



Vilnius
2009



1st Baltic Sea Conference in Orthognathic Surgery and Orthodontics (BSCOSO)

September 24th-27th, 2009
Vilnius, Lithuania

FINAL PROGRAM AND ABSTRACT BOOK

www.orthognathicsurgery.info/conference



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Editorial office:

I.Kanto str. 4-1, Kaunas, Lithuania, tel./fax. +370 7 228307,
mob. +370 612 71707, e-mail: zilinskas@sbdmj.com
edoffice@sbdmj.com

Web: <http://www.sbdmj.com>
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Front page contains a photo of St.Apolonija, the patroness of dentists (statue is located in Vilnius, St.Peter and Povilas Church).

Past issues of the journal can be obtained at Kanto str. 4-1, Kaunas. Tel. +370 7 228307, mob. +370 612 71707.

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Welcome to All Participants,

I'm grateful and honored to have been invited to Chair this, The 1st Baltic Conference on Orthognathic Surgery. I'm very thankful to Simonas Grybauskas who has organized this great meeting with experts from all over the world.

We are all part of this most rewarding of professions. We are here as a result of previous generations of surgeons who gave of themselves to lay a foundation for the complex surgery of today. Without our prediccorsors we would not be at the first Baltic conference. I look forward to this conference and the chance to further advance our wonderful specialty.

A handwritten signature in black ink that reads "G. William Arnett".

Dr. G. William Arnett
Conference Chairman



It is a great pleasure to welcome you to this first ever Baltic Conference on Orthognathic Surgery and Orthodontics. For those of you who come from the Baltic states, from Lithuania, from Latvia and from Estonia, this is a great occasion and a recognition of the progress made by your surgical and orthodontic specialties in the last few years. For those of you who are visiting from elsewhere, you are most welcome and we know that with you this conference will be the success that it deserves to be.

The collaboration between our two specialties is the foundation upon which modern orthognathic treatment is based. This conference will develop that approach, and I hope you will both contribute to it, enjoy it and learn from it. Take a few moments also to see something of Vilnius and its surroundings – you will not be disappointed.

A handwritten signature in black ink that reads "Adrian Sugar".

Dr. Adrian W. Sugar
Conference Chairman



It is an honor and great pleasure for me to welcome you all at the 1st Baltic Sea Conference in Orthognathic Surgery and Orthodontics (BSCOSO 2009) in Vilnius, Lithuania.

I am more than delighted to announce the most recognized specialists in orthognathic surgery and orthodontics have generously joined the International Faculty of this conference. We truly hope that their knowledge and experience will bring this conference to invaluable levels.

The importance of orthognathic surgery and associated orthodontic treatment has been continuously growing in the Baltic countries and in the bigger part of Eastern European area during the last 10 years. The improvement of surgical techniques and increasing knowledge on the subject along with rising economy enabled surgeons and orthodontists to get together and offer their patients a more qualitative treatment of skeletal malocclusion. I hope that this meeting will further advance the communication between the surgeons, orthodontists, restorative dentists and sleep specialists.

Vilnius, the historical capital of Lithuania, dating back to the 14th century, is declared the Cultural Capital of Europe 2009. I hope that its remarkable Old Town awarded with the status of World Cultural Heritage by UNESCO, the oldest University in the Eastern Europe, a splendid architectural blend of Gothic, Renaissance and Baroque styles along with friendly atmosphere of modern city will catch you and leave unforgettable impressions for many years.

My colleagues from the Organizing Committee and I wish you an interesting conference, very fruitful and stimulating discussions and a pleasant stay in the charming city of Vilnius!

Sincerely,

A handwritten signature in black ink that reads "Simonas Grybauskas".

Dr. Simonas Grybauskas
Organizing Committee Chair and Host

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For questions regarding scientific program, please contact:

Dr. Simonas Grybauskas
 E-mail: simonas@vicklinika.lt

Organizing Secretariat

For questions regarding registration, accommodation, social program and general information about the Conference, please contact

ViaConventus 

Meeting Management Company
 Olimpieciu Str. 1 - 34
 LT-09200 Vilnius, Lithuania
 Tel.: +37052000780
 Fax: + 37052000782
 E-mail: conference@orthognathicsurgery.info

ABOUT THE CONFERENCE

Pre-Conference Course

September 24th, 2009

Conference Venue

The Conference venue is Reval Hotel Lietuva.

Conference Days

September 25th - 27th, 2009

Reval Hotel Lietuva

Konstitucijos Ave. 20

Vilnius LT-09308, Lithuania

Official Language

Official language is English.

Translation to Russian language will be available for participants from Eastern European area.

Accreditation

The 1st Baltic Sea Conference in Orthognathic Surgery and Orthodontics (BSCOSO) is acknowledged by the European Accreditation Council for Continuing Medical Education (EACCME) as CME activity for medical specialists. The EACCME is an institution of the European Union of Medical Specialists (UEMS), www.uems.net.

The 1st Baltic Sea Conference in Orthognathic Surgery and Orthodontics is designated for a maximum of 24 hours of European external CME credits. Each medical specialist should claim only those hours of credit that he/she actually spent in the educational activity.

EACCME credits are recognized by the American Medical Association towards the Physician's Recognition Award (PRA). To convert EACCME credit to AMA PRA category 1 credit, contact the AMA.



Photography rules

All kinds of photography and video recording are strongly prohibited during all scientific sessions. Photography is allowed during introductory and social speeches, breaks and all times except the lectures.

Transgressors of photography regulations will be dismissed from scientific session and requested to demonstrate the deletion of all photos from the camera card. In case of repetitive violation of this rule Conference organizers have the right to cancel the Certificate of Attendance without refund.



Registration and Hospitality Desks

The Registration and Hospitality Desks for the Conference will be located in the lobby of the Congress Center of Reval Hotel Lietuva. They will be open on:

Thursday 24th September, 16:00 – 18:00

Friday 25th September, 07:00 – 18:00

Saturday 26th September, 07:30 – 19:00

Sunday 27th September, 08:30 – 18:00

Conference Identification Badges

The Conference Identification Badge will be provided along with other Conference items upon registration. Please keep in mind that entrance to scientific sessions will be denied to attendees without Conference Badges. The Identification Badges will be most helpful in contacting with Secretariat and other participants too. The cost of replacing a lost or misplaced badge is 10 Euro.

Badges are color coded as follows:

Green	Invited Speakers
White	Delegates
Violet	Sponsors and exhibitors
Blue	Accompanying persons
Yellow	Staff

Certificate of Attendance

Certificates of Attendance will be distributed on 27th September, 2009.

Please note that in agreement to EACCME regulations, every participant will be kindly required to fill in evaluation forms. Participants who fail to hand in the evaluation forms may not receive the Certificate of Attendance.

Abstract Book

All abstracts that have been accepted by the Scientific Committee were published in the scientific journal „Stomatologija. Baltic Dental and Maxillofacial Journal“. Companies and delegates may copy materials for their personal use, but further copying for sale or for any other commercial purpose is prohibited without prior written permission of the Editor.

Speakers' Room

Speakers will be able to check their presentations in advance in the Speakers' Room which will be located in PI hall. It will be open on:

Thursday 24th September, 16:00 – 18:00

Friday 25th September, 07:00 – 18:00

Saturday 26th September, 07:30 – 19:00

Sunday 27th September, 07:30 – 18:00

The Speakers' Room is equipped with computers.

Please note that presentations should be uploaded in the Speakers' Room. All speakers are kindly requested to provide their presentations one day prior to the session (most important for video presentations). If you are planning to run presentation from your own computer, please inform us one day prior to the session or in advance.

Exhibition

A commercial and technical exhibition will form an integral part of the Conference. It will take place in the lobby of the Congress Center of Reval Hotel Lietuva.

Exhibition will be open on:

Friday 25th September, 08:00 – 18:00

Saturday 26th September, 08:00 – 19:00

Sunday 27th September, 08:00 – 18:00

Poster Exhibition

Poster Exhibition will be set in the lobby of the Congress Center of Reval Hotel Lietuva.

Poster Exhibition will be open on:

Friday 25th September, 08:00 – 18:00

Saturday 26th September, 08:00 – 19:00

Sunday 27th September, 08:00 – 17:00

Posters should be removed on:

Sunday 27th September, 17:00 – 19:00

Posters that will not be removed by the specified time may be lost.

Internet Area

The Internet Area will be located in the lobby of the Congress Center of Reval Hotel Lietuva. It is free of charge and it will be open during all Conference hours. For your convenience free of charge wireless internet is also available at Conference venue.

Coffee Breaks

Coffee, tea and other refreshments will be served in the exhibition area and in the lobby of the Congress Center of Reval Hotel Lietuva.

Lunches

Lunches will be served in the restaurant „River Side“ and Beta hall at the Reval Hotel Lietuva.

SOCIAL PROGRAM

Lithuania, the hosting country, celebrates the One Thousand Years to be mentioned in the historic annals. Vilnius, the historical capital of Lithuania dating back to the 14th century, is declared the European Capital of Culture 2009. It is an honor for us to commemorate these important dates with you during the conference in Vilnius.

So let us take you to the mysterious journey through the narrow streets of Medieval country yards, above the towers of the biggest Old Town in the Baltic region, outside the city, to wade into the widest river Nemunas, flow into the Curonian Lagoon, to walk barefoot in the Curonian Split, feel unforgettable harmony and charm in the center of Europe.



Welcome Reception at Vilnius str. 31

25th September, Friday. 19:30

Welcome Reception followed by Lithuanian neo-folk music will take place in between Vilnius Old Town and Center. Vilnius has a remarkable Old Town awarded with the status of World Cultural Heritage by UNESCO and Vilnius St. 31 is a perfect example of this acknowledgement. The building, counting 200 years, was reconstructed for the new life in 2008. It is unique for its covered vitreous in-yard and is the only building of this kind in the Old Town of Vilnius. Luscious National food and drinks will be served for guest degustation. This is a perfect time to meet old colleagues and make new friends.

Dress code – smart casual

Free for participants and accompanying persons

Gala Dinner in Vilnius City Hall

26th September, Saturday. 20:30

Vilnius City hall is a historical building in the heart of the Old Town of Vilnius. The city's most important venue for cultural and political celebratory events, a former Nobel Theatre building, features a distinctive interior of splendid halls. Special nobel food and drinks, music and dances will set everyone for elation and exciting evening. The dinner will be followed by a pleasant surprise!

Dress code – formal attire

Gala Dinner fee – 125 Euro



PROGRAM

SEPTEMBER 24TH (THURSDAY)**Pre-Conference Course**

The essentials of orthognathic surgery and related orthodontic treatment. Perioperative orthodontics. Theoretical and practical aspects of facial planning and treatment strategy. Factors influencing the success of treatment outcome.

Date: September 24th, 2009
 Language: Russian
 Speakers: Dr. Simonas Grybauskas (Lithuania)
 Dr. Andrey Senyuk (Russia)
 Duration: 9:00 - 17:00

SEPTEMBER 25TH (FRIDAY)**08:00 Opening ceremony**

Prof. Maurice Mommaerts (President of EACMFS, Belgium), Prof. Ilze Akota (President of BAMPS, Latvia), Dr. G. William Arnett (USA), Dr. Adrian Sugar (UK), Dr. Richard McLaughlin (USA), Prof. Ilga Urtane (Latvia), Dr. Marianne Soots (Estonia), Prof. Pranas Tercijonas (Lithuania), Dr. Simonas Grybauskas (Lithuania)

Morning session. Treatment Planning

Chairs: Prof. Ilze Akota (Latvia) and Dr. Simonas Grybauskas (Lithuania)
Discussion Chair: Dr. Richard McLaughlin (USA)

08:40 Historical lecture

Prof. Andrejs Skagers (Latvia), Dr. Marianne Soots (Estonia), Prof. Pranas Tercijonas (Lithuania)
Past and Present of Orthognathic Surgery in Baltic States

09:00 Opening lecture

Prof. Dr. Dietmar Segner (Germany)
The Borderline Between Orthodontics and Orthognathic Surgery

09:45 Coffee break**10:00 Keynote lecture**

Dr. G. William Arnett (USA)
Facial Diagnosis and Treatment Planning

11:50 Discussion**12:10 Lunch****Afternoon session. Key Factors for Treatment Stability**

Chairs: Prof. Ilga Urtane (Latvia) and Prof. Maurice Mommaerts (Belgium)
Discussion Chair: Dr. Adrian Sugar (UK)

13:00 Keynote lecture

Dr. Richard McLaughlin (USA)
Pre-Surgical Orthodontic Set-Up and Post-Surgical Finishing of Combined Orthodontic and Orthognathic Surgery Cases

15:00 Coffee break**15:15 Lecture**

Dr. Charles Falzone (USA)
Post Orthognathic Surgical Occlusal Adjustment

16:05 Keynote lecture

Dr. G. William Arnett (USA)
Key Factors for Mandibular Advancement Stability

17:55 Discussion**18:15 End of Friday scientific session****19:30 Welcome Reception at Vilniaus st. 31**

SEPTEMBER 26TH (SATURDAY)**Morning session: Treatment Planning and TMJ****Chairs: Prof. Andrejs Skagers (Latvia) and Dr. Andrey Senyuk (Russia)****Discussion Chair: Dr. G. William Arnett (USA)****07:50 Opening remarks****08:00 Keynote lecture**

