Plastic Surgery, Halle, Germany

### Objectives:

Clinical and experimental studies show a clear effect of B-vitamins in the prevention of oromaxillofacial clefts. Hereby the local effect of thiamin (B1) in the amniotic fluid is very important for the embryonic facial development. In vitro palatal organs were directly stimulated by topic B-vitamins. A low B1-concentration in the serum and amniotic fluid of mothers with clefts in their offspring was found. Cleft lip/palate (CL/P) shows a gender related distribution in human with unknown reason. Animal studies were performed to analyze the gender related teratogenic and genetically cleft appearance and response to the B1-supplementation.

### Methods:

Cyclophosphamide (0.6 mg) and dexamethasone (0.25 mg) were injected intraperitoneal to A/B-Jena mice on different days of pregnancy. Abort and malformation rate was gender-specific documented: in teratogenic induced (A/B-Jena, nCPA=481, nDexa=255) and in genetically determined (A/WySn-mice, n=372) mice. Thiamin (B1) was given to A/B-Jena (nCPA+B1=449, nDexa+B1=282) and A/WySn-mice (n=372) mother-mice at different times of pregnancy: before, simultaneous and after the teratogenic action. B1 serum- and amniotic fluid concentration was analyzed in respect to cleft-appearance. Immunohistochemical and mRNA analysis of the ThTr1/2 were performed.

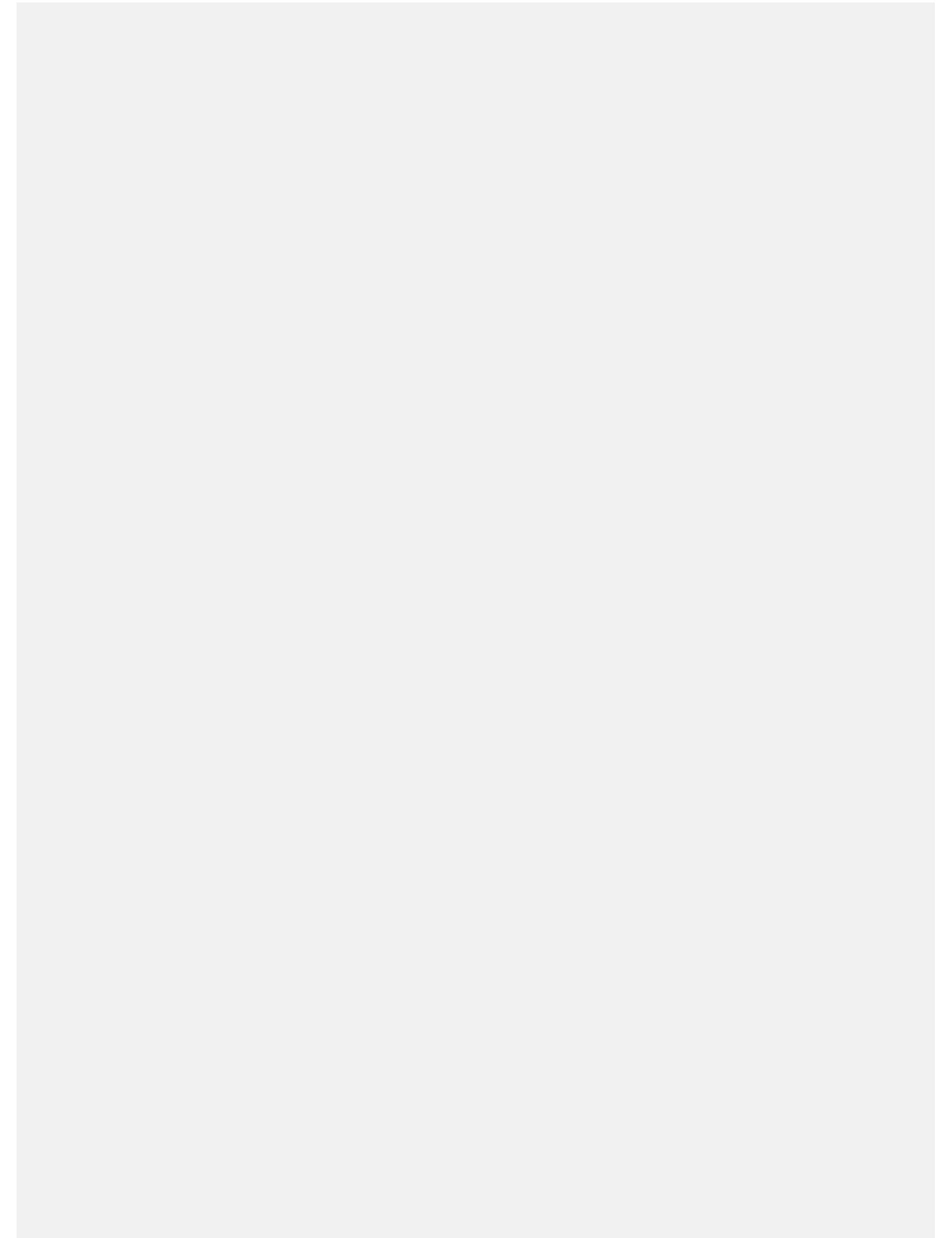
### Results:

There was a strong anti-teratogenic effect of vitamin B1 especially in the male fetuses. The prophylactic/periconceptional, but not the therapeutic supplementation can be proposed as a crucial step for regular facial and palatal fusion in embryonic development. The absolute rate of genetically CL/P-appearance cannot be reduced by oral B1-supplementation. We found an increase of the water-soluble thiamine serum concentration, but no change in the amniotic fluid concentration. A ThTr1/2-transporter defect (mRNA) caused the low amniotic fluid concentration. These findings confirm observations about cleft appearance in human beings.

### Conclusions:

Our special experiments on cleft appearance in animals showed a strong anti-teratogenic effect of thiamin (B1), especially in the male fetuses. Genetically determined cleft-appearance cannot be influenced. This confirms the observations about cleft appearance in humans that exogenous factors of cleft appearance can be positively influenced by the application of thiamine, but endogenous, like genetically factors, not.

## Notes





# Basic Research / Pathology



## Adipose Stem Cells for Cranio-maxillofacial Reconstruction: Recent Developments and Future Directions

\*György Kálmán Sándor<sup>1</sup>

<sup>1</sup>University of Oulu, Department of Oral and Maxillofacial Surgery, Oulu, Finland

### Objectives:

Basic understanding of the pathobiology of mesenchymal stem cells (MSCs), has led to the development of tissue engineered constructs which can be adapted to treat bony defects. A primary source of MSCs for bone tissue engineering is fat which is rich in adipose-derived stem cells (ASCs). The interdependency between mesenchymal cell lines, adipogenesis and also osteogenesis allows ASCs to be used for bone regeneration. We aim to present the clinical experience with reconstruction of large craniofacial osseous defects with ASCs.

### Methods:

Autogenous fat from the anterior abdominal wall of the patients was routinely harvested and taken to a central tissue banking laboratory for *ex-vivo* expansion. The ASCs were seeded onto resorbable scaffolds and growth factors added. Vascularized soft tissue beds were prepared for *ectopic bone* formation and later microvascular translocation where indicated. Alternatively ASC seeded constructs could be used with an *in situ* ossification protocol.

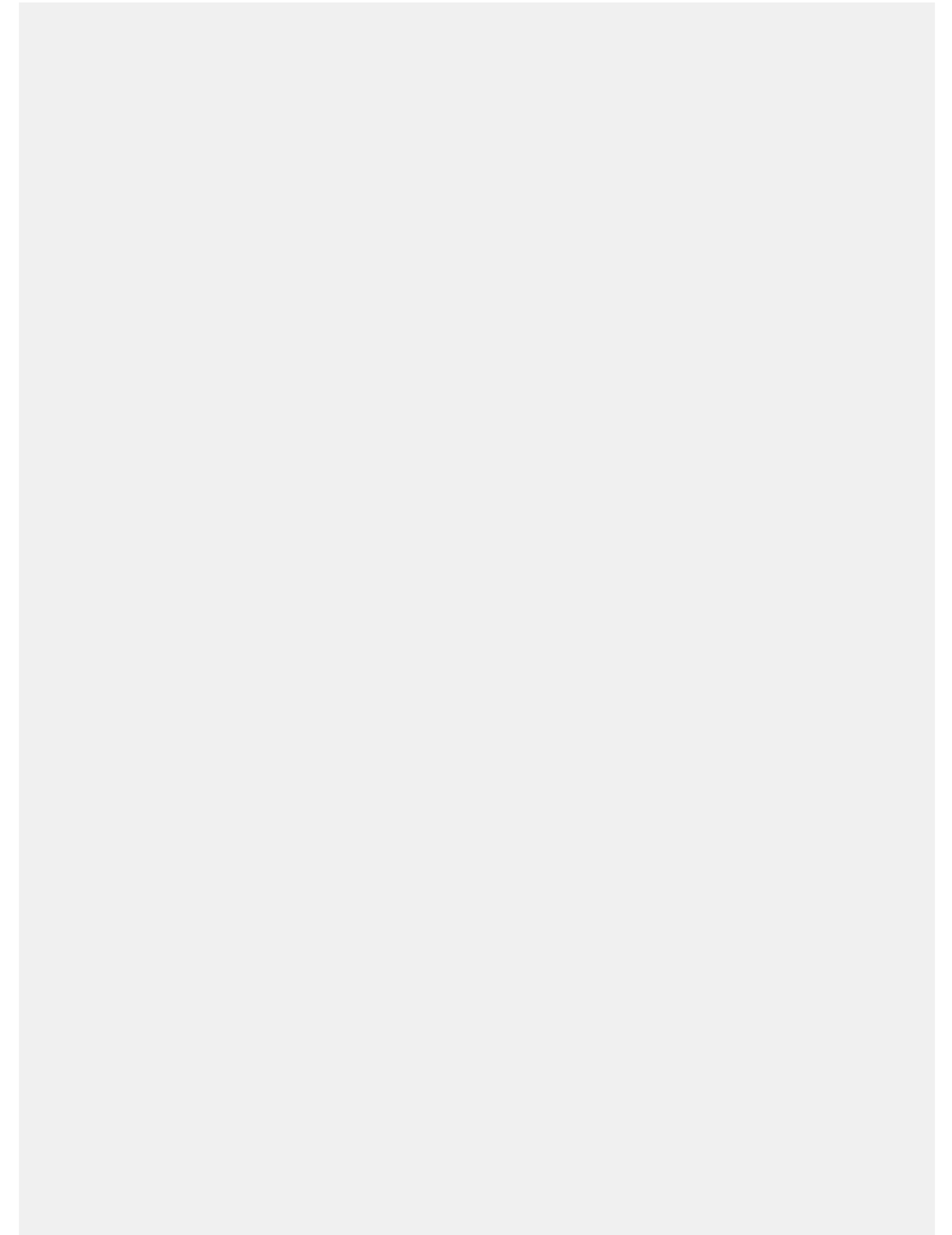
### Results:

Though autogenous ASC aided reconstruction of large defects was technique sensitive, of long duration and more costly than conventional standard immediate reconstruction, these factors are changing with increased familiarity and experience with the procedures. Likewise practitioners have learned which cases and levels of complexity require *ectopic bone formation* and *in situ ossification* protocols. Long-term results and clinical observations of treated cases are extremely encouraging. Three-dimensional bioprinting is also gradually being incorporated into the protocol.

### Conclusions:

In the future, with evolving technological advances, ASC aided reconstruction will be more regularly used in clinical practise. Possibilities with allogeneic stem cells moving towards an off-the-shelf type of product analogous to the allogeneic pooled mesenchymal stem cell derivative Prochymal™ may be a future step in reconstructive tissue engineering.

## Notes



## The Effect of Craniosynostosis on the Facial Symmetry in *Twist1*<sup>+/-</sup> Mice

\*Takashi Nuri<sup>1</sup>, Masato Ota<sup>2</sup>, Sachiko Iseki<sup>3</sup>, Koichi Ueda<sup>1</sup>

<sup>1</sup>Osaka Medical College, Plastic and Reconstructive Surgery, Takatsuki, Japan

<sup>2</sup>Japan Women's University, Human Science and Design, Department of Food and Nutrition., Tokyo, Japan

<sup>3</sup>Tokyo Medical and Dental University, Molecular Craniofacial Embryology, Tokyo, Japan

### Objectives:

Twist1 is required for regulation of cranial suture cell proliferation and osteoblast differentiation. Haploinsufficiency of human *TWIST1* gene has been identified in association with Saethre-Chotzen syndrome, and recent studies revealed that mutations in *TWIST1* and *FGFR2* genes are involved in nonsyndromic craniosynostosis. In general, the patients with craniosynostosis require operative release of affected sutures to abate the condition, which makes it difficult to observe sequential effect of suture fusion on growth of calvarium and face.

### Methods:

Quantitative analysis of morphological changes of the skull during the suture fusion of *Twist1* loss of function mutant mice (*Twist1*<sup>+/-</sup>) was carried out by using micro CT scan images of postnatal day P14, P42 and P56.

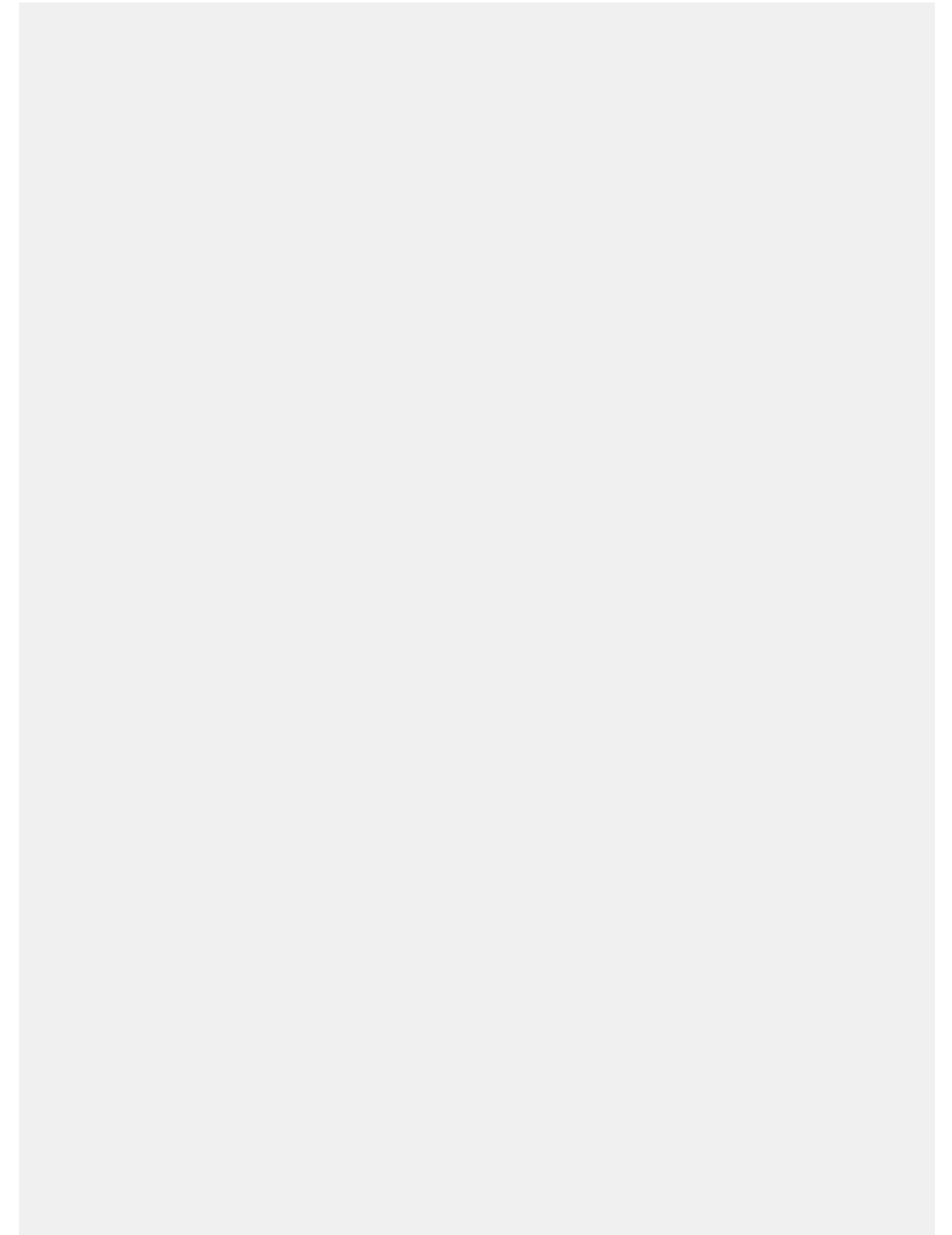
### Results:

Fusion of the coronal suture started by P14 and almost completed by P56. The anterior-posterior growth of the skull was not observed after P28, which was compensated by increased growth of the height. The length of zygomatic arch that represents the orbit size was significantly shorter than the WT at P42 and P56. In p42 and p56 *Twist1*<sup>+/-</sup> mice with plagiocephaly, the zygomatic arch length of fusion side was shorter than that of p14 WT mice whereas that of non-fusion side was comparable to that of P56 WT.

### Conclusions:

We found that the facial asymmetry assessed by orbit size was also present in the *Twist1*<sup>+/-</sup> with bilateral coronal suture fusion. These results suggest that the polar character in coronal suture fusion and facial asymmetry due to *Twist1* mutation are caused by the timing and progress of unilateral coronal suture fusion in relation to the intracranial pressure.

## Notes



## Management of craniofacial fibrous dysplasia of children

\*Alexander Kugushev<sup>1</sup>, Andrey Lopatin<sup>1</sup>

<sup>1</sup>Russian Children's Clinical Hospital, Craniomaxillofacial surgery, Moscow, Russian Federation

### Objectives:

Fibrous dysplasia is a development defect of the bone. Bone is replaced by a fibrous tissue, which resembles frosted glass at X-ray examination. The craniofacial form of fibrous dysplasia leads to aesthetic and functional impairment. There is no unified algorithm of treatment that can affect fibrous dysplasia growth. Surgical treatment is the main, but controversial method of treatment - it poses high risk of bleeding, delayed deformities due to continued growth in children, and risk of progression or relapse. When choosing a treatment, it is important to evaluate benefits and risks, the degree of improvement in the quality of patient life.

### Methods:

The report presents treatment options depending on the location, prevalence of fibrotic dysplasia lesions and the age of the child, as well as indications for surgical treatment. The report is based on the observation of 34 children outpatient and surgical treatment of 48 children. The age of the patients ranged from 2 to 15 years at the time of the first disease manifestation. Most often fibrous dysplasia hit the upper jaw and front-orbital zone. In all clinical cases observed, damaged functions were restored and good cosmetic result was achieved.

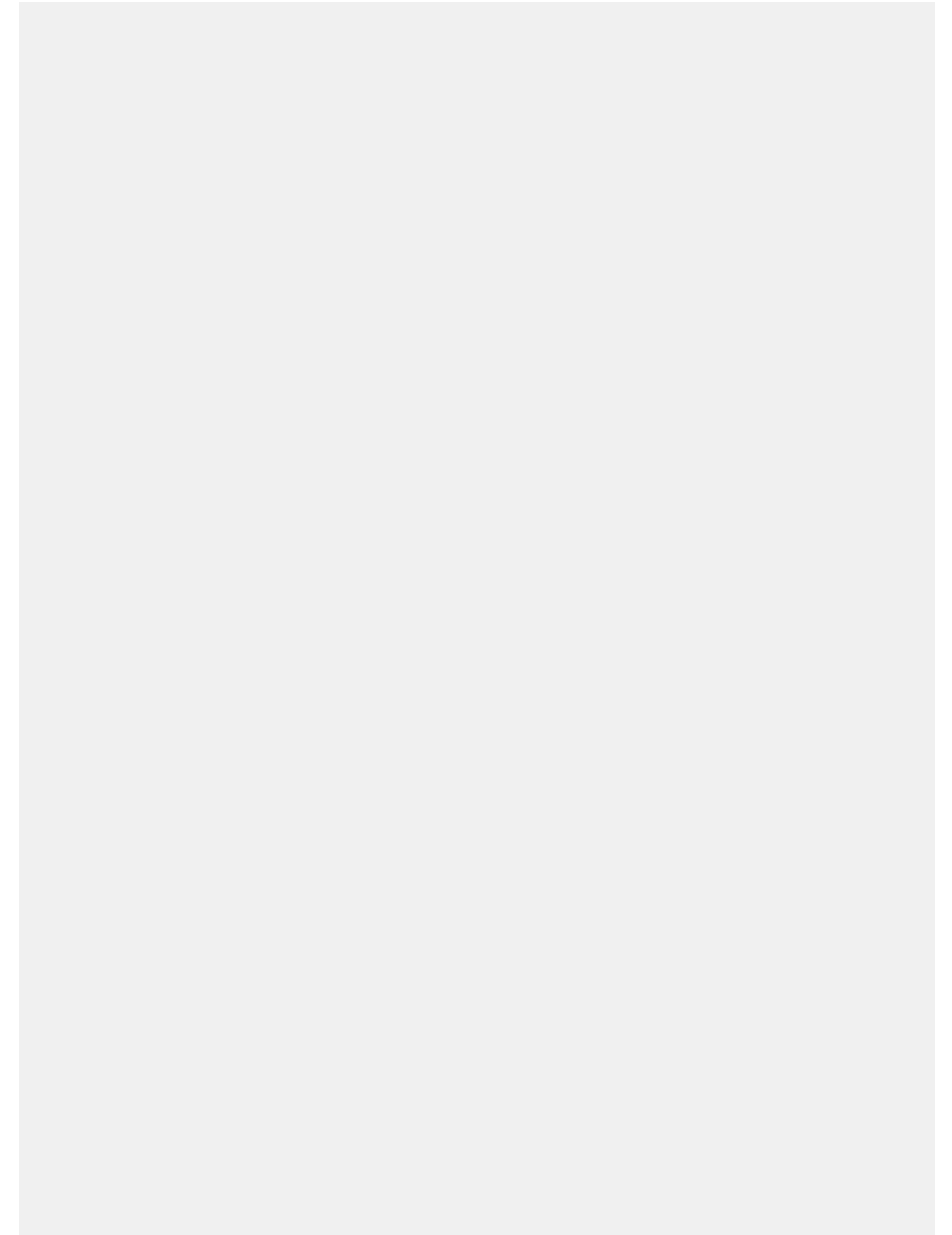
### Results:

A detailed algorithm for managing patients with fibrous dysplasia, indications for surgical treatment, and the timing and frequency of observation of such patients has been developed.

### Conclusions:

Conservative treatment is the main method of therapy in the asymptomatic course of fibrous dysplasia. Patients with indications for surgical treatment should undergo reconstructive operations with autologous plastics and the possible combined use of implants.

## Notes





## Mesenchymal beta-catenin is required for palatal elevation through regulation of canonical WNT signaling and F-actin expression

\*Cheng-hao Li<sup>1</sup>, Xiaoxiao Pang<sup>1</sup>, BING SHI<sup>1</sup>

<sup>1</sup>West China College of Stomatology, Sichuan University, Department of Cleft Lip and Palate Surgery, Sichuan, China

### Objectives:

Cleft palate is one of the most common birth defects in humans.  $\beta$ -catenin is expressed in palatal epithelium and mesenchyme during mouse palatal development. The role of epithelial  $\beta$ -catenin in palatal development is well studied, but little is known about the role of mesenchymal  $\beta$ -catenin in palatogenesis.

### Methods:

To investigate the role of mesenchymal  $\beta$ -catenin in secondary palatal development, we generated a new knock-out mouse model (Sox9CreER; CatnbF/F).

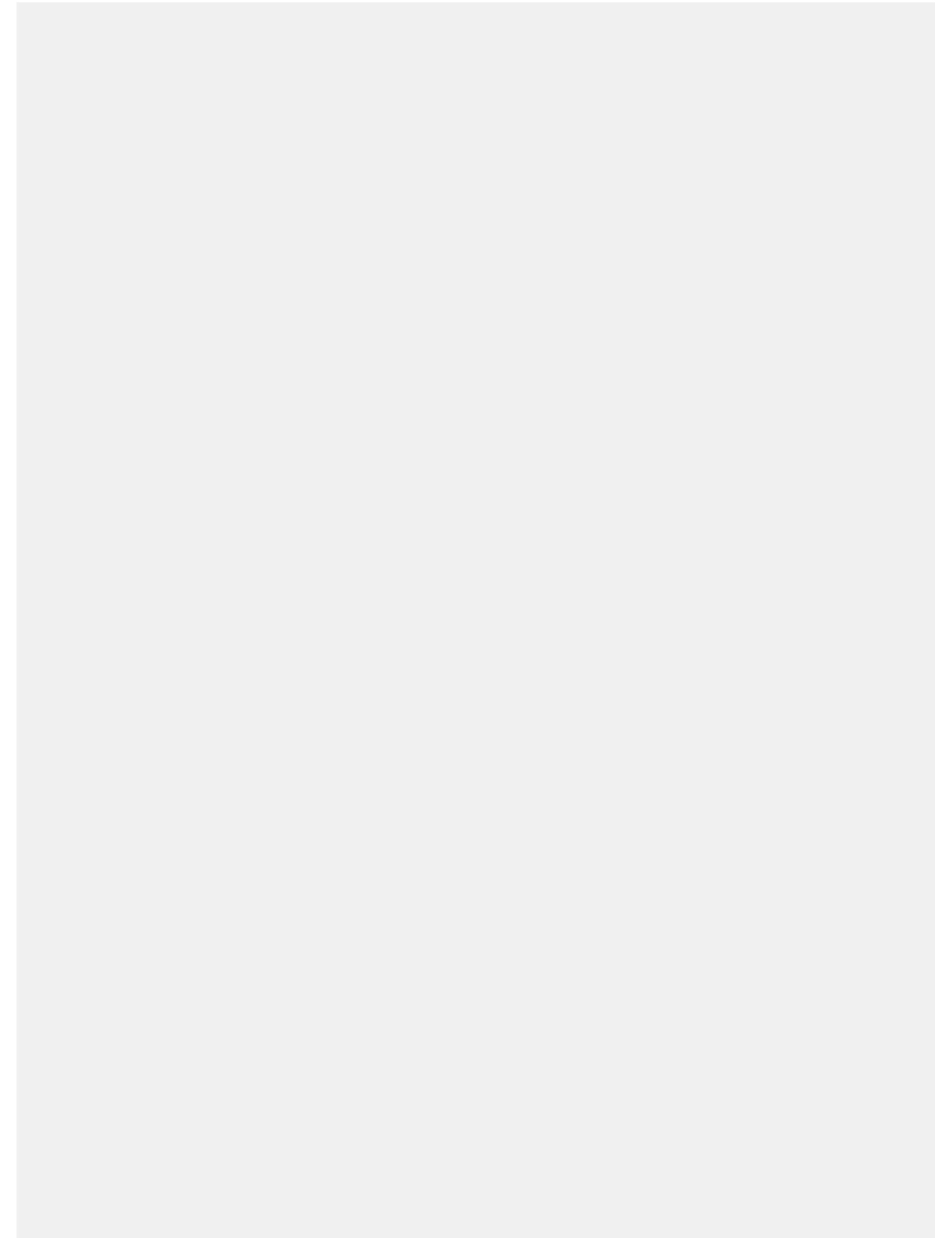
### Results:

We found Sox9CreER; CatnbF/F mice exhibited a delayed palatal elevation, leading to cleft palate. Abnormal cell proliferation and apoptosis were found and canonical Wnt signaling was repressed in the Sox9CreER; CatnbF/F palate. Moreover, F-actin expression decreased in the palatal mesenchyme of mutant embryos. Interestingly, RNA-seq showed krt13, krt25, krt27 and krt71 were significantly increased in mutant palate, which indicated keratin plays a role in mesenchymal  $\beta$ -catenin-mediated palatal development.

### Conclusions:

our results suggest that mesenchymal  $\beta$ -catenin is required for palatal elevation by regulating mesenchymal canonical Wnt signaling and F-actin expression.

## Notes





# Treatment of the Pierre Robin Sequence I







## 280 Pierre Robin sequence patients, what is new?

\*Kurt Butow<sup>1</sup>

<sup>1</sup>University of Pretoria + The Wilgers Hospital, Maxillo-Facial and Oral Surgery, Pretoria, South Africa

### Objectives:

The entity Pierre Robin syndrome/anomaly/sequence (PRS) has been plagued by controversy concerning the appropriate terminology, the etiopathogenesis, developmental theories of these appearances, as well as the management thereof. The relevant scientific literature was compared to this very large clinical database of 282 PRS cases, sub-classified into Siebold-Robin sequence (SRS) and Fairbairn-Robin triad (FRT). Clinical description, diagnostic criteria, epidemiology, oligohydramnios theory, mandibular catch-up growth, midfacial hyperplasia, and initial peri-surgical management have been compared and what is new?

### Methods:

Disparities exist within the literature regarding definitive diagnostic criterion of the two distinguishable subdivisions, namely the Siebold-Robin sequence (SRS) and the Fairbairn-Robin triad (FRT). Previously, PRS has mostly been referred to as one entity, characterised by micrognathia and glossoptosis, with (FRT) or without a palatal cleft (SRS). The incidence and the appearances among different racial and gender groups are presented.

### Results:

The database analysis focuses on the genetic variations, family history, differentiating between syndromic and non-syndromic PRS and types of syndromes. It also alludes to cases with breathing, feeding problems and mortality rates. Data shows that the FRT presented with a variation of syndromes and other genetic abnormalities, whilst the SRS presented with only one type of syndrome.

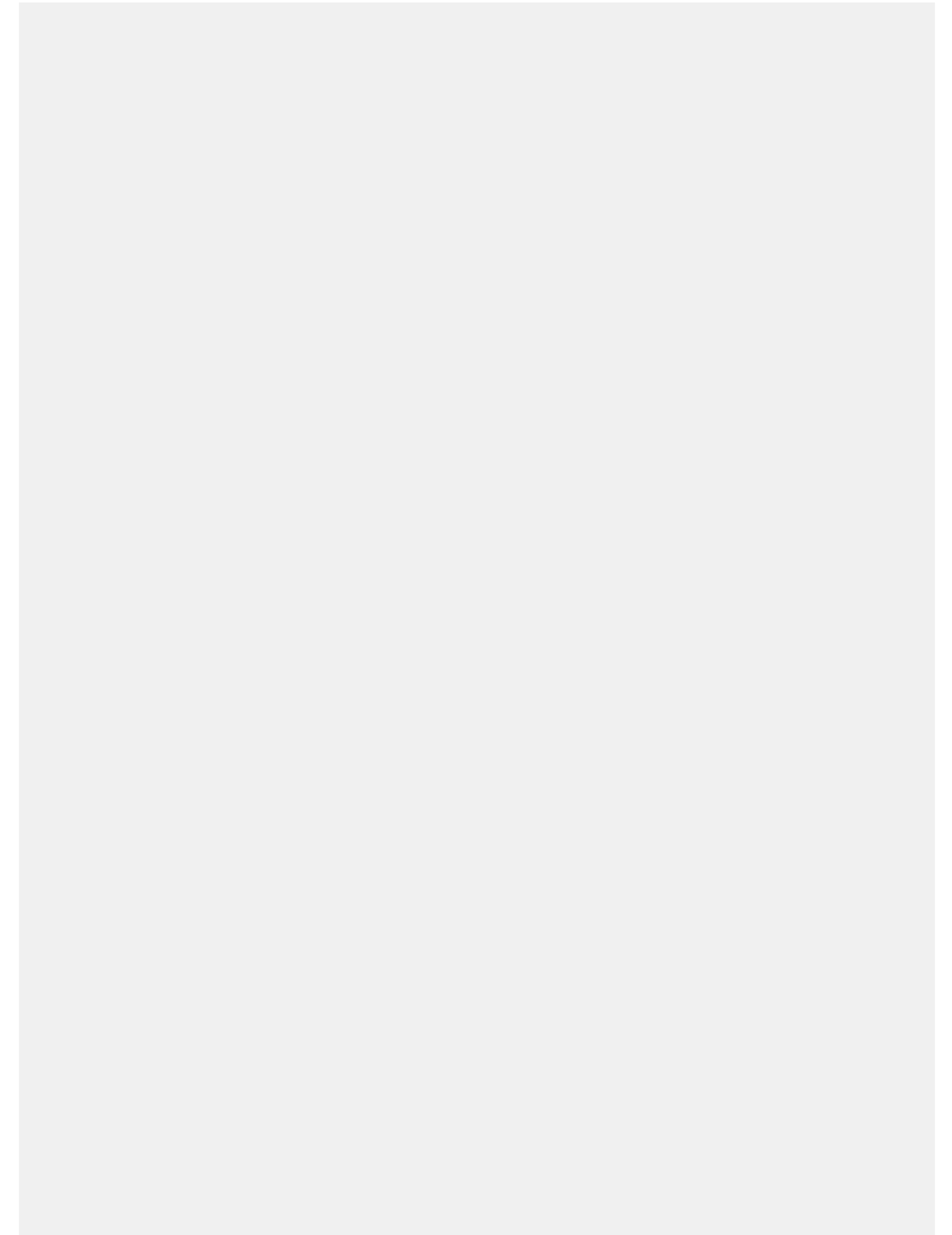
Various theories of origin described have been compared concerning the oligohydramnios theory, mandibular catch-up growth and midfacial hypoplasia.

### Conclusions:

The management of SRS/FRT depends on a variety of factors, which include airway compromise, feeding difficulties and the sequence of reconstruction. This study discusses in detail a stepwise sequential approach to both disorders, different treatment modalities related to airway obstruction and/or hypoxia and feeding difficulties are presented (*Annals of Maxillofacial Surgery* 2016; Vol 6: 31-49 – Pierre Robin sequence: subdivision, data, theories and treatment. Part I to IV).

This information compiled from a very large series of 282 PRS cases may confirm or refute existing knowledge and management at various units worldwide.

## Notes



## Oro-pharyngeal airway space in patients with cleft as compared to controls: a 3D volumetric study

\*Himija Karia<sup>1</sup>, Ashok Kumar Karia<sup>2</sup>

<sup>1</sup>VSPM Dental College and Research Centre, Orthodontics and Dentofacial Orthopedics, Nagpur, India

<sup>2</sup>Getwell Hospital, Nagpur, Germany

### Objectives:

Patients with CLP suffer from several esthetic as well as functional challenges. Surgical management of CLP requires maneuvering and repositioning of jaws which may affect the oro-pharyngeal airways. Several cases of airway insufficiency, velopharyngeal incompetence, snoring, hypopnea and OSA have been reported among cleft subjects. The aim of this study was to extensively evaluate and compare the dimensions of the oro-pharyngeal airway in all three planes and to compare the volume of the oro-pharyngeal airway among subjects with and without cleft lip and palate.

### Methods:

The sample consisted of 3D DVT scans of 62 patients with cleft lip palate and 42 individuals with Angle's Class I malocclusion obtained from the departmental archives. The patients in both the groups were further divided into pre-pubertal and post-pubertal groups based on the CVMI status as seen on the 3D scans. The antero-posterior, vertical and transverse dimensions of the oro-pharyngeal airway were measured using the mid sagittal and axial slices obtained from 3D DVT scans for both the groups. The Statistical analysis was carried out using SPSS version 16.0. t-test was applied for testing statistical significance.

### Results:

The Statistical analysis revealed that the antero-posterior airway dimension was significantly reduced in the study group as compared to the control group.

The evaluation of the height of the oropharyngeal airway showed that the length of the airway column was significantly reduced in the patients with cleft as compared to the control group.

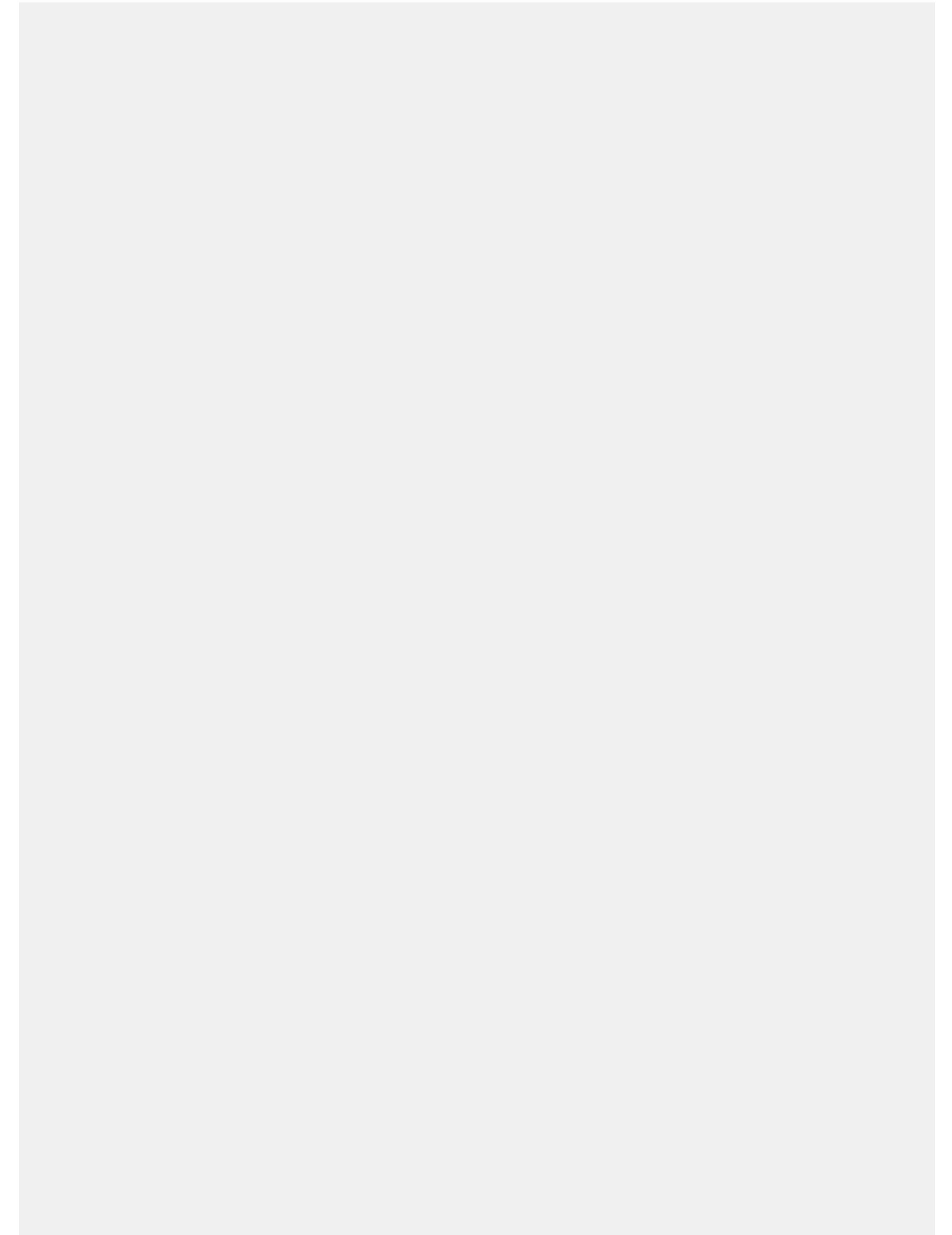
The study group subjects showed a significantly reduced oropharyngeal airway volume as compared to the control subjects.

Significant difference was seen in the direction of growth of airways between the patients with and without CLP when comparison based on age was carried out.

### Conclusions:

Patients with cleft lip/ palate showed reduced dimensions and volume of the oro-pharyngeal airway in all three planes as compared with well matched control group. The authors propose a compensation hypothesis based on the comparison of growing subjects with and without CLP. This study provides vistas for future research in this regard for the better understanding and management of CLP cases. This study also suggests caution while planning Orthodontic and Orthognathic correction in subjects with CLP.

## Notes





## Threedimensional analysis of the dental arch in infants with isolated cleft palate in comparison with pierre-robin-sequence

\*Susanne Lienemann<sup>1</sup>

<sup>1</sup>Leipzig University Hospital, Polyclinic for Orthodontics, Leipzig, Germany

### Objectives:

This lecture is dealing with three-dimensional morphological changes in the maxilla of infants with isolated cleft palate (ICP) in their first year of life. Plaster models of 62 patients with non-syndromic cleft palate and Pierre-Robin-Sequence (RS) were compared to a healthy control group.

### Methods:

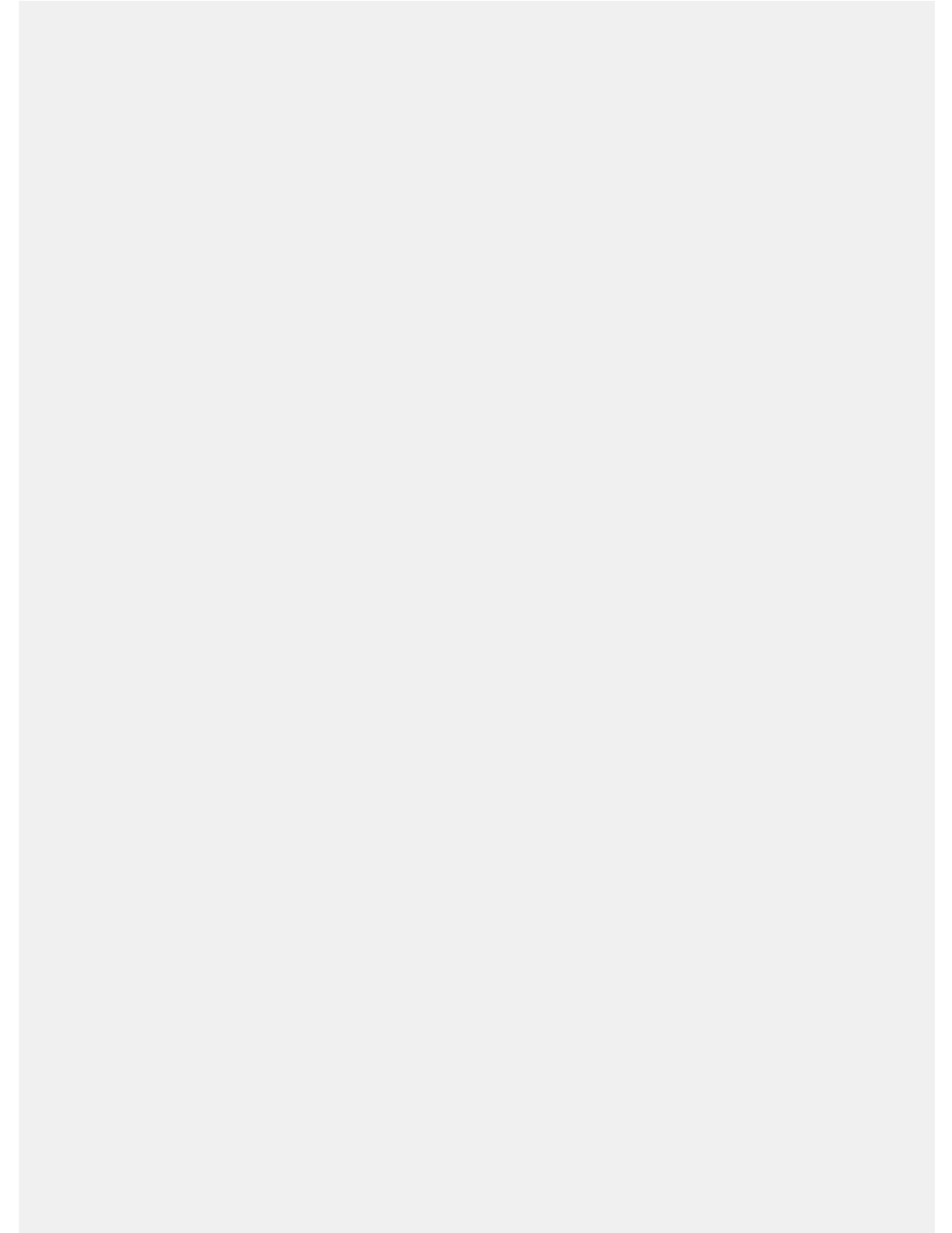
Casts being used for this study resulted from presurgical orthodontic treatment with Hotz plate at Leipzig University Hospital. 502 Plaster models were digitalized to be assessed with the orthodontic diagnostic software OnyxCeph®.

### Results:

RS patients showed early on significant greater anterior arch lengths ( $p=0,01$ ) and posterior arch widths ( $p=0,012$ ). In comparison to this parabolic dental arch form found in the RS group, ICP patients showed a more U shaped dental arch. In contrast to a healthy control group the examined cleft palate groups showed overall wider posterior dental arch widths. Furthermore the observed groups revealed a shortfall in anterior arch lengths which leads to an increasing growth deficit of the total arch length.

### Conclusions:

## Notes



## Perioperative Management of 103 patients with Pierre-Robin-Sequence treated with Preepiglottic Baton Plate compared to 103 patients with cleft palate

\*Gül Schmidt<sup>1</sup>, \*Alexander Voigt<sup>1</sup>, Carsten Matuschek<sup>1</sup>, Max Heiland<sup>1</sup>, Jan-Dirk Raguse<sup>1</sup>

<sup>1</sup>Klinik für Mund-, Kiefer-, Gesichtschirurgie, Charité Campus Virchow-Klinikum, Arbeitsbereich LKG-Spalten, Berlin, Germany

### Objectives:

Due to the anatomical situation in Pierre-Robin-Sequence (PRS), anaesthesiological (difficult airway) and surgical management (limited space) of children with PRS is challenging. In our experience, the Preepiglottic Baton Plate (PEBP) not only secures the airway immediately after insertion but also has a positive effect on mandibular growth, thereby eliminating upper airway obstruction (UAO) permanently. We compared anaesthesiological and surgical parameters of 103 patients with PRS after completion of PEBP therapy to those of 103 patients with isolated cleft palate (CP).

### Methods:

103 patients with PRS were treated with PEBP after birth (over 6 to 8 month) until a stable airway was established due to a corrected intermaxillary relation and tongue position. At that point, closure of the cleft palate was performed. 103 patients with isolated cleft palate were operated on at the same age and served as a control group. We compared mode of intubation, induction time and recovery time, cut-suture-time, incidents during recovery, need for ICU-monitoring and surgical characteristics.

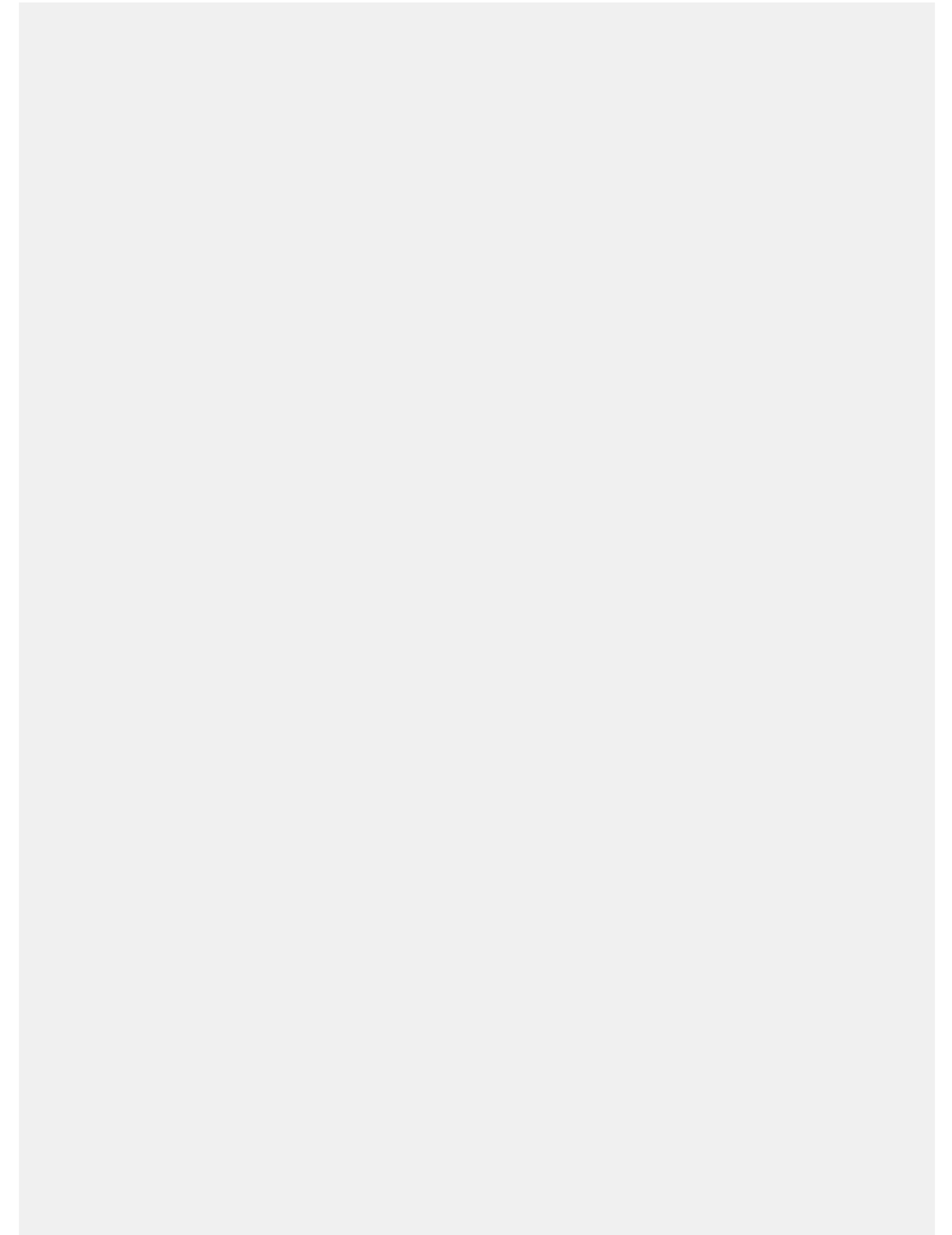
### Results:

Anaesthesia: Videolaryngoscopy and fiberoptic intubation were used only once in each group. Laryngospasm occurred in 3 patients with PRS and in 5 with CP. Two patients (PRS) and 3 (CP) needed postoperative ICU-monitoring. Induction time was not significantly different for both groups. Neither group experienced a significantly different recovery time. Surgery: Complete CP was more frequent in PRS than in CP. However, of the remaining patients who had incomplete CP, the vomer was not connected to the palate in 18% (PRS) and 36% (CP), which demanded a more complex reconstruction. The overall time of the operation did not differ significantly.

### Conclusions:

After therapy with the PEBP the need for videolaryngoscopy or fibreoptic intubation was <1% and as low as in the control group. All other parameters also showed no significant difference. These findings suggest that therapy with PEBP can eliminate postnatal UAO and perioperative obstructive complications.

## Notes



## Less Invasive Treatment of Sleep-Disordered Breathing in Children with Syndromic Craniosynostosis

\*Silvia Müller-Hagedorn<sup>1</sup>, Cornelia Wiechers<sup>2</sup>, Jörg Arand<sup>2</sup>, Wolfgang Buchenau<sup>2</sup>, Christian Poets<sup>2</sup>, Margit Bacher<sup>3</sup>, Michael Krimmel<sup>4</sup>, Siegmund Reinert<sup>4</sup>

<sup>1</sup>University of Rostock, Department of Orthodontics, Rostock, Germany

<sup>2</sup>University of Tuebingen, Neonatology, Tuebingen, Germany

<sup>3</sup>BIP-Orthodontic Practice Tuebingen, Tuebingen, Germany

<sup>4</sup>University of Tuebingen, Maxillofacial Surgery, Tuebingen, Germany

### Objectives:

Infants and children with syndromic craniosynostosis (SCS), such as Apert-, Crouzon- or Pfeiffer syndrome, are prone to sleep disordered breathing (SDB) including obstructive sleep apnea and upper airway resistance syndrome (OSAS, UARS), potentially leading to tracheostomy. We modified the Tübingen Palatal Plate (TPP), an oral appliance with a velar extension effectively treating airway obstruction in Robin sequence, by attaching a tube to its velar extension to bridge the narrow pharyngeal airway in SCS patients. Here, we evaluated this treatment concept.

### Methods:

Our hospital's electronic patient files were searched for all children with a diagnosis of SCS admitted between 01/01/2004 and 31/12/2016. Children with isolated craniosynostosis were excluded. OSAS was defined as a mixed-obstructive apnea-hypopnea index (MOAHI) >1, and UARS as more than 1 episode with nasal flow limitation/h, but absent OSAS. Children with a diagnosis of OSAS received the TPP and fiberoptic nasopharyngoscopy to assess the type of obstruction and to adjust the plate. Growth and weight gain, determined as standard deviation scores, were also evaluated before and during treatment.

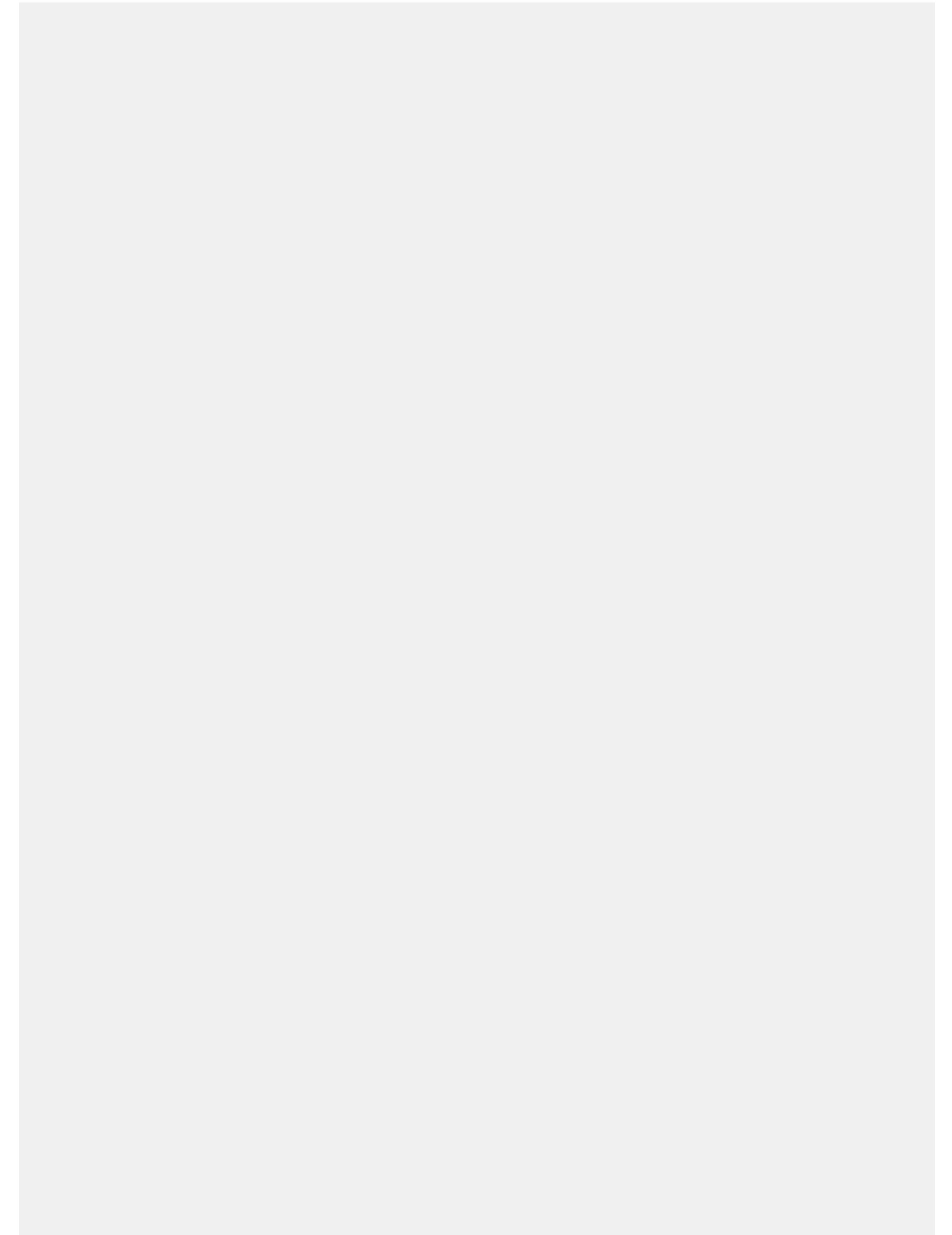
### Results:

Of 34 patients included, 24 presented with SDB and 27 had midface hypoplasia. Proportions of SDB were 78% in those with, and 22% in those without midface hypoplasia. In the OSAS group (n = 19), 13 patients were treated with palatal plates, with the remaining receiving continuous positive airway pressure, midface surgery or tracheal intubation. The MOAHI decreased across all children receiving palatal plate treatment from 14.6 (range 0.0-50.7) at admission to 0.9 (range 0.0-3.5) at discharge (p=0.002). SDS for weight and body length also improved (p<0.05 for weight and p=0.05 for body length). Only one child required tracheostomy.

### Conclusions:

Treatment of upper airway obstruction by a modified TPP in these children with SCS was shown to be mostly effective and safe. If confirmed in larger prospective studies, it may help to avoid more invasive interventions.

## Notes



## Mandibular distraction osteogenesis to an infant with Treacher Collins syndrome given a tracheostoma due to obstructive respiratory disorder

\*Yoshihide Mori<sup>1</sup>, Tomohiro Yamada<sup>1</sup>, Hiroyuki Nakano<sup>1</sup>, Tomoki Sumida<sup>1</sup>

<sup>1</sup>Kyushu University, Oral and Maxillofacial Surgery, Fukuoka, Japan

### Objectives:

Treacher Collins syndrome indicates hypoplasia of zygoma and mandible, external ear malformation, defect of lower eyelid and so on. Almost of them are caused by an autosomal dominant inheritance, and *TCOF1*, *POLR1C* and *POLR1D* are known as causal genes. As this syndrome accompanies respiratory disorder and hypacusis, but less mental retardation, the patients can participate in the society with proper treatment in appropriate time.

Herby, we report an infant case of Treacher Collins syndrome performed mandibular distraction osteogenesis who had tracheostoma and cleft palate.

### Methods:

The case is 3 old-year boy. As he had hypoplasia of bilateral zygoma and mandible at birth, he diagnosed as Treacher Collins syndrome. A cleft palate was also found. He had respiratory disorder due to micrognathia and the tracheostomy was performed in the early time after his birth. Only pediatric treatment and management on tracheostoma were continued until 3 year-old without palatoplasty, because of his growing lag. Then, we plan the mandibular distraction osteogenesis under general anesthesia to improve respiratory condition and perform palatoplasty.

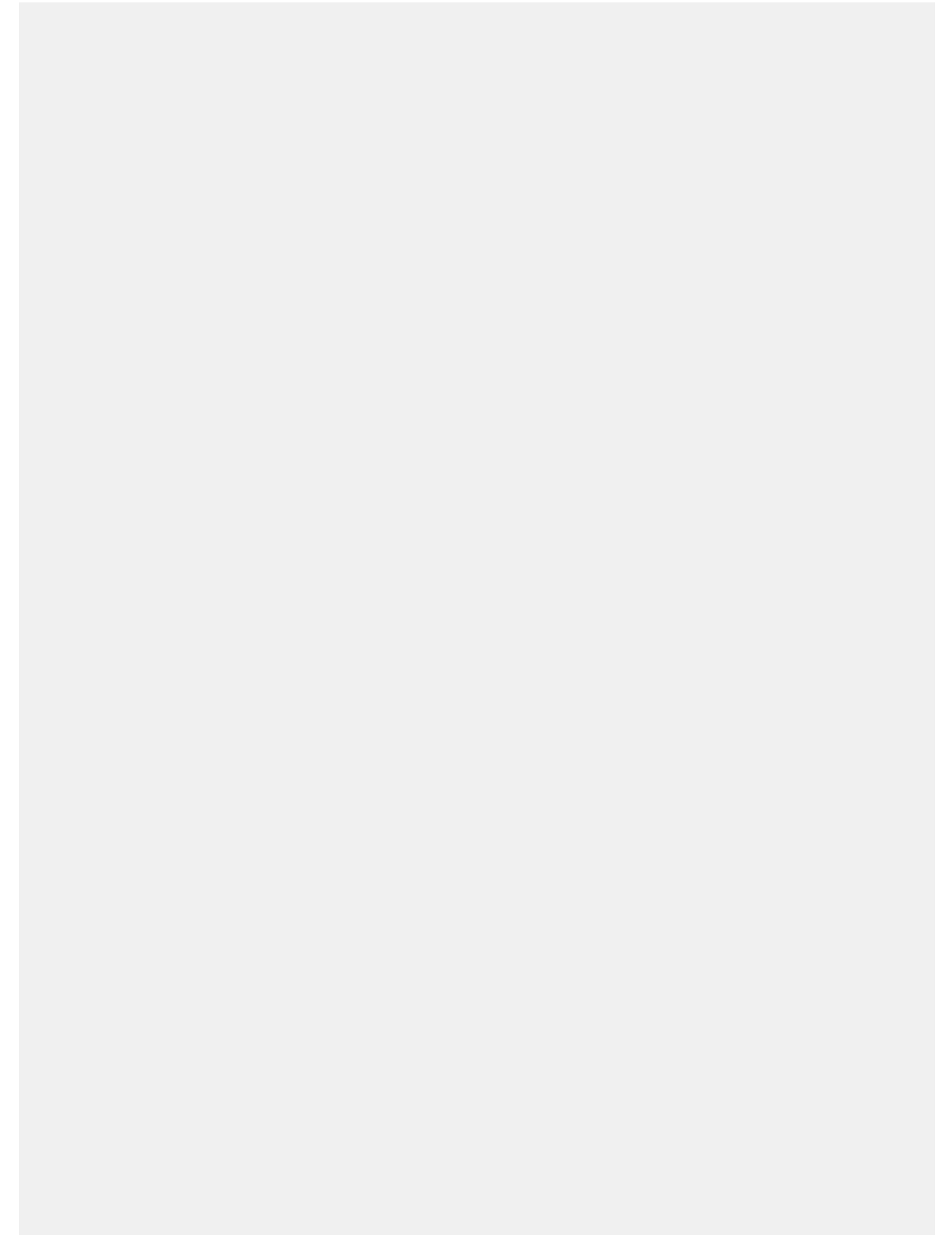
### Results:

We accessed both mandibular bodies via bilateral submandibular incision, gave osteotomies between first and second molar tooth germ and set distractors (Zurich system, KLS Martin). The distraction started next day after operation, 1 mm every day. The mandibular was elongated to 25 mm, edge-to-edge occlusion was observed at the part of anterior teeth. The airway was expanded anteroposteriorly, and the palatoplasty was performed 3 months later. The closure of tracheostoma is now planning.

### Conclusions:

Mandibular distraction osteogenesis to an infant with respiratory disorder due to micrognathia, like Treacher Collins syndrome, should be adopt for patients' functions and social lives.

## Notes



## **Treatment of airway obstruction in infants with Pierre Robin Sequence by distraction osteogenesis: long-term results**

*\*Nasser Nadjmi<sup>1</sup>*

<sup>1</sup>University of Antwerp (UA), Department of Cranio-Maxillofacial Surgery, Antwerp, Belgium

### **Objectives:**

The clinical experience with long term results in treating respiratory and feeding problems in infants with severe PRS is presented, using mandibular distraction osteogenesis. All patients suffered from severe obstructive airway symptoms while awake, and feeding problems. All patients had repeated apnoea monitor triggering, and abnormal sleep study. In a number of patients the air way obstruction was treated with pressure support breathing and the feeding problems with the use of a percutaneous gastrostomy tube. The paediatric Molina Distractor was used in all cases to lengthen the mandible. The age at the time of distraction varied from 2 weeks to 3 months. Distraction started at the day of surgery with a rate of 2 mm per day, and continued till a normal intermaxillary relationship was achieved. At the completion of distraction period the patients were discharged from the hospital.

### **Methods:**

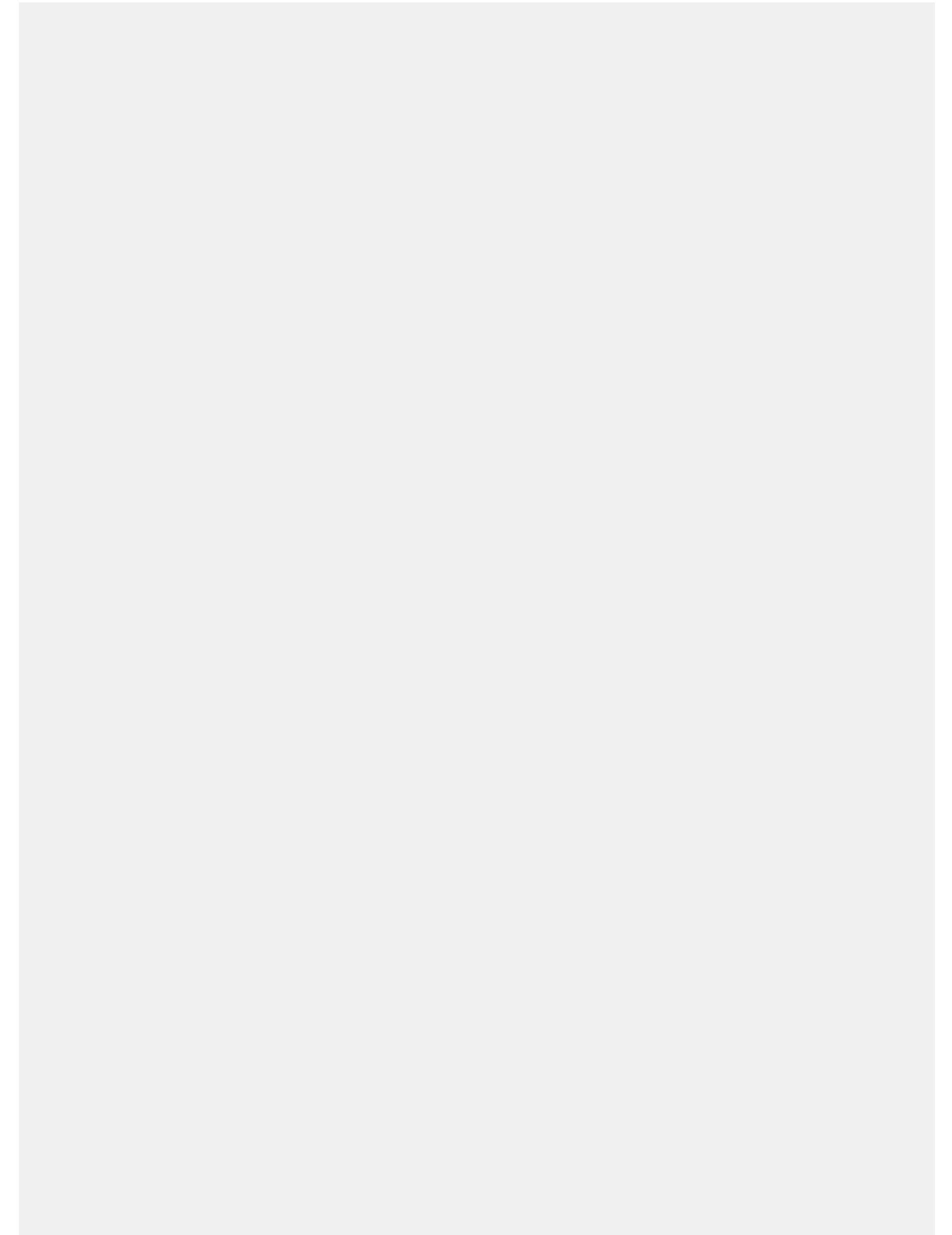
The airway problems were completely solved at the end of distraction in all cases. In the long term, feeding problems were solved in all patients after distraction. Up to 17 years Follow up showed in all patients an adequate airway with negligible scarring, a normal facial growth and speech. Fistula formation was not reported.

### **Results:**

### **Conclusions:**

Mandibular distraction osteogenesis is useful to avoid tracheotomy in infants with micrognathia in whom the obstruction is at the supraglottic/tongue base level and in whom CPAP and / or nasopharyngeal airway has not been successful in the treatment of airway obstruction.

## **Notes**





# The Cleft Nose







## Reconstructive rhinocheiloplasty after post-operative deformations in patients with bilateral cleft of the upper lip

*\*Sofiyat Mustafaeva<sup>1</sup>, \*Vladimir Vissarionov<sup>1</sup>, \*Magomet Mustafaev<sup>1</sup>, Dzhambulat Kuzhonov<sup>1</sup>, El'mira Tarchokova<sup>1</sup>*

<sup>1</sup>North-Caucasian Scientific and Practical Centre for Maxillo-Facial, Plastic Surgery And Dentistry, Oral and Maxillo-Facial Surgery, Nalchik, Russian Federation

### Objectives:

The aim of the study was to develop a technique of reconstructive rhinocheiloplasty in patients with bilateral cleft of the upper lip who have got post-operative deformities and to assess its efficiency by analysing long-term results.

### Methods:

Typical post-operative deformations in patients with bilateral cleft of the upper lip are represented by flattening of the nasal tip and widening of its basis. Reconstructive rhinocheiloplasty involves mobilisation of the membranous nasal septum up forward and shaping of its distal part with two skin strips of the upper lip. Correction of the upper lip is performed by reducing of its central part on one or two arterial pedicle. In case of cicatrical deformation of prolabium we use the prolabium for creating the membranous nasal septum, and appearing deficit is replenished with a full-length flap from the lower lip by modified method by Abbe.

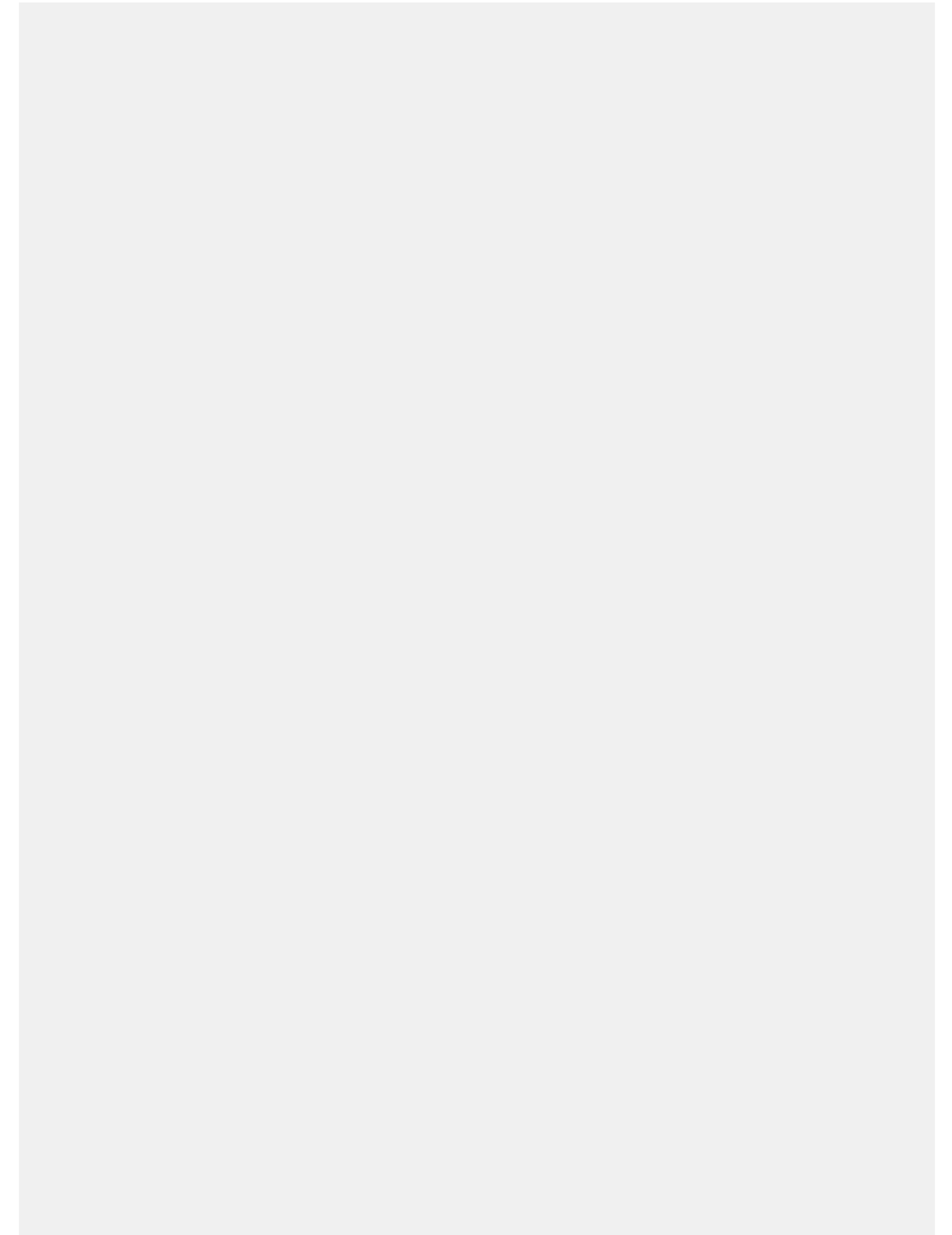
### Results:

More than 500 results after rhinocheiloplasty in patients of different ages are analysed. It is determined that more stabile development of nasal structures appears in children operated at the age of 4-6 years old.

### Conclusions:

In all cases it was succeeded to reach desirable results. More stabile results in children at the age of 4-6 years old confirms the expediency of performing the correction before admitting to school that helps their favourable social adaptation.

## Notes





## Improvement of unilateral cleft lip in simultaneous repair of nasal deformity

\*Xiao Ju Jin<sup>1</sup>

<sup>1</sup>Beijing Smileangel Children's Hospital, Beijing, China

### Objectives:

Further improve cleft lip nose deformity.

### Methods:

Surgical separation, suspension of large wing cartilage, filling part of the nasal septum cartilage.

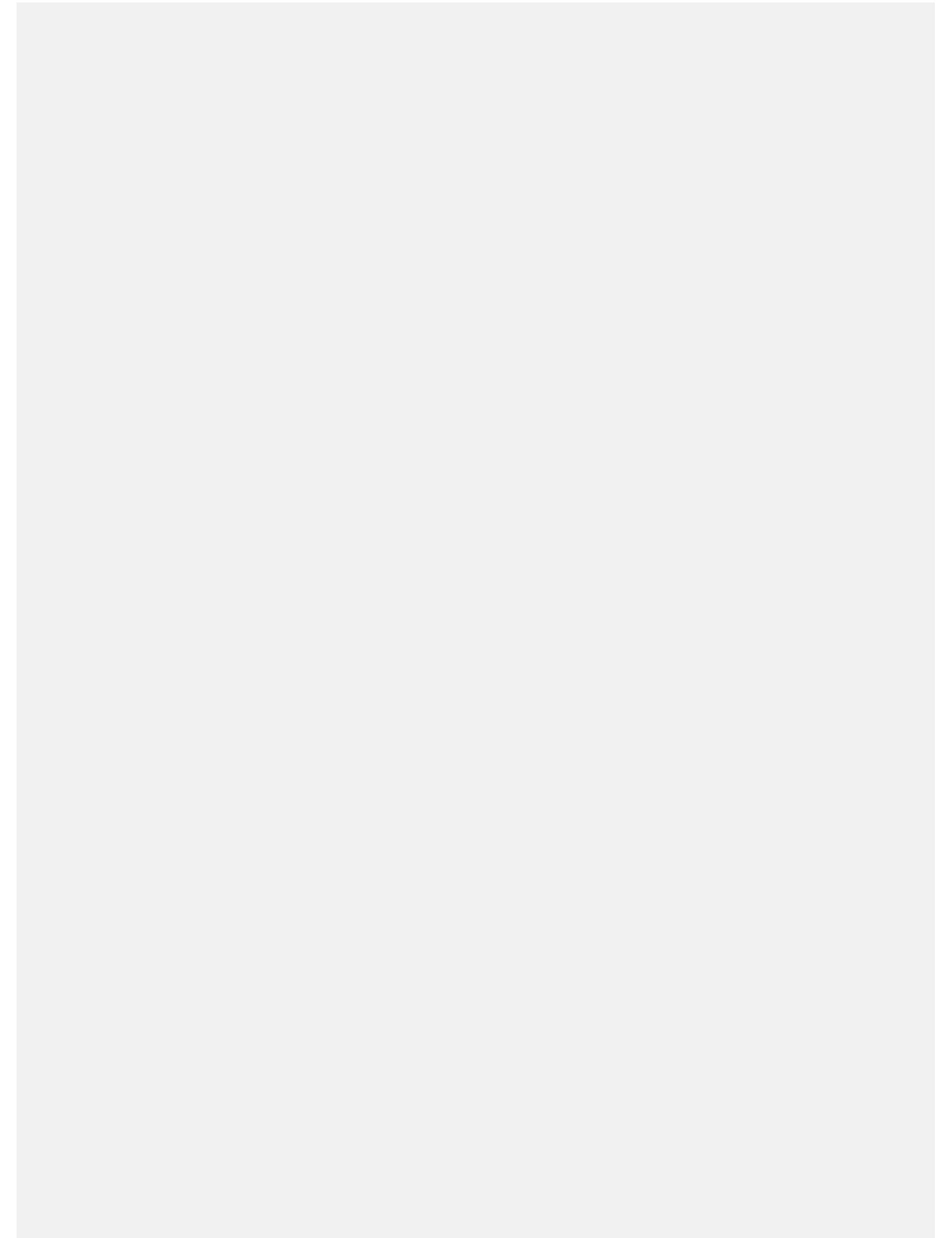
### Results:

Simultaneous correction of cleft lip nasal deformity.

### Conclusions:

The effect of cleft lip repair nasal deformity is remarkable.

## Notes





## A Twenty Year Experience with the treatment of Cleft-Lip Nasal Deformity

*\*Henry Vasconez<sup>1</sup>, Nneamaka Agochukwu<sup>1</sup>*

<sup>1</sup>University of Kentucky, Plastic Surgery , Lexington, United States

### Objectives:

To review the evolution and technical refinements in the treatment of Cleft Lip- Nasal Deformities in patients that have been treated by the senior author for a span of twenty years.

### Methods:

: Cleft lip and palate patients treated by the senior author were reviewed over the last twenty years who were followed to the period when they underwent definitive cleft-lip nasal reconstruction. A listing of the techniques employed over this period was made and a statistical analysis of each patient. The outcomes in terms of aesthetic and functional outcome (improvement in nasal airway obstruction) were evaluated.

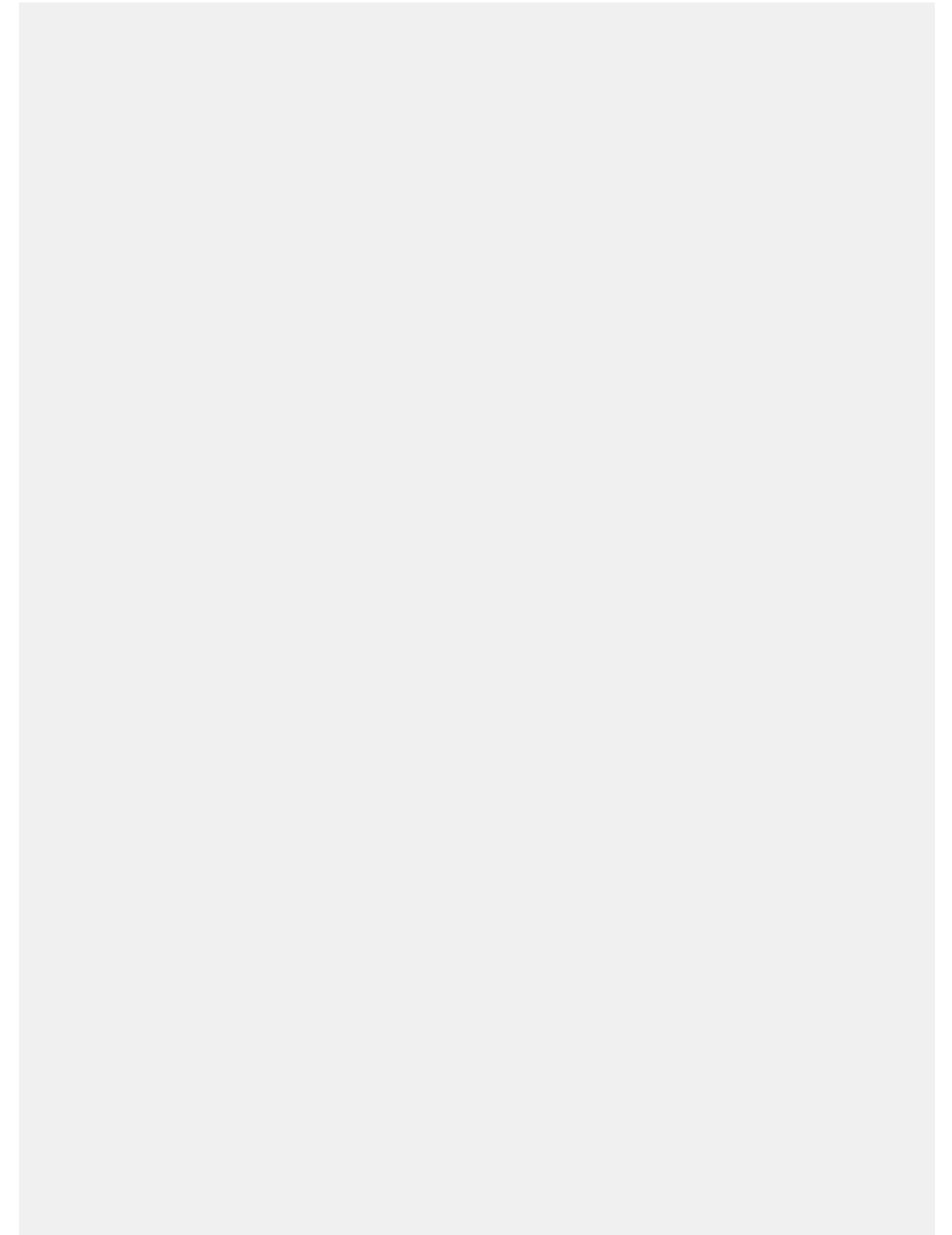
### Results:

: 50 patients underwent an open septorhinoplasty performed by the senior author, from 1997-2017. Specific maneuvers including spreader grafts, columellar strut grafts, nasal osteotomies, and tip/lower lateral cartilage grafts were performed according to the needs of the patient. Patients generally complained of airway obstruction. CT scan documentation was increasingly obtained over the years to document the internal nasal pathology. A septoplasty with use of spreader grafts or flaps was generally performed. Bone grafting of the hypoplastic maxilla was widely used to improve the overall result.

### Conclusions:

Improvements in the treatment of patients born with cleft lip and palate have been evident in many aspects over the last twenty years. Cleft Rhinoplasty is usually among the final major procedures performed on this group of patients. Refinements have occurred with the incorporation of aesthetic and functional techniques shared from conventional rhinoplasty. Good and even outstanding results can make a major impact on the long journey of the cleft patient. We will show some of these results in this study.

## Notes





## Primary correction of the nasal deformity in unilateral cleft lip patients: merging the past with the present to achieve a satisfactory outcome

\*Jordi Puente-Espeñ, Maria del Carmen Moreno Alvarez<sup>1</sup>

<sup>1</sup>Hospital General de Mexico , Plastic and Reconstructive Surgery, Mexico City, Mexico

### Objectives:

Demonstrate the results of a surgical technique performed on 28 patients with complete unilateral cleft lip at tertiary level medical institution in Mexico.

Comment on the findings, based on a heterogenous patient population.

Describe the demographic and sociocultural difficulties that were taken into account in creating the technique.

### Methods:

A group of 28 patients with complete unilateral cleft lip treated at Hospital General de Mexico from March 2015 to December 2016 is presented. Demographic data is reviewed with descriptive statistics. Preoperative, intraoperative and postoperative information with regards to adjuncts (presurgical molding and stents), intraoperative times and technical aspects, interesting findings as well as postoperative information are discussed. Complications are divided as those related to surgery and those non related to surgery. Historical aspects of primary nasal repair are discussed.

### Results:

The technical aspects are shown.

Intraoperatively, the nasal correction is performed based on three pillars:

1. A supraperiosteal dissection of the orbicularis oris muscles and adjacent tissues, along the ascending process of the maxilla on the cleft side exclusively.
2. The nasal floor is repaired by mobilizing the lining flap on the mucosa of the cleft side. The septal cartilage is left untouched.
3. Handling the alar cartilage. Dissection along the alar cartilage on the cleft side, over the nasal dome on the non cleft side and nasal tip (similar to Salyer's technique).

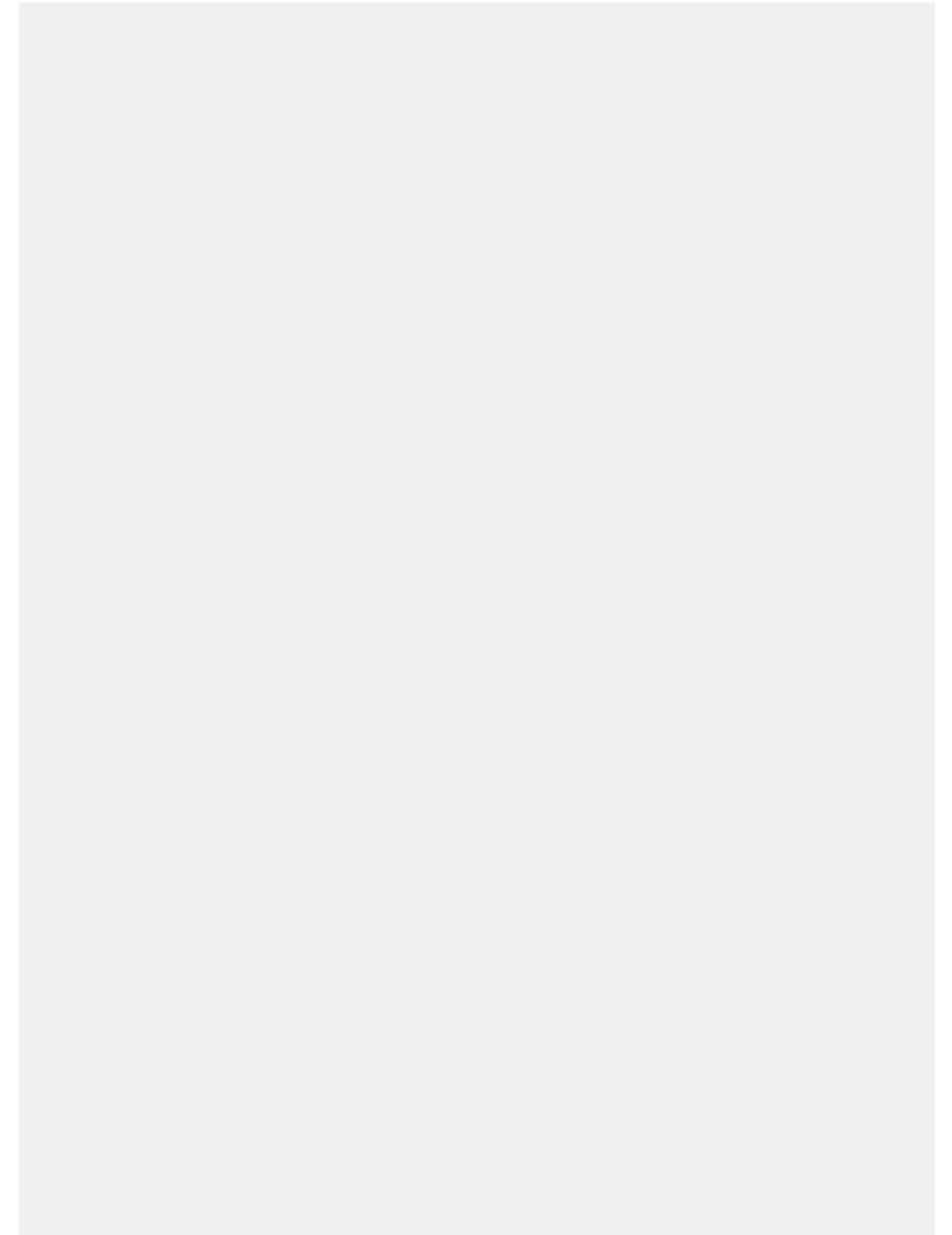
The use adjuncts (presurgical) described

Complications are shown.

### Conclusions:

- Primary nasal repair is feasible.
- The reconstructive surgeon must use wisely the surgical techniques that have demonstrated positive outcomes.
- A careful approach to details will shorten the learning curve for the junior reconstructive surgeon.

## Notes





## Synchronous repair of Bilateral cleft lip and Nose

*\*Muhammad Ashraf Ganatra<sup>1</sup>*

<sup>1</sup>Dow University of Health Sciences, Dept. of Plastic Surgery, Karachi, Pakistan

### Objectives:

The repair of bilateral cleft lip has remained challenge for cleft surgeons for the years, but during last decade many principles have evolved which have changed the concept and results of bilateral cleft lip surgery. Many surgeons are responsible for this change in concept. among them are Mullikan, Cutting , McComdb and Noordhoff. We have borrowed mixture of principles from them and repaired bilateral cleft lip and nose at the same surgical procedure. Objective of this paper is to demonstrate a technique to give satisfactory results in one sitting by re-pairing lip and doing primary Rhinoplasty

### Methods:

All patients were operated after the age of three months. Philtral flap was designed on prolabium with slightly concave side, about 8 to 10mm wide. The proposed Cupid's bow peak's point was marked on the lateral labial elements. The philtral flaps were incised. The lateral white line vermillion-mucosal flaps were incised and the alar based flaps were elevated. The splayed alar cartilages were exposed through inverted U rim incision (Tajima). The orbicularis oris muscles were opposed throughout the vertical height of the lip. Nasal molding was done by intermodal suture through inverted U incision.

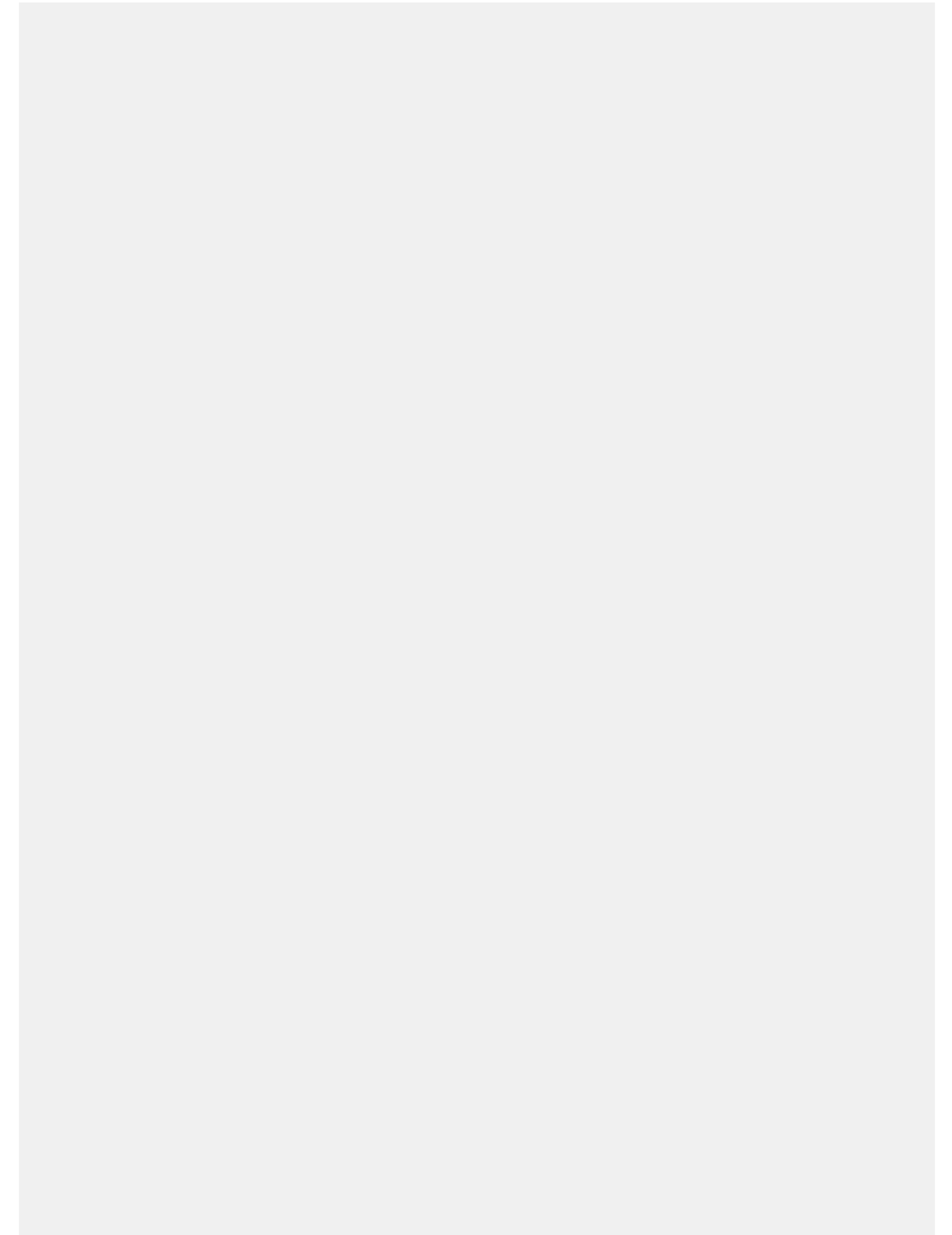
### Results:

From Jan 2016 up to Dec.2017, 51 cases had been done. All cases through the courtesy of DCKH . Age vary from 4 months to 30 years with an mean age of 9 years. There was satisfactory aesthetic results in almost all cases. There was dehiscence in three case. Ten cases were of wide clefts with protruding pre maxilla. Nasal conformer was given to all patients for three months.

### Conclusions:

Synchronous repair of Bilateral cleft lip and nose has established as a safe technique with no long term harmful effects noted in other series.

## Notes





## Evaluation of Growth Trend about Nasal Dorsum in Patients with Cleft Lip

\*Cheng-hao Li<sup>1</sup>, BING SHI<sup>1</sup>, LINGLING PU<sup>1</sup>

<sup>1</sup>West China College of Stomatology, Sichuan University, Department of Cleft Lip and Palate Surgery, Sichuan, China

### Objectives:

in this research, we tried to investigate morphologic characteristics of the nasal dorsum of primary operated patients with cleft lip with or without combined cleft palate in different ages.

### Methods:

278 patients with cleft lip (CL) and 298 patients with cleft lip and palate (CLP) who had nasal deformity after the primary repair accomplished, as well as 333 individuals without orofacial clefts were retrospectively enrolled. Lateral cephalometric radiographs of all individuals were taken to evaluate morphologic characteristics of the nasal dorsum, when Dunn's test was used to analysis the difference. The threshold of significance was set at 0.05.

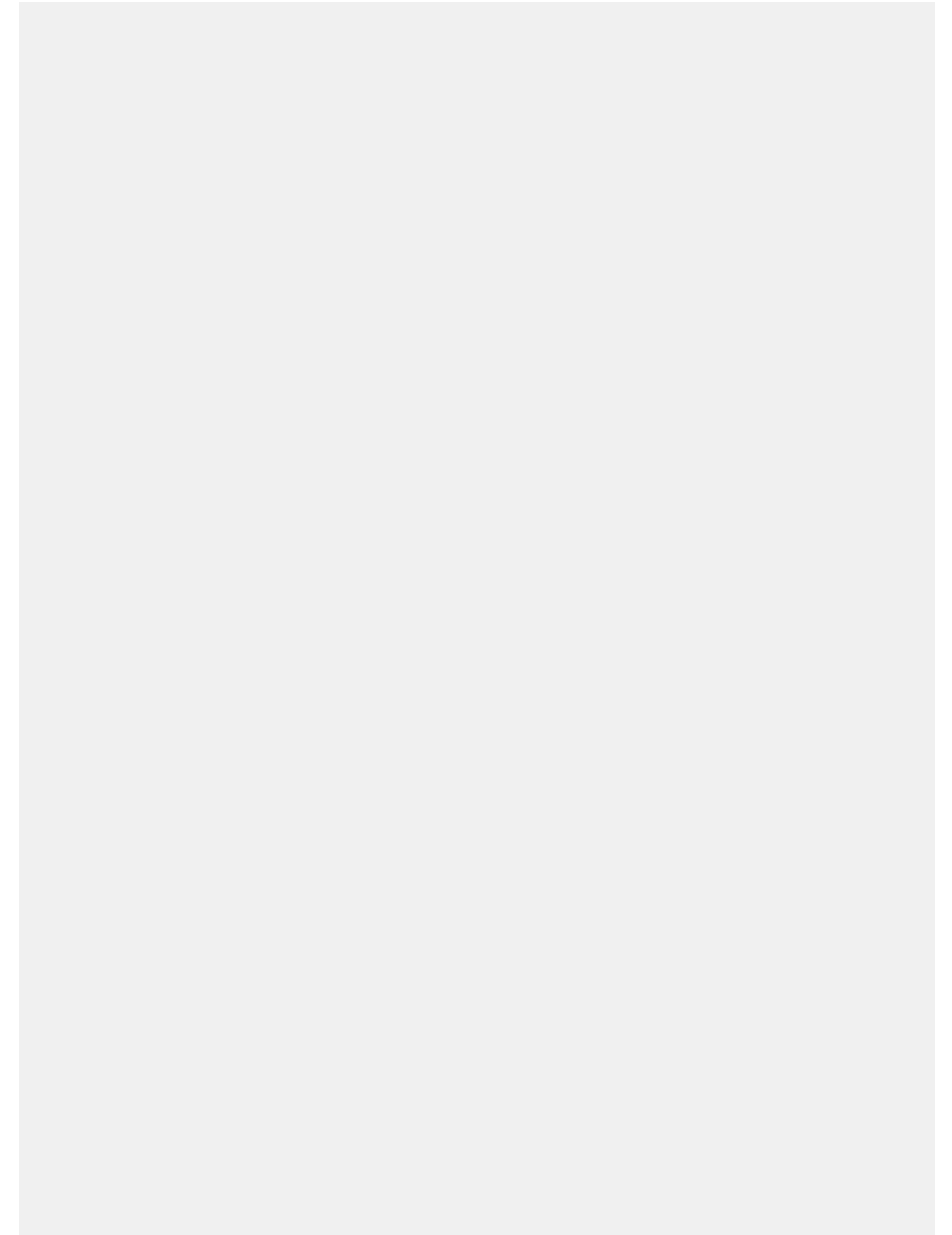
### Results:

Compared with control group, for CLP patients, the angulation of nasal bone is smaller in 5y-18y( $p < 0.001$ ), and there is no significant difference in length of nasal bone in most age groups except for 11y-13y, 5y-6y and 17y-18y, but the upper nasal dorsum is obviously longer, while the lower nasal dorsum is shorter in 5y-18y ( $p < 0.001$ ); for CL patients, they have shorter nasal bone( $p < 0.01$ ), shorter nasal dorsum and lower nasal dorsum in 5y-18y ( $p < 0.001$ ), but similar length of upper nasal dorsum in 8y-18y, similar angulation of nasal bone and nasal dorsum in 5y-18y.

### Conclusions:

Our results showed that the nasal dorsum of CL patients had significant differences in length while the CLP patients had in angulation.

## Notes





## The Effects of Presurgical Nasoalveolar Molding on the Midface Symmetry of Children with Unilateral Cleft Lip and Palate. A long term follow up study

*\*Wasmiya AlHayyan<sup>1</sup>, Sharat Pani<sup>2</sup>, Aziza Aljohar<sup>3</sup>, Fawzi AlQatami<sup>4</sup>*

<sup>1</sup>Amiri hospital / Riyadh colleges of dentistry and pharmacy / , Pediatric dentistry, Kuwait city, Kuwait

<sup>2</sup>Riyadh colleges of dentistry and pharmacy , Pediatric dentistry , Riyadh city, Saudi Arabia

<sup>3</sup>King faisal special hospital , pediatric dentistry , Riyadh city, Saudi Arabia

<sup>4</sup>Amiri Hospital, orthodontic department , Kuwait city, Kuwait

### Objectives:

There is little published literature on the long term effects of Presurgical Nasoalveolar Molding (PNAM) on midface symmetry. We attempted to compare the midface symmetry of children with UCLP who received P NAM before surgical interventions and those who did not receive P NAM to each other and age and gender matched control.

### Methods:

Thirty nine frontal facial photographs of 13 UCLP patient who received P NAM in their treatment protocol (Group 1: P NAM) and 13 UCLP patient who did not have P NAM (Group 2: NNAM) and 13 age and gender matched control group. Three unilateral and three bilateral orthopometric midface landmarks were programmed using a customized software (OnyxCeph3™, Image Instruments GmbH, Germany) and linear measurements (mm) of the landmarks from the midline were obtained and compared between groups using the one-way ANOVA and Scheffe's post-hoc test.

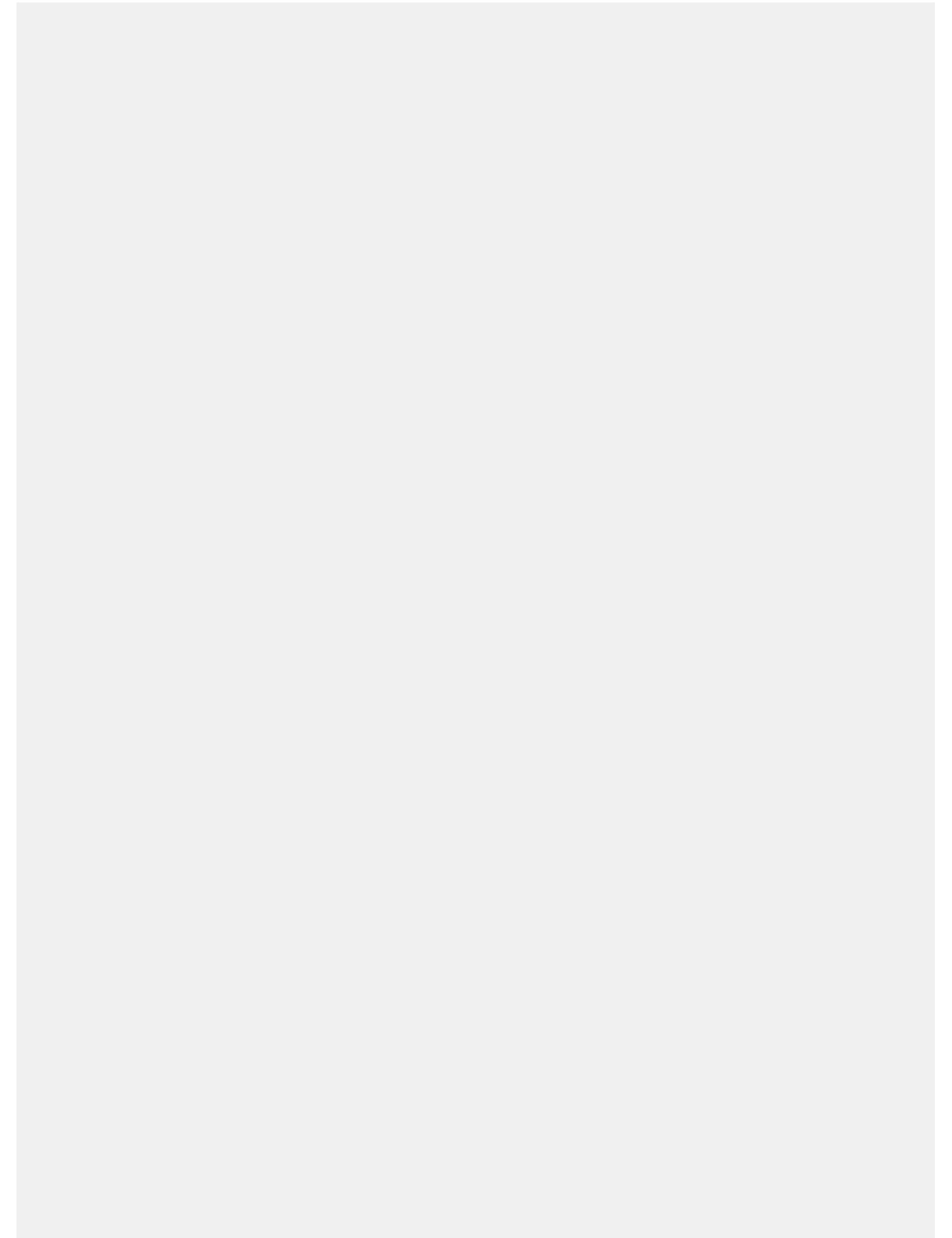
### Results:

Significant differences were observed between the control and UCLP groups for the measurements of the Proanasale, subnasale and zygion. However no significant differences were observed between the P NAM and NNAM groups for the six midface landmarks.

### Conclusions:

Within the limitations of this study we can conclude that P NAM does not seem to significantly impact the long term midface symmetry of children with UCLP.

## Notes





# PRS II – Treatment with Preepiglottic Baton Plate





## Therapy of postnatal upper airway obstruction in Pierre-Robin-Sequence (PRS) by Preepiglottic Baton Plate (PEBP): Experience from 122 cases

\*Guel Schmidt<sup>†</sup>, Jan-Dirk Raguse<sup>1</sup>, Alexander Voigt<sup>†</sup>, Carsten Matuschek<sup>1</sup>

<sup>†</sup>Klinik für Mund-, Kiefer-, Gesichtschirurgie, Charité Campus Virchow-Klinikum, Arbeitsbereich LKG-Spalten, Berlin, Germany

### Objectives:

PRS is a developmental disorder of various etiology and pathogenesis. Accordingly, there is no consensus on how to specifically treat the postnatal clinical implications, of which securing the airway is the most important task. Several current publications suggest a variety of different modalities, ranging from non-invasive methods like positioning or PEPB to highly invasive actions like a tracheotomy. In this context we would like to report our experience with the PEBP.

### Methods:

We extracted data from 122 cases (110 non-syndromic, 12 syndromic) with PRS that were treated with PEBP. Patients with the following symptoms were included: mandibular retrognathia, glossoptosis, obstruction of the upper airway resulting in respiratory distress with or without cleft palate. Clinical data included frequency and grade of desaturation, signs of respiratory distress (e. g. sternal retractions), mode and effect of positioning, duration of hospital stay, mode and duration of food intake and weight gain.

### Results:

Of the non-syndromic patients (n=110), 64 presented sternal retractions and desaturation immediately after birth. 3 patients required intubation.

In 31 patients, positioning restored sufficient breathing. However, in 2 aspiration occurred and 20 had feeding problems and failure to thrive. Therefore, 22 of 31 patients had to receive a PEBP in the course, which leaves only 9 patients in which positioning alone proved to be a sufficient long-term measure.

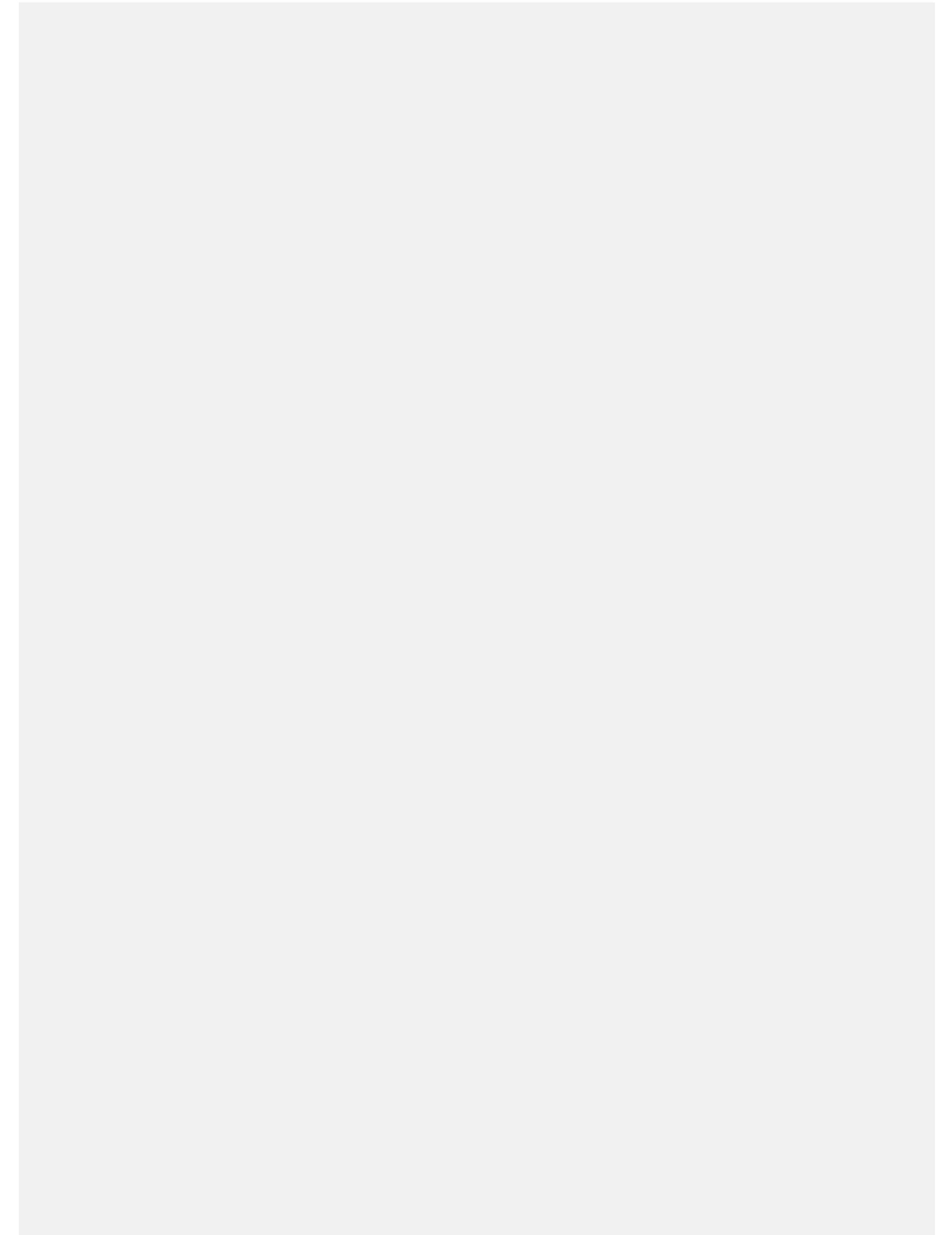
There were no oxygen desaturation or retractions after insertion of the PEBP. All intubated patients (n=3) could be extubated. Of 10 syndromic patients, 2 needed a tracheotomy in the end.

### Conclusions:

A sufficient standardized approach to the acute postnatal implications of PRS is key to a positive outcome and avert serious consequences. We found that PEBP can sufficiently secure the airway in newborns with PRS as well as help in providing adequate feeding.

Since 29 % of the patients that were initially treated by prone positioning developed respiratory distress in the course, we recommend the use of the PEBP also in seemingly lighter cases. Besides, these patients can also benefit from mandibular growth induced by the device.

## Notes



## Pre-epiglottic bottom plate with velar extension for the treatment of glossoptosis with or without skeletal deficiency

\*Antje Goebell<sup>1</sup>, Jennifer Plath<sup>2</sup>, Gabriele Kawohl<sup>3</sup>, Hans von Luecken<sup>4</sup>, J. Camilo Roldán<sup>5</sup>

<sup>1</sup>Werner-Otto-Institute, Phoniatrics and Logopedics, Hamburg, Germany

<sup>2</sup>Catholic Children's Hospital Wilhelmstift, Orthodontics, Hamburg, Germany

<sup>3</sup>Catholic Children's Hospital Wilhelmstift, Neonatology and Intensive Care, Hamburg, Germany

<sup>4</sup>Catholic Children's Hospital Wilhelmstift, ENT, Cleft Clinic, Hamburg, Germany

<sup>5</sup>Catholic Children's Hospital Wilhelmstift, Pediatric Facial Plastic Surgery and Craniofacial Anomalies, Hamburg, Germany

### Objectives:

Glossoptosis combined with mandibular hypoplasia, known as Pierre Robin Sequence (PRS), or with other skeletal deficiencies as in Treacher Collins or even due to a neurofunctional deficit, produces a respiratory distress due to a mechanical obstruction of the hypopharynx. A "pre-epiglottic bottom plate with velar extension, PEBP" has been reported as a promising device for alleviating hypopharynx obstruction in PRS, nevertheless, this technique has not been widespread, presumably, because of the need of a complex infrastructure. In the present study we inform about our experience, using a simplified PEP-technique in 16 patients with glossoptosis with or without skeletal deficiency.

### Methods:

A prospective cohort study was performed in infants up to 7 months who presented glossoptosis with or without skeletal deficiency and who underwent orthopedic treatment by a pre-epiglottic bottom plate. Impression was taken in Trendelenburg position without sedation. Plate placement was performed without endoscopic control. In case of fail in alleviating hypopharynx obstruction, a lateral cervical x-ray was performed in order to localize the plate bottom in relation to the epiglottis. The therapy was continued until the glossoptosis was resolved and the mandibular growth was satisfactory. Endoscopic monitoring was performed before discontinuation of the therapy. Evolution was documented by video.

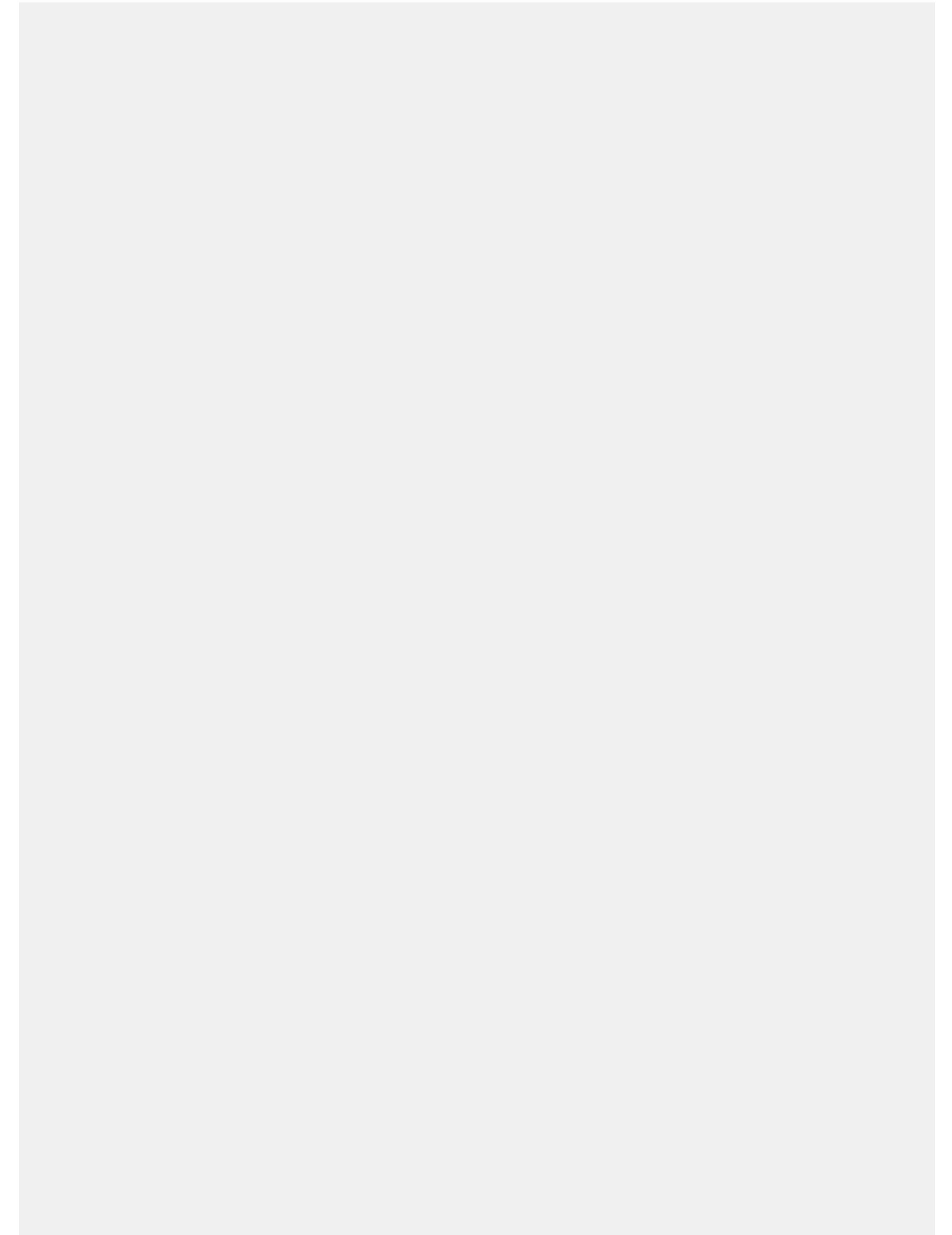
### Results:

16 infants were treated from 2013-2017 (Pierre Robin [n=10]; Treacher Collins [n=4]; Goldenhar [n=1]; Dystonia (glossoptosis without skeletal involvement) [n=1]). O<sub>2</sub> saturation was restored after plate placement. Therapy was discontinued after 3-4 months, as glossoptosis was resolved and mandibular growth satisfactory. Endoscopic evaluation performed in-between showed restored hypopharynx support and normal deglutition. Therapy was accepted by all infants within the first 2,5 months of age (14/14), older infants did not tolerate the plate (2/2). One infant with severe Treacher Collins underwent an elective tracheotomy, despite a well-placed pre-epiglottic bottom, due to uncertain respiratory evolution.

### Conclusions:

Glossoptosis is the main feature, which produces respiratory distress in different craniofacial anomalies. Furthermore, glossoptosis even without skeletal involvement produces hypopharynx obstruction. In the present series, glossoptosis as a main physiopathological feature, in presence of mandibular hypoplasia (Pierre Robin, Treacher Collins) and/ or in presence of neuromuscular dysfunction without skeletal involvement was resolved by using a plate with a pre-epiglottic bottom, while skeletal maturity was improved in case of mandibular hypoplasia. The therapy with a plate with a pre-epiglottic bottom is easily to implement without the need of an advanced infrastructure.

## Notes





## Modern 3D concepts in cleft and craniofacial surgery

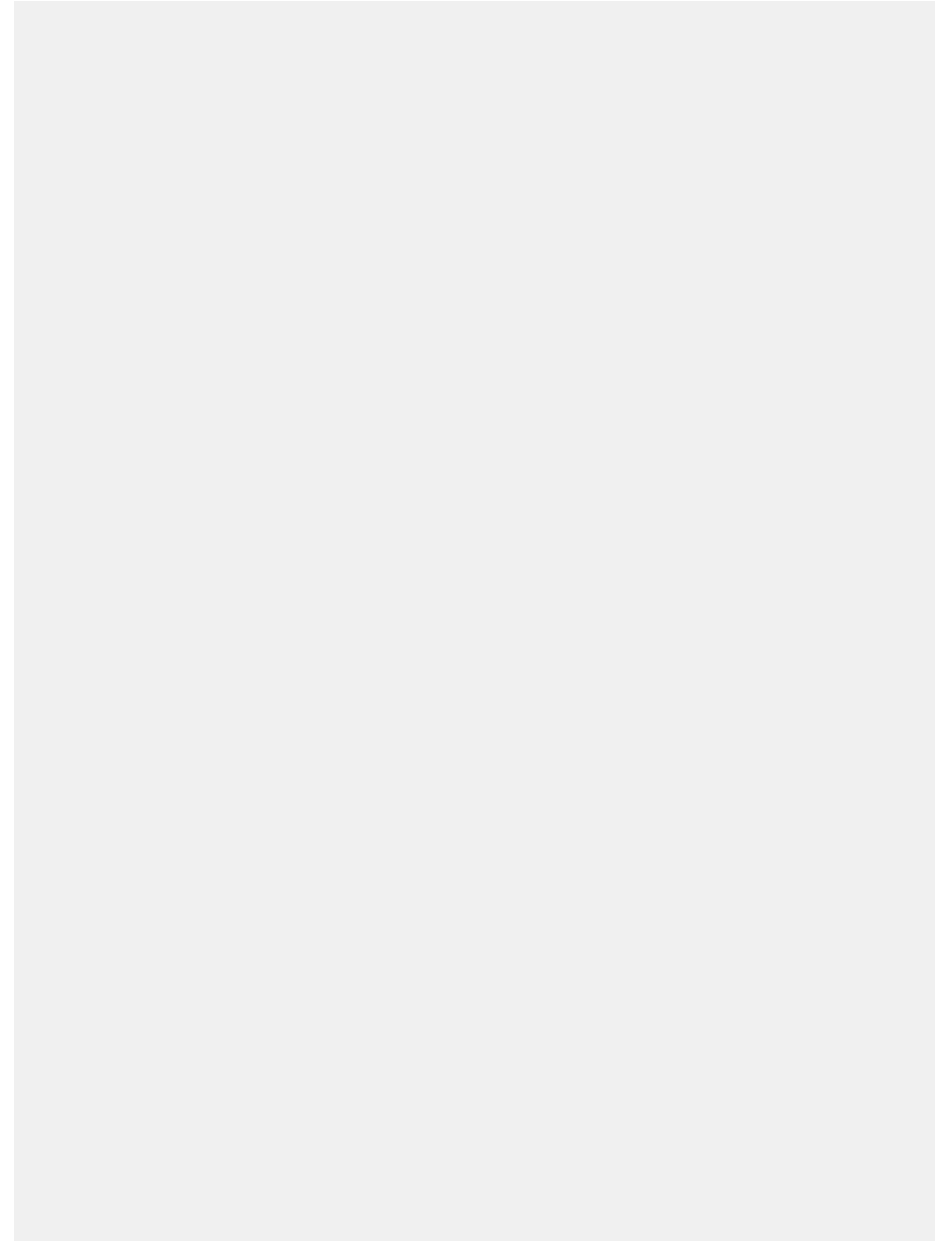
\*Stefaan J. Bergé<sup>1</sup>

<sup>1</sup>Radboud University Nijmegen Medical Center, Nijmegen, Netherlands

### Objectives:

This is a presentation about modern 3D concepts in cleft and craniofacial surgery. We will present the state of the art in 3D-imaging and printing, discuss augmented models and augmented reality and have a look at robotics and automation in cleft and craniofacial surgery. This lecture attempts to be a visionary talk about cleft and craniofacial care in the next decades. We will focus on the close cooperation between the technicians and surgeons, which is the key in implementing all these fascinating techniques in a clinical setting and allows for further improvement and development of the aforementioned tools.

### Notes





# ENT / Speech Pathology I



## Acute otitis media and the need for myringotomy tubes among paediatric cleft lip and palate patients in Northern Finland

\*Ville Lehtonen<sup>1</sup>, Riitta Lithovius<sup>1</sup>, Leena Ylikontiola<sup>1</sup>, Vuokko Anttonen<sup>1</sup>, Timo Autio<sup>1</sup>, Virpi Harila<sup>1</sup>, George Sándor<sup>1</sup>

<sup>1</sup>University of Oulu, Jyväskylä, Finland

### Objectives:

Cleft lip and palate is the most frequent congenital anomaly occurring in the craniofacial region. Children with cleft lip and palate may suffer feeding, swallowing, speech, hearing and cosmetic problems as well as poor dental health. While acute otitis media is very common for small children, it is even more common in children with cleft lip and or cleft palate. The aim of this study was to investigate the association of cleft lip and palate patients and the development of middle ear diseases and need for myringotomy tubes. Another aim was to determine the level of potential hearing loss and speech difficulties among the cleft patients.

### Methods:

Patient records of 204 cleft patients treated in Oulu University Hospital, Finland during the period 1997-2014 were analysed. The analyses were carried out using cross-tabulation and Chi-square testing. Differences between the groups were considered statistically significant with p values <0.05.

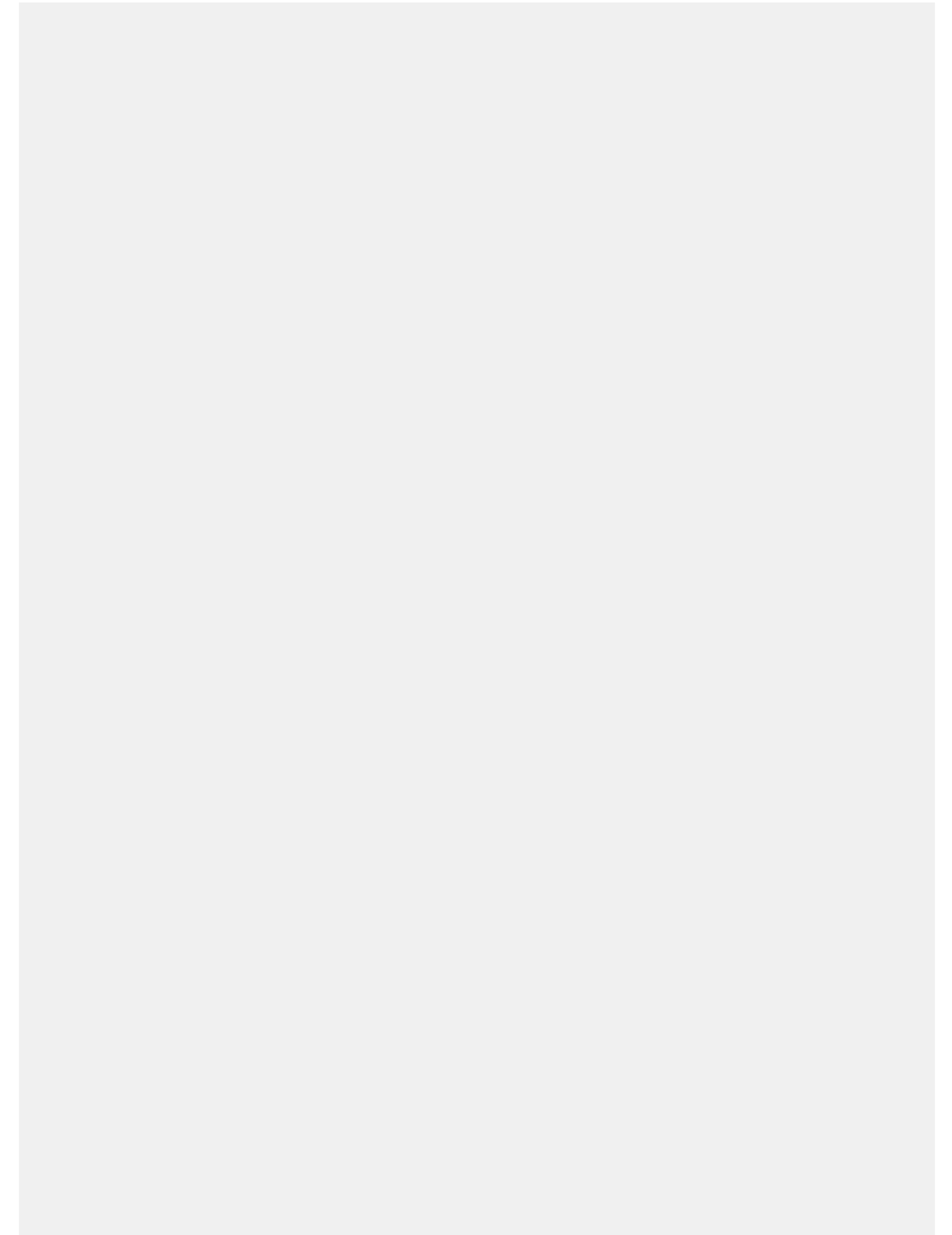
### Results:

Almost four in five (79.4%) had excretive products in their middle ear. Serous secretions were found among half of the cleft lip and palate patients (n=38), 27.0% of the left palate patients (n=141); whereas not at all among lip cleft patients (n=22). Mucous secretion referring to glue ear was detected in 92.1% of the cleft lip and palate patients, 73.8% of the cleft palate patients; and in 18.1% of the cleft lip patients. Almost all patients in the study group (88.3%) had had one or more myringotomy tubes placed during the follow-up period.

### Conclusions:

There was a difference in the need of tubes according to the cleft type – all cleft lip and palate patients had had tubes placed ( $\geq 1$ ); 95.7% of those with palatal involvement, but only 18.2% of cleft lip patients. Among other problems cleft patients have frequent ear infections needed myringotomy tubes; especially the more severe clefts are associated with frequent infections.

## Notes



## Functional outcomes after early soft palate closure

\*Cora Claussen<sup>1</sup>, Christin Kleye<sup>2</sup>, Michael Ehrenfeld<sup>2</sup>

<sup>1</sup>Poliklinik für Kieferorthopädie LMU, München, Germany

<sup>2</sup>Klinik und Poliklinik für Mund-, Kiefer-, Gesichtschirurgie LMU München, München, Germany

### Objectives:

Interdisciplinary treatment of CLP patients in so-called cleft centers today is considered as standard of care. However orthodontic pretreatment concepts, timing, surgical concepts and techniques of CLP repair vary considerably. In this paper data from a cleft center with a maximum of 20 year follow-up and consistent use of the same treatment concept are presented.

### Methods:

242 patients with clefts of the lip, alveolous and/or palate could be included. For every patient an individual treatment plan according to her/his deformity is established. All patients with feeding problems have been treated with an acrylic plate as soon as possible after birth. All cleft palate patients have received a palate repair at 3 to 4 months. Lip repair was either done in the same operation or with a delay of 8 to 10 weeks. Residual fistulae were addressed at the age of 2 years. Alveolar bone grafts were performed as requested by the orthodontists in the mixed dentition.

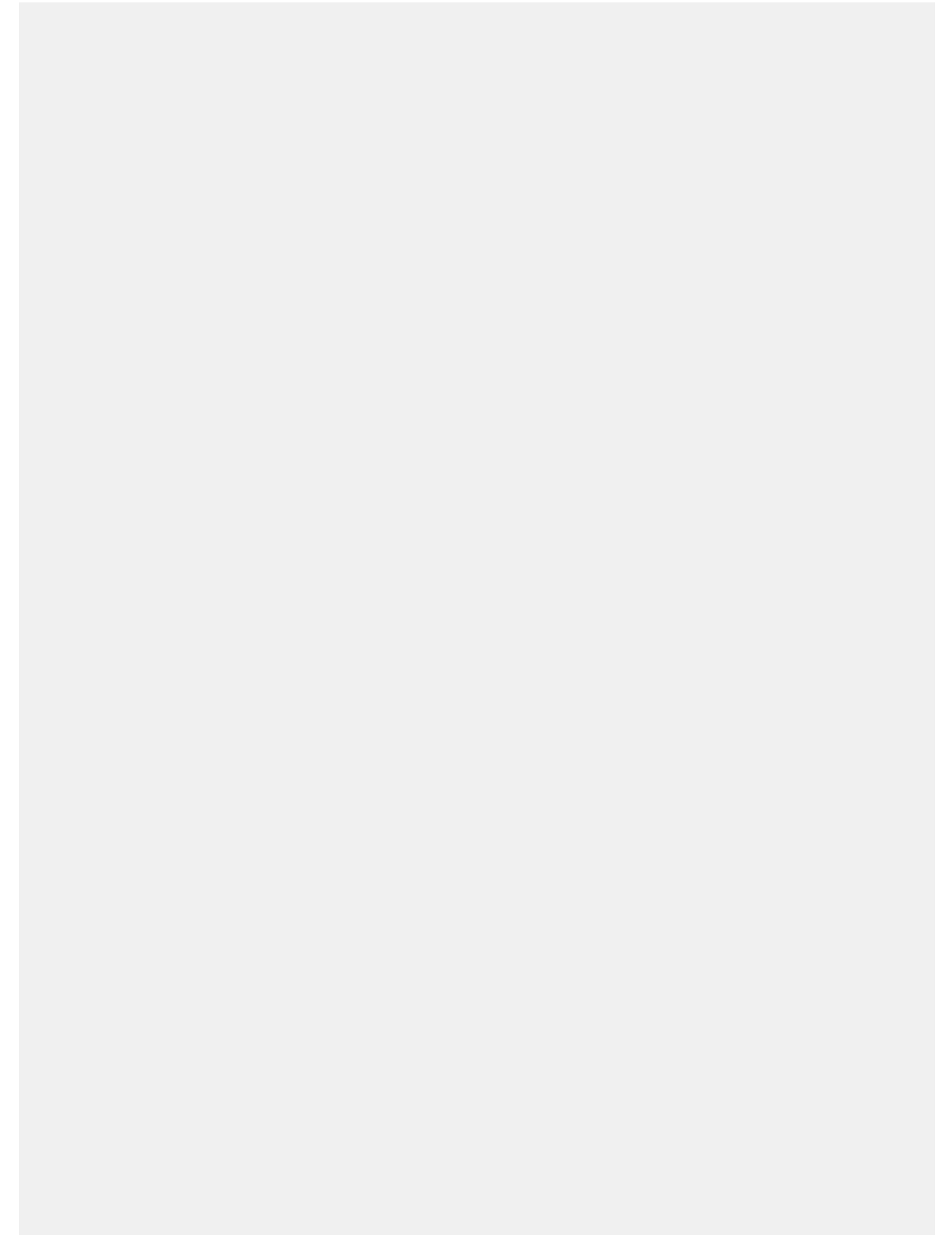
### Results:

227 patients with cleft palates were treated with acrylic plates. 206 patients required middle ear treatment, 199 at the first operation, 7 at a later stage. Persistent fistulae in the palate were diagnosed in 4 % of our patients, predominantly in the anterior hard palate in bilateral CLP cases. Velopharyngoplasties were performed in 2,8 % of the patients. 4 % of the patients had persistent ear drum perforations after middle ear treatment with grommets, in 1,3 % of our patients cholesteatomas were diagnosed and treated. Only 0,9 % of the patients had a permanent severe reduction in hearing.

### Conclusions:

The described treatment concepts produce very good outcomes and offer individual treatment options depending on the severity of the deformities, and after adequate explanation by the cleft team is well accepted by the patient families.

## Notes





## Myanmar Articulation, Resonation, Nasal Emission and Nasal Turbulence Test

*\*Kalyanee Makarabhirom<sup>1</sup>*

<sup>1</sup>Mahidol University, Department of Communication Sciences and Disorders, Bangkok, Thailand

### Objectives:

To develop and assess the validity of the Myanmar Articulation, Resonation, Nasal Emission and Nasal Turbulence Test.

### Methods:

The developed test was administered to children aged 7.0 - 13.0 years old.

The content validity of the Myanmar Articulation, Resonation, Nasal Emission and Nasal Turbulence Test were evaluated by six linguists in Myanmar language. All items of the test was rated within 2 scales (0 = not relevant, 1 = good relevant). The item- level content index (I-CVI) was computed as the number of all linguists given a rating of 1 (all good relevant scale) divided by the total number of those expertise persons.

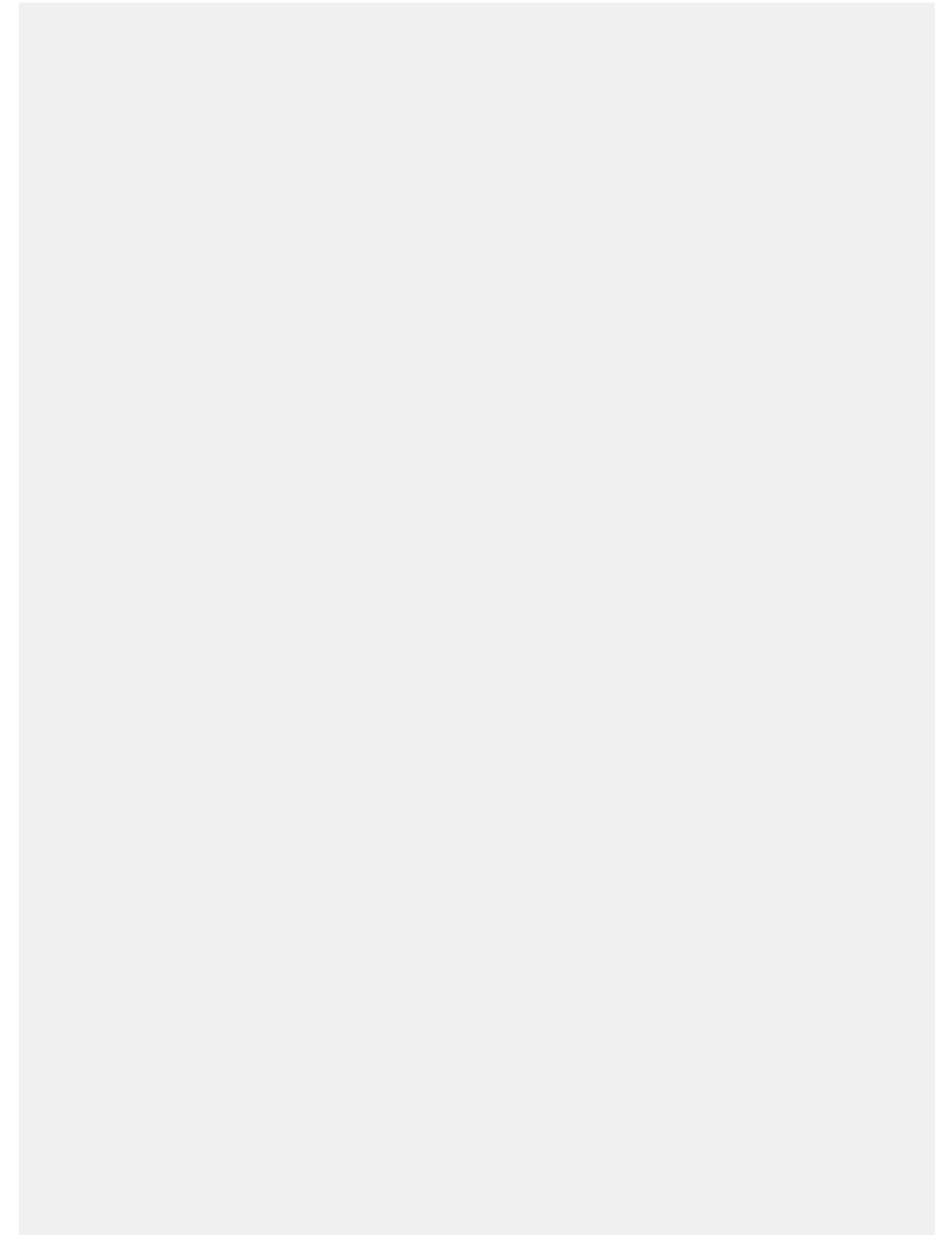
### Results:

55 out of 58 items (word level) and 25 out of 32 items (phrase or sentence level) of the constructed test had the I-CVI of 1.00, indicating an excellent level of the expert agreement. The researchers re-established some items as all linguists recommend until validity was reached at 0.8. Fifty eight pictures for word level and 32 pictures for phrase or sentence level were drawn in color pictures. Each picture was created clearly and easy to identify. Every picture was assessed, redrawn and then identified correctly by 10 normal children at least 80 percent. Next, all pictures were retested by 10 cleft lip/palate children and were revised.

### Conclusions:

The Myanmar Articulation, Resonation, Nasal Emission and Nasal Turbulence Test was the 1st tool for speech assessment.

## Notes





## Speech outcome after early one-stage repair of complete unilateral cleft lip and palate and four different methods of the hard palate closure

\*Maria Hortis-Dzierzbicka<sup>1</sup>, \*Włodzimierz Piwowar<sup>1,2</sup>

<sup>1</sup>University of Warmia and Mazury, Department of Otorhinolaryngology and Maxillofacial Surgery, Olsztyn, Poland

<sup>2</sup>Institute of Mother and Child, Department of Pediatric Surgery, Warsaw, Poland

### Objectives:

to report the long-term speech outcome in a sample of 170 children with complete unilateral cleft lip and palate (CUCLP), treated with one-stage lip, hard and soft palate repair at the Institute of Mother and Child in Warsaw at a mean age of 8 months by three experienced cleft surgeons.

### Methods:

Four groups of consecutive patients – 4 modalities of the hard palate closure. Group 1 (n=39)– modified vL procedure on both sides. Group 2–modified vL procedure on the unclefted side. Group 3 (n=42)– vomerplasty with a tight closure of all surgical wounds on the hard palate, one-layer closure of the hard palate. Group 4 (n=33) – two-layer closure of the hard palate. Speech assessment:(1) perceptual speech evaluation,(2) evaluation of compensatory facial grimacing, (3) clinical intraoral evaluation, and (4) videonasendoscopy in patients demonstrating hypernasality. Mean age at speech assessment was 12 years. Statistical analysis-Chi2 test.

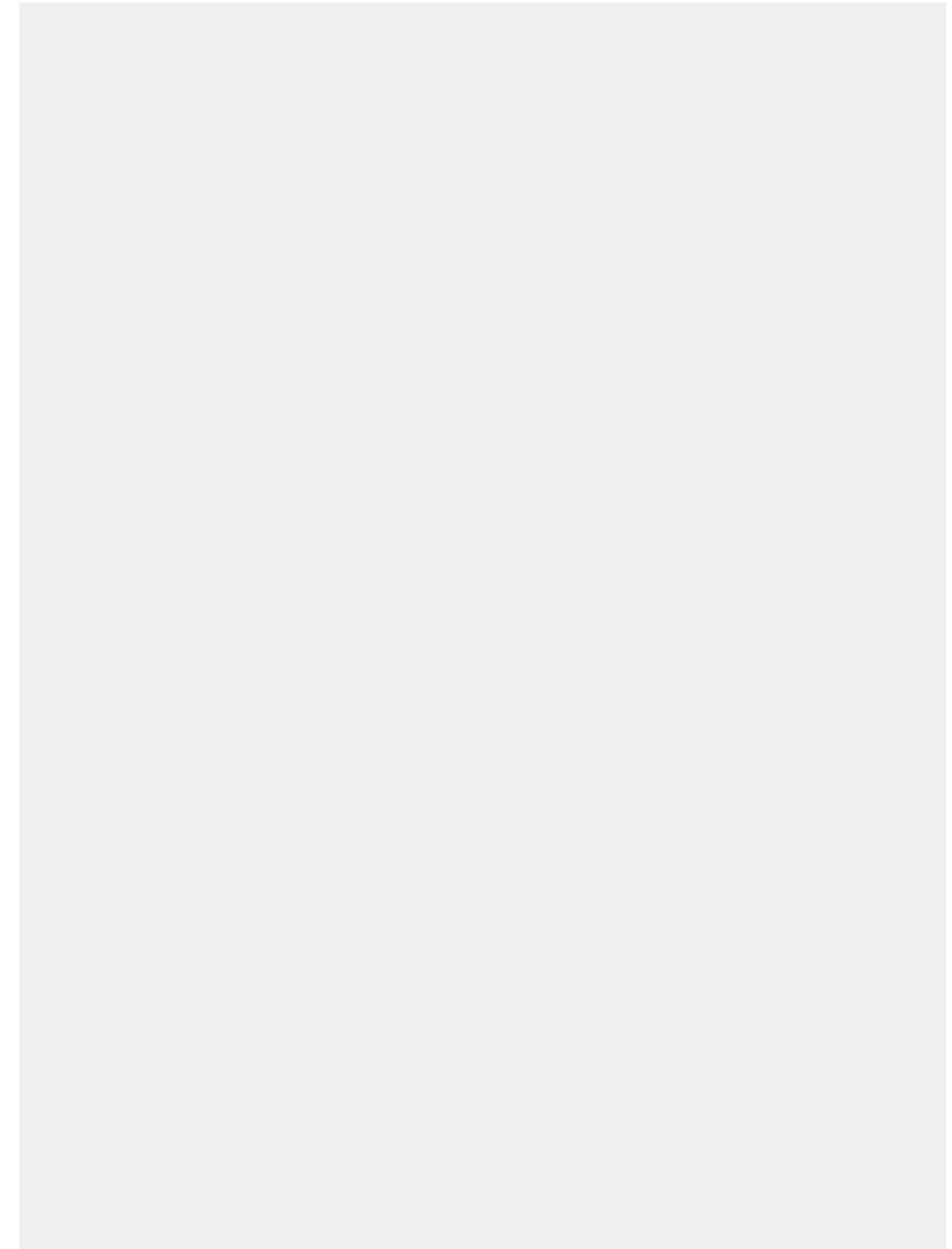
### Results:

Total pharyngoplasty rate – 8,75%. Total postoral CAs incidence - 2,2%. The overall speech intelligibility estimated as very good/good in over 80% of cases. No statistically significant differences in relation to hypernasality, CAs occurrence and speech intelligibility between the groups were found ( $p>0,1$ ). Oronasal fistula (ONF) occurrence was 15.7% in B-vL group, 7.1% in U-vL group, 50% in VF group III and 27,3% in VF group IV. The only statistically significant difference in speech outcome was in the incidence of fistula friction during pronunciation of some anterior sounds in VF groups as compared with both vL groups ( $p<0.001$ ).

### Conclusions:

The shown results seem to be very rewarding for all assessment parameters, including the socially important good speech intelligibility, independently of the method of the hard closure. The HP repair technique ( shift to VF repair with tight closure of all surgical wounds on the hard palate) had a significant bearing on the high prevalence of anterior ONFs in group III and IV, which is unacceptable by today's standards of cleft care. However, these ONFs, being mostly small and retroalveolarly located, did not affect the overally good speech outcome in this sample.

## Notes





## **Impact of Timing of Palatal Repair on Resonance, Understandability and Acceptability in Children with Repaired Cleft Lip and Palate**

*\*Pushpavathi M<sup>1</sup>, Ajish K Abraham<sup>2</sup>, S R Mahadeva Prasanna<sup>3</sup>, Girish K S<sup>2</sup>*

<sup>1</sup>All India Institute of Speech and Hearing, Department of Speech Language Pathology, Mysuru, India

<sup>2</sup>All India Institute of Speech and Hearing, Department of Electronics, Mysuru, India

<sup>3</sup>IIT, Department of Electrical & Electronics, Guwahati, India

### **Objectives:**

- (1) To compare resonance, speech understandability and speech acceptability across early intervention group and delayed intervention group in words
- (2) To compare resonance, speech understandability and speech acceptability across early intervention group and delayed intervention group in sentences
- (3) To compare resonance, speech understandability and speech acceptability across stimuli in early intervention group and delayed intervention group.

### **Methods:**

Sixteen native Kannada speaking children with repaired cleft lip and palate were considered with equal number of participants in early and late intervention group. The speech stimuli used for the present study consisted of 10 meaningful words and 10 meaningful oral sentences loaded with pressure consonants. Participants were made to repeat the stimuli and the responses were recorded in a sound treated room. The recorded speech samples were presented to three experienced SLPs for perceptual evaluation. A standardized four point rating scale was used for perceptual judgement of resonance, understandability and acceptability.

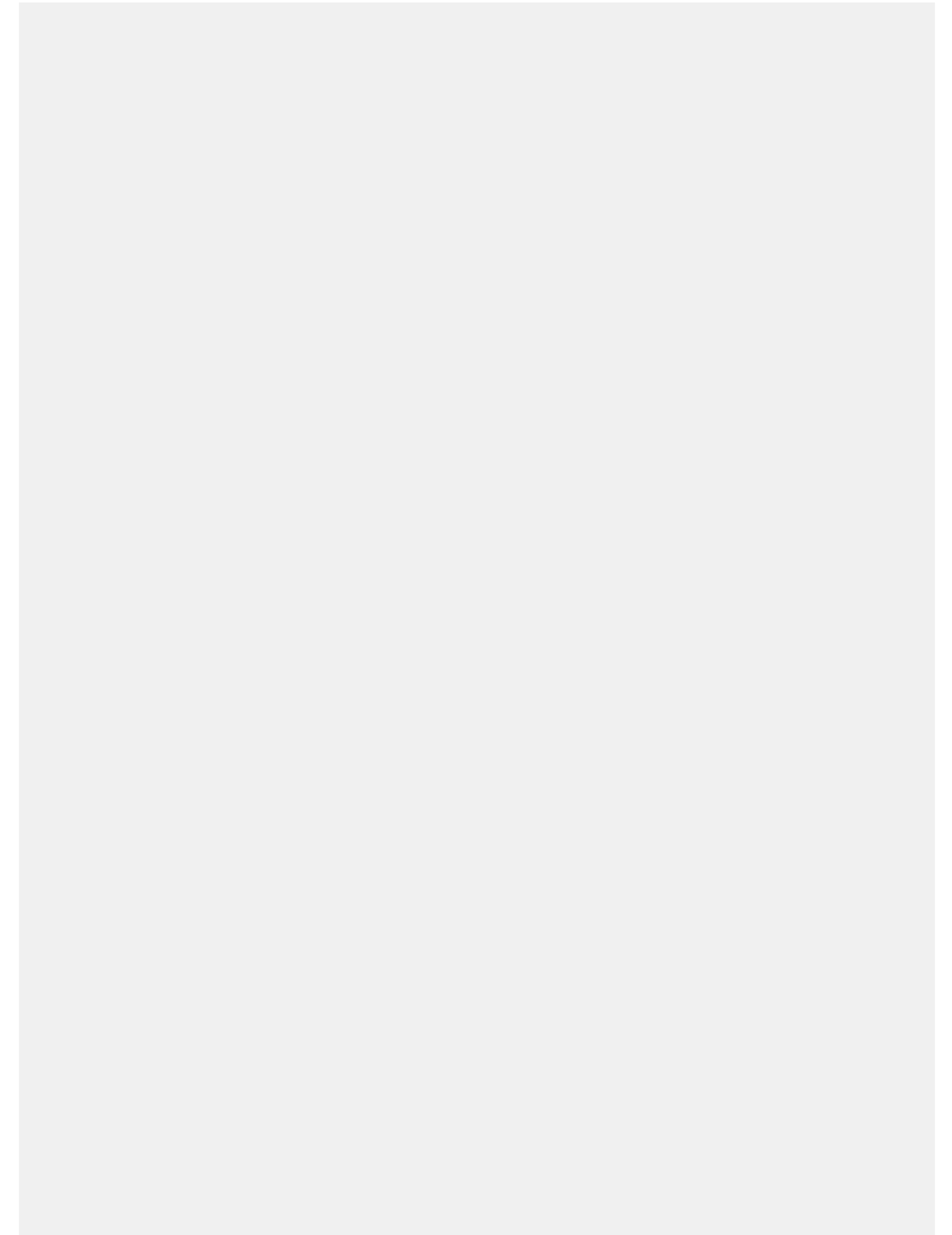
### **Results:**

In both words and sentences, the mean scores of resonance, speech understandability and speech acceptability of the children in early intervention group was comparatively higher than the children in late intervention group but it was statistically significant only in resonance. This suggests that, early surgical intervention has a direct impact in reducing hypernasality. This also depicts that resonance alone is not responsible for reduced overall speech intelligibility which highlights the need of including other parameters such as articulation as one of the test protocol. There was no stimuli effect on the above parameters within the groups.

### **Conclusions:**

The present study concludes that early surgical intervention has a direct impact in reducing hypernasality in children with CLP. It also found that the parameter resonance alone is not responsible for reduced overall speech understandability and speech acceptability. The study also provides implication that working on resonance alone in speech therapeutic intervention does not help in the improving speech intelligibility.

## **Notes**





# Orthognathic Surgery





## Management of maxillary cleft deficiency - long term results

\*Adi Rachmiel

<sup>1</sup>Rambam medical center, Oral & Maxillofacial Surgery, Haifa, Israel

### Objectives:

Correction of the hypoplastic maxilla secondary to cleft patients is a great challenge due to significant vertical and horizontal deficiency and difficulty in mobilizing the hypoplastic maxilla as a result of scarring from previous operations. In addition there is a great tendency for relapse. We present our experience in treatment of maxillary cleft deficiency using conventional osteotomies and distraction osteogenesis

### Methods:

Patients were treated by Le Fort I Osteotomy or by Maxillary distraction using Rigid External Distraction devices (RED) or Internal Distraction Devices (IDD). Long term follow up of 5 years is presented

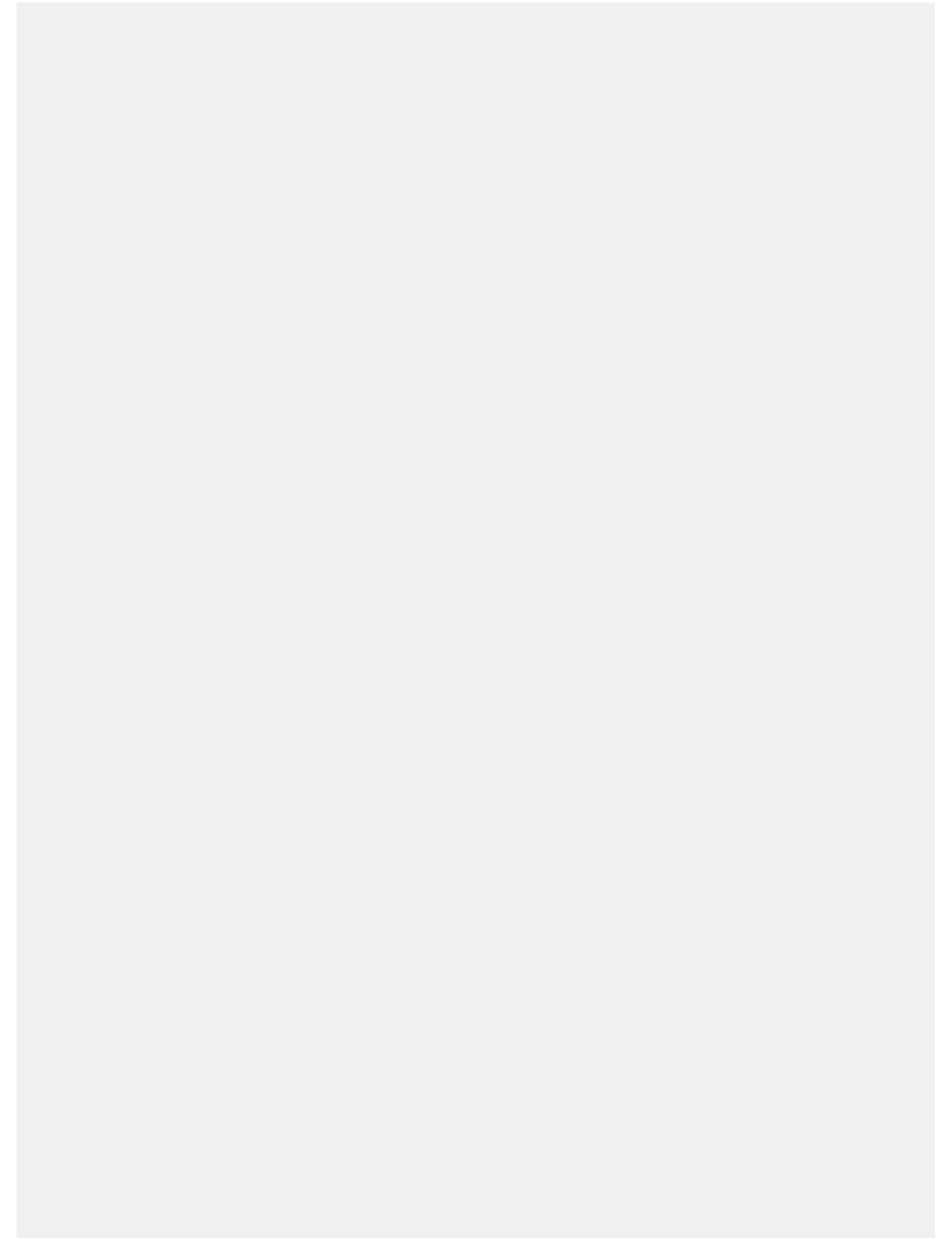
### Results:

Conventional osteotomies exhibited satisfactory stability in adult patients in cases of mild-moderate deficiencies up to 9mm. The RED system offers greater distraction length, better control over the vector of lengthening and is easily removed. However, it is uncomfortable and there is a risk of parietal bone penetration. IDD are efficient in advancement of the deficient maxilla, safer to wear for long periods of time, do not create social discomfort and therefore permit for longer retention periods which may contribute to better stability than external devices. Their major disadvantage is the need for a second operation to remove the devices

### Conclusions:

The hypoplastic maxilla in cleft patients which exhibit severe retrusion is better treated by distraction osteogenesis than by conventional orthognathic surgery. The internal devices should be considered first even when taking into account the major disadvantage of a second operation for device removal

## Notes



## Frequency of maxillary osteotomy after cleft palate surgery

\*Ana Tache<sup>1</sup>, Maurice Y. Mommaerts<sup>1</sup>

<sup>1</sup>Brussels University Hospital, European Face Centre, Brussels, Belgium

### Objectives:

#### Background:

A well-known consequence of labiopalatal repair is a diminished maxillary growth. Additional surgical maxillary treatment may be necessary after completion of the growth. In literature the rate of Le Fort I osteotomy in ULCP en BCLP patients is reported to vary in the literature: 10% Friede et al. (2012), 17,5% Lisson et al (2014), 20,9% Good et al (2007), 41,17% Heliovaara et al (2014).

The frequency of need for orthognathic surgery carries particular significance for any institution because it is generally assumed to reflect the success or failure of the institution's protocol.

#### Methods:

##### Objective:

The purpose of this study is to determine the frequency of maxillary hypoplasia as measured by need of maxillary osteotomy surgeries.

##### Subjects:

A prospective study was conducted and records of the patients operated in a determined period of time were reviewed. UCLP, BCLP and CP patients were included.

##### Methods:

All patients who underwent primary cleft repair by the same surgeon were identified using our computerized data system. All potential cases were screened through a review of medical records to ensure that the information of each patient was accurate. The following parameters were collected: age, sex, timing of the primary cleft surgery, procedures performed, need for orthognathic surgery.

##### Results:

Our database consisted of 955 patients. We excluded the patients with other diagnoses, patients operated by other surgeons and all secondary cases. A number of patients were lost to follow-up. Syndromic patients were not excluded.

Out of 169 patients, only 2 (1,18%) required maxillary advancement. 1 patient had UCLP and the other one had BCLP. No patient in the CP group required maxillary osteotomy surgery.

##### Conclusions:

In the literature timing of the primary cleft surgery and the technique has been a debated subject. We managed to achieve more than satisfactory results regarding facial growth in the vast majority of our patients. As results show only 1,18% of the patients had to undergo orthognathic surgery to correct a maxillary growth deficiency which could not otherwise be corrected with orthodontic appliances.

##### References:

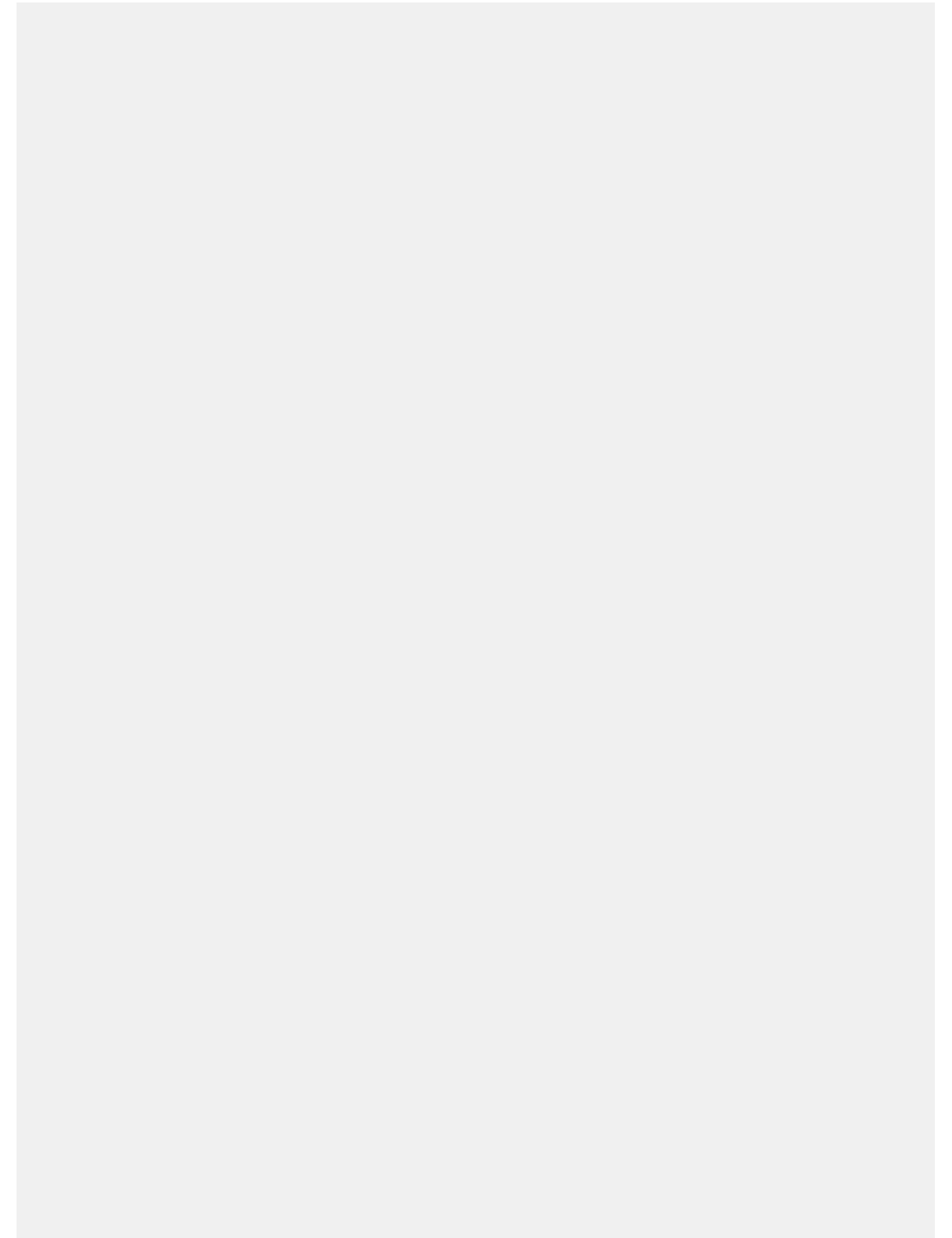
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## Notes



## **Reconstruction of Resected Premaxilla with Distraction Osteogenesis and Alveolar Bone Grafting in a Cleft Patient**

*\*Kevser Sancak<sup>1</sup>, Mine Alkaya<sup>1</sup>, Eda Naifoglu<sup>1</sup>, Mehmet Emre Yurttutan<sup>1</sup>, Aysegul Mine Tuzuner Oncul<sup>1</sup>*

<sup>1</sup>Ankara University Faculty of Dentistry, Oral and Maxillofacial surgery, Ankara, Turkey

### **Objectives:**

Maxillary hypoplasia in cleft lip and/or palate (CLP) deformities results from congenital reduction in midfacial growth and the effects of the surgical scar from CLP repair. Therefore, distraction osteogenesis (DO) has become an alternative technique to treat craniofacial dysplasia and large fistulas to overcome some of these limitations. Over time, there have been many forms of treatment aimed at changing the position of the premaxilla. In the past, the premaxilla was sometimes resected. Excision of premaxilla affects maxilla growth, support of upper lip and nose arch form with impediments to masticatory function and speech

### **Methods:**

A 23-year-old female had suffered from oronasal large fistula, malocclusion, speech difficulties and esthetic problems. Clinical examination revealed that she had a large fistula in the premaxilla area. The patient had a history of bilateral cleft lip and palate that repaired at the age of 1-year-old; then palatoplasty was done in another institution. Unfortunately the premaxilla was resected during her first operation.

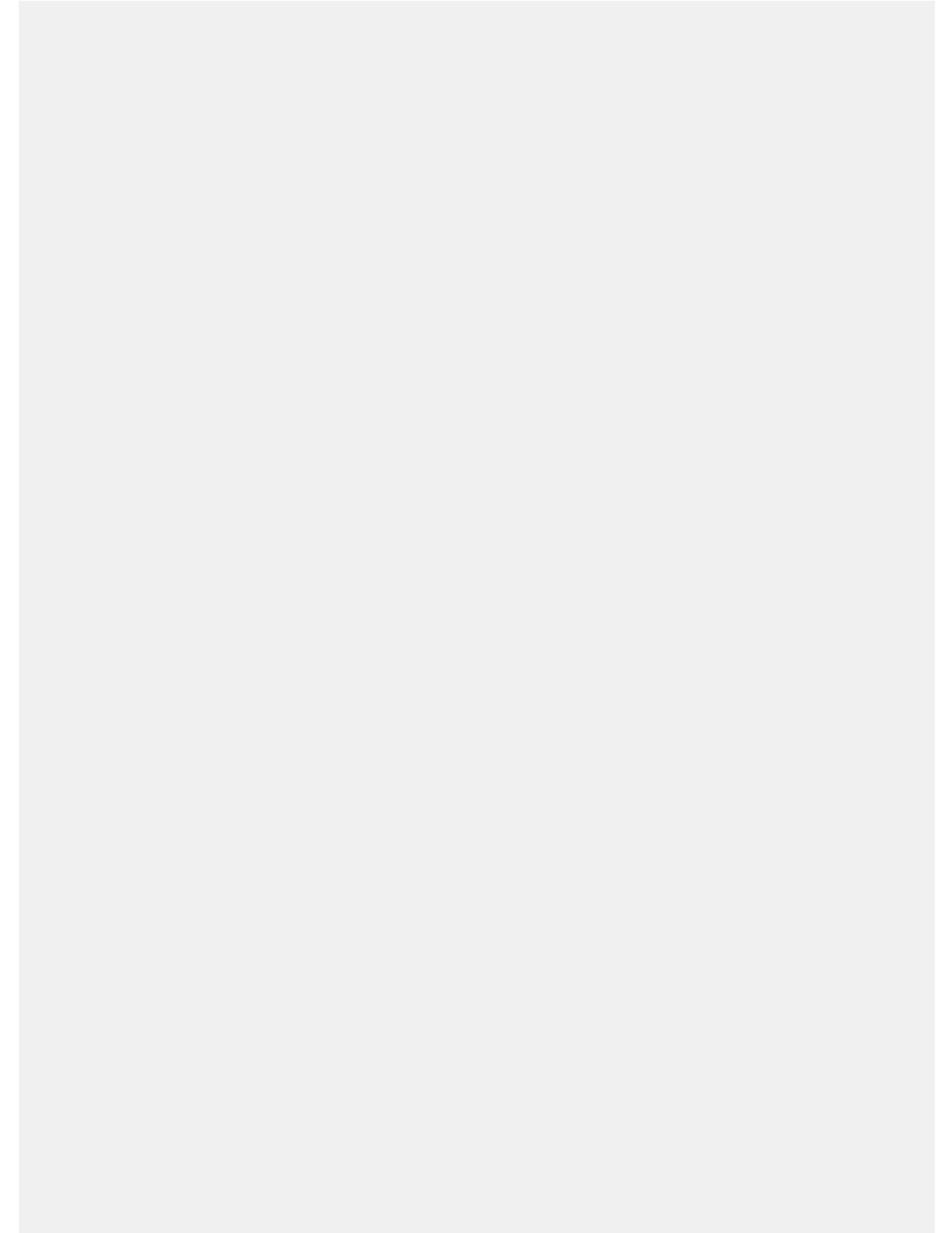
### **Results:**

In this clinical report, intraoral transport distraction of the alveolar bone to diminish the residual large fistula was used. The oronasal fistula was reconstructed in 2 steps uneventfully.

### **Conclusions:**

Distraction osteogenesis (DO) is a useful technique to diminish large fistulas. DO is an alternative treatment in cleft lip and palate patients.