Dr. Adrian Sugar (UK)

*Managing Facial Asymmetry***09:00 Keynote lecture**

Prof. Robert Sader (Germany)

*Virtual 3D and 4D Planning and Simulation of Corrective Jaw Surgery***10:00 Coffee break****Morning session: Team Approach to Surgical Patients****Chairs: Dr. G. William Arnett (USA) and Dr. Roberto Lasserre (Chile)****Discussion Chair: Prof. Ilga Urtane (Latvia)****10:15 Team lecture. Chilean, Santiago Experience***Multisegmental Le Fort I: A Key for Stability*

Dr. Julio Cifuentes (Chile)

Surgical Considerations

Dr. Roberto Lasserre (Chile)

*Orthodontic Considerations***11:45 Discussion****12:00 Lunch****Afternoon session: Team Approach to Surgical Patients****Chairs: Dr. Adrian Sugar (UK) and Prof. Antanas Sidlauskas (Lithuania)****Discussion Chair: Prof. Johan Reyneke (Rep. of South Africa)****12:50 Lecture**

Prof. Ilga Urtane (Latvia)

*Condylar Morphology of Orthognathic Patients from iCAT Data***13:10 Team lecture. Santa Barbara Experience**

Dr. David Way (USA)

*Atypical Condylar Morphology in the Growing Patient**"Will These Patients be Our Next Orthognathic Surgery Candidates?"*

Dr. Michael Gunson (USA)

*The Influence of Estrogen on Condylar Resorption***14:30 - 14:45 Coffee break**

Dr. G. William Arnett (USA)

Surgical Condylar Compression and Late Relapse

Dr. Richard McLaughlin (USA)

*The Importance of Close Communication Between Orthodontist and Orthognathic Surgeon During the Management of Combined Cases***16:05 Coffee break****Afternoon session: Team Approach to Surgical Patients (continued)****Chairs: Dr. Richard McLaughlin (USA) and Dr. Julio Cifuentes (Chile)****Discussion Chair: Dr. Adrian Sugar (UK)****16:20 Team lecture. Moscow Experience**

Dr. Katrin Al-Khamid (Russia)

Perioperative Orthodontics

Dr. Andrey Senyuk (Russia)
Multidisciplinary Approach to Partially Edentulous Orthognathic Patients

Dr. Ekaterina Kudinova (Russia)
Auxillary Plastic Surgery in the Nasolabial Area

Dr. Givi Ordzhonikidze (Russia)
Prosthetic Considerations for Dental Rehabilitation after Orthognathic Surgery

Dr. Gulsara Ospanova (Russia), Dr. Andrey Senyuk (Russia)
Goals as a Result of Skeletal Malocclusion Treatment. Late and Early Complications of Multimodality Therapy



18:00 Coffee break

Afternoon session: Team Approach to Surgical Patients (continued)

Chairs: Prof. Johan Reyneke (Rep. of South Africa) and Dr. David Way (USA)

Discussion Chair: Dr. Michael Gunson (USA)

18:15 Team lecture. Baltic Experience

Dr. Girts Salms (Latvia)
BSSO vs VRO in Bimaxillary Surgery for Correction of Class III Malocclusion

Dr. Dalia Latkauskiene (Lithuania)
Functional Herbst Appliance for Class II Patients
"Is it an Alternative Treatment to Orthognathic Surgery?"

Dr. Simonas Grybauskas (Lithuania)
Surgical Management of Class II Division 2 Patients

19:15 Discussion

19:30 End of Saturday scientific session

20:30 Gala Dinner in Vilnius City Hall

SEPTEMBER 27TH (SUNDAY)

Morning session: Techniques

Chairs: Prof. Paul Stoelinga (The Netherlands) and Prof. Dario Bertossi (Italy)

Discussion Chair: Dr. G. William Arnett (USA)

08:50 Opening remarks

09:00 Keynote lecture

Prof. Johan Reyneke (Republic of South Africa)
Correction of Anterior Open Bite

10:00 Lecture

Prof. Maurice Mommaerts (Belgium)
Correction of Maxillary and Mandibular Transverse Problems

10:45 Lecture

Prof. Paul J. W. Stoelinga (Netherlands)
Aesthetic Implications of Orthognathic Surgery

11:15 Coffee break

Morning session: Obstructive Sleep Apnea

Chairs: Dr. Michael Gunson (USA) and Dr. Girts Salms (Latvia)

Discussion chair: Prof. Christian Lindqvist (Finland)

11:30 Lecture

Prof. Andrejs Skagers (Latvia)
Naso-Pharyngeal Surgery to Diminish Snoring and Obstructive Sleep Apnea

12:00 Lecture

Dr. Julio Cifuentes (Chile)
Extrapharyngeal Surgery in OSA: Maxillomandibular Advancement

12:45 Discussion

13:00 Lunch



Afternoon session: Future Trends

Chairs: Prof. Robert Sader (Germany) and Prof. Juozas Olekas (Lithuania)
Discussion chair: Dr. Adrian Sugar (UK)

13:55 Lecture

Dr. James Mah (USA)

3-D Imaging in Orthodontics and Orthognathic Treatment

14:25 Lecture

Prof. Christian Krenkel (Austria)

Intraoperative Control During Orthognathic Surgery

14:55 Lecture

Prof. Christian Lindqvist (Finland)

The Use of Bioresorbables in Orthognathic Surgery

15:25 Coffee break

Afternoon session: Techniques

Chairs: Dr. Marianne Soots (Estonia) and Prof. Dr. Johan Reyneke (Rep. of South Africa)
Discussion Chair: Dr. Richard McLaughlin (USA)

15:40 Team lecture. Verona Experience

Prof. Dario Bertossi (Italy)

Orthodontic Microsurgery for Rapid Dental Repositioning in Adult Patients

Dr. Antonio D'Agostino (Italy)

Rotational Movements of the Maxillo-Mandibular Complex: an Effective Tool in Aesthetic Management of Dentoskeletal Deformities

Dr. Elisabetta Grendene (Italy)

Orthodontics in Surgical Cases: the Importance of a Connection with the Surgeon

Dr. Lorenzo Trevisiol (Italy)

Grafting Materials: New Perspectives in Orthognathic Surgery

Prof. Pier Francesco Nocini, Dr. Massimo Albanese (Italy)

Ancillary Procedures in Orthognathic Surgery and Facial Plastic Surgery

17:20 Discussion

17:40 Closing remarks

Dr. G. William Arnett, Dr. Adrian Sugar, Dr. Richard McLaughlin, Prof. Ilga Urtane, Prof. Johan Reyneke, Dr. Simonas Grybauskas

18:00 End of Conference

ABSTRACT BOOK

ORAL PRESENTATIONS

SEPTEMBER 25TH (FRIDAY)

Prof. Andrejs Skagers

Department of Pathology, Institute of Stomatology, Riga Stradins University, Riga, Latvia



PAST AND PRESENT OF ORTHOGNATHIC SURGERY IN BALTIC STATES

Andrejs Skagers¹, Linas Zaleckas², Pranas Tercijonas³, Stasys Bojarskas³, Rasa Babicenko⁴, Peeter Viidebaum⁵, Marianne Soots⁶, Viktors Andrusenko⁷

¹ *Institute of Stomatology, Riga Stradins University, Latvia*

² *Institute of Odontology, Vilnius University, Lithuania*

³ *Department of Maxillofacial Surgery, Kaunas University of Medicine Hospital, Lithuania*

⁴ *Department of Head and Neck Surgery, Klaipeda University Hospital, Lithuania*

⁵ *Department of Maxillofacial Surgery, North Estonian Regional Hospital, Estonia*

⁶ *Clinic of Stomatology, Tartu University Hospital, Estonia*

⁷ *Daugavpils Regional Hospital, Latvia*

In Lithuania orthognathic surgery has been developed in Vilnius University and Kaunas Medical University clinics. Some operations are done in Klaipeda. The first Le Fort I osteotomy done by Juozas Olekas (1996), whereas fist mandibular osteotomies in Vilnius were performed by prof. Petras Sileikis, more than 15 years ago. Since 2003 orthognathic surgery in Vilnius has been developed by Simonas Grybauskas with the help from Riga. The first contemporary bimaxillary osteotomy only by Lithuanian surgeons was performed in 2004 by S.Grybauskas, L.Zaleckas and G.Kapusinskas. Now annually about 60 orthognathic operations in Vilnius are performed by S.Grybauskas, about 90% of them being double jaw surgery.

In Kaunas first vertical ramus osteotomy done by Pranas Tercijonas, Gintautas Sabalys and Vladas Steponavicius (1986). First BSSO done by Pranas Tercijonas, Gintautas Gumbelevicius and Irena Navakauskiene (1992). First bimaxillary surgery (1993) done by Pranas Tercijonas and Rasa Babicenko. Presently in Kaunas 10 – 15 orthognathic operations annually are carried out by Stasys Bojarskas and Ricardas Kubilius.

In Estonia orthognathic operations are performed in Tartu University Clinic of Stomatology and at the Department of Maxillofacial Surgery of North Estonian Regional Hospital (Tallinn). In Tallinn orthognathic surgery was started in middle of 1970s by Ants Stamberg. Contemporary orthognathic surgery started in 1990s after training of Hamor Kaha and Peeter Viidebaum from Tallinn, Marianne Soots and Ülo Pintson from Tartu in Arhus University clinic chaired by Steen Sindet Pedersen. The first BSSO in Tartu was performed in 1997. In 2000 Paul J.W. Stoelinga performed in Tartu first cranio-osteoplasty and fronto-orbital advancement. In 2008 in Estonia 79 patients were operated on: BSSO (82%), Le Fort I osteotomy (11%); two-jaw osteotomy (7%). The leading surgeons are M.Soots in Tartu, H.Kaha and P.Viidebaum in Tallinn.

In Latvia Astra Linare first performed mandibular ramus osteotomy (Ziele) to close open bite (1962). A. Linare in period 1964 – 1988 did 249 corticotomies (78,3%), mandibular ramus osteotomies (Lindemann, Ziele) – 37 (11,64 %), 32 tongue reductions (10,06%). Le Fort I osteotomies were started in Riga in 1986 by Vladimir Sukachev (Moscow) and Andrejs Skagers, BSSO by A. Skagers (1988). First one stage bimaxillary surgery did Paul Stoelinga (1996). Contemporary orthognathic surgery in Latvia developed by support of Adrian Sugar (UK), Per Skjelbred (Norway), Christian Linqvist, Riitta Suuronen, Pekka Laine (Finland), Joel Ferry (France). Leonard Krekmanov (Sweden) and Viktors Andriusenko did some orthognathic operations in Daugavpils Regional hospital. First Le-Fort III osteotomy in Riga performed Per Skjelbred (2007). Now active in orthognathic surgery are Girts Salms, Andris Bigestans and Gunars Lauskis in close cooperation with orthodontists Ilga Urtane, Gundega Jakobsone and Dace Osleja. In year 2008 in Latvia 34 orthognathic patients were operated on: bimaxillary surgery in 14 cases, Le Fort I osteotomy – 26; BSSO – 22.



Prof. Dr. Dietmar Segner

Orthodontic Department of Hamburg University, Hamburg, Germany

THE BORDERLINE BETWEEN ORTHODONTICS AND ORTHOGNATHIC SURGERY

Orthodontists and maxillofacial surgeons are regularly confronted with the problem to decide what would be the best treatment approach for a given case. Not all cases are clear-cut surgical or clearly orthodontic cases. In addition there are cases where the patient has objections to certain kinds of treatments, which may create additional problems for the doctors involved. The lecture shows cases on both sides of this borderline and explains why the decision for the treatment was taken, what outcome had to be expected and how the final result evolved. Cephalometric guidelines in combination with the profile evaluation give the best indication of the recommended treatment.



Dr. G. William Arnett

The Center for Corrective Jaw Surgery, Santa Barbara, California, USA

FACIAL DIAGNOSIS AND TREATMENT PLANNING

Traditional occlusal correction corrects the bite to a class I Angle classification. The angle occlusal system is 75 years old and has no relationship to facial esthetics. This scientific program will address the inadequacy of traditional diagnosis and treatment planning of malocclusions. The discussion will highlight occlusal correction driven by facial norms and not an Angle class I.



Dr. Richard McLaughlin

Clinical professor at the University of Southern California, USA;

Department of Orthodontics in Los Angeles, California;

Associate professor at St. Louis University, Department of Orthodontics

PRE-SURGICAL ORTHODONTIC SET-UP AND POST-SURGICAL FINISHING OF COMBINED ORTHODONTIC AND ORTHOGNATHIC SURGERY CASES

Dr. McLaughlin will discuss six frequent categories of surgical-orthodontic treatment.

These categories are:

1. Class II mandibular surgery
2. Class II maxillary surgery
3. Class II maxillary and mandibular surgery
4. Class III mandibular surgery
5. Class III maxillary surgery
6. Class III maxillary and mandibular surgery

In each of these categories, the horizontal, vertical and transverse factors related to pre-surgical orthodontic set-up will be discussed. This will be followed by comments on post-surgical finishing.