## **Notes**





# Speech Pathology II – Free Papers



## **Speech outcomes in patients with unilateral cleft lip and palate after one- or two stage palatoplasty**

*\*Ann Dieckmann<sup>1</sup>, Ija Bauska<sup>2</sup>, Andzela Steinberga<sup>2,3</sup>, Asta Lipnickiene<sup>2,3</sup>, Marika Padrik<sup>2,3,4</sup>, Karsten Gundlach<sup>1</sup>, Franka Stahl<sup>5</sup>, Jan-Hendrik Lenz<sup>1</sup>*

<sup>1</sup>University of Rostock, Oral and Maxillofacial Surgery, Rostock, Germany

<sup>2</sup>University, Logopaedics, Riga, Latvia

<sup>3</sup>University, Logopaedics, Vilnius, Lithuania

<sup>4</sup>University, Logopaedics, Tartu, Estonia

<sup>5</sup>University of Rostock, Orthodontics, Rostock, Germany

### **Objectives:**

To evaluate speech in patients with unilateral cleft, lip, alveolous and palate after one-stage or two-stage palatoplasty and compare speech with dynamic and static orofacial dysfunctions

### **Methods:**

92 patients with unilateral total clefts of lip, alveolus and palate (Q.37.5) from 4 different European cleft palate centers at the age of 3 and 5 years with a self developed protocol for minimal documentation. The main difference was, that in centers A and C palates were closed in two-stage whilst in centers B and D palatoplasty was performed in just one operation. Evaluating primary orofacial functions (like breathing, sucking, chewing, biting, swallowing and tongue rest position) as well as secondary functions (like speech and voice) with standardized objective tests.

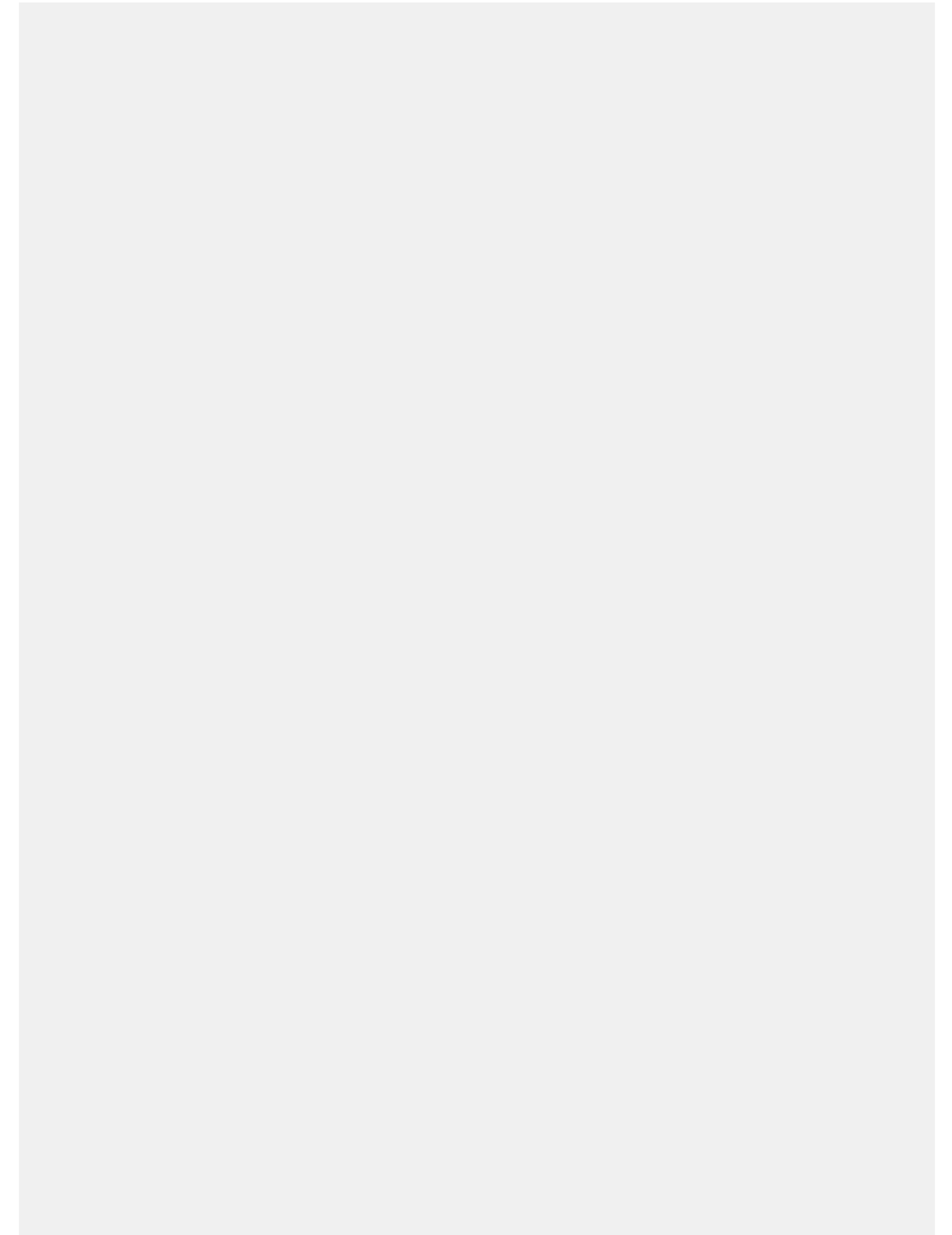
### **Results:**

Open mouth posture, unphysiological tongue rest position and visceral swallowing patterns were the most frequently diagnosed primary orofacial dysfunctions with all test persons. Malarticulation and hypernasality were the most frequently diagnosed secondary orofacial dysfunctions with significant differences between the four cleft centers. Non significant differences in velopharyngeal function were found among these four groups at 3 and 5 years of age.

### **Conclusions:**

The two-stage palatoplasty in patients with unilateral clefts of lip, alveolus and palate in combination with an early treatment of primary and secondary orofacial dysfunctions is still a valuable treatment protocol; especially when comparing results with single-stage palatoplasty outcomes.

## **Notes**



## **Cleft speech evaluation using Lithuanian cleft speech sample: 3 years follow-up of children with complete unilateral cleft lip and palate**

*\*Arunas Vasiliauskas<sup>1</sup>, Simona Sarneckiene<sup>2</sup>, Dovile Valukoniene<sup>3</sup>*

<sup>1</sup>Lithuanian University of Health Sciences, Clinic of Orthodontics, Kaunas, Lithuania

<sup>2</sup>Kaunas Center Outpatient clinic, Diagnostics and Consultation Department, Kaunas, Lithuania

<sup>3</sup>private practice, Kaunas, Lithuania

### **Objectives:**

A wide range of methods is applied for evaluating and reporting speech outcomes that follow cleft lip and/or palate surgery. The purpose of this study was to test cleft speech samples and follow-up patients' speech outcomes after 3 years.

### **Methods:**

The original Lithuanian cleft speech sample, developed according to Scandcleft recommendations, was used in perceptual speech evaluation using dictaphone Panasonic RR-XS400E-S 2 G. Patient's A (male, 10 years old) and patient's B (male, 11 years old) dental arch relationship according to Goslon Index yardstick were scored 1 (excellent). The identical speech sample was used in assessment on March 2013 and reassessment on March 2016.

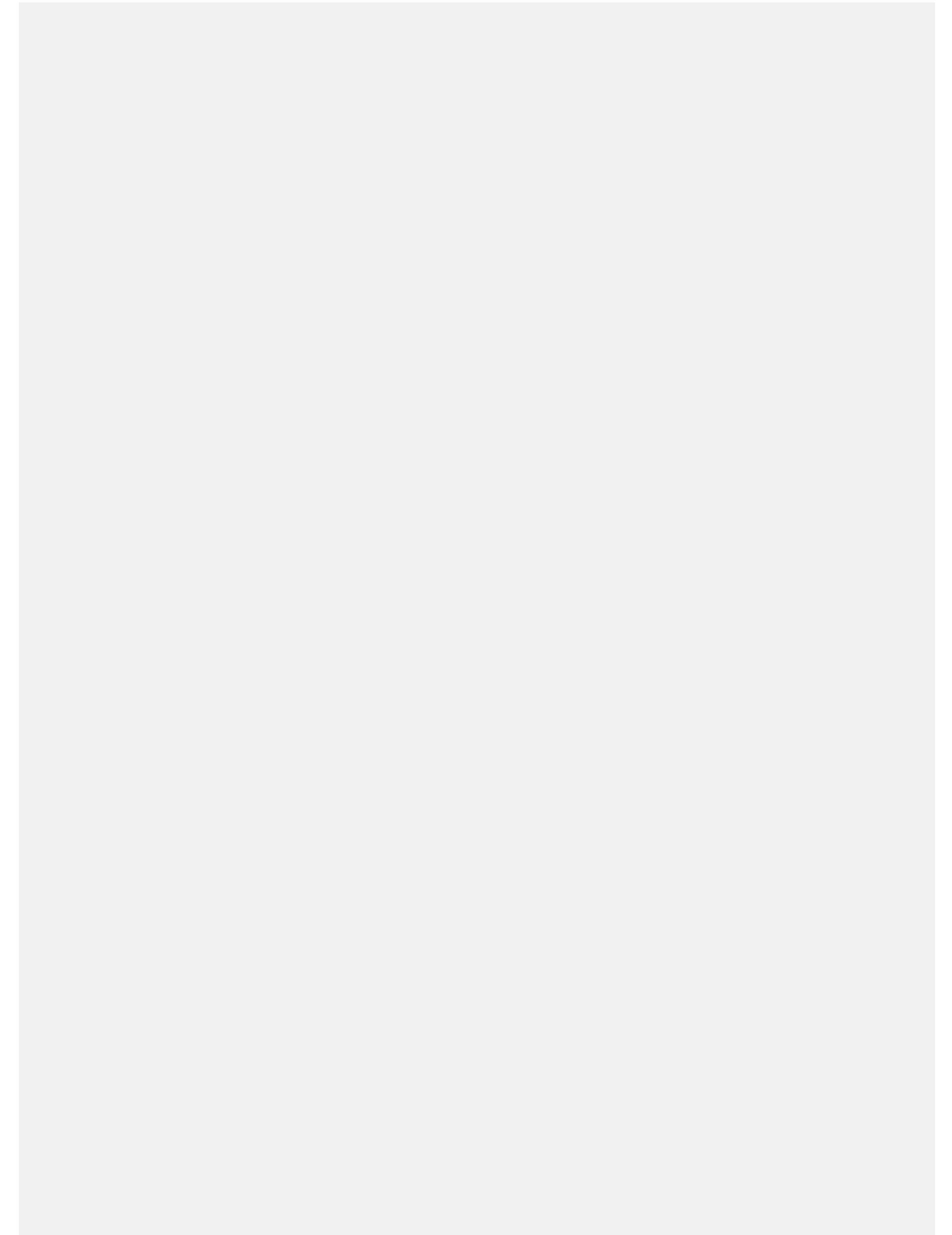
### **Results:**

The prepared original speech sample estimated universal parameters identical to Scandcleft methodology. Patient's A initial speech test result was 17 and after reassessment 15 while patients's B result was 2 and improved up to score 0. The evaluation scores reflected the huge difference among these speech outcomes. Patient's A speech disorder is noticeable despite secondary surgery and intensive speech therapy during schooltime.

### **Conclusions:**

Within the limitations of the performed research, the present study indicates that the created original Lithuanian cleft speech sample is appropriate to assess the cleft speech outcomes. However, further long-term studies involving a larger patient-group is needed before final conclusion can be made on this topic.

## **Notes**







## Speech outcome in palatal clefts “Our Protocol”

*\*Nirved Jain<sup>1</sup>*

<sup>1</sup>Jeewan Memorial Hospital, Plastic & Cosmetic Surgeon, Raipur, India

### Objectives:

The purpose of this study was to assess and simplify the speech improvement protocol in Cleft Palate Patients.

### Methods:

This study was conducted in Jeewan Memorial Hospital, Raipur, India from a period of 2015 to 2017. Fifteen patients were included in this study starting from the age of two to eighteen years. Twelve of them were females and three males. Simple assessment methods were used as guidelines. Mothers of the children were trained with the help of pictorial diagrams. Periodically the patients were called for followup to assess the progress.

### Results:

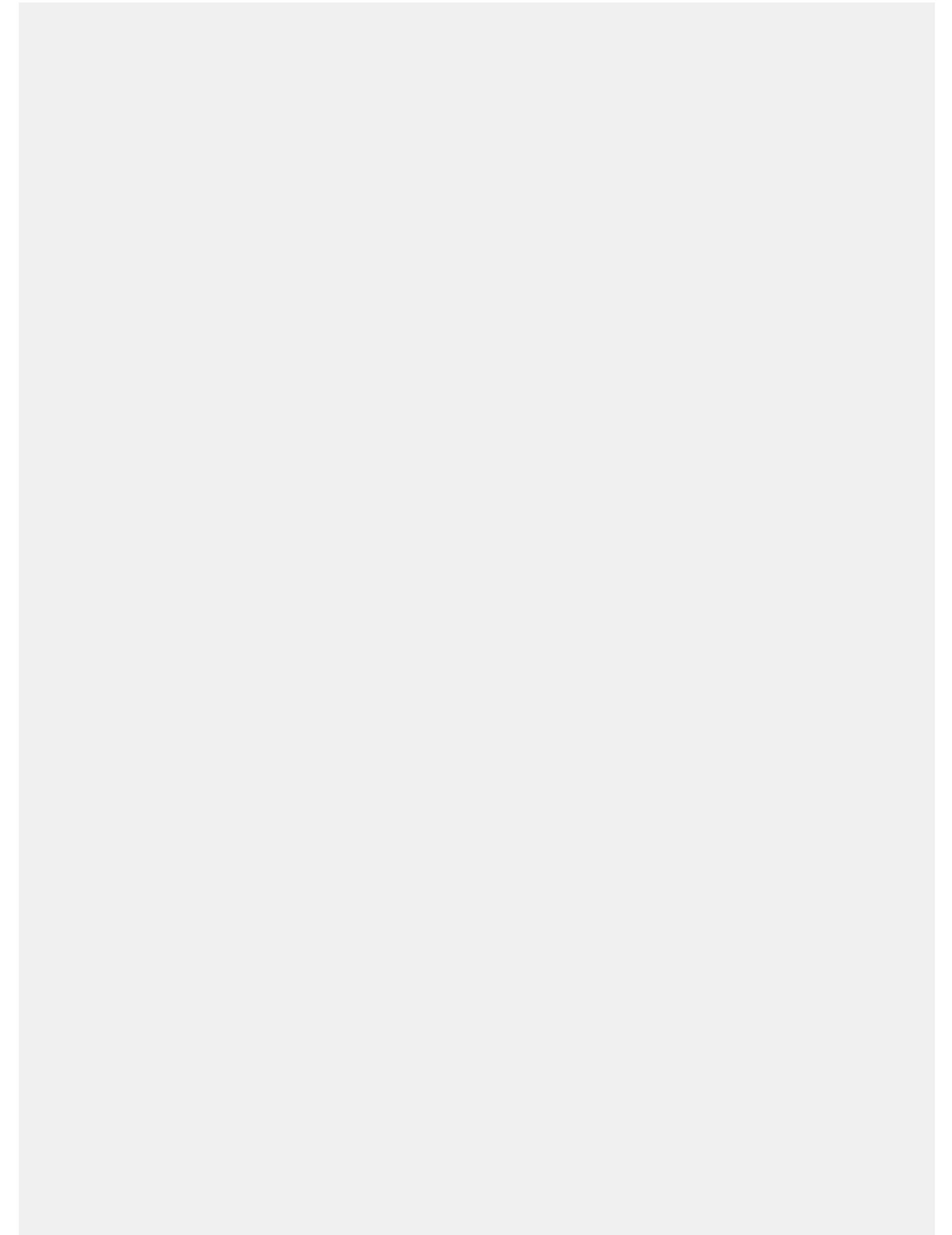
Despite all handicaps and limited resources good result were clearly audible in ten children. Three showed average improvement and two children were not up to the mark.

### Conclusions:

On an average 66% children showed significant speech improvement with our limited resources. Speech outcome in palatal clefts is of prime concern. Poor illegible speech is responsible for major psychological drawbacks resulting in school drop outs for the fear of ridicule which ultimately lead to social seclusion.

In a country like India still availability of speech therapists and patient compliance is a major deterrent factor in speech development. In our center we have tried to improve speech outcome by simplified techniques and taking the help of the mother as speech therapist by educating her.

## Notes





## Assessment of the speech therapists and audiologists educational needs and services available in cleft lip/palate management in South Africa

*\*Emad Ghabrial<sup>1</sup>*

<sup>1</sup>University of Pretoria , Orthodontics, Pretoria, South Africa

### Objectives:

- Measure the exposure and knowledge level of speech therapists and audiologists involved in cleft lip/palate (CLP) and craniofacial deformities (CFD) management.
- Describe the services provided by the speech therapists and audiologists to CLP and CFD patients in South Africa
- Obtain an opinion from speech therapists and audiologists about the current CLP and CFD educational needs

### Methods:

An online survey and telephone interviews through a structured questionnaire to investigate the services and education provided to CLP and CFD patients..

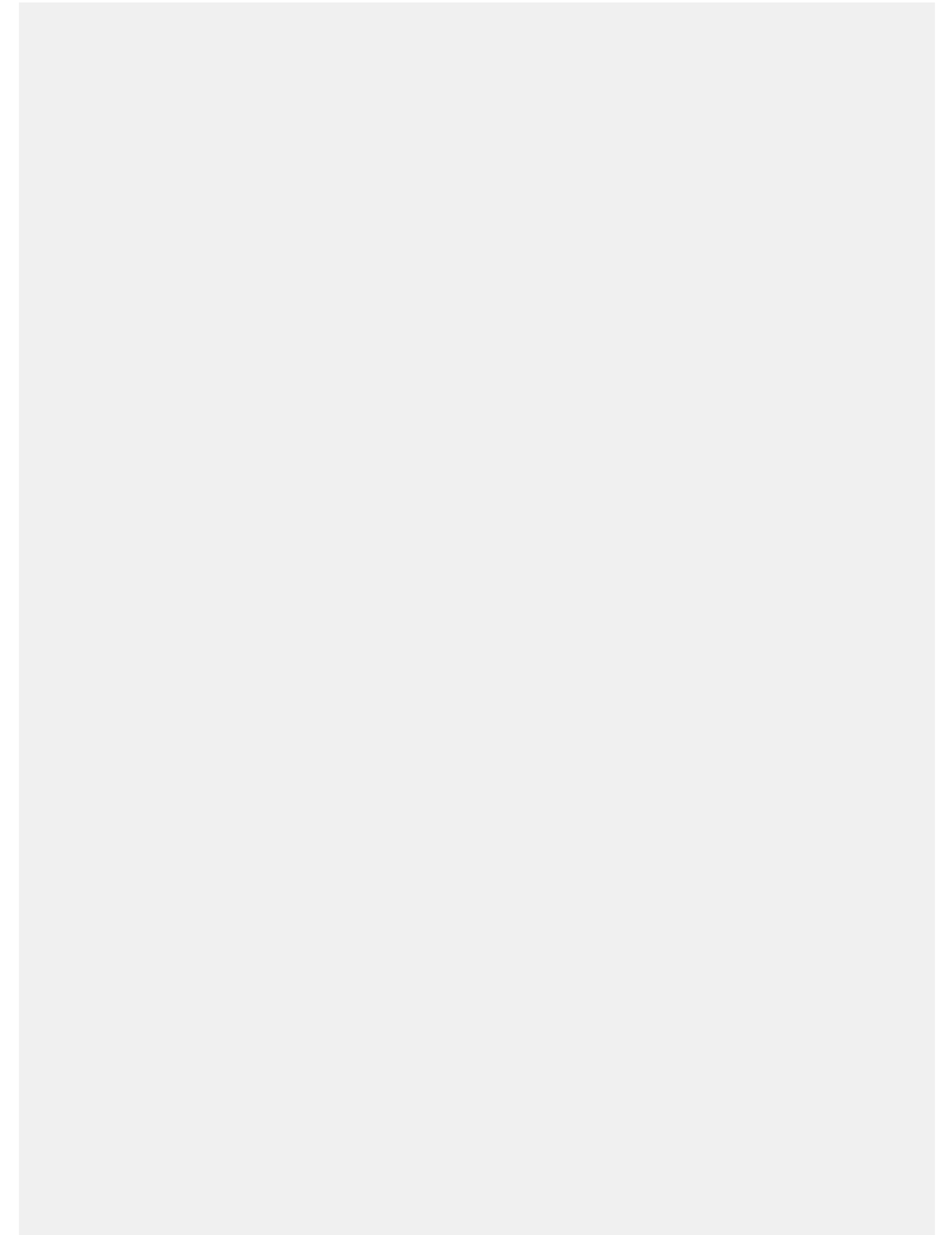
### Results:

The questionnaire was completed by 123 speech therapists and audiologists, of which 70% have more than 10 years of professional experience. Of the respondents, 60% showed a good general knowledge of CLP and CFD. However, 80,8% acknowledged their limited clinical exposure during their academic education. Only 42,4% of the professionals offer treatment for CLP and CFD patients, and 26,5% of them participate in multidisciplinary teams. 96% of the respondents, agreed on the need to improve the academic education, and the majority recommended certified short courses, workshops and online courses.

### Conclusions:

There is a need to establish an educational strategy for CLP and CFD clinical management services. This study also provided information about the speech therapy and audiology assessment and intervention protocol of CLP and CFD in South Africa.

## Notes





## Patients and professionals have different views on online patient information about cleft lip and palate

\*Stefanie Van den Bosch<sup>1</sup>, Stefaan Berge<sup>1</sup>, Marjan Faber<sup>1</sup>

<sup>1</sup>Radboud University Medical Center Nijmegen, Oral and Maxillofacial surgery, Nijmegen, Netherlands

### Objectives:

Parents of children with a cleft lip and/or palate (CL/P) and patients with CL/P actively search for online information about CL/P. The quality of this information has not been sufficiently evaluated. The aim of this study was to define quality criteria for online information about CL/P and assess the quality of frequently accessed websites.

### Methods:

Patients, parents, and professionals were equally involved in all stages of this study. A literature review was performed to obtain known quality criteria for online information. These criteria were prioritized by patients, parents, and professionals. The most important criteria were used to rate the quality of four websites on CL/P.

### Results:

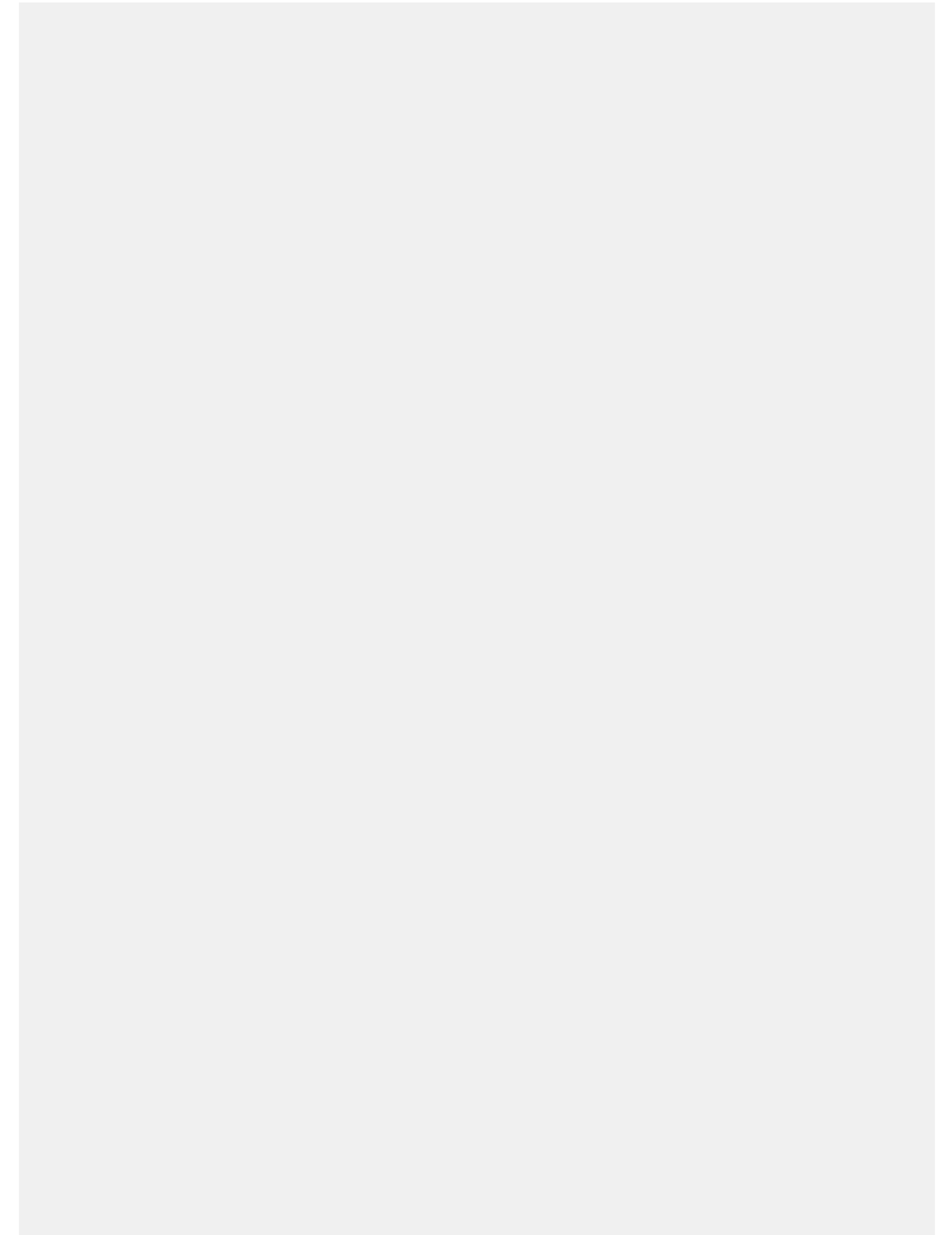
Forty-two quality items were extracted from the literature. Patients, parents, and professionals agreed on the importance of 16 of these items. New groups of patients, parents, and professionals assessed four websites on CL/P. Although the groups were like-minded in their overall assessment of the quality of the websites, distinct differences emerged between the groups in relation to certain items.

### Conclusions:

This study shows the importance of patient participation in healthcare research, as well as a feasible approach to do so.

Involving patients in composing online health information will set different priorities, which is necessary in establishing high quality information.

## Notes





## Submucous Cleft Palate - Diagnosis and Intervention

\*Lian Ma<sup>1</sup>

<sup>1</sup>Peking University, Cleft Lip and Palate Treatment Center, Peking, China

### Objectives:

Submucous cleft palate(SMCP) is a special type of cleft palate, where the intact palate is shown while the velopharyngeal function is effected in various degrees resulting in poor speech outcome. Diagnosis, treatment and prognosis have become challenging due to the characteristics of SMCP. In this current report, we share our experience regarding the clinical significant, indication of operation and prognosis of SMCP

#### 1 Anatomical characteristics and diagnosis criteria on SMCP

Typical criteria for diagnosis SMCP has been well known but the relationship between velopharyngeal closure functions which effect on the speech still is unclear. In author opinion, the diagnosis of SMCP should based on clinical symptom-hypernasality or unclear speech combining with clinical sign(bifid uvular, transparent zone on palate and touchable V shape on posterior border of hard palate), which so called “true submucous cleft palate” . The function of velopharyngeal closure was effected by the defect of hard palate on SMCP.

### Methods:

#### 2 Maxillary growth and Velopharyngeal function of SMCP

As a phenotype, SMCP occurred in about at least 100 syndromes of head and neck, which also have hearing impairment and intelligent retardation. Speech rehabilitation in SMCP is more difficulty than rest type of cleft palate.

Maxillary hypoplasia in SMCP is associated with the degree of attachment vomer and palate plate. Velopharyngeal incompetence related with bony defect in SMCP

#### 3 Surgical intervention of SMCP

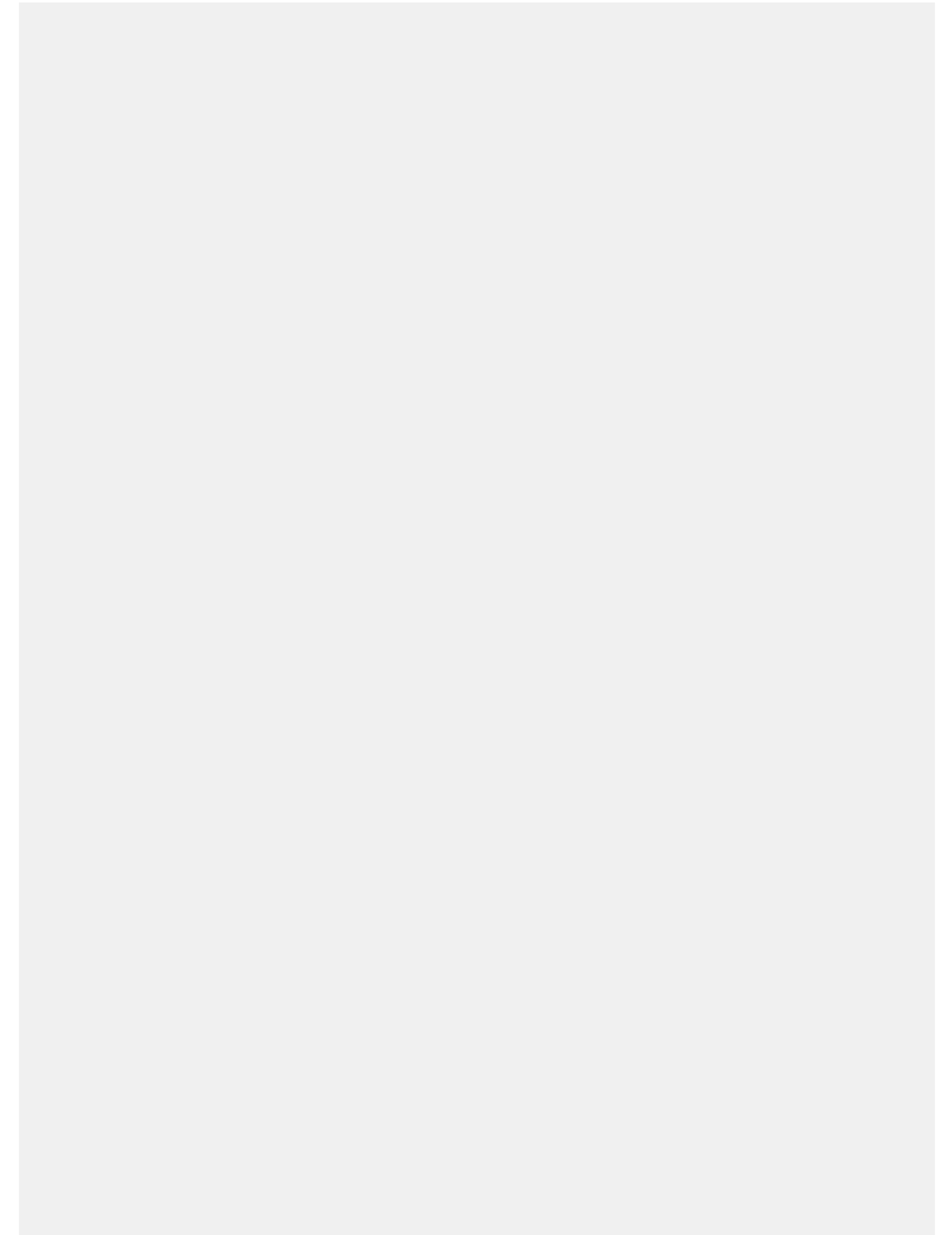
### Results:

The operation indication on SMCP was discussed and Langenbeck procedure with or without release incision had been always the first choice. The author describe the operation procedure in detail for SMCP with lager bony defect.

### Conclusions:

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## Notes



## Sphincter Pharyngoplasty in treating Velopharyngeal Insufficiency

\*José Banquart Leitão<sup>1</sup>, Diana Coimbra<sup>2</sup>, Joana Barbosa-Sequeira<sup>1</sup>, Ana Coelho<sup>1</sup>, Ana Sofia Marinho<sup>1</sup>, Fátima Carvalho<sup>1</sup>

<sup>1</sup>Centro Hospitalar do Porto, Pediatric Surgery, Porto, Portugal

<sup>2</sup>Hospital Pediátrico de Coimbra, Coimbra, Portugal

### Objectives:

Cleft lip and palate are one of the most common craniofacial anomalies. Although its management has improved over the years, still 20-30% of patients develop velopharyngeal insufficiency (VPI), which limits social communication and impairs quality of life. Early surgical correction of VPI is known to improve outcomes. However, consensus is lacking regarding the best surgical option. Sphincter pharyngoplasty (Hynes procedure with Orticochea's modification) is our first option in treating VPI. Our goal was to evaluate our results in the treatment of VPI using the sphincter pharyngoplasty technique.

### Methods:

A retrospective analysis of all patients submitted to Sphincter pharyngoplasty during a 18-year period (January 1999 to June 2017) in our institution was performed. Demographic and clinical data were collected, including preoperative speech impairment, previous surgical interventions and sphincter closing patterns (as assessed by nasoendoscopy). Postoperative outcomes include early and late complications, speech improvement, nasal obstruction and apnea occurrence.

### Results:

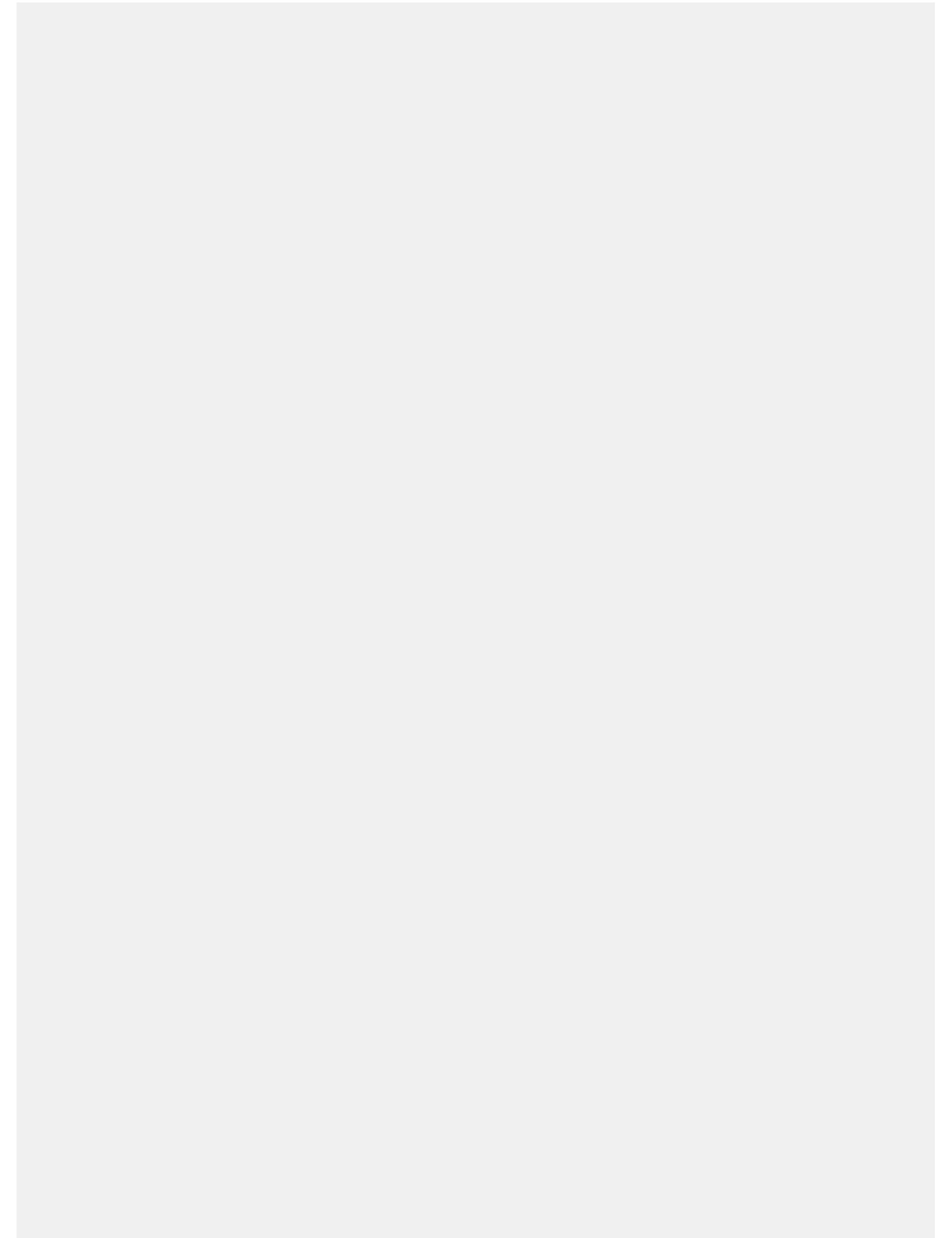
84 children were treated, 91% with cleft palate and 8% congenital VPI. Mean age was 9 years old (min:max 3:18 years). Preoperative nasoendoscopy closure pattern was 61% coronal, 37% circular and 2% sagittal. Complications occurred in 20% (N=17): flap dehiscence in 6%, flap displacement in 8% and airway compromise in 6%. Revision surgery was needed in 14 cases. 87% (N=73) showed favorable outcomes, 50% with a normal or near normal speech. 3% patients failed to show improvement. Concerning airway compromise, 24% complained of nasal obstruction, 27% snoring and 8% sleep apnea, with 2 patients requiring ventilatory support.

### Conclusions:

VPI is common following primary palatoplasty. At our center, experience has led us to be more interventive when VPI persists after 6 years of age with formal speech therapy care. Surgical intervention and chosen technique is based on patient's history, speech assessment and nasoendoscopy.

We find there is always some compromise to be made when altering the normal anatomy of the pharynx. Although consensus is lacking we believe that sphincter pharyngoplasty is a valid option in the treatment of VPI, being a safe procedure with good outcomes that overweight its limitations.

## Notes





## Customized cephalometric analysis for treatment planning of patients with a bilateral cleft lip and palate using Dolphin Imaging software

*\*Olga Zangieva<sup>1</sup>, Adil Mamedov<sup>1</sup>, Lina Mazurina<sup>1</sup>, Tamuna Kozmava<sup>1</sup>, Madina Gazieva<sup>1</sup>, Anna Kalinina<sup>1</sup>, Alessandro Manzoli<sup>1</sup>*

<sup>1</sup>I.M. Sechenov First Moscow State Medical University, Department of Pediatric Dentistry and Orthodontics, Moscow, Russian Federation

### Objectives:

To define specific points and angles in the lateral ceph X-Ray in a group of patients with the bilateral cleft lip and palate for precise orthodontic and orthognathic surgery treatment planning.

### Methods:

New stable points on the lateral ceph X-ray were defined in the group of patients without malformations using Dolphin Imaging software. New points and angles were used in digitizing the lateral ceph X-rays in the group of patients with the bilateral cleft lip and palate in the age from eight to sixteen at the different stages of treatment. All measurements are presented in a table for a clear vision of treatment planning.

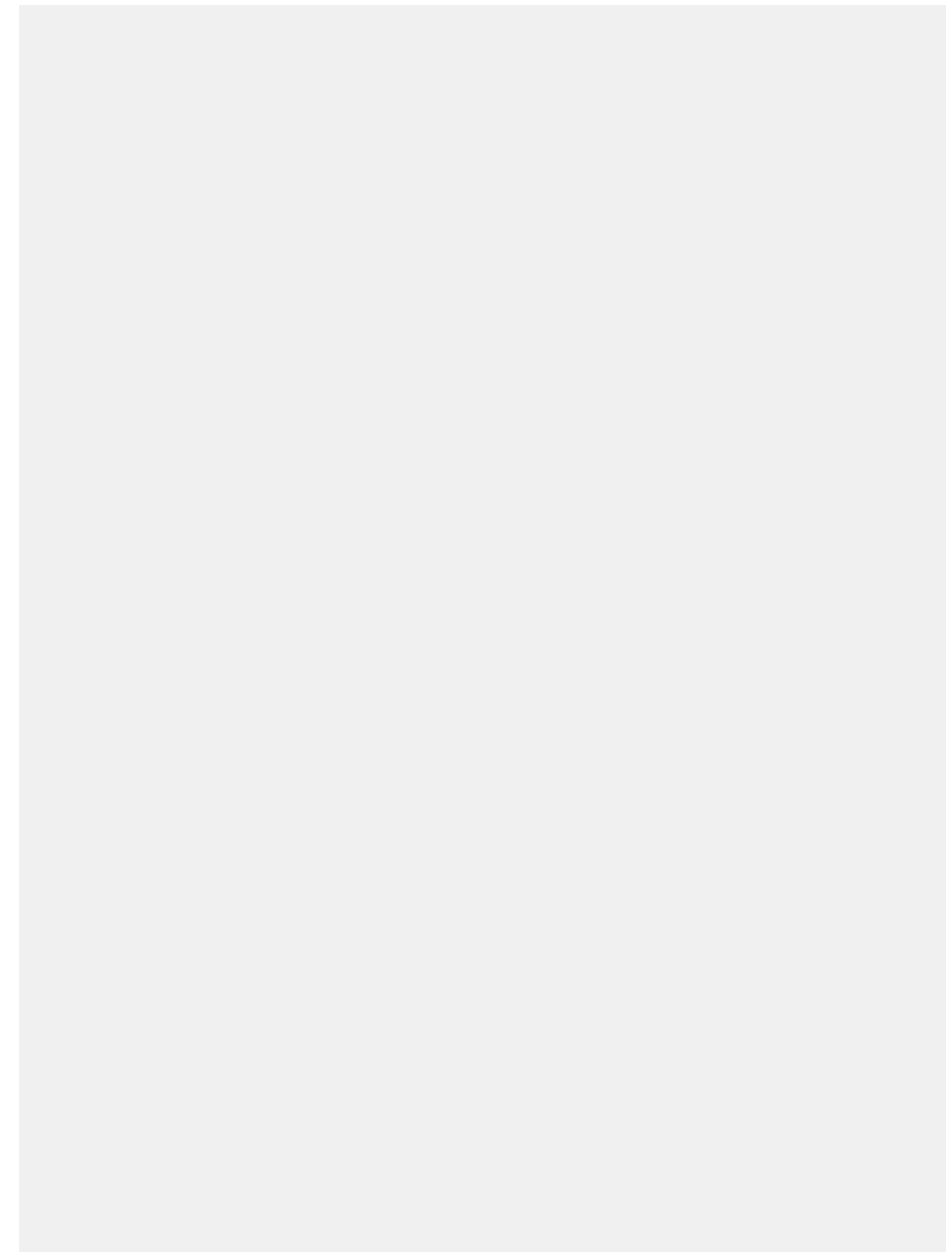
### Results:

The difference in the measurements of the maxilla rotation has been found using general cephalometric analysis and customized cephalometric analysis in the group of patients with the bilateral cleft lip and palate.

### Conclusions:

For the successful treatment of the patients with the bilateral cleft lip and palate, it is necessary to use customized cephalometric analysis to reduce potential necessity of the post-treatment surgery corrections.

## Notes





## The new rotation-advancement technique in unilateral cleft lip

\*Bing Shi<sup>1</sup>

<sup>1</sup>State Key Laboratory of Oral Disease, Department of Cleft Lip and Palate Surgery, Sichuan, China

### Objectives:

The treatment of the lip deformity in operated cleft patients is critical task as the malformation gets severer through growth, which requires a clear understanding of associated complex anatomic abnormalities, meanwhile, the effect of which is not as ideal as expected Millard's rotation-advancement technique was popular in China. However, malformation of nose are still the formidable challenge to the plastic surgeon

### Methods:

From August 2013 to December 2016, 51 patients with non syndromic unilateral complete or incomplete cleft lip were treated by new surgical techniques in West China stomatology hospital compared with 80 patients by Millard's rotation-advancement technique. Half a year later, we give evaluation of nasal morphology by the standard photo measurement analysis.

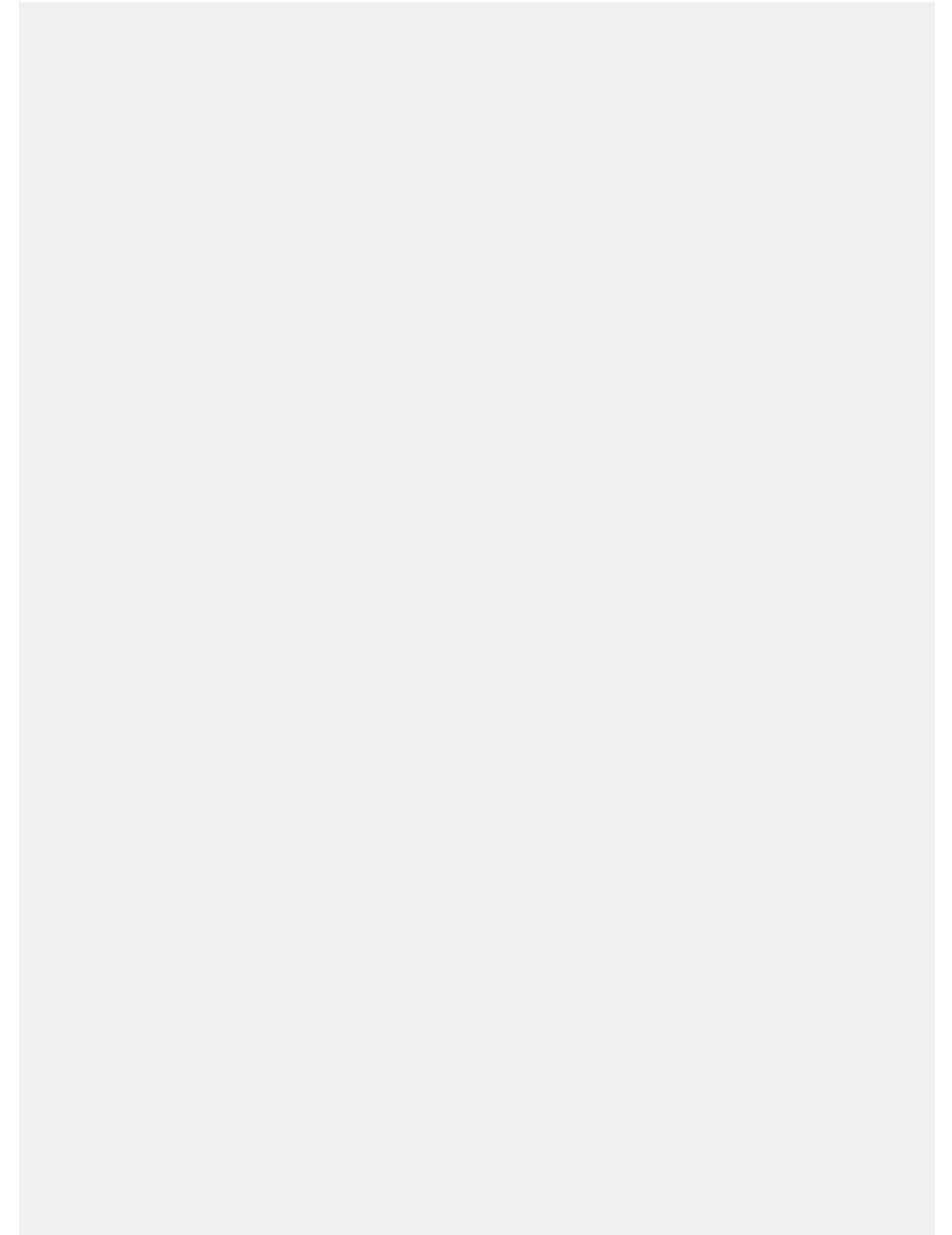
### Results:

Our results showed the new surgical techniques make well-balance on recovery about nasal morphology on the alar base, columella, nostril, nasal tip, and nasal floor both in unilateral complete or incomplete cleft lip.

### Conclusions:

In this section, we present the west china technique-the new rotation-advancement technique in unilateral cleft lip, which focus on the primary rhinoplasty that benefit the patients with incomplete and complete cleft lip.

## Notes



## Preoperative training using 3D computer-assisted elastic models of the face and cleft lip

*\*Koichi Ueda<sup>1</sup>, Yuka Hirota<sup>1</sup>, Daisuke Mitsuno<sup>1</sup>, Jun Akamatsu<sup>2</sup>, Hiromi Kino<sup>2</sup>*

<sup>1</sup>Osaka Medical College, Plastic and Reconstructive Surgery, Takatsuki, Japan

<sup>2</sup>Chikamori Hospital, Plastic Surgery, Kochi, Japan

### Objectives:

We reported realistic 3D computer-assisted 2-layer elastic models of cleft lip (PRS,2017). The surface layer is made of polyurethane, and the inner layer is silicone. Using this elastic model, we taught residents and young doctors cheiloplasty. Additionally, we have made a new three-dimensional, computer-assisted, three-layer model which has one more salt layer representing bone.

By using these models, we tried experiments of remote preoperative training for residents to learn cheiloplasty and facial fracture operations.

### Methods:

#### 1) Remote preoperative training

We made three-layer models for two patients with multiple facial bone fractures. For a resident who lives in Kochi, where is about 300km from Osaka Medical College (OMC), we sent patients' information, preoperative data, and the cleft lip and new models. After that, we discussed the operation.

#### 2) Remote operative training

Instead of the actual operation, the models were used. The two Microsoft HoloLens sets as an augmented reality device were each used to connect OMC to Kochi via Skype.

From OMC, we taught the operations through the HoloLens devices.

### Results:

For remote preoperative training for residents, useful information could be provided. Moreover, by using the multiple fracture models, operative planning, approaching methods for the fracture lines and fixation methods could also be discussed.

Finally, by using the cleft lip model, the operative incision design and operation methods could be taught effectively.

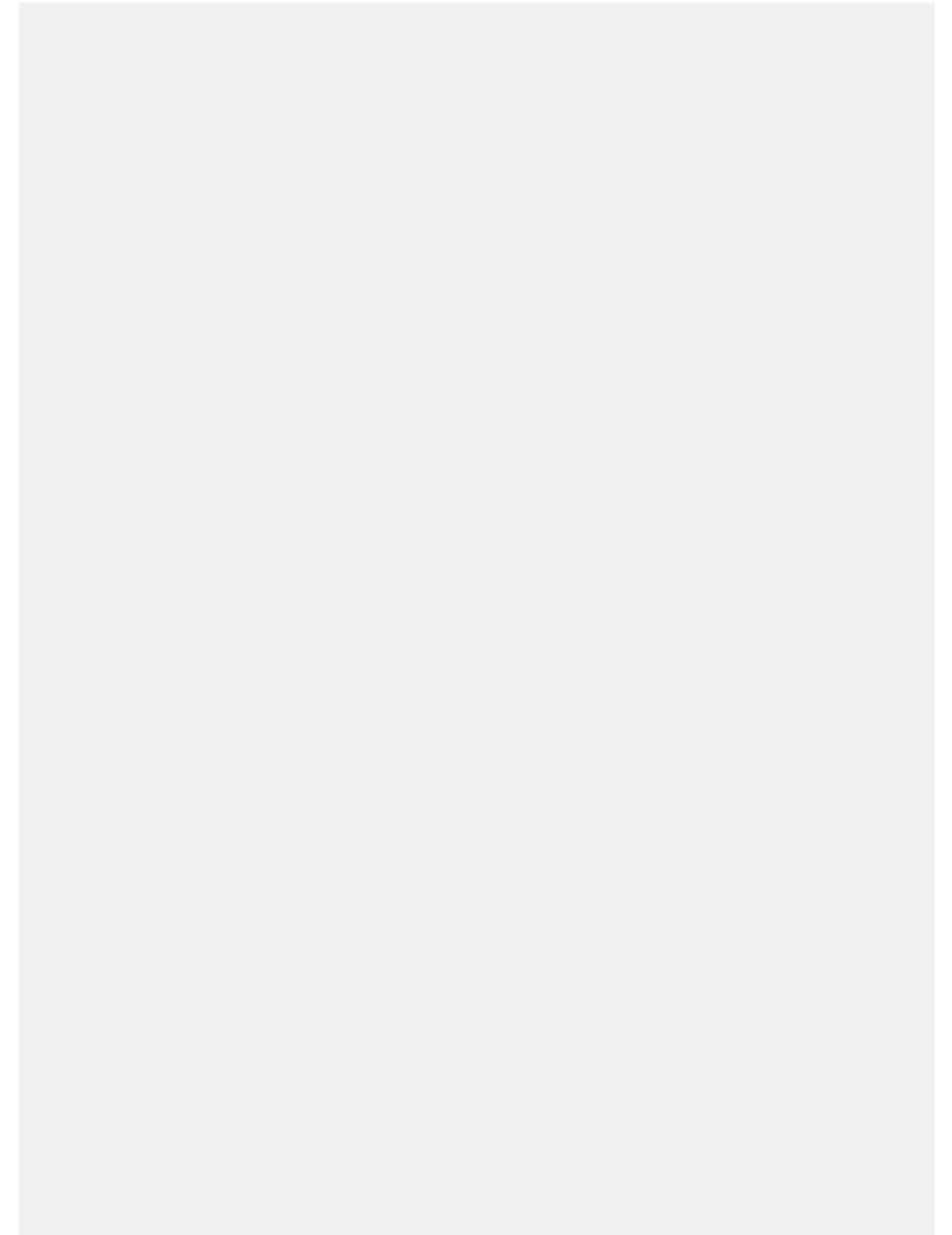
While connected to Skype using the HoloLens, a visual delay was recognized about 0.4~0.5 seconds from OMC to Kochi Chikamori Hospital, but the delay was not noticed by oth during model operation.

### Conclusions:

For preoperative training for residents and young doctors, the three-dimensional two-layer elastic and three-layer models proved to be quite useful.

As well, for the remote model operation using the HoloLens via Skype, the models were also recognized to be useful for teaching operation methods.

## Notes







# Cleft Surgery – Concepts and Long Term Results – Part 1





## 20 years result history of cleft lip surgery using Delaire's primary cheilorhinoplasty technique: results and achievements

\*Nataliia Tetruieva<sup>1</sup>

<sup>1</sup>OHMATDET, Plastic surgery and reconstructive microsurgery, Kyiv, Ukraine

### Objectives:

“The skill of the surgeon plays a subordinate role to the appropriateness and value of the operative techniques that are used in the management of congenital labiomaxillopalatine cleft. The surgical procedure not only should allow reconstruction of form and function of the divided face but also should permit very good subsequent growth of the facial skeleton” Jean Delaire.

Until 1994 we had paid attention mostly to the prolabium and restoration of a circular muscle of a mouth in cheiloplasty surgeries. We frequently observed nose deformation, dysplasia of midfacial and maxilla growth. Since 1994 we implemented Delaire's method.

### Methods:

Primary Delaire's cheilorhynoplasty is based on anatomofunctional communication of muscles and bones of the face. The facial muscles form 3 rings according to Delaire. The cleft brakes 2 upper rings causing imbalance of muscle function and causes secondary distortions. To attain the normal growth of mid facial skeleton in cleft lip patients it is absolutely critical to restore these muscle groups. Delaire proposed to use subperiosteal incision with mobilization and reposition of mioperiosteal flap including nasolabial muscles in the basis of septum nasalis and spina nasalis anterior.

### Results:

We implemented the method in our clinic and in the last 20 years from 1997 we could achieve overwhelming results. The results history includes over 981 cleft palate patients. All the operations are performed applying Delaire's cheilorhinoplasty method by one surgeon. 579 operations are performed on a one sided cleft lip including 124 isolated cleft lip. 112 operations performed on a bilateral cleft lip, 26 out of these were conducted in two stages. Secondary repair of upper lip and nose deformation was done in 45 cases targeting to schedule these operations before age of 8-10. 49 secondary open rhynoplasty were performed at the age of 13-16.

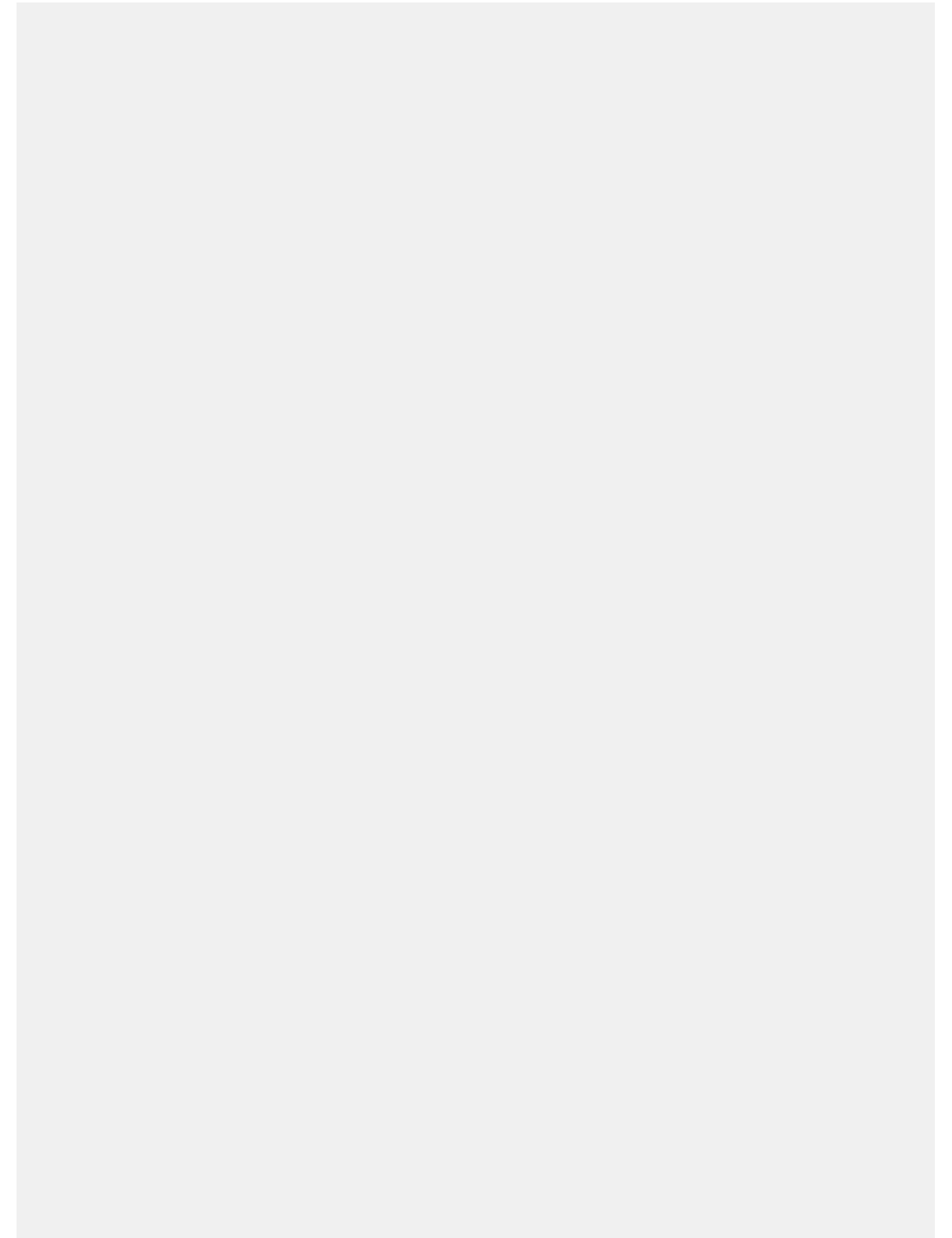
### Conclusions:

These statistically significant results of the operations have confirmed that the Delaire's method of cheilorhynoplastic allows achievement of the following results: better aesthetic result as well prevention of the secondary facial skeleton deformation.

Secondary repair lip and nose should be performed before a patient reaches 8 years old as later the sutures of facial skeleton start to close and potential mid facial growth is delayed.

Orthodontic pre-surgery treatment is effective prior to conducting the operation.

## Notes



## Long-term aesthetic and functional treatment results of children with congenital facial clefts

*\*Sergey N. Bessonov<sup>1</sup>, \*Victoria V. Shilenkova<sup>1</sup>, \*Maksim G. Karpov<sup>1</sup>, \*Sergey V. Gushkov<sup>1</sup>*

<sup>1</sup>Yaroslavl State Medical University, Clinical Dentistry and Maxillofacial Surgery, Yaroslavl, Russian Federation

### Objectives:

The clinical evaluation of aesthetic and functional treatment results of patients with congenital facial clefts (appearance, breathing, speech, voice). Patients' long-term treatment results with cleft lip and palate were estimated at the age of 5-7 years and after of the facial skeleton growth was completed at the age of 16-28 years. The results were evaluated by visual examination and anthropometric data.

### Methods:

The efficiency of surgical treatment was based on the measurement of jaws size and evaluation of symmetry of Cupid's bow, columns of the filter, red border of lips, nasal tip, alar base, shape of the nostrils. ENT-examination included the nasal endoscopy, laryngostroboscopy, rhinomanometry, voice and speech quality assessment by Speech Handicap Index (SHI), Voice Handicap Index (VHI), GRBAS, computer acoustic analysis with measurement: Main Frequency (FO), Maximum Phonation Time (MPT), Jitter, frequency and dynamic ranges (Fdelta, SPLdelta), voice intensity, Dysphonia Severity Index (DSI).

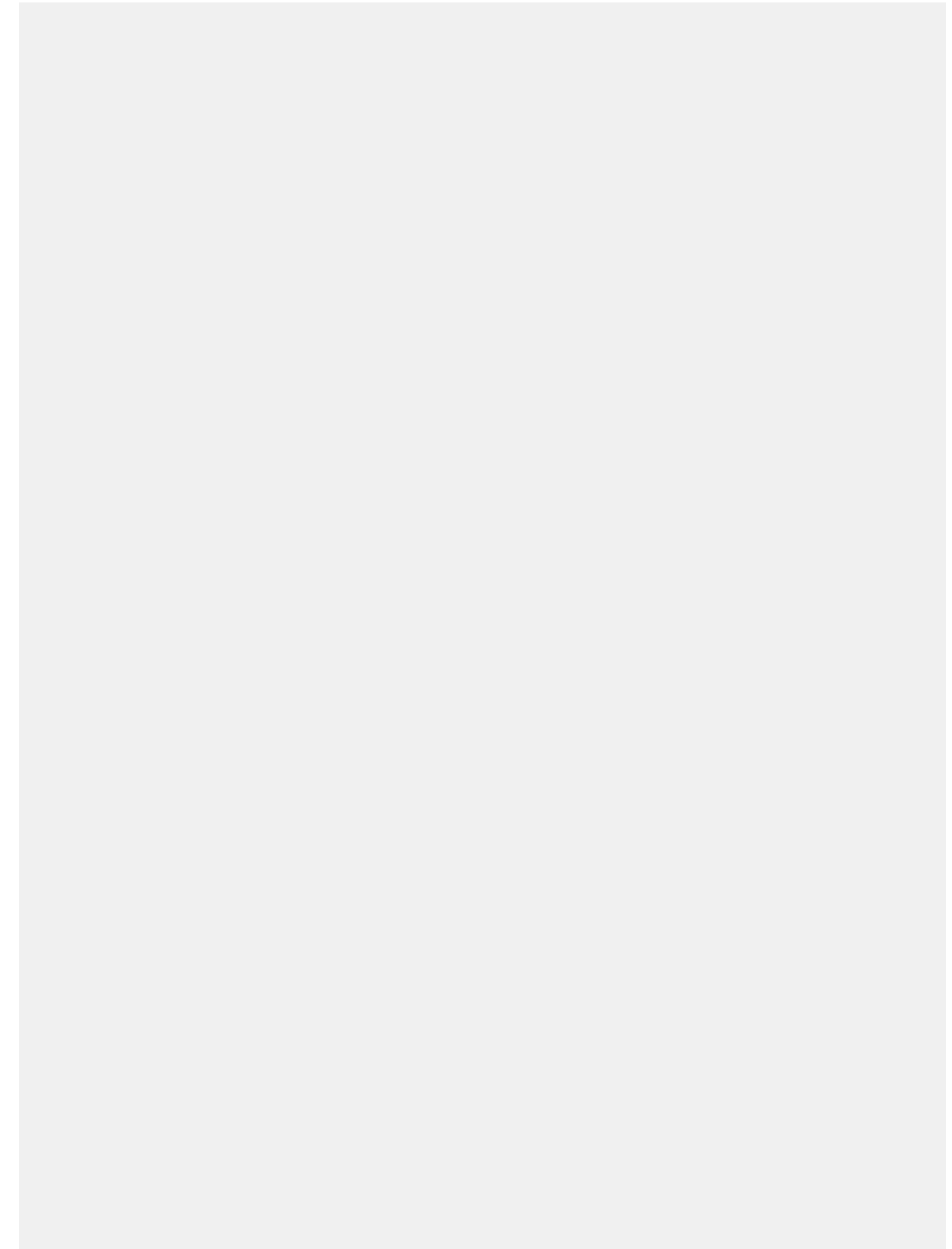
### Results:

In 87 children 5-7 years after surgery very good results decreased from 44±2,5% to 27,6±4,8%, good and satisfactory results increased from 45±2,4% to 50,6±5,4% and from 11±4.4% to 21.8±4.4%. After 14-28 years very good and good results decreased from 27.6±4.8% to 11.1±5.5% and from 50.6±5.4% to 23.3±5.8%. 44.4% of patients had asymmetry of the nose or flattening of nose's apex and wings, 94.4% - nasal septal deformities, 27.8% - exudative otitis media, 66.7% - functional dysphonia with decreasing of MRT, increasing of Jitter, negative DSI, shortening the frequency and dynamic range. GRBAS was 2.3±1.2, VHI - 15.3±5.6, SHI - 5.3±1.5.

### Conclusions:

The congenital clefts of lip and palate leads to face deformities: maldevelopments of the jaw bones, bone-cartilaginous skeleton of the nose, dysfunctions of facial muscles. Surgical methods for eliminating congenital clefts of the upper lip and palate allow to get good aesthetic and functional results after treatment immediately. But with time, results of operations become worse. Patients who underwent treatment operations of congenital clefts of face have not only verbal, but also voice disorders. The dynamic observation of the otorhinolaryngologist is obligatory for early detection of ENT organs' pathology.

## Notes





## Cleft lip and palate surgery: 20 years experience

\*Gennady Gonchakov<sup>1</sup>, Svetlana Gonchakova<sup>1</sup>

<sup>1</sup>Central Clinical hospital, Maxillofacial Department, Paediatric Maxillofacial, Russian Federation

### Objectives:

Early cleft lip and palate rehabilitation is among difficult problems of maxillofacial surgery. High cleft frequency, functional disorders, variability of tactics is among the known points. Almost all of them can be solved by implementing a number of care principles: early counseling, treatment and rehabilitation. The tactics of early surgery are recognized as optimal in most cleft centers to achieve the prompt and full rehabilitation. Our medical approach is based on the experience of rehabilitation more than 15000 children with clefts during last 20 years and includes a number of original techniques and age-related approaches to their use

### Methods:

Cleft lip surgery is done at 1-4 months using Millards method with nasolabial muscles and nasal cartilages subperiosteal mobilization and reconstruction. Cleft palate is eliminated by two-stage procedure using veloplasty at 6-8 months, uranoplasty at 12-14 months. From 2 to 18 years annually we evaluate results by the maxillofacial surgeon, orthodontist, speech therapist, ENT doctor, dentist. Orthodontic treatment and if necessary speech therapy are provided. At 7-10 years we perform alveolar bone grafting using spongy iliac autografts. The final stage of surgery is lip and nose secondary revision with usually use us at preschool ages.

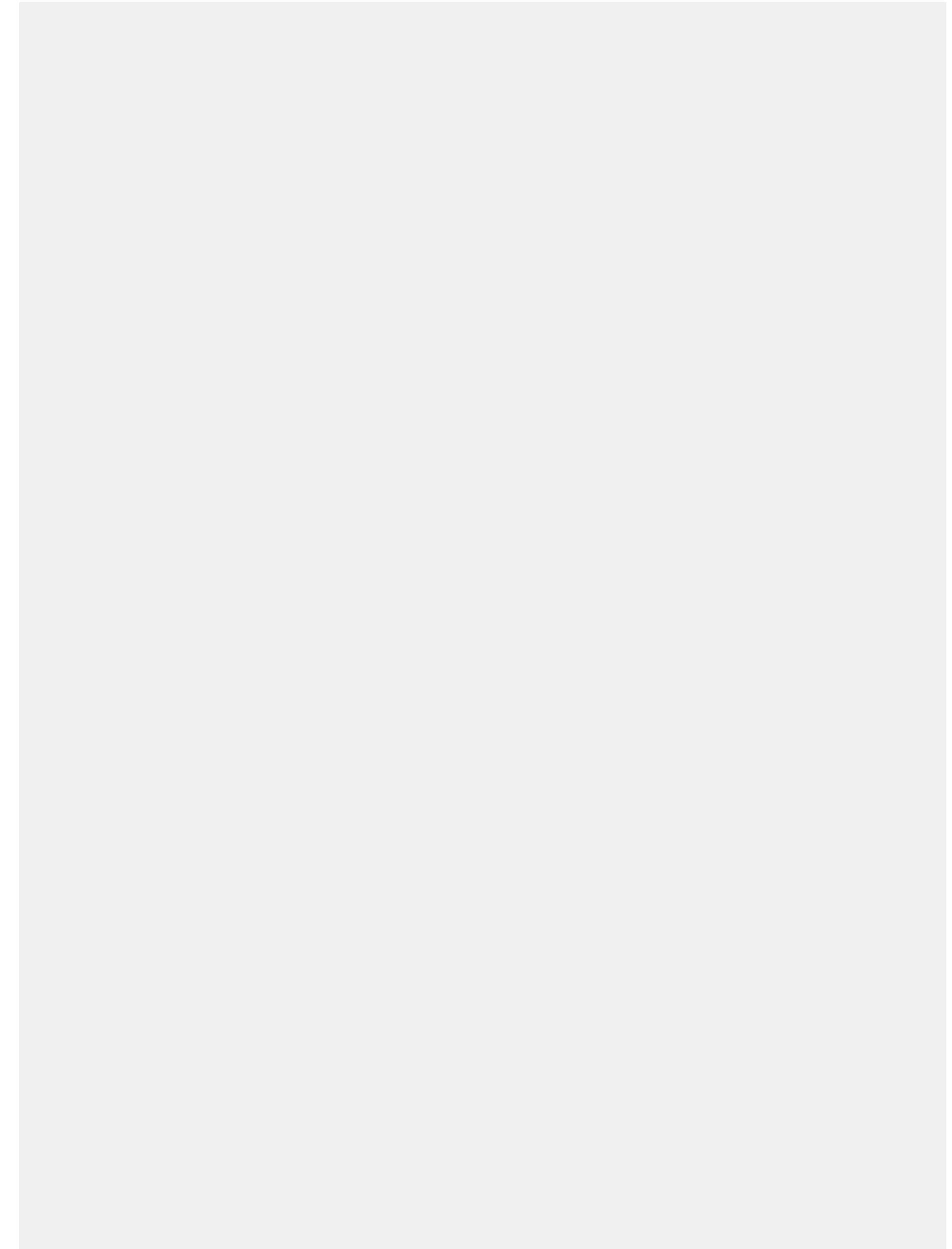
### Results:

After incomplete cleft lip surgery patients are demonstrated total lip-nose contours restoration in 95% cases, after unilateral \ bilateral complete cleft lip surgery good cosmetic results are in 90% patients. The analysis of two-stage palatal closure up to 12-14 months results indicates high efficiency: 92% bilateral and isolated cleft palate cases and 96.5% unilateral cleft patients demonstrate normal speech spontaneous formation with complete closure in nasopharyngoscopy. If velopharyngeal insufficiency is persistent (1.8%), it is eliminated by surgery using different types of pharyngeal flaps with the subsequent course of speech therapy.

### Conclusions:

Our experience in cleft lip and palate surgery and rehabilitation attests that is necessary to perform primary staged surgery during the first year of children life, using functional methods, which provides optimal conditions for rehabilitation. Along with attractive appearance patients are demonstrated spontaneous speech restoration in the majority of cases in various clefts groups. Displacement the time of surgery leads to 100% of the patients' need for long-term speech therapy rehabilitation to eliminate velopharyngeal dysfunction, the phenomenon of which can persist in spontaneous speech, preventing the childrens adaptation in society.

## Notes



## **Long term 3D evaluation of alveolar bone formation in UCLP patients after early Secondary Gingivo-Alveolo-Plasty**

*\*Cristina Incorvati<sup>1</sup>, Maria Costanza Meazzini<sup>1</sup>, G. Novelli<sup>1</sup>, D. Elsidio<sup>1</sup>, M. Corno<sup>1</sup>, L. Autelitano<sup>1</sup>*

<sup>1</sup>University of Milan | UNIMI, Department of Maxillo-Facial Surgery, Smile House, Regional Center for CLP, Milan, Italy

### **Objectives:**

The aim of this study was to evaluate three dimensionally long-term results of the alveolar cleft ossification in patients who have undergone Early Secondary Gingivo-Alveolo-Plasty (ESGAP) executed with the Milan surgical protocol , which includes the use of ESGAP together with hard palate closure at 18-36 months.

### **Methods:**

The samples consisted of 3D CT scans of 63 UCLP in permanent dentition at average age of 15.7 years. Alveolar thickness, nasoalveolar height, nasal floor ossification and hard palate were evaluated using dental, axial, and coronal cuts on CT scan and 3D models. Alveolar width was measured at three levels on the CT scans. All measurements were normalized and ratios of the affected versus the non-affected side were obtained .Alveolar bridging was quantified using a modified 3D Bergland's scoring system. Volume measurements and ratios of each hemimaxilla were added. The presence/absence of the lateral incisors was recorded on the cleft side.

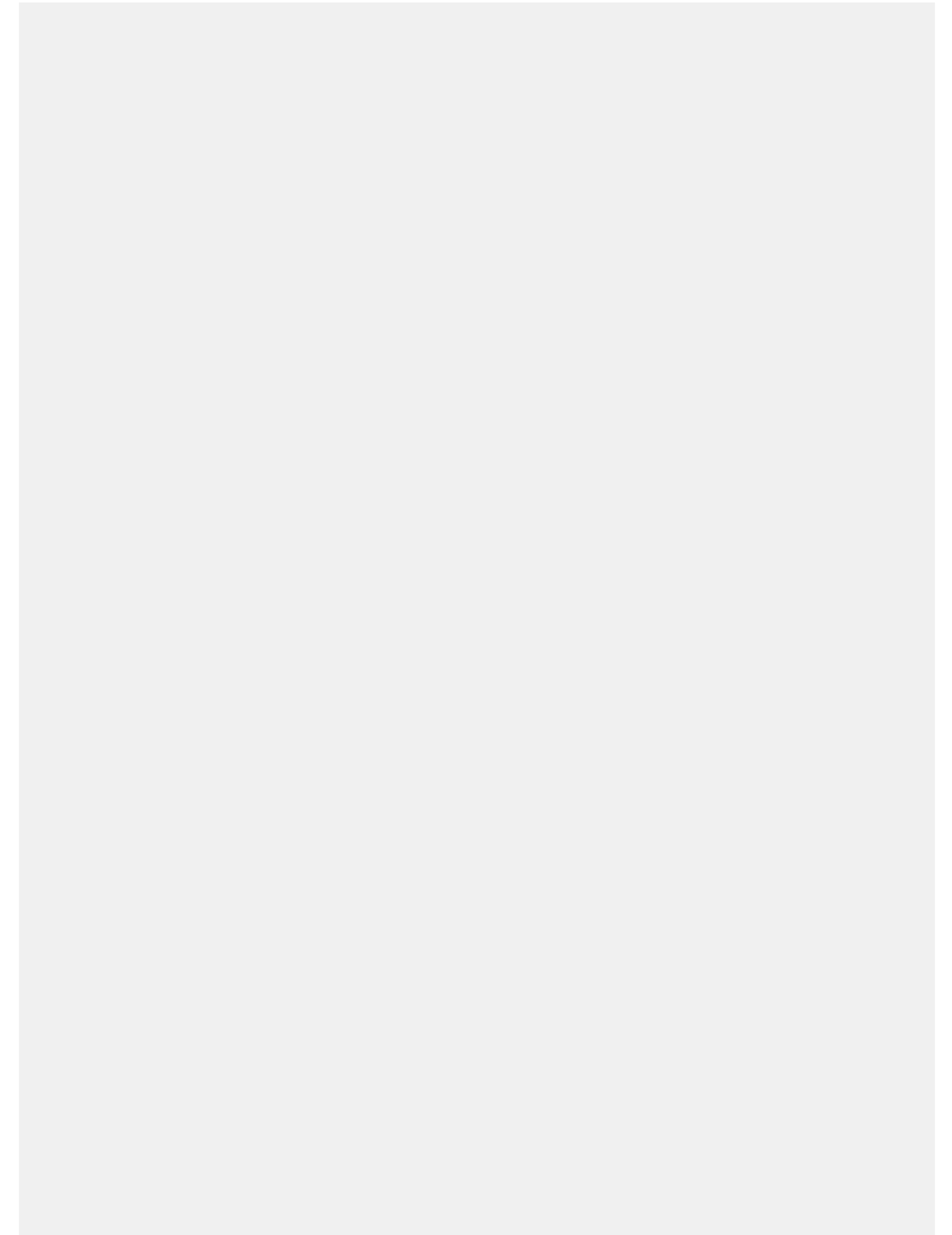
### **Results:**

Alveolar thickness and height were ideal or good ,respectively, in 89,5 and 91,4 percent of the sample. Insufficient ossification (<25 percent) was found in three patients (5,2 percent), and only one of them (1,7 percent) presented no bone bridging.

### **Conclusions:**

3D evaluation of the alveolar cleft ossification allows for adequate information on alveolar thickness, evaluation of bone availability for implant placement and suggestions for orthodontic protocols. ESGAP seemed to provide an adequate alveolar and nasal ossification in the longterm.

## **Notes**



## Closure of cleft lips with wave line incisions according to Pfeifer – a longitudinal study over 35 years

\*Konstanze Scheller<sup>1</sup>, Johannes Schubert<sup>1</sup>

<sup>1</sup>University of Halle-Wittenberg, Department of Oral and Maxillofacial Plastic Surgery, Halle, Germany

### Objectives:

For primary lip reconstruction in patients with cleft lip/palate (CL/P) different surgical techniques are used in Europe. There is a large variety of ways to obtain lip closure with excellent results, each one with advantages and disadvantages. At the University hospital in Halle the primary closure of cleft lip is performed according to Pfeifer's wave line incisions for the last 35 years.

### Methods:

A longitudinal, retrospective study was performed in all the cleft patients treated in our hospital for the last 35 years (n=356). Every year metric parameters for the development of the lip length, the development of the primary and secondary palate were taken from the age of 6 month to about 16/17 years of age. A statistical evaluation (SPSS) was performed to archive results depending on the lip length development and the degree of primary dysmorphology and cleft appearance.

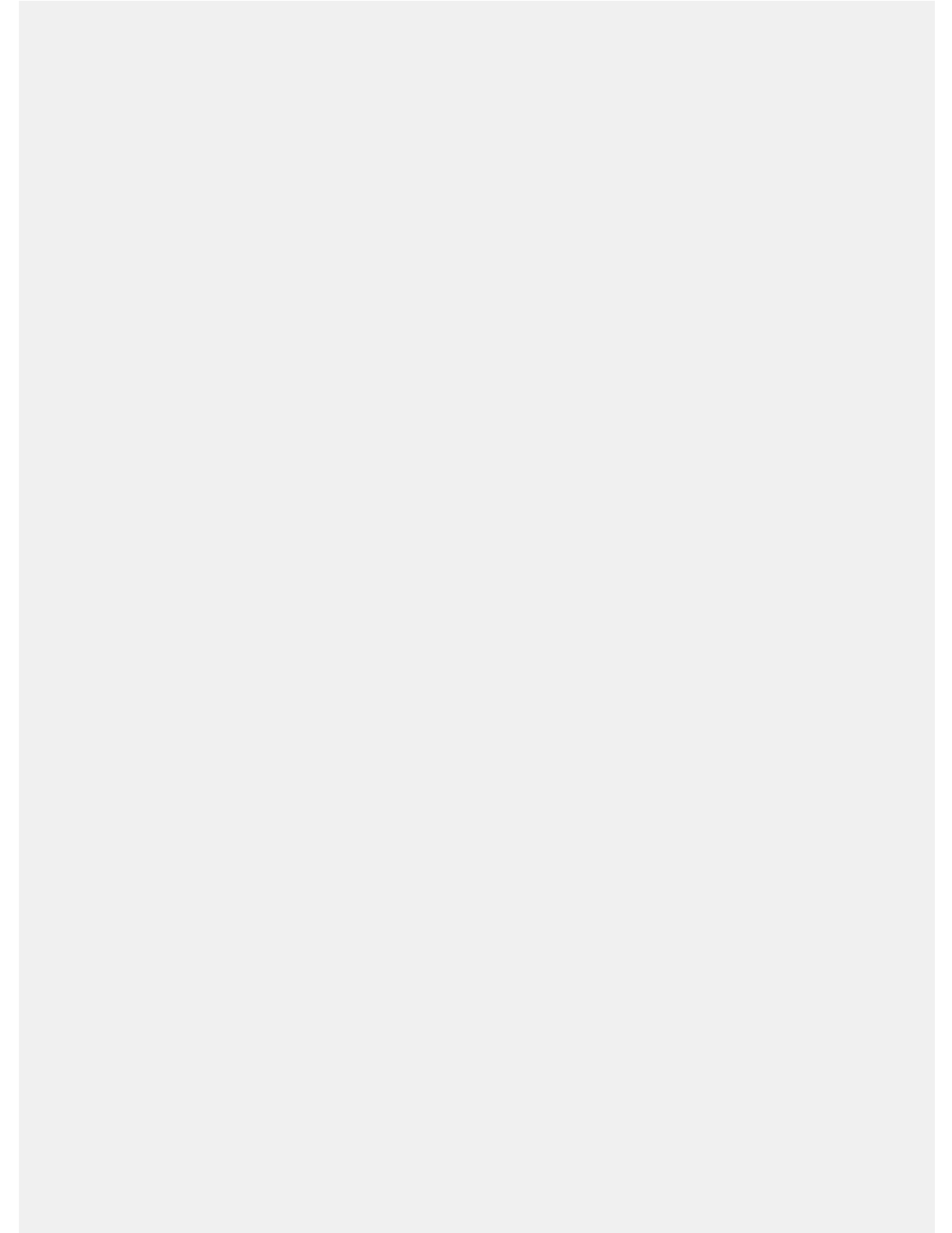
### Results:

In unilateral clefts the lip length of the *lateral cleft side* was 1.5–2 mm and of the *medial cleft side* 2-4 mm shorter than the unclefted side (4-6 month). After surgery there were two obvious developmental periods in the early childhood (1–4 years) and puberty (12–15 years). Between the age of 5 to 11 a symmetrical slow growth followed. Lip length was complete at the age of 16 (16.5 – 18 mm). The difference of both lip length (control – cleft side) in unilateral clefts demonstrated a not visible difference of 0.2 -0.3 mm. Bilateral clefts showed a harmonic development and no obvious difference in the length of both lip side.

### Conclusions:

Pfeifer's wave line incisions is a universal technique for primary closure and revision of all types of cleft lips with aesthetically and functionally good results. At the age of 16–18 the length difference in unilateral clefts is only 1-2% of the whole lip length (0.15–0.2 mm). Bilateral clefts show almost no asymmetry or growth inhibition, but sometimes the whistling deformity needs a cosmetic correction. Unfortunately no other clinical investigations describe the lip development in cleft patients treated with other methods over such a long period. So an objective comparison of other methods with the Pfeifer wave line incision is difficult.

## Notes





# Orthognathic and Craniofacial Surgery



## **A suggested universal protocol for accuracy assessment of 3D virtually planned orthognathic surgery**

*\*Ramy Gaber<sup>1,2</sup>, Eman Shaheen<sup>2,3</sup>, Bart Falter<sup>3</sup>, Sebastian Araya<sup>2</sup>, Constantinus Politis<sup>2,3</sup>, Gwen Swennen<sup>4</sup>, Reinhilde Jacobs<sup>2</sup>*

<sup>1</sup>Faculty of Dentistry, Ainshams University, Oral and Maxillofacial Surgery, Cairo, Egypt

<sup>2</sup>KU Leuven, OMFS-IMPACT research group, Leuven, Belgium

<sup>3</sup>University Hospital of Leuven, Oral and Maxillofacial Surgery, Leuven, Belgium

<sup>4</sup>General Hospital St Jan, Bruges, Belgium

### **Objectives:**

The aim of this study was to systematically review methods used for assessing the accuracy of 3-dimensional virtually planned orthognathic surgery in an attempt to reach an objective assessment protocol that could be universally used

### **Methods:**

A systematic review of the currently available literature, published until September 12, 2016, was conducted using PubMed as the primary search engine. We performed secondary searches using the Cochrane Database, clinical trial registries, Google Scholar, and Embase, as well as a bibliography search. Included articles were required to have stated clearly that 3-dimensional virtual planning was used and accuracy assessment performed, along with validation of the planning and/or assessment method. Descriptive statistics and quality assessment of included articles were performed

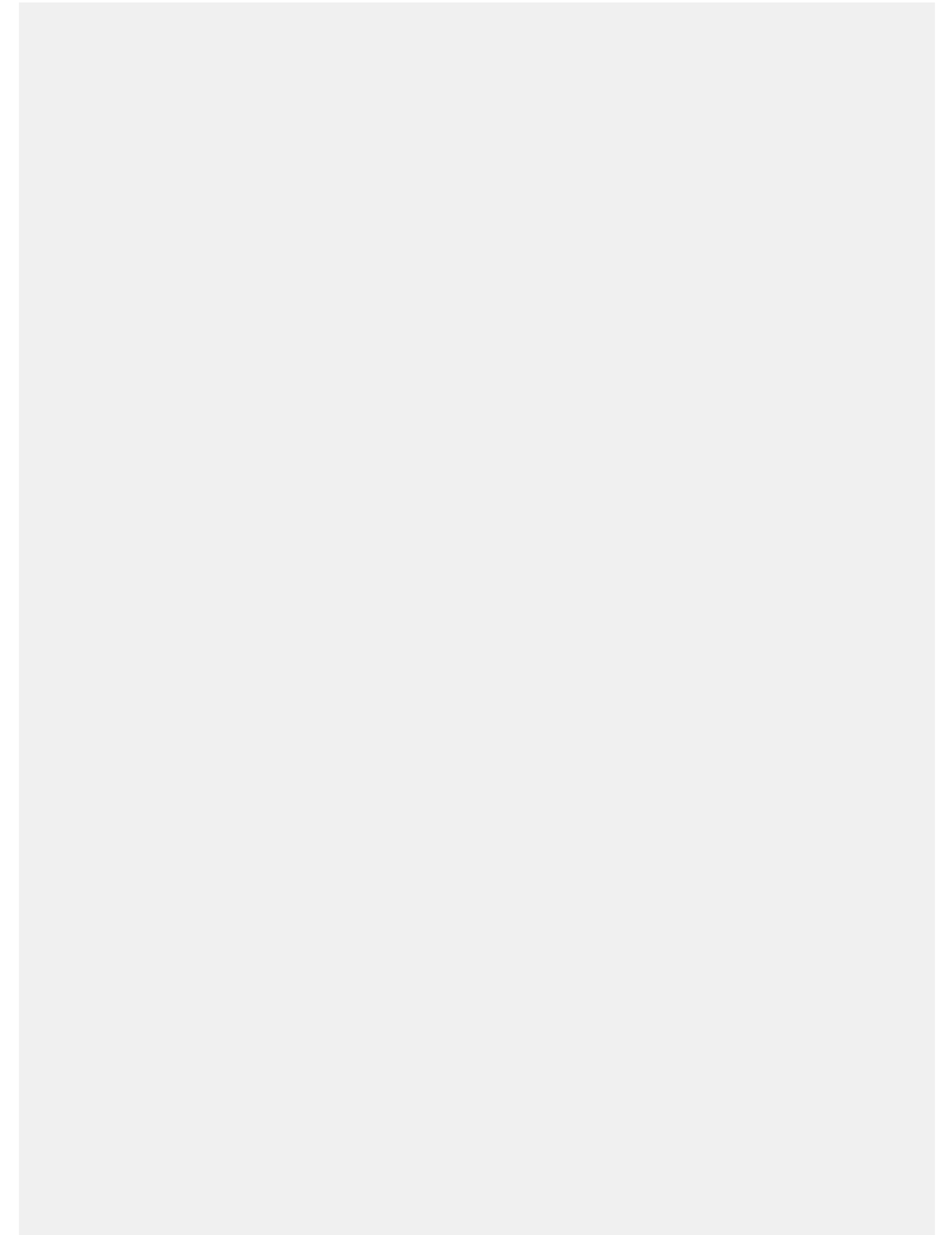
### **Results:**

The initial search yielded 1,461 studies. Only 7 studies were included in our review. An important variability was found regarding methods used for 1) accuracy assessment of virtually planned orthognathic surgery or 2) validation of the tools used. Included studies were of moderate quality; reviewers' agreement regarding quality was calculated to be 0.5 using the Cohen k test

### **Conclusions:**

On the basis of the findings of this review, it is evident that the literature lacks consensus regarding accuracy assessment. Hence, a protocol is suggested for accuracy assessment of virtually planned orthognathic surgery with the lowest margin of error.

## **Notes**





## Orthognathic surgery and maxillary distraction for patients with cleft lip and palate

*\*Roman Fedotov<sup>1</sup>, Orest Topolnickiy<sup>1</sup>, Natalia Imsheneckaya<sup>1</sup>, Artyem Makeev<sup>1</sup>, Ekaterina Grigorova<sup>1</sup>*

<sup>1</sup>Moscow State University of Medicine and Dentistry, Pediatric maxillofacial surgery, Moscow, Russian Federation

### Objectives:

According to the International and Russian medical researches the frequency of cleft pathology is 1-1,5 in 1000 newborn children.

It is an important aspect to all the patients with cleft pathology to undergo subsequent treatment in special medical centers for complex rehabilitation, with the full range of medical professionals, however according to researches - from 10 to 30 percent of cleft patients need supplementary orthognathic surgery.

And our goal is to improve the quality of rehabilitation of cleft patients by orthognathic surgical treatment as well as by applying a distraction method for moving the upper jaw forward.

### Methods:

Patients were divided into 2 groups.

1. **130** patients with cleft who underwent orthognathic surgery with simultaneous moving of the jaws to the correct ratio. 58% percent have a unilateral cleft and 42% percent have a bilateral cleft. Upper jaw osteotomy was performed among 25%, lower jaw osteotomy was performed among 5% and bimaxillary osteotomy was performed among 70% patients.

2. **7** patients who were treated with the maxillary distraction method. 5 of them with bilateral cleft and 2 with unilateral cleft. In 6 cases the internal distraction apparatus was applied and in one case an extraoral distraction apparatus was applied.

### Results:

**Group 1.** Stable result of occlusion after orthognathic surgery was achieved for 81% cases. Relapse was noted in 19%. A reliable correlation between relapse and quality of postoperative orthodontic treatment ( $p < 0.05$ ) was revealed.

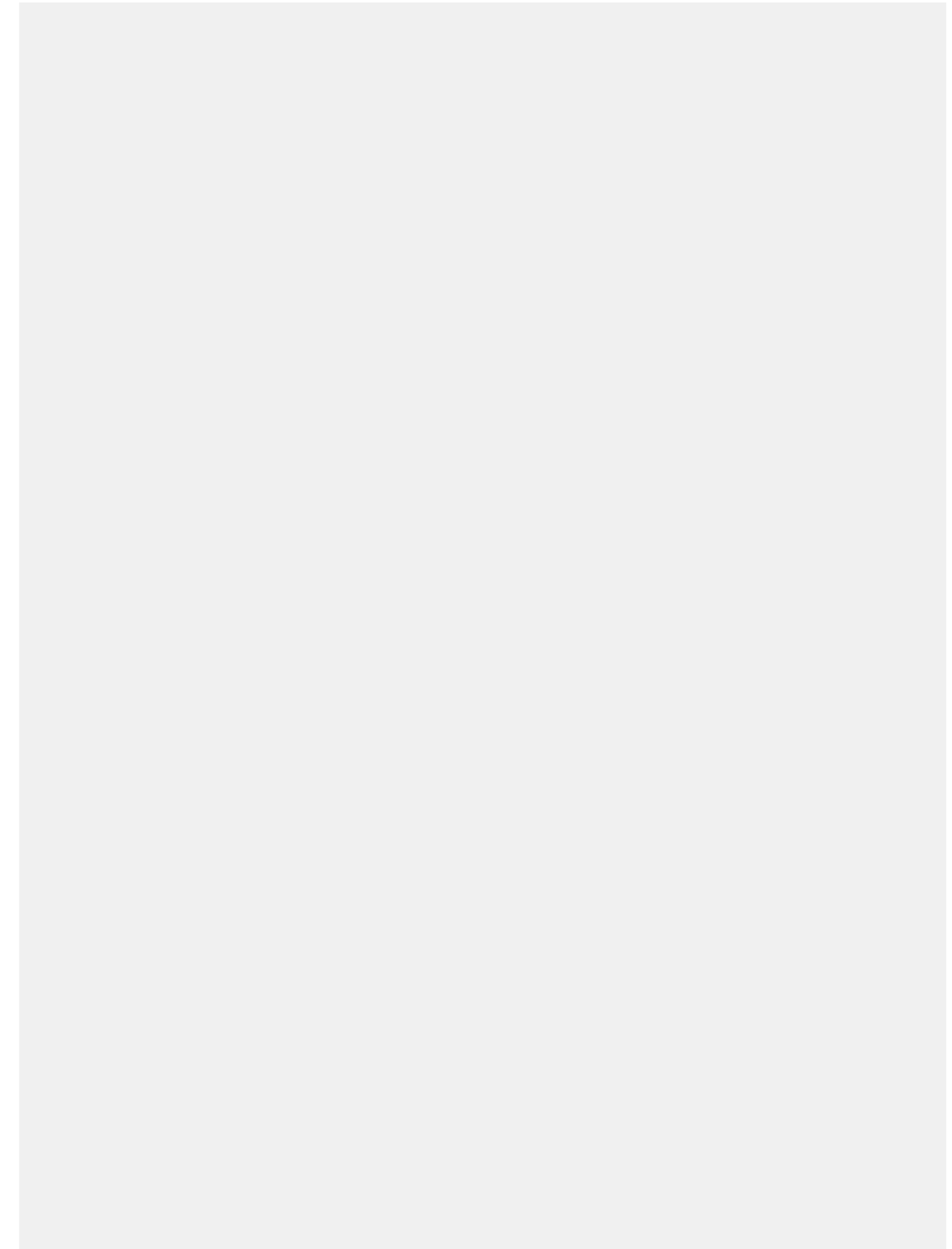
**Group 2.** Distraction method was applied, a stable result was achieved in all 7 cases. It was noted that patients from group 2 have had postoperative orthodontic treatment for 6-12 months longer than patients from group 1.

### Conclusions:

The orthognathic surgery creates stable anatomical and functional results which leads to better social adaptation and less disability.

Taking into account our personal and colleagues' experience, we consider that the application of the distraction method gives a more stable occlusion result than the use of orthognathic surgical treatment with simultaneous movement of the jaws, however, after using the distraction method, additional surgical treatment is required to extract the distraction device. The optimal rate of distraction for the upper jaw is 0.5 mm per day and the consolidation period for a good stable result is at least 20 weeks.

## Notes



## Role of distraction osteogenesis in the management of cranio- and dentofacial anomalies

*\*Sandra Scholz<sup>1</sup>, Matthias Schulz<sup>2</sup>, Max Heiland<sup>1</sup>, Nicolai Adolphs<sup>1</sup>*

<sup>1</sup>Charité Universitätsmedizin Berlin, Department of Craniomaxillofacial Surgery, Berlin, Germany

<sup>2</sup>Charité Universitätsmedizin Berlin, Pediatric Neurosurgery, Berlin, Germany

### Objectives:

Distraction osteogenesis (DO) has been applied to the craniomaxillofacial framework for more than two decades. Although relevant factors for successful distraction osteogenesis are well known there are ongoing controversies about indications and limitations of the method and there is still a lack of evidence based data.

### Methods:

Since 2003 DO has been applied by the same surgical team to patients affected by cranio- or dentofacial anomalies within staged individualised treatment protocols. The records of these patients have been reviewed in order to assess the role of DO within the spectrum of a major craniomaxillofacial (CMF) department.

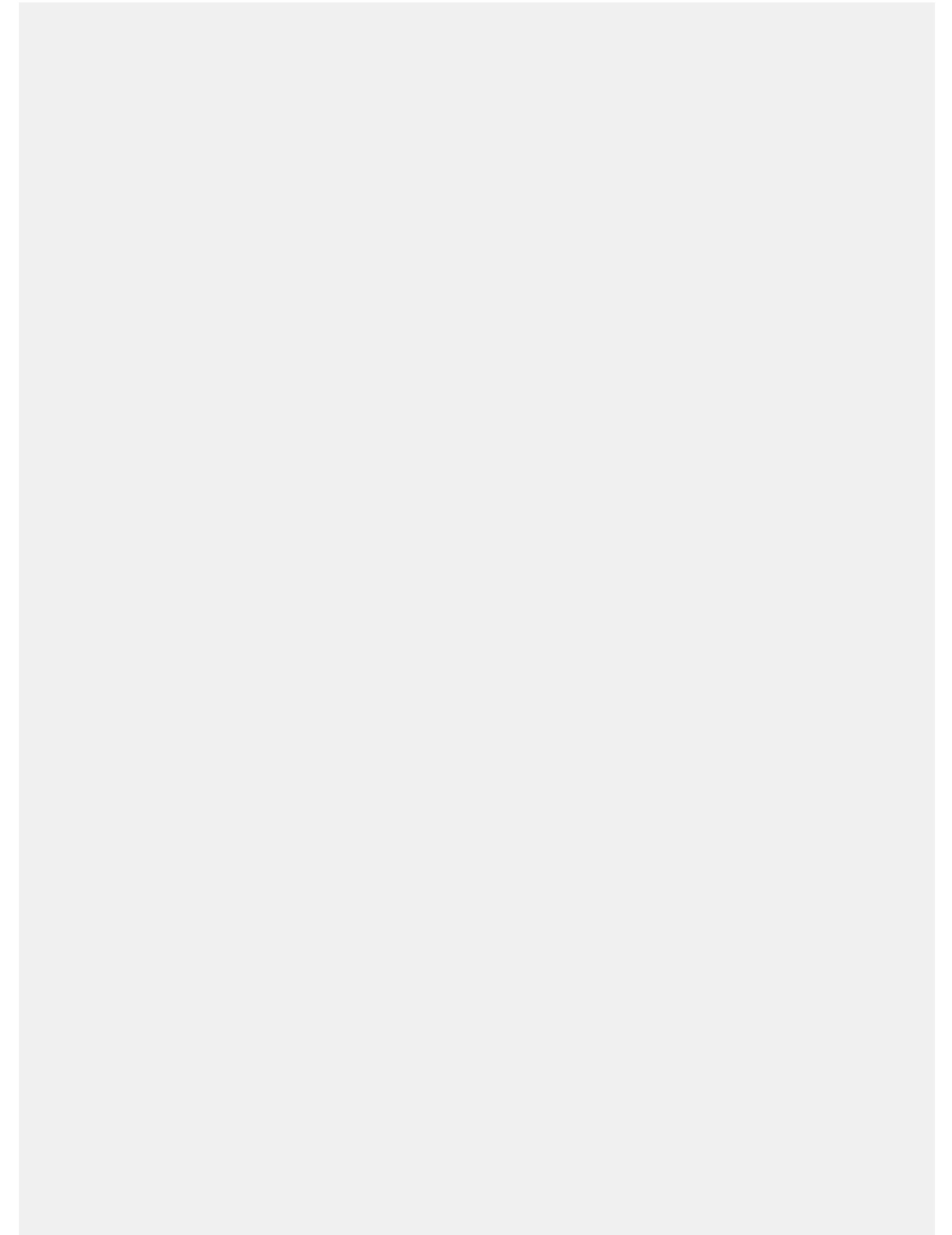
### Results:

More than 175 patients have been treated by DO corresponding to less than 1% of all treated patients during 14 years. A wide variance of parameters was found which clearly impedes evidence based statements. DO for the correction of transverse maxillary deficiency (n=144) was the main application providing reliable results. In 31 patients DO was successfully applied in order to correct syndromal craniofacial growth deficiencies. Staged additional surgeries were typically required in the majority of patients. In two patients (1,2%) infective complications caused persistent tissue damage. Computer technologies were helpful in craniofacial DO.

### Conclusions:

According to this review the principle of gradual expansion by DO plays a minor role with regard to the overall patient counts of a CMF department. However DO is a powerful tool for the reconstruction of patients affected by cranio- or dentofacial anomalies within individually staged treatment concepts.

## Notes



## Improvement of rehabilitation of patients with craniofacial microsomia

Orest Topolnitsky<sup>1</sup>, \*Natalia Imshenetckaia<sup>1</sup>, Artyom Makeev<sup>1</sup>, Roman Fedotov<sup>1</sup>, Maxim Mamedov<sup>1</sup>

<sup>1</sup>MSMSU, Pediatric Maxillo-facial Surgery, Moscow, Russian Federation

### Objectives:

Relevance. Craniofacial microsomia (CM) includes lesion in the development of structural elements of the face, formed from the 1st and 2nd branchial arches, the 1st branchial gill and the pharyngeal pocket. It combines 3 syndromes: hemifacial microsomia, Goldenhar syndrome and the Tricer-Collins-Franceschetti syndrome. Frequency is 1: 5000 - 1: 5600 newborns.

The aim of the study is to improve the rehabilitation of patients with CM syndromes. Objectives: 1) to determine the sequence and timing of surgical treatment, 2) to offer rehabilitation algorithms based on the severity of diseases and individual anatomical features.

### Methods:

Materials and methods: 120 patients with CM syndromes aged from 0 to 18 years old had been registered from 2013 to 2017 in our dept. Each patient underwent multispiral computed tomography (MSCT) of the facial part of the skull, first and second cervical vertebrae and middle, inner ear, as well as ultrasound (US) with dopplerography of the soft tissues of the maxillofacial region (muscles and fascia) of the affected and contralateral sides. Timing and methods of treatment depended on the severity of lesion.

### Results:

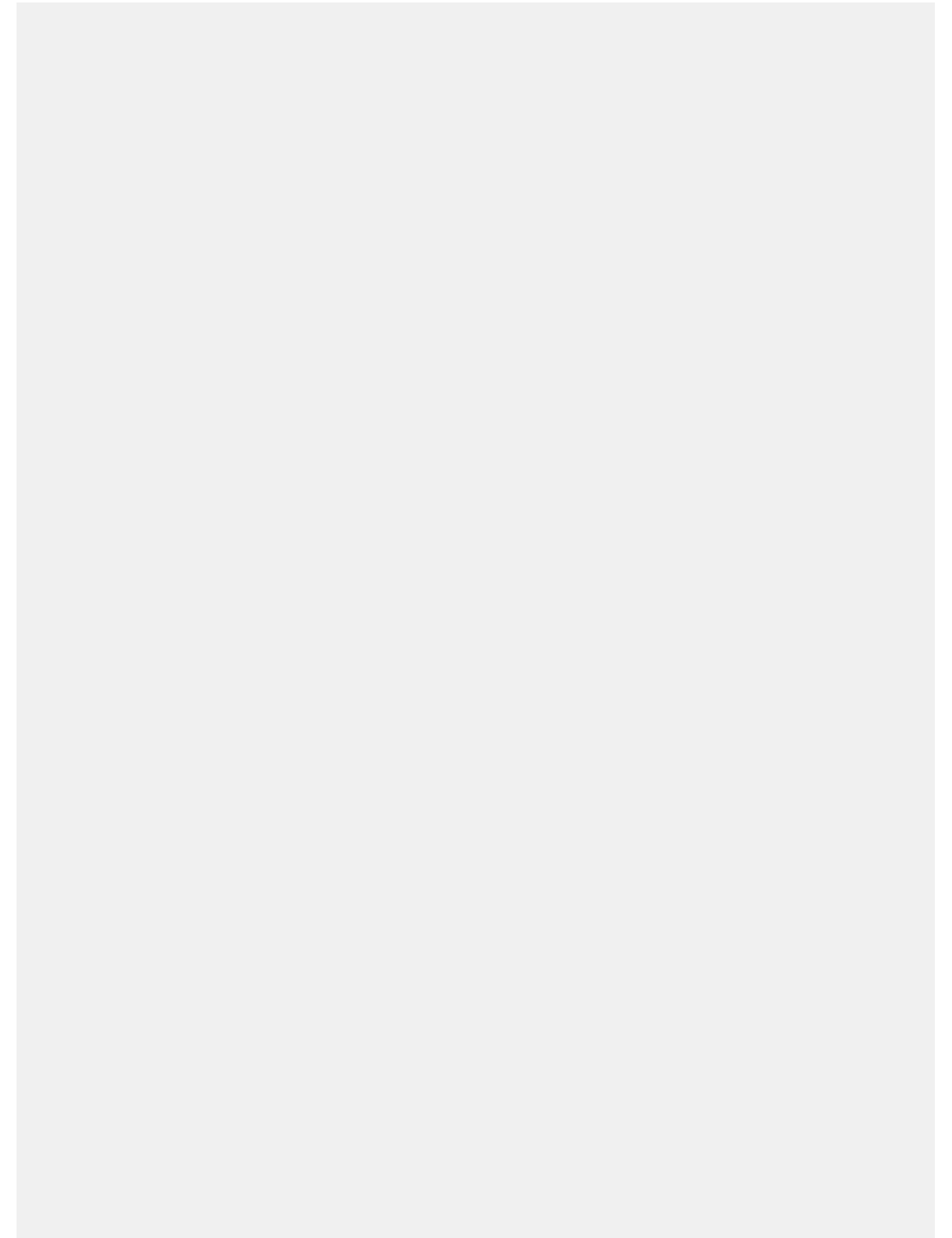
Results. For M1E1S1 symptomatic treatment was performed. For M2E2S2 osteogenesis of the mandible was carried out at the age of 6-12. The timing of the correction of the auricle depended on its position and severity. For M3E3S3 endoprosthesis was performed at the age of 6-8 to create a distal support, normalize occlusion, restore muscle balance and to create soft tissue expansion. Further correction of soft tissues was performed. Auricles were shifted downwards and mesially, so the transposition of lobe was carried out. At 10-11 we carried out changing of endoprosthesis. At 16 orthognathic surgery and final endoprosthesis was performed.

### Conclusions:

Conclusions.

- 1.The results of ultrasound and MSCT do not always coincide with clinical picture of the severity of the pathology, which is the basis for determining methods of treatment.
- 2.Early rehabilitation of patients with CM allows to normalize the function of chewing, to ensure the formation of physiological bite during the change of teeth and to reduce significantly secondary deformations.
- 3.The sequence and age of surgical treatment should be determined by the severity of the symptoms and the severity of the deformity. Treatment should be comprehensive and consistent.

## Notes



### **Costochondral graft in hemifacial microsomia: Long term results in a small case series**

*\*Valeria Marinella Augusta Battista<sup>1</sup>, Maria Costanza Meazzini<sup>1</sup>, Giulia Rossetti<sup>1</sup>, Mario Ferrari<sup>1</sup>, Luca Autelitano<sup>1</sup>*

<sup>1</sup>ASST Santi Paolo e Carlo, Maxillo Facial Surgery Smile House, Milano, Milano, Italy

#### **Objectives:**

The aim of this study is to evaluate the long term results of costochondral graft in a sample of growing patients affected by HFM type III according to Pruzansky.

#### **Methods:**

In the maxillofacial department of the University Hospital of Milan, Smile House, between 1995 and 2006, 33 procedures of ramus condyle reconstruction by CCG were performed.

In order to obtain a homogeneous sample inclusion criteria were: growing patients affected by HFM type III Pruzansky, costochondral graft for mandibular reconstruction done at 5/8 years. Only 5 patients were included.

The growth of the reconstructed ramus is assessed on panoramic X rays. To assess facial symmetry a photometric evaluation in the frontal view was carried out.

#### **Results:**

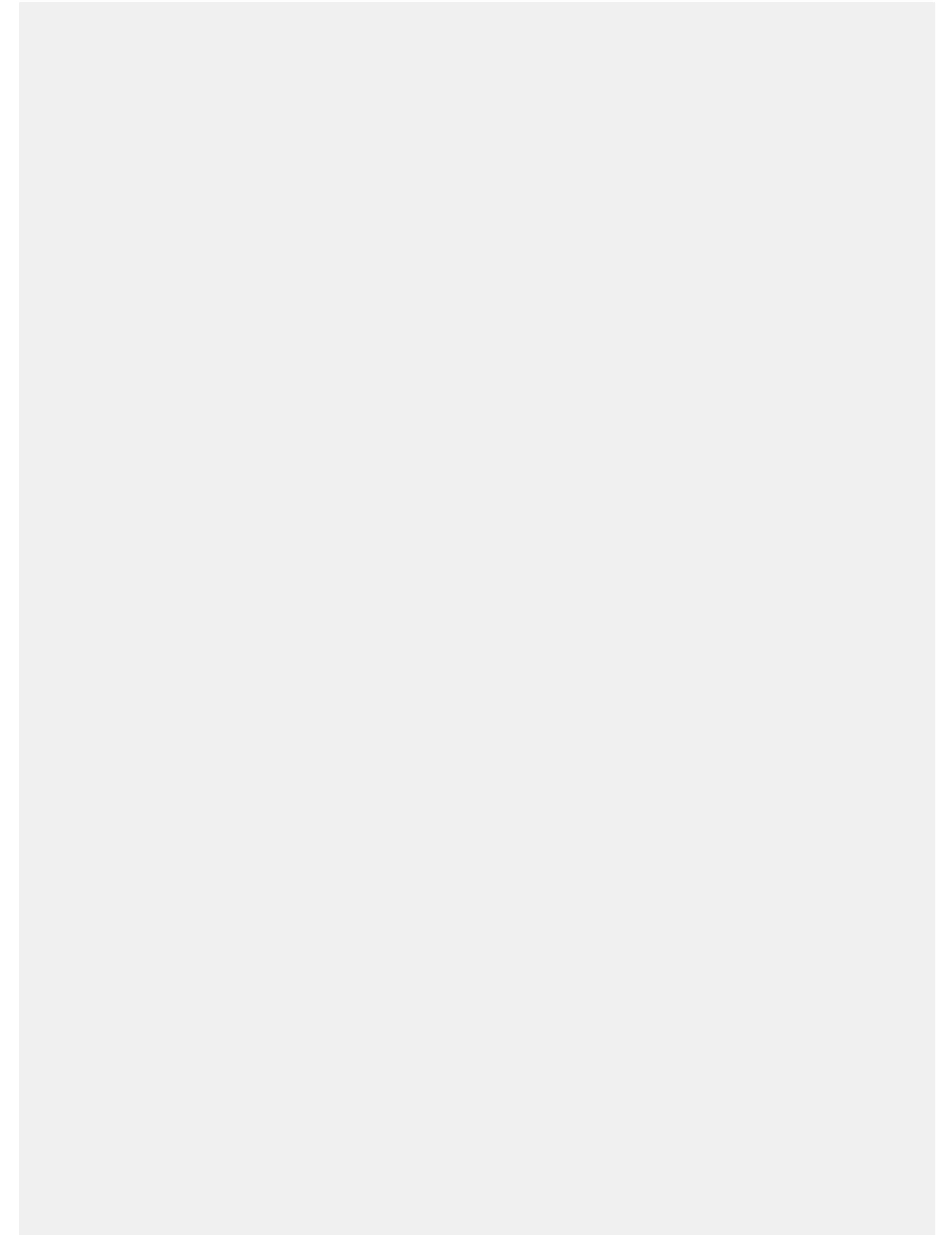
The skeletal evaluation on Panoramic x ray shown an acceptable result in 2 patient and a successful result in 3 patients in terms of occlusal canting. The mandibular ratio decreased from 0,95 to 0,87 after an average follow up of 7,6 years.

A good facial symmetry was achieved after surgery, but was lost in the majority of the cases at the most recent control.

#### **Conclusions:**

In patients with a congenital deformity, restoring the height of the ramus leads to an immediate restitution of facial symmetry, but in the long term there is a return to the asymmetric ratio in particular for soft tissues defect on the affected side.

### **Notes**



## Follow-up of vertical mandibular ramus distraction osteogenesis in hemifacial microsomia until the completion of growth

\*Michael Krimmel<sup>1</sup>, Margit Bacher<sup>2</sup>, Silvia Müller-Hagedorn<sup>3</sup>, Susanne Kluba<sup>1</sup>, Siegmund Reinert<sup>1</sup>

<sup>1</sup>University Hospital Tübingen, Department of Oral and Maxillofacial Surgery, Tübingen, Germany

<sup>2</sup>Private Practice, Tübingen, Germany

<sup>3</sup>University Hospital Rostock, Department of Orthodontics, Rostock, Germany

### Objectives:

In 1992 McCarthy performed the first vertical mandibular ramus distraction. Thereby he revolutionized the treatment of mandibular hypoplasia. However, in the meantime the initial euphoria has decreased significantly.

### Methods:

We report of 4 patients with unilateral hypoplasia of the mandibular ramus Pruzanski class I. All patients had an OAV (oculo-auriculo-vertebral) spectrum. Distraction osteogenesis was performed at a mean age of 16.1 years (range 12-22). An identical unidirectional and intraoral device was used with a distraction rate of 1 mm/day. The length of distraction was between 20 and 25 mm. The time of passive retention after distraction was extended to one year to prevent relapse and thereafter an orthodontic device was used to develop the maxilla downwards.

### Results:

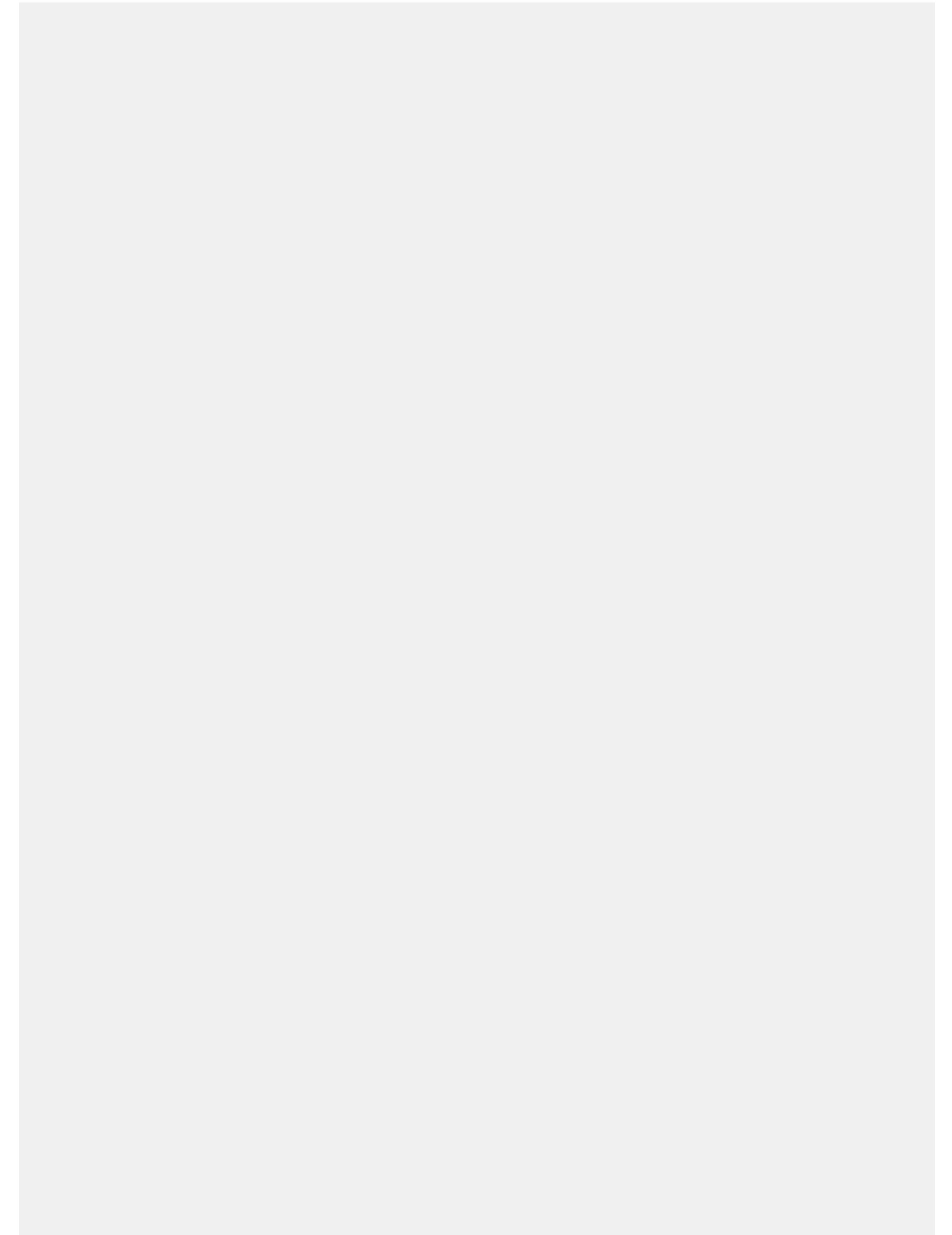
Patients were followed-up until the end of growth. The time was in mean 5.8 years (range 3.3 – 8.6).

We observed on orthopantomogram a complete relapse of the elongated ramus to its original size in comparison to the unaffected side. Fortunately this disastrous radiological result did not accord with the clinical appearance of the patients. The angle between the bipupilar line and the oral commissure improved from 7.9° to 4.6° in the long term. But the lines were far from parallel.

### Conclusions:

Despite the initial symmetry of the mandible after distraction, patients with hemifacial microsomia showed an almost complete skeletal relapse. In our opinion distraction osteogenesis in juvenile patients should therefore be indicated cautiously and only if there is severe social pressure. Later orthognathic surgery after completion of growth may be hindered severely by the burden suffered during initial surgery.

## Notes



## The Adjunctive Use of Free Fat Graft in Secondary Alveolar Cleft Bone Grafting (A Case-Control Trial)

\*Marwa Elkassaby<sup>1</sup>, Yasser Elhadidi<sup>1</sup>

<sup>1</sup>Faculty of Dentistry, Ainshams University , Oral and Maxillofacial Surgery , Cairo, Egypt

### Objectives:

Alveolar cleft grafting is considered one of the challenging procedures in the spectrum of care of patients with cleft lip and palate due to the high rate of redo. Several protocols, adjuncts and procedures were proposed to enhance healing of Alveolar Cleft Bone Grafting (ACBG). Free fat graft (FFG) is currently an attractive method used for soft tissue augmentation in the head and neck region. The aim of this presented technique is to assess the adjunctive use of FFG as a membrane material in protection and hence, success rate of ACBG.

### Methods:

Twenty-four unilateral secondary alveolar cleft cases (age 8-12; mean 9 years) were randomly divided into study group (FFG was used as an adjunctive to cover the bone graft) and control group (no adjunctive was used). In all cases the cortico-cancellous bone graft was harvested from the anterior iliac crest. During the bone harvest procedure subcutaneous fat was dissected to be used in the study group. Intra-oral sulcular incision was made; the fistula dissected and closed. The harvested bone was packed after bone decortication then the FFG was placed as a membrane over the grafted bone and the flap was closed primary without tension.

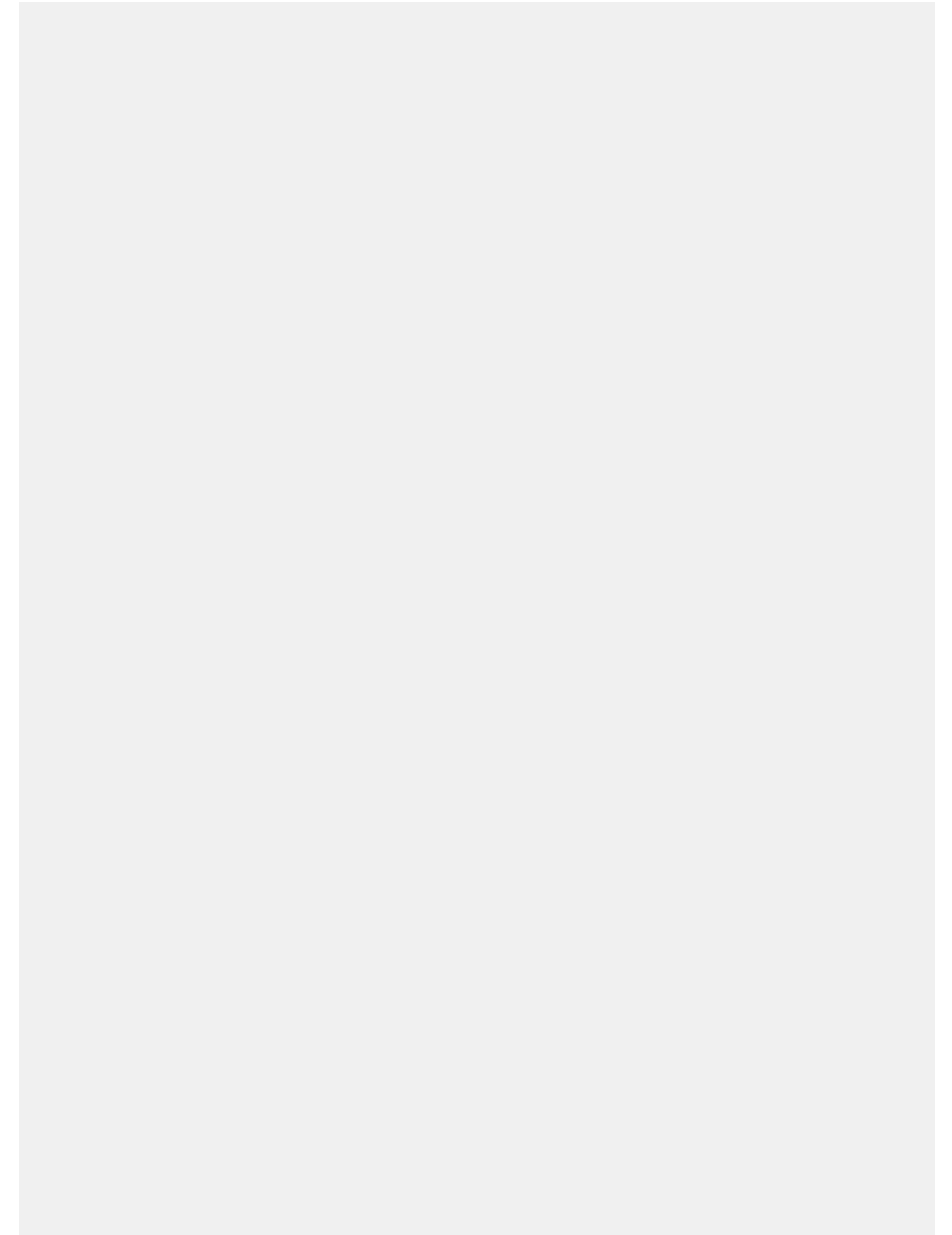
### Results:

cases were assessed clinically as regards soft tissue healing. Chi-square test was used to assess results ( $P = 0.05$ ). In the first 2 weeks; 2 cases in study group showed dehiscence (16.7 %) compared to 4 cases in control group (33.3%), there is no statistical significance ( $p= 0.78$ ). After 6 months of follow-up none of the cases in the study group showed signs of failure compared to 4 cases in the control (33%) which require re-grafting; there is no statistical significance ( $p= 0.39$ ). None of the cases managed by FFG showed signs of fluid escape from the fistula and soft tissue coverage was of normal colour with no features of inflammation.

### Conclusions:

Free fat graft offers a feasible adjunct for protection of ACBG, promotes better healing and increases rate of success of the procedure by securing the soft tissue closure over the grafted bone. The authors relate the success rate of this proposed technique to biocompatibility of the FFG and it's high Mesenchymal Stem Cell content.

## Notes





# Cleft Surgery – Concepts and Long Term Results – Part 2



### Long-term results of treatment after single stage or two stage palatoplasty

*\*Irina Fomenko<sup>1</sup>, Angela Kasatkina<sup>1</sup>, Iliia Timakov<sup>1</sup>, Diana Melnikova<sup>1</sup>, Natalia Kraevskaa<sup>1</sup>*

<sup>1</sup>Volgograd State Medical University, Children dentistry, Volgograd, Russian Federation

#### Objectives:

To compare results of multidisciplinary treatment after the two-stage or the single-stage palatoplasty in children 14-17 y.o..

#### Methods:

All children were operated in “City Clinical Hospital N° 1” and are on the orthodontic treatment in “Children’s Clinical dental clinic N°2».Patients were divided into two groups: Group 1 – two- stages palatoplasty - 33 persons;. Group 2 – single-stage palatoplasty - 32 persons.

All patients after surgical treatment were taken on orthodontic treatment. The following additional methods of research were used: biometric, X-ray,, electromyographic.

The orthodontic models measured the distance between the maxillary first premolars and molars on the side of the alveolar bone defect, and on the side where there was no defect.

#### Results:

The width of the upper jaw in the molar regions was significantly less in the children of group 1 than in the children of group 2 ( $44.6\pm 0.37\text{mm}$  vs  $47.43\pm 0.45\text{ mm}$  respectively,  $p<0.05$ ).No significant differences were found between the different parameters.

When analyzing telerradiographs significant differences were found.

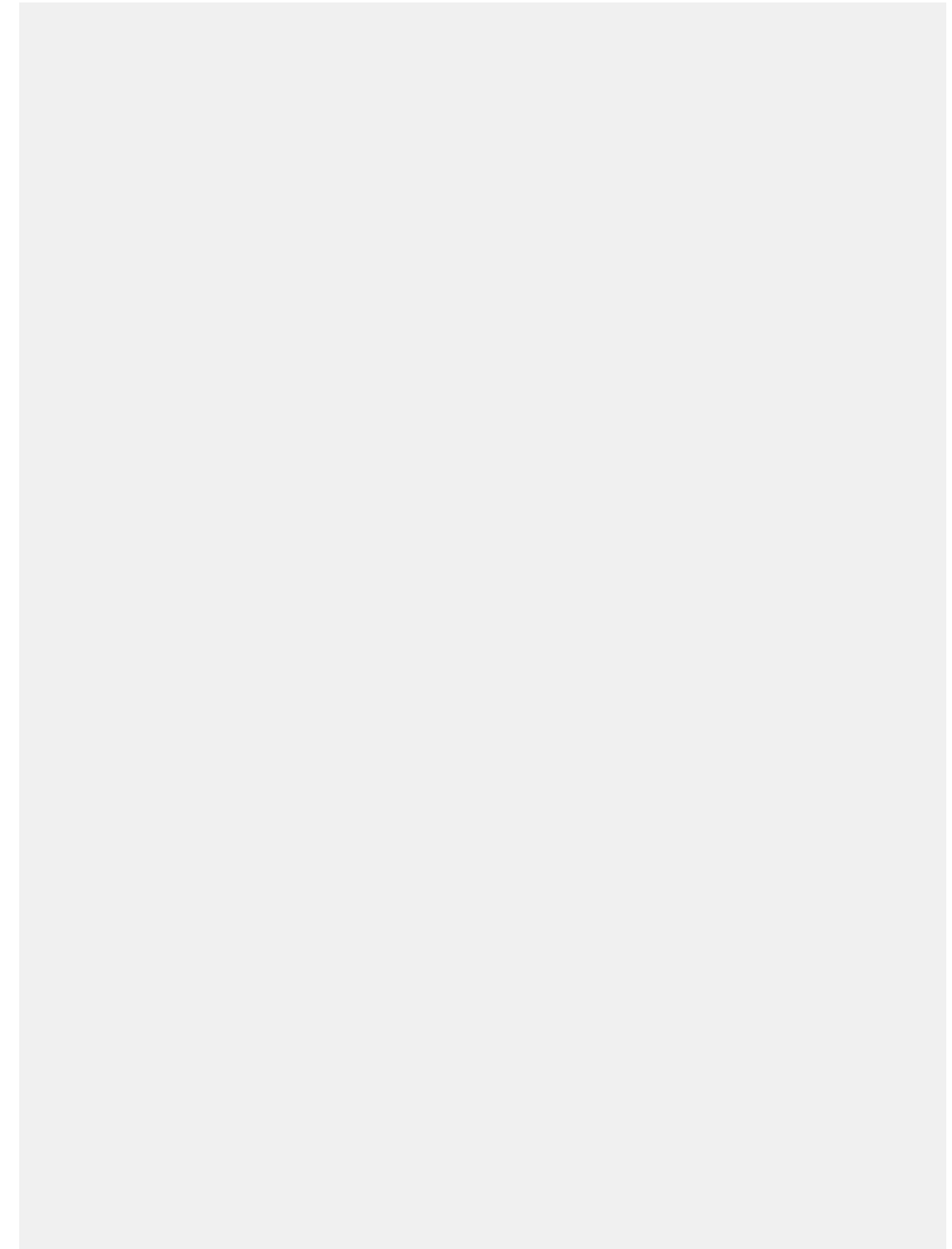
Patients in both groups were observed asymmetry in the temporal muscle. The degree of asymmetry was higher in Group 2. The maximum amplitude of the temporal muscle samples’ grip on the cleft side, “” bruxism “,” opening \ closing “was significantly higher in patients of the 2 groups.

#### Conclusions:

In the children aged of 14-17 years with the cleft palate repair the growth of the upper jaw and muscle symmetry was more harmonious after the two-stage palatoplasty than after the single-stage palatoplasty.

An integral part of the front of orthodontic treatment, diagnostic accuracy is aimed at forecasting a positive result of treatment

### Notes





## Treatment outcome in three European cleft centers with bilateral cleft lip and palate till 12 years of age

\*Theodosia Bartzela<sup>1</sup>, Christos Katsaros<sup>2</sup>, Elisabeth Rønning<sup>2,3</sup>, Sara Rizell<sup>2,3,4</sup>, Anne Marie Kuijpers\_Jagtman<sup>2,3,4,5</sup>,  
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<sup>1</sup>Center for Dental and Craniofacial Sciences, Charité - Universitätsmedizin Berlin, Berlin, Germany, Department of Orthodontics, Dentofacial Orthopedics and Pedodontics, Berlin, Germany

<sup>2</sup>University of Bern, Orthodontics, Bern, Switzerland

<sup>3</sup>University of Oslo, Department of cleft lip and palate, Oslo, Finland

<sup>4</sup>University of Gothenburg, Cleft lip and palate center, Gothenburg, Sweden

<sup>5</sup>Radboud University, Orthodontics and Craniofacial Biology, Nijmegen, Netherlands

### Objectives:

In this retrospective longitudinal study were compared and evaluated the dental arch relationships, the craniofacial morphology and soft tissue profile changes, in a large intercenter sample of patients with complete bilateral cleft lip and palate (CBCLP).

### Methods:

Three Cleft Palate Centers (Gothenburg, Nijmegen, and Oslo) which employed different treatment protocol participated in the study. 204 dental casts and 148 lateral cephalograms of patients with CBCLP from 4.5 to 13.5 years of age were evaluated. Dental arch relationships were categorized with the bilateral cleft lip and palate (BCLP)-yardstick. Increments for each interval (from 6 to 9 years, 6 to 12 years, and 9 to 12 years) were analyzed by logistic and linear regression models. 18 hard tissue and 10 soft tissue landmarks were digitized. Hard and soft tissue data were superimposed using the generalized Procrustes analysis

### Results:

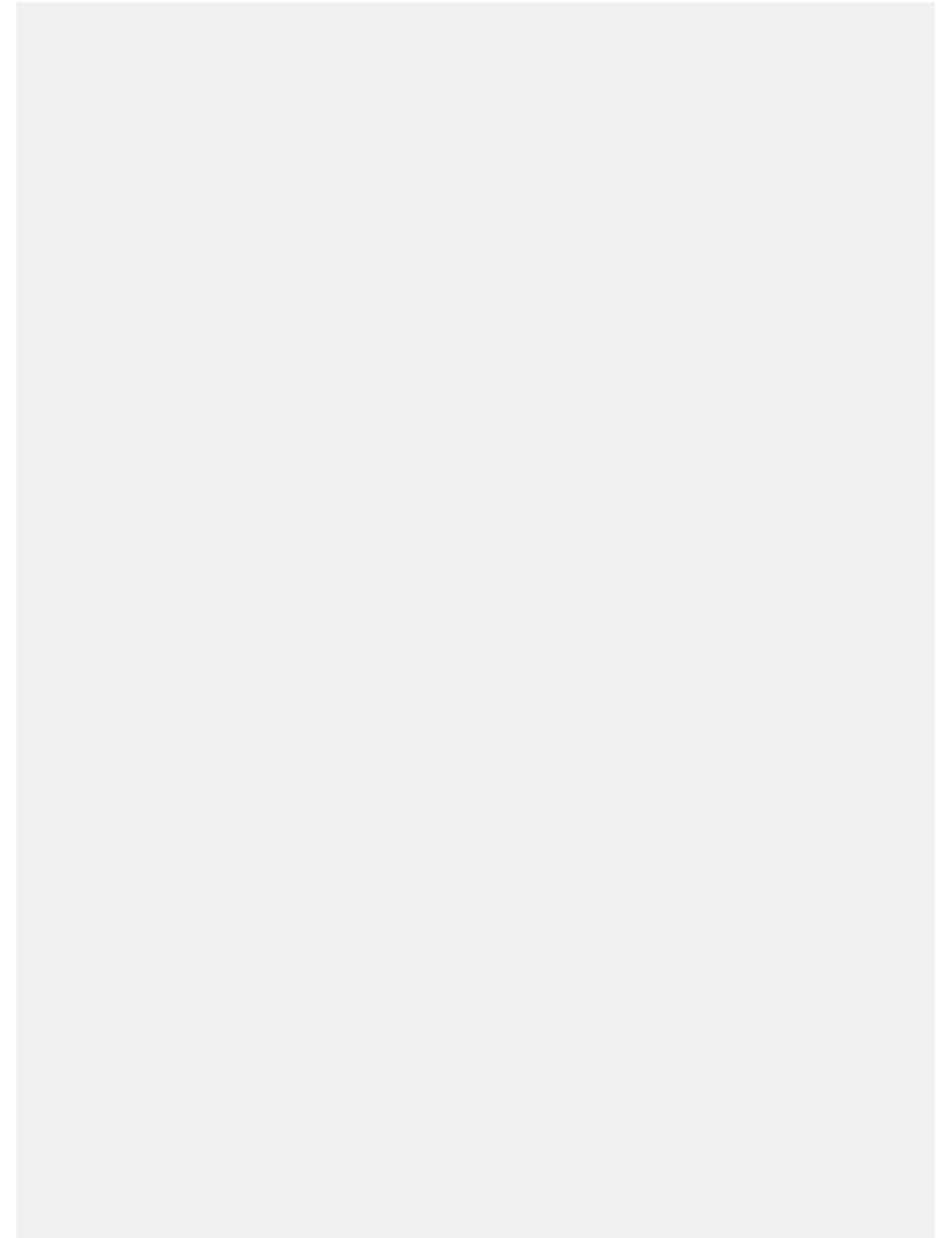
There were no significant differences in outcome of dental arch relationships between the centers at age 12 or at age 9. At age 6. Nijmegen showed significantly better results ( $p=0.027$ ) in comparison to the center of Gothenburg, but this difference diminished over time.

For Nijmegen, the increments of the variables SNA, ANB, SN-NL, SN-ML, NL-ML, Snss, and Snp<sub>g</sub> were significantly different than the two other centers ( $p=0.041$  to  $<0.001$ ). SNP<sub>g</sub> increments were significantly different between Nijmegen and Oslo ( $p=0.002$ ).

### Conclusions:

Despite different timing of interdisciplinary treatment, dental arch relationships in the three centers were comparable at age 9 and 12. The growth pattern and the maxillary and upper incisor were the variables with the main differences in craniofacial morphology until 12 years of age. Delaying hard palate closure and employing infant orthopedics did not improve the treatment outcome in the long run. Premaxillary osteotomy employed in center of Nijmegen appeared to be associated with less favorable dental arch relationship between 9 and 12 years.

## Notes





## The Role of Cleft Lip and Palate in Global Reconstructive Surgery: A Bibliometric Analysis

\*Urška Čebren<sup>1</sup>, Kevin Zuo<sup>2</sup>

<sup>1</sup>Stanford University, Divisions of Hand and Plastic Surgery, Palo Alto, United States

<sup>2</sup>University of Toronto, Division of Plastic & Reconstructive Surgery, Toronto, Canada

### Objectives:

The main objectives of this paper were to analyse the top cited articles in the field of Global Plastic Surgery to understand what portion of these is dedicated CLP surgery, as well as to understand the main trends in global plastic surgery publications.

### Methods:

We performed a literature review using the “Web of Science” search engine.

We included all articles written in English and all article types as well as all years.

The title and abstract of each citation were reviewed. Most of the reports could be excluded on that basis. The remaining articles were checked for inclusion and exclusion criteria by 2 physicians. Lastly the papers were ordered by most citation and the top 25 were selected and included in the study.

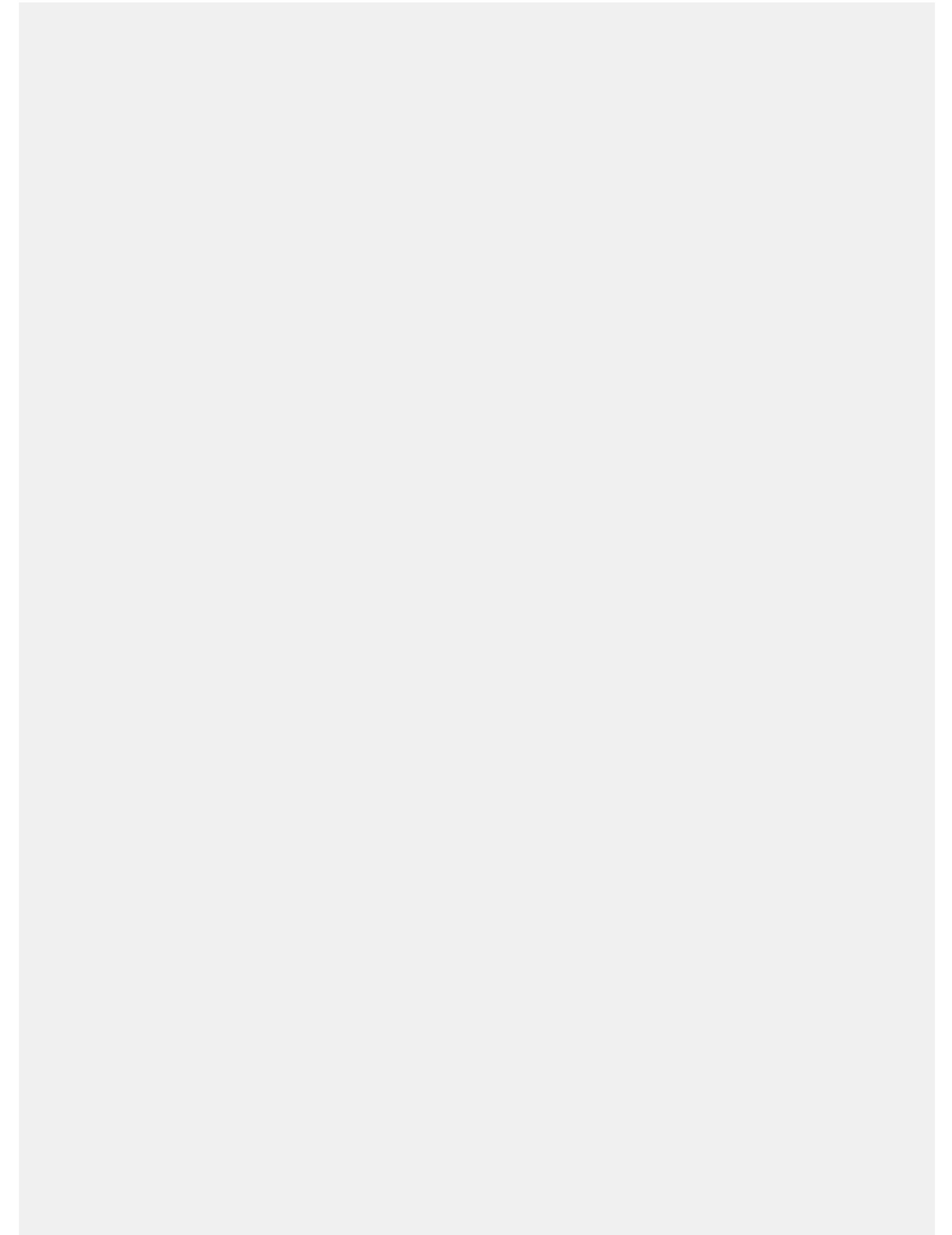
### Results:

Of the 25 papers, 16 were specifically about CLP, 7 were about other subspecialties or about general global plastic surgery and 2 papers dealt with general plastic surgery as well as CLP. The main topics of the papers were missions reports and discussions, quality of care assessments, burden of disease and the impact of surgical intervention - usually measured in Disability Adjusted Life Years (DALYs), economic analysis of missions or surgical interventions and proposed guidelines for volunteers and for surgical care in LMICs. Only 1 paper dealt with resident involvement in global plastic surgery.

### Conclusions:

The findings of our study shed light on the most cited articles in global plastic surgery, and provide a useful base for those in the field and could be used to help guide future research. Our study also highlights the importance that CLP has in this field.

## Notes



## The vomer flap in cleft palate repair: revisiting its history and showing its applicability in a group of patients treated at Hosp General de Mexico

*\*Jordi Puente-Espeñ, Maria del Carmen Moreno Alvarez<sup>1</sup>*

<sup>1</sup>Hospital General de Mexico , Plastic and Reconstructive Surgery, Mexico City, Mexico

### Objectives:

Describe the technical details associated with a vomer flap

Demonstrate the results of hard palate closure with the use of a vomer flap in patients with different types of clefts and repair performed at different ages

Explain the historical aspects involved in the design of a vomer flap

### Methods:

A retrospective chart review of 19 patients (12 M, 7 F) with cleft palate that underwent cleft palate repair and had a vomer flap in order to close the nasal layer of the anterior (hard) palate at HGM from March 2015 to November 2016. Inclusion criteria described. The patients were divided according to etiology into three groups based on Veau classification;

	<b>Group</b> Group 1 (Veau III)	<b>Group</b> Group 2 (Veau IV)	<b>Group</b> Group 3 (Veau II)
Veau	11	1	7
Age at the time of repair	Group A (<2 years) 14	Group B (2-4 years) 2	Group C (>4 years) 3
Technique used	Group alfa (von Langenbeck) 14	Group beta (VL & Bardach) 5	

as well as:

### Results:

The technical aspects, according to groups is analyzed and described carefully.

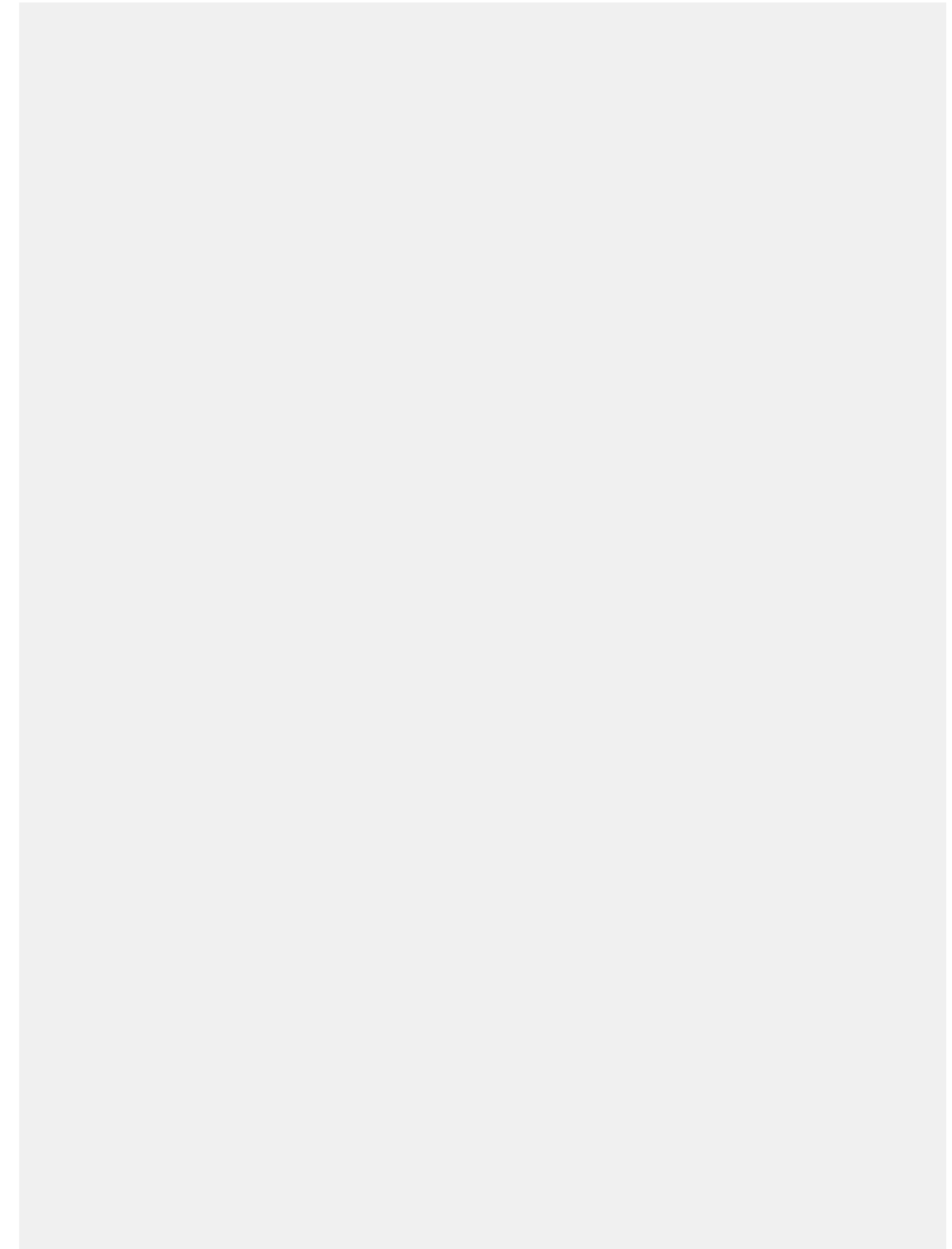
Complications encountered unrelated to surgery were two: laryngospasm in one patient, glossal swelling with prolonged admission for 1 patient. Complications related to surgery were: two anterior fistulas (behind the alveolus) and 1 fistula at the soft/hard palate junction. Intraoperative data (surgical times, bleeding, size of defect etc), in addition to demographic data (age at repair) are analyzed and presented. Complications are carefully analyzed according to the groups mentioned.

Historical data and its applicability in currently repair are discussed.

### Conclusions:

Vomer flaps constitute an invaluable tool to provide a two-layer closure for hard palate repair. Although the fistula rate in this study is in the range reported in the literature, both patients who demonstrated anterior fistulas had their repair at a delayed age, 3 years and 19 years of age, respectively; as well as presented extremely wide defects (18- 22 mm at the hard/soft palate junction). Thus, the use of vomer flaps may prove quite helpful in any cleft palate that involves the hard palate, especially in large and very anterior defects; it may be associated with a decreased fistula rate, in addition to providing a double layer closure.

## Notes





# Craniofacial Surgery



## The role of the orbital interventions in surgical management of craniosynostosis

*\*Igor Baranyuk<sup>1</sup>*

<sup>1</sup>Morozovskaya Moscow Child's Hospital, Moscow, Russian Federation

### Objectives:

The purpose of the study was to analyze the role of surgical interventions on the orbits in patients with craniosynostosis, and to estimate the impact of these interventions on the results of treatment.

### Methods:

The study was carried out by analyzing the data of 50 patients with craniosynostosis. The study included 21 patients with plagiocephaly and unilateral craniosynostosis of the coronary suture, 26 patients with trigonocephaly and metopic synostosis and 3 patients with turribrachycephaly and bilateral coronal synostosis. According to computer tomograms and intraoperative data, an analysis of the changes in the orbits area was done. All the patients underwent reconstructive cranioplasty with obligatory involvement of the frontoorbital complex in the field of operative intervention and fixation with titanium plates, which were removed in 3 months.

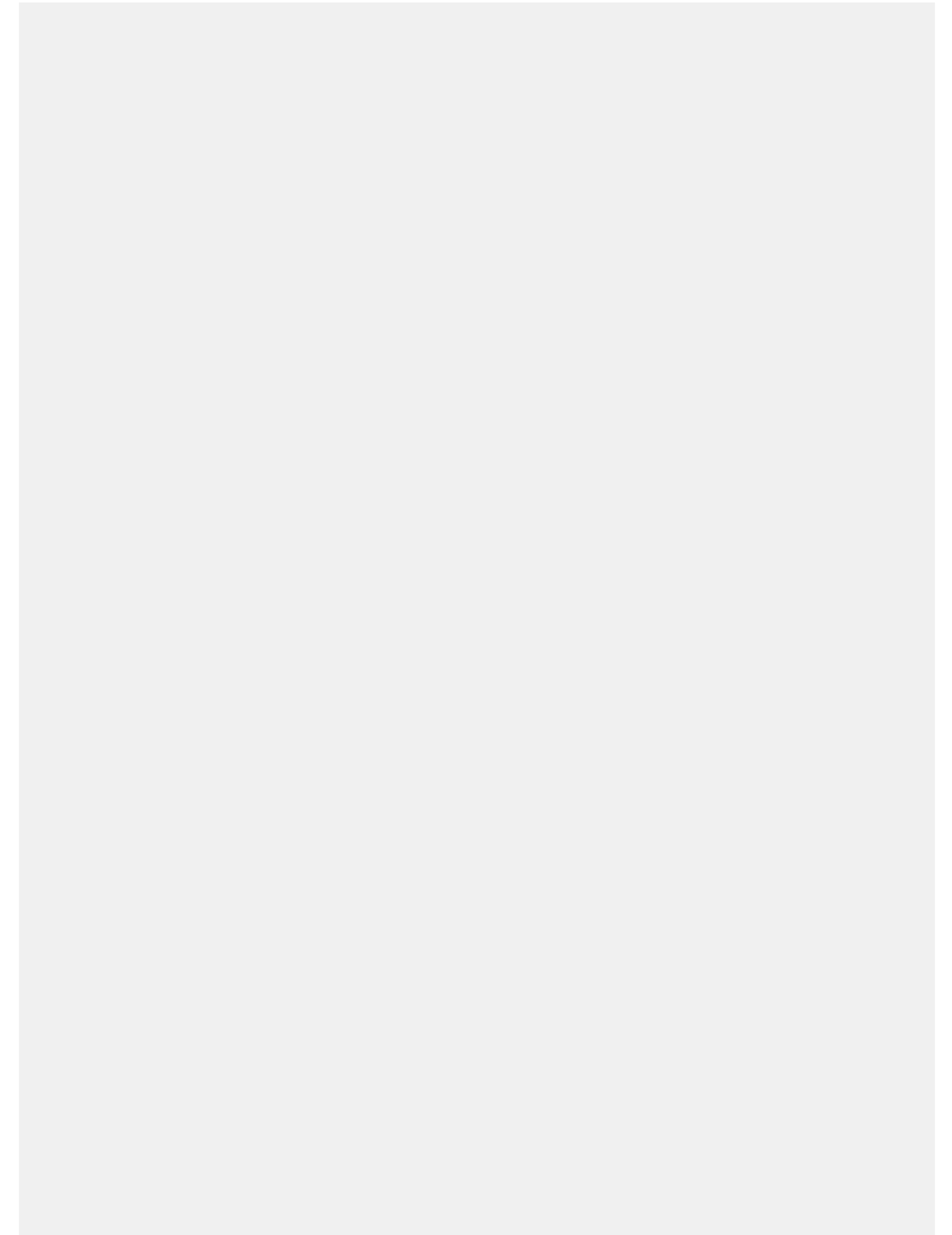
### Results:

In case of plagiocephaly, the orbit on the side of the synostosis became less deep, more elongated, shifted posteriorly beyond the vertebral margin, the orbitals acquired an open type. In case of trigonocephaly, the upper half of both orbits turned backward from the center, the orbitals acquired an open type, a triangular shape. In cases of turribrachycephaly there was a smoothing of the upper orbital margins, the lateral edges of the orbits turned out to be rearward, the orbitals acquired a shallow shape. Satisfactory results were obtained in all patients, complications are not received.

### Conclusions:

In patients with craniosynostosis, orbits are always involved in the pathological process. The exception is only some patients with an isolated synostosis of the sagittal suture. Minimally invasive techniques, such as simple biting of the suture, can not provide a change in the configuration and shape of the orbits and anterior cranial fossa. The method of choice is reconstructive cranioplasty with the involvement of the frontoorbital complex in the field of operative intervention, remodeling and movement of osteotomized fragments of the orbits.

## Notes





## The commissure position of unilateral transverse facial cleft repair: Is symmetry really possible?

\*Teng Wan<sup>1</sup>

<sup>1</sup>Shanghai 9th people's hospital, Shanghai, China

### Objectives:

Many methods have been devised to decide the position of commissure in transverse facial cleft repair. Most of them are based on the concept of symmetry, but almost all transverse facial cleft patients have asymmetrical mandibles, which means a symmetrical commissure is impossible. The purpose of this study is to determine the appropriate commissure position in transverse facial cleft repair.

### Methods:

From 2010 to 2016, 35 patients with unilateral transverse facial cleft were treated with our technique. The position of the commissure was set 2-4 mm medially according to the noncleft side commissure. Linear incision was used for skin closure. Anthropometric methods were used to measure the position of the repaired commissure immediately after surgery and at follow-up visits.

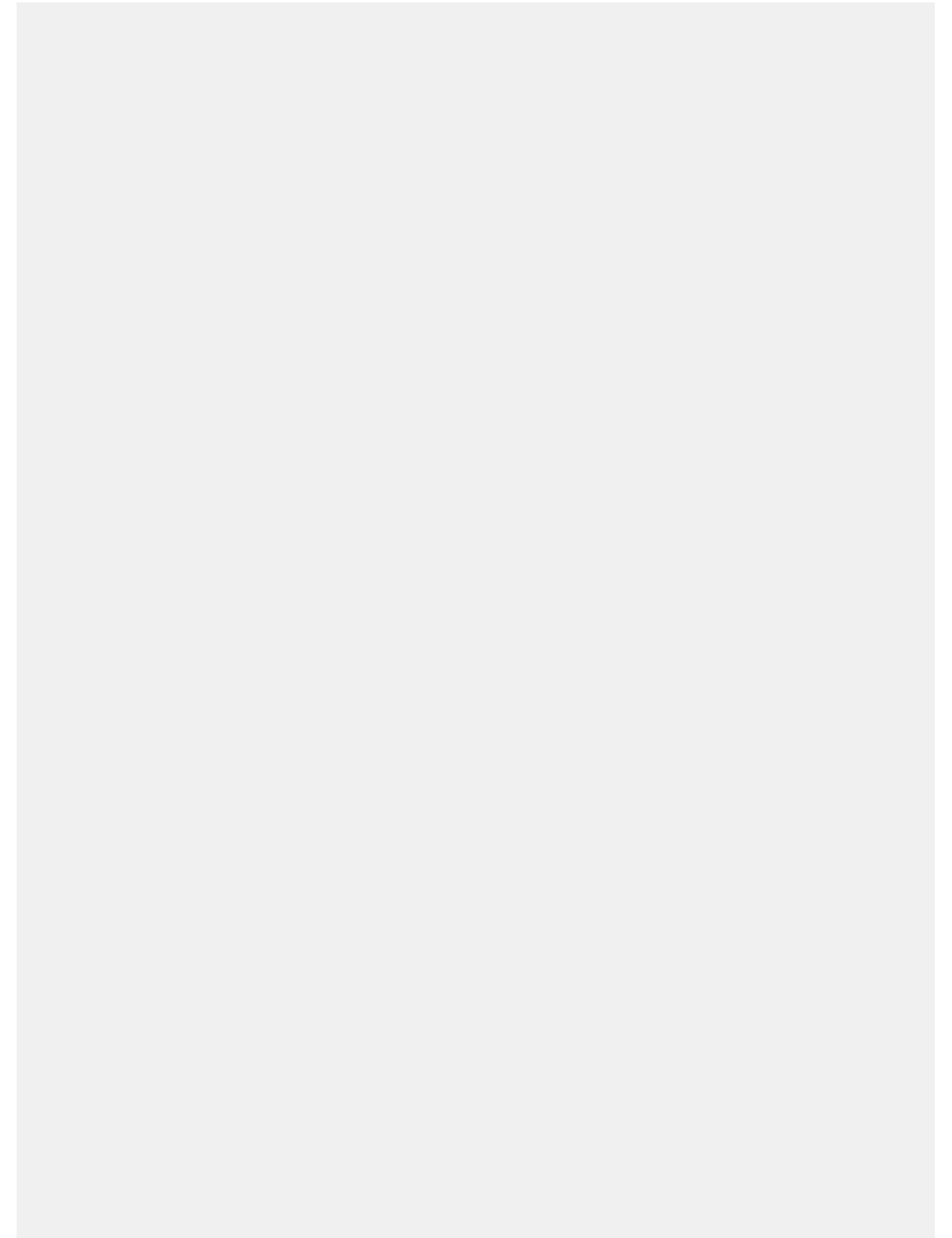
### Results:

The average follow-up period was 17 months. The mandible was asymmetrical in almost all patients. The commissure position of the cleft side was in harmonious proportion to the noncleft side after surgery. The commissure position was relatively stable at long time followup comparing to immediately after surgery.

### Conclusions:

As most transverse facial cleft have asymmetrical mandible, symmetry of commissure is almost impossible. With the commissure 2~4 mm medially moved, the commissure on the cleft side can be in harmonious proportion to the noncleft side.

## Notes





## Clinical findings and surgical management of rare facial clefts

\*Peter Sieg<sup>1</sup>

<sup>1</sup>University of Luebeck, Dept. of Maxillofacial Surgery, Lübeck, Germany

### Objectives:

The wide variation of craniofacial clefts, their complexity as well as the rarity of these conditions make classification difficult and require adjusted surgical strategies. Depending on their extension surgical treatment of facial clefts often requires a multi-step procedure. Among the different structures involved in the cleft formation the orbit and the cranial base need special consideration as in most of these cases development of encephalomeningoceles results.

### Methods:

60 children with rare facial clefts (31 female, 29 male) were evaluated according to the extension of their cleft formation and the individual surgical management. Seven out of 60 suffered from a combination of different clefts based on the Tessier classification. In 25 cases the neurocranium was involved in the cleft formation.

### Results:

Depending on the extension of the cleft formation the surgical management was based on three major requirements:(1): Establishment of normal eye-lid function to preserve visual acuity, (2): Repair of perioral structures to achieve oral competence. (3): Closure of the bony gap to the neurocranium to avoid a relapse of the encephalomeningoceles after their removal.

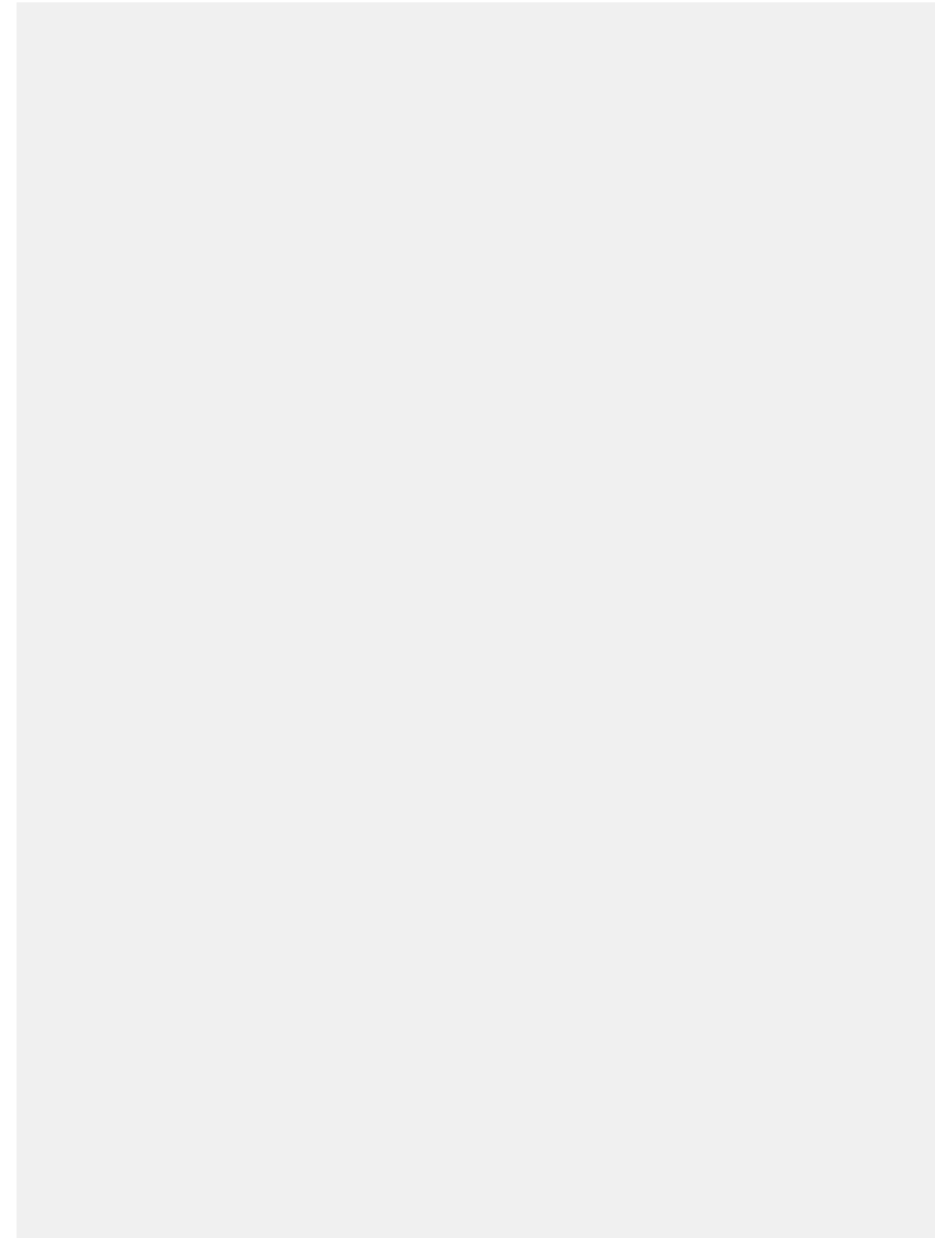
In order to deal with soft tissue deficiency local flaps, different patterns of rotation flaps were mostly used.

The decision management, technical notes as well as dealing with side effects of the surgical treatment will be presented in detail.

### Conclusions:

The presentation focuses on the clinical findings, classification and outcome after surgical treatment of rare craniofacial cleft cases. The soft tissue repair mainly aims for improvement of eyelid function and perioral repair to achieve oral competence. The surgical management allowed definitive treatment of the encephalomeningoceles and improvement of function and aesthetics

## Notes





# Secondary Corrections







## Secondary correction of the upper lip deformity

\*Niels Pausch<sup>1</sup>, Alexander Hemprich<sup>1</sup>, Dirk Halama<sup>1</sup>

<sup>1</sup>University Hospital of Leipzig, Oral and Maxillofacial Surgery, Leipzig, Germany

### Objectives:

For secondary correction of the upper lip, there is no unique, generally accepted technique. The timing of this procedure is also discussed controversial. The study was aimed to investigate, which age of patients is best for secondary lip surgery. Other studied variables were patient's gender, cleft type and combination with other secondary surgery.

### Methods:

We identified all nonsyndromic cleft patients who underwent secondary lip surgery in our unit in the period January 2000 to December 2016.

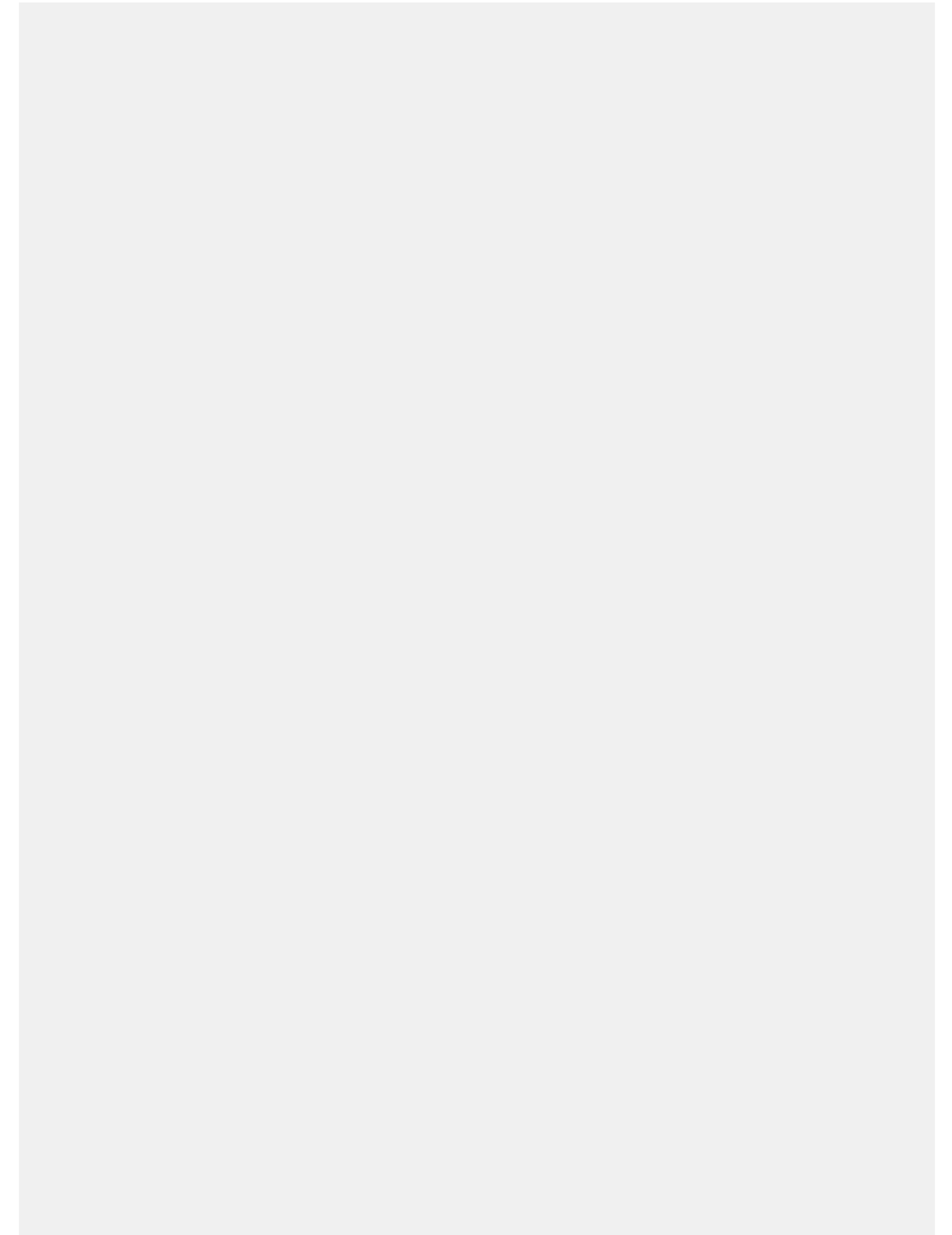
### Results:

237 cleft patients were included (94 female, 143 male; 160 with unilateral cleft lip, ucl; 77 with bilateral cleft lip, bcl) Median age of the sample was  $19.33 \pm 12.08$  years, Mean 18.0; range 1-67 years. Age at the time of the secondary lip surgery was equal for both genders (t-test,  $p=0.77$ ) and cleft types (t-test,  $p=0.70$ ). The lip correction was performed as a single operation (ucl:  $n=49$ , bcl:  $n=17$ ), in combination with a septorhinoplasty (ucl:  $n=92$ , bcl:  $n=52$ ) or combined with other procedures (ucl:  $n=10$ , bcl:  $n=5$ ).