Dr. Charles Falzone

Private practice, Santa Barbara, USA

POST ORTHOGNATHIC SURGICAL OCCLUSAL ADJUSTMENT

Post orthognathic occlusal adjustment is a minor procedure of major importance. The presentation includes a detailed description of the technique of occlusal adjustment and its mechanobiology and includes a presentation of four clinical cases describing different aspects of occlusal adjustment including the correction of anterior prematurities, posterior prematurities, retainer design, and occlusal adjustment with tooth mass discrepancies.



Dr. G. William Arnett

The Center for Corrective Jaw Surgery, Santa Barbara, California, USA

KEY FACTORS FOR MANDIBULAR ADVANCEMENT STABILITY

Orthognathic surgery literature has emphasized avoiding counterclockwise advancements of the mandible to avoid relapse. Avoiding CCW has become an obsessive solution which in fact does not control relapse. This scientific program will examine twelve relapse factors of which CCW advancement is only one.

SEPTEMBER 26TH (SATURDAY)

Morning session: Treatment Planning and TMJ



Dr. Adrian Sugar

*FDSRCS(Eng,Ed), FDSRCPS(Glas), MDhc(Riga), Hon Fellow(UWIC)
Cleft and Maxillofacial Units, Morriston Hospital and Swansea University Medical School,
Swansea SA6 6NL, Wales, UK*

MANAGING FACIAL ASYMMETRY

This presentation will consider the investigation, diagnosis and treatment of facial asymmetry. It will consider conditions of excessive and reduced growth and the influence of growth on treatment. Emphasis will be placed on the need for a good understanding of the condition being treated and meticulous attention to detail in the planning and practice of treatment.

Conditions of excessive growth, such as Condylar Hyperplasia and Hemifacial Hyperplasia, will be considered and their diagnosis as well as timing and planning of interventions.

Conditions of tissue deficiency such as Hemifacial Atrophy, Condylar Hypoplasia and Hemifacial Microsomia will also be described and the very different approach to their management. Hemifacial or Craniofacial Microsomia (HFM, CFM) as the second most common craniofacial syndrome with an incidence of around 1 in 5000 live births will be considered in detail. Its spectrum and complexity of malformation, the role of 3D imaging and planning in its diagnosis and treatment, as well as its presentation, classification and treatment according to age will be described. The merits of the classification systems, of reconstructive surgery in general including of the ear, bones and soft-tissues will be described with particular reference to the role of bone grafting, distraction osteogenesis, orthognathic surgery, autogenous and implant-retained ear prostheses.



Prof. Robert Sader

Department for Oral, Cranio-Maxillofacial and Facial Plastic Surgery, Medical Center of the Johann Wolfgang Goethe University, Frankfurt, Germany

VIRTUAL 3D AND 4D PLANNING AND SIMULATION OF CORRECTIVE JAW SURGERY

Human kind receives more than 90 % of its environmental informations by the visual sense. Consequently, acquiring visual informations by imaging procedures has gained increasing importance in medical diagnostics or therapy (intraoperative scanning, endoscopic-assisted surgery). As functional parameters plays an essential role in surgical planning, preoperative simulation of postoperative function will also have an increasing influence on surgical planning and will be one of the future challenges in medicine. In evaluation of the musculoskeletal system, a break through was achieved by 3D-representation of the imaging data. New possibilities of CMF surgery have been achieved like individual 3D-planning of osteotomies including soft tissue outcome or manufacturing individual custom implants for skull reconstruction. But by modern multidetector scanner and the rapid evolution of computer multiprocessor technology it was possible not only to improve the spatial 3D-image resolution but also to fasten scanning time and to achieve realtime online imaging, so called 4D-imaging. New possibilities of 4D-imaging in CMF surgery will be presented like realtime-MRI (30 images/second) for pre- and postoperative control of muscle function before and after surgery. Planning of facial expressions after esthetic

surgery will be possible by 4D-surface scanning and 4D-computertomography of the facial skull enables not only realtime representation of the TMJ movements of condyle and disc but also representation the muscle functions. It will be shown, that these new diagnostic imaging tools can directly led to surgical innovations like development of new surgical devices

Morning session: Team Approach to Surgical Patients

Team lecture. Chilean, Santiago Experience

Dr. Julio Cifuentes

Professor of Oral and Maxillo Facial Surgery at the Dental School of the Medicine Faculty, Universidad del Desarrollo-Clinica Alemana, Chile

MULTISEGMENTAL LE FORT I: A KEY FOR STABILITY

Surgical Considerations

Multiple-segment LeFort I osteotomy is defined as an osteotomy that divides the tooth-bearing arch of the maxilla into three or more segments. Experience has shown that the results are reliable, the procedure is safe with minimal complications.

In this presentation we are going to analyze: Indications, Advantages, Surgical key points, Orthodontic preparation, Complications.

Different clinical cases will be shown.

Dr. Roberto Lasserre

Professor of Orthodontics and Dentofacial Orthopedics at the Dental School of the Medicine Faculty, Universidad del Desarrollo-Clinica Alemana, Chile

MULTISEGMENTAL LE FORT I: A KEY FOR STABILITY

Orthodontic Considerations

Besides the facial balance and functional occlusion, the stability is one of the main goal in orthodontics. The multisegment LeFort I osteotomy is a useful technique that should be considered during an ortho-surgical treatment planning. This lecture shows orthodontic considerations, indications, advantages and disadvantages. Clinical cases will be shown.

Afternoon session: Team Approach to Surgical Patients

Prof. Dr. Med. Ilga Urtane

Head of Department of Orthodontics, Director of Institute of Stomatology, Riga Stradins University, Riga, Latvia

CONDYLAR MORPHOLOGY OF ORTHOGNATHIC PATIENTS FROM ICAT DATA

The influence of malocclusion on TMJ morphology and apposite is still not completely understood. In the literature it has been hypothetically stated that the condyle and fossa might differ in shape and their interrelation among people with various malocclusions. Precise assessment of skeletal morphology of the temporomandibular joint (TMJ) is important in orthodontic and orthognathic surgery treatment planning and prediction of the stability of the treatment results.

The diagnostic accuracy of the condyle and glenoid fossa with conventional 2D radiography is limited. The advent of the CBCT has substantially expanded the options for diagnosing TMJ pathologies giving the orthodontists and maxilla–facial surgeon access to precise 3D information of hard tissue structure. The aim of the presentation is to demonstrate the results of assessment of condylar and glenoid fossa parameters and morphology in 3D imaging acquired by CBCT i-CAT in orthognathic patients with severe class II and class III malocclusions and class I subjects correspond to research diagnostic criteria. There will be presented results indicating statistically significant differences between groups of class I, Class II and Class III for all spatial measurements on both sides and anterior, concentric,

posterior position of condyle in glenoid fossa; variability of the condyle and glenoid fossa height and width and condylar resorption signs variability between malocclusions groups.

That allows to conclude that condyle and fossa differ in shape and relationship in orthognathic patients and may be a reason for differing condyle positions within the fossa.

Team lecture. Santa Barbara Experience

Dr. David Way

Practice of Orthodontics, Fort Collins, Colorado, USA

ATYPICAL CONDYLAR MORPHOLOGY IN THE GROWING PATIENT.

“WILL THESE PATIENTS BE OUR NEXT ORTHOGNATHIC SURGERY CANDIDATES?”

We will review condylar morphology from ages 6 through adulthood with examples of condylar morphology within the range of normal and those that are atypical for each age.

We will discuss a method of obtaining condylar volumetric measurements. The volumetric measurements may be an adjunctive diagnostic tool in monitoring changes or stability of patients followed over time. The benefits and the problems areas of this technique will be discussed

We will review examples of early condylar injury and condylar changes of unknown etiology and their affect on facial growth in predicting future comprehensive treatments.

Dr. Michael Gunson

The Center for Corrective Jaw Surgery, Santa Barbara, California, USA

THE INFLUENCE OF ESTROGEN ON CONDYLAR RESORPTION

Oral Contraceptive Pill Use and Abnormal Menstrual Cycles in Women with Condylar Resorption: A Case for Low Serum 17 β -estradiol as a Major Factor in Progressive Condylar Resorption

Introduction. Progressive condylar resorption has been described for many years. Because condylar resorption favors women over men, many have thought a prominent systemic factor for the pathogenesis of this disease might be related to sex hormones. **Methods.** Over a 3 year period, 27 women without autoimmune disease presented to our office for orthognathic surgical correction of their skeletal deformity secondary to severe condylar resorption. They all showed radiographic evidence of severe condylar resorption. Sex hormone dysfunction was evaluated and mid-cycle serum levels of 17 β -estradiol were measured. Use of exogenous hormones was also documented. **Results.** Twenty-six of the 27 women with severe condylar resorption had either laboratory findings of low 17 β -estradiol or a history of extremely irregular menstrual cycle. Of the 27 women, 25 showed abnormally low levels of serum 17 β -estradiol at mid-cycle. Two subsets were identified in the low 17 β -estradiol group. The first did not produce estrogen naturally (8/27) and the second group had low 17 β -estradiol levels secondary to oral contraceptive pill (OCP) use (19/27). Of the 19 OCP users, all 19 reported that chin regression and open bite changes occurred after starting OCP use. Nine of the 19 reported these condylar resorption symptoms within the first 6 months of starting the OCP. **Conclusions.** Whether induced by ethinyl estradiol birth control or by premature ovarian failure, low circulating 17 β -estradiol makes it impossible for the natural reparative capacity of the condyle to take place in the face of local inflammatory factors. This leads to cortical and medullary condylar lysis.

Dr. G. William Arnett

The Center for Corrective Jaw Surgery, Santa Barbara, California, USA

SURGICAL CONDYLAR COMPRESSION AND LATE RELAPSE

Intra-operative condyle displacement (compression) is a primary source of late mandibular relapse. This scientific presentation will focus on mandibular relapse associated with bilateral sagittal osteotomy advancement. Additionally, this presentation will discuss mandibular relapse associated with isolated Le Forte I surgery.



Dr. Richard McLaughlin

*Clinical professor at the University of Southern California, USA;
Department of Orthodontics in Los Angeles, California;
Associate professor at St.Louis University, Department of Orthodontics*

THE IMPORTANCE OF CLOSE COMMUNICATION BETWEEN ORTHODONTIST AND ORTHOGNATHIC SURGEON DURING THE MANAGEMENT OF COMBINED CASES

All aspects of diagnosis and treatment planning need to be carefully evaluated together by the orthodontist and orthognathic surgeon. This includes information on the face, airway, occlusion, and the TMJ and musculature. Once a clear pathway has been established concerning these areas and all aspects have been agreed upon, orthodontic treatment can be initiated. Once initial orthodontic alignment has been established, progress models and other records need to be taken and reviewed by both surgeon and orthodontist. Post-surgically, both surgeon and orthodontist need to follow the case very carefully to make sure healing occurs properly and minor changes in the occlusion can be adjusted.

Afternoon session: Team Approach to Surgical Patients

Team lecture. Moscow Experience

Dr. Katrin Al-Khamid

Central Scientific-Research Institute of Stomatology, Moscow, Russia

PERIOPERATIVE ORTHODONTICS

In the past years in all over the world and in our country the continuous scientific and practical studies and critical evaluation of different methods and results have greatly improved results of treatment and theoretical understanding of collaboration between surgeons, orthodontists and prosthodontists. We will discuss on preoperative and postoperative orthodontic care in patients with different dentofacial deformities from the point of view of maximum post-treatment stability.

Dr. Andrey Senyuk

Central Scientific-Research Institute of Stomatology, Moscow, Russia

MULTIDISCIPLINARY APPROACH TO PARTIALLY EDENTULOUS ORTHOGNATHIC PATIENTS

In recent years orthognathic treatment was improved by introduction of different types of treatment planning (2D,3D,4D) and different types of new surgical techniques. Nevertheless some patients have additional dental problems, associated with dento-facial deformities.

Objective examination tends to reveal the absence of frontal or distal support in dental arches, that lead to non-standard treatment protocol. This condition can lead to complications when performing orthognathic or reconstructive jaws surgery.

We will discuss on different conditions, common and uncommon situations due to acquired dental problems, treatment mistakes associated with basic dento-facial deformity.

Dr. Ekaterina Kudinova

National Research Institute of Surgery, Moscow, Russia

AUXILIARY PLASTIC SURGERY IN THE NASOLABIAL AREA

Introduction. In our days, orthognathic surgery reaches high results of successful treatment partially at the expense of new effective diagnostic methods. But aims of plastic surgery are not only to achieve optimal occlusion, but also to make harmonic esthetic face proportions. Materials and methods. The patients were divided into several groups:



Patients, who have a deformation of one or both jaws. When they come to plastic surgeon they often ask for rhinoplasty, because what they see is only slight underdevelopment of mental prominence and nose, which is seems to them too big. Usually they do not even notice the deformation of jaws. Some of them had orthodontic treatment in childhood and suppose that problem solved long time ago, in consequence they are not geared up for axonometric maxilla. *Patients with complains only on deformation of chin.* In many cases they are offered contour surgery with a silicone implant. But frequently this type of operation is execute by plastic surgeons without basic maxillofacial education sometimes it causes such problems displacement of implant due to external approach and suprapariosteal location.

Patients, who had rejuvenation surgery and chin implant. In such cases chinplasty suppose to improve submental profile, but it can even make contrary effect of visible aging.

Patients with posttraumatic deformation of middle face area. They usually in need of maxilla augmentation (Le Fort I osteotomy) with a single-step reconstruction of zygomaticoorbital area.

Conclusion. To achieve good esthetic result it is important to estimate skull proportion right and consider further operations in closely related areas as: nose, nasolabial fold, upper and lower lip, zygomatic region at the first level of patient's examination and planning of operation.

Dr. Givi Ordzhonikidze

Private practice in prosthodontics, Moscow, Russia

PROSTHODONTIC CONSIDERATIONS FOR DENTAL REHABILITATION AFTER ORTHOGNATHIC SURGERY

In the presentation we will discuss on main conditions that are required in order to achieve satisfactory esthetic and functional outcome of complex rehabilitation. Good long-term results are impossible without thorough treatment planning, multi-disciplinary approach and understanding of techniques and materials.

Many factors influence esthetic and functional outcome of complex oral rehabilitation. Those factors should be addressed in a proper way. Comprehensive preoperative esthetic and functional analysis, correct communication between prosthodontist, maxillo-facial surgeon and dental technician regarding all details of planned rehabilitation are absolutely necessary for successful treatment.

Material selection plays important role in the management of complex cases. After all patients come to us not for advanced surgical techniques, ridge augmentation, guided tissue regeneration and not for high-tech all-ceramic restorations made with CAD/CAM technologies of latest generation. Patients want to have beautiful face, smile and teeth that will function for a long-long time. And it is up to specialists to satisfy these needs using proper materials and methods in each and every clinical case.

Dr. Gulsara Ospanova

Vice-president of Russian Orthodontic Society, Central Research Institute of Stomatology, Moscow, Russia

GOALS AS A RESULT OF SKELETAL MALOCCLUSION TREATMENT. LATE AND EARLY COMPLICATIONS OF MULTIMODALITY THERAPY

Gulsara Ospanova, Andrey Senyuk

Central Research Institute of Stomatology, Moscow, Russia

One hundred years ago Dr. Edward H. Angle wrote "The mouth is a most potent factor in making or marrying the beauty and character of the face, and the form and beauty of the mouth largely depends on the occlusal relations of the teeth" It was an absolute paradigm for orthodontists many years, especially in the USSR. Yes, the correct occlusal relations of the teeth are important, but more important is the face. Every doctor and every patient requires unpredictable quality result of the treatment. An orthodontist has to think like a surgeon and vise-versa to achieve an excellent result. In this presentation I will: 1) Define the goals of team treatment. 2) Define the early and late errors.

Afternoon session: Team Approach to Surgical Patients (continued)**Team lecture. Baltic Experience****Dr. Girts Salms***Institute of Stomatology, Riga Stradins University, Riga, Latvia***BSSOVSVRO IN BIMAXILLARY SURGERY FOR CORRECTION OF CLASS III MALOCCLUSION***Girts Salms, Andris Bigestans, Gunars Lauskis, Andris Abeltins, Gundega Jakobsone
Institute of Stomatology, Riga Stradins University, Riga, Latvia*

Introduction: The aim of the study was to evaluate skeletal stability of the BSSO and VRO after bimaxillary surgery to correct class III malocclusion. BSSO was performed in asymmetric cases and VRO in symmetric cases respectively.

Patients and Methods: Patients group consisted of 49 individuals (age 18"27, mean 2.5 years old), who were operated since 1999–2007 at the Riga Stradins University. All of them had bimaxillary surgery – in 19 cases Le Fort I osteotomy together with BSSO and in 30 cases Le Fort I osteotomy together with VRO. Fixation of the osteotomies was performed with 2mm osteosynthesis plates either in BSSO or in VRO groups. Evaluation of operated patients was done one year after the surgery utilizing lateral cephalograms. There was not statistically significant difference of the preoperative characteristics between those two patients groups. Surgical repositions were similar in both groups. The mean surgical setback in the BSSO group was 5.0 ± 3.7 mm and in the VRO group 4.3 ± 3.0 mm, however the difference was not statistically significant. The average relapse at Pog point was 1.9 ± 1.3 mm for BSSO group and 1.8 ± 1.6 mm for VRO group respectively, however in the VRO group were 4 patients (14%) with relapse more than 4.0 mm. The amount of the surgical movement was associated with the relapse for VRO group in vertical and horizontal directions, while for BSSO group correlation was found out for vertical movements.

Conclusions: The findings of our study suggest that there were no statistically significant differences in post operative stability for both patient groups. However VRO showed more trends to relapse in both dimensions vertically and horizontally.

Topic: Accuracy and stability in orthognathic surgery

Dr. Dalia Latkauskiene*Department of Orthodontics, Kaunas University of Medicine, Kaunas, Lithuania***FUNCTIONAL HERBST APPLIANCE FOR CLASS II PATIENTS. "IS IT AN ALTERNATIVE TREATMENT TO ORTHOGNATHIC SURGERY?"**

Since 2004 more than 200 Class II patients were treated by the lecturer using crowned Herbst (Ormco). The aim of the presentation is to discuss clinical use of Herbst treating non-growing patients, present special treatment protocol as well as to make certain remarks on using this appliance.

Dr. Simonas Grybauskas*Department of Oral and Maxillofacial Surgery, Vilnius University Hospital Zalgirio Clinic, Vilnius, Lithuania***SURGICAL MANAGEMENT OF CLASS II DIVISION 2 PATIENTS**

Management of Class II-2 patients brings in the challenge once the surgical treatment plan is accepted by the patient. While this type of malocclusion could theoretically be easily corrected by use of isolated lower jaw advancement, the straightforward treatment does not always result in acceptable facial profile after surgery. The reason for this is the unique facial morphology of Class II-2 patients: low angle face, flat occlusal plane, thin upper lip, frequently associated with vertical maxillary deficiency, strong perioral and mentalis muscles as well as a strong "button-chin".

All of these issues rather than malocclusion alone need to be addressed while planning and treating Class II-2 patients in order to receive functional and aesthetic results. The presentation will cover the

most important aspects of surgical treatment planning involving double jaw surgery, genioplasty and soft tissue procedures. Case presentations will illustrate the theoretical aspects of this lecture.

SEPTEMBER 27TH (SUNDAY)

Morning session: Techniques

Prof. Johan Reyneke

*Departments of Oral and Maxillofacial Surgery:
University of the Witwatersrand, South Africa;
University of Oklahoma, Oklahoma City, U.S.A.;
University of Florida College of Dentistry, Gainesville, Florida, U.S.A.*

CORRECTION OF ANTERIOR OPEN BITE

Some of the most challenging dentofacial deformities facing the surgeon and orthodontist are anterior open bite malocclusions. Determining the course of an anterior open bite and formulating a diagnosis and treatment plan are complicated by the role of the neuromuscular, skeletal and genetic influences. Specific indications for orthodontic and various surgical solutions should be considered. Long-term skeletal and dental stability are a concern because of the influence that the neuromusculature has on the repositioned jaws and teeth.

Dr. Maurice Mommaerts

*Maxillo-Facial and Facial Plastic Surgery; Director Bruges Cleft & Craniofacial Centre
President EACMFS 2008-2010*

CORRECTION OF MAXILLARY AND MANDIBULAR TRANSVERSE PROBLEMS

Severe crowding due to narrow upper and lower apical bases can be corrected by the extraction of four premolars, or by bimaxillary transverse osteodistraction. The first strategy is prone to unaesthetic changes in lip posture, nasolabial angle and buccal corridors. Life-long retention is necessary because of the known correlation between increased intercanine distance and relapse of crowding. The second strategy involves surgery and the final outcome regarding stability is not yet known. Theoretically, because the canines have not been moved outside of the skeletal envelope, and because the functional matrix positively influences the dental arches, relapse of crowding should be less. Facial appearance is improved because of the reduction of the buccal corridors and the fullness of the mouth both at rest, and upon smiling

Prof. Paul J. W. Stoelinga

*Emeritus Professor of Oral and Maxillofacial Surgery University of Nijmegen and Maastricht,
The Netherlands*

AESTHETIC IMPLICATIONS OF ORTHOGNATHIC SURGERY

Orthognathic surgery has two goals i.e. functional and aesthetic improvement. When planning the surgery the aesthetic implications should be considered with great care, because otherwise the outcome of the surgery may give rise to frustration of both the patient and the surgeon. Preoperative assessment should include a systematic analysis of the middle and lower third of the face. Based on the planned surgical movements of the jaws the soft tissue changes should be anticipated. There are some basic rules that should be realized when planning the surgery. Yet, unwanted side effects are sometimes unavoidable.

Examples are broadening of the nasal base when intruding the maxilla or a down sloping of the corners of the lips in some cases. Also nasal contour may change after maxillary surgery, either to the benefit or disadvantage of the patient.

This presentation will address the systematic assessment of the facial hard and soft tissues and discuss the implications for the treatment.

It will also deal with possibilities to correct some esthetic shortcomings which may be the result of the orthognatic or rather maxillofacial orthopaedic surgery

- Nose-lip-chin balance
- Malar prominence
- Infra orbital rim
- Nasal projection
- Lip competence i.e. absolute & relative lip length
- Chin position & contour

Morning session: Obstructive Sleep Apnea

Prof. Andrejs Skagers

Department of Pathology, Institute of Stomatology, Riga Stradins University, Riga, Latvia

NASO-PHARYNGEAL SURGERY TO DIMINISH SNORING AND OBSTRUCTIVE SLEEP APNEA

Andrejs Skagers¹, Juris Svaza¹, Laila Feldmane², Iveta Jankovska¹

¹Institute of Stomatology, Riga Stradins University, Latvia

²Department of Pathology, Riga Stradins University, Latvia

Naso-pharyngeal surgery since 2002 includes 70 patients – 56 men and 14 women aged from 22 to 78 years. They passed Epworth sleepiness scale (ESS) questionnaires, polysomnography (PSG), lateral cephalometry. Habitual snoring was in 29 patients, OSA mild – 18 (AHI – 5-15), OSA moderate – 15 (AHI – 16-30), OSA severe – 8 (AHI>30). Methods of surgery were: CO₂ LASER uvulopalatoplasty (UPP) – 11, UPP with resection of uvula and arcus pharyngopalatinus, sutures – 56, excisional UPPP with tonsillectomy – 13 cases. Nasal surgery was on 18 patients- submucous resection of deviated septum (16), spreader grafts (11), columellar strut (9), turbinectomy (5).

Results: Histology of removed part of soft palate showed hyperplastic squamous epithelium with lymphoangiectasia, phlebotasia, venous congestion below, atrophy of muscle fibers, inflammation of mucous glands, hyperplasia of minor salivary glands, dilatation of salivary ducts. Late results (ESS, PSG): disturbed sleep breathing stopped – 13%, improved sleep – 78%, no changes – 9%. Lateral cephalometry (26 patients) – 1,5-4,5 mm sagital increase of UA on oropharyngeal level.

Conclusion: Control PSG showed AHI decrease in all tested OMA patients. In general better results were achieved in cases where bigger amount of oropharyngeal soft tissue including large palatal tonsils was removed and mucosa of soft palate and pharyngeal walls readapted. Higher satisfaction was of patients with severe OSA. Less satisfied were patients with habitual snoring.

Topic: Management of obstructive sleep apnea

Dr. Julio Cifuentes

Professor of Oral and Maxillo Facial Surgery at the Dental School of the Medicine Faculty, Universidad del Desarrollo-Clinica Alemana, Chile

EXTRAPHARYNGEAL SURGERY IN OSA: MAXILLOMANDIBULAR ADVANCEMENT

Breathing disorders during sleep and particularly in Obstructive Sleep Apnea (OSA) have become an important component of public health because of their significant prevalence and their potential detrimental cardiovascular and behavioral consequences.

Although the majority of OSA patients are treated with nasal CPAP, surgery plays a significant role in the management of these conditions.

Surgical treatments are classified in Naso-pharyngeal or Extra-pharyngeal or as Stanford University classified them, Phase I and Phase II.

In this lecture, extra-pharyngeal or Phase II treatments will be analyzed, with special emphasis on doing Counterclockwise Rotation of the maxillo-mandibular complex.

It's indications will be given, surgical technique and our results and literature will be shown.

Clinical cases will be analyzed.

Afternoon session: Future Trends**Dr. James Mah**

*Associate Clinical Professor at the University of Southern California
and the University of Nevada, Las Vegas, USA*

3-D IMAGING IN ORTHODONTICS AND ORTHOGNATHIC TREATMENT

3-Dimensional radiographic examination with cone-beam computed tomography (CBCT) has emerged as a fundamental diagnostic and treatment planning technology in orthodontics and orthognathic surgery. A comprehensive evaluation of the patient can be performed in one dataset allowing for visualization of the entire craniofacial complex, dentition, alveolar arches, airway and temporomandibular joints. The presentation will focus on specific clinical situations that were only resolved via 3-D imaging. In addition, 3-D applications in modeling and orthognathic surgery will be presented.