### Conclusions:

The age summit for both genders and cleft types was about 18 years. Combined clefts often require secondary corrections; isolated cleft lip cases mostly need no further surgery.

## Notes



## The residual large or recidivous palatal defects surgery using tongues flap

\*Svetlana Gonchakova<sup>1</sup>, Dmitry Gonchakov<sup>1</sup>, Anna Vologzanina<sup>1</sup>

<sup>1</sup>Central Clinical Hospital , Paediatric Maxillofacial Department, Moscow, Russian Federation

### Objectives:

The importance of cleft palate problems is due to the high birth rate, the functional severity and of primary surgery complications. The frequency of palate defects reaches 35% -59%, the symptoms: speech, throwing food into the nose, unacceptable hygiene – are determined prompt treatment. Various surgical methods are used: palatal flaps and muscle vestibular flaps which moving into defects. But authors admit their insignificant effectiveness (50%). The use of vascularized flaps from remote donor sites and Filatov graft, has significant limitations in children's practice. Our tactic of palate defects surgery to use the tongues back.

### Methods:

During the first surgical step the inner lining of defect is formed. Taking into account the ratio of the defects sizes and the size of the palatine processes, the surrounding defect tissues to dissect, mobilize and restore. In accordance with true dimensions of the mucosal defect of the mucosa and the contractile flaps ability, a W-shaped 5-8 mm thick muscle flap on tongues back is formed with a feeding leg in the tongues tip. The flap edges fix to the hard palate mucosal edges. The duration of the inter-stage period is from 2 to 3 weeks. When the second stage of surgical treatment was performed, the feeding leg of the flap was cut off.

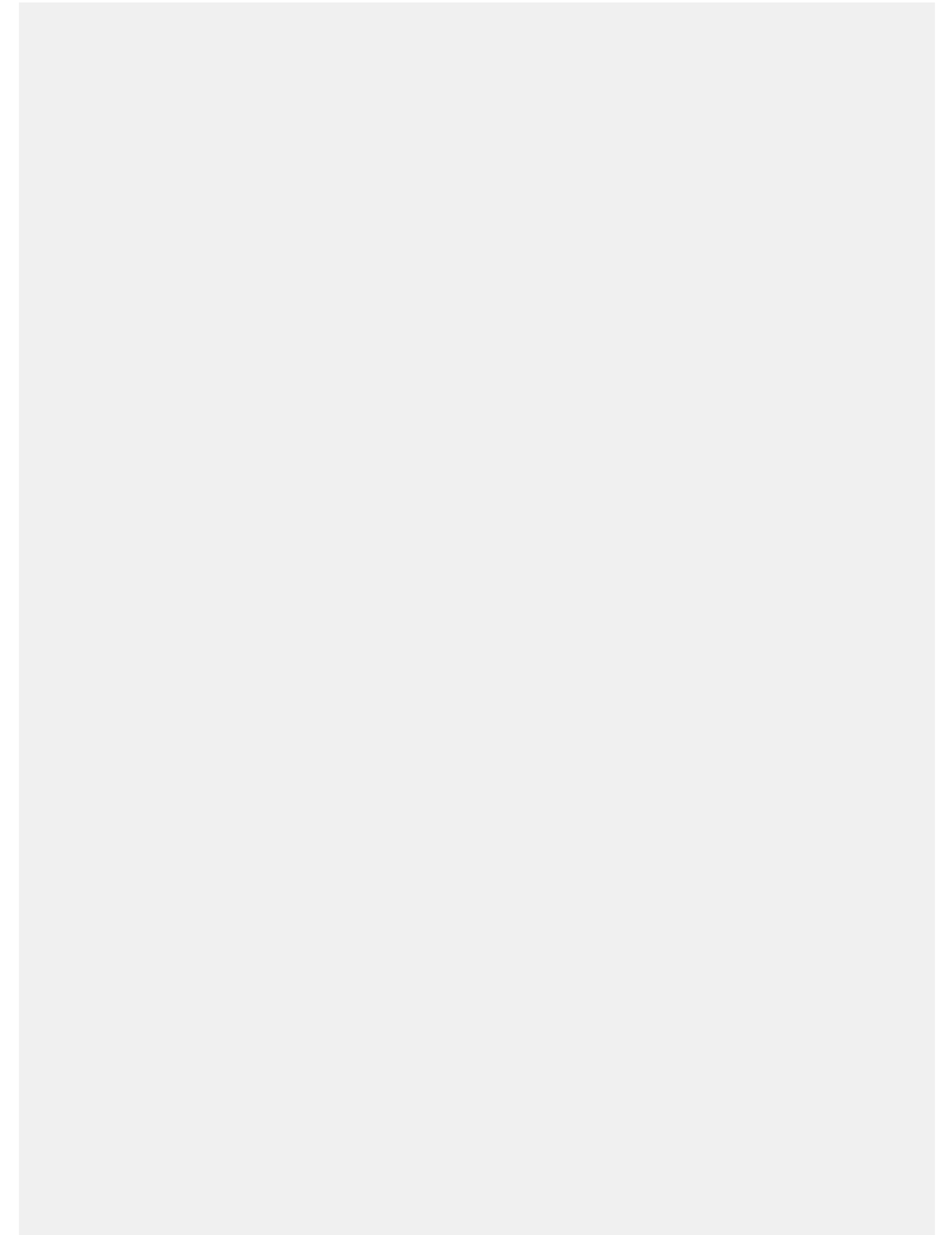
### Results:

This surgical technique was used in 153 patients (age from 5 to 18 years) with extensive and recidivous holes, with an area 1- 15 cm<sup>2</sup>. In 94.8% (145 patients) the use of this method allowed to completely replace the palatal defects. In 8 patients (5.2%) 2 weeks after surgery, the formation of narrow and small palate defects in the projection between the edges of the flap and the mucosa of the hard palate, no more than 5 mm in length and 1 mm in width, was recorded. In all cases, acceptable contours of the palatal arch are restored. Complications, deformations and functional disorders from the donor site were not noted.

### Conclusions:

Evaluating the results of the presented method, it should be noted its high efficiency. In 94.8% of patient the use of this method allowed to completely replace the defects of the hard palate, regardless of their size, localization, the original type of congenital pathology and the severity of cicatricial changes in the palate without any problems of donor site. Almost all the results of method using tongues backs flap can be assessed as satisfactory in view of the almost complete replacement of the palate defect, the absence of signs of nasal emission and the ingress of fluid and food from the oral cavity into the nasal cavity.

## Notes



## Autogenous tooth transplantation to correct hypodontia in cleft patients.

### Technical innovations and results

*\*Christin Kleye<sup>1</sup>, Cora Claussen<sup>2</sup>, Michael Ehrenfeld<sup>1</sup>*

<sup>1</sup>Klinik und Poliklinik für Mund-, Kiefer-, Gesichtschirurgie LMU München, München, Germany

<sup>2</sup>Poliklinik für Kieferorthopädie LMU, München, Germany

#### Objectives:

CLP patients frequently present with tooth agenesis predominantly in the maxilla. This complicates orthodontic treatment is one reason for maxillary growth retardation. Autogenous tooth transplantation from the mandible to the maxilla is one possibility to enlarge the number of permanent teeth in a hypodontic maxilla, but success depends on atraumatic surgical execution. The newly created recipient alveolar socket should be wide enough to accept the donor tooth without mechanical pressure to the tooth surface and the pellicle, which is sometimes difficult to establish in free-hand drilling.

#### Methods:

Material and methods. 100 extracted premolars have been measured with calipers and the metric dimensions of the tooth roots have been recorded. From this data pool three “average” sized premolar templates have been designed both for the right and left side, small, medium and large. The templates were first created in acrylic, and after proof of concept in titanium.

In clinical cases the donor tooth is first removed atraumatically. It is measured and the appropriate template is selected. The template is then used intraoperatively during the drilling process to create a new socket in the maxilla while the tooth transplant is protected.

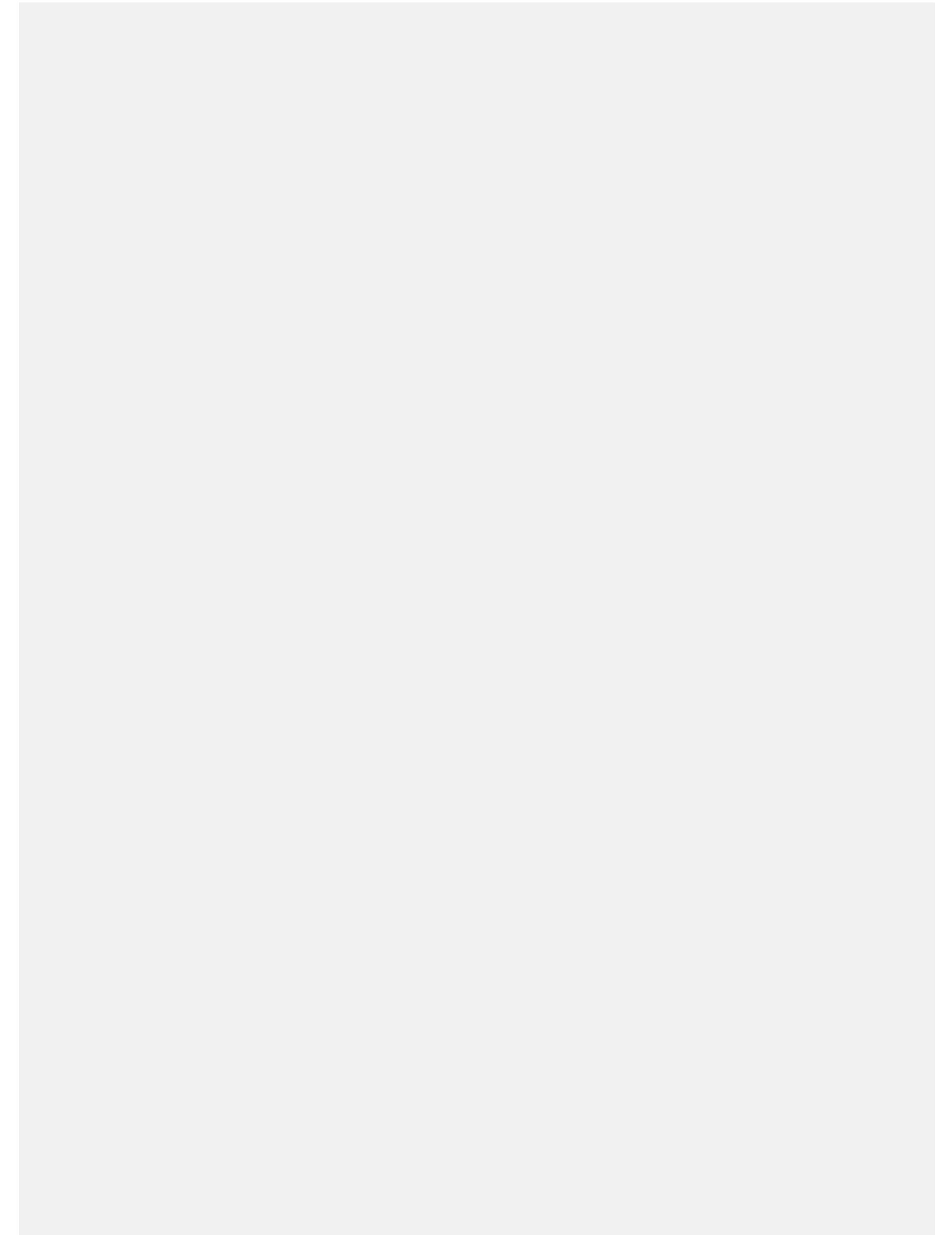
#### Results:

4 patients with CLP and hypodontia have been treated with tooth transplantation from the mandible to the maxilla, 5 teeth have been transplanted. All teeth took well, and showed sensitivity upon testing.

#### Conclusions:

The use of templates has made surgery much easier, quicker and reduces the risk of potential mechanical injury to the pellicle.

## Notes





## Buccal Pad Fat Flap in Palatoplasty

*\*Muhammad Ashraf Ganatra<sup>1</sup>*

<sup>1</sup>Dow University of Health Sciences, Dept. of Plastic Surgery, Karachi, Pakistan

### Objectives:

Most of the techniques of Palatoplasty involves raising the flaps from two lateral sides and bring them to gather in the midline, leaving the lateral area on the palatal shelf side as rawhis raw area is usually filled either by Surgical or other haemostatic material. This denude area may lead to scar formation and contraction and may cause hindrance in the growth of mid face. Coverage of this area by autologous tissue is of prime importance. In this regard Buccal Pad flap was used in our study to cover the bare bone with autologous tissue. Objective is to describe how to raise flap and insert into lateral palatal shelf gaps.

### Methods:

After the repair was complete by Two flap palatoplasty technique described by Bardach , buccal fat pad flap (BFPP) was harvested by inserting a curved iris scissor in the superior buccal sulcus just lateral to the maxillary tuberosity. This result in protrusion of the buccal fat from the hole. This fat pad flap was teased out gently and placed in the lateral palatal defect of expose bone. The lateral palatal flaps were sutured with gingival with Vicryl 4/0.

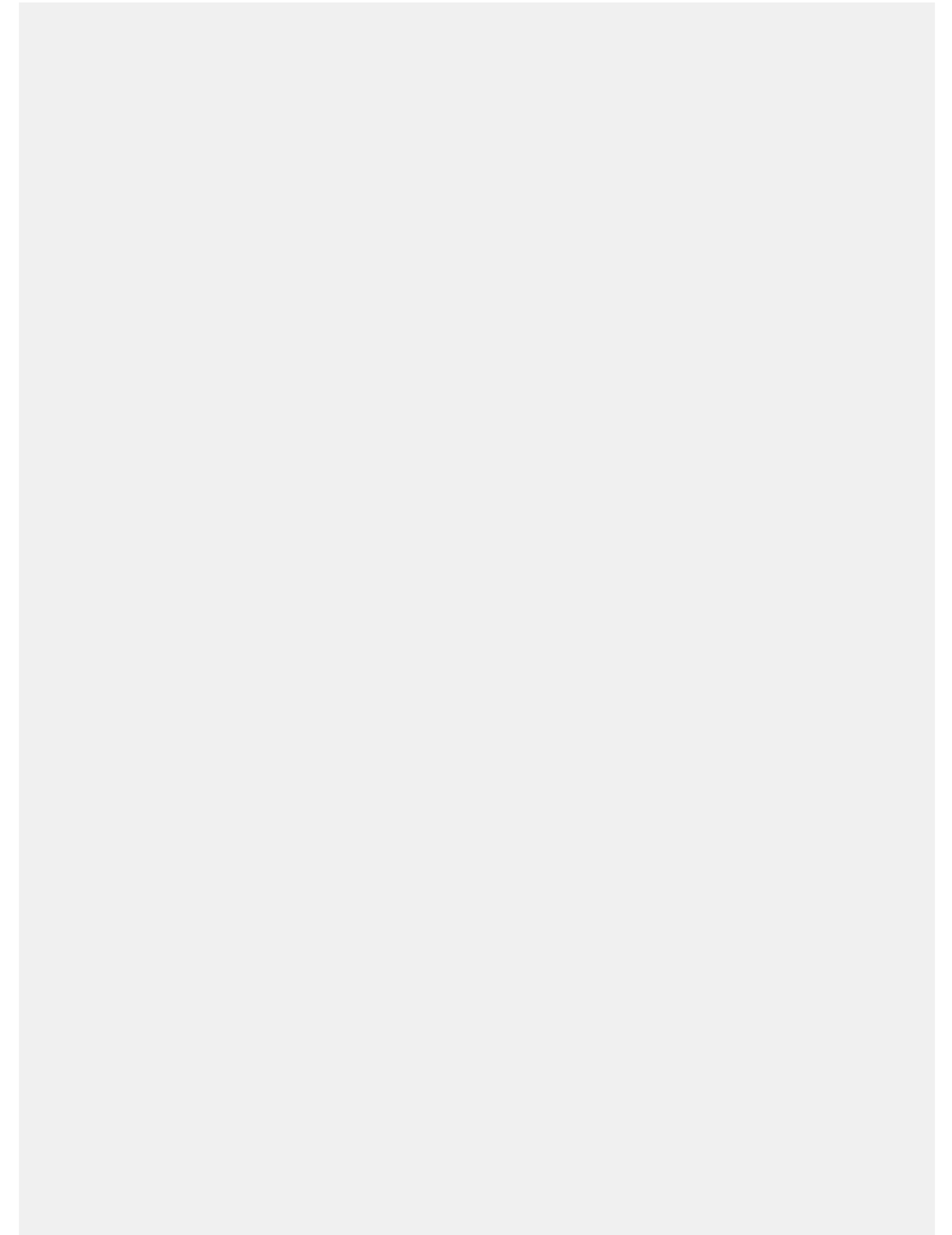
### Results:

129 patients had been operated from Jan.2015 to Dec.2017. All patients were seen at 2,4 and 12 weeks post operatively. No patients had complications related the Buccal pad flap or donor site post opeartivel. In all patients donor site epithelizes within 12 to 14 days. No patients develop post operative fistula.

### Conclusions:

Buccal fat pad flap is good addition in the armamentarium of a cleft surgeon reducing the morbidity and complication rate in cleft patients.

## Notes



## Orthognathic surgery in CLP patients by means of maxillary distraction osteogenesis

*\*Bernhard Weiland<sup>1</sup>, Dominik Haim<sup>1</sup>, Ute Botzenhart<sup>2</sup>, Günter Lauer<sup>1</sup>*

<sup>1</sup>Universitätsklinikum Carl Gustav Carus, Klinik und Poliklinik für Mund-, Kiefer- und Gesichtschirurgie, Dresden, Germany

<sup>2</sup>Universitätsklinikum, Poliklinik für Kieferorthopädie, Dresden, Germany

### Objectives:

Due to specific patterns of malformation in patients with cleft lip and palate (CLP), dysgnathia occurs as a transversal and/or sagittal deficit of the maxilla. The routine treatment of these malocclusions is a combination of orthodontic and surgical measures. Conventional surgical methods, e.g. bimaxillary osteotomies, reach their limits in CLP patients because of the scar tissue and the severe maxillary hypoplasia. This article shows possibilities of distraction osteogenesis to ease the surgical treatment of severe maxillary growth impairment.

### Methods:

Clinical cases show distraction osteogenesis with internal and external devices. Skeletal advancement, soft tissue changes and stability are the main aspects of the different methods to compare. The importance of radiologic 3-D data for surgical planning will be discussed.

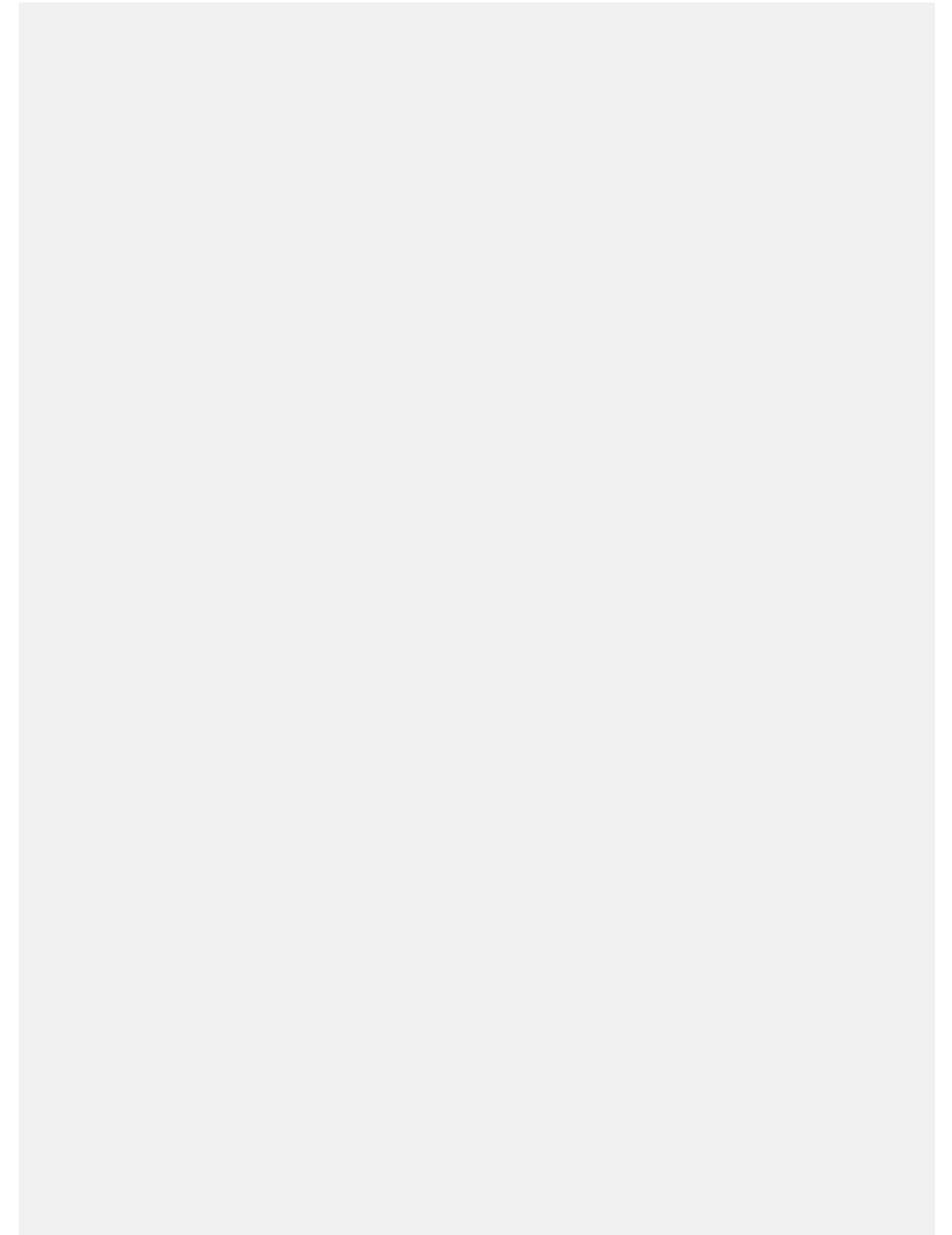
### Results:

Maxillary distraction is a preferable method to eliminate malocclusion in CLP patients. Especially intraoral devices enable a comfortable and safe distraction. Usually a mandibular osteotomy can be avoided. Computer aided 3-D surgical planning can improve the insertion procedure. After distraction, in most cases there is a need for a second correction of nasal and lip shape.

### Conclusions:

Orthognathic surgery in CLP patients by means of maxillary distraction osteogenesis is a preferable alternative to standard surgical procedures.

## Notes





## Improving results of corrections of secondary cleft lip deformities

\*Dmytro Karavanov<sup>1</sup>

<sup>1</sup>Oleksandrovsky Clinical Hospital of Kiev, Reconstructive surgery, Kiev, Ukraine

### Objectives:

In spite of the recent development in primary cleft lip and palate surgery, improving methods and techniques of primary operations, secondary deformities of the upper lip in cleft patients are still very common and many of them need a secondary surgery. However, outcome of revisions, especially in long follow-up are also not fully predictable and successful. To improve the results of secondary interventions and decreasing its number it is important to keep some key principles in planning and performing secondary procedures.

### Methods:

During 2010-2017, we operated on 38 patients (24 males and 14 females) with secondary cleft lip (21 unilateral and 17 bilateral) deformities. 26 of them already had previous revision surgery. Median age of patients was 18.3 years. Based on accurate analysis of all components of the deformities patients were divided into several groups according to dominating type of impairment: superficial aesthetic problems (n=7); functional problems (n=21); volume and tissue deficiency (n=10). Depending on the group, age and severity of deformity, an appropriate technique was chosen. Surgery wide ranged from simple scar removal to distant (Abbe) flap.

### Results:

The results were evaluated by clinical examinations, photos comparison before- and after-, patient's interview. Follow-up ranged from 1 to 7 years. In 27 patients (71.05%) we obtained significant functional and aesthetic improvement and they didn't require any future interventions; 7 patients (18.42%) had significant functional improvement, but aesthetic result was moderate; and 4 patients (10.52%) required additional surgery.

### Conclusions:

Unsuccessful outcomes of secondary operations often are result of improper analyzing and planning of surgery. To avoid that and decreasing number of interventions, one must be adhere to the some principles:

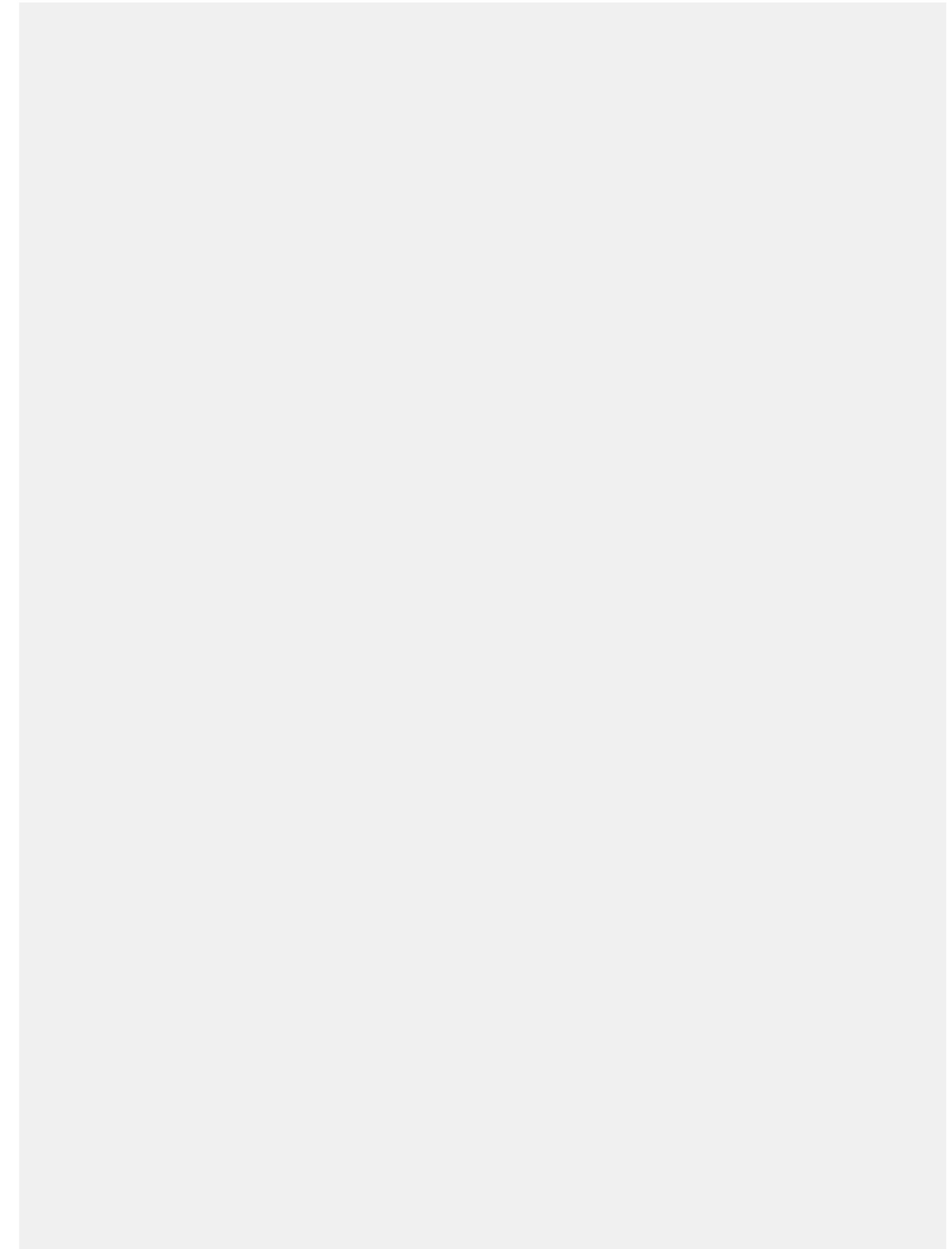
Dividing patients into groups, based on type and degree of deformity is useful for choice optimal method of correction

In early childhood one mustn't forget about time as a self-improvement factor

Early secondary, mostly aesthetic interventions could be considered only in cases with impact of facial growth and psychosocial development

In secondary surgery, precision technique and minimizing tissue excision should be a priority

## Notes





# Free Papers





## 27 years CLP volunteer missions

\*J. Thomas Lambrecht<sup>1</sup>

<sup>1</sup>UZB Basel, Basel, Switzerland

### Objectives:

The missions took place in Indonesia (1991-1992), India (1994-2003), Bhutan (2005-2010), Kenia (2011-2013), Mexico (2016) and Vietnam (2017).

They are mainly financed by the Rotary Club Basel-Riehen (Switzerland).

### Methods:

Over 1000 patients were operated, their safety had priority: at least 5 month old and 5 kilograms was the basic rule, help for self-help for the native Colleges was the purpose.

Though the surgeons were the mission leaders, this did not mean to be a hierarchy: decisions of the anaesthesiologist are equally important for the patients and success is the aim of the mission. Anaesthetical and surgical responsibilities can be defined, not only in difficult situations one helps the others.

### Results:

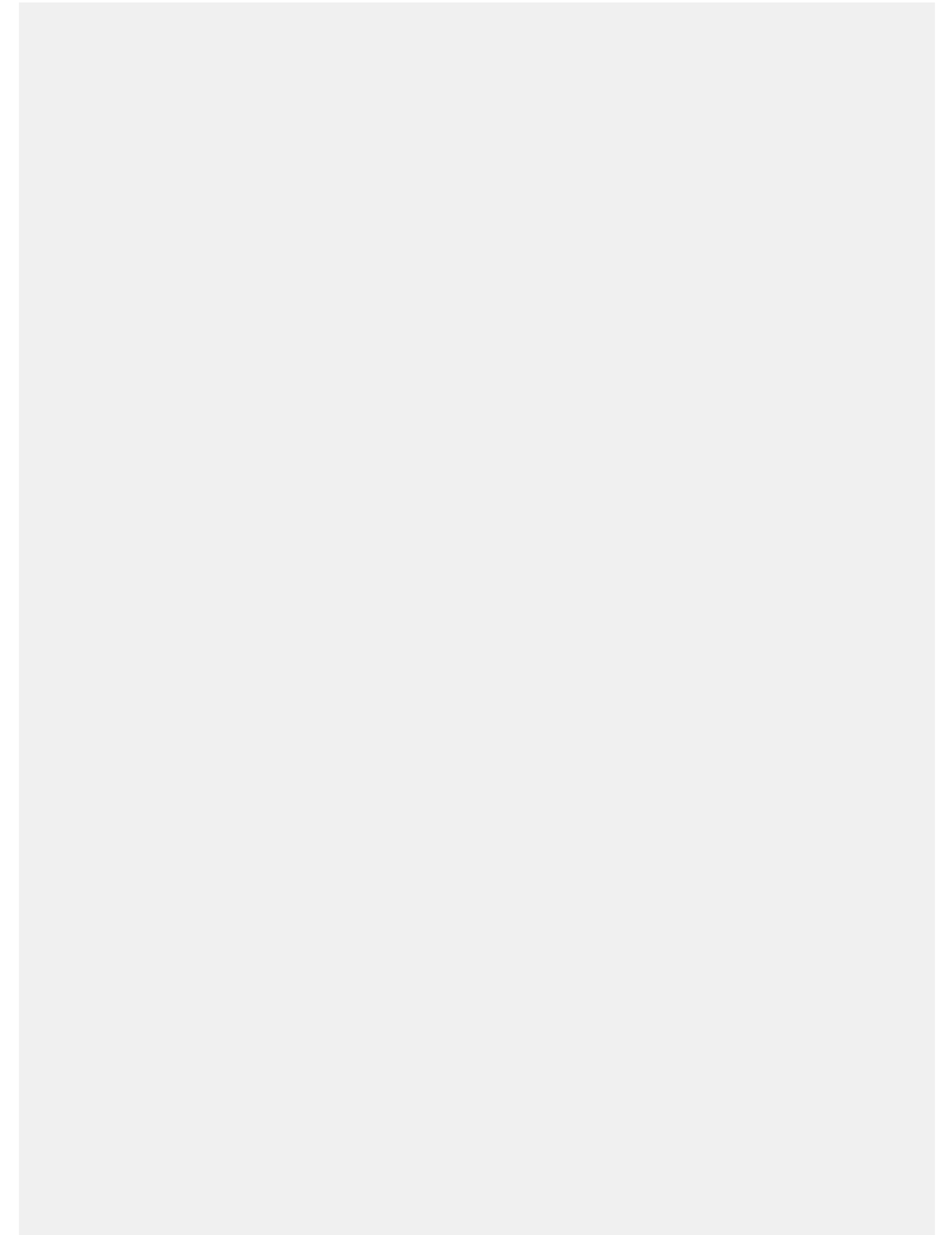
The mission preceding announcements were focused on CLP patients. Burns, trauma and tumors had second priority.

Aesthetic results were equally important as speech results. Cultural aspects influenced therapy in a certain way in the different continents, the motto therefore was: when in Rome do as the Romans do.

### Conclusions:

A health system without health politicians and health insurances can be imagined, a health system without nurses and doctors can not.

## Notes







## Afghanistan - Cleft Care in a war stricken country

\*Ulrike Lamle<sup>1,2</sup>

<sup>1</sup>Deutsche Cleft Kinderhilfe, Berlin, Germany

<sup>2</sup>Deutsche Cleft Kinderhilfe, Cleft Lip and Palate Surgery, Freiburg, Germany

### Objectives:

The objective was to train Afghan surgeons and to establish cleft centers in different cities in the country and continuously support cleft surgeries done by Afghan surgeons

### Methods:

Afghan surgeons from Faisabad, Kundus and Mazar e Sharif got continuous training in Cleft Lip and Palate Surgery in neighboring countries (Tajikistan, Pakistan and India), supported by DCKH (Deutsche Cleft Kinderhilfe)

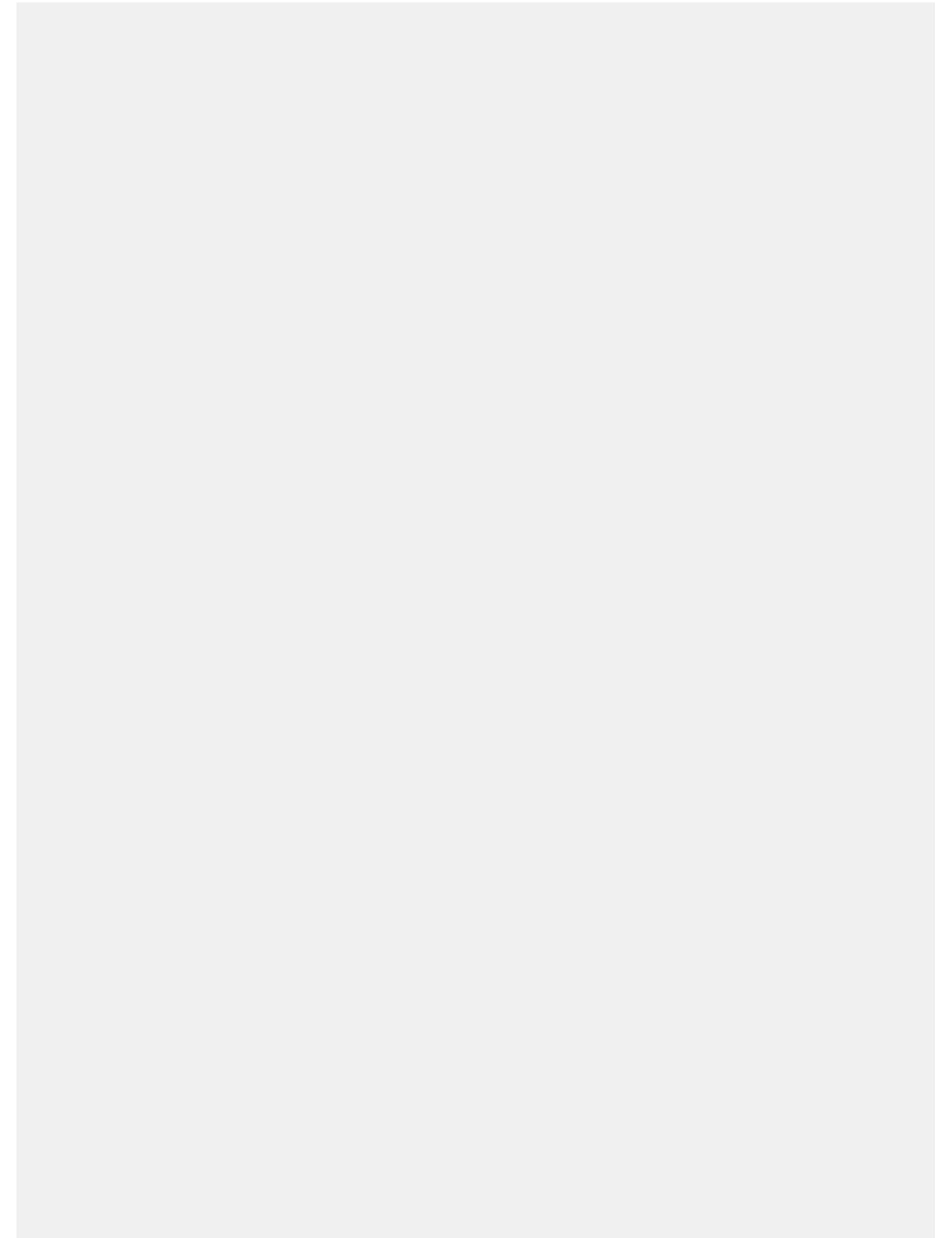
### Results:

4 Surgeons in 3 different Afghan cities got trained in Cleft surgery and are today able to continuously operate the children in their hometowns. The surgeries are supported by DCKH

### Conclusions:

Even in countries to which we don't have direct access, training programs for local surgeons can be performed and a system of cleft care can be established. The approach of DCKH, to train these surgeons in neighboring countries, where thousands of cleft surgeries are performed every year, proved to be very successful.

## Notes





## Orthognathic Considerations for the Cleft Patients

\*Xiaofeng Bai<sup>1</sup>, Qiang Liu<sup>1</sup>, Bin Zhang<sup>1</sup>, Zengjian Li<sup>1</sup>

<sup>1</sup>China Medical Univerity Stomatological Hospital, Shenyang, China

### Objectives:

Orthognathic surgery for cleft patients is different from conventional jaw corrective surgery when the blood supply and scar tissue is considered.

### Methods:

Ten years cases of jaw deformity with cleft lip/palate were retrospectively reviewed. Our experience regarding the time of surgery, flap design for maxillary advancement as well as maxilla segmentalisation was concluded.

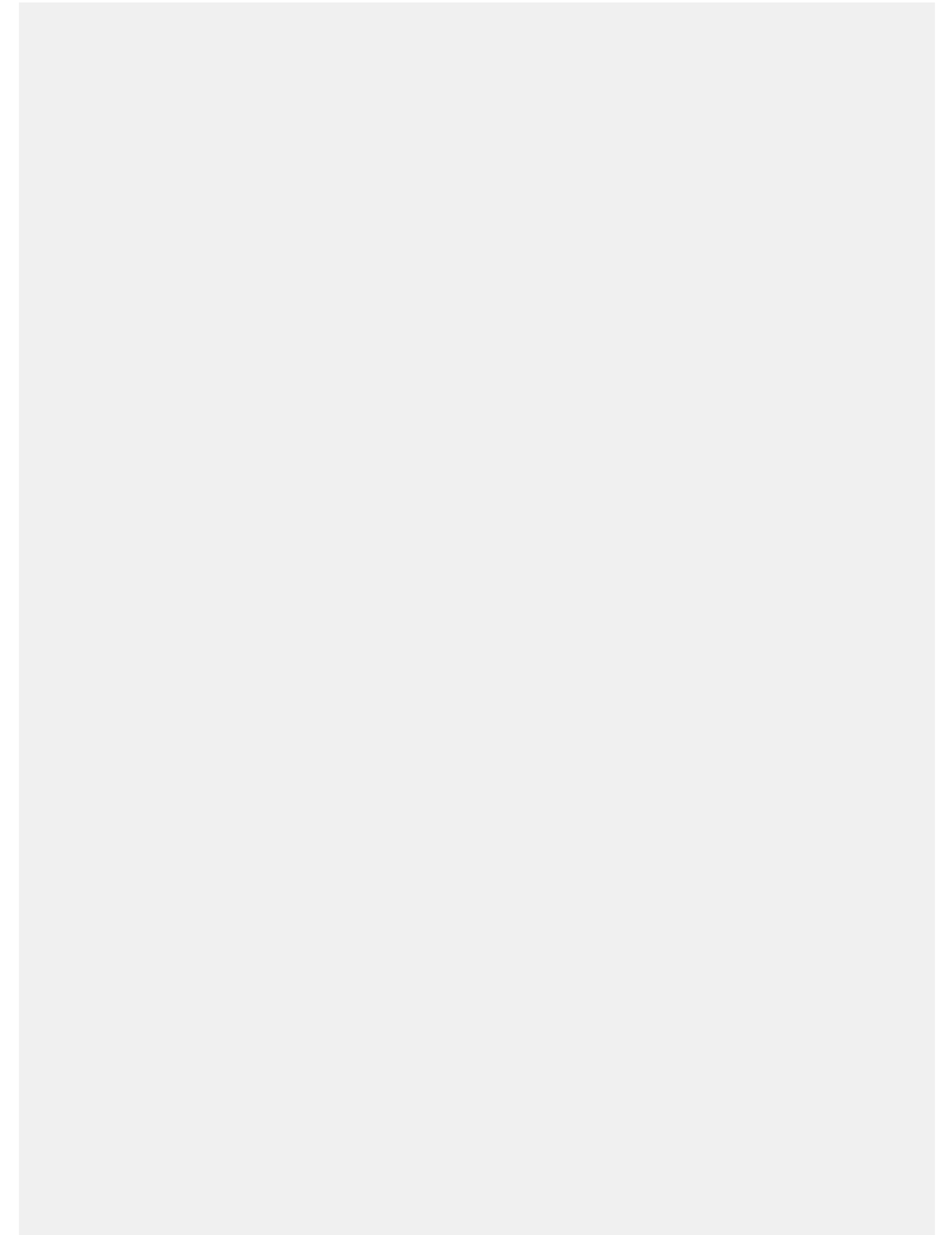
### Results:

Orthognathic surgery had been planned later in adolescence after alveolar bone grafting. Flap had been designed according to the scar tissue in the palate as following: 1.For most patients, the circumvestibular incision and a down-fracture approach is a common treatment. 2. For those with severe palatal scarring, who have previously undergone an island palatal repair, and those with bilateral clefts of the maxilla, an anterior buccal pedicle should be left on the mobilized maxilla. Segmentalisation had been taken with cautions, and in most circumstances, the transverse discrepancy had been treated by other solutions.

### Conclusions:

Based on full considerations of patients with cleft lip / palate physiologically and biologically, the risks and relapse of orthognathic management could be reduced.

## Notes



## Development of a free Perforator fat flap with minimal donor site morbidity for microvascular reconstruction of buccal fat in lateral cleft patients

\*Martha Hauschild<sup>1</sup>, Fred Podmelle<sup>1</sup>

<sup>1</sup>Universitätsmedizin Greifswald, Klinik für Mund-Kiefer-Gesichtschirurgie/Plastische Operationen, Greifswald, Germany

### Objectives:

Some facial reconstructive surgeries require fat augmentation in a bigger amount than it might be possible to achieve with free autologous fat grafting and lipofilling. In the permanently moving parts of the face allogenic transplants have their limits. For instance as the replacement of buccal fat (Bichat), we need a pure adipose flap with a soft consistence. It would be desirable to harvest a free fat flap with minimal or without donor site morbidity and without aesthetic limitation among others in lateral cleft patients.

### Methods:

In one patient with an unilateral hemifacial cleft who desired the restoring of the buccal fat on that hollow cheeked side, we developed an endoscopically assisted fat tissue flap. We implanted an individualized expander via facelift incision 3 month previous microsurgery. The surgical approach on the harvest side was given by a pre-existing scar. The flap was attached to a facial artery and two veins. The stability of the fat tissue was controlled 12 and 24 month postoperatively with MRI and Ultrasound. The aesthetic results of the harvesting area and the facial area were following up by photographs and 3D facial scanner.

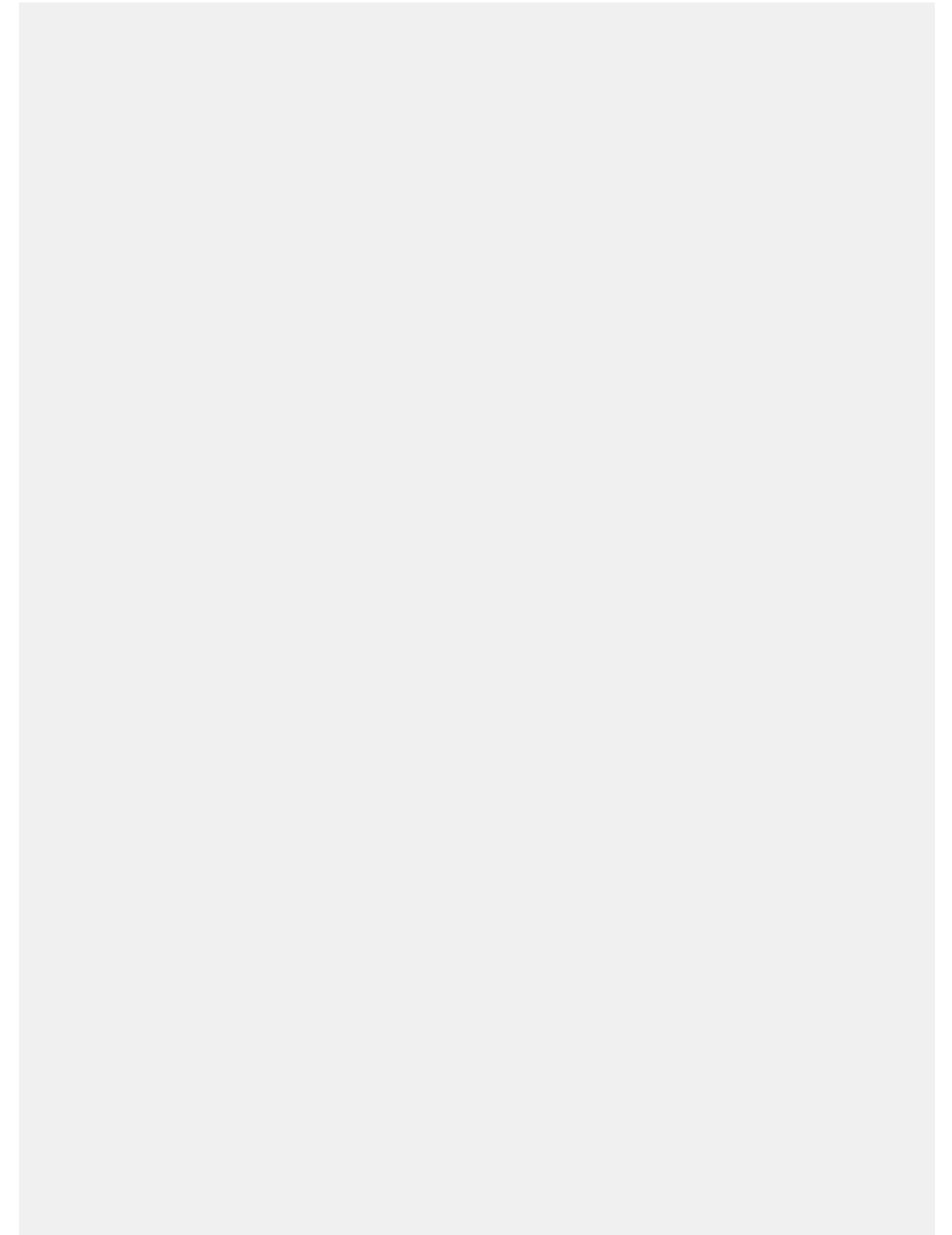
### Results:

The flap can be harvested in a standard abdominoplastic procedure with achievable aesthetic improvement as it has already been established in reconstructive breast surgery. In that clinical case with unilateral facial cleft, we were able to reconstruct the buccal fat pad. The hollow side was precautionary slightly overcorrected and showed a volume lost from about 15 to 20 % within one year postoperatively. We found a stabile result in the photographs and 3D facial scans at the present moment 30 month postoperatively. There were no aesthetic or functional limitations on the donor side. The volume lost here is indistinguishable.

### Conclusions:

The deep inferior epigastric artery perforator flap harvested as a part of a minimal invasive abdominoplastic procedure and using an incision well hidden within the bikini zone is an attractive surgical option for volume restoration of the face in cases exceeding the possibilities of free autologous fat grafting, lipofilling and allogenic implants.

## Notes





## Comparison of general laryngoscope and visual laryngoscope in children with cleft lip and palate

\*Yu Feng Zhang<sup>1</sup>

<sup>1</sup>Beijing Smileangel Children's Hospital, Beijing, China

### Objectives:

To compare the effectivity and safety of visual laryngoscope and ordinary laryngoscope in children with cleft lip and palate surgery.

### Methods:

100 children undergoing selective cleft lip and palate surgery, ASA - , age from 3 months to 20 months, weight 5.0kg~15.0kg were randomly divided into two groups, the M group and the C group. Both of the two groups were given the general anesthesia. The M group used ordinary laryngoscope, V group using visual laryngoscope, recorded the number of initial intubation successful, the intubation time, and the tissue injuries of mouth and throat.

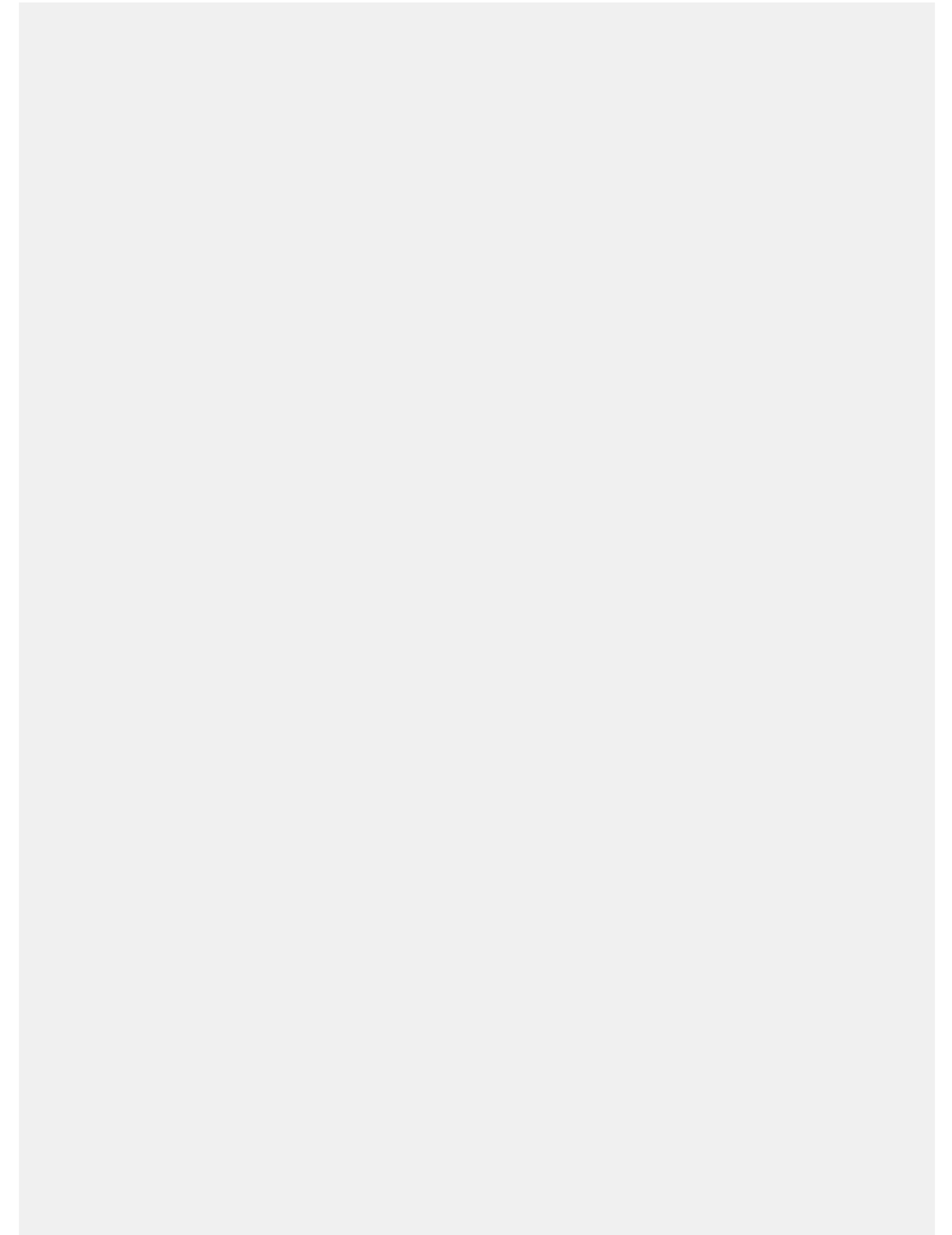
### Results:

The Initial intubation success rate V group 48/50 96%, M group 40/50 90%,  $P>0.05$ , the two groups were not statistically significantly different. The intubation time V group  $32\pm 12s$ , M group  $25\pm 10s$ ,  $P<0.05$ , the difference was statistically significant. The tissue injuries V group 0/50 0%, M group 5/50 12%,  $P<0.05$ , the difference was statistically significant.

### Conclusions:

Compared with the ordinary laryngoscope, the visual laryngoscope throat has a better view and the tissue damage is less. It is more safe and effective. Although the time of intubation is longer, there is no clinical significance.

## Notes



## Management of facial deformities in children with consequences of infantile hemangioma treatment

\*Anna Denis<sup>1,2</sup>, Ivan Abushkin<sup>3</sup>, Igor Vasilyev<sup>4</sup>, Viacheslav Vasilyev<sup>4</sup>, Olga Gavrilova<sup>2</sup>

<sup>1</sup>Children's Regional Clinical Hospital of Tver, Tver, Russian Federation

<sup>2</sup>Tver State Medical University, Department of Pediatric Dentistry and Orthodontics, Tver, Russian Federation

<sup>3</sup>Laser medical technology center, Chelyabinsk, Russian Federation

<sup>4</sup>South Ural State Medical University Ural State Medical University, Department of Plastic Surgery, Chelyabinsk, Russian Federation

### Objectives:

Background: Aggressive treatment of infantile hemangioma (IH) may lead to scarring and deformity of face vital strictures (lips, nose, ear, lids). There are number of methods to solve these aesthetic and functional problems. Fat grafting is a very effective method of treatment of scars and contour deformities in adults, but not widespread in pediatric surgery.

The objective of this article is to show efficacy and safety of fat grafting in correction of facial scars and deformities of the face in children after IH treatment.

### Methods:

Six patients (five girls and one boy) were treated with fat grafting between 2014 and 2017 in Tver state hospital and Chelyabinsk medical laser center. The locations of treatment were: lips (4 patients, 66,66%), forehead (1 patient, 16,67%) and nose (1 patient, 16,67%). Combination with other reconstructive procedures was performed in two children. The amount of transferred fat was from 3 to 7 ml for one session. 20 fat grafting procedures was done in 6 patients. Median follow up was 11 month.

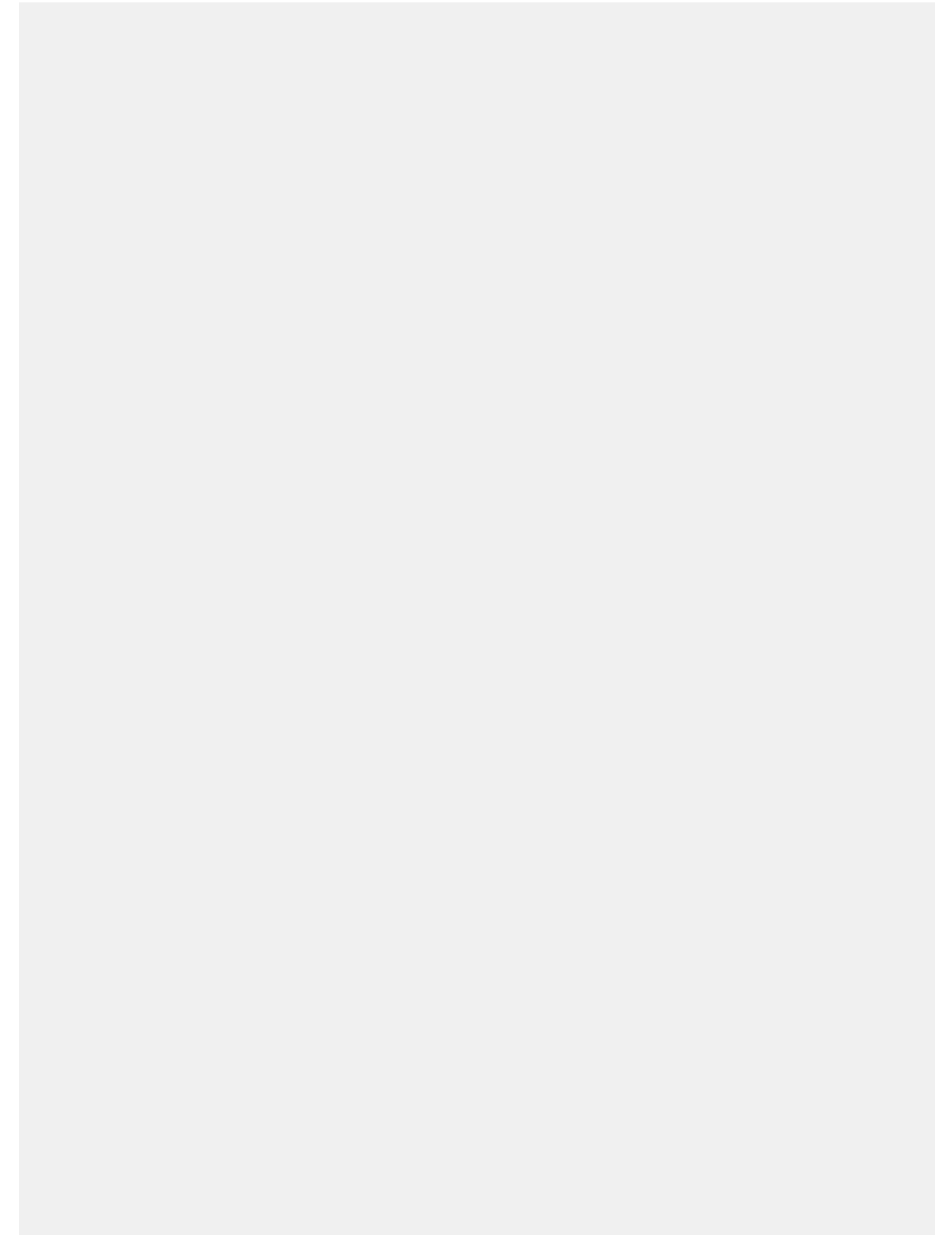
### Results:

In all cases we achieved required results. The volume and red border of lips were reconstructed well. Improvement of scars after fat grafting was obvious. We did not reveal any complications and side effects after fat grafting procedures.

### Conclusions:

Transplantation of autologous fat tissue in combination with other reconstructive procedures is a very effective tool in treatment scars and soft tissue deformities of the face in patients after IH treatment.

## Notes





# Poster Session I: Maxillofacial Surgery I



**P1-01****The primary and secondary bilateral cleft lip surgery**

*\*Svetlana Gonchakova<sup>1</sup>, Gennady Gonchakov<sup>1</sup>*

<sup>1</sup>Central Clinical Hospital , Paediatric Maxillofacial Department, Moscow, Russian Federation

**Objectives:**

The efficiency of bilateral clefts lip surgery is one of the notable problems of maxillofacial pediatric surgery. The importance of the problem is caused both by the initial degree of severity of deformation of the middle zone of the face, and by the insufficient effectiveness of the proposed operational techniques. At the same time, early and complete restoration of the facial contours remains an important stage in the treatment of these patients. The aesthetic attractiveness and symmetry of the upper lip and nose is due to the anatomically correct position of all of its components, including the nasolabial muscles and nasal cartilages.

**Methods:**

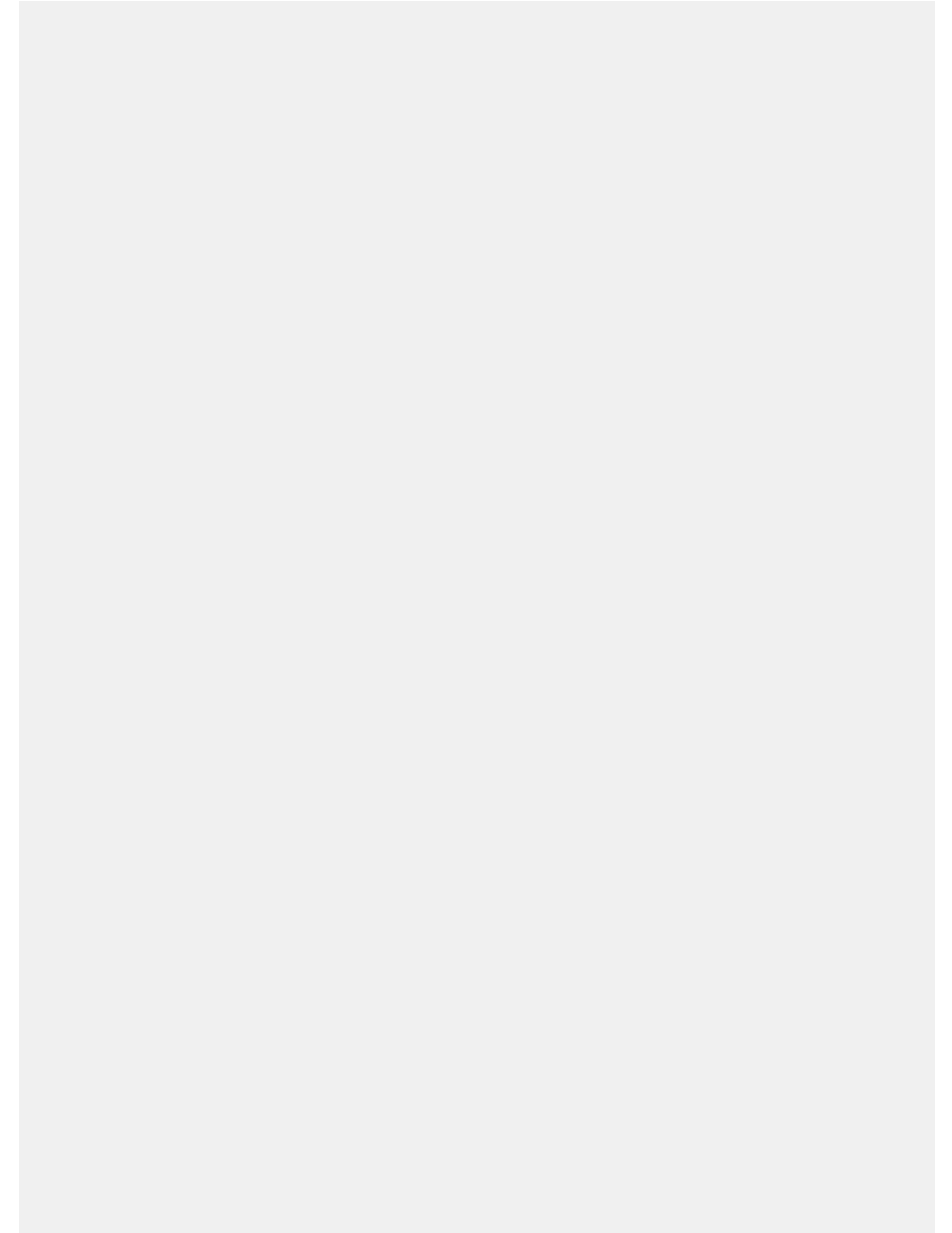
Based on the Millard method and the normal and cleft lip nasolabial, the technique of functional bilateral simultaneous lip-nose surgery was developed, which we use at the age of 3-4 months. The subperiosteal mobilization of upper lip and cheeks tissues along the anterior maxillas surface and the pyriformes aperture edges and the nasolabial muscles reconstruction of the continuity and correct position is performed. For patients after primary surgery the similar technique is used at the age of 5-6 years. Along with restoring the facial musculature position and continuity, rhinoplasty is done, with the modeling of noses cartilages.

**Results:**

The assessment of this approaches effectiveness is included such parameters as: the general appearance of the face, the shape of the nose, nasal, the shape of the upper lip, the profile of the face and the condition of the scar, as well as the orthodontic (biometric examination of jaw models) and radiological examination of patients (CT 3D). For 15 years, this technique has been used in more than 458 patients with different types of bilateral cleft lip. Terms of observation are 6 monthes-10 years. In all cases, stable good (86%) and satisfactory (14%) functional and cosmetic results were obtained for all the parameters studied.

**Conclusions:**

The method using principles of scars anatomically position, muscles subperiosteal mobilization and reconstruction and noses cartilages modeling makes it possible to recreate the natural lip and nose. The pressure of the restored orbicularis oris muscle after the operation eliminates the displacement of the intermaxillary fragment and lateral fragments of the maxilla. In asymmetric forms of bilateral defects, the use of this approach from a technical point of view allows to completely eliminate vertical disbalance of muscles and skeletal elements and achieve a symmetrical position of all cutaneous anatomical landmarks.

**Notes**



**P1-02**

**Unilateral microform cleft lip repair through three mucosal incisions in Chinese adult patients**

*\*Yongqian Wang<sup>1</sup>, Ningbei Yin<sup>1</sup>*

<sup>1</sup>Plastic Surgery Hospital, Peking Union Medical College, Center for Cleft lip and palate repair, Beijing, China

**Objectives:**

In microform cleft lip repair, the traditional surgical method applies upper lip external incision, finally leading to a scar on the upper lip. The scar might be obvious in colored race because of hyperplasia. We describe a new technique of unilateral microform cleft lip repair through intraoral and intranasal incisions in Chinese adult patients.

**Methods:**

According to the shape of Cupid's bow, a different small incision is used without creating an obvious cutaneous scar. A vertical incision is made on the mucosa in the oral cavity against the infused gap of the muscle. Another vertical incision was made on the nasal floor. The anatomical structure could be exposed clearly through the intraoral and intranasal incisions. First, the nasolabial muscle around the nasal floor is reconstructed and then the orbicularis oris muscle around the philtrum is reconstructed.

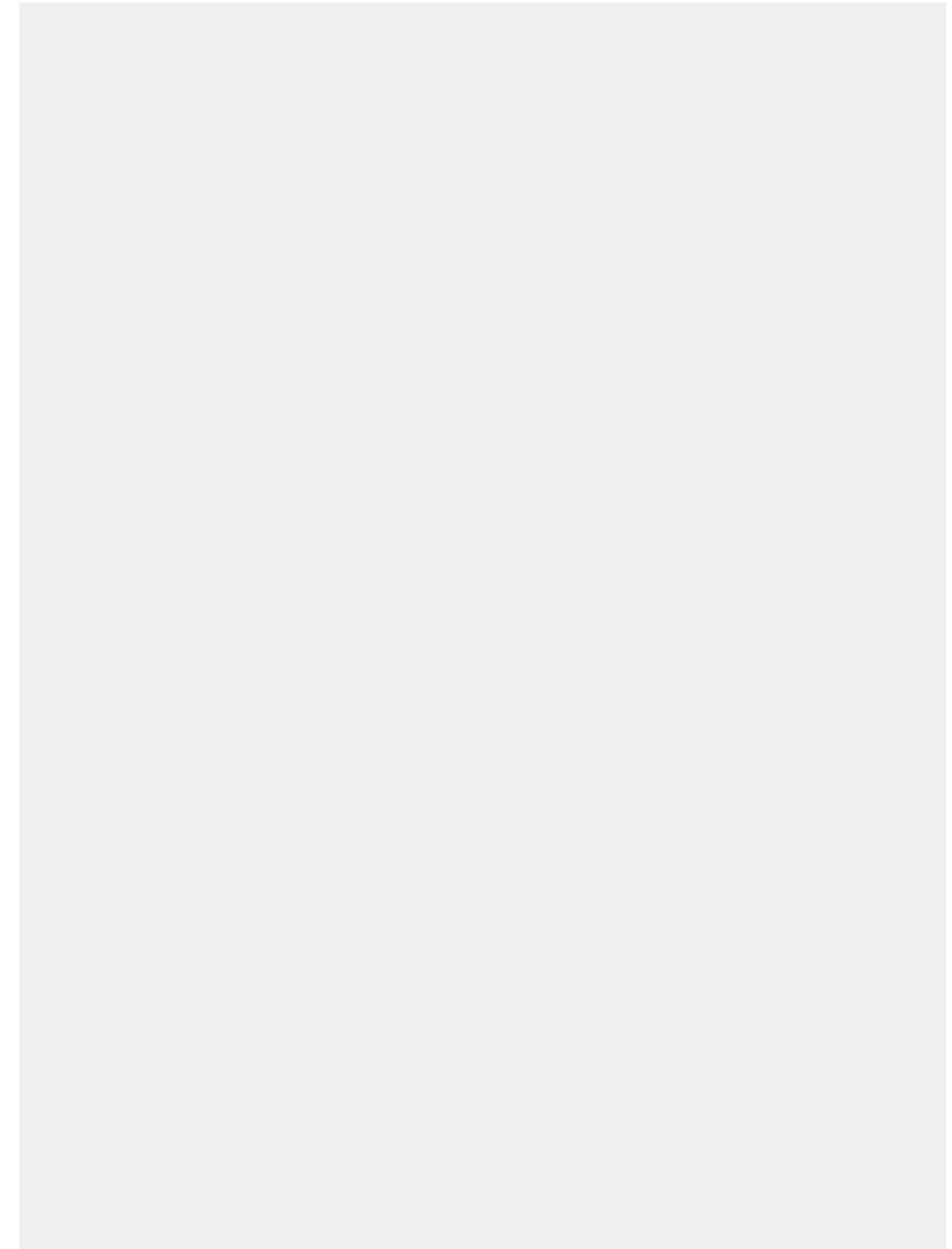
**Results:**

From March 2011 to March 2017, the technique was used in 35 unilateral microform cleft lip repairs. All the patients were followed up for 12 to 36 months. The appearance of the nose, philtrum, and Cupid's bow peak improved. 32 patients had a satisfactory appearance. The nasal alar relapsed in 3 patients.

**Conclusions:**

The orbicularis muscle of mouth could be reconstructed through intraoral and intranasal incisions. The shape of the nose, Cupid's bow and philtrum could be restored without traditional skin incision.

**Notes**







**P1-03**

**Two cases of oral synechia with cleft palate**

*\*Yuumi Lee<sup>1</sup>, Kouichi Ueda<sup>2</sup>, Ryoma Touuchi<sup>1</sup>, Yuka Hirota<sup>2</sup>*

<sup>1</sup>Social Welfare Organization Saiseikai Imperial Gift Foundation, Inc. Saiseikai Suita Hospital, Osaka, Plastic Surgery, Suita-City, Japan

<sup>2</sup>Osaka Medical College, Plastic Surgery, Takatsuki-City, Japan

**Objectives:**

Cleft palate is the most common congenital facial anomaly in human beings. Cleft palate accompanied by oral synechia is very rare. We herein describe our treatment of two infants with cleft palate accompanied by congenital oral synechia caused by a membranous adhesion between the oral floor and free margin of the cleft palate.

**Methods:**

We decided to perform surgical excision of the synechia, because mouth-opening limitations cause serious airway problems and feeding disturbances.

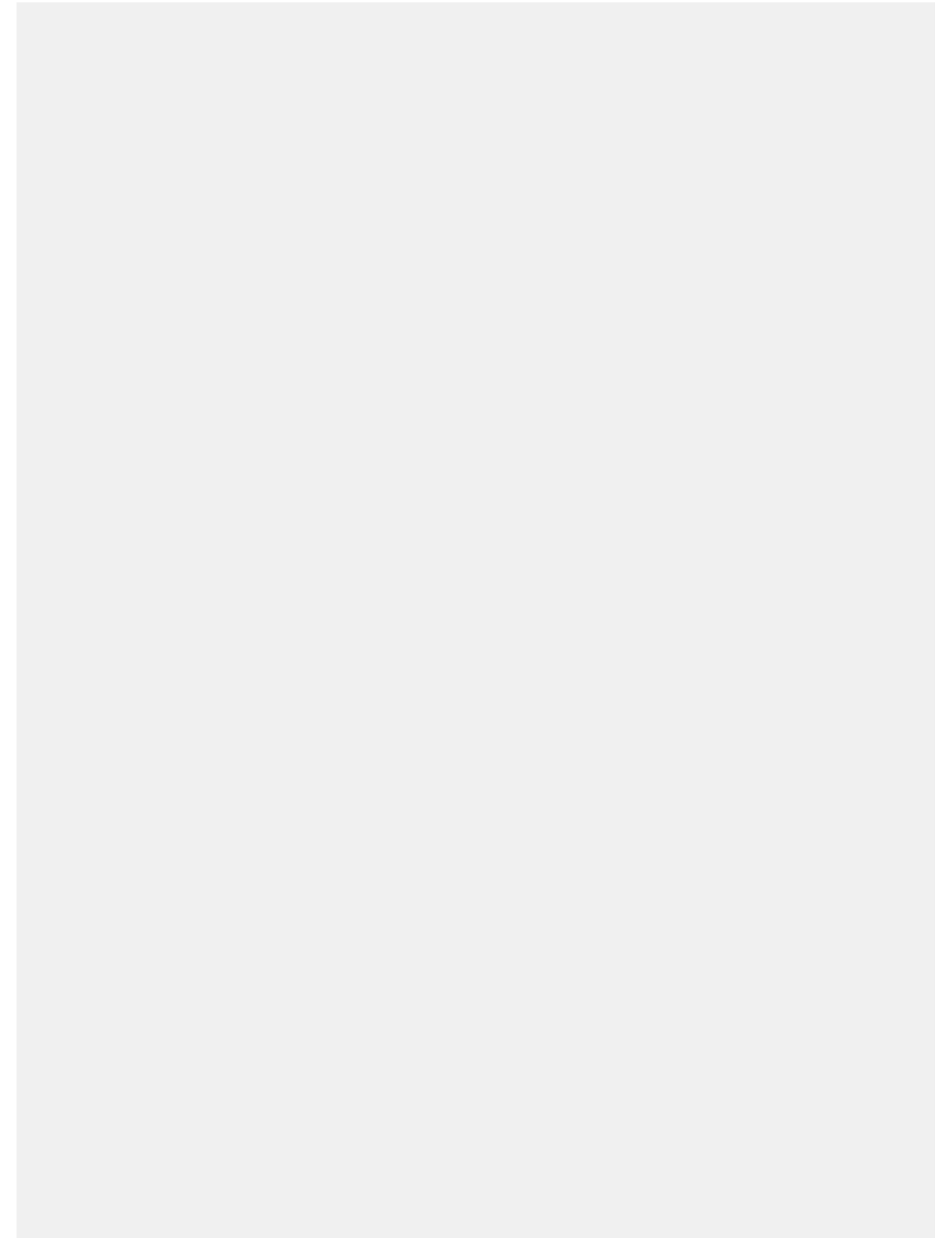
**Results:**

The infant in Case 1 had impaired mouth opening due to adhesion by two bands between the oral floor and the cleft palate. We performed surgical excision of the synechia due to the feeding problems. After the excision, he enabled normal feeding. The infant in Case 2 had impaired mouth opening due to adhesion by a band between the oral floor and the cleft palate. He underwent surgical repair of the congenital heart defect. However, the impaired mouth opening made intubation for general anesthesia difficult. We resected the synechia under local anesthesia before intubation. After the excision, intubation and heart surgery were safely performed.

**Conclusions:**

Oral synechia with cleft palate is a rare anomaly. Mouth-opening limitations cause serious airway problems and feeding disturbances. Urgent surgical excision of the synechia is often required.

**Notes**





**P1-04**

**A case of bilateral oblique facial cleft with cleft soft palate**

*\*Xie Li Chen<sup>1</sup>*

<sup>1</sup>Beijing Smileangel Children's Hospital, Beijing, China

**Objectives:**

To introduce the particularity of this case and the method of treating this case.

**Methods:**

The use of multi-Z-flap incision suture bilateral oblique facial cleft so that patients return to normal facial contours.

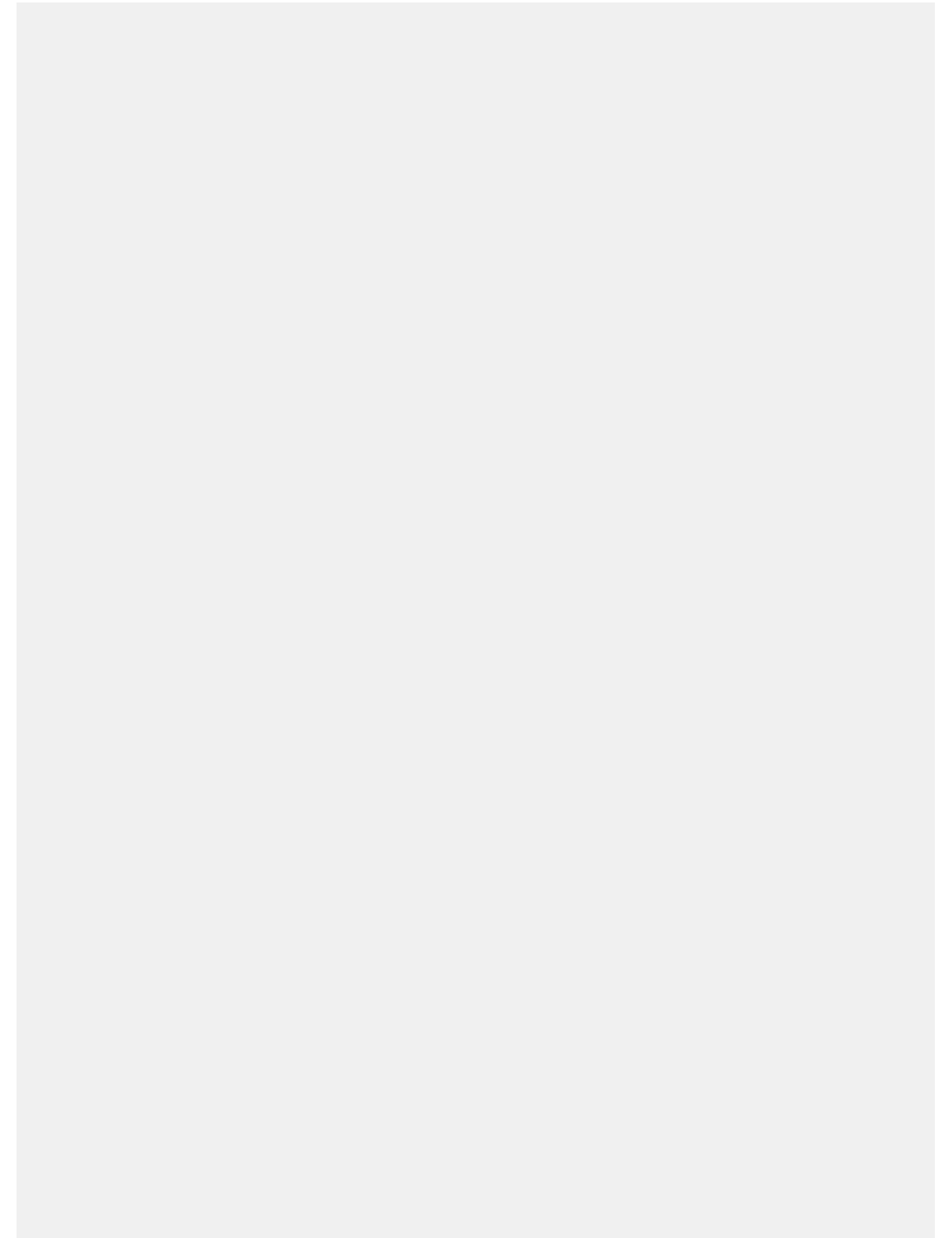
**Results:**

Greatly improved appearance, the patient is very satisfied.

**Conclusions:**

This case was rare cases, treatment focuses on facial appearance and function recovery.

**Notes**



**P1-05****Gustatory perception in cleft patients after palatoplasty with a tongue flap**

Ekaterina Grigorova<sup>1</sup>, Sofia Budylina<sup>1,2</sup>, \*Roman Fedotov<sup>1</sup>, Orest Topolnickiy<sup>1</sup>

<sup>1</sup>Moscow State University of Medicine and Dentistry, Pediatric maxillofacial surgery, Moscow, Russian Federation

<sup>2</sup>Moscow State University of Medicine and Dentistry, Department of normal physiology, Moscow, Russian Federation

**Objectives:**

Russian and foreign specialists have accumulated considerable experience in surgical rehabilitation of patients with residual palate defects after uranoplasty.

The plastic using tongue flap is more often applied in case of the defects of the hard palate.

Since this method involves the excision of a part of the tongue, it is likely to suggest a violation of the sensory function of the latter, *since it is rightly considered to be a kind of sensory organ.*

The purpose of this research was to analyze a taste sensitivity in children with congenital clefts who underwent plastic surgery on the palate using a tongue flap.

**Methods:**

A group of 7 children aged 10 to 18 years was under supervision.

The research was carried out by the method of functional mobility developed by N.S. Zayko and S.M. Budylina in different periods: before surgery, 15 days after surgery, 6 months and 1 year 2 months after surgery.

**Results:**

Gustatory perception research in the reference group in the preoperative period showed that the level of mobilization of the taste buds of the tongue is on the average 85%, which is somewhat higher than the norm (70%).