Prof. Christian Krenkel

*Clinic of Oral & Maxillofacial Surgery, Paracelsus Medical School,
Salzburger Landeskrankenhaus, Salzburg, Austria*

INTRAOPERATIVE CONTROL DURING ORTHOGNATHIC SURGERY

C Krenkel, R Triessnig, D Singh, S Enzinger

In Orthognathic surgery both the patient as well as the surgeon want to reduce the risks of failure to a minimum: the surgeon wants to be prepared for any unexpected incidents during the operation, the patient declines any bad outcome concerning function and appearance.

With the *3D-Orthognathic Surgery Simulator (3D-OSS)* a preoperative simulation can be performed planning both maxillar and mandibular osteotomies. The parameters displayed during planning are as follows: The occlusal relationship; the relationship on the Le Fort I osteotomy plain; the site of the condyle in the TMJ; the site of the sagittal split; the site of the mandibular angle; the site of the chin. The *Face-O-Meter* helps in fixing the exact centre of the upper jaw (inter-incisal point). It also allows comparing the line of the pupils of the eyes with the front upper tooth line. This Instrument is based on three sockets in the frontal bone and can therefore be disconnected but also be replaced during the Le Fort I osteotomy procedure. The measurement of the interincisal point is performed three dimensionally and allows perfect control or immediate correction of the intermediate wafer and helps to find a reproducible vertical position of the maxilla.

In combining the *3D-OSS* and *Face-O-Meter* with computer-aided techniques the best and safest way for both the patient and the surgeon can be found to minimize the discrepancy between the expectations of the patient and the actual results.

Prof. Christian Lindqvist

*Department of Oral and Maxillofacial Surgery, Institute of Clinical Medicine,
Department of Surgery, Institute of Dentistry, University of Helsinki,
Helsinki, Finland*

THE USE OF BIORESORBABLES IN ORTHOGNATHIC SURGERY

Bioabsorbable fixation devices have been used in our department in orthognathic surgery from 1991. We studied a material of 163 patients that underwent 329 orthognathic osteotomies fixed with bioresorbable devices. The complications were minor and did not affect the end results of the operations. Minor complications occurred in 14 patients (8.6%). Insufficient fixation resulted in open bite in three patients (1.8%). Based on our experience, bioresorbable devices are safe to be used in orthognathic procedures. However, there is a learning curve, as there is with all new methods introduced.

Several recent studies are in agreement with our results, indicating that resorbable fixation of orthognathic osteotomies is a viable alternative to titanium plates and screws. Also a Cochrane

database search provided evidence to show that there is no statistically significant difference in postoperative discomfort, level of patient satisfaction, plate exposure or infection for plate and screw fixation using either titanium or resorbable materials.

In conclusion it seems that the patient undergoing orthognathic treatment should be allowed to choose between the different fixation methods after having received all available information about the pros and cons for either a metallic or resorbable osteosynthesis.

Afternoon session: Techniques

Team lecture. Verona Experience

Prof. Dario Bertossi

Associate Professor in the Department of Dental Clinic and Maxillofacial Surgery, University of Verona, Italy

ORTHODONTIC MICROSURGERY FOR RAPID DENTAL REPOSITIONING IN ADULT PATIENTS

Dario Bertossi, Andrea Podestà, Tomaso Vercellotti, Pier Francesco Nocini

Introduction: The malposition of single dental elements plays a key role in affecting occlusion. Normally, patients come and ask for a rapid solution. We selected 10 patients affected by dental malocclusion and dental ankylosis, and treated with multiple osteotomies (MTDLD) and traditional orthodontics.

Materials and Methods: Ten patients (8 women and 2 men) have been treated with the MTDLD technique. This is done by piezosurgery and veronatip and multiple bone cuts between each root.

Results: The projected dental adjustments were achieved in 18 to 25 days for the dental inclusion group, and in 68 to 150 days for the presurgical group. The decrease in orthodontic treatment time was on an average of 70% for the ankylotic teeth and 65% for the pre-surgical group.

Discussion: To overcome orthodontic limits, several reports have suggested the use of labial/lingual vertical corticotomy. Liou and Huang, Wilcko et al described a "periodontally accelerated osteogenic orthodontics" procedure including lingual and buccal flaps, bone bur decortication, bone grafting, and fixed orthodontic treatment. This technique reduces treatment time versus conventional techniques by 30% to 50%.

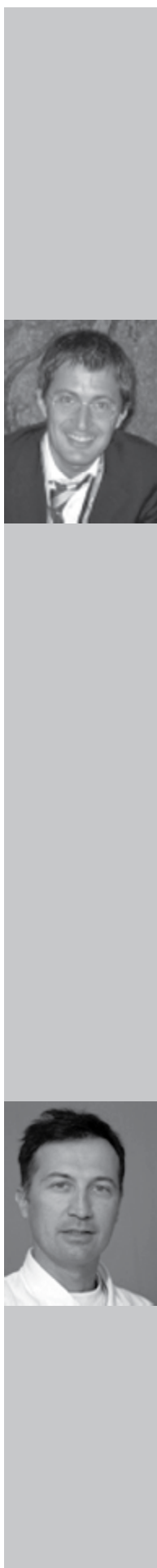
Microsurgical orthodontics maximize the rapidity of movement and prevent damage to the periodontal tissues. These goals can be achieved with the piezosurgical technique invented by Vercellotti, that is done performing multiple osteotomies and the immediate application of biomechanical forces. The greatest amount of dental movement occurs in the first 30% of the total treatment time, ending with the conventional orthodontic treatment.

Dr. Antonio D'Agostino

Department of Dental Clinic and Maxillofacial Surgery, University of Verona, Italy

ROTATIONAL MOVEMENTS OF THE MAXILLO-MANDIBULAR COMPLEX: AN EFFECTIVE TOOL IN AESTHETIC MANAGEMENT OF DENTOSKELETAL DEFORMITIES

In orthognathic surgery the alteration of the occlusal plane can determine profile modifications, especially in the labiomental region. Its role has been ignored for a long time for different reasons such as the concerns related to function and stability of final result. Nowadays it's evident how modifications of occlusal plane can be effective, especially in class II patients where the flattening of a steep occlusal plane with a counter-clockwise rotation can result in a great improvement of the lower third of the face. Furthermore it can reduce the need for adjunctive procedures as chinplasty. The keypoints for satisfactory results are correct diagnosis and treatment planning and an adequate surgical technique. This presentation will show how these concepts can be applied to class III patients, where clinical and cephalometric analysis are the real keypoints to define the most effective rotation (counterclockwise or clockwise) for aesthetical improvements.





Dr. Elisabetta Grendene

Private practice and consultant at Department of Dental Clinic and Maxillofacial Surgery, University of Verona, Italy

ORTHODONTICS IN SURGICAL CASES: THE IMPORTANCE OF A CONNECTION WITH THE SURGEON

Nowadays there is a high perception of aesthetics and beauty. In order to satisfy patients requests and to obtain good occlusal and aesthetic results often in many cases an orthodontic treatment has to be supported by surgical procedures. In these situations the orthodontic preparation requires specific teeth movement depending on the type of surgery necessary. This is the reason because it is extremely important a tight connection between orthodontics and surgeon. This presentation wants to focus the attention on the importance of this relationship through the analysis of some cases underling some clinical aspects extremely important for both surgical and orthodontic success.



Dr. Lorenzo Trevisiol

Department of Dental Clinic and Maxillofacial Surgery, University of Verona, Italy

GRAFTING MATERIALS: NEW PERSPECTIVES IN ORTHOGNATHIC SURGERY

Orthognathic surgery frequently requires movements of maxilla, mandible, and midface region that create gaps between the proximal and distal bony segments. These bone gaps can be small or quite large, as seen in cases of maxillary hypoplasia, midface hypoplasia, and counterclockwise rotations of the maxillomandibular complex. Various interpositional grafting materials have been advocated to maintain the repositioned segments in order to simplify the surgical procedures and to reduce the morbidity and the intraoperative time.

Nowadays the "gold standard" for bone volume improvement in orthognathic surgery seems to remain autologous bone graft. The aim of this presentation is to discuss our experience from a clinical and histological point of view with different grafting materials used in orthognathic surgery, stating some issues useful to choose the most valuable material according the type of defect created.



Prof. Pier Francesco Nocini

Chief of the Department of Dental Clinic and Maxillofacial Surgery, University of Verona, Italy

Dr. Massimo Albanese

Assistant Professor at the Department of Dental Clinic and Maxillofacial Surgery, University of Verona, Italy

ANCILLARY PROCEDURES IN ORTHOGNATHIC SURGERY AND FACIAL PLASTIC SURGERY

Pier Francesco Nocini, Massimo Albanese, Dario Bertossi



Chinplasty: Chinplasty represents one of the most common ancillary procedure and is often associated with corrective surgery of the skeletal bases in skeletal dimorphisms. This type of surgery entails the increase or reduction of the chin horizontally and vertically. By means of the same incision an alternative can be the positioning of a subperiosteal graft (silicone or medpore.

Malaroplasty: Malarplasty can be performed by means of osteotomies to improve the intermalar distance or to reduce it. The most used techniques to improve malar projection are however grafts.

Rhinoplasty: Rhinoplasty can be performed using three different methods: closed approach, transcartilagineous and intercartilagineous (delivery) or a combination. Perioral and perinasal musculature dissection and detachment of the muscle of the nasal floor pyriform opening and anterior nasal spine required for the Le Fort 1 osteotomy must be followed by accurate muscle repositioning, Rhinoplasty can correct these alterations simultaneously to the Le Fort I osteotomy or in a second surgical step.

Lipofilling: Lipofilling represents a corrective technique for volume. Autologous fat tissue taken from peripheral sites, where it is more abundant. There are several areas that can be grafted: lips, malar prominence, nasal labial folds, chin and the various residual asymmetries in different areas of the face.

Submental Liposuction: This technique can correct sagging skin, ptosis and excess of the platysma, chin ptosis and, in certain cases, a prominence of the submandibular gland or digastric muscle.

POSTER PRESENTATIONS

In alphabetical order by first author.
Underlined author is presenting author.

SURGICAL TREATMENT OF A SEVERE HIGH-ANGLE CLASS III MALOCCLUSION – A CASE REPORT

Arman-Ozcirpici Ayca¹, Sar Cagla¹, Uckan Sina²

¹ Department of Orthodontics, Baskent University, Ankara, Turkey

² Department of Oral & Maxillofacial Surgery, Baskent University, Ankara, Turkey

Introduction and Objectives: Orthognathic surgery, combined with orthodontic treatment is commonly used to correct a malocclusion with a substantial skeletal component. The objective of this poster is to present a high-angle skeletal Class III patient in which orthodontic decompensation was performed before bimaxillary orthognathic surgery.

Subject and Methods: A 19 year old female patient, presenting severe skeletal Class III malocclusion (SNA:76, SNB:83, ANB:-7) and increased vertical growth pattern (GoGnSN:45) was treated with combined orthodontics and orthognathic surgery. The surgical procedure consisted of 3 mm of maxillary advancement in conjunction with 2 mm of anterior impaction and 4 mm of posterior impaction. Accordingly 9 mm of mandibular set-back was performed. In addition to bimaxillary jaw surgery, genioplasty, involving 6 mm of vertical reduction and 3 mm of sagittal reduction was carried out. After surgery, postsurgical orthodontic treatment was done which involved final positioning of the teeth. Hawley retainers were applied for retention.

Results: Intermaxillary sagittal relationship was improved and vertical height was reduced significantly following bimaxillary surgery and vertical reduction genioplasty. A satisfactory result was achieved and the objectives of the treatment were accomplished after 18 months of total treatment time and the treatment results were stable after 3.5 years follow-up period.

Conclusion: Dramatic and stable facial improvements both in the frontal and profile aspects were achieved with bimaxillary surgery and vertical reduction genioplasty.

Topic: Aesthetic facial planning.

CAN ORTHOGNATHIC SURGERY PROVIDE A YOUNGER LOOK? REPORT OF TWO CASES

Arman-Ozcirpici Ayca¹, Sar Cagla¹, Uckan Sina²

¹ Department of Orthodontics, Baskent University, Ankara, Turkey

² Department of Oral & Maxillofacial Surgery, Baskent University, Ankara, Turkey

Introduction and Objectives: Combined orthodontic and surgical treatment aims to produce more harmonious facial skeletal relationships. Research has shown that most of the patients request surgical-orthodontic treatment because of a desire to improve their facial and dental appearance. The aim of this presentation is to present bimaxillary surgery with a Le Fort I maxillary advancement combined with bilateral sagittal split osteotomy for mandibular setback in two skeletal Class III subjects whose main complaints were being old-looking.

Subjects and Methods: Case 1: An 18 year old female patient presented severe maxillary retrusion and mandibular protrusion. She also had partial loss of mandibular posterior teeth. In order to achieve new alveolar bone formation for the insertion of dental implants, mandibular first premolars were translated posteriorly via two screws which were inserted on the posterior alveolar bone of the mandible. Presurgical orthodontics involved decompensation of incisor inclinations and translation of mandibular first premolars. Subsequently, orthognathic surgery was performed. The surgical procedure consisted of maxillary advancement and mandibular set-back. After surgery, orthodontic treatment for finalization was carried out.

Case 2: A 24 year old female patient had maxillary retrusion and mandibular protrusion. She was deeply concerned about frontal and profile aspect of her face. After leveling both arches and decompensating the incisors, bimaxillary surgery, consisting of maxillary advancement and mandibular set-back, was performed to achieve a more harmonious jaw relationship.

Results: Intermaxillary sagittal jaw relationship and soft-tissue profile was improved with the combined orthodontic and surgical treatment in both patients.

Conclusion: Bimaxillary surgical treatment contributes to improve facial attractiveness in young adults. Youthful and harmonious facial appearances can be achieved by means of combined orthodontic- surgical therapy in severe Class III malocclusions characterized with retrusive nasomaxillary areas and prominent chins.

Topic: Aesthetic facial planning.

OUTCOME OF ORTHOGNATHIC SURGERY: DO WE REALLY ACHIEVE THE DESIRED SOFT TISSUE PROFILE?

Arman-Ozcirpici Ayca¹, *Yilmaz Alev*¹, Polat-Ozsoy Omur¹, Uckan Sina²

¹ Department of Orthodontics, Baskent University, Ankara, Turkey

² Department of Oral & Maxillofacial Surgery, Baskent University, Ankara, Turkey

Introduction and Objectives: Combined orthodontic and orthognathic surgical treatment has become a common treatment modality for the correction of facial deformities and occlusal disharmonies. In most cases, the aims of such procedures are not only to correct the dental malocclusions but also to improve the facial esthetics and to harmonize the facial profile. The objective of this retrospective cephalometric study was to assess the results of surgical-orthodontic therapy and evaluate the achieved soft tissue profile comparatively with cephalometric esthetic norms.

Subjects and Methods: The sample consisted of 37 patients treated consecutively with orthodontic therapy combined with bilateral sagittal split and/or Le-Forte 1 osteotomies and rigid fixation. The first group comprised 27 patients who were treated for their Class III malocclusion and 19 of them were treated with bimaxillary surgery for maxillary advancement and/or impaction and mandibular setback, 4 with mandibular setback, 4 with maxillary advancement and 14 of them had an additional reduction genioplasty. From the second group of 10 Class II patients, 5 received bimaxillary surgery for maxillary impaction together with mandibular advancement, 5 had mandibular advancement and 6 of the patients received supplementary genioplasty. Pre-treatment and post-treatment cephalometric radiographs were analyzed and skeletal, dental and soft-tissue variables were measured. Treatment changes within each group, differences between groups and differences of the treatment outcomes from cephalometric norm values were evaluated statistically using SPSS.

Results: The findings demonstrated significant improvements in all dental, skeletal and soft tissue parameters in both groups. Changes in Class III patients were more pronounced compared to the Class II group. Evaluation of treatment results revealed that, complete normalization of cephalometric soft-tissue variables was not achieved, still showing significant differences compared to esthetic norms in both groups.

Conclusions: Precise and realistic predictions of profile outcomes during treatment planning are essential to achieve desired facial esthetics particularly in patients presenting severe skeletal discrepancies. Long-term studies are required in order to confirm the stability of the treatment outcomes.

Topic: Aesthetic facial planning.

PATIENTS PRINCIPLES OF TREATING PATIENTS WITH CONGENITAL JAW ANOMALIES

Drobyshev Aleksey Yu., *Tarasenko Igor V*, Dibirov Timur M., Sviridov Evgeny G., Tarasenko Svetlana I.

Moscow State University of Medicine and Dentistry, Moscow, Russia

Introduction and objectives: The aim of our work is demonstration of orthognathic surgery abilities and stating the main principles of multidisciplinary approach to planning and treatment of patients with congenital jaw anomalies.

Materials and methods: A combined examination, planning of treatment, surgery and rehabilitation of 187 patients, aged from 16 to 45, with diagnosis of mesial occlusion, caused by lower jaw macrognathia, and distal occlusion, caused by lower jaw micrognathia, was performed. Usual clinical, anthropometric and X-ray methods were used in patient examination, as well as special inquiry into temporomandibular joint, which included clinical examination, analyzing plaster models in an articulator and instrumental examination using axiography and magnetic resonance imaging of temporomandibular joint.

The following symptom complexes were present: combined anomalies and deformities of the maxilla and the mandible, underdevelopment of the maxilla, retrognathia, open bite, cross bite, anomalies and deformities of tooth rows and tooth position etc. The pathological changes in otorhinolaryngological status were also found, such as deformation of the nose bones and the septum, hyperplasia of the turbinated bones.

Results: According to the data, which was obtained at the first stage of planning, the maxilla was moved in three-dimension space with the help of an articulator and the interim splint was made out of cold-polymerization plastic or another material. The final splint was manufactured, in case dense confrontation of both models in the planned occlusion could not be achieved.

The symmetry was attained with the help of calculating parameters on the teleradiograms in straight projection and assesment of facial parameters.

The operation was performed on the mandible in 26 patients and both on the maxilla and on the mandible in 161 patient. Osteotomy of the maxilla and osteotomy along the palatinal median raphe, followed by fixation of the distractioning device for the mandible expanding was the first stage in 25 patients. We performed intracortical osteotomy after Obwegeser and Del Pont at the site of the ramus at the mandible, and sliding, stepped osteotomy according to Le Fort I at the maxilla. All patients were subject to final orthodontic treatment, which was aimed to achieve the maximum tubercule-fussural contact.

Septoplasty, rhinoplasty, genioplasty and submental and submandibular liposuction were performed according to indications.

Conclusions: Interaction between the doctor and the patient is necessary at all stages of treatment. It is important to give the right assessment to the esthetic indices, such as the expressiveness of the zygomatic eminences, the projection of the back and the tip of the nose, its width in the ala region, the size of the upper and lower lip etc, i.e. the parameters, which may be changed during the orthognathic operations, prior to the surgical treatment. The algorithym of patient examination and treatment, based on correct esthetic and stable results, must be used.

Topic: Accuracy and stability in orthognathic surgery.

LATERAL MANDIBULAR BODY OSTECTOMY IN THE TREATMENT OF LATEROGENIA

Hrusak Daniel, Bohmova Hana, Bernat Ladislav
Charles University - University Hospital, Plzen, Czech Republic

Introduction: Laterogenia represents a complicated situation to be managed solely by means of orthodontic treatment. Orthognathic surgery in combination with preoperative and postoperative orthodontic therapy is necessary in almost every case of Laterogenia.

Laterogenia is caused by many causes, the final position of the jaws is often involving not only the mandible, but as well the maxilla and is resulting in an asymmetric "bow face" appearance. In some facial syndromes Laterogenia is included.

Material and Methods: In determination the treatment plan all patients underwent orthodontic evaluation including x-ray and cephalometric analysis. Dental cast analysis is needed to judge the dental treatment plan; periodontal evaluation is required in cases where extractions are to be done. Video recording of the jaw motion a speech is a helpful tool for case documentation. To measure the skeletal component of the deformity a 3D CT scan is necessary. The surgical plan is verified on model analysis, in some cases stereolithography is useful to understand the complexity of the deformity for precise osteotomy planning.

Orthodontic pretreatment influences the dental position to a sufficient ready for surgery situation. During surgery osteotomies and rotational motion of the mandible is done, in some cases bimaxillar surgery is necessary.

Results: A case of combined orthodontic and surgery approach to an adult woman with laterogenia is presented, in which a unilateral mandibular body ostectomy by means of PIEZOSURGERY was performed. The long term follow up demonstrates a stable outcome with excellent esthetic and functional.

Conclusions: In adult patients Laterogenia we usually do not observe growth related relapse. Precise clinical evaluation and the use of advanced imaging technique are improving the treatment plan in any facial deformity. Targeting the main point of the deformity with the surgery makes the surgical approach easy and efficient.

Topic: Management of facial asymmetries.

CORRECTION OF HIGH ANGLE CLASS-II DIVISION 1 MALOCCLUSION WITH VERTICAL MAXILLARY EXCESS AND GUMMY SMILE

Yilmaz Alev¹, Arman-Ozcirpici Ayca¹, Uckan Sina²

¹ Department of Orthodontics, Baskent University, Ankara, Turkey

² Department of Oral & Maxillofacial Surgery, Baskent University, Ankara, Turkey

Introduction and Objectives: Severe Class-II division 1 malocclusion with vertical maxillary excess and gummy smiles can be treated in several ways. Early orthodontic treatment with vertical control may decrease the malocclusion as well as improve the appearance. Correction of gummy smile can be achieved by using periodontal procedures after orthodontic treatment but in severe cases, orthognathic surgery might be the optimal solution. The aim of this report is to present two cases demonstrating high angle Class II division 1 malocclusion associated with severe gummy smile treated with a combined orthodontic/surgical approach.

Subjects and Methods: The first patient was a 25 year old female with a skeletal (ANB:12°) and dental Class-II malocclusion with 10 mm of overjet, 1 mm of overbite and increased mandibular plane angle (Go-Gn/SN: 52°). She presented with a convex facial profile, increased lower anterior facial height, severe gummy smile and lip incompetence. After 2 months of maxillary expansion and 10 months pre-surgical decompensation orthodontic treatment, maxillary impaction of 10 mm and mandibular advancement with sagittal split ramus osteotomy was performed. Total treatment duration was 2 years and 7 months. Essix retainers were used for retention.

The second patient was a 16 year old male with skeletal Class-II malocclusion (ANB: 7°) and increased anterior facial height (GoGnSN: 44°). According to the clinical examination he had convex soft tissue profile, gummy smile and lip incompetence. He had a Class II molar and canine relationship with 10 mm overjet, 3,5 mm overbite. Arch

length discrepancies in upper and lower arches were -4 and -12,5 mm respectively. It was decided to extract lower first and upper second premolars. Subsequent to 1 year and 8 months of pre-surgical orthodontic treatment, bimaxillary orthognathic surgery involving 6 mm of maxillary impaction and 6,5 mm of mandibular advancement was performed together with 5 mm vertical reduction and 5 mm advancement genioplasty. Total treatment duration was 2 years and 2 months. Hawley appliances were used for retention.

Results: Following bimaxillary surgery, the occlusal and intermaxillary relationship was corrected lower anterior facial height decreased significantly and a more balanced soft tissue profile was obtained in both cases.

Conclusion: Bimaxillary surgery for maxillary impaction, mandibular autorotation and mandibular advancement is a reliable treatment option for correction of vertical maxillary excess and gummy smile. However, accuracy of soft-tissue profile prediction is sometimes questionable particularly in very severe cases requiring a great amount of impaction.

Topic: Aesthetic facial planning.

LONG TERM STABILITY OF ASYMMETRIC ORTHOGNATHIC SURGERY

Kaya Burcak¹, Arman-Ozcirpici Ayca¹, Uckan Sina²

¹ Department of Orthodontics, Baskent University, Ankara, Turkey

² Department of Oral & Maxillofacial Surgery, Baskent University, Ankara, Turkey

Introduction and Objectives: In the treatment of severe malocclusions accompanying prominent facial asymmetry, satisfying results can only be obtained by combination of orthodontics and orthognathic surgery. The aim of this presentation is to display the orthodontic & surgical treatment outcomes and stability of 2 patients having severe asymmetry and dentofacial deformity.

Subjects and Methods: *Case 1:* A 27 years old female whose main complaint was the asymmetric look of her face was diagnosed to have hemimandibular hyperplasia. The the length of the mandibular ramus and corpus was evidently longer on the right side and the occlusal plane was deviated. The patient had skeletal Class III relationship and a concave profile. Through fixed orthodontic treatment the dental arches were aligned and decompensated. Afterwards, with a Le Fort 1 osteotomy the maxilla was moved forward and impacted at the posterior right side while vertically augmented at the posterior left side. The mandible was moved backwards with SSRO and a corticocancellous bone block was excised from the lower border of the mandible between right parasymphisial region and right angular notch. *Case 2:* The main complaint of the 18 years old male was the asymmetric look of his face, anterior position of his mandible and having difficulty in speaking and chewing. In the clinical examination facial asymmetry due to the laterognathic mandible, concave profile, unilateral posterior cross bite, insufficient overbite and negative overjet was observed. After dental alignment and decompensation with orthodontics, the maxilla was asymmetrically moved forward and impacted with Le Fort 1 osteotomy, the mandible was asymmetrically moved backwards with SSRO. The correction of the mandibular skeletal midline was 12,5 mm from the left side to the center.

Results: With the adjustment of the skeletal relationship, the occlusal plane deviation was corrected, the asymmetry of the face was eliminated and an esthetic profile was obtained in both 2 cases. The patients gained a good occlusion with proper chewing and speaking functions. The results obtained in the hard tissues remained stable except for very minor changes and the soft tissues get better adapted to the hard tissues in time.

Conclusion: The improvement in occlusion and facial appearance obtained by means of combined orthodontic and orthognathic procedures was proved to be stable as no major relaps occurred in the follow up period.

Topic: Managment of facial asymmetries.