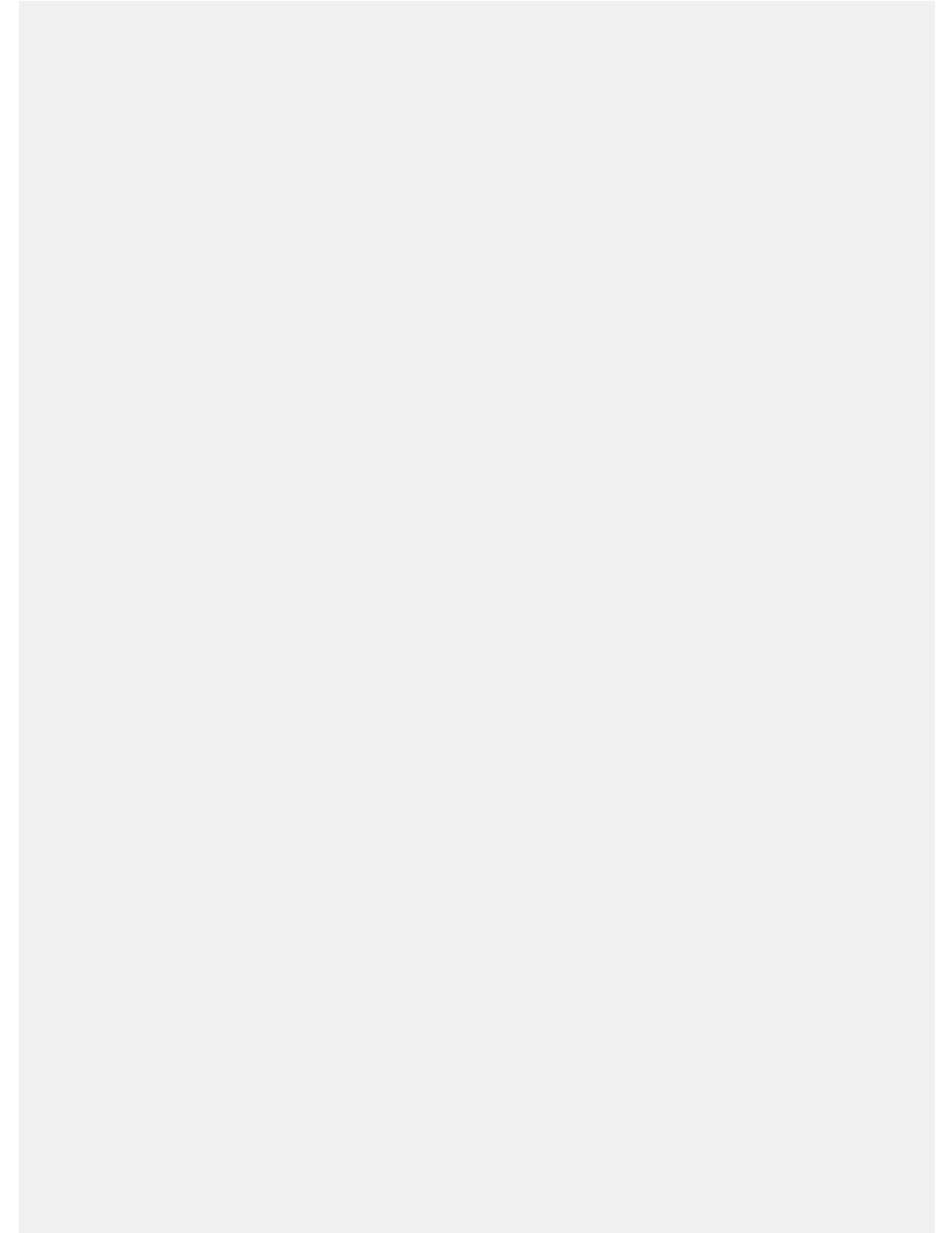
The study in the early postoperative period revealed a significant increase in the level of mobilization of the taste buds of the tongue to 100%.

The study 6 months after the surgery revealed a decrease in the level of mobilization of the taste buds of the tongue to 85%, and 1 year 2 months after the operation, the level of mobilization of the taste buds of the tongue was 70%, which corresponds to the age norm.

**Conclusions:**

It should be noted that the research of gustatory perception in case of surgery on the palate using a flap from the tongue can be used as an indicator of dynamic processes in sensory systems, in which compensatory mechanisms take part that ensure the normalization of taste perception in the postoperative period.

This indicates that the use of a flap from the tongue to close a hard palate defect does not lead to a significant disruption in the taste perception and does not adversely affect the quality of life.

**Notes**



**P1-06**

**Cherubism: clinical case of 8 years old child**

*\*Alexander Kugushev<sup>1</sup>, Andrey Lopatin<sup>1</sup>, Dmitriy Rogogin<sup>1</sup>*

<sup>1</sup>Russian Children's Clinical Hospital, Craniomaxillofacial surgery, Moscow, Russian Federation

**Objectives:**

Giant cell reparative granuloma (GCRH) is often found in adults. Only 1,7% of GCRH cases are found in children. Despite its benign nature, GCRH often recurs after surgical treatment and can metastasize. Cherubism is a rare form of GCRH, which damages upper and lower jaws. Treatment of cherubism is complicated since radical surgery is impossible. Cases of cherubism treatment are extremely scarce, especially in children before puberty. The 2017 multi-center study of GCRH treatment by denosumab includes patients older than 12 years.

**Methods:**

A five-year-old child with cherubism was treated in the Department of maxillofacial surgery of the Russian Children's Clinical Hospital on an ambulatory basis. The patient received courses of bisphosphonates therapy for three years. Despite therapy progressive growth of the upper and lower jaw persisted, which led to exorbitalism. After the histological verification of the diagnosis and the approval of the ethical committee of the RCCH, at the age of eight, the patient was treated with a denosumab. Treatment scheme included one injection per month for six months with a loading dose in the first month.

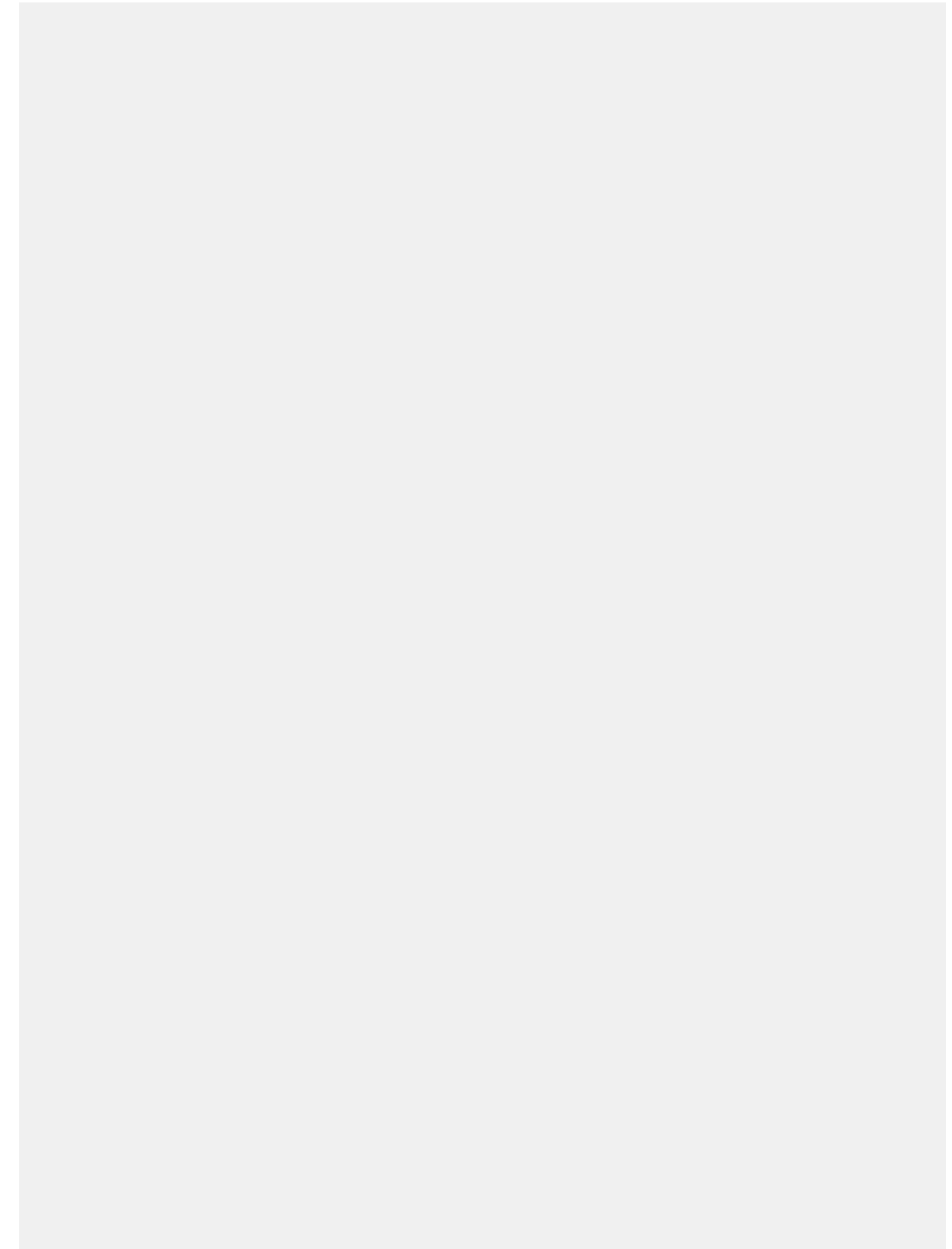
**Results:**

A histological examination of the tumor was performed after denosumab treatment. It showed decrease in number or disappearance of giant cells and the formation of bone and fibrous tissue. MSCT showed an increase in bone density from 65 HU to 385 HU. Radiographic examination of the hands did not reveal a slowdown in growth. The size of the tumor nodes decreased, which allowed planning the contour resection of the lower jaw. The structure and volume of the upper jaw approached the average indicators and did not require surgical correction.

**Conclusions:**

Inoperable forms of GCRH and cherubism require complex approach including denosumab therapy with subsequent contour resection of excess bone tissue to improve the quality of life of such patients.

**Notes**



**P1-07****Using autologous sticky bone for secondary alveolar cleft repair**

*\*Keskanya Subbalekha<sup>1</sup>, Arintara Thanasut<sup>1</sup>, Onanong Silkosessak<sup>1</sup>*

<sup>1</sup>Faculty of Dentistry, Chulalongkorn University, Radiology, Wangmai, Patumwan, Bangkok, Thailand

**Objectives:**

The aim of this study was to investigate the result of autologous sticky bone which was autologous particulate cancellous iliac bone glued with non-additive autologous plasma in secondary alveolar cleft repair.

**Methods:**

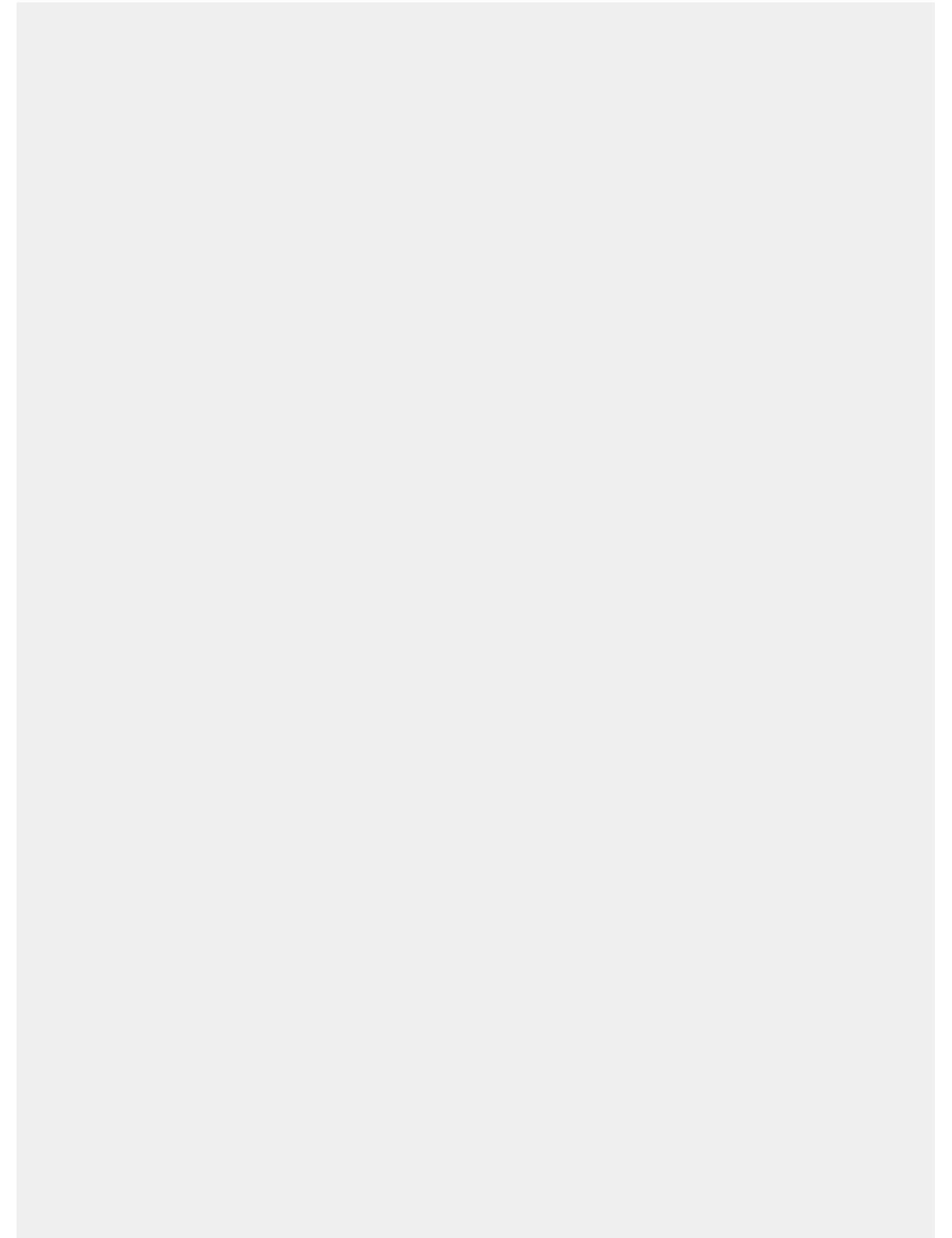
Fifteen alveolar clefts from 13 patients aged 8-14 years were studied. Study group (8 clefts) was grafted with autologous sticky bone. Control group (7 clefts) was grafted with non-sticky autologous cancellous iliac bone. Percentage of the bone volume filled in the cleft was evaluated from cone beam computed tomography at the 6th month post-operation. Grafted bone density was measured from 2 dimensional periapical radiograph at the 1st, 3rd, and 6th month post-operation. The pre-operative cleft volume and density were also recorded for baseline data. Mann-Whitney U test was used for statistical analysis with significance at  $p < 0.05$ .

**Results:**

The mean $\pm$ SD of bone volume filled in the cleft were 64.87 $\pm$ 19.63% and 67.74 $\pm$ 18.73% in study and control group, respectively. The mean $\pm$ SD of grafted bone density at pre-operation, 1st, 3rd, and 6th month post-operation in study group were 0.46 $\pm$ 0.10, 0.71 $\pm$ 0.28, 0.67 $\pm$ 0.24, and 0.75 $\pm$ 0.18, respectively; while 0.71 $\pm$ 0.29, 0.85 $\pm$ 0.45, 0.67 $\pm$ 0.12, and 0.81 $\pm$ 0.41, respectively, in control group. However, there were not statistically differences between both groups.

**Conclusions:**

Although the repairing of alveolar cleft with autologous sticky bone did not show significant superior bone regeneration, it tended to increase more bone density from pre-operative baseline comparing to non-sticky bone. The results of this study suggested that non-additive autologous plasma benefited in bone graft manipulation by gluing graft particles. It did not give advantage or disadvantage in bone regeneration. The sample size in this study was too small, further investigation in larger sample size might give clearer role of autologous sticky bone in alveolar cleft repair.

**Notes**



**P1-08**

**Two Cases Of Septorhinoplasty In Unilateral Cleft Palate And Cleft Lip Patients**

*\*Aryé Weinberg<sup>1</sup>, Ralph Magritz<sup>1</sup>, Ralf Siegert<sup>1</sup>*

<sup>1</sup>Prosper-Hospital Recklinghausen, Otorhinolaryngology, Head and Neck Surgery , Recklinghausen, Germany

**Objectives:**

Nasal deformity in cleft patients is challenging. Aesthetical, functional and surgical goals need to be met. The cleft nose grows with age but remains smaller in comparison to non-cleft patients causing an impaired nasal air-flow. Cleft patients often have septum deviation, turbinate hypertrophy and atretic nostrils. However the main concern in cleft nose is the lower lateral position of the cleft ala compared to the controlateral side. The dome of the nose is lower on the cleft side. All together on the cleft side the development and growth of the nasal tissue and bone is reduced resulting in a nasal tip deviation.

**Methods:**

We present two cases of nasal deformity in unilateral cleft palate and cleft lip patients, one in a 16-year old female and one in a 63-year-old male. Both patients had a deviated septum, a turbinate hypertrophy and a lower dome on the cleft side and underwent functional septorhinoplasty.

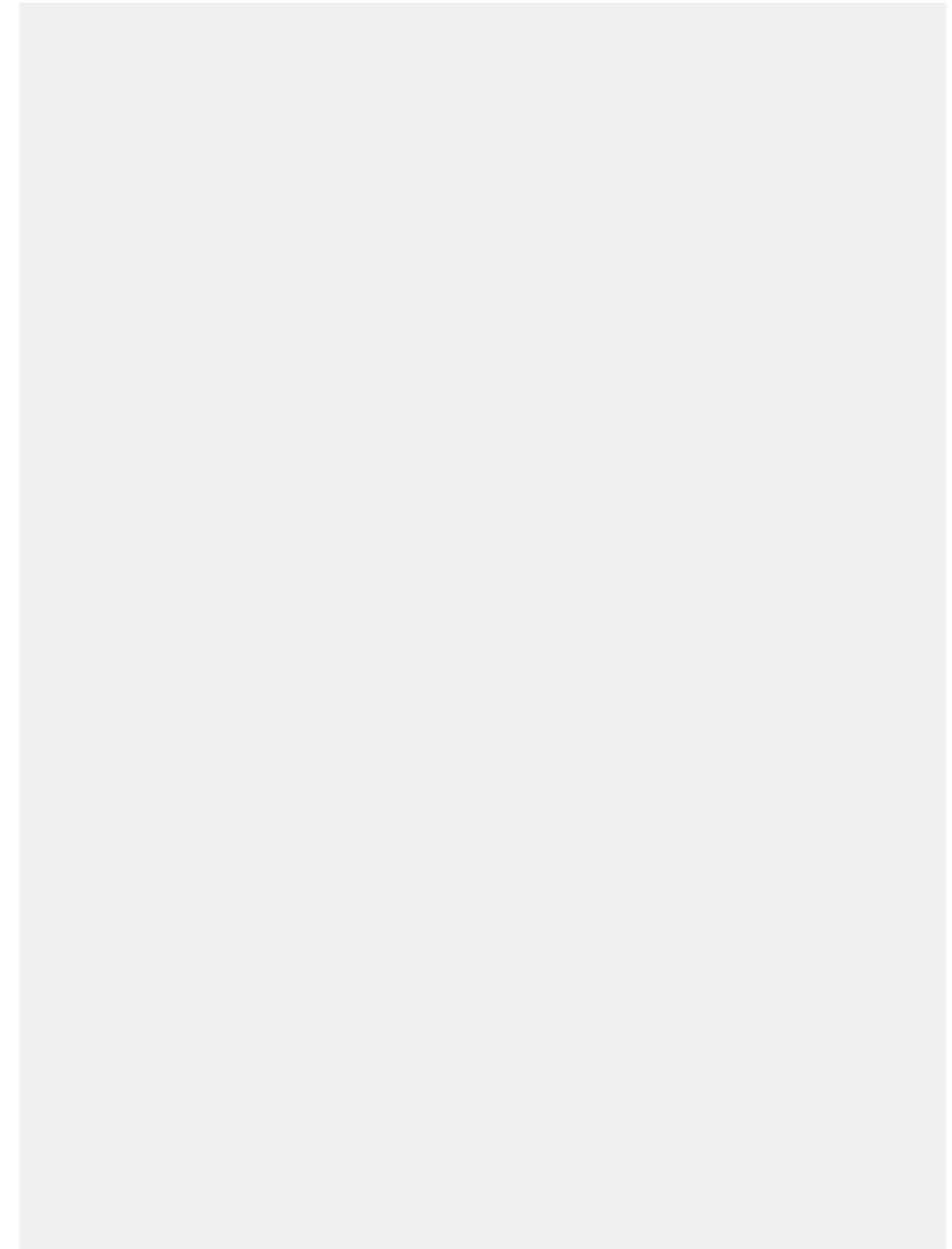
**Results:**

In both cases a decollement of the nose was performed, the ala exposed, corrected and adjusted. In the case of the 16-year-old patient parts of the septum cartilage were placed and fixed between the spina nasalis anterior and the newly tipp of the nose. In the case of the 63-year-old patient parts of the septal cartilage were used as a columella strut which was attached at the medial part of the alae. The tip of the nose was then elevated and everted out by using intercrural sutures. In both cases a conchotomie was carried out. Till today satisfying functional and aesthetic results were achieved.

**Conclusions:**

Cleft nose reconstruction demands a thorough combination of aesthetic and functional knowledge. It can be performed at every age. However it is recommended to wait until the patient has gained enough physical and psychological maturity. It is important that major nasal septum surgery is performed at a later stage so an unrestricted facial growth can be guaranteed. As in all aesthetic interventions realistic goals should be set by the surgeon and patient alike.

**Notes**





**P1-09**

**Objective study of surgical outcome of unilateral cleft lip repair**

*\*Muhammad Ashraf Ganatra<sup>1</sup>, Summera Knawal<sup>2</sup>*

<sup>1</sup>Dow University of Health Sciences, Dept. of Plastic Surgery, Karachi, Pakistan

<sup>2</sup>Darul sehat Hsopital , Oral surgery, karachi, Pakistan

**Objectives:**

The purpose of this study was to do a Objective retrospective analysis of unilateral cleft lip cases operated in year 2016 with regard to four parameters: 1.lip height from alar base to white roll. 2. symmetry of white roll 3. symmetry of red line. 4.notching of vermillion and nasal symmetry and flaring.

**Methods:**

We have evaluated surgical outcome of patients that have undergone surgery from January 2016 to December 2016, at Al-Mustafa Medical center, Karachi. All patients were operated by senior surgeon. The study includes patients having unilateral cleft lip and excludes all syndromic and bilateral cleft of lip. Data analysis includes age, sex, site and type of cleft lip. Photographic record of all patients has been analyzed with regard to lip height from alar base to white roll, symmetry of white roll, symmetry of red line, notching of vermillion and nasal symmetry and flaring.

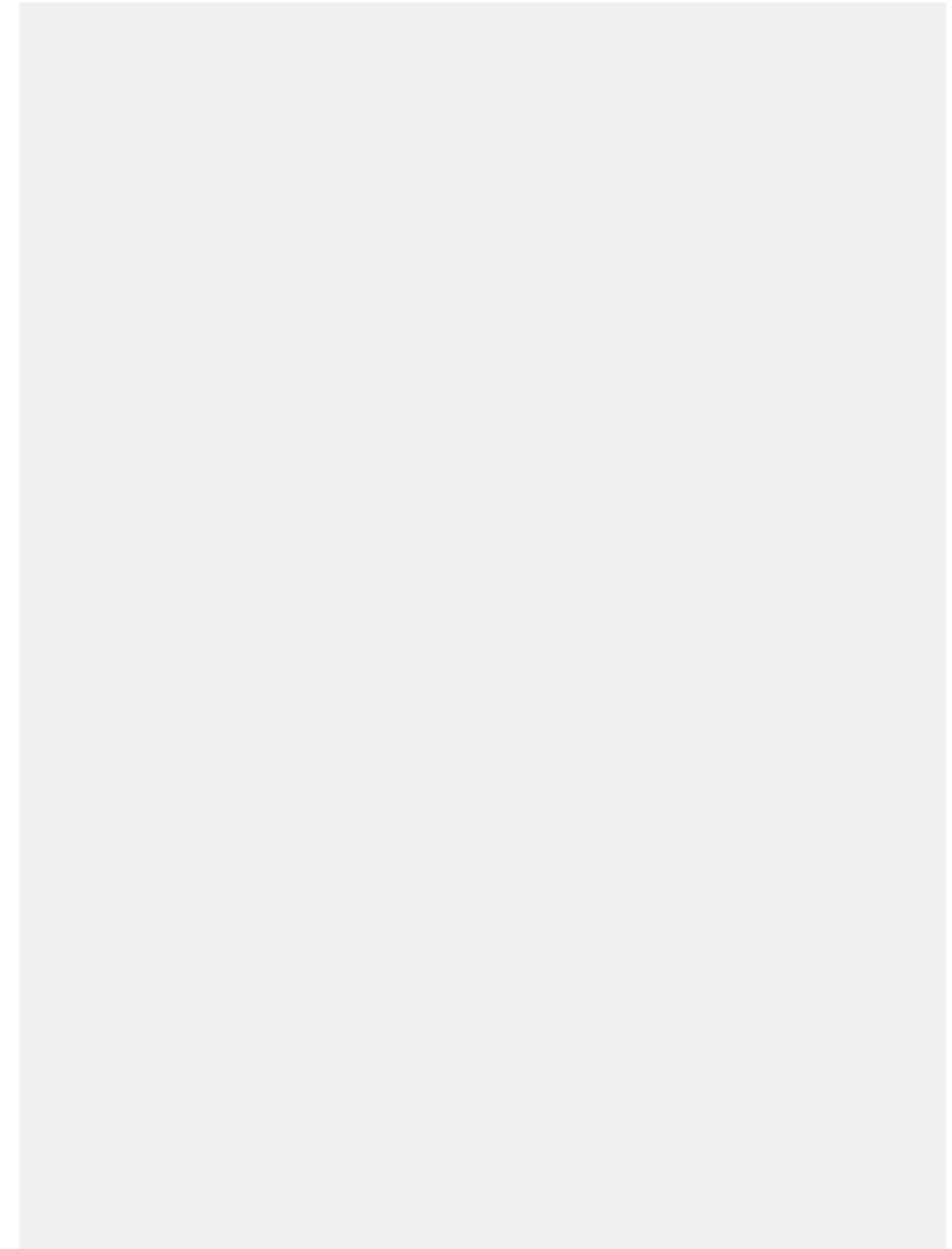
**Results:**

A total of 44 patients, of which 24 (54.5%) male and 20 (45.5%) female were evaluated during this period and results of surgery were evaluated at 1st post-operated day and 1 week postoperatively. Preoperatively unilateral cleft was graded as mild 19 (43.18%), moderate 8 (18.18%) and severe (38.63%). Post operatively all the parameters were marked as 0, 1 and 2 as poor, fair and good outcome respectively. All the five parameters on day 1 had a score of 2 but on day 8th, 65% of the patients had poor or fair outcome as compare to other four parameters.

**Conclusions:**

This quantitative assessment of surgical outcome stresses us on to improve techniques to give better nasal symmetry.

**Notes**





# Poster Session II: Maxillofacial Surgery II







**P2-01**

**Sparing condylar head in hemimandibular resection favours joint rehabilitation following free fibular flap reconstruction**

*\*Sailesh Kumar Mukul<sup>1</sup>, ABHISHEK SINGH<sup>1</sup>*

<sup>1</sup>All India Institute of Medical Sciences Patna , Oral and Maxillofacial surgery , Department of Dentistry, PATNA, India

**Objectives:**

The aim of the study is to evaluate joint function and rehabilitation in subjects who undergo hemi mandibulectomy with condylar head preservation and vascularised fibular reconstruction.

**Methods:**

It is an observational study which was carried out in a single institution in series of subjects who underwent hemi mandibulectomy with the condylar (TM joint) preservation and vascularized fibular reconstruction for various mandibular tumors.

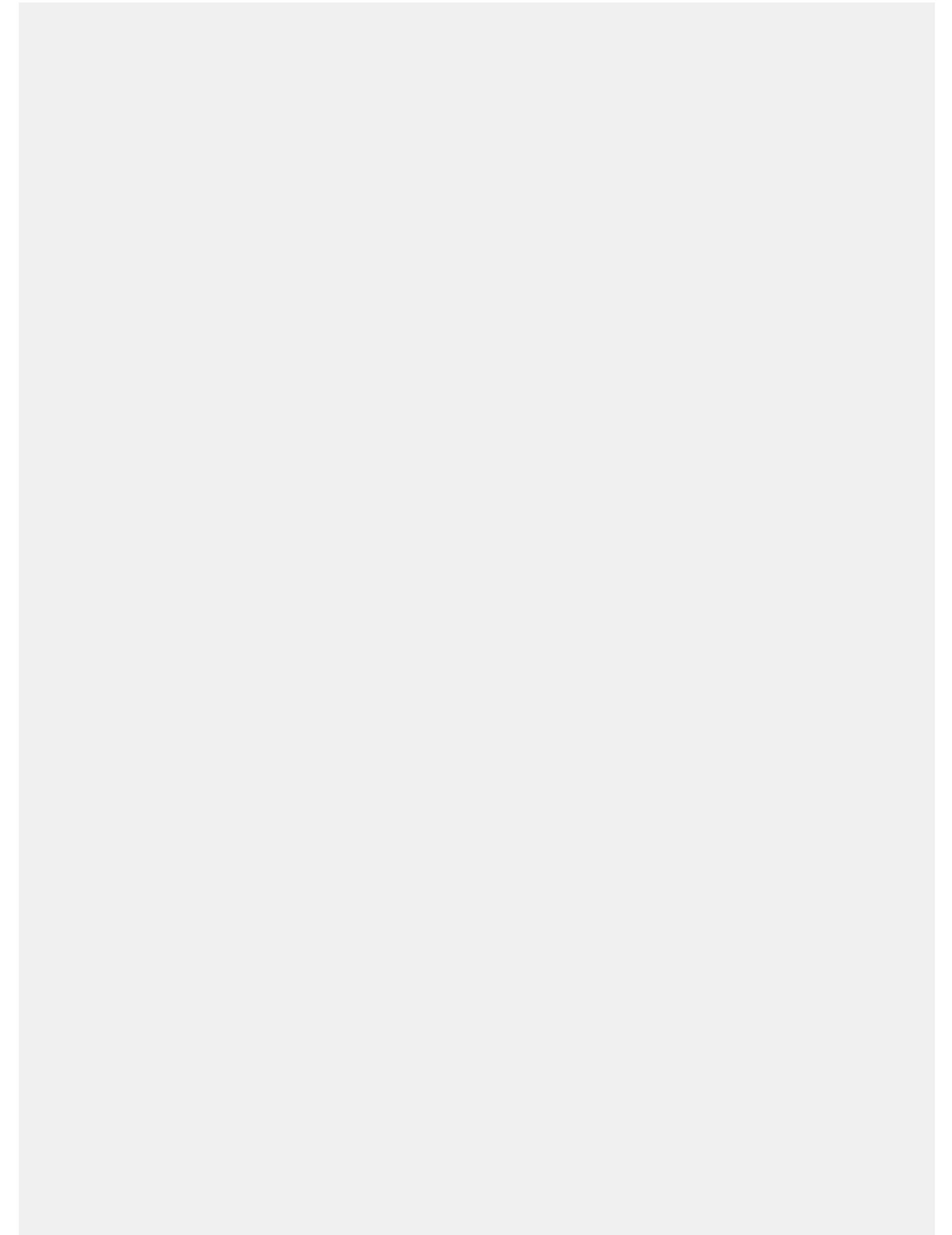
**Results:**

It was observed that the vascularity and ligamentous support of the unresected condylar head reduced the morbidity of mandibular reconstruction as it relates to Temporo Mandibular Joint (TMJ) function.

**Conclusions:**

In summary, preservation of condylar head and joint proper in hemi mandibulectomy during various benign and malignant oro mandibular tumors show better joint function and rehabilitation after vascularised free fibular flaps for oro-mandibular defects. We think that the additional time and effort are required with this technique are warranted to preserve the normal anatomy and function of the temporomandibular joint.

**Notes**





**P2-02**

**Comparative evaluation of outcomes of platelet-rich plasma (prp) and platelet-rich fibrin (prf) with cancellous bone grafts in cases of alveolar cleft**

*\*Abhilasha Yadav<sup>1</sup>, Suhas Jajoo<sup>2</sup>, Rajiv Borle<sup>3</sup>*

<sup>1</sup>Sushrut Hospital, Oral & Maxillofacial Surgery, WARDHA, India

<sup>2</sup>Jawaharlal Nehru Medical College, General Surgery, WARDHA, India

<sup>3</sup>Sharad Pawar Dental College, Maxillofacial Surgery, WARDHA, India

**Objectives:**

The purpose of this study was to determine the efficacy of alveolar bone grafting with autologous iliac cancellous bone incorporation with platelet-rich plasma (PRP) and platelet-rich fibrin and evaluate its osteoregeneration.

**Methods:**

Total **75** patients of cleft alveolus out of which 25 alveolar clefts in 25 patients with grafted autogenous bone and PRP (PRP group), 25 clefts in 25 patients with grafted autogenous bone alone (Control group) and 25 alveolar clefts in 25 patients with grafted autogenous bone and PRF (PRF group) were enrolled for the present study. PRP and PRF were extracted from autogenous blood using a plasma centrifuge system. Age range was 7- 20 yrs. Quantitative evaluation of regenerated bone was made and compared with controls.

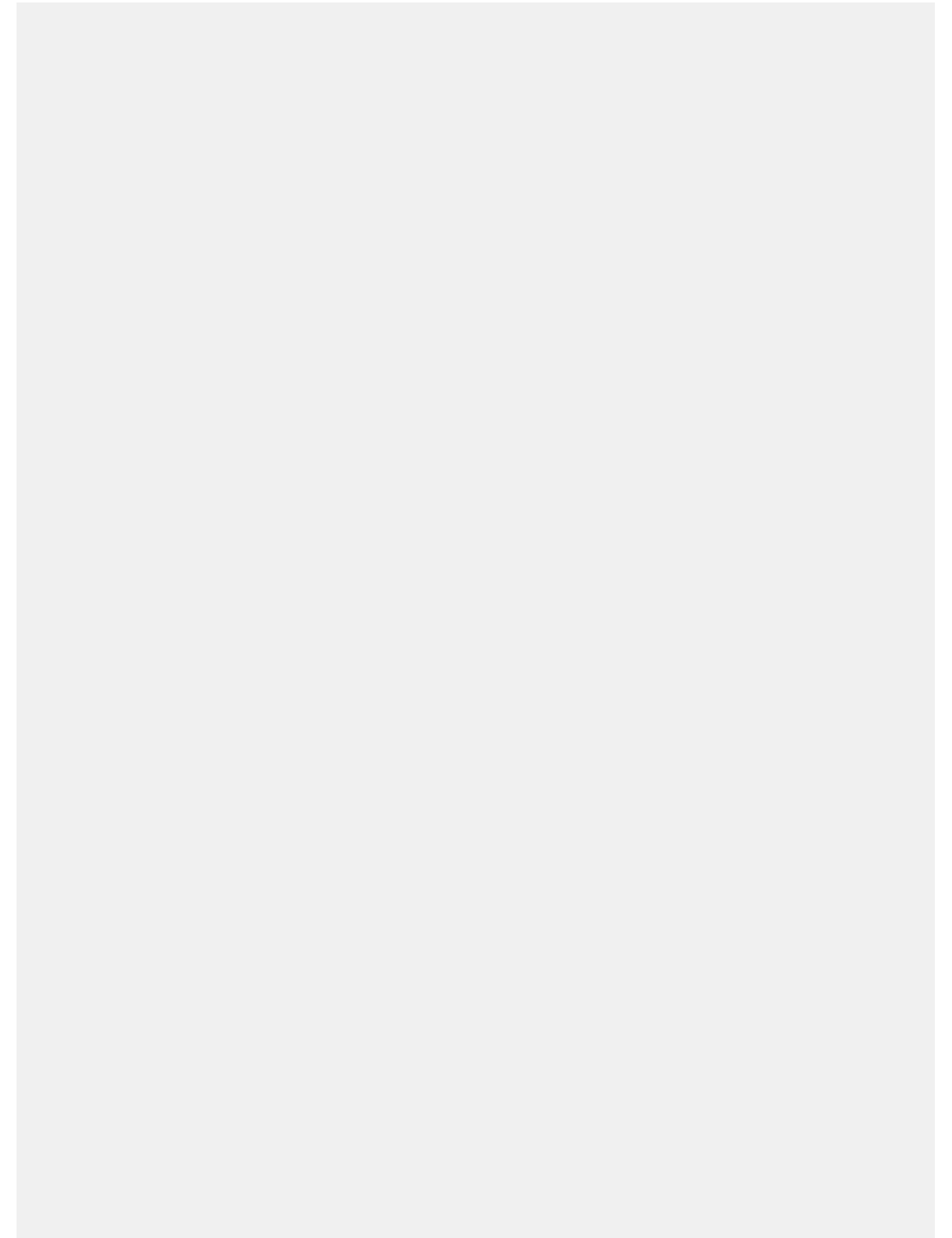
**Results:**

The average of the volume ratio of regenerated bone was higher in cases with PRF followed by PRP when compared to the control group.

**Conclusions:**

PRF is a safe and cost-effective source for growth factors and is easy to extract. It could enhance the osteogenesis of alveolar bone grafting in cleft lip and palate patients and may be useful for subsequent orthodontic therapy.

**Notes**



**P2-03****Long term result of dental implant treatment for the patients with cleft lip and/or palate**

*\*Katsuhiro Minami<sup>1,2</sup>, Toshio Sugahara<sup>1</sup>, Hideto Imura<sup>1,2</sup>, Maya Yoshida<sup>1</sup>, Nagato Natsume<sup>1</sup>*

<sup>1</sup>Aichi-Gakuin University School of Dentistry, Division of Research and Treatment for Oral and Maxillofacial Congenital Anomalies, Chikusa, Nagoya, Japan

<sup>2</sup>Aichi-Gakuin University Hospital, Division of Dental Implantology, Nagoya, Japan

**Objectives:**

[Purpose] We think that an important goal in the treatment of cleft lip and/or palate patients is to normalize the function and anatomy of cleft region. Complete skeletal and dental reconstruction of alveolar cleft is of great importance because of congenital missing of lateral incisor. Most of cleft patients have benefited from alveolar bone grafting and orthodontic realignment and require little or no prosthodontic treatment. In addition, dental implant has been utilized for dental reconstruction for cleft patients. The purpose of this study was to evaluate the long term results of dental implant placement into the grafted alveoli.

**Methods:**

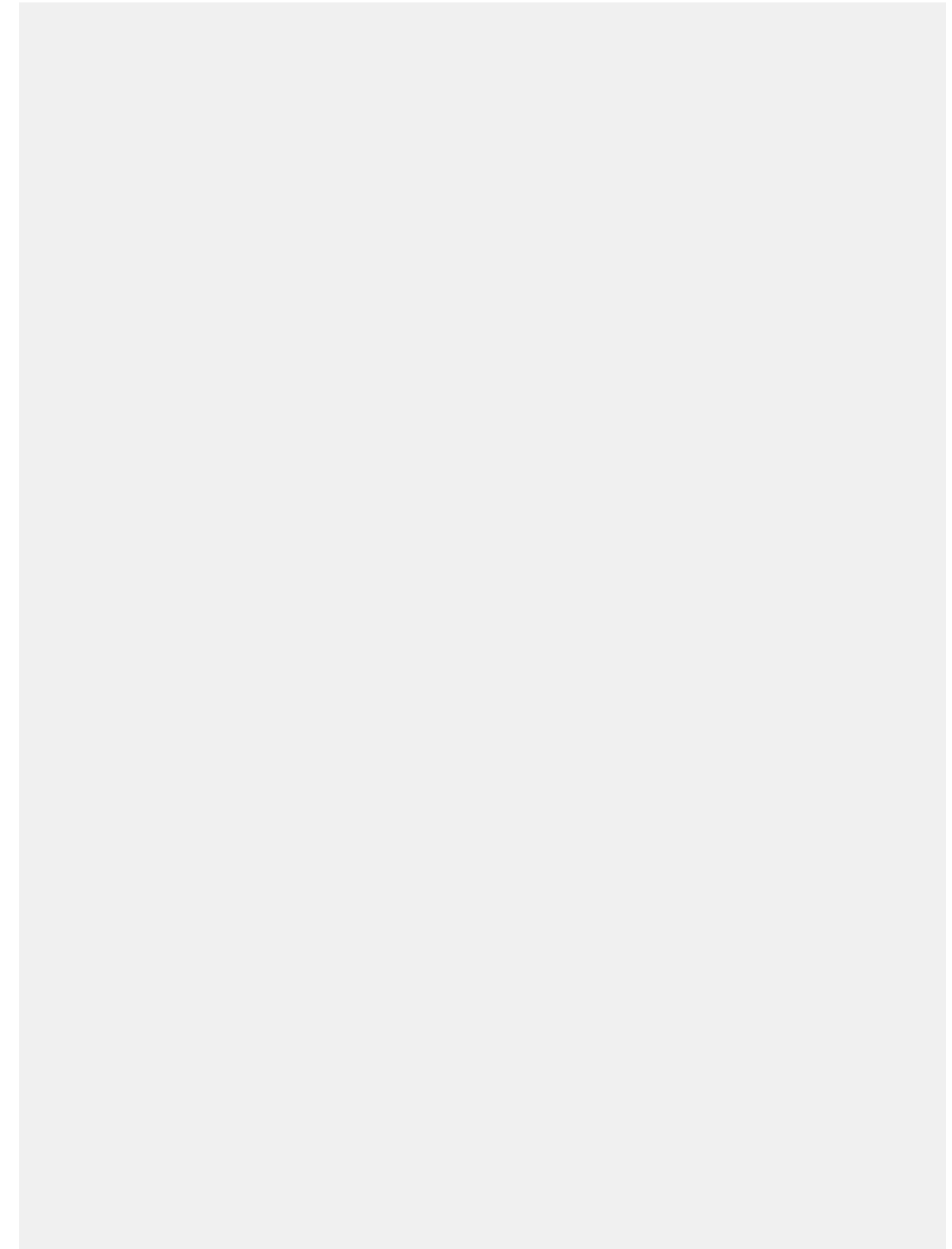
[material and Method] 22 patients (9 male and 13 female) were selected. They had been performed dental implant treatments and set final restoration more than 5 years at Cleft Lip and Palate Centre, Aichi-Gakuin University Hospital. Eight patients were CLA and fourteen were CLP patients. All patients were performed orthodontic treatment from mixed dentition periods and put removable retainer.

**Results:**

[Results] 19 patients were received secondary alveolar bone grafting from ilium during orthodontic treatment. 3 patients were performed tertiary alveolar bone grafting for the purpose of implant placement. 17 patients were needed alveolar augmentation for the purpose of implant placement. We applied 33 implants to 25 alveolar cleft, and only one implant loss was observed (success rate : 97%).

**Conclusions:**

[Conclusions] In many CLP patients, prosthetic treatment is essential because of congenital missing of lateral incisor. Recently alveolar bone graft was applied to the serial CLP treatment. Alveolar bone grafting enabled us to apply almost same prosthetic protocol in CLP patients and dental implant has been utilized. In our cases, success rate of implant treatment was 97% though alveolar augmentation was necessary in many cases though bone graft was performed formerly. Based on our experience, it is concluded that alveolar bone grafting followed by implant placement is a reliable alternative for prosthetic rehabilitation of cleft patients.

**Notes**

**P2-04****The effect of immediate placement of vacuum stent on success of vestibuloplasty in cleft lip and palate patients**

*\*Aseel Asar<sup>1</sup>, Marwa El Kassaby<sup>1</sup>, Mahmoud Yehia<sup>1</sup>, Ramy Gaber<sup>1</sup>, Yasser El Hadidi<sup>1</sup>*

<sup>1</sup>faculty of dentistry, ain shams university, Oral and maxillofacial department, Cairo, Egypt

**Objectives:**

Cleft lip and palate patients usually have an altered anatomy in the prolabium area usually presenting as shallow vestibule which affects the patients in many aspects such as lip mobility, appearance, poor hygiene maintenance, poor periodontal health and difficult prosthetic treatment. Vestibuloplasty is a well known technique used in dental surgery to free the lip and deepen the labial vestibule. This study was conducted to assess the results of immediate placement of vacuum fabricated stent during vestibuloplasty procedure on rate of relapse.

**Methods:**

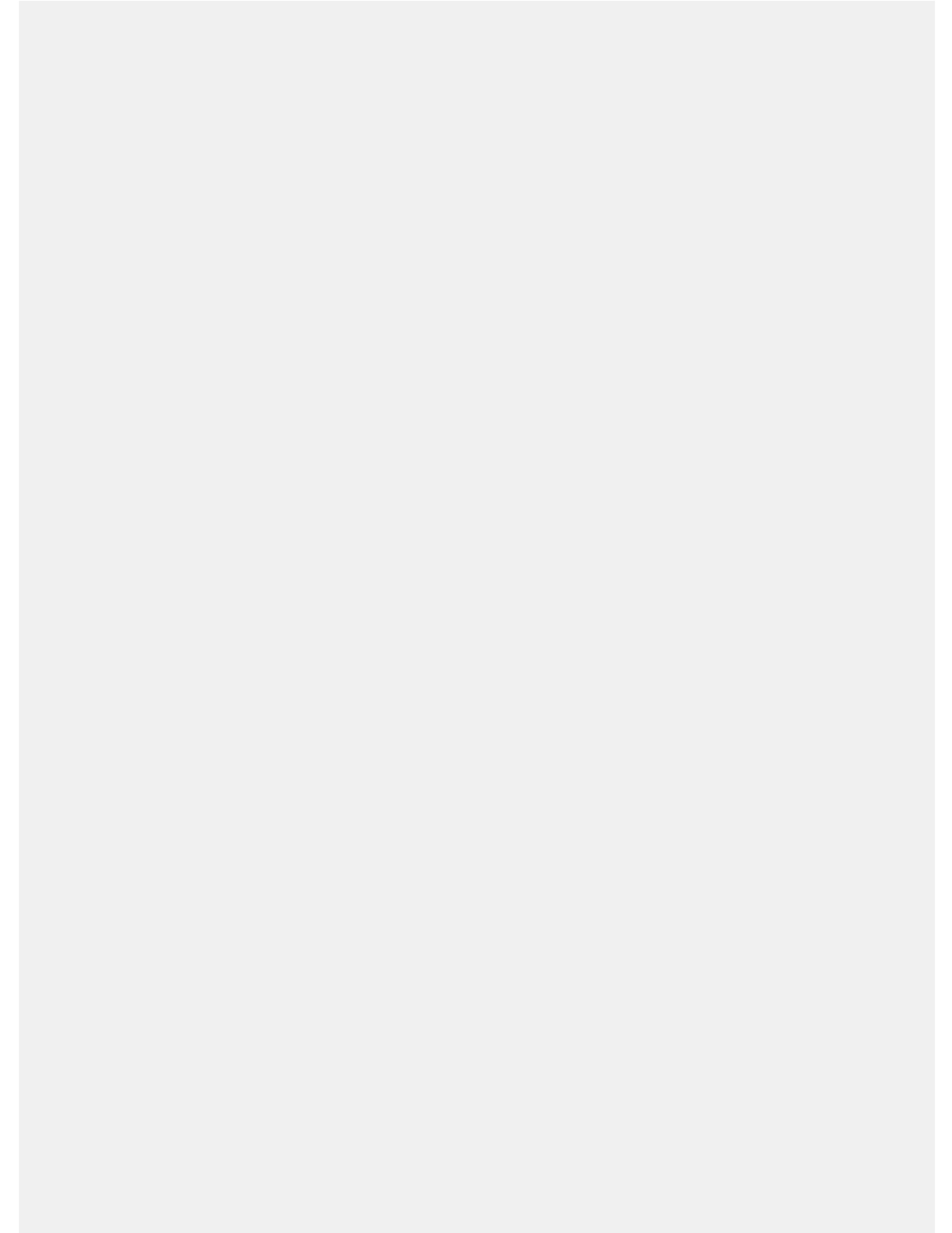
14 BCLP patients were included in this study, divided into two groups. Study group was associated with stent construction and control group had no stent. Horizontal incision sparing the interdental papillae, partial thickness flap was elevated to the desired depth, suturing of the margins of the flap to the underlying periosteum using re-sorbable sutures, intraoperative impression recording the full depth of the new vestibule is taken, casts are trimmed and vacuum stents with labial flange reaching the full depth were fabricated then seated and fixated using mini-screws.

**Results:**

No complications were associated with surgery either intraoperative or postoperative in both groups. The major advantage of fixed stent was elimination of the need for patient compliance leading to better results. Immediate construction of the stent decreased rate of relapse compared to control. Results were assessed by unpaired t-test and showed significance difference between two groups. All cases showed enhanced lip mobility. Relapse of 50% of the gained depth was recorded in two cases after 1 year of the study group.

**Conclusions:**

Vestibuloplasty led to satisfactory both physical and psychological results. The use of fixed stent led to 100% gain of vestibule depth immediate postoperative along with good success rate in the long-term follow up.

**Notes**

## P2-05

**Evaluation of the role of pedicled buccal fat pad in primary palatoplasty and its impact on maxillary growth: early outcomes**

*\*Dekid Palmo<sup>1</sup>, Brijesh Mishra<sup>1</sup>, Arun Kumar Singh<sup>1</sup>, Vijay Kumar<sup>1</sup>, Veerendra Prasad<sup>1</sup>, Divya Narain Upadhyay<sup>1</sup>*

<sup>1</sup>King George's Medical College, dept of plastic surgery, lucknow, India

**Objectives:**

To study the role of pedicled buccal fat pad in primary palatoplasty and to assess the effect on maxillary growth

**Methods:**

Twenty patients of UCLP in King George's Medical College, Lucknow, at the age of 9 to 12 months were planned for palatoplasty. Group 1: two flap palatoplasty with bilateral pedicled buccal fat pad to cover the lateral defects. Group 2: two flap palatoplasty without buccal fat. Group 3: Ten patients with normal lip and palate. Preoperative and 1 year postoperative dental arch length width was measured in dental cast. Postoperative pain, epithelisation, cheek deformity, bleeding, infection and fistula noted. Statistical analysis: Quantitative variables-Mann-Whitney Test,paired T test and ANNOVA. Qualitative variables -Chi-Square test.

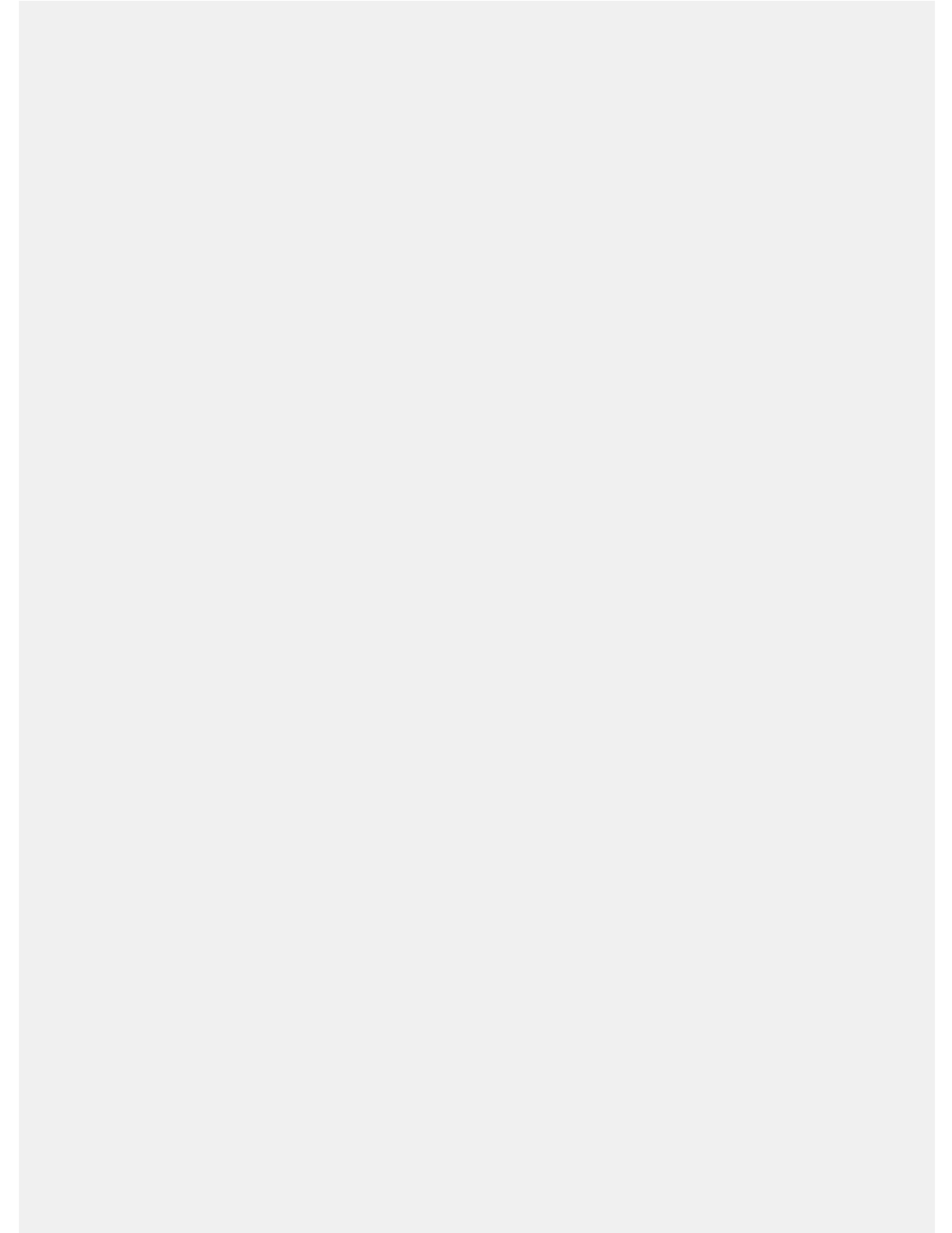
**Results:**

Postoperative pain score of Group II ( $6.10 \pm 1.29$ , median 6.00) was found to be statistically significantly higher than that of Group I ( $4.20 \pm 0.92$ , median 4.00). At 1 week, epithelization was observed in 8 (80.0%) children of Group I and in 3 (30.0%) of Group II. None of the patients developed cheek deformity, bleeding, infection or graft loss). After 1 year of palatoplasty, anterior arch width of Group I ( $30.50 \pm 2.99$  mm) was found to be higher as compared to Group II ( $28.70 \pm 1.42$  mm) and Group III ( $27.70 \pm 1.16$  mm) ( $p=0.115$ ). Increase in arch length and arch width were not statistically significant.

**Conclusions:**

Patients of palatoplasty with buccal fat pad have decreased postoperative pain. There is a significant increase in anterior arch width of Group I ( $30.50 \pm 2.99$  mm) as compared to Group II ( $28.70 \pm 1.42$  mm) and Group III ( $27.70 \pm 1.16$  mm), ( $p=0.115$ ). The use of buccal fat pad in palatoplasty promotes early epithelization, less scarring and hence lesser growth restriction. . As palatal growth continues upto adulthood, longer follow ups are required to assess the long term impact of buccal fat pad on maxillary growth.

## Notes



**P2-06****Le Fort 1 Osteotomy Challenges In Alveolar Cleft Patients**

*\*Ayşegül Mine Tüzüner Öncül<sup>1</sup>, Mehmet Emre Yurttutan<sup>1</sup>, Ayşe Tuba Altuğ Demiralp<sup>2</sup>, Kevser Sancak<sup>1</sup>, Mine Alkaya<sup>1</sup>, Eda Naifoğlu<sup>1</sup>*

<sup>1</sup>Ankara University, Faculty of Dentistry, Oral and Maxillofacial Surgery, Ankara, Turkey

<sup>2</sup>Ankara University, Faculty of Dentistry, Orthodontics, Ankara, Turkey

**Objectives:**

Orofacial clefts have great impact on the quality of life which includes aesthetics, function, psychological impact, dental development and facial growth. The alveolar defect is usually reconstructed between 6 and 11 years of age and is often related to the development of the maxillary canine root, thus allowing more maxillary growth before surgical intervention. The management of the cleft and craniofacial patient can present some additional challenges, and considerations, for the clinicians involved in caring for these patients. We present the challenges and difficulties during Le Fort I osteotomy in patients which have alveolar clefting.

**Methods:**

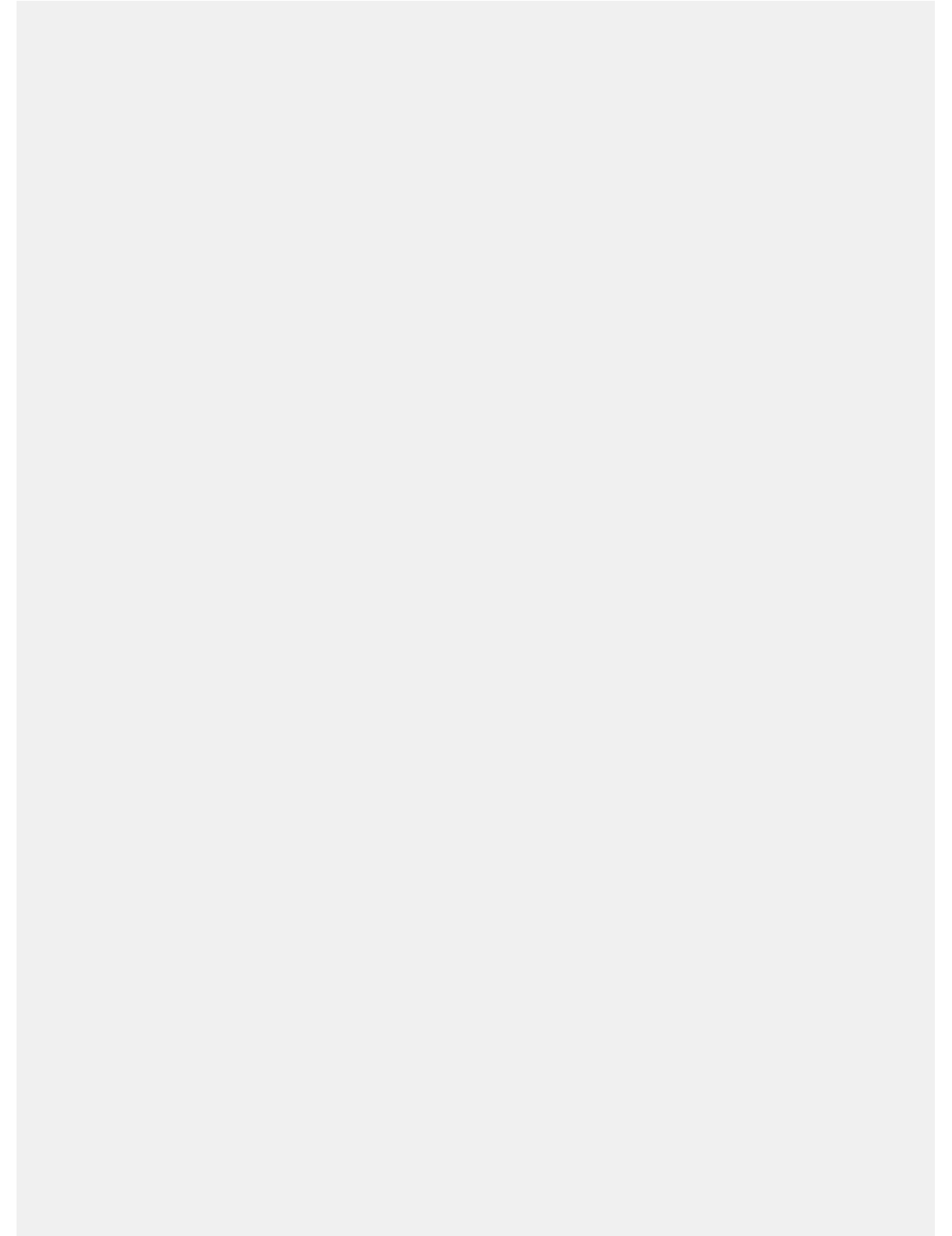
This presentation will provide 4 case reports of current treatment pathways and objectives for cleft lip and palate patients and includes treatment challenges; including consideration of complex medical co-morbidities, anatomical variations, missing soft and hard tissues, including missing teeth. Three patients had unilateral, 1 patient had bilateral alveolar cleft. All patients were represented for the alveolar bone grafting in the late phase (older than 18). One year following alveolar bone grafting, Le Fort 1 osteotomies were performed.

**Results:**

The main surgical difficulty was in the dissection of the nasal floor. The second challenge was the tendency of relapse. In one of the cases 6 mm advancement were performed, however, relapse was observed 1 year after the surgery.

**Conclusions:**

Elevation of the nasal mucosa, unwanted fractures when performing maxillary down fractures and relapse are the challenges we would encounter for Le Fort 1 osteotomy treatment.

**Notes**

**P2-07****Implant-borne prosthodontic rehabilitation of an edentulous young woman after cleft lip and palate and drug-abuse**

*\*Harald Eufinger<sup>1</sup>, Jörg Kästner<sup>1</sup>*

<sup>1</sup>Dept. of OMF-Surgery, Recklinghausen, Germany

**Objectives:**

Repair of CLP leads to scarring in the affected areas. If growth disturbances occur, a transversal and/or sagittal deficit of the maxilla is typically found, which may be compensated by the patient's dentition. Apart from CLP all edentulous patients undergo vertical atrophy of the alveolar process and centripetal atrophy in the maxilla, but centrifugal in the mandible in the sagittal and the transversal dimension. Therefore prosthodontic rehabilitation of edentulous CLP patients may lead to major problems referring to scar tissue and interalveolar relation. This case report presents strategies to overcome typical problems in that respect.

**Methods:**

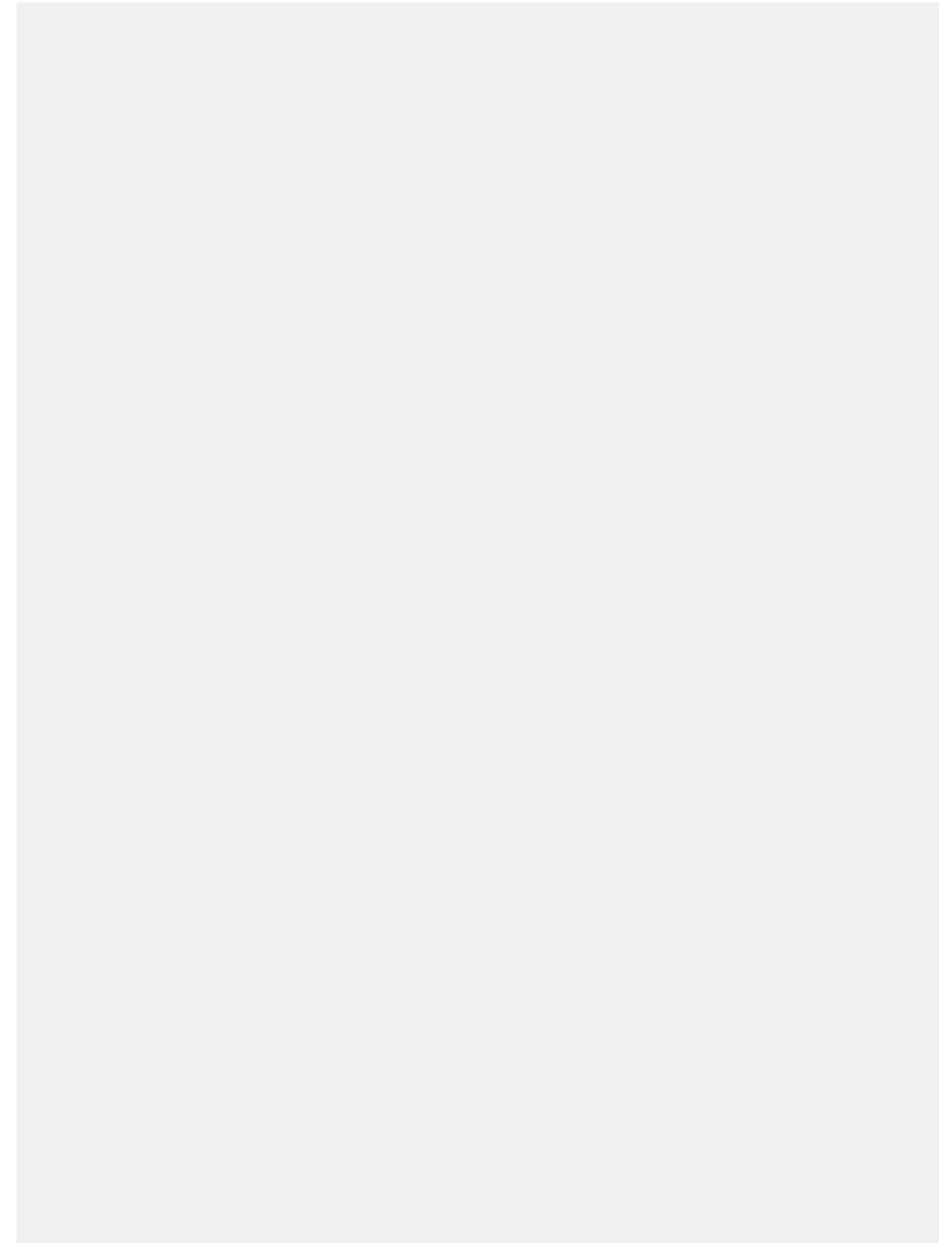
A 34-year-old edentulous woman after CLP presented for prosthodontic rehabilitation. Scarring of the operated regions was not severe. She showed severe vertical atrophy of the maxillary alveolar process with a complete deficit in the region of the former cleft alveolus. Due to maxillary retrognathism and atrophy the sagittal relation was unfavourable. General medical history included intravenous drug abuse and hepatitis C in the past and continued nicotine abuse and the inclusion in a methadone-substitution-program. Attempts of conventional prosthodontic treatment had failed before so that implant borne rehabilitation was planned.

**Results:**

Augmentation and implant insertion avoided the area of the cleft alveolus, bilateral sinus floor and lateral augmentation was performed in the maxilla combined with vertical augmentation of the anterior mandible using iliac crest bone. Both in the maxilla and in the mandible 6 implants were inserted. Extensive vestibuloplasties with split skin grafts became necessary afterwards. Without complications this complex rehabilitation was successful functionally and aesthetically. Costs were completely covered by the patient's social health insurance.

**Conclusions:**

Without orthognathic surgery and without addressing complex problems of repeated surgery in the area of the former cleft lip alveolus complex implant borne prosthodontic rehabilitation can be predictable and successful in the CLP patient.

**Notes**

**P2-08****PRGF as a support in surgical procedures in cleft patients**

*\*Falk Wüsthoff<sup>1</sup>, Ralf Smeets<sup>1</sup>, Henning Hanken<sup>1</sup>, \*Jill Knips<sup>1</sup>*

<sup>1</sup>Universitätsklinikum Hamburg-Eppendorf, Klinik für MKG-Chirurgie, Hamburg, Germany

**Objectives:**

Platelet rich plasma (PRP) hosts various osseoinductive agents such as BMP, PDGF or PRGF. It is also known to have a positive effect in wound healing. In patients with cleft palate or alveolus wound healing is quite often compromised due to prior surgical procedures. In a case series of four patients (age 34, 21, 13 and 12 years) undergoing secondary palatoplasty or augmentation of the alveolus, we used PRGF® as an autologous matrix with bone grafts and fibrin membranes for soft tissue coverage in order to prevent wound healing disorders and enhance tissue healing.

**Methods:**

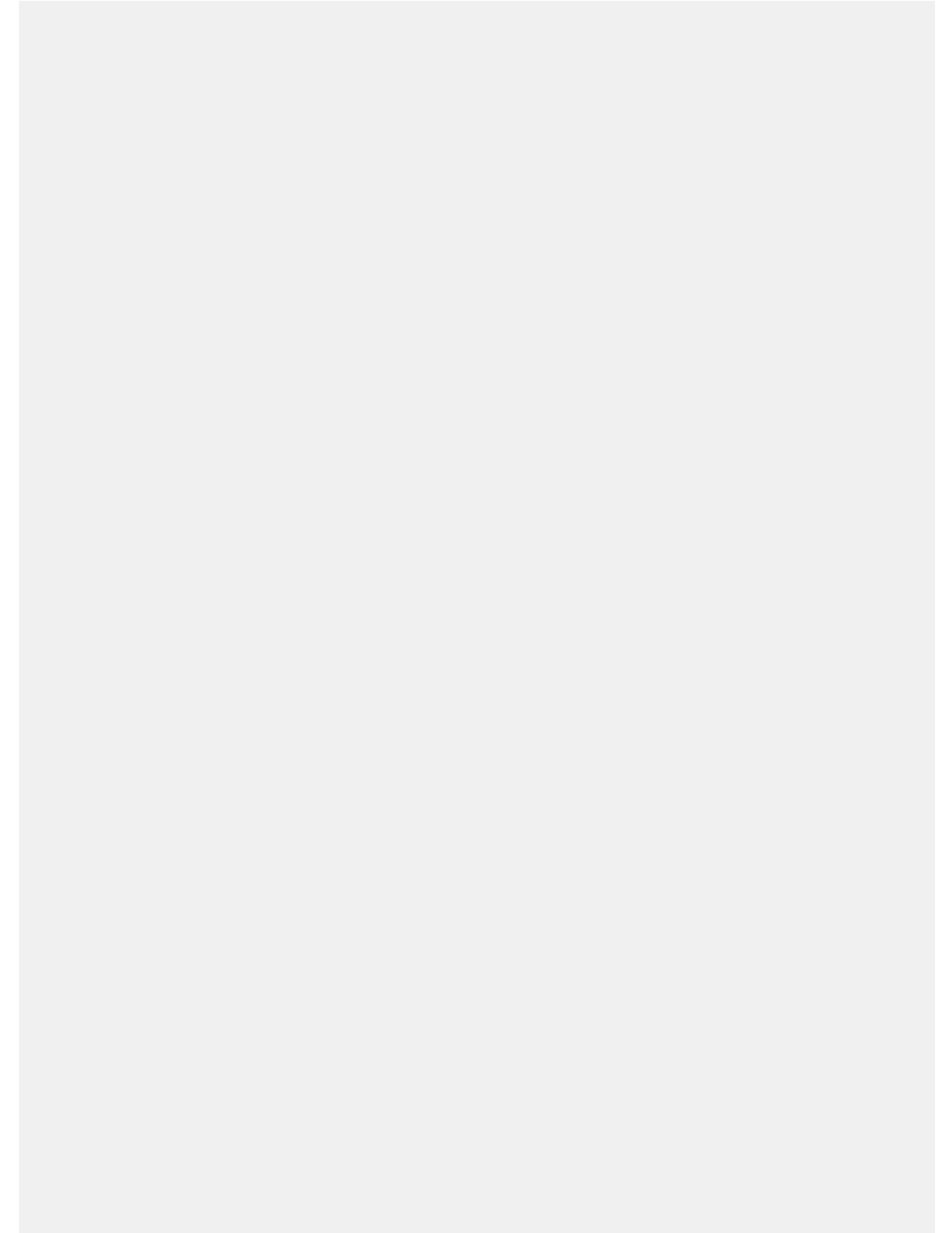
PRGF® and fibrin membranes were produced with a bti endoret® set according to manufacture's protocol. Cancellous bone was harvested from the iliac crest in three patients and PRGF® was added for maxillary osteoplasty. The autologous fibrin membranes were used as an extra layer before wound closure to achieve good soft tissue coverage in these 3 patients and in the patient with secondary palatoplasty.

**Results:**

PRGF® and fibrin membranes were easy to produce with the bti endoret® kit during the surgical procedures. PRGF® allows an easier handling of the cancellous bone and the graft keeps the desired three dimensional shape. Fibrin membranes can be used to cover augmentation sites or as an additional layer in palate repair. All four patients showed typical scar tissue at the surgical site and no wound healing disorders occurred during next 3 months. All augmented sites showed good integration of the grafts and subsequent orthodontic treatment could be initiated 6 weeks afterwards.

**Conclusions:**

PRGF® allows easy handling of bone grafts such as cancellous bone and seems to influence the healing process and the ossification of the grafted site positively. Fibrin membranes seem to support soft tissue healing even in complicated cases. PRGF® and fibrin membranes are a promising innovation to improve wound healing in cleft patients, especially in children because there exists no risk of infections as in allo- or xenografts.

**Notes**



## P2-09

**Orthodontics - Orthognathic Surgery Patients with Cleft Lip and Palate**

\*Marija Magdalenic-Mestrovic<sup>1</sup>, Zeljko Orihovac<sup>2</sup>, Vlasta Lovric<sup>3</sup>, Snjezana Kadic<sup>4</sup>

<sup>1</sup>Dental Polyclinic Zagreb, Department of Orthodontics, Zagreb, Croatia

<sup>2</sup>Clinical Hospital Dubrava, Department of Maxillofacial Surgery, Zagreb, Croatia

<sup>3</sup>Dental Polyclinic Zagreb, Department of Prosthodontics, Zagreb, Croatia

<sup>4</sup>Dental Polyclinic Zagreb, Department of Paediatric Dentistry, Zagreb, Croatia

**Objectives:**

To present two complicated cases of patients with bilateral cleft lip and palate which were treated with the combination of orthodontic therapy and orthognathic surgery.

**Methods:****Results:**

## CASE 1:

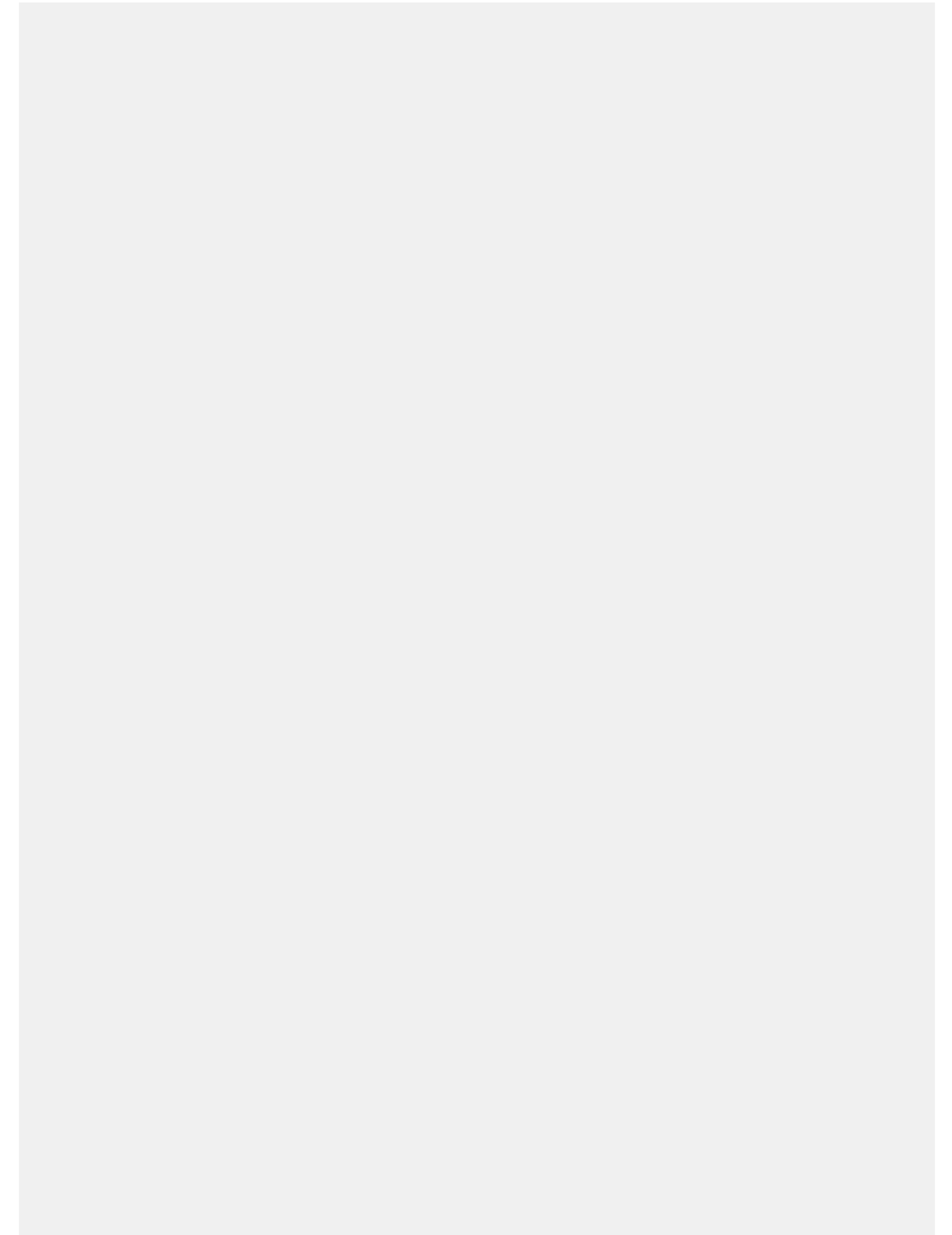
A 23- year-old male patient was referred to the Department of orthodontics, Dental Polyclinic Zagreb. After complete orthodontic diagnosis: bilateral cleft lip and palate, skeletal Class III malocclusion (anteroposterior maxillary deficiency) and *hypodontia 12*, a treatment plan was made and therapy was continued with fixed orthodontic appliance in both jaws which included orthognathic surgery - *osteotomia maxillae et mandibulae bimaxilaris*. After completing orthodontic/orthognathic surgery therapies, the patient was referred to prosthodontic department for final rehabilitation - metal ceramic bridge.

## CASE 2:

A 19-year-old female patient was referred to our Polyclinic with a diagnosis of bilateral cleft lip and palate, skeletal Class III malocclusion (*hypoplasia maxillae*), impacted tooth /23/ and missing five teeth in upper jaw. The therapy began with quad-helix (SME), extraction of 34 and 44, and fixed orthodontic appliance in both jaws. Additionally, a surgical treatment - maxillary osteotomy and chin reconstruction was made. To achieve individual optimum for this patient, a combination of orthodontic - orthognathic surgery, dental restorations and prosthetic rehabilitation in upper jaw was carried out.

**Conclusions:**

In some patients with cleft lip and palate after active orthodontic treatment, as the last stage in therapy, the orthognathic surgery might be needed to bring the deficient maxilla downward and forward. Afterwards those patients need fixed prosthodontics to replace missing teeth.

**Notes**

## P2-10

**Osteotomy of the premaxilla in adolescent patients having bilateral CLAP**

\*Jan-Hendrik Lenz<sup>1</sup>, Juliane Neubert<sup>2</sup>, Franka Stahl<sup>2</sup>, Ann Dieckmann<sup>1</sup>, Bernhard Frerich<sup>1</sup>

<sup>1</sup>Rostock University - Medical Faculty, Department of Oral, Maxillofacial and Facial Plastic Surgery, Rostock, Germany

<sup>2</sup>Rostock University-Medical Faculty, Department of Orthodontics, Rostock, Germany

**Objectives:**

In certain juvenile patients having BCLAP the position of the premaxilla cannot be corrected by using orthodontic appliances only. Several alternative treatment modalities are described, i.e. sequential surgical interventions with or without osteoplasties or distraction osteogenesis including osteoplasty. Single time as well as two time surgical treatments are well known: Complications range from residual oronasal fistulas, failures of stabilization or necrosis of the premaxilla.

**Methods:**

In 5 adolescent non-syndromic BCLAP (mean age 7.4 years) orthodontic treatment (positioning of premaxilla, expansion of lateral segments) were carried out presurgically. Surgical interventions (GA) included secondary bone grafting (iliac crest), after 3 months osteotomies/corrections of the premaxillary position. Fixation of premaxilla was enabled using acrylic splints (retention over 8 weeks). Postoperative orthodontics enabled superior positioning of the premaxilla and regular inclination of incisors.

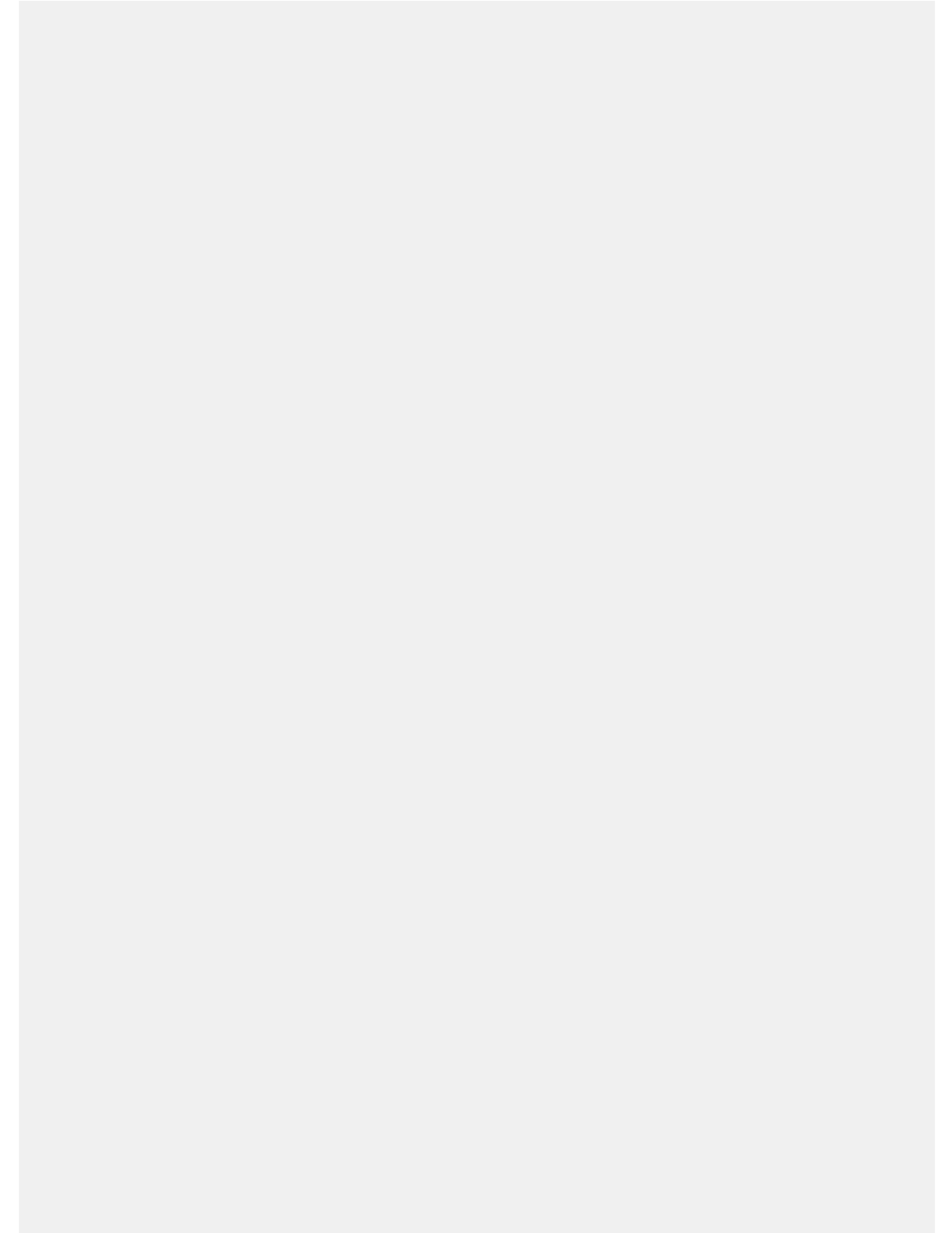
**Results:**

Treatments were without major complications (No fistula, necrosis) In 1 patient the splint had to be fixed secondarily by wiring (LA). Long-term observations (mean recall 3.7 years) haven't revealed growth disturbances or relapse up to now. In all patients regular occlusion of the incisors as well as stable position of the premaxilla are present.

**Conclusions:**

In elected adolescent patients having BCLAP with severe malposition of the premaxilla osteotomy and correction of the premaxilla position following to secondary bone grafting seems to be a valuable method to correct malposition and malocclusion in secondary dentition. In our opinion two stage surgery (bonegrafting followed by secondary osteotomy) seems to be a valuable and severe surgical technique.

## Notes





# Poster Session III: Genetics and Epidemiology





P3-01

**Epidemiology of cleft lip and palate in Georgia**

*\*Zurab Vadachkoria<sup>1</sup>, Sophie Chincharadze<sup>2</sup>, Irakli Mchedlishvili<sup>3</sup>*

<sup>1</sup>Tbilisi State Medical University, Rector, Department of Surgery Direction of Child and Adolescent Stomatology (Dentistry) and Prophylactics of Stomatological (Dental) Diseases, Tbilisi, Georgia

<sup>2</sup>Tbilisi State Medical University, Department of Surgery Direction of Child and Adolescent Stomatology (Dentistry) and Prophylactics of Stomatological (Dental) Diseases, Tbilisi, Georgia

<sup>3</sup>Tbilisi State Medical University, Department of Epidemiology and Biostatistics, Tbilisi, Georgia

**Objectives:**

The aim of our study was to determine epidemiological properties (prevalence by years and regions, distribution by sex and type) of cleft lip and palate (CLP) in Georgia.

**Methods:**

We used 2006-2015 data of the National Center for Disease Control and Public Health and archive materials about this congenital malformation from Tbilisi, regional and district maternity houses. We also used materials from G. Zhvania Pediatric Clinic of Tbilisi State Medical University, where the treatment and rehabilitation of children with CLP take place. Data was processed in SPSS v16.

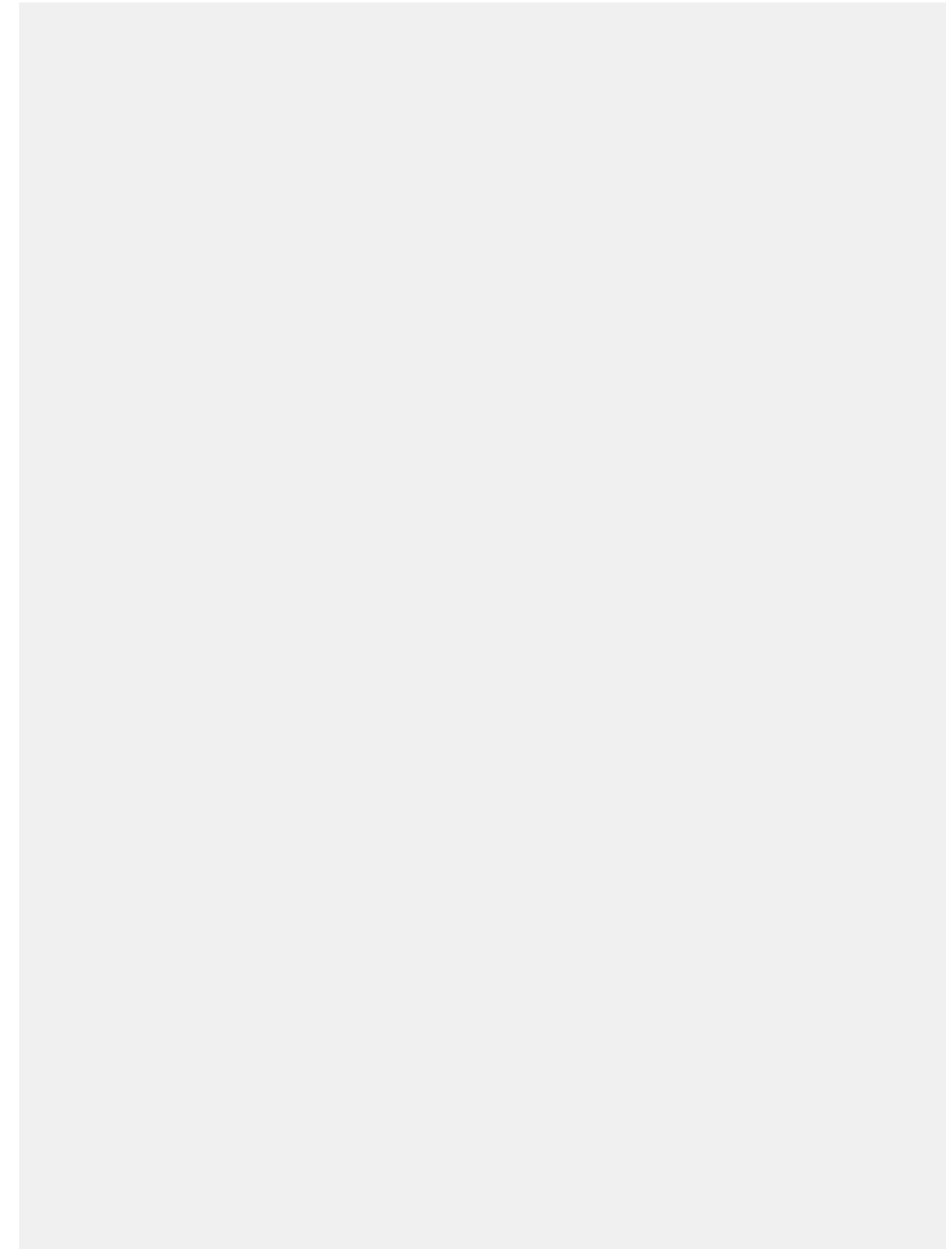
**Results:**

In 2006-2015 the mean prevalence of CLP in Georgia was  $0.95 \pm 0.4$  per 1000 live births. In the studied period there was seen a declining trend confirmed by rates in years 2006-2010 and 2011-2015 correspondingly being 1.01/1000 and 0.88/1000. A declining trend was more eminent in comparison with the data of 20th century, namely in 1981-1990 the prevalence was 1.05/1000. In Georgia this congenital malformation is distributed unevenly. The prevalence was  $1.60 \pm 0.19/1000$  in Eastern Georgia (excluding Tbilisi),  $0.65 \pm 0.05/1000$  in Western Georgia ( $p < 0.01$ ). In the study period the prevalence in Tbilisi was  $0.80 \pm 0.07/1000$ .

**Conclusions:**

In Georgia cleft lip and palate is characterized by a decreasing trend. It is distributed unevenly in different regions of the country, especially in Eastern and Western parts of Georgia. CLP is more frequent among boys (60.3%) than among girls (39.7%) ( $p < 0.01$ ). The most common type of this malformation is cleft lip with cleft palate - 39.8%, followed by cleft lip - 36.1% and cleft palate - 24.1%.

Notes



**P3-02****A Descriptive Epidemiology Study of Cleft Lip and Palate in Northern Finland**

*\*Riitta Lithovius<sup>1</sup>, Ville Lehtonen<sup>1</sup>, Leena Ylikontiola<sup>1</sup>, György Sandor<sup>1</sup>*

<sup>1</sup>Unit of oral health sciences/Oulu University Hospital, Maxillofacial surgery, Oulu, Finland

**Objectives:**

The aim of this study was to determine the incidence of cleft lip and or cleft palate in a population uniquely from Northern Finland.

**Methods:**

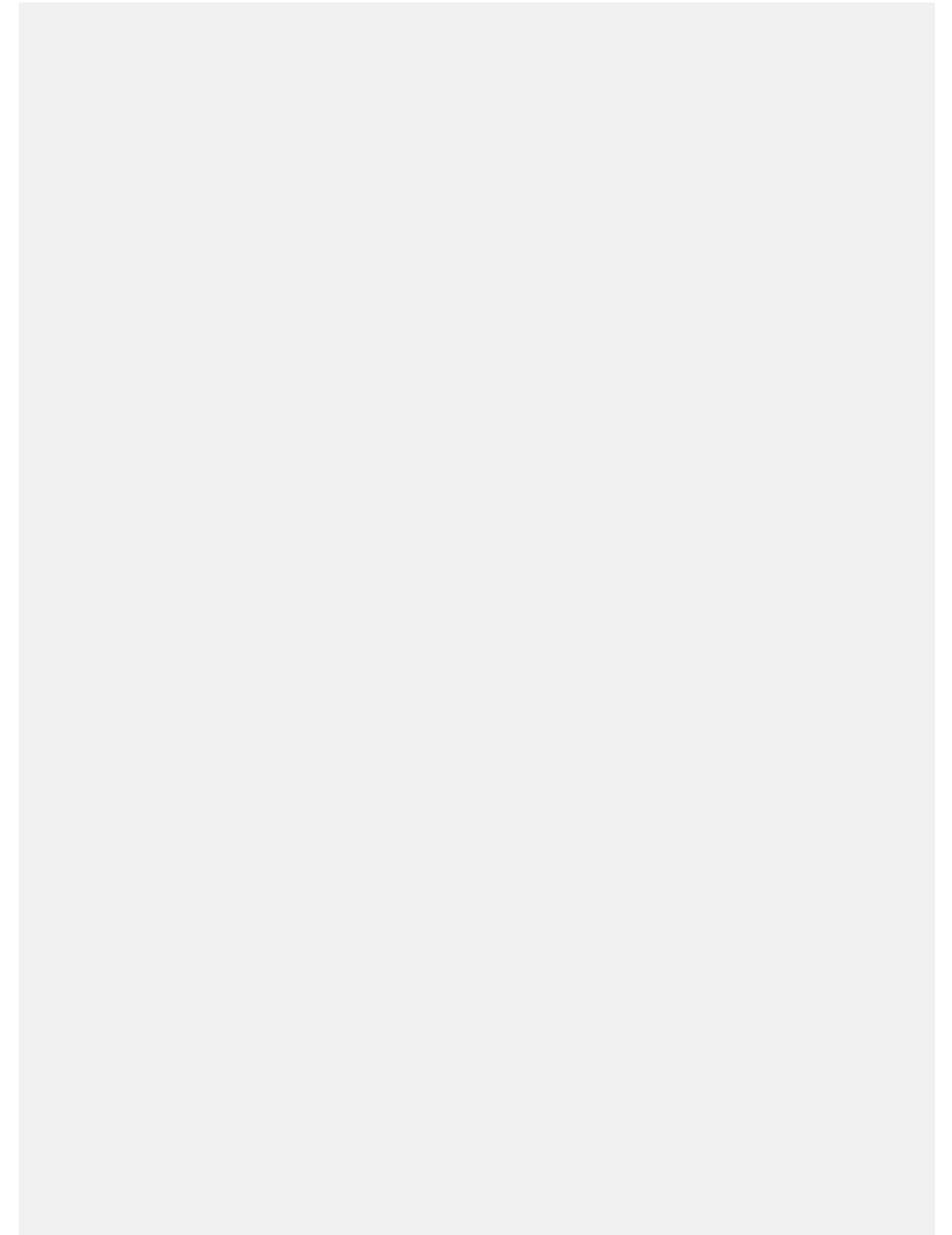
The records of a total of 214 cleft patients treated between 1998 and 2011 at the Oulu Cleft Lip and Palate Center at the University of Oulu were assessed on a retrospective basis. The following data were collected: cleft type, sex, side of cleft and family history of cleft were investigated and analyzed.

**Results:**

Cleft palate (68.7 %) was most frequently found, followed by cleft lip and palate (18.7%) and cleft lip with or without alveolus (12.6%). Cleft palate occurred more frequently in females (63.3%) and cleft lip and palate was more frequently found in males (62.5%) and the left side was more frequently affected in both male and female patients. Left sided clefts were observed in 82% of patients and right sided clefts in 18%. A family history of clefting was detected in 20.1% of patients.

**Conclusions:**

The incidence of clefts in Northern Finland is higher than the corresponding incidence in other European countries. The cleft palate was most frequent cleft type and it was more frequent in females. In males cleft lip and palate was more frequent. The left side was more frequently affected in both genders. One fifth of the patients had family history of clefts.

**Notes**



**P3-03**

**The frequency and risk factors of cleft lip and palate in Volgograd and Volgograd Region**

*\*Irina Fomenko<sup>1</sup>, Angela Kasatkina<sup>1</sup>, Ilia Timakov<sup>1</sup>, Diana Melnikova<sup>1</sup>*

<sup>1</sup>Volgograd State Medical University, Children dentistry, Volgograd, Russian Federation

**Objectives:**

According to the statistic research there is still high level of children with cleft lip and/or cleft palate. According to the information given by The World Health Organization (2006) the frequency of birth of children with this pathology is 1 in 800-2000 births. It is common knowledge that congenital defect of maxillofacial area belongs to multifactorial defects, so the necessity of studying the reasons and conditions of forming this pathology in each region is very important.

The aim is to study the frequency and risk factors of cleft lip and palate in Volgograd and Volgograd Region in 2010 -2016 y.

**Methods:**

The studying the frequency of birth of children with maxillofacial defects is based on the official medical statistical reporting and the information provided by The Regional Centre of medical examination of children with maxillofacial defects in 2010-2016. We have analyzed 325 cases of birth of children with this pathology. To analyze the dynamic of the indicator we used the previous epidemiological researches.

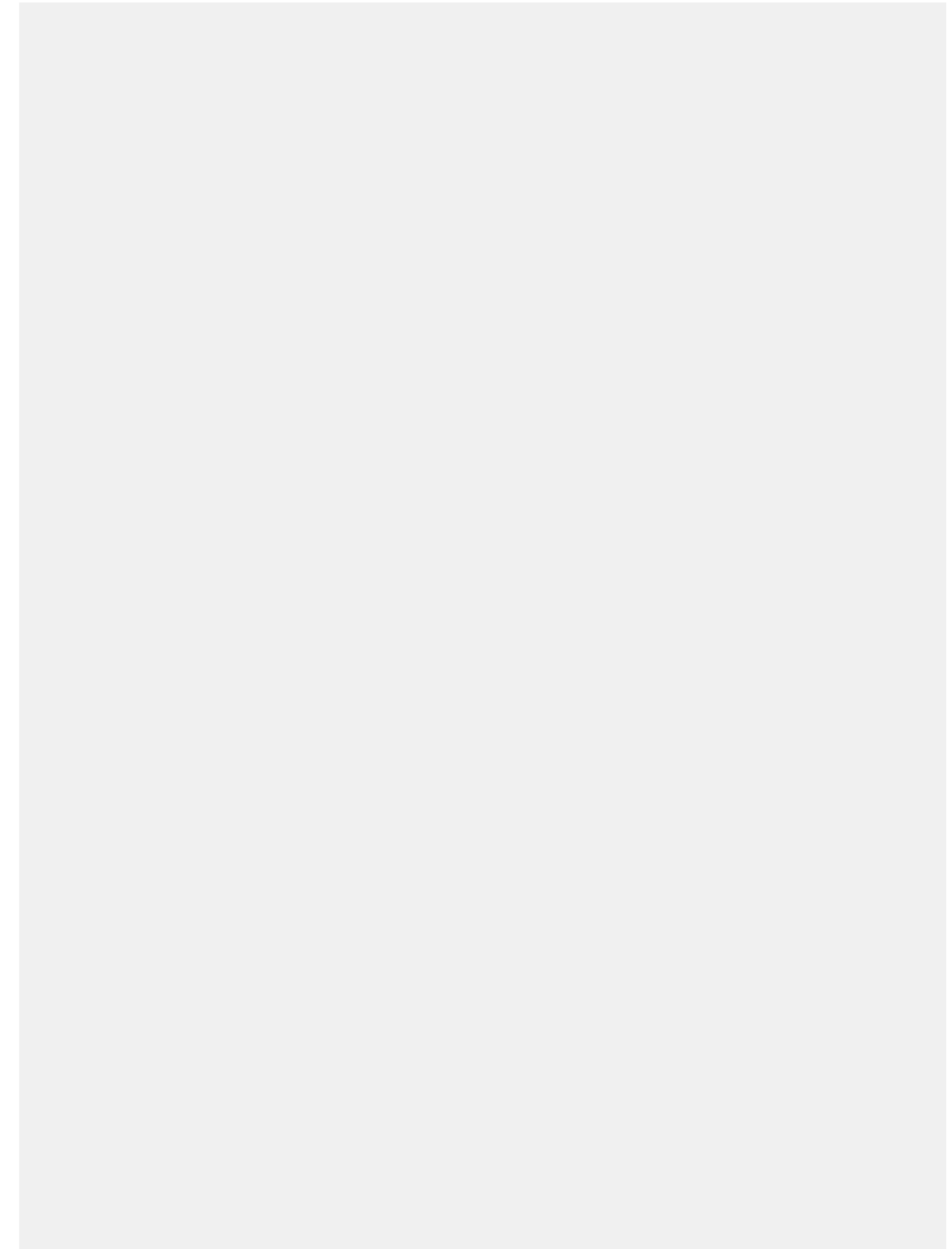
**Results:**

The frequency of clefts in the region - averages 1:679 births. According to the previous researches during 25 years this indicator amounts 1:751 births. After analyzing the possible risk factors of appearance of the pathology we discovered the following: the hereditary factor was discovered among 40 children (13,2±2,21%); 176 mothers (58,1±6,72%) pointed the coming through some infectious diseases during the first trimester; 115 women (38,1±7,94%) pointed taking antibiotics, salicylates and some other pills during the pregnancy; the presence of potential risk factors of professional activity was discovered among 133 women (43,81±2,54%).

**Conclusions:**

the results show a high frequency of birth of children with this pathology, underline the necessity of studying the possible risk factors for creating an affective preventive system of treatment.

**Notes**





**P3-04**

**Orofacial clefts in the Middle Eastern countries – a systematic review**

*\*Mahsa Mortazavi<sup>1</sup>, Marie Tolarova<sup>1</sup>*

<sup>1</sup>University of the Pacific, Arthur A. Dugoni School of Dentistry, Orthodontics, San Francisco, United States

**Objectives:**

The purpose of this study was to determine prevalence of OFC in regions of the Middle East. Numerous historical and recent studies on orofacial clefts (OFC) have shown that prevalence of OFC is influenced by multiple factors. They may include ethnicity, type of birth registry, hospital-based or population-based source of data, type of a cleft, and others. Recent studies on etiology of OFC revealed that different environmental and different genetic factors may participate in etiology of OFC in populations of different countries, locations, and even in societies characterized by a specific cultural, religious, or socioeconomic status.

**Methods:**

A systematic review of literature was done using three search engines (PubMed, Scopus, Google Scholar) and keywords: cleft, cleft lip, cleft lip and palate, cleft palate, orofacial cleft, prevalence, incidence, Middle East and all Middle Eastern countries (Bahrain, Cyprus, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Northern Cyprus, Oman, Palestine, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, Yemen). The search was run with no language restrictions and covered the 1980 – 2017 time periods.

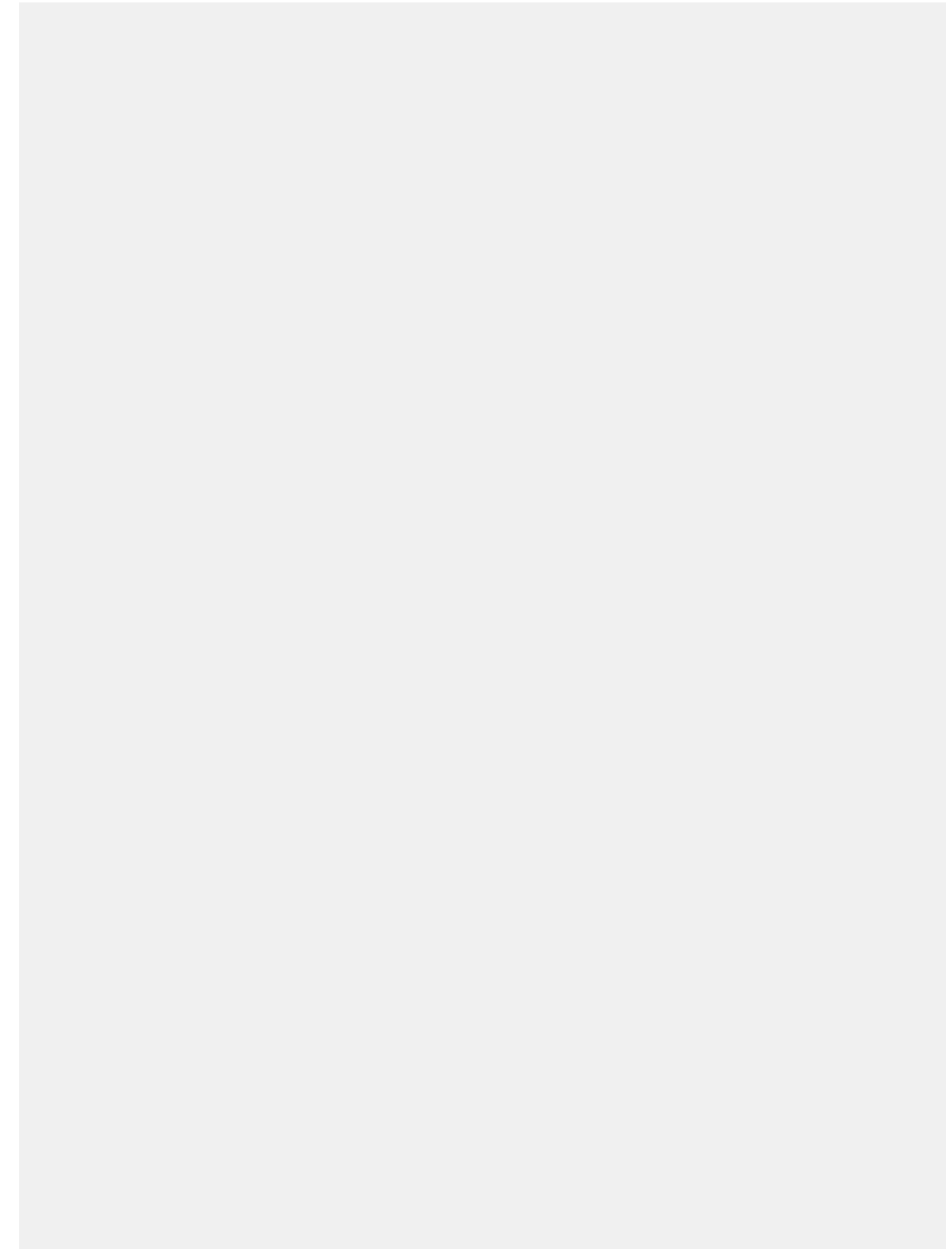
**Results:**

The search yielded 27 articles. Out of them, 24 articles matched the inclusion criteria (11: different states of Iran, 3: Saudi Arabia, 2: Jordan, Oman, Israel, 1: Bahrain, Egypt, Iraq, Palestine and UAE). No data were obtained for the remaining eight Middle Eastern countries. Vast majority of studies were based on hospital data, some included also syndromic cases. The prevalence of cleft lip and/or palate reported in these studies varied greatly from 0.3 to 2.4 per 1000 live births.

**Conclusions:**

Widely different values of OFC prevalence in the Middle Eastern countries or even between different cities of the same country were reported. It may be due to different methods of ascertainment. However, also differences in combinations of genetic and environmental factors in specific locations should be considered. Thus, in addition to improvements of existing birth defects registries, also studies focusing on etiological factors are needed for more accurate determination of values of OFC prevalence in the Middle Eastern countries.

**Notes**





**P3-05**

**Evaluation of experience of stress in cleft parents**

*\*Mine Alkaya<sup>1</sup>, Kevser Sancak<sup>1</sup>, Aysegul Mine Tuzuner oncul<sup>1</sup>*

<sup>1</sup>ankara university, faculty of dentistry, oral maxillofacial and surgery, ankara, Turkey

**Objectives:**

Cleft lip and palate is the most frequent congenital craniofacial deformity. Raising a child with a congenital craniofacial anomaly like a cleft lip and/or an alveolus cleft and/or a palate cleft (orofacial cleft) brings many challenges. This particular period may bring forth many different feelings. Questions may arise about what went wrong during pregnancy, the uncertainty of having a future child with a congenital malformation, and uncertainty about the future and the quality of life of their child. All these feelings can potentially lead parents to experience stress.

**Methods:**

In this study, the “Motherhood Satisfaction” questionnaire was used to measure the satisfaction of motherhood in mothers of children with orofacial cleft, with and without the use of an orthodontic plate in Ankara University Faculty of Dentistry, Department of Oral Maxillofacial Surgery. Do mothers of children with an orofacial cleft differ in satisfaction with motherhood from mothers of a child without an orofacial cleft?

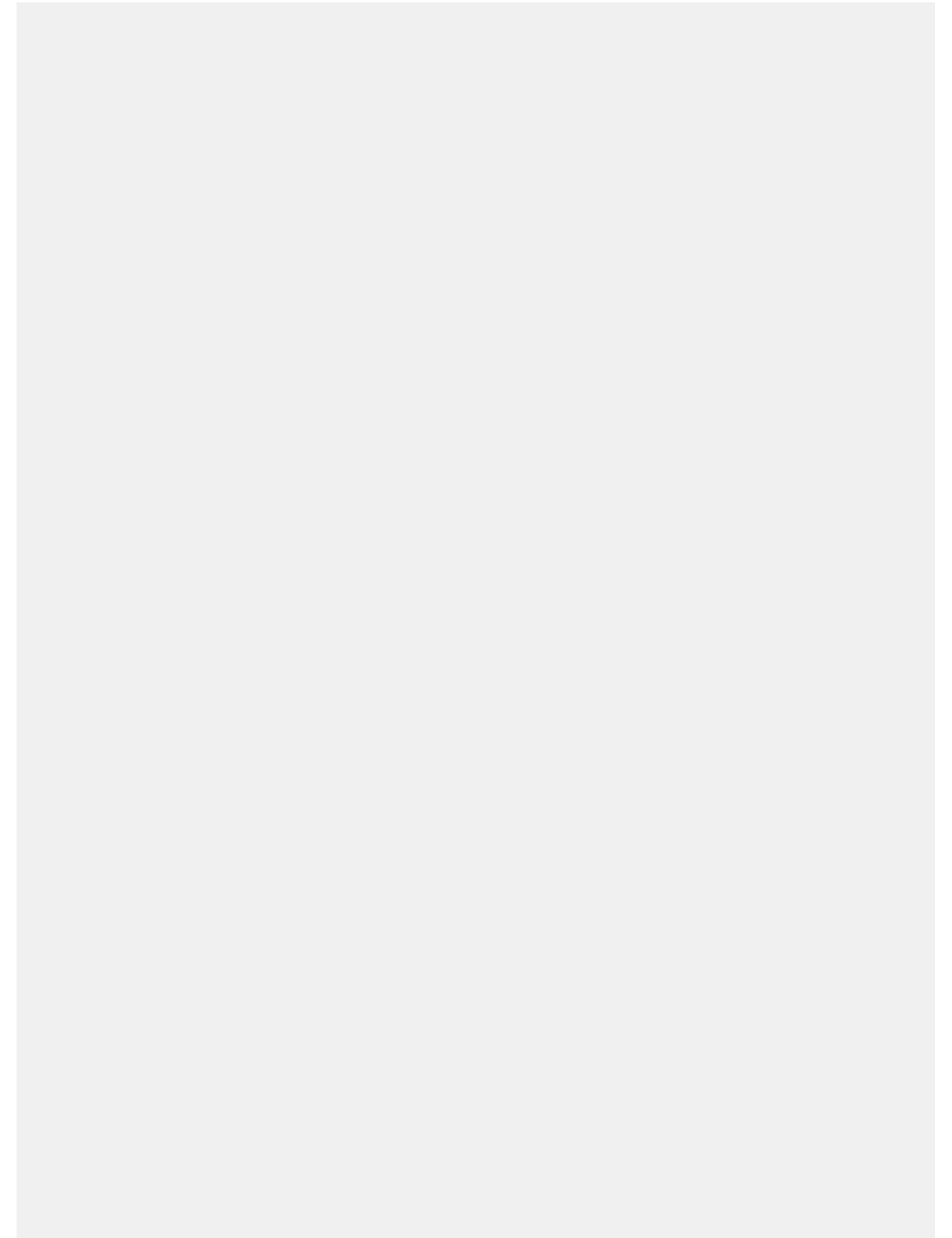
**Results:**

The SPSS version 23.0 was used and the results were analyzed by Student t test. As a result of the study, it was found that the mothers of cleft lip and palate children were more stressed.

**Conclusions:**

Surveys and questionnaires are tools available to clinicians that may more objectively explain a subjective assessment of patient satisfaction. Survey anonymity has the advantage of allowing the respondent to answer questions in a forthright manner. Furthermore questionnaires with craniofacial surgery must have to ability evaluate social aspects of deformity, facial aesthetics, oral function.

**Notes**





**P3-06****Morphological observation of cleft palate after palatal fusion in mice**

\*Hideto Imura<sup>1,2</sup>, Chisato Sakuma<sup>1,2</sup>, Tomohiro Yamada<sup>3</sup>, Yayoi Ikeda<sup>4</sup>, Toshio Sugahara<sup>1</sup>, Nagato Natsume<sup>1,2</sup>

<sup>1</sup>Aichi-gakuin university, School of dentistry, Division of Research and Treatment for Oral and Maxillofacial Congenital Anomalies , Nagoya, Japan

<sup>2</sup>Aichi-gakuin university hospital, Cleft lip and palate center, Nagoya, Japan

<sup>3</sup>Kyushu University, Section of Oral and Maxillofacial Surgery, Division of Maxillofacial Diagnostic and Surgical Sciences, Faculty of Dental Science, Fukuoka, Japan

<sup>4</sup> Aichi Gakuin University, Department of Anatomy, School of Dentistry, Nagoya, Japan

**Objectives:**

We reported that effect of 2,3,7,8-tetrachlorodibenzo-p-dioxin(TCDD) suggests occurring cleft palates after palatal fusion<sup>1</sup>). However, we showed that mouse embryos exposed to fixed concentration of TCDD during palatal fusion expressed 100% cleft palate on E18, we observed palatal fusion of TCDD-exposed mouse embryos on embryonic day (ED)14,15 and 16. In this study, we investigated the factor of process to induce cleft palate mouse embryos after palatal fusion.

**Methods:**

ICR pregnant mouse exposed TCDD a dose of 40 / body weight on gestational day 12. Embryos were removed on ED 15 from TCDD-exposed pregnant mouse and we observed palatal morphology of the mouse embryos which had palatal fusion. Sections were also incubated overnight at 4°C with anti-cytokeratin polyclonal and vimentin polyclonal antibodies.

**Results:**

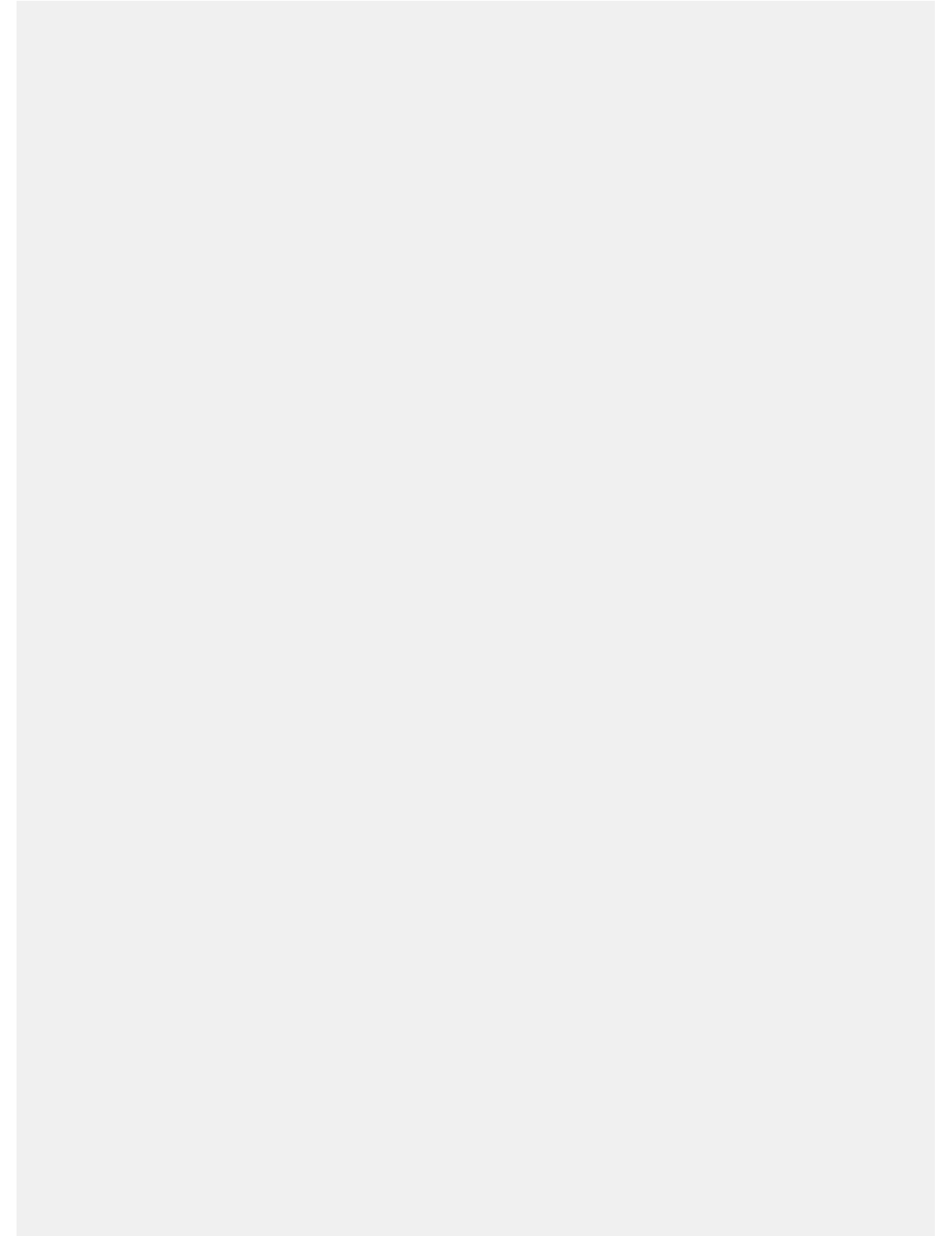
The three mouse embryos TCDD-exposed had palatal fusion at anterior side of palatal plate and express palatal cleft at posterior side. The oral palatal mucosa invaginated upward gradually from middle side to posterior side and after that palatal mucosa was separated from midline of the palatal fusion.

**Conclusions:**

We suggested that the palatal fusion of the mouse embryos TCDD-exposed started to separate from oral mucosa of palate and lead to palatal cleft. Deficiency of the cells was observed in a state where continuity of the epithelium was maintained. It was considered that the insufficient intercellular adhesion of the palate was one of the reasons for the dissection.

This research was financial supported by Grant-in-Aid for Scientific Research (Category C,16K11773-Hideto Imura) reference

1)Sakuma C, Imura H, Journal of Japanese Cleft Palate Association,42(2) 163.

**Notes**

**P3-07****Survey about baby's "thinning" of cleft lip and palate patients in Ethiopia**

*\*Hideto Imura<sup>1,2</sup>, Hiroo Furukawa<sup>2,3</sup>, Satoshi Suzuki<sup>1,2</sup>, Toko Hayakawa<sup>2,3</sup>, Maya Yoshida<sup>1,2</sup>, Fuko Yamauchi<sup>1,2</sup>, Kazuhide Nishihara<sup>4</sup>, Akira Arasaki<sup>4</sup>, Nagato Natsume<sup>1,2</sup>*

<sup>1</sup>Aichi-gakuin university, School of dentistry, Division of Research and Treatment for Oral and Maxillofacial Congenital Anomalies , Nagoya, Japan

<sup>2</sup>Aichi-gakuin university hospital, Cleft lip and palate center, Nagoya, Japan

<sup>3</sup> Aichi Gakuin University, Department of Health Science, Faculty of Psychological and Physical Science, Nagoya, Japan

<sup>4</sup> University of the Ryukyus, Department of Oral and Maxillofacial Functional Rehabilitation, Graduate School of Medicine, Okinawa, Japan

**Objectives:**

In Ethiopia, We cannot deny estimate there is some possibility that some in some cases the life of babies with birth defects is cut off as a subject of so-called baby's "thinning". Early measures are needed to rescue the humanity of the patient. This report, we will report show you the results of the questionnaire conducted about the knowledge of cleft lip and palate gathered at the time of during the medical assistance mission at butadzilla.

**Methods:**

We have already been conducting conducted 7 academic research and medical cooperation seven times from 2009 to 2017 in the capital Addis Ababa, Butadera and Awasa. The details are clarified from the actual survey since 2014 which was conducted by in the granted of by the Japan Society for the Promotion of Science. We conducted a questionnaire survey on knowledge and consciousness of cleft lip and palate in 100 subjects at the Addis Ababa University Dental College and 22 subjects of butadzilla's patients and families.

**Results:**

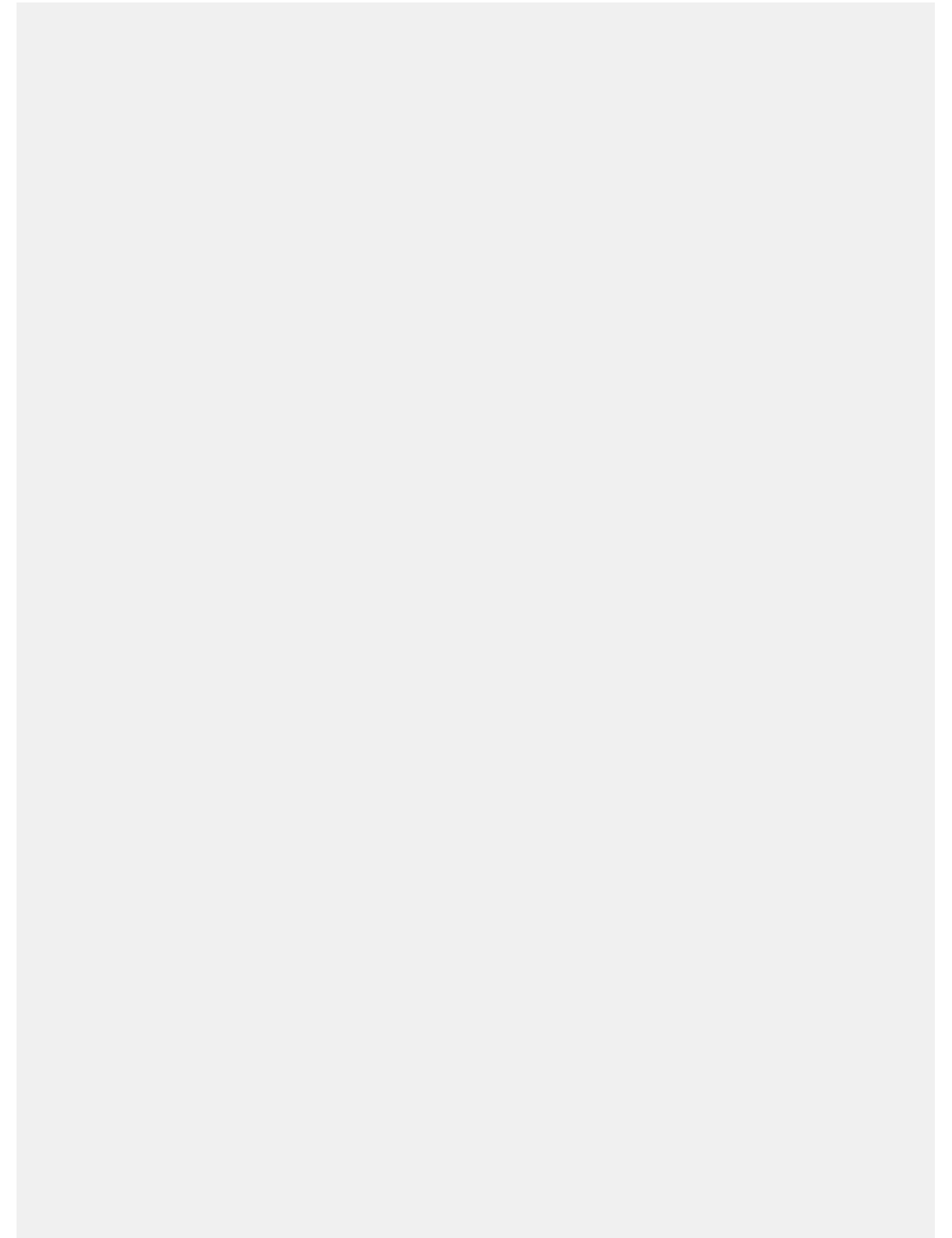
For "thinning", Yes was 2% and No was 98% in the Addis Ababa University Dental College. As for suicide, Yes was 2% and No was 98% in the Addis Ababa University Dental College.

**Conclusions:**

The result from the questionnaire survey, conducted in Addis Ababa, showed Ethiopian did not have strong prejudice to cleft lip and palate, but many people thought it was the God's will. Though people's recognition did not relate to the "thinning" that we concerned, the view to the congenital anomaly by Ethiopian who were students of school of dentistry in the capital city, was shown.

It is necessary to continue the further investigation, and it was reaffirmed that it is urgent to develop a plan to improve this situation.

This work was supported by JSPS KAKENHI Grant Number 26257509 (representative: Hiroo Furukawa).

**Notes**

**P3-08****Localization of serotonin and serotonin transporter during palate formation in mice**

*\*Katsuhiro MINAMI<sup>1</sup>, Toshio SUGAHARA<sup>1</sup>, Azumi HIRATA<sup>2</sup>, Nagato NATSUME<sup>1</sup>*

<sup>1</sup>Aichi-Gakuin University School of Dentistry, Division of Research and Treatment for Oral and Maxillofacial Congenital Anomalies, Chikusa, Nagoya, Japan

<sup>2</sup>Osaka Medical College Graduate School of Medicine, Department of Anatomy and Cell Biology, Takatsuki, Japan

**Objectives:**

Serotonin (5-HT) is known to have diverse functions such as migration of neural crest cells and involvement in the initial maxillofacial development.

**Methods:**

In this study, we examined localization of 5-HT and Serotonin transporter (SERT) during palate formation immunohistochemically in mice to determine the functional relevance of 5-HT and SERT.

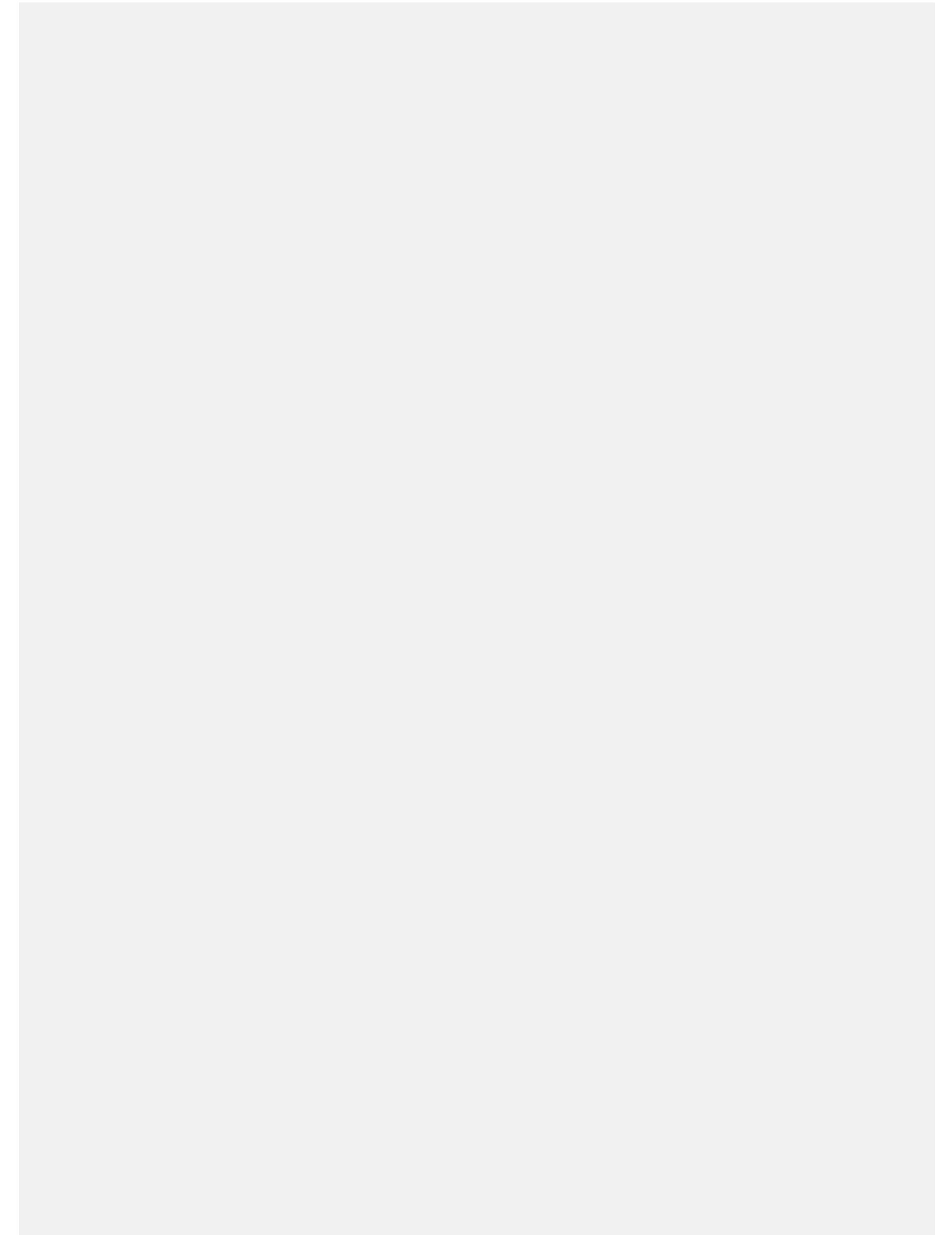
**Results:**

In western blot analyses, 5-HT showed the highest expression in the palatal shelves that were positioned bilaterally along the side of the tongue, whereas SERT expression increased along with development. Immunohistochemically, in the palatal shelves in the vertical position, diffuse localization of 5-HT was observed in the palatal mesenchyme. When the palatal shelves were oriented horizontally, similar immunoreactivities of both 5-HT and SERT were observed in the cells of the outer epithelial layer of the palatal shelf. In addition, both immunoreactivities were detected in the medial epithelial seam of fused palatal shelves.

**Conclusions:**

These findings suggest that serotonergic regulation via SERT is involved in palatogenesis.

This study was supported by Grants-in-Aid for Scientific Research(KAKEN) 16K11772.

**Notes**



**P3-09**

**Detection of Streptococcus mutans and Lactobacilli in Mongolian children with Cleft Lip and/or Palate**

*Soyolmaa Mashbaljir<sup>1</sup>, Bayarchimeg Batbayar<sup>1</sup>, Oyunkhishig Khishigdorj<sup>1</sup>, Oyun-Enkh Puntsag<sup>1</sup>, Urjinkham Jagdag-suren<sup>1</sup>, \*Ariuntuul Garidkhuu<sup>1,2</sup>, Ken Osaka<sup>2</sup>, Nagato Natsume<sup>3</sup>*

<sup>1</sup>School of Dentistry, MNUMS, Ulaanbaatar, Mongolia

<sup>2</sup>Graduate School of Dentistry, Tohoku University, Sendai, Japan

<sup>3</sup>School of Dentistry, Aichi-Gakuin University, Nagoya, Japan

**Objectives:**

The objective of this investigation was to study the presence of cariogenic bacteria in Mongolian children with CL/P.

**Methods:**

The study was carried out on 24 children with cleft lip and/or palate aged 3-48 months. All participants' caregivers have signed the informed consent. Microbiological analyses: CRT<sup>®</sup> bacteria test (Ivoclar Vivadent) was used. The saliva stimulated by chewing a paraffin pellet collected as specimens in the proper vials, containing specially prepared agar. Test vials were incubated at 37°C for 48 hours. The collected data were classified as  $10^5$  colony-forming units (CFU)/ml vs  $\geq 10^5$  CFU/ml, in accordance with the scale recommended by the manufacturer

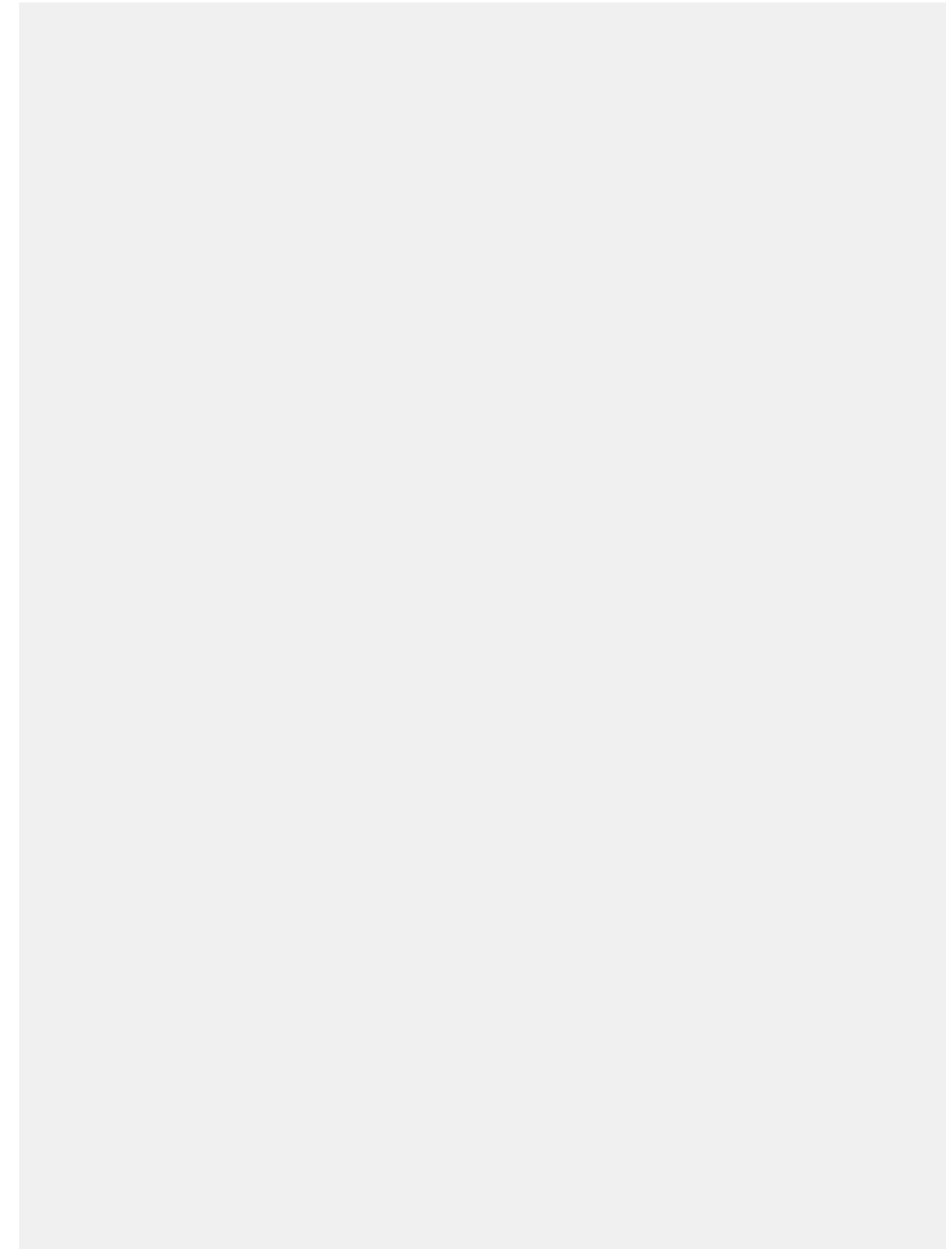
**Results:**

Both S.mutans and lactobacilli were detected in all 100% children with cleft lip and/or palate. Most of children 83.3% had high numbers of S. mutans ( $\geq 10^5$  CFU/mL), and 45.8% of them had high levels of lactobacilli. However, only 16.7% of children had less than  $<10^5$  CFU/mL of S. mutans. Low levels of lactobacilli were detected in 54.2% of all children. All 25-36 months old children wearing obturator exhibited high levels of lactobacilli ( $\geq 10^5$  CFU/mL). Nearly 25% of the children with clefts wore obturator, and all of them were positive for both S. mutans and lactobacilli.

**Conclusions:**

High streptococcal and lactobacilli counts were observed in Mongolian children with cleft lip and/or palate. Therefore, it is important to promote awareness of oral health within this population and integrate dental preventive regimens into treatment protocol.

**Notes**





**P3-10**

**Socioeconomic factors that may contributed to etiology of orofacial clefts. Systematic review**

*\*Shubdeep Dhillon<sup>1</sup>, Mahsa Mortazavi<sup>1</sup>, Geethapryia Kumar<sup>1</sup>, Marie Tolarova<sup>1</sup>*

<sup>1</sup>University of the Pacific Arthur A. Dugoni School of Dentistry, Orthodontics, San Francisco, United States

**Objectives:**

Association of a socio-economic status (SES) with congenital anomalies and diseases has been studied for many years. Under the umbrella of SES are several environmental factors, like nutrition, pollution, education, life-style, and other factors. They can vary in different parts of the world due to different climate, ethnicity and cultural differences. The important role of epigenetic mechanisms in regulation of gene expression is known. Therefore, identifying environmental factors linked to SES is critically important not only for understanding etiology, but also for prevention of orofacial clefts (OFC).

The purpose of this systematic review was to determine associations between various risk factors related to SES and prevalence of OFC.

**Methods:**

Using keywords socio-economic status, risk factors, environmental factors, etiology, prevalence, orofacial cleft, cleft lip, cleft palate and non-syndromic cleft lip and palate in PubMed and Google Scholar search engines, a systematic review of literature was done. The search was run with no language, place or time period restrictions.

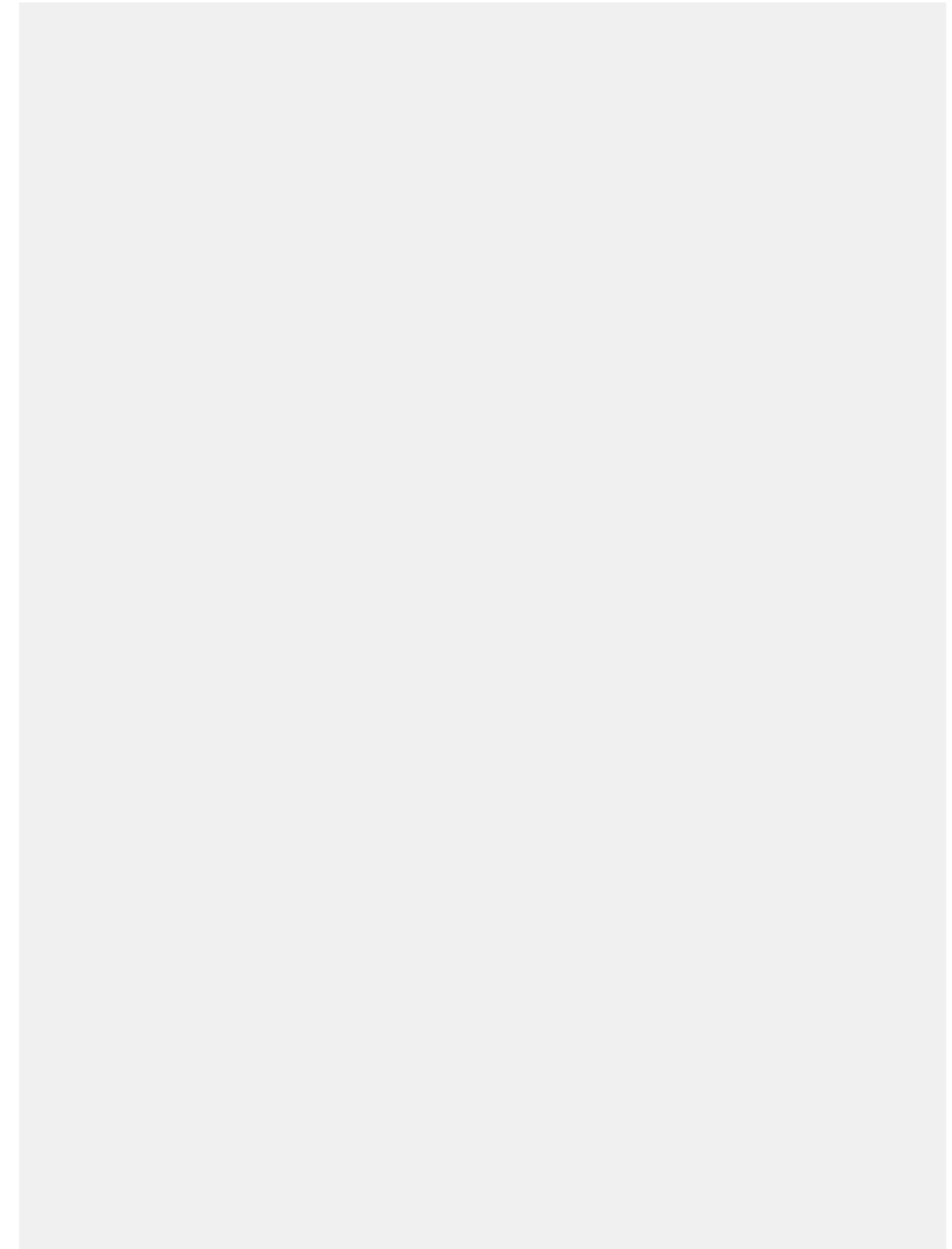
**Results:**

Our search yielded 23 articles from different countries and continents that focused on etiology and/or prevalence of cleft lip and palate anomalies. The reviewed studies listed various environmental factors - illiteracy or lower educational level, high risk paternal occupations, maternal exposure to tobacco, indoor cooking smoke, alcohol drinks, insecure water sources, nutritional deficiency, self-administered medications and other factors that may be directly or indirectly related to SES. While a general agreement between the studies on majority of factors was found, there was a controversy regarding prevalence of OFC in urban and rural areas.

**Conclusions:**

Our search yielded 23 articles from different countries and continents that focused on etiology and/or prevalence of cleft lip and palate anomalies. The reviewed studies listed various environmental factors - illiteracy or lower educational level, high risk paternal occupations, maternal exposure to tobacco, indoor cooking smoke, alcohol drinks, insecure water sources, nutritional deficiency, self-administered medications and other factors that may be directly or indirectly related to SES. While a general agreement between the studies on majority of factors was found, there was a controversy regarding prevalence of OFC in urban and rural areas.

**Notes**



**P3-11****Donor site harvesting with a Piezo device to improve tooth autotransplantation**

*\*Leena Ylikontiola<sup>1</sup>, György Kalman Sandor<sup>1</sup>*

<sup>1</sup>Oulu University Hospital Unit of Oral Health Sciences, University of Oulu, Department of Oral and Maxillofacial Surgery, Oulu, Finland

**Objectives:**

Piezo-surgery has been successfully applied at our centre for harvesting autogenous bone grafts from the iliac crest with a reduction in donor site morbidity. Piezo-surgery has also been adapted to intraoral use and is routine in sinus lift surgery. Candidate autotransplant donor teeth are often ectopically positioned and may require a considerable amount of potentially heat generating alveolar bone drilling to allow removal of the tooth. This abstract aims to apply piezo-surgery to the donor site harvesting of unerupted permanent premolar teeth for autotransplantation.

**Methods:**

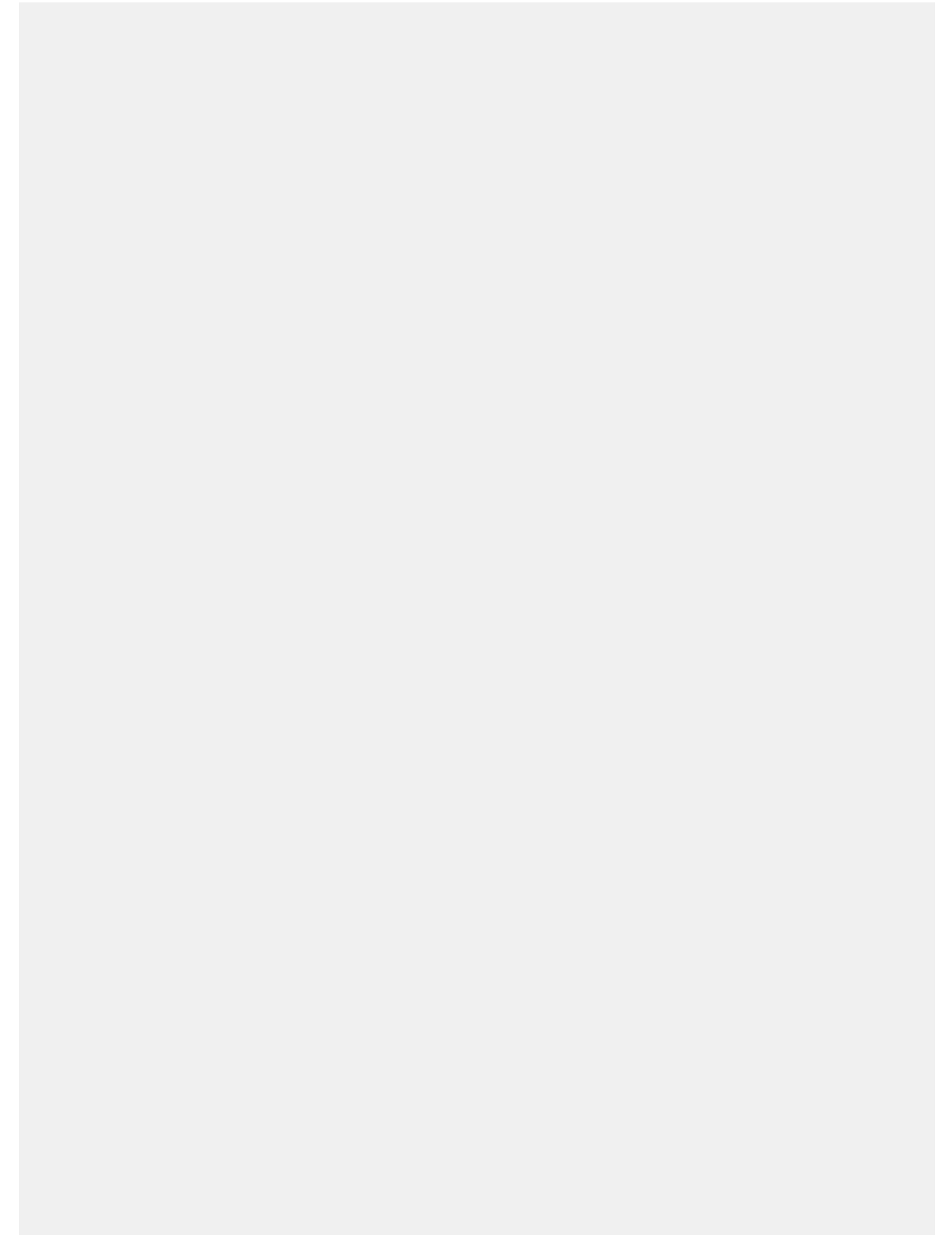
Permanent maxillary or mandibular premolar teeth with sufficient crown and root development, intact dental follicles which were morphologically sound were designated as potential candidate teeth for autotransplantation during multidisciplinary surgical and orthodontic consultations. The autotransplanted teeth replaced missing teeth that were lost due to trauma or due to congenital reasons such as oligodontia and in cleft lip and palate patients. A piezo-surgical device was used to remove sufficient alveolar bone from the pericoronal region to allow atraumatic delivery of the tooth with an intact follicle.

**Results:**

Teeth were transplanted to their recipient beds once these beds were fully prepared. The development of the transplanted teeth was followed clinically and radiographically for the next 12 months. All transplanted teeth healed in a satisfactory manner without excessive mobility, however there was one case of ankylosis. Although the root lengths were variable, all teeth were morphologically intact and clinically sound.

**Conclusions:**

Piezo-surgical harvesting of donor autotransplant teeth including those in cleft palate patients results in well prepared dental transplantable units capable of surviving and becoming functional teeth.

**Notes**



**P3-12**

**Use of mandibular chin bone for alveolar bone grafting in cleft patients**

*\*Min Keun Kim<sup>1</sup>, Jang Ha Lee<sup>1</sup>, Young Wook Park<sup>1</sup>*

<sup>1</sup>Gangneung-Wonju National University, Oral and maxillofacial surgery, Gangneung, South Korea

**Objectives:**

We evaluated and compared the outcomes of different ossification processes in patients with alveolar cleft in whom correction was performed using endochondral bone graft or intramembranous bone graft.

**Methods:**

The patients were divided into two groups: the endochondral bone (iliac bone or rib bone) graft group and the intramembranous bone (mandibular bone) graft group. Through postoperative and follow-up radiologic images, the height of the interdental bone septum was classified into four types based on the highest point of alveolar ridge. Then, the height of the interdental bone septum and the area of the bone graft were evaluated according to the type of bone graft.

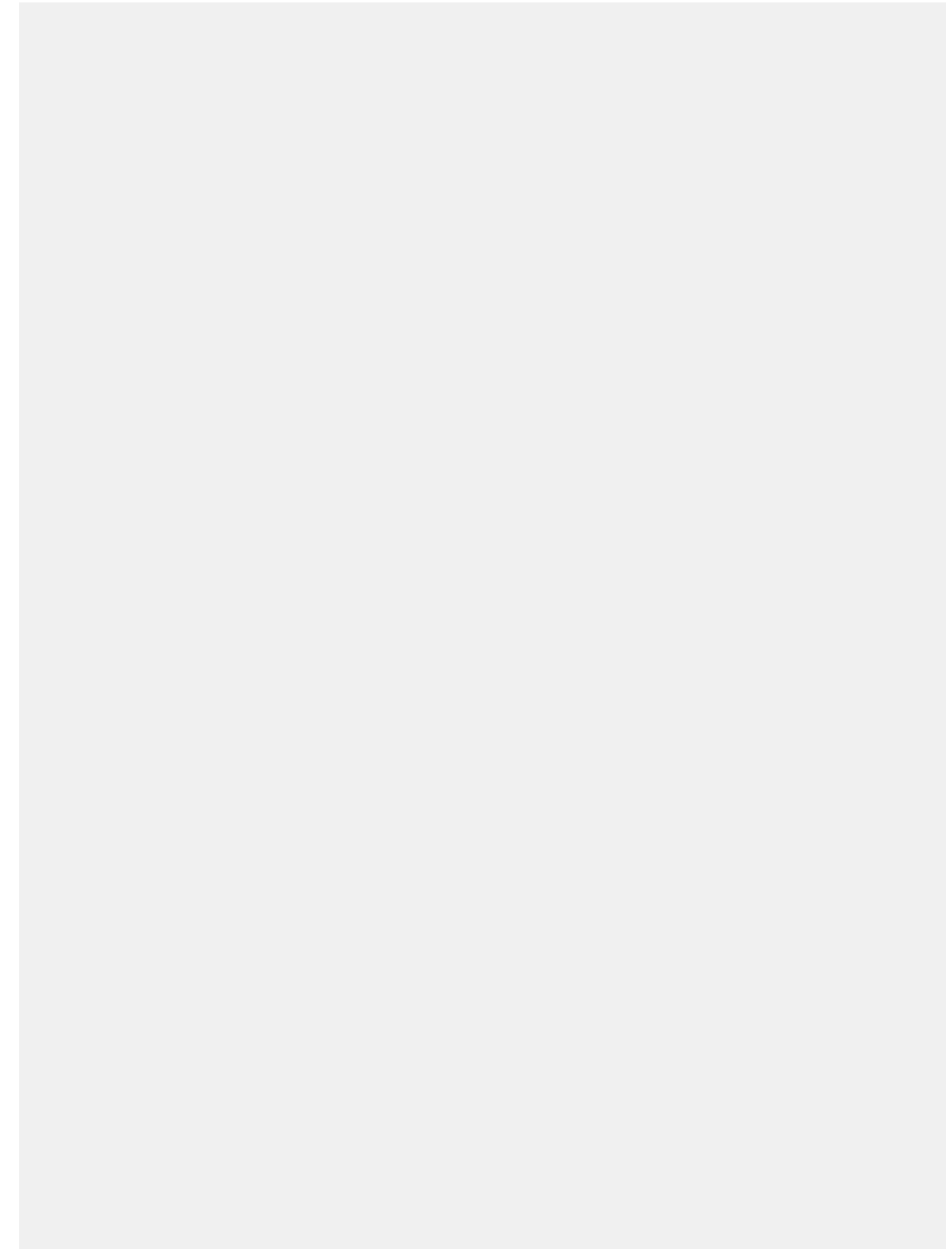
**Results:**

Thirty patients were included in this study. There was no significant difference in the change of the interdental bone height and the area of the bone graft according to the type of bone. There was no significant difference in the success rate of the surgery according to the type of bone. One patient underwent an additional bone graft surgery during the follow-up period.

**Conclusions:**

The outcomes of alveolar bone grafting were not significantly different according to the type of bone graft. If appropriate to the size of the recipient site, the chin bone is a useful graft material in alveolar cleft, as is the iliac bone.

**Notes**





**P3-13**

**Surgical treatment of bilateral facial cleft (Tessier No.3) with bilateral complete cleft palate:  
A case report**

*\*Young Wook Park<sup>1</sup>, Min Keun Kim<sup>1</sup>*

<sup>1</sup>Gangneung-Wonju National University, Oral and maxillofacial surgery, Gangneung, South Korea

**Objectives:**

The Tessier number 3 cleft is uncommon congenital craniofacial clefts, which is the most medial type of oblique facial cleft. It is also called naso-ocular cleft, nasomaxillary cleft, or paranasal medial orbito-maxillary cleft showing a cleft that extends from philtrum of the upper lip, through the alar groove and the lateral wall of the nose, to the medial canthus of the eye and the lower eyelid. Due to its rarity and complexity, surgical repair of bilateral Tessier No.3 clefts has been a challenge to the cleft surgeons.

**Methods:**

The patient described here presented a severely protruded premaxilla, unsymmetrical oblique facial clefts with bony involvements, eyelid colobomas, and bilateral complete cleft palates. We diagnosed him as bilateral nasomaxillary clefts (Tessier No. 3) extending cranially on the right side (Tessier No. 11) accompanying with right-sided microphthalmia and left-sided anophthalmia. His right eye was in end-stage, had no function due to recurrent retinal detachments. We repaired simultaneously the bilateral soft tissue clefts.

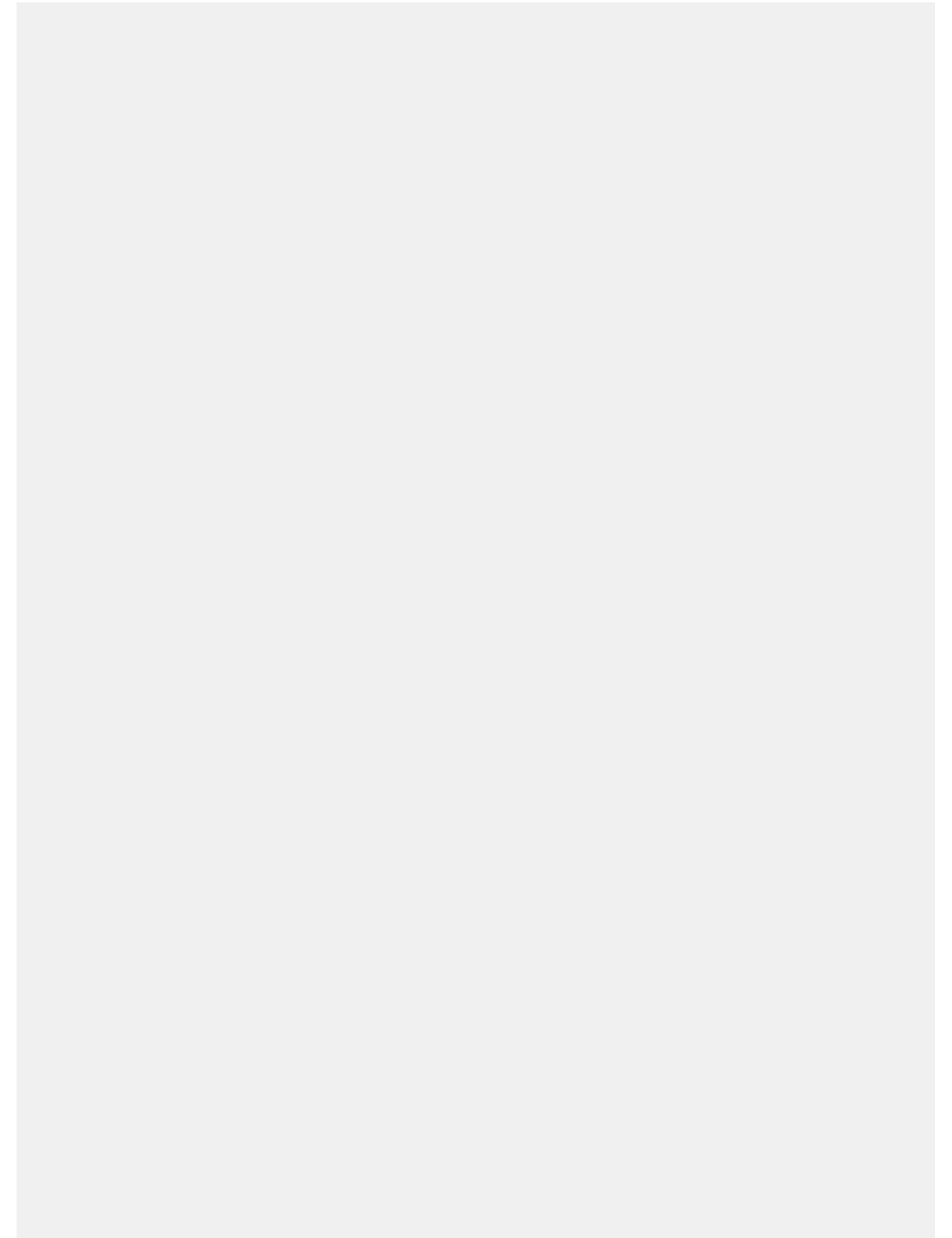
**Results:**

Our surgical strategies were downward rotation of the nasal flap, medial advancement of the laterally based cheek flap, and the use of medially based upper eyelid flap after medial canthopexy. Postoperatively, the patient showed an esthetically favorable face without remarkable scars or mismatched skin colors.

**Conclusions:**

The surgical significance of our anatomic repair is presented.

**Notes**







# Poster Session IV: Orthodontics



## P4-01

**Tooth anomalies in patients with cleft lip and palate at the University Medical Centre Mainz**

\*Susanne Wriedt<sup>1</sup>, Anna Kaltenmorgen<sup>1</sup>, Maximilian Moerge<sup>2</sup>

<sup>1</sup>University Medical Centre Mainz, Department of Orthodontics, Mainz, Germany

<sup>2</sup>University Medical Centre Mainz, Department of Maxillofacial Surgery, Mainz, Germany

**Objectives:**

Literature indicates a prevalence of tooth aplasia in patients with cleft lip and palate from 22 up to 86%. Looking at the cleft palate patients treated at the department of orthodontics we examined frequency and location of dental hypo- and aplasia and their impact on the orthodontic or prosthodontic treatment for space closure.

**Methods:**

Records (x-rays, medical files) of 356 patients with cleft lip and/or palate born in 1954-2007 were taken from the archive of the orthodontic department at the University Medical Centre Mainz. Among others we extracted clinical parameter: kind of cleft region and number of hypo- and aplasia, time of primary surgery, kind of prosthetic restoration or orthodontic space closure. Descriptive analyze and Chi2-test were performed using SPSS23.

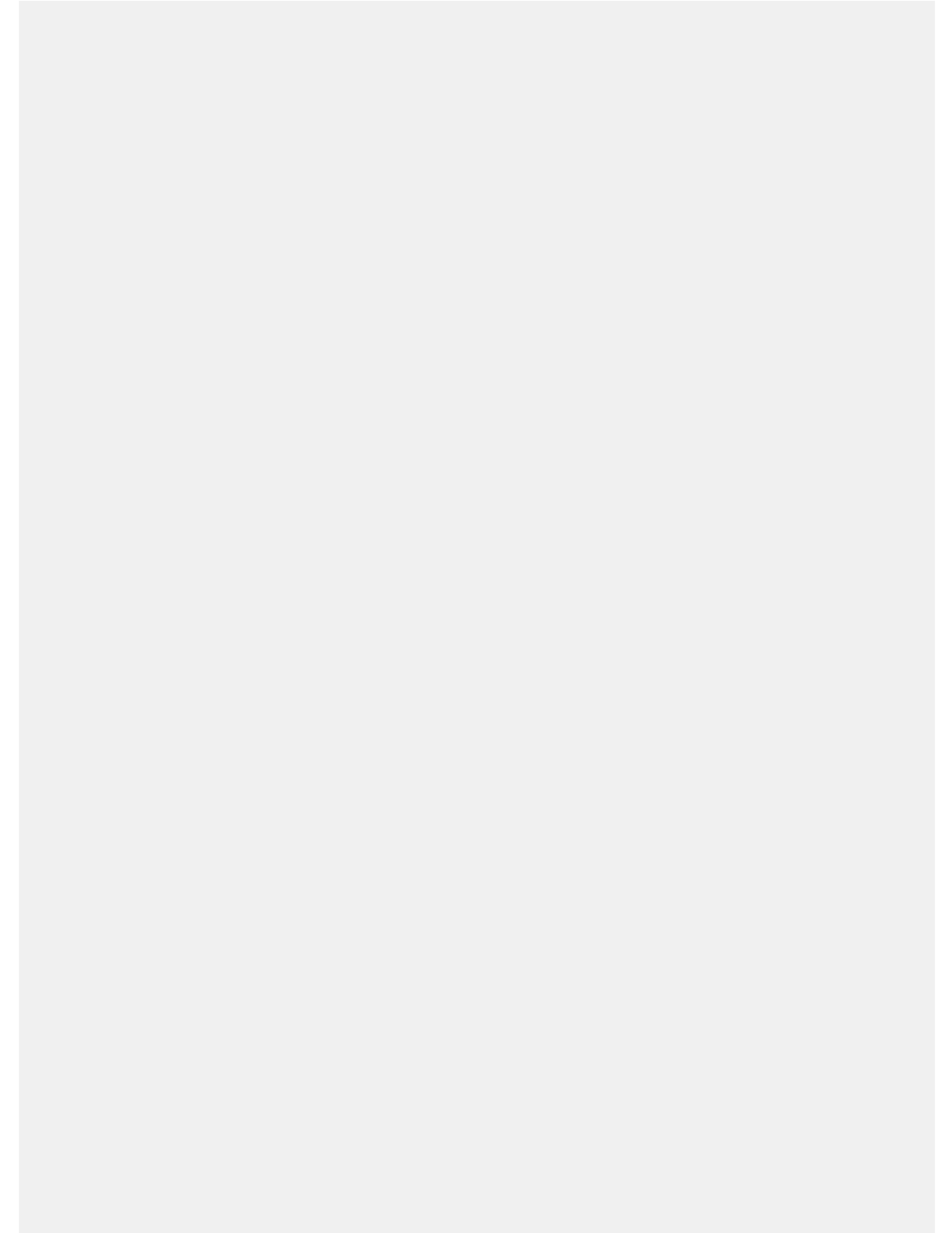
**Results:**

50% of the patients had UCLP, 16% BCLP. 37% had no aplasia, 34% one, 29% two or more. 35% had aplasia of tooth 22, 27% of 12. Hypoplasia was seen in the upper frontal region (10-28%). 242 patients with involvement of a unilateral alveolar cleft had a-/hypoplasia more often on ipsi- than contralateral side. No difference of position or frequency of a-/hypoplasia was found concerning different times of primary operations ( $p=0.058-0.855$ ), though extent and prevalence of prosthodontic replacement decreased. 42% of older patients had prosthodontic substitution, 80% of younger patients showed maintained natural tooth or orthodontically closed gap.

**Conclusions:**

Timely surgical closure of the cleft lip and/or palate combined with increased orthodontic space closure, and better dental care and education reduce the need for prosthodontic therapy. As consequence, more and more patients without or minimal prosthetic restorations only are released into their adult life.

## Notes



## P4-02

**Radiologic symptoms of disturbed development in the dentition of cleft patients**

\*Mathias Schmücker<sup>1,2</sup>, Martin Scheer<sup>2,3</sup>, Martin Zerfowski<sup>2,4</sup>, Wibke Lindemann<sup>2,5</sup>, Johannes Röhling<sup>1,2</sup>

<sup>1</sup>Private Orthodontic Practice, Bielefeld, Germany

<sup>2</sup>Cleft Centre Ostwestfalen-Lippe, Ostwestfalen-Lippe, Germany

<sup>3</sup>Johannes Wesling Klinikum, Department of Oral and Maxillofacial Surgery, Minden, Germany

<sup>4</sup>Evangelisches Klinikum Bethel, Department of Oral and Maxillofacial Surgery, Bielefeld, Germany

<sup>5</sup>Private Orthodontic Practice, Löhne, Germany

**Objectives:**

Panoramic radiographs (PAN) are valuable in identifying symptoms of disturbed development of the dentition (DDD) in patients with orofacial clefts. Emphasis shall be put on hypodontia (HD) and tooth displacement (TD) due to their relevance for orthodontic treatment planning as well as analysing anomalies concerning amount, combination and association of the individual symptoms.

**Methods:**

A cleft group (CG) and a control group (CO) were set up for analysis. Inclusion criteria (IC) for the CG were presentation of a non-syndromic cleft and  $\geq 1$  PAN, which was met by 47 cleft patients (mean age 10.2y). IC for the CO were absence of clefting and syndromic diseases with  $\geq 1$  PAN which was met by 968 orthodontic patients (mean age 11.8y). Symptoms considered were HD, TD, atypical pos. and delayed development of tooth buds, dysplasia, rotation, hyperodontia, infrapos. of primary molars, taurodontism and incr. distance between tooth buds of permanent molars. A chi square test was used for analysis with  $p \leq 0.05$  valued as stat. significant.

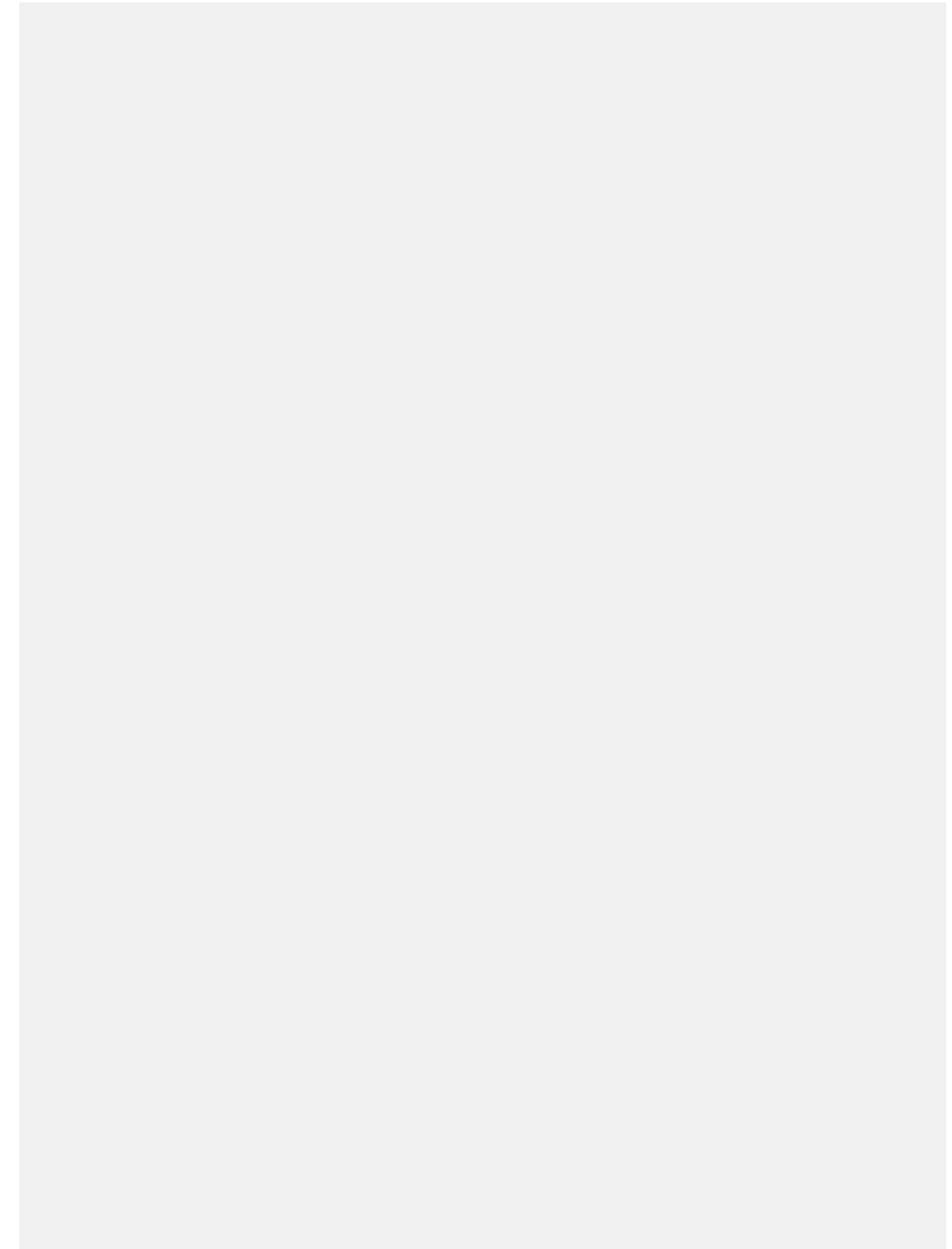
**Results:**

Occurrence of symptomatic teeth within the CG was 3x higher in the maxilla than in the mandible ( $p < 0.01$ ). HD was the most prevalent symptom (63.8%) in the CG. Combinations of symptoms were generally found more often in the CG than in the CO ( $p < 0.01$ ) with dysplasia occurring most frequently in combination with HD ( $p < 0.01$ ). Missing tooth buds 12, 22 ( $p < 0.01$ ) and 15, 35 ( $p = 0.05$ ) were more frequently diagnosed in the CG. TD was found in 19.1% of the CG, always in combination with other symptoms of DDD. The analysis showed increasing additional symptoms in combination with HD and TD in the CG without reaching statistical significance.