THE RELATIONSHIP BETWEEN THE ANATOMICAL POSITION OF THE MANDIBULAR CANAL AND SENSORY DISTURBANCE OF THE LOWER LIP FOLLOWING SAGITTAL SPLITTING RAMUS OSTEOTOMY

Kakudo Kenji, Ohnishi Yuichi

Second Department of Oral and Maxillofacial Surgery, Osaka Dental University, Osaka, Japan

Introduction and objectives: The relationship between the anatomical position of the mandibular canal and sensory disturbance of the lower lip following sagittal splitting ramus osteotomy was investigated to help in the selecting of a surgical procedure.

Material and Methods: The subjects were 100 patients with mandibular protrusion who underwent sagittal splitting ramus osteotomy alone at the Second Department of Oral and Maxillofacial Surgery of Osaka Dental University Hospital. CT images were acquired before surgery, horizontal cross-sectional views parallel to the occlusal surface were prepared, and the CT slice at a site 5 mm below the inferior border of the *lingula mandibulae* was selected for measurement. The distance between the inner surface of the mandibular ramus lateral cortical bone and mandibular

canal was measured on the CT slice. The presence of sensory disturbance of the lower lip was investigated immediately and 3 and 6 months and 1 year after surgery.

Results: The distance between the inner surface of the mandibular ramus lateral cortical bone and mandibular canal was $2.141.18$ mm on the left and 2.11 ± 1.18 mm on the right. Sensory disturbance of the lower lip was present in 69.0, 15.9, 11.5, and 2.5% immediately after and 3 and 6 months and 1 year after surgery, respectively. Regarding the relationship between the distance and presence of sensory disturbance of the lower lip, the incidence was the highest in cases with a distance shorter than 1 mm.

Conclusion: Examination by CT is useful to reduce the incidence of postoperative sensory disturbance of the lower lip.

Topic: Sensory disturbance of the lower lip, sagittal splitting ramus osteotomy. Accuracy and stability in orthognathic surgery.

ALTERNATIVE INCISIONS IN ORTHOGNATHIC SURGERY

Mihai Constantin

Clinic of Oral and Maxillofacial Surgery, University of Medicine and Pharmacy, Iasi, Romania

Introduction and Objectives: The success of any surgical operation depends partially on choosing the right incision based upon anatomical principles and the right closure technique which offers safety. Four essential elements can characterize a well planned incision: accessibility, extensibility, preservation of function and safety. Therefore, instead of classic incisions we propose a set of 3 alternative incisions as following: a trapezoidal gingival festooned incision for maxillary osteotomy Le Fort I; rectangular trapeze gingival festooned incision for sagittal mandibular bilateral osteotomy; a V-W incision for genioplasty surgery.

Material and Methods: This set of 3 incisions has been used at the Oral and Maxillofacial Surgery Clinic from Iasi on a number of 165 patients diagnosed with dento-skeletal anomalies during a period of 5 years 2003-2008. Regarding the type of osteotomy (maxillary, mandibular or bimaxillary) we used one or more of the type of incisions described.

Results: During and after surgery the healing process takes place without any type of inconveniencies and with visible advantages and results. Advantages: protection of the labial frenulum; avoidance of cicatriceal scars formation; avoidance of division of muscular groups into sections; preservation of the inferior insertion of the masseter muscle essential for the correct positioning of the condyle; the mucous plaque does not superpose the osseous one; direct and immediate subperiosteal access; the abortion passage does not cause injury to the periosteum since essential healing depends on its integrity; minor postoperative scars with obvious cosmetic character.

Conclusion: This set of 3 types of incisions offer the surgeons accessibility and safety and good and safe healing for the patient. In conclusion, the set of 3 incisions represents a good and viable alternative in orthognathic surgery.

Topic: Accuracy and stability in orthognathic surgery.

IMPORTANCE OF HEAD POSITIONING IN CEPHALOMETRIC ANALYSIS OF 3D-CT STEREOTAXIC IMAGES

Ohnishi Yuichi¹, Nakajima Masahiro¹, Kim Han-Joon², Naoyuki Matsumoto², Kakudo Kenji¹

¹*Second Department of Oral and Maxillofacial Surgery, Osaka, Japan*

²*Department of Orthodontics, Osaka Dental University, Osaka, Japan*

Introduction and objectives: Positioning of the head during cephalometric radiography has significant influence on the evaluation of symmetry in frontal images and evaluation with lateral images. In the past, however, positioning for this kind of radiography was performed only at the right and left external auditory foramens using ear rods. The present study was undertaken to examine the effects on morphological evaluation and diagnosis of head positioning at points other than the external auditory foramens.

Material and Methods: Based on computed tomographic data collected from patients with jaw deformities, we positioned the head image using the right and left external auditory foramens and other reference points with a three-dimensional stereotaxic imaging system. The frontal plane was defined as the plane passing through the right and left external auditory foramens (P images) perpendicular to the horizontal plane. The P images were compared with images taken under a setting where the other frontal plane was defined as the plane connecting the lowest point of the right and left inferior orbital margins (O images) perpendicular to the same horizontal plane.

Results: Comparisons of the three image types revealed that the head position was biased more to the right side in lateral, frontal and inferior views in the P images than in the O or other images.

Conclusion: These results indicate that morphological evaluation and diagnosis of jaws, face and skull should be made in a range of anatomical directions, instead of relying on a single positioning.

Topic: Virtual 3D planning.

CHANGES IN UPPER AIRWAY AND HYOID BONE POSITION AFTER BIMAXILLARY SURGERY

Sar Cagla¹, Polat-Ozsoy Omur¹, Arman-Ozcyrpicy Ayca¹, Uckan Sina²

¹ Department of Orthodontics, Baskent University, Ankara, Turkey

² Department of Oral & Maxillofacial Surgery, Baskent University, Ankara, Turkey

Introduction and objectives: Following bimaxillary surgery, the position of the hyoid bone is changed, with consequent narrowing of the pharyngeal airway space (PAS). PAS narrowing might be a factor in obstructive sleep apnea (OSA). OSA is considered a risk factor for systemic and pulmonary hypertension and cardiac arrhythmias. The purpose of this study was to evaluate changes in the the pharyngeal airway and hyoid position following double jaw surgery.

Subjects and Methods: Fifteen class III patients (4 males and 11 females, mean age: 24.29±4.33), had a Le Fort I maxillary advancement osteotomy and mandibular set-back with bilateral sagittal split ramus osteotomy. Lateral cephalograms were taken and evaluated pretreatment and 3-6 months after the surgery. 18 anatomic landmarks were located, 5 linear and 6 angular measurements were made on the cephalograms. Data evaluation were made using Paired *t*-test and Wilcoxon signed ranks test.

Results: Lateral cephalometric analysis demonstrated significant changes in SNA, SNB and ANB angles ($p < 0.05$). Significant increase was observed in upper airway width ($p = 0.021$), and decrease was observed in middle airway width ($p = 0.007$). H-RGN and H-Walker point distances, which indicate hyoid bone position were found to be decreased ($p = 0.020$ and $p = 0.015$).

Conclusion: Increase in the upper airway dimensions and decrease in the lower airway measurements were seen after short term evaluation of bimaxillary surgery in Class III patients. However, validity of these results should be re-evaluated in the long-term in order to evaluate the risk of obstructive sleep apnea.

Topic: Management of obstructive sleep apnea.

CHANGE OF LIP LINE CANT AFTER ONE-JAW ORTHOGNATHIC SURGERY IN MANDIBULAR ASYMMETRY PATIENTS

Hwang Hyeon-Shik¹, Min Yu-Sun², Cho Jin-Hyoung², Min-Kyu Sun², Hoi-Jeong Lim²

¹ Department of Orthodontics, ²nd Stage of Brain Korea 21, School of Dentistry, Chonnam National University, Gwangju, Korea

² Department of Orthodontics, School of Dentistry, Chonnam National University, Gwangju, Korea

Introduction: The purpose of the present study was to investigate the change of lip line cant (LLC) after one-jaw orthognathic surgery in mandibular asymmetry patients.

Material and Methods: Pre- and post-operative data of twenty two one-jaw orthognathic surgery patients who presented menton deviation over 2° before the surgery were used as the basis of the study. LLC was measured in the pre- and post-operative frontal photographs and its change was correlated with various craniofacial measurements obtained from pre- and post-operative frontal cephalograms and maxillofacial 3D CT images.

Results: While the subjects used in this study showed 2.4° of LLC on average before surgery, LLC improved to 0.5° after surgery and the change (1.9°) was statistically significant. In the correlation analysis, pre-operative LLC showed positive correlations with menton deviation and mandibular anterior occlusal plane (OP) cant. In the correlation analysis of LLC change, it showed positive correlations with pre-operative LLC and mandibular anterior OP cant and pre- and post-operative change of menton deviation.

Conclusions: The results of the present study suggest that LLC is present with chin deviation, even without significant maxillary canting, and can be improved considerably by one-jaw surgery alone.

Topic: Management of facial asymmetries.

THREE-DIMENSIONAL LOCALIZATION AND EVALUATION OF IMPACTED MANDIBULAR CANINES AND ADJACENT INCISOR ROOT RESORPTIONS WITH CONE-BEAM COMPUTER TOMOGRAPHY (I-CAT).

Sosars Peteris¹, Liepa Andra²,

^{1,2}Institute of Stomatology, Latvia

Introduction and objectives: The maxillary canines are the second teeth in their frequency of impaction after third molars. Incidence of canine impaction in population varies from 1-3% (L. Walker, 2005). Also, impacted canines vary greatly in their inclination and location that may lead to resorbtion of adjacent teeth and different treatment plan considerations. In recent studies, resorbtion number of neighbouring teeth were found extremely high (38% by S.

Ericson, J. Kuroi, 22.7% by D. Liu, W. Zhang). With cone-beam computer tomography it is possible to create precise three-dimensional images and view teeth and adjacent structures in all three planes. Our aim is to evaluate the method developed by Walker (2005), modified by Deng Gao Liu (2008) and Kuroi's resorption classification in impacted mandibular canine localization detection and evaluation of adjacent teeth resorptions that accordingly may assist in further treatment planning.

Material and methods: Using cone-beam CT (I-Cat), two patients with mandibular impactions have been evaluated in three planes: coronal, sagittal and axial (analyzed angles and distances to the midline of the jaws and occlusal plane). Adjacent incisor root resorptions were evaluated with classification made by J. Kuroi. In this study we also evaluated proximity to the lateral and central incisors, existence of deciduous canines, alveolar width in the area of canine (both impacted and normally erupted) and follicle size.

Results: Patient 1, 13 years old, had a mesio-buccally placed impacted canine. Deciduous canine was still in its place. A mild lateral incisor root resorption was found which could not be visible on the panoramic and lateral cephalometric views. The follicle size is between normal variations.

Patient 2, 11 years old, with multiple impactions and supernumerary teeth have the impacted canines located mesio-buccally. The deciduous canines were still in their places. No resorptions were found between permanent lateral incisor and canine due to displacement of supernumerary teeth. The follicle sizes are difficult to detect, because they are fused together with supernumerary teeth follicles.

Using cone-beam CT (I-Cat) the anatomical relationships of impacted canines with neighbouring teeth and their exact position can be clearly visualized, however the methods used in this study are not complete in complicated cases and need further improvement.

Conclusions: The methods developed by Walker and Kuroi are useful in localization impacted mandibular canines and adjacent incisor root resorption. However, methods evaluating impacted canine localization places need more improvement and more research in depth are required in this field.

Topic: Virtual 3D planning.

HORIZONTAL REDUCTION GENIOPLASTY: INDICATIONS, TECHNIQUE AND TREATMENT OUTCOMES OF THREE CASES

Uçkan Sina¹, Arman-Ozçirpici Ayca², S. Soydan Sydyka¹

¹*Department of Oral & Maxillofacial Surgery, Baskent University, Ankara, Turkey*

²*Department of Orthodontics, Baskent University, Ankara, Turkey*

Introduction and Objectives: To correct a chin deformity, a sliding genioplasty may be performed as an isolated procedure or in conjunction with other surgical procedures. Although vertical and sagittal lengthening or reduction of chin was documented in detail, literature lacks data regarding indications and clinical results of horizontal reduction genioplasty. The aim of this report is to present 3 cases of horizontal reduction genioplasty.

Subjects and Methods: The first patient was a 39 year old woman with a skeletal and dental Class III malocclusion. She had a Class III molar and canine relationship, with tet-a-tet incisors and 2 mm open bite. A negative overjet of 2 mm was obtained after 9 months pre-surgical decompensation orthodontic treatment. A sagittal split ramus osteotomy was performed simultaneously with 10 mm horizontal reduction genioplasty.

The second patient was 21 years old and represented a skeletal Class III malocclusion, with maxillary deficiency in sagittal and transversal planes. Subsequent to pre-surgical orthodontic treatment, orthognathic surgery involving 5 mm of maxillary advancement and 2 mm of maxillary posterior impaction was performed together with genioplasty. The genioplasty procedure included 4 mm of vertical and horizontal reduction.

The third case was a male of age 27 years 7 months. Clinical examination revealed a concave profile with a relatively prominent lower lip, retrusive mid-face, increased lower facial height and a prominent chin. After 2 years of fixed appliance treatment, bimaxillary orthognathic surgery involving 4 mm impaction, 5 mm advancement of the maxilla, 7 mm mandibular set-back was done. A genioplasty was performed at the same time for vertical (7 mm) and horizontal (10 mm) reduction.