**Conclusions:**

The knowledge of potential characteristics of symptoms of DDD is vital for differentiated orthodontic treatment planning. Our study revealed that the combination of symptoms is occurring more often in patients with clefts than in the control group. We found missing tooth buds in 68.1% of the cleft patients, with teeth 12, 22, 15, 35 being more frequently affected than in the control group. The majority of missing tooth buds of the cleft patients was found in combination with dysplasia. Displaced teeth were found in 19.1% of the cleft patients, always in combination with other symptoms of disturbed development of the dentition.

## Notes





**P4-03**

**Comparison of three rating methods of nasolabial appearance in patients with cleft lip and palate between two ethnic groups**

*\*Van Thai Nguyen<sup>1,2</sup>, Toai Nguyen<sup>2</sup>, Triin Jagomagi<sup>1</sup>*

<sup>1</sup>University of Tartu, Institute of Dentistry, Tartu, Estonia

<sup>2</sup>Hue University of Medicine and Pharmacy, Faculty of Odonto-Stomatology, Hue, Viet Nam

**Objectives:**

The aim of the study was to compare nasolabial appearance between patients with repaired unilateral cleft lip and palate from Vietnam and Estonia using three rating methods: five-point esthetic index, a visual analog scale (VAS), and reference scores method.

**Methods:**

The study included 23 Vietnamese and 33 Estonian patients who had undergone primary cleft surgery. Facial and profile patient images were cropped to show the nasolabial region and coded. Five raters evaluated the nasolabial appearance of the patients using three methods. The esthetic index investigated nasal form, nasal symmetry, vermilion border, and nasolabial profile on a five-point scale. The VAS was a 100-mm line where 0 mm represented least esthetic and 100 mm represented most esthetic. The reference scores method was a numerical scale ranged from 0 to 200. Intraclass correlation coefficients (ICC) were used to evaluate the reliability.

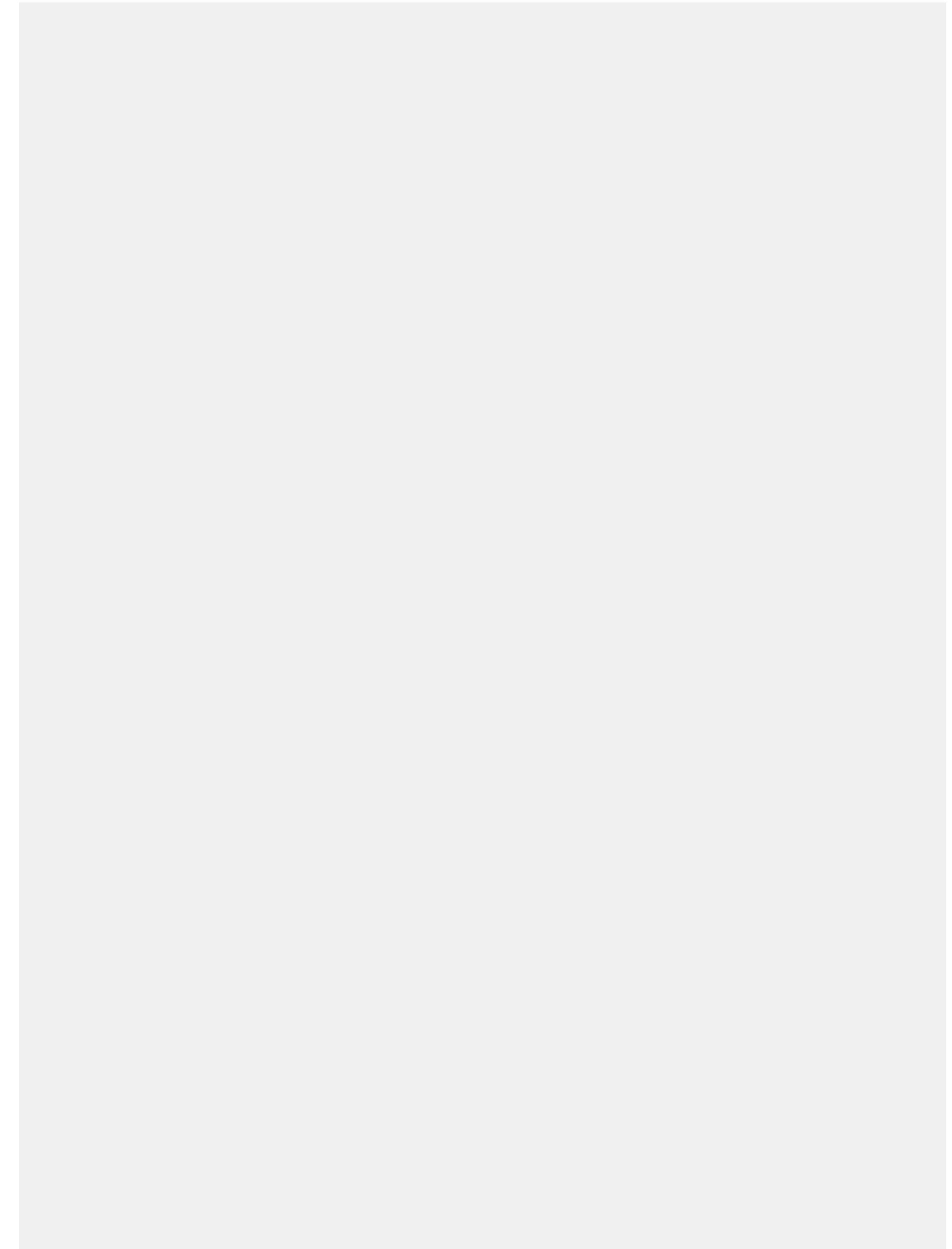
**Results:**

The esthetic index produced a higher ICC, i.e. higher reliability, than VAS and reference scores method. Nasal symmetry was judged as the least esthetic feature among Vietnamese patients, whereas nasolabial profile was the least esthetic feature among Estonian patients. No significant differences in the nasolabial appearance were found between Vietnamese and Estonian patients regardless of the rating methods ( $p > 0.05$ ) except for nasal symmetry.

**Conclusions:**

The five-point esthetic index seems to produce more reproducible results. There were no significant differences in nasolabial appearance between the two ethnic groups. Overall average nasolabial appearance results were obtained using different treatment protocols in the two countries.

**Notes**



**P4-04****An novel intraoral appliance design with skeletal anchorage for rigid external distraction (red) devices**

*\*Ayse Tuba Altug<sup>1</sup>, Aysegul Tuzuner-Oncul<sup>2</sup>*

<sup>1</sup>University of Ankara, School of Dentistry, Orthodontics, Ankara, Turkey

<sup>2</sup>University of Ankara, School of Dentistry, Oral and Maxillofacial Surgery, Ankara, Turkey

**Objectives:**

The vector control of the maxillae and the stability of intraoral appliances used with Rigid External Distraction (RED) devices have been challenging. RED devices tend to rotate the maxilla in an undesired upward position. In addition, the instability of the intraoral anchorage appliances and unfavorable dental movements (protrusion of the maxillary teeth) have also been discussed. Therefore, the aim of these case reports is to introduce a new skeletal anchorage adapted custom-made intraoral appliance and report the effects of maxillary distraction osteogenesis (DO) for two cleft palate patients.

**Methods:**

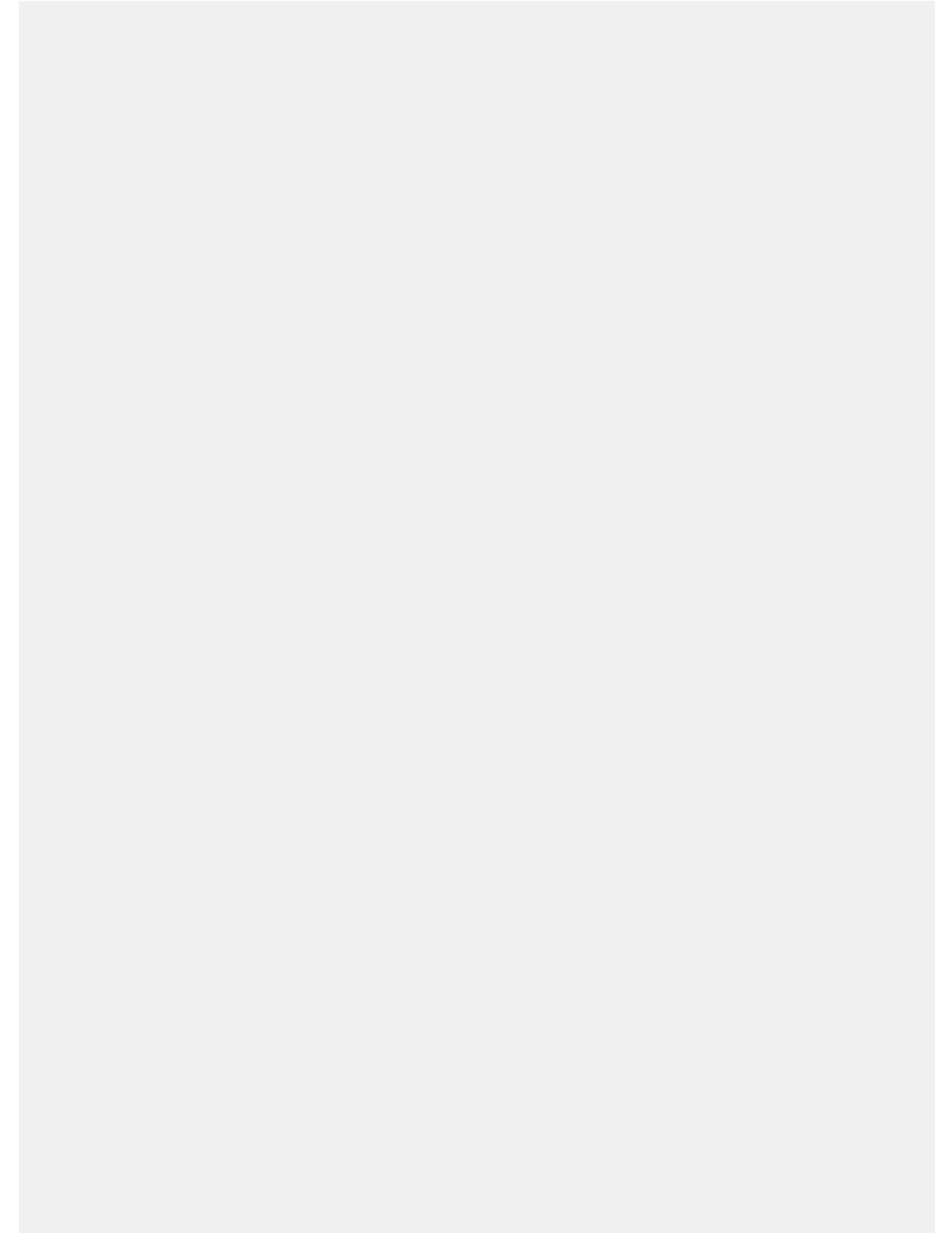
Our intraoral protraction appliance will be described on three subjects who had individual designs. The subjects were 21 and 26-year-old female patients with operated cleft palate, a 17-year-old female patient with oligodontia, all with severe maxillary hypoplasia and negative overjet of 16mm, 12mm and 10mm respectively. Although all patients had concave profiles, two of them had severely dished-in profile due to vertical dimension loss caused by several missing teeth. Special removable prosthetics with miniplates were fabricated. A multi-level external traction hooks were soldered to the appliance as traction units.

**Results:**

The mean distraction lengths were 18mm, 14mm and 12 mm, respectively immediately after DO. A significant advancement of the maxilla and correction of the sagittal Class III skeletal relationship was achieved for each patient. Maxillae of each patient were advanced without any unfavorable rotations and dental compensations.

**Conclusions:**

The presented intraoral bone-supported, multi-level traction appliance design enables the vectical control of the maxilla and enhances the stability of the appliance through distraction and consolidation stages of DO with RED. There was no problem with stability of the device. Unfavorable tooth movements were prevented.

**Notes**



**P4-05**

**Role of orthodontist in cleft management**

*\*Parakrama Wijekoon<sup>1</sup>, Rathnakumara Dissanayake<sup>2</sup>*

<sup>1</sup>Head , Department of OMF Surgery, Faculty of Dental Sciences, Peradeniya, Sri Lanka

<sup>2</sup>Srimavobandaranayaka specialised childrens hospita, orthodontic, peradeniya, Sri Lanka

**Objectives:**

Cleft lip and palate is the most common developmental dentofacial anomaly that an Orthodontist would encounter. This will demand orthodontic intervention from birth till about completion of the growth. In fact, advances in orthodontics have contributed much to the improvement of overall aesthetic and functional outcome of cleft lip and palate treatment.

**Methods:**

New technologies in the delivery of orthodontic care in cleft patients are emerging at an alarming rate. Basically orthodontics is the prevention and correction of occlusal anomalies, which is intimately related to facial growth and development of the dentition. To accomplish this, the orthodontist has a key role in close monitoring of changes in the dentofacial environment, eruption of teeth and correction of any malalignment from the early days of dental development

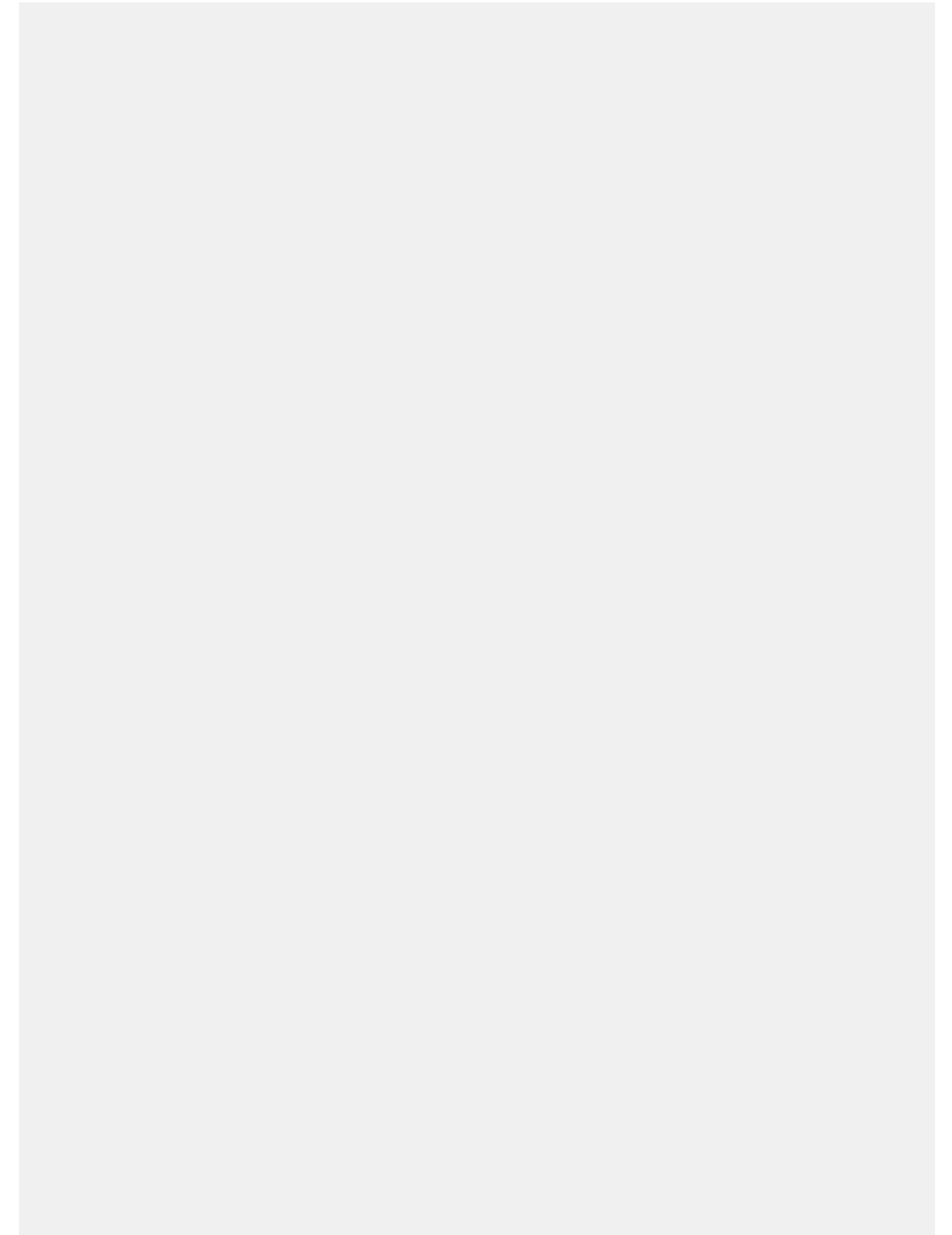
**Results:**

Removable, Functional and Fixed appliances are the armements used in daily cleft orthodontic practice. Although some of the cleft malocclusions can be solely managed by the orthodontist, certain complex craniofaciall deformities will require interdisciplinary management. The fields such as Pre-Surgical Orthopedics, Interceptive treatment of developing malocclusion and Two phase verses Single phase treatment have been shadowed by controversy.

**Conclusions:**

An attempt is made in this presentation to illustrate different treatment approaches in cases managed by the multi-disciplinary team with special emphasis on orthodontic diagnosis, treatment planning with decision making. Further, prevention of malocclusion, in the management of complex dentofacial anomalies and malocclusions for the best aesthetic and functional outcome is discussed.

**Notes**



## P4-06

**A Clinical Measure of UCLP Infant Morphology Predicts an Adverse Growth Outcome**

\*Sukhi Atwal<sup>1</sup>, Thomas Dietrich<sup>2</sup>, Lars Enocson<sup>3</sup>, Rona Slator<sup>3</sup>, Bruce Richard<sup>3</sup>

<sup>1</sup>Queen Alexandra Hospital, Orthodontics, Portsmouth, United Kingdom

<sup>2</sup>Birmingham Dental Hospital, Birmingham, United Kingdom

<sup>3</sup>Birmingham Children's Hospital, Birmingham, United Kingdom

**Objectives:**

Children with complete unilateral cleft lip and palate (cUCLP) are at risk of poor mid facial growth. In the UK all children with cUCLP are assessed for facial growth at age 5 years using the 5 year index. Facial growth varies between centres. The reasons for this are unclear and may include intrinsic factors such as the severity of the cleft.

The objective of this research was to see if the Peltomaki method of assessing cleft severity from infant dental models was associated with 5 year index outcomes.

**Methods:**

138 children with cUCLP and 5 year index scores were identified. 44 of these children also had an infant model taken at the time of cleft lip repair. The infant models were assessed for severity by using 2 different ratios;

1. the size of the cleft gap to the circumference of the arch, and
2. the size of the cleft gap to the length of the arch (Peltomaki et al, 2001).

An association was then investigated between the severity scores and the 5 year index scores.

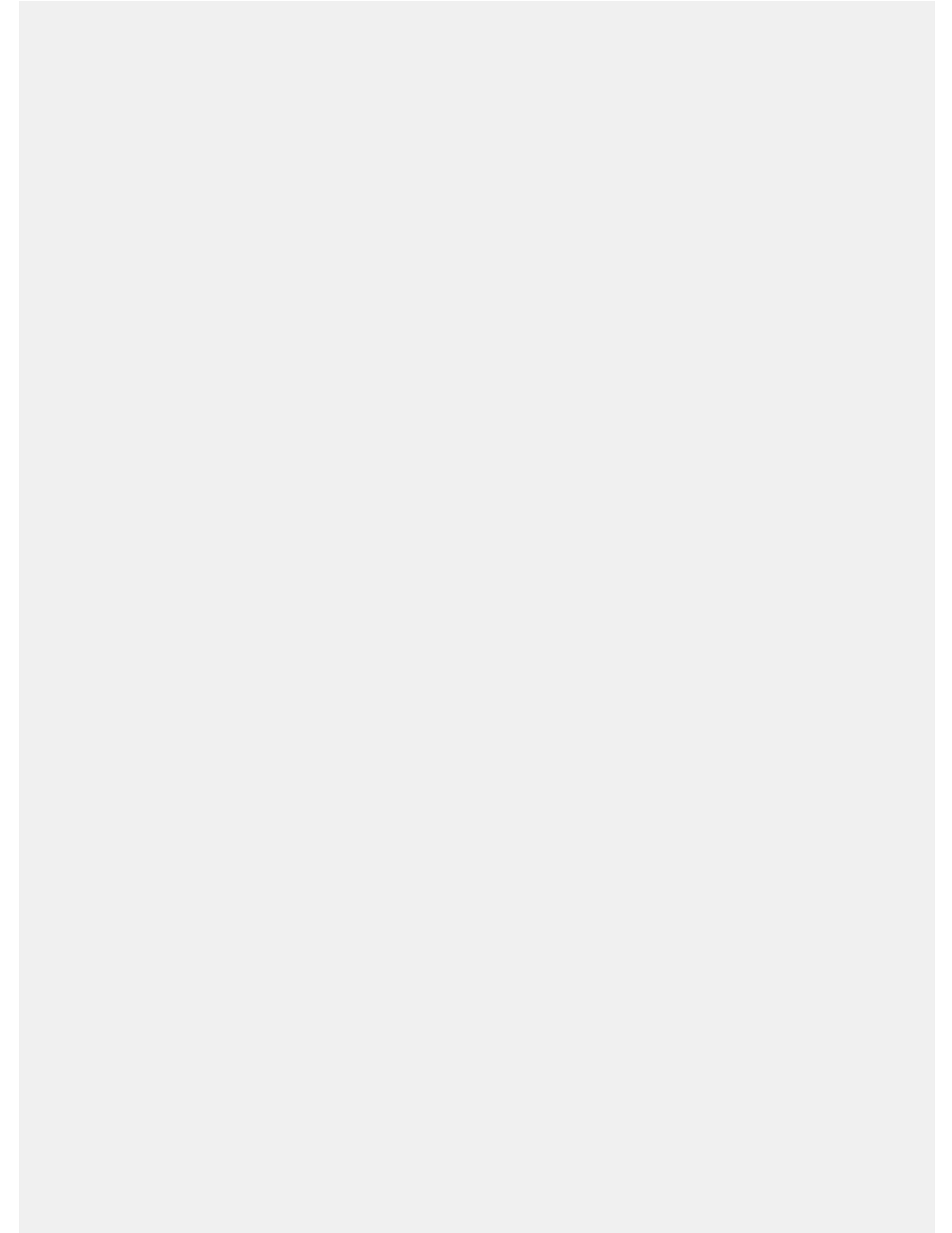
**Results:**

The 2 methods of assessing severity using arch circumference and arch length were strongly related (Pearson's coefficient 0.98, p=0.0001). Both the ratio of cleft gap width to arch circumference and cleft gap width to arch length were associated significantly with the 5 year index score.

**Conclusions:**

When considering facial growth outcomes, the severity of the cleft needs to be taken into consideration. This presentation will describe the Peltomaki method of assessing cleft severity and the results above.

## Notes



## P4-07

**Changes in cephalometric values of cleft lip and palate patients after alveolar bone replacement**

\*Katalin Vajda<sup>1</sup>, Zsanett Kövér<sup>1</sup>, Gejza Herényi<sup>1</sup>, Ákos Nagy<sup>1</sup>, Attila Vástyán<sup>2</sup>, Lajos Olasz<sup>1</sup>

<sup>1</sup>University of Pécs, Dentistry, Oral and Maxillofacial Surgery, Pécs, Hungary

<sup>2</sup>University of Pécs, Department of Paediatrics, Pécs, Hungary

**Objectives:**

Cleft lip and / or palate is a congenital disorder caused by abnormal craniofacial development of the fetus. The cleft may be unilateral or bilateral, may affect the soft tissue, the alveolar processes, the hard and the soft palate. In cases where the cleft is present in the area of the alveolar processes, alveolar bone implantation may be also necessary. We included 19 patients (16 boys and 3 girls) who had good quality x-ray images. Patients were grouped according to the type of cleft lip and palate (unilateral or bilateral) and the measure of sagittal skeletal index (ANB= A point- Nasion- B point angle).

**Methods:**

The authors have retrospectively studied the effect of autogenous alveolar bone implantation in the Department of Pediatrics and Maxillofacial Division of the Department of Dentistry, Oral and Maxillofacial Surgery of the Pécs University Clinical Center between 2009 and 2017 on the lateral cephalometric skull radiographs of skeletal, dentoalveolar and facial aesthetics angles and distance used in Hasund's cephalometry.

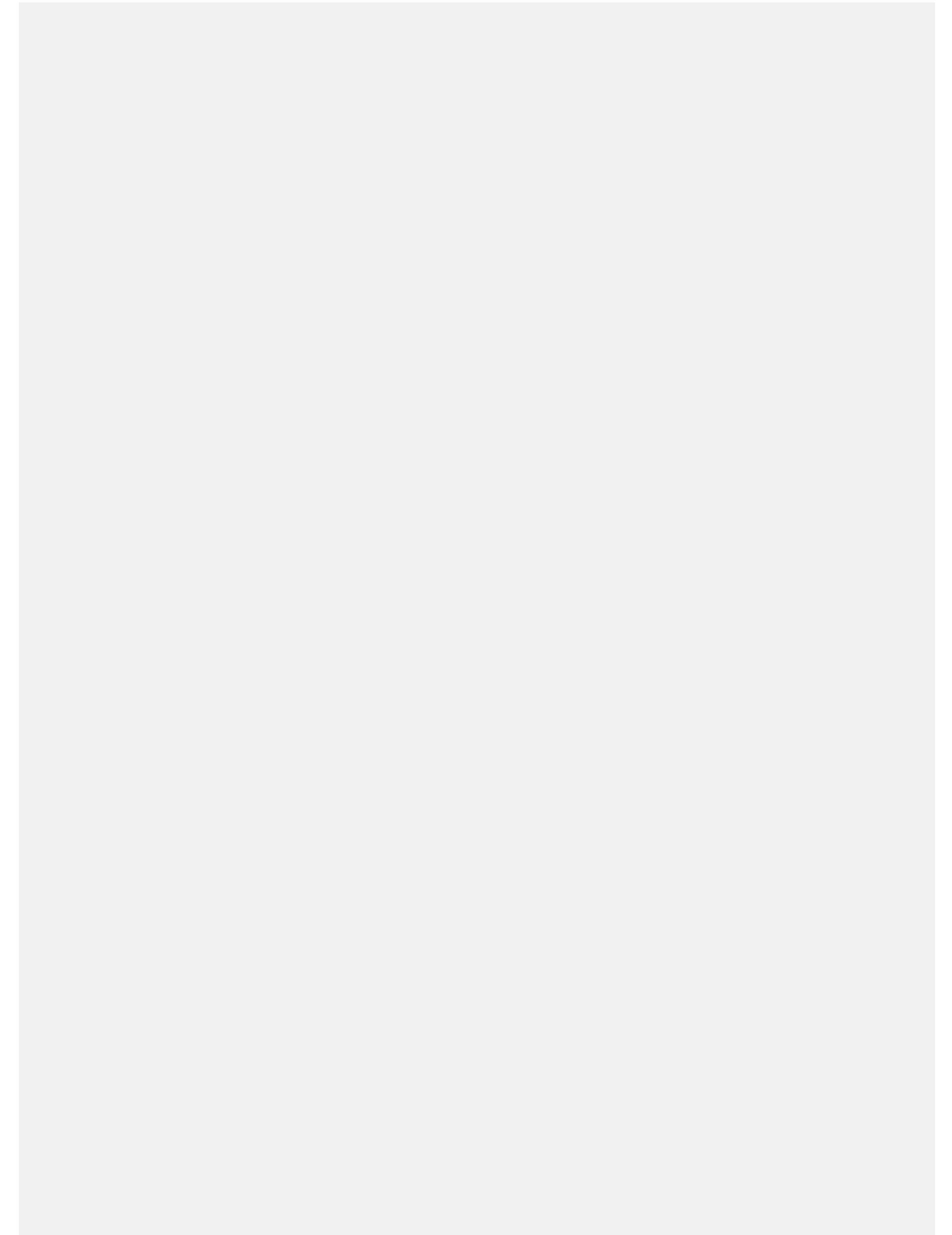
**Results:**

The ANB (A point- Nasion- B point) angle significantly decreased following bone grafting. The angle between the upper incisors axis and the NA (Nasion- A point) line showed significant increase. A significant increase in the incisal point of the upper incisor and the distance NA (Nasion- A point line) was seen. Significant decrease in angle H was observed. For statistical analysis, paired t test was performed using GraphPad Prism software.

**Conclusions:**

Alveolar bone grafting not only stabilizes the denture but also provides skeletal, dentoalveolar and aesthetic results. Although there is a close relationship between the soft-tissue profile and the supporting hard-tissue structures, the improved soft-tissue profile commonly seen after protraction is more stable than the ANB angle which is also dependent on mandibular position, size, and growth.

## Notes





**P4-08****Usefulness of the Advanced Genioplasty Osteotomy for airway constriction in the upper respiratory tract**

\*Yuka Hirota<sup>1</sup>, Koichi Ueda<sup>1</sup>, Yumi Lee<sup>1</sup>, Takashi Nuri<sup>1</sup>

<sup>1</sup>Osaka Medical College, Plastic and Reconstructive Surgery, Takatsuki city, Osaka, Japan

**Objectives:**

Corrective jaw surgery is performed to correct conditions of the jaw and face related to factors such as structure, growth, and movement. In particular, advancement genioplasty osteotomy (also called horizontal osteotomy of the chin) is used to correct airway constriction conditions such as sleep apnea. The purpose of this presentation is to report our experience with four advancement genioplasty osteotomy cases performed in our department.

**Methods:**

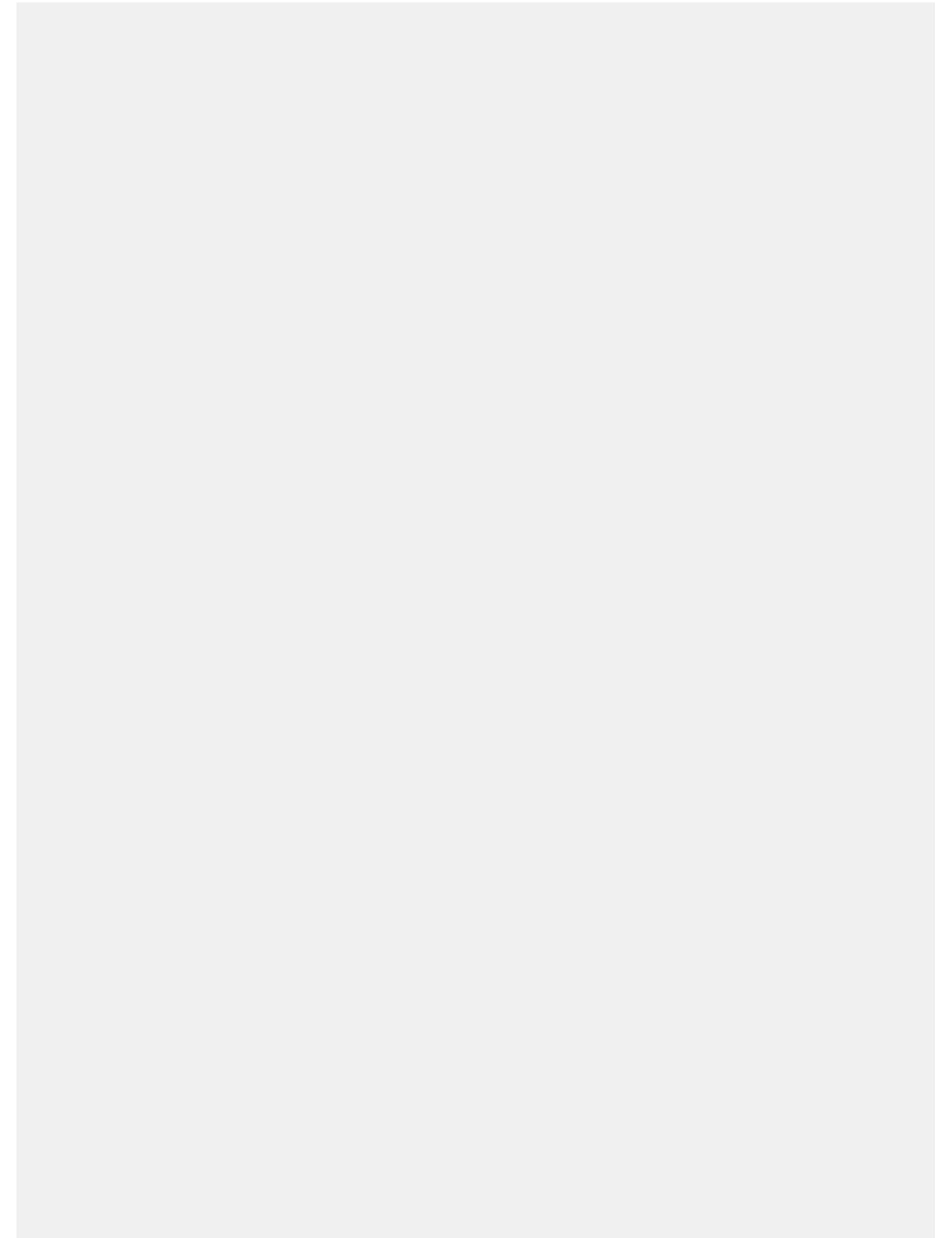
Case1: A 23-year-old female diagnosed with sleep apnea due to Treacher-Collins syndrome. Case2: A 16-year-old male with Treacher-Collins syndrome. Though, the patient had undergone mandibular distraction in childhood, the sleep apnea recurred after orthodontic treatment. Case3: A 23-year-old male with Crouzon syndrome. The patient had previously undergone Le Fort osteotomy, tongue reduction, and sliding genioplasty. However, airway constriction was reactivated. Case4: A 9-year-old female with Goldenhar syndrome. The patient underwent tracheostomy, mandibular body distraction and reconstruction of the right temporomandibular joint.

**Results:**

In the four cases of reported above, genioplasty was performed as follows, and the preoperative airway constriction was compared with postoperative constriction. Case1: An interposition genioplasty and segmental osteotomy of the mandible were performed. Case2: Sliding genioplasty was performed. Case3: Distracting genioplasty was performed to obtain enough anterior movement. Case4: Interposition genioplasty was then performed by adding a rib bone graft to create further airway expansion. Airway constriction was improved postoperatively in all cases. The patient in case4 no longer had respiratory distress when attaching the speech cannula.

**Conclusions:**

The method of genioplasty osteotomy with geniohyoid muscle advancement as a treatment for sleep apnea was first reported by Riley et al. in 1989. We confirmed the usefulness of this method not only for cases of upper airway constriction without maxillary hypoplasia, but also for sleep apnea syndrome that had recurred after achievement of dental articulation.

**Notes**



# Poster Session V: Different Aspects of Cleft Care



**P5-01****Nutrition, Oral Hygiene, Compliance Approach for Optimizing Success of Secondary Alveolar Cleft Bone Grafting**

*\*Marwa Elkassaby<sup>1</sup>, Mahmoud Yehia Abdelaziz<sup>1</sup>*

<sup>1</sup>Faculty of Dentistry, Ainshams University, Oral and Maxillofacial Surgery, Cairo, Egypt

**Objectives:**

Optimization of the outcomes of secondary alveolar cleft bone grafting (ACG) is the goal of all cleft teams. However, outcomes may vary from one patient to another operated by the same surgeon. Some predictors for complications have been documented in literature. Nevertheless, operating on 8-12 years old children poses its own set of challenges as regards adopting good nutritional habits, maintenance of oral hygiene as well as cooperation and following instructions post-operatively. These factors play a very important role to achieve successful soft tissue and bone healing following ACG.

**Methods:**

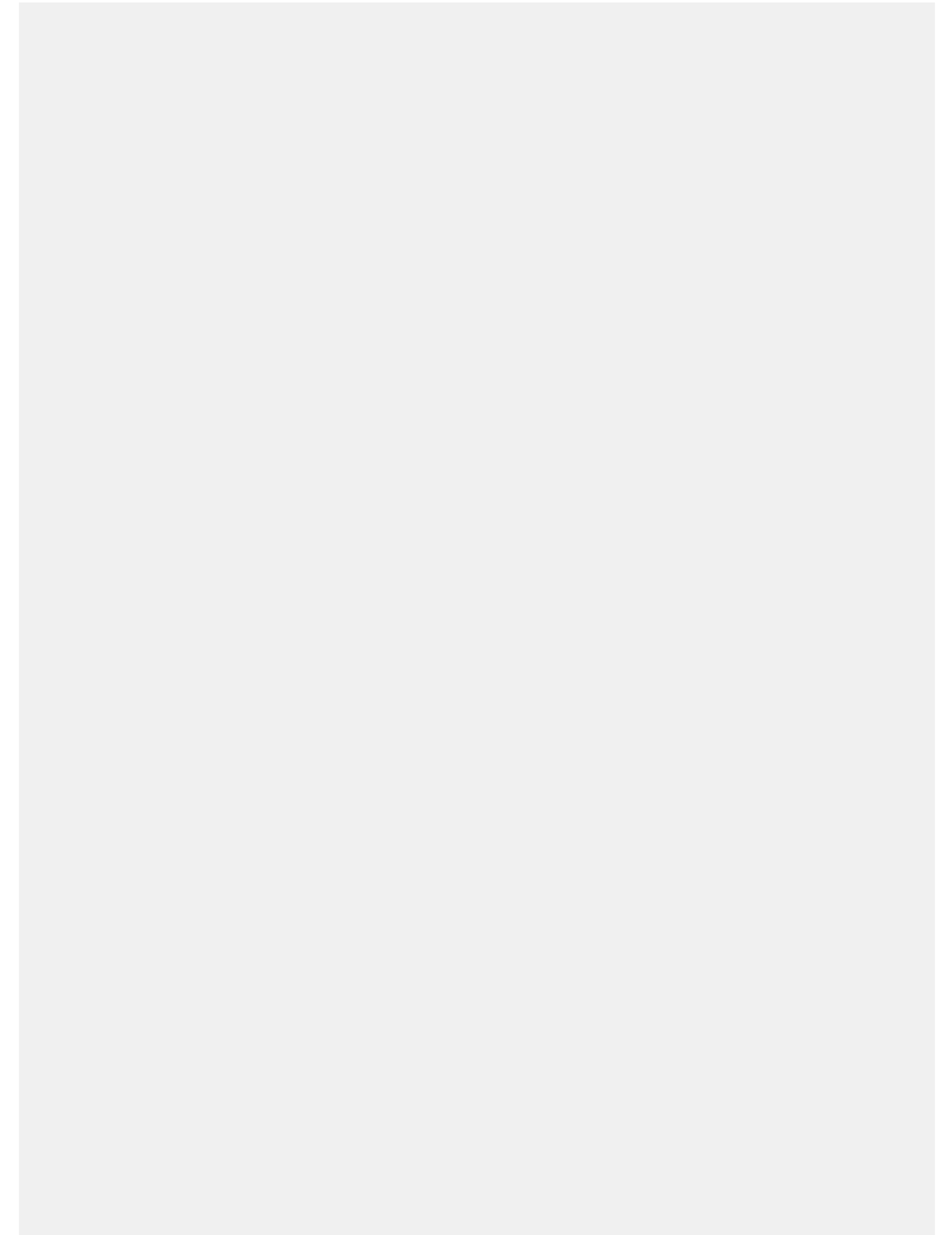
We adopted a comprehensive approach to improve outcomes of ACG, which was implemented for all cases starting 2017 (30 patients). Parental and children educational sessions were prioritized for improving eating habits, oral hygiene and compliance of parents and children to this protocol. Emphasizing the correlation between strict adherence to given instructions and treatment outcomes. This was assessed by frequent monitoring long before ACG surgery at least 6 months preoperatively by examination of iron profile and weight changes, plaque index and gingival health preoperatively and soft tissue and bone healing 6-12 months postoperatively.

**Results:**

Our comprehensive approach resulted in improvement of iron profile values and weight gain of children preoperatively as well as plaque index and gingival health. This led to better treatment outcomes in terms of improved soft tissue healing, less postoperative complications and better patients' compliance postoperatively.

**Conclusions:**

Nutrition, oral hygiene and children's compliance are important predictors for success of secondary alveolar cleft bone grafting surgery.

**Notes**



**P5-02**

**For cleft lip and palate patients with special wound care compared to the advantages traditional wound dressing**

*\*Yun Wang<sup>1</sup>*

<sup>1</sup>Beijing Smileangel Children's Hospital, Beijing, China

**Objectives:**

To approve that the specialized wound care is more beneficial to the special population of cleft lip and palate than traditional wound care.

**Methods:**

To analyze the difference between the two kinds of wound care, By statistics of wound healing, doctor satisfaction when patient is discharge. And the parents' satisfaction rate after 1 month .

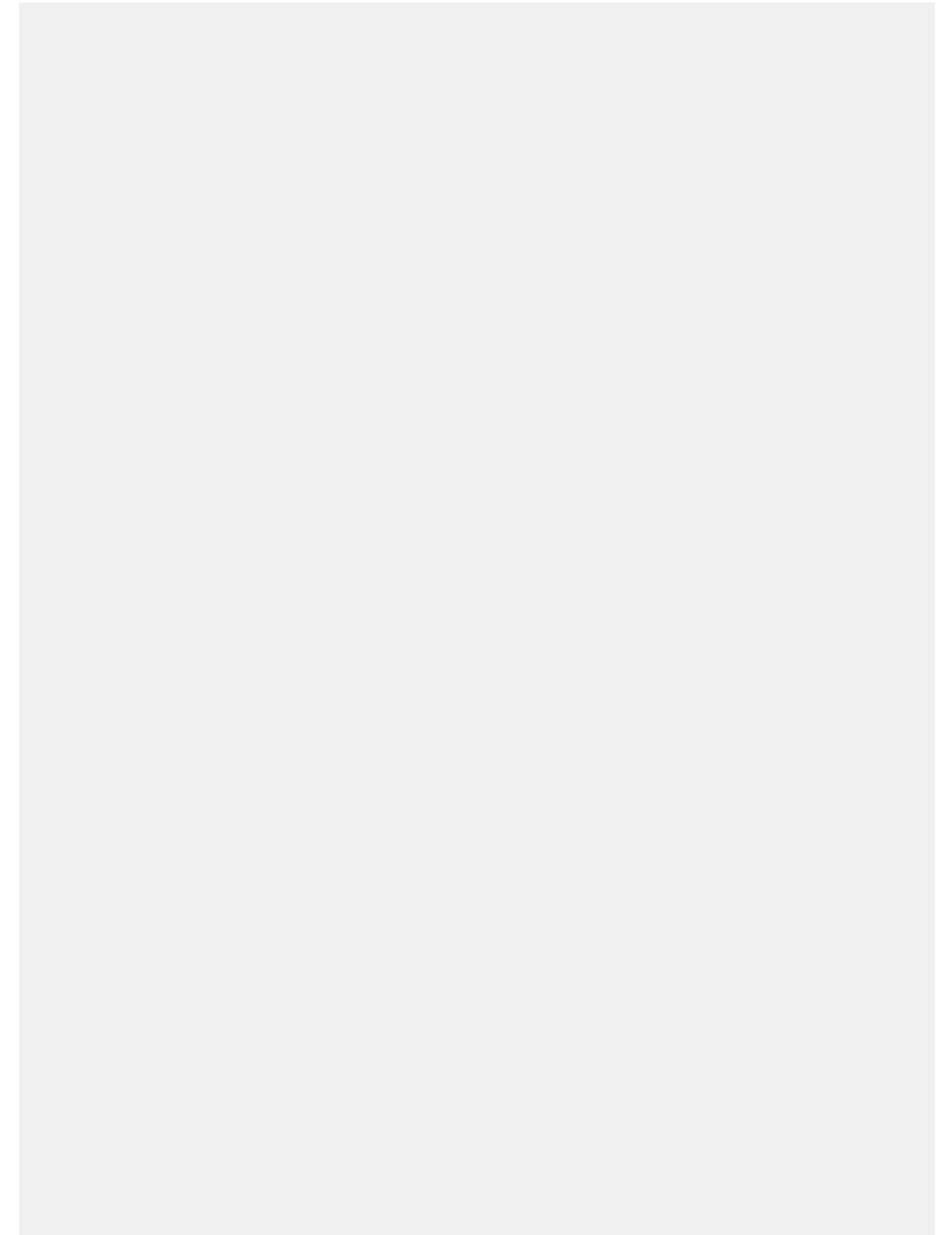
**Results:**

Due to specialized wound care, the recovery of wound is better than traditional wound care, thus shortening the length of hospital stay. Improved patient' satisfaction with wound recovery.

**Conclusions:**

In order to ensure cleft lip and palate wound the recovery, we should be more standardized and more professional in wound care.

**Notes**



**P5-03****Dilemma of bilateral cleft, are we doing the best?**

*\*Parakrama Wijekoon<sup>1,2</sup>, Rathnakumara Dissanayake<sup>1</sup>*

<sup>1</sup>Head , Department of OMF Surgery, Faculty of Dental Sciences, Peradeniya, Sri Lanka

<sup>2</sup>Srimavobandaranayaka specialised childrens hospita, orthodontic, peradeniya, Sri Lanka

**Objectives:**

Cleft lip and palate is the second most common congenital abnormality in the body and the commonest in the head and neck region. Bilateral cleft lip and palate are less common than unilateral cleft and has overall incidence of approximately 1 in 5000 to 1 in 6500 births. As with the unilateral cleft, a wide range of clinical presentations of the bilateral cleft lip and palate is possible, from the simple microform cleft to the complete cleft bilaterally involving the lip, alveolus, palate, and nose Difficulty in management varies from simple incomplete bilateral cleft to patient with severe premaxillary protrusion.

**Methods:**

Patients undergone bilateral cleft lip repair from 2014 July to 2016 July in the cleft center at Dental Hospital Peradeniya Sri Lanka was included in the study. Thirty eight patients ( 25 M,13F) undergone surgery during that time. Mean age of surgery was 6 months. Patients were divided in to three groups depending on the presentation of premaxillary displacement..1. incomplete or un displaced N=13,2. moderately displaced N=23,3.severly displaced N=10.Patients in group 2and 3 underwent pre surgical orthopedic treatment by a single orthodontist. Both side of the lip was corrected at the same time and surgeries performed by single surgeon

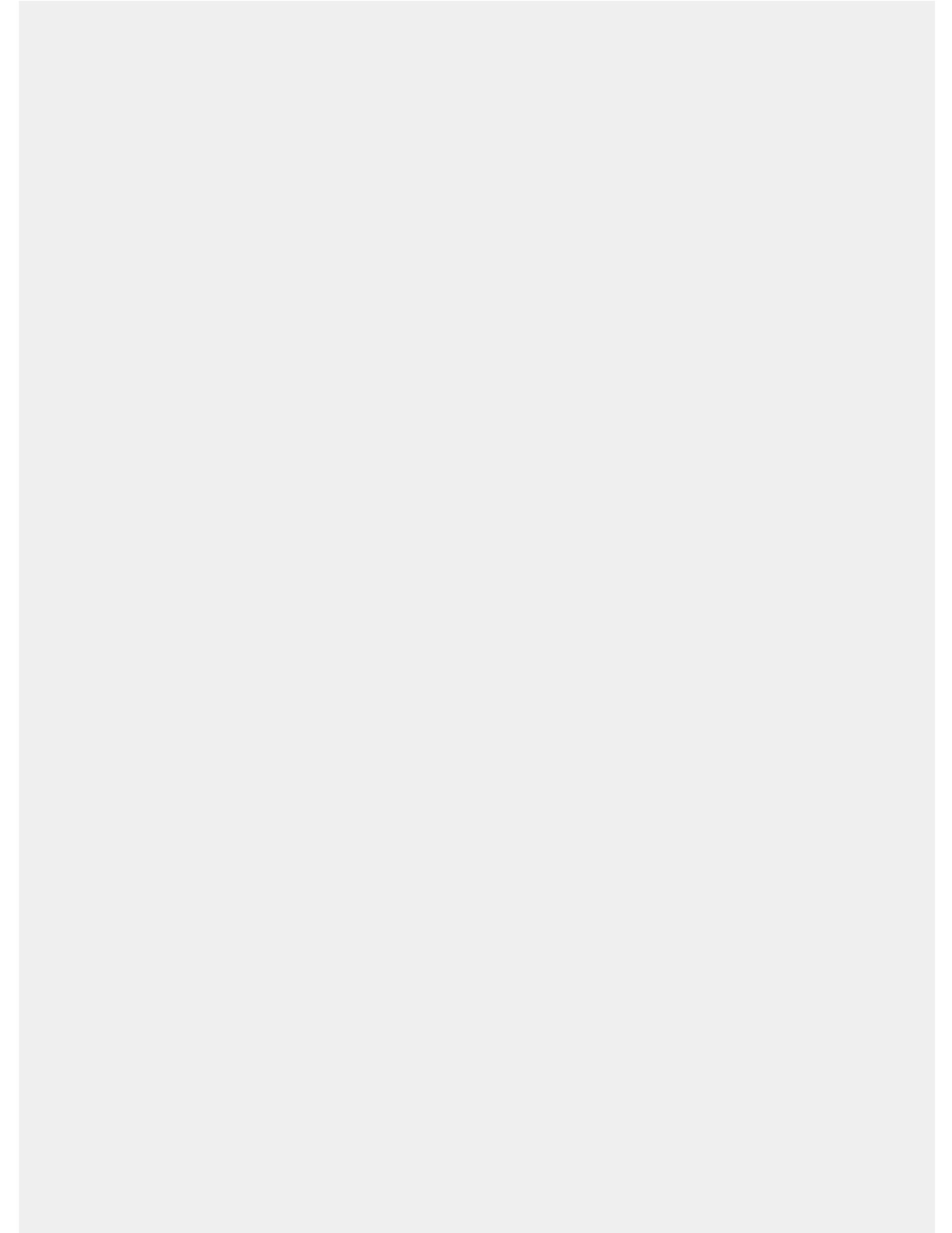
**Results:**

Group 2 patients underwent elastic strapping before surgery. Group 3 patients were selected for nasopalveolar molding, but only six patients were able to complete it.

All the patients were reviewed 1,4,and 24 weeks after surgery by different surgeon. Quality of lip repair was categorized in to poor, acceptable and satisfaction groups. Eighty five percent of the group 1patients and 60% of group 3 patients shows satisfactory results . most of the post operative complications are seen in the group 3 patients(N=4 suture breakdown, N=2 wound dehision, N=2 excessive bleeding.

**Conclusions:**

Repair of bilateral cleft lip and palate remains the major challenge for the cleft surgeon. By selecting correct technique, correct timing and well trained surgeon dilemma of bilateral cleft lip repair can be address successfully.

**Notes**

**P5-04****Smile House Cagliari: 2013-2017 Activities and Results***\*Maurizio Diego Foresti<sup>1</sup>, \*Luca Vadilonga<sup>1</sup>, \*Luca Maria Moricca<sup>1</sup>, \*Renato Paracchini<sup>1</sup>*<sup>1</sup>Ospedale SS Trinità - Cagliari - ATS Sardegna , Maxillo-Facial Surgery, Cagliari, Italy**Objectives:**

Since 2013 in Cagliari-Sardinia- Italy was created by the partnership between Operation Smile Italy Onlus and ASL8 Cagliari The Smile House Cagliari: a single center to provide diagnosis and multispecialistic treatments for lip and cleft palate from prenatal period till the end of growth.

Presentation of clinical and surgical activities developed by medical team since July 2013 until today in Cagliari.

Presentation of Smile House Cagliari and the organization of the clinical team

**Methods:**

Treatment of patients affected by CLP or others facial deformities: surgical evaluations and treatments - speech evaluations and treatments - Dental and orthodontic evaluations and treatments - psychological evaluations and treatments.

Medical training

Medical research

Family support

Patient's parents Associations

**Team composition**

4 surgeons (1 clinical coordinator)

3 anesthesiologists

1 pediatrician

2 dentists

1 psychologist

Nurses: from SS Trinità Hospital

2 speech therapists

2 Otolaryngologists

2 volunteers

**Results:****Schedule activities**

**Surgical consultations:** Tuesday and Wednesday (9.00am – 1.00pm)

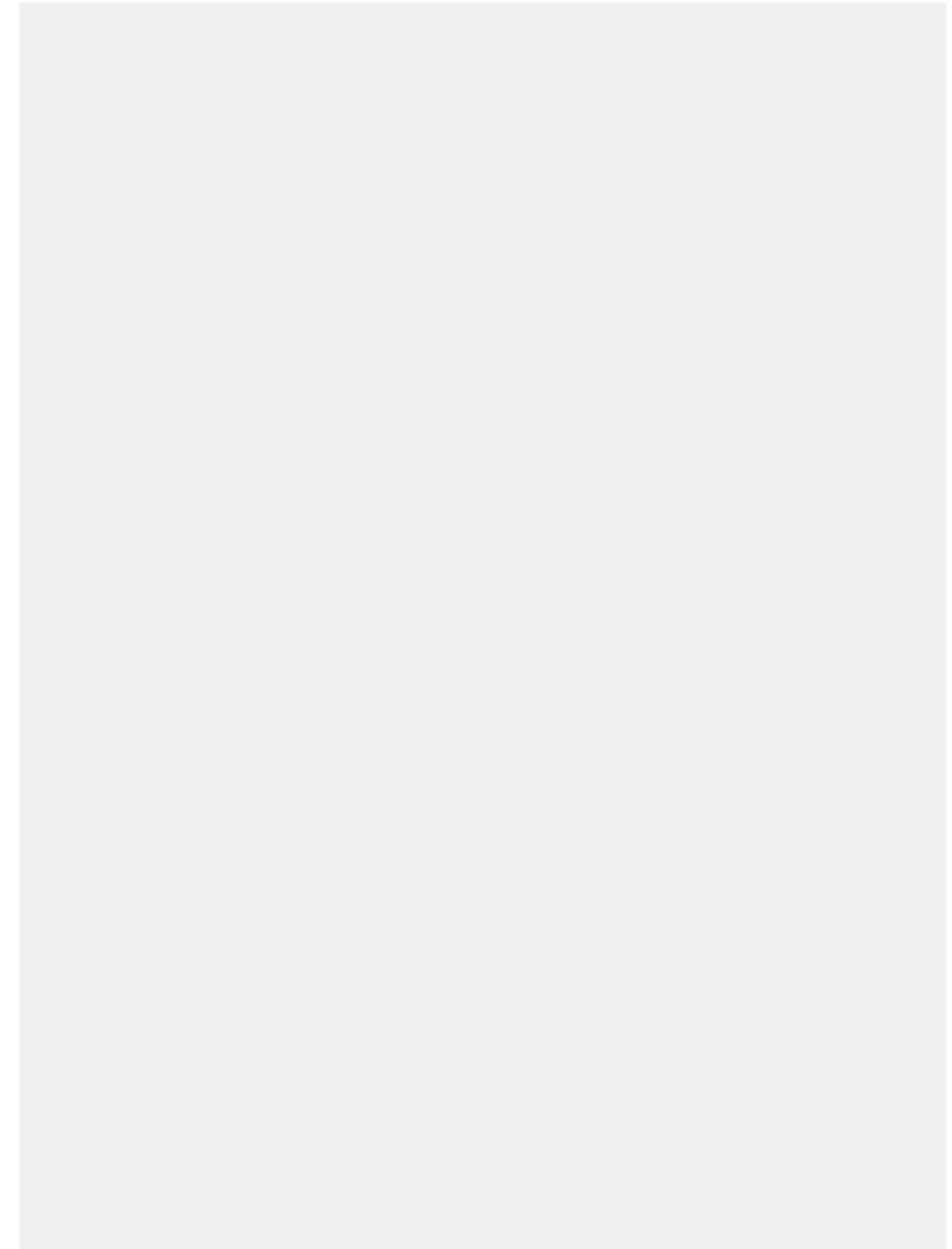
**Orthodontic treatments and dental evaluations** Tuesday and Wednesday (9.00am – 1.00pm)

**Speech Therapy** (9.00am – 1.00pm)

**Surgical Activities** : 1 day for week (primary and secondary cases)

**Conclusions:**

year	1st visit	surgical treatments	medical evaluations
2013	15	5	60
2014	20	14	150
2015	15	19	200
2016	10	8	100
2017	5	6	60
total	65	52	570

**Notes**



P5-05

**Importance of medical assistance and research in the African continent -Medical cooperation and academic research for cleft lip and palate in the Federal Republic of Ethiopia**

*\*Nagato Natsume<sup>1</sup>, Hideto Imura<sup>1</sup>, Toko Hayakawa<sup>2</sup>, Kazuhide Nishihara<sup>3</sup>, Akira Arasaki<sup>3</sup>, Fuko Yamauchi<sup>1</sup>, Maya Yoshida<sup>1</sup>, Satoshi Suzuki<sup>1</sup>, Naoki Takahashi<sup>4</sup>, Toshiro Kibe<sup>5</sup>, Duy Tran Le<sup>1</sup>, Hiroo Furukawa<sup>2</sup>*

<sup>1</sup>Aichi Gakuin University, Division of Research and Treatment for Oral and Maxillofacial Congenital Anomalies, School of Dentistry,, Nagoya, Japan

<sup>2</sup>Aichi Gakuin University, Department of Health Science, Faculty of Psychological and Physical Science, NiSSHin, Japan

<sup>3</sup> University of the Ryukyus, Department of Oral and Maxillofacial Functional Rehabilitation, Graduate School of Medicine, Okinawa, Japan

<sup>4</sup>Chiba Cancer Center, Chiba, Japan

<sup>5</sup>Kagoshima University, Department of Oral and Maxillofacial Surgery, Kagoshima, Japan

**Objectives:**

Medical cooperation in Africa is important to us. We have 15 years experience in medical cooperation in African Continent from Tunisia and I would like to report our experience in Ethiopia. Ethiopia has an area of 1097,000 square meters, which is about three times bigger than that of Japan, with a population of about 102,400,000 people. It plays a diplomatic central role of the African region, and the headquarters of the African Union (AU) and the United Nations Economic Commission for Africa (ECA) are located in there.

**Methods:**

We are conducting several researches in Ethiopia by Grant-in-Aid for Scientific by the Japan Society for the Promotion of Science of Japan. It has been said the incidence of cleft lip and palate varies on races, and African people have a low incidence of cleft lip and palate, but any detailed research have proven our common view. We alongside have been operating charitable surgeries as a medical assistance in Ethiopia, and been receiving and training Ethiopian oral-maxillo surgeon in Japan, and we published the book about cleft lip and palate in Ethiopian.

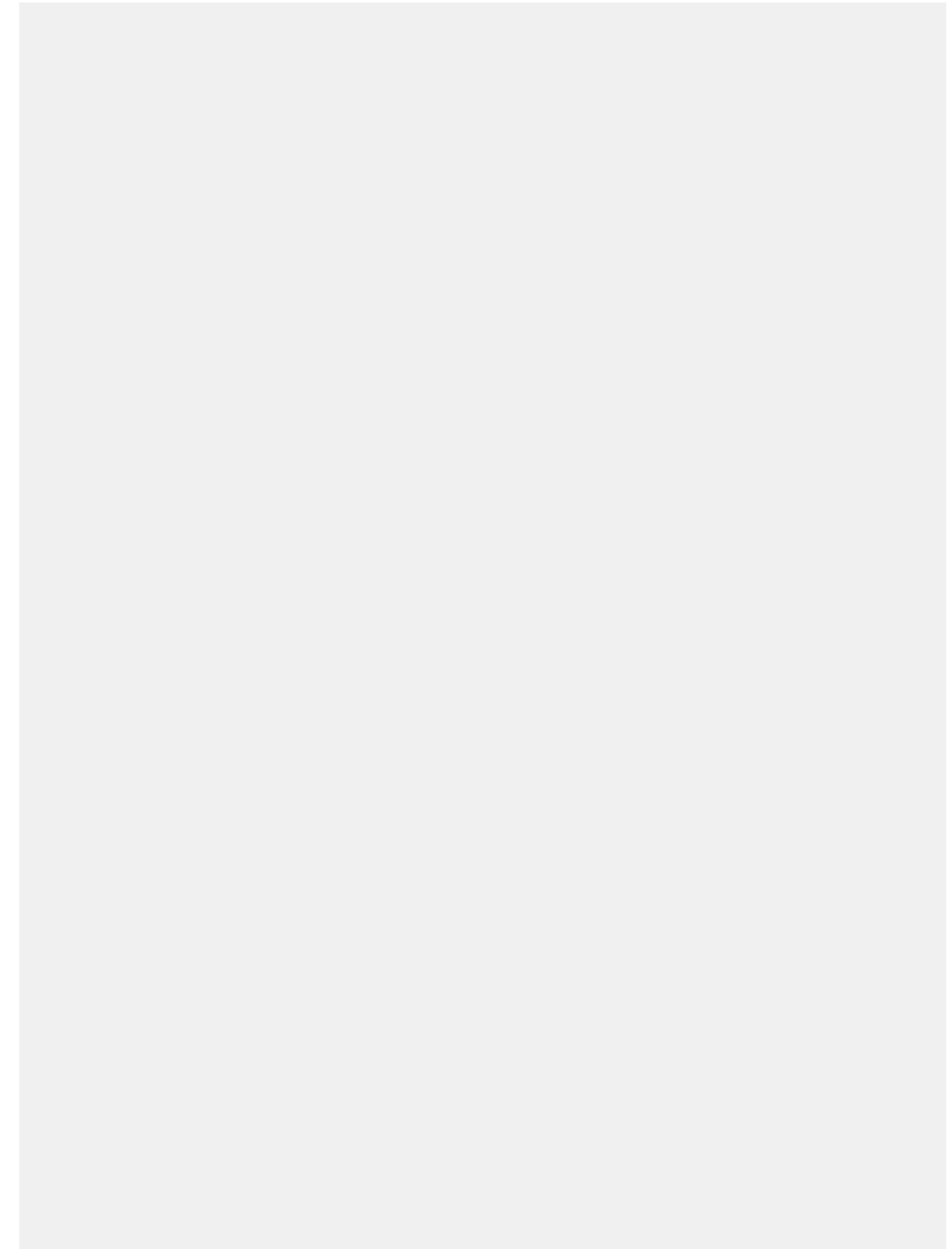
**Results:**

These researches and charitable medical activities have resulted in being evaluated by the country.

**Conclusions:**

These researches and charitable medical activities have been evaluated by Prime Minister of Hailamariam and they established the Honorary Consulate of the Federal Democratic Republic of Ethiopia in Japan after all and cultural and economic exchange cooperation between the two countries has been active besides the charitable medical activities. This presentation reports the results currently acquired from these researches and activities. This study is supported by Grant-in-Aid for Scientific Research:Japanese Government (A) 26257509 by the Japan Society for the Promotion of Science.

Notes



**P5-06****Perceptions of quality nursing care in patients with cleft lip and palate**

\* *Darawan Augsornwan<sup>1</sup>, Lalida Phetfai<sup>1</sup>, Palakorn Surakulprapa<sup>2</sup>*

<sup>1</sup>Faculty of Medicine, Khon Kaen University, Nursing Division, Muang, Khon Kaen, Thailand

<sup>2</sup>Faculty of Medicine, Khon Kaen University, Surgery Department, Khon Kaen, Thailand

**Objectives:**

To survey the patients perceptions of quality nursing care in patients with cleft lip and palate

**Methods:**

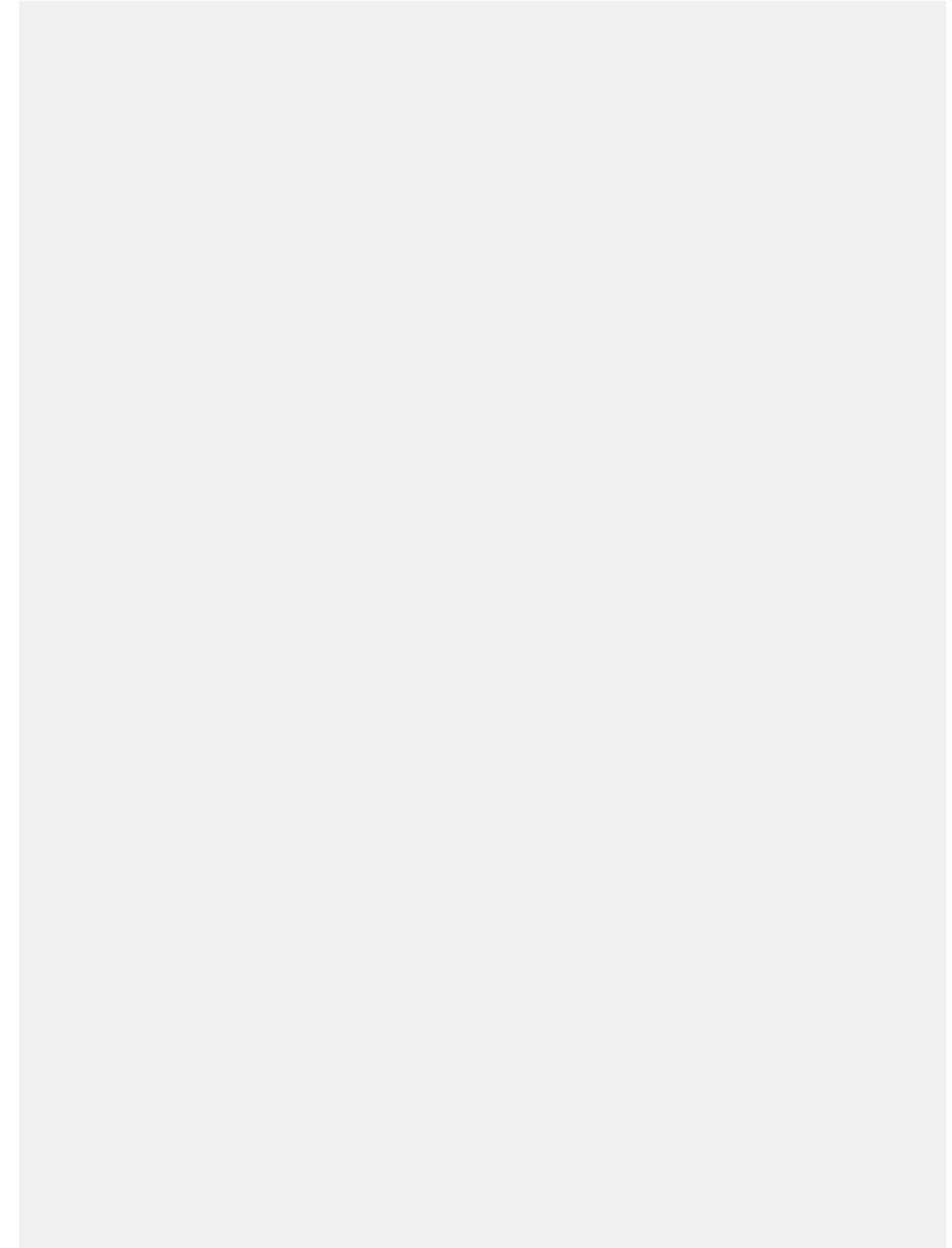
This is a descriptive study, collected data from 46 patients with cleft lip and cleft palate who were admitted in surgical ward Srinagarind Hospital between January – May 2017. The studied population were parents of patients with cleft lip and cleft palate purposively selected and interview using structured questionnaire focused on 6 domains thus: 1) caring 2) ability and expertise in nursing 3) management of physical environment 4) availability of nursing service 5) continuity of care and 6) effectiveness or outcome of care. The data were analyzed and presented in frequency and percentage.

**Results:**

The percentage of patients perception in more than expectation level of 6 domain, (caring, ability and expertise in nursing, management of physical environment, availability of nursing service, continuity of care and effectiveness or outcome of care are 35.6, 32.4, 34.0, 38.4, 34.0, 43.1 percents) The percentage of patients perception in expectation level of 6 domain (caring, ability and expertise in nursing, management of physical environment, availability of nursing service, continuity of care and effectiveness or outcome of care are 56.4, 59.0, 61.2, 53.4, 60.1 and 54.3 percents), but some topics in each domain patients perception is in lower level

**Conclusions:**

parents/patients perception of quality nursing care in 6 domains is in expectation level, but some topics in each domain patients perception is in lower level than their expectation more than 10 percents, so needs further consideration to detail and develop the nursing system more to improve the quality of care.

**Notes**





**P5-07**

**Nursing system development in patients undergoing operation in 3C Ward: convey information to the new patients with Cleft lip and cleft palate**

*\*Ialida phetfai<sup>1</sup>, Darawan Augsornwan<sup>1</sup>, Palakorn Surakulprapa<sup>2</sup>, Pinrat Jampakame<sup>1</sup>*

<sup>1</sup>Faculty of Medicine, Khon Kaen University, Nursing Division, Khon Kaen, Thailand

<sup>2</sup>Faculty of Medicine, Khon Kaen University, Surgery Department, Khon Kaen, Thailand

**Objectives:**

To develop a method to convey information to the new patients also to assess patients opinion about video media to convey information.

**Methods:**

This study is one part of nursing system development in patients undergoing operation in 3C Ward. It is a participation action research divided into 3 phases Phase 1 Situation review: In this phase we review the outcomes, process of giving information from nurses, patients and family about information. Phase 2 Searching nursing intervention about giving information while patients were admitted in ward from literature then establish protocol. This phase we have protocol, video media to give information. Phase 3 implementation and evaluation. The studied population were 32 patients who were admitted in 3C, Srinagarind Hospital.

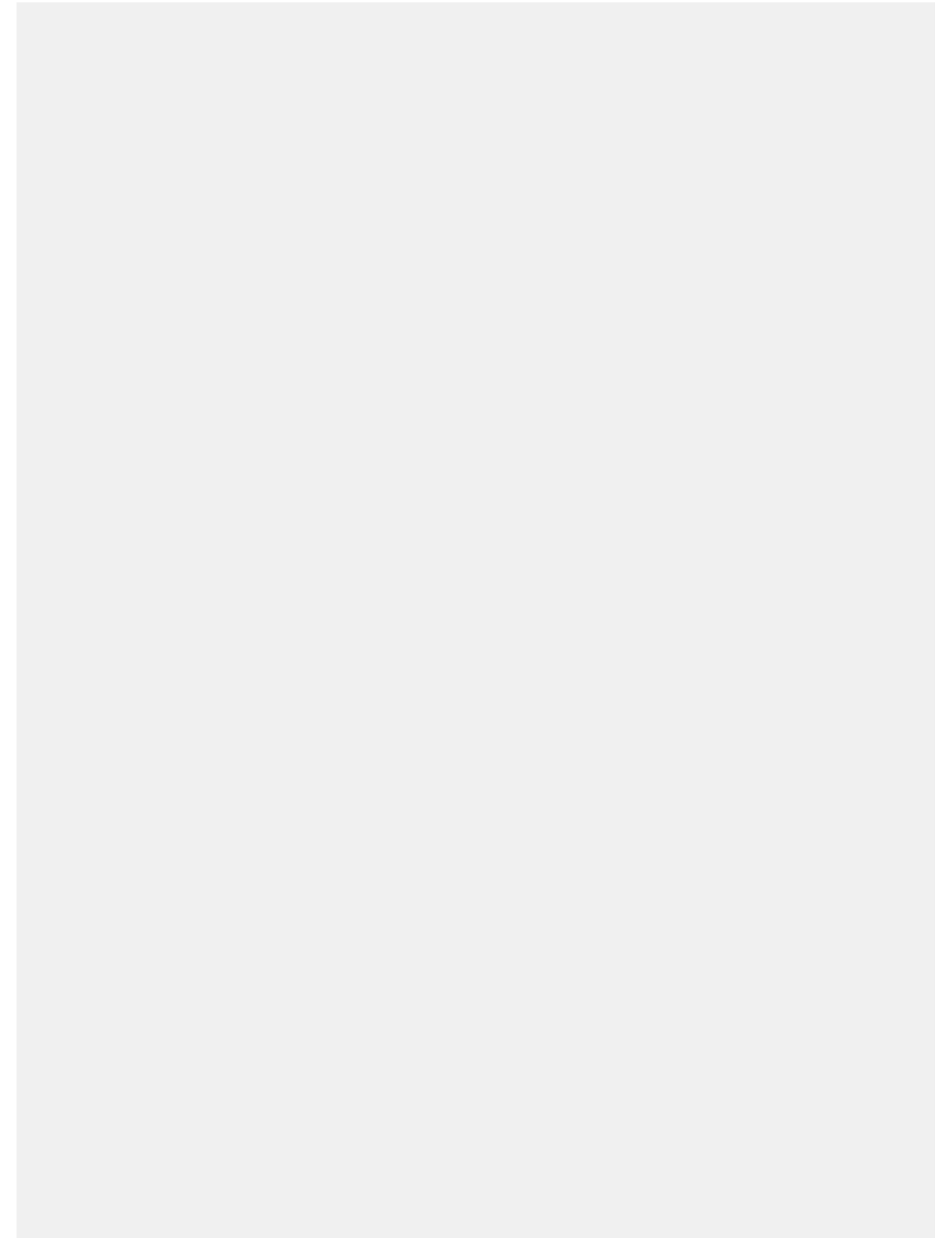
**Results:**

The study found patients 96.87% know and understand the information. From our observation 94.4% patients/family follow the hospital rules and protocol. 94.74% of patients / family satisfaction about video media.

**Conclusions:**

Conveying information by video media increased patients knowledge. Patients can follow the rules, protocol and know how to take care themselves

**Notes**



## P5-08

**Quality of life among caregiver parents of down syndrome children and its associated factors in Mongolia**

*Kherlen Ponkhoon<sup>1,2</sup>, Odgerel Tsogbadrakh<sup>3</sup>, Bolortungalag Baatarjav<sup>4</sup>, Uranchimeg Bayarmagnai<sup>2</sup>, Munkhtuya Tumurkhuu<sup>2</sup>, Ariuntuul Garidkhuu<sup>5,6</sup>, Ken Osaka<sup>5</sup>, \*Sarantuya Jav<sup>2</sup>*

<sup>1</sup>Mongolian National University of Medical Sciences, Department of Pediatrics, School of Medicine, Ulaanbaatar, Mongolia

<sup>2</sup>Mongolian National University of Medical Sciences, Department of Molecular Biology and Genetics, School of Bio-Medicine, Ulaanbaatar, Mongolia

<sup>3</sup>Mongolian National University of Medical Sciences, Division of Hematology, School of Medicine, Ulaanbaatar, Mongolia

<sup>4</sup>Medipas Hospital, Division of Molecular Biology, Erdenet, Mongolia

<sup>5</sup>Tohoku University, Department of International Oral Health and Community Health, Graduate School of Dentistry, Sendai, Japan

<sup>6</sup>Mongolian National University of Medical Sciences (MNUMS), Department of Prosthodontics, School of Dentistry, Ulaanbaatar, Mongolia

**Objectives:**

Children born with cleft lip and/or palate sometimes associates with Down's syndrome. The aim this study was to evaluate quality of life and its associated factors among caregivers of children with Down's syndrome.

**Methods:**

A community based, cross-sectional study was conducted among 63 caregivers of children with Down syndrome in Ulaanbaatar, Mongolia. Data on QOL was assessed by WHOQOL-BREF questionnaire. The participants were divided into three groups according to the age of Down syndrome children as follows: Group 1 - From birth to less than 6 years old; Group 2- Six to less than 11 years old, and group 3: those 11 years of age and older.

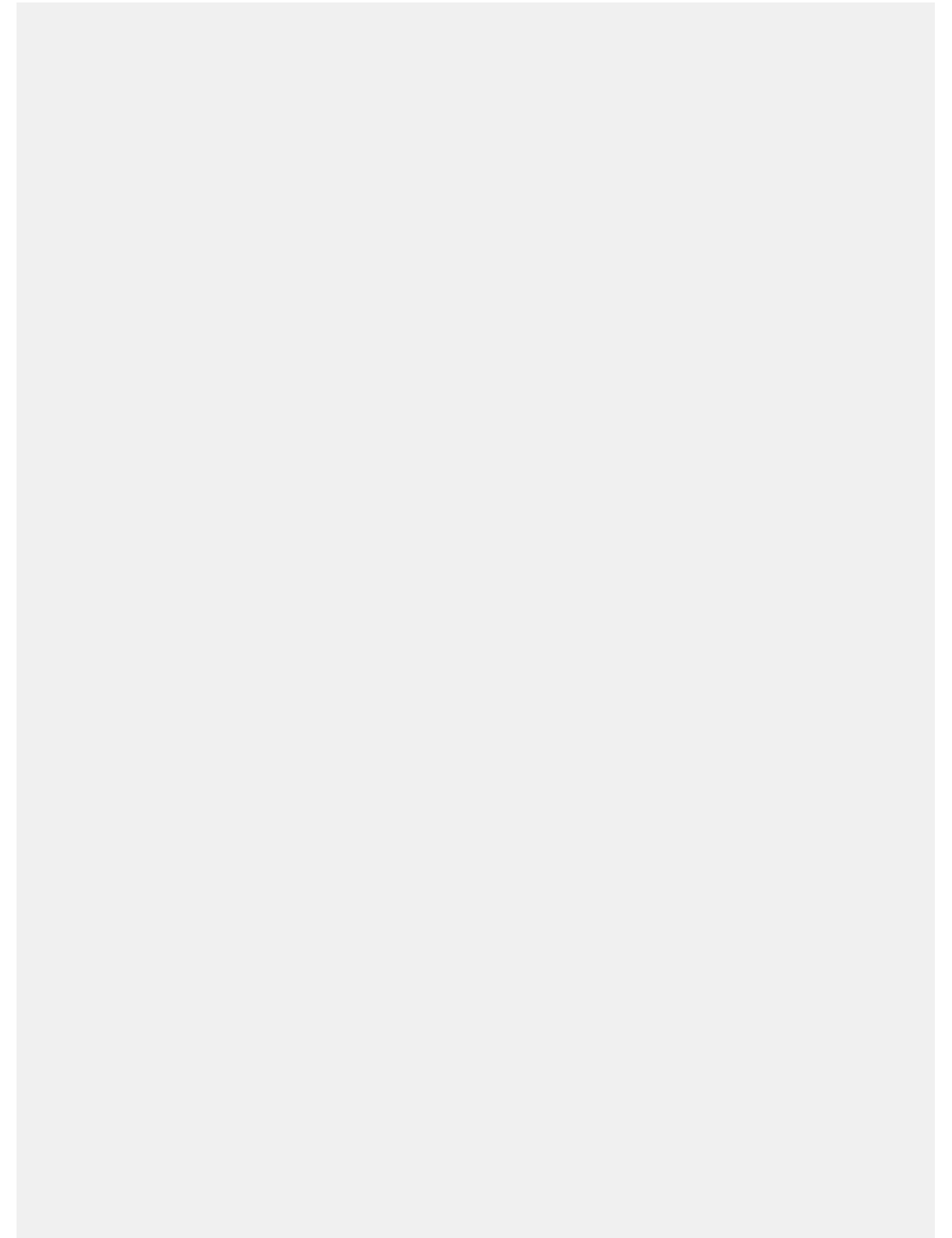
**Results:**

About 50% of caregivers have considered their quality of life as good and 58.7% of them considered their health as satisfied. Environmental assessment was weakest among other domains. Mental health was compared to physical health ( $p < 0.025$ ) as well as the environmental assessment was compared ( $p < 0.001$ ) to other 3 domains with statistically significant differences. However, social relation to ( $p < 0.417$ ) physical health and to mental health ( $p < 0.102$ ) showed no difference in statistical significant importance. Living standard was an influential factor on physical and mental health, environment and education.

**Conclusions:**

According to social and economic indicators, gender, educational level, family income and children's age of the caregiver's influences the quality of life and environment assessment was directly correlated with physical health, mental health, and social relation.

## Notes



## P5-09

**Study results on nasalance scores of Mongolian speaking children**

\*Ariuntuul Garidkhuu<sup>1,2</sup>, Shagdar Batsukh<sup>2</sup>, Myagmar Bat-Erdene<sup>2</sup>, Tselmuun Chinzorig<sup>1</sup>, Amarsaikhan Bazar<sup>2</sup>, Purevjav Nyanrag<sup>2</sup>, Nagato Natsume<sup>3</sup>, Davaa Gombosuren<sup>4</sup>, Ken Osaka<sup>1</sup>

<sup>1</sup>Tohoku University, Graduate School of Dentistry, Sendai, Japan

<sup>2</sup>Mongolian National University of Medical Sciences, School of Dentistry, Ulaanbaatar, Mongolia

<sup>3</sup>Aichi-Gakuin University, School of Dentistry, Aichi, Japan

<sup>4</sup>Mongolian National University of Medical Sciences, School of Public Health, Ulaanbaatar, Mongolia

**Objectives:**

Hypernasality is dominant characteristic of speech exhibited by individuals with cleft lip and/or palate. In Mongolia, there are no studies on the development of nasalance scores as well as protocols to be used in clinical speech therapy. Necessity in establishment of data on nasalance scores of Mongolian speaking children prompted us to conduct present study. Thus, we aimed to evaluate mean nasalance scores of Mongolian speaking children.

**Methods:**

A total of 2280 healthy children were selected in this cross-sectional study in order to represent all khalkh dialects of Mongolia. Participants from central region, 4 aimags and 3 cities and 43 children with repaired clefts were included in the study. Subjects were divided into 4 groups, aged (i) 4–5, (ii) 6–8, (iii) 9–11 and (iv) 12–13, respectively. Children repeated each of the seven speech stimuli (high pressure consonants and low pressure consonants, nasal consonants and 7 passages), developed by our research team, individually. Nasalance scores were obtained using a Nasometer TM II (model 6400). For statistical analysis used SPSS 20.0 paired-sample t-test, One-way ANOVA and p value calculated for the significance differences ( $p < 0.05$ ).

**Results:**

Normative a mean nasalance scores obtained for the all passages were 26.3–33.7%. Normative a mean nasalance scores obtained for 4–5 years old were  $26.8 \pm 5.0\%$ , 6–8 years  $32.0 \pm 7.5\%$ , 9–11 years  $34.0 \pm 6.6\%$  and 12–13 years  $35.0 \pm 8.7\%$ , respectively. There was statistically significant gender dependence for the all passages ( $p = 0.001$ ). A mean normative nasalance score for Mongolian speaking boys were 31.44%–75.45%, where as for girls was 32.71%–76.96 and showed statistically gender significance ( $p = 0.001$ ).

Nasalance mean scores for cleft palate children for the high pressure consonants were  $44.4 \pm 20.9\%$ , low pressure  $31.1 \pm 15.9\%$  and nasal consonants  $54.0 \pm 18.5\%$ , respectively.

**Conclusions:**

This study provides a nasalance data for Mongolian speaking children to use as a reference for clinical speech therapy for children with congenital cleft lip and/or palate and it is the first research study of its kind in Mongolia.

## Notes