Results: More balanced soft tissue profiles were obtained and, both the facial appearance and the occlusion were improved in all three patients. Square shape of the wide chins was corrected by horizontal reduction genioplasty and a natural facial look was achieved.

Conclusion: Horizontal reduction genioplasty is a reliable and stable surgical technique for improvement of facial esthetic and associated with a relatively low risk of complications.

Topic: Aesthetic facial planning

LIST OF PARTICIPANTS

List of participants registered until 24th August, 2009

ARMENIA

Harutyunyan Hayk K. drhaikk@rambler.ru

AUSTRIA

Krenkel Christian christian.krenkel@endodistractor.at
Santigli Elisabeth elisabeth.santigli@medunigraz.at

AZERBAIJAN

Abishov Rashad reshad_a@mail.ru
Aletanet Aliyeva metanet@orthodontics.az
Aliyeva Matanat
Gasan Asadov
Rahimov Chingiz R. chinrahim@hotmail.com

BELARUS

Harbatsevich Nina ninagor@bk.ru
Lagoyskiy Arkadziy alkerdy@mail.ru

BELGIUM

Deframg Joel lottedefr@nca.be

BRAZIL

Cintra Octavio ocintra@hotmail.com
Galiano Aluisio ag_galiano@yahoo.com.br
Margoni-Neto Octavio margoni_net@hotmail.com
Motta Gustavo M. ghmotta@yahoo.com.br
Pitta Marcos Cesar mc.pitta@uol.com.br

CHILE

Cifuentes F. Julio jcifuentesf@alemana.cl
Lasserre Roberto cl.ortodoncia@123.cl
Santelices Pilar santelices.pilar@gmail.com

CYPRUS

Christou Elena P. mpapadmd@spidernet.com.cy
Michaelides Christos christosmichaelides@cytanet.com.cy
Papademetriou Micael K mpapadmd@spidernet.com.cy
Smith Catherine J. mpapadmd@spidernet.com.cy
Strouthou Anastasia G. astrouthou@yahoo.com

CROATIA

Senzel Stanislava stasa1976@gmail.com

CZECH REPUBLIC

Hrusak Daniel hrusak@fnplzen.cz

DENMARK

Abbas Salaheddin Omar sho@odont.ku.dk
Albarazi Asmaa asmaabarazi@yahoo.dk
Begtrup Anders abegtrup@hotmail.com
Bjoern-Joergensen Jens tiops@webspeed.dk
Blomlof Johan johan.blomlof@yahoo.se
Boegild Ivan klinikken@tandlaequerne-boegild.dk
Borch Sune sbo@odont.ku.dk
Borchorst Morten U. morten@borchorsttandregulering.dk
Christiansen Louise Barnechow lob@odont.ku.dk
Derry Allan alderry@post5.tele.dk
Einarsdóttir Lára Björk lbe@odont.ku.dk
Fisker Klavs G. info@kfisher.dk
Groenastoed Halldis hgr@odont.ku.dk
Hansen Wilford whan@odont.ku.dk
Hegrand May Lise hegrand@post.tele.dk
Helleberg Malene malchr@rm.dk
Hillerup Søren soren@hillerup.net
Ingerslev Janne janne.ingerslev@svs.regionsyddanmark.dk
Jensen Thomas marthom@mail.tele.dk
Jensen Mette Falk mfj2708@hotmail.com
Johannesen Lars H. lahj@m.dk
Kenrad Astrid B. ake@odont.ku.dk
Kjøller Louise lkj@odont.ku.dk
Kragsskov Jens jens@tandreguleringshuset.dk
Kuzmova With Dobrinka G. dobi_den@yahoo.com
Laursen Morten Godtfredsen mortengl@yahoo.com
Lenk-Hanson Lone lenk@hansen.mail.dk
Lindtoft Helle helle.lindtoft@odontologi.au.dk
Lomholt Jens Fog jlo@odont.ku.dk
Lorenzen Henning soheloo@yahoo.com
Marcussen Mette mette.marcussen@rn.dk
Neumann-Jensen Bjarne bjnj@m.dk
Nielsen Michael Hald hald@nielsen.mail.dk
Nielsen Lisbeth harehouse25@email.dk
Terp Anne Grethe agterp@gmail.com
Thastum Mette mette.thastum@rn.dk
Torkov Peter petertorkov@hotmail.com
With Michael S. mswith@ddf.dk

ESTONIA

Paal Ene ene.paal@ortodontia.ee
Peshjonkina Anastassia studiosaamica@hotmail.com
Piho-Ottas Kairi kairiwho@hotmail.com
Poздеjeva Anna annapozdejeva@gmail.com
Pruuli Helen helen.pruuli@ortodontia.ee
Soots Marianne marianne.soots@kliinikum.ee
Vengerfeldt Eliis eliis.kaselo@gmail.com
Videbaum Pieter
Vörk Kati kati.vork@gmail.com

FINLAND

Hekali Maarit I. maarit.hekali@kolumbus.fi
Kuusisto Jukka jukka.kuusisto@finnet.fi
Lindqvist Christian christian.lindqvist@helsinki.fi
Miettinen Aimo
Piiippo Mikko J. mikko.piiippo@finnet.fi
Rajasuo Ari ari.rajasuo@esshp.fi

FRANCE

Gleizal Arnaud arnaud.gleizal@chu-lyon.fr
Nimeskern Nicolas P. drnimeskern@gmail.com
Souchet Alain souchet.ortho@wanadoo.fr

GEORGIA

Baladze Qetevan qetewan@gmail.com

GERMANY

Bachman Juergen P. juergen.p.bachmann@t-online.de
Korzinskas Tadas tadaskorzinskas@yahoo.de
Lippold Carsten carstenlippold@yahoo.de
Moiseenko Tatjana moiseenko79@yahoo.de
Sader Robert r.sader@em.uni-frankfurt.de
Segner Dietmar dsegner@better-smiles.de
Udeabor Samuel samudeabor@yahoo.com
Lehmann Marc ml@mondeal.de

GREECE

Sygkollitou Efthymia

HUNGARY

Kocsis András kocsas@fogszabalyzas.hu
Obama Ferenc K. oberna.ferenc@t-online.hu
Seres László seresl@yahoo.com
Toth-Bagi Zoltan tothbagi@vnet.hu
Vegh Andras aveghdr@chello.hu

ICELAND

Arason Gisli E. gislieinar@gmail.com
Pálsson Stefán R. tannrettingar@hotmail.com

INDIA

Arya Kiran kiran_arya38@yahoo.com
Singh Surjeet kiran_arya38@yahoo.com

IRELAND

Kumar Laxmish mlkodi@yahoo.com
Mc Kiernan Eamonn X. F. emkciernan@stjames.ie

ISRAEL

Abdalla Essam Kasem medoabd2009@hotmail.com
Fourman Michael meenif@mail.ru
Pour Sammy spour@poria.health.gov.il
Qablán Fares kablanp@walla.co.il
Schwartz-Arad Devorah udi@dsa.co.il
Shteif Moshe mshteif@yahoo.com
Toeg Avraham avitoeg@hotmail.com

ITALY

Albanese Massimo massimo.albanese@univr.it
Bertossi Dario dario.bertossi@univr.it

JAPAN

D'agostino Antonio
Grendene Elisabetta
Mariano Raffaele ramaria@libero.it
Trevisiol Lorenzo
Zanotto Agostino agozan@libero.it
Itsuki Yasuhiro yasuihiro@yoiha.jp
Yuichi Ohnishi onishi_yu_ku@msn.com
Kakudo Kenji kakudo@cc.osaka-dent.ac.jp
Ohnishi Yuichi onishi_yu_ku@msn.com
Ryosuke Kubota kubota@stu.osaka-dent.ac.jp

LATVIA

Salms Girts
Abeltins Andris i.krauze@latnet.lv
Altroks Andris dr.a.bigestans@gmail.com
Bigestans Andris ieva.ff@gmail.com
Filipova Ieva
Grzibovskis Maris
Gulite Dace dacegulite@inbox.lv
Indriksone Iveta
Jakobsone Gundega
Jankovska Iveta
Kazanceva Anna
Klimecs Vadims
Krisjane Zane
Liepa Andra
Neimane Laura
Osleja Dace
Pimanovs Viktori viktorsp@latnet.lv
Pugaca Jolanta
Seja Edgars
Sosars Peteris
Stamers Kaspars
Urtane Ilga
Voistrolovs Antons
Zepa Inta
Zepa Katrina

LITHUANIA

Aleksakova Irina
Abuneviciute Asta asta.abuneviciute@gmail.com
Almonaitiene Ruta rutaalmonaitiene@hotmail.com
Baubiniene diana.baubiniene@delfi.lt
Berzanskiene jurate.berzanskiene@gmail.com
Bogusiene ebogusiene@gmail.com
Buskiene ievabuski@inbox.lt
Damusiene rasaorto@yahoo.com
Dumbryte Irma i.dumbryte@gmail.com
Grigaitė Gailute gailute@takas.lt
Grybauskas Simonas simonag@mail.lt
Juknevičienė Ruta rutajuk@gmail.com
Kavaliauskienė Aiste ice_kava@yahoo.com
Kazakevičienė Eurika kazakev@gmail.com
Kazlauskienė Marina kmarika35@yahoo.com
Krusinskiene Viktorija viktesv@gmail.com
Latkauskienė Dalia dalia.lat@gmail.com
Liutkienė Jurga jurgaliutkienė@gmail.com
Margelyte-Bobiniene Evelina evelinamb@gmail.com
Mazutiene Lina dirsytelina@hotmail.com
Milasiute Ramune ramunemilasiute@yahoo.com
Minkeviciene Lina lminkeviciene@gmail.com
Naujokaityte Laura nau_ju@yahoo.com
Neverauskiene Zivile zivile.never@yahoo.com
Pakarkliene Ramune
Peciuliene Jolita jolitapec@yahoo.com
Petkinyte Guoda ortodontas@yahoo.com
Pikeliene Vilma judvilma@yahoo.com
Pocevicius Andrius pocevicius@gmail.com
Ramanauskienė Justina justina.taip@gmail.com

LIST OF PARTICIPANTS

Raskiniene	Laura	lauraraskiniene@gmail.com	SERBIA	Stojkovic	Goran	drgoranstojkovic@gmail.com
Razukevicius	Dainius	dairazuk@yahoo.com	SLOVAK REPUBLIC	Beno	Michal	michbeno@gmail.com
Sidlauskas	Antanas	antanas@kaunas.omnitel.net		Hirjak	Dusan	hirjak.dusan@gmail.com
Sidlauskas	Mantas	m.sidlauskas@gmail.com	SOUTH KOREA	Byun	Stephen Seong Kyu	skbyunms@naver.com
Silanskaite	Diana	diana_silanskaite@yahoo.com		Choi	Jong Woo	pschoi@amc.seoul.kr
Smaliene	Dalia	dsmaliene@gmail.com		Hwang	Hyeon Shik	hwang@chonnam.ac.kr
Stoma	Janina	stoma@takas.lt		Ohe	Joo Young	oyoung81@naver.com
Svambariene	Gintare	g.s@siauliai.aps.lt	SPAIN	Cano	Jorge	jo.cano@wanadoo.es
Tamosiunaite	Irma	irmatam@yahoo.com		Iriarte	Jose	cosano.isabel@synthes.com
Tercijonaite	Ilona	saulona@yahoo.com		Ramirez Varela	Sergio	sergio_ramirez_varela@hotmail.com
Trakimavicius	Darius	dtrakimavicius@gmail.com	SWEDEN	Bryndahl	Fredrik	fredrik.bryndahl@odont.umu.se
Trakiniene	Giedre	gyd_trakiniene@yahoo.com		Cromvik	Ulf B.	ulf.cromvik@lthalland.se
Urboniene	Gintare	gintareurboniene@gmail.com		Hallgren	Anders	anders.hallgren@gmail.com
Vaitiekuniene	Rima	brobin@plius.lt		Keshishian	Patrik	patrikkes@hotmail.com
Vasiliauskas	Arunas	vasiliauskas@kaunas.omnitel.net		Legrell	Per Erik	per.erik.legrell@odont.umu.se
Zasciurinskiene	Egle	eglezas@gmail.com		Ohannessian	Peter	peter.ohannessian@lio.se
Zykute	Indre	indrezykute@gmail.com		Pigg	Juhani	juhani.pigg@ptj.se
Zujevic	Ingrida		THE NETHERLANDS	De Koning	Martien J.J.	m.de.koning@planet.nl
NORWAY				Stoelinga	Paul J. W.	p.stoelinga@hetnet.nl
Ransve	Anne Marie			Van Eggermont	Bas	bas.van.eggermont@kchir.umcg.nl
Espeland	Lisen		TURKEY	Arman Ozcirpici	Ayca	ayca@baskent.edu.tr
Risheim	Helge			Cimen	Emre	dtemrecimen@yahoo.com
POLAND				Yilmaz	Alev	alevcetinsahin@yahoo.com
Wisniewska	Katarzyna	m-wisniewski_mfs@gmail.com		Soydan	Sidika Sinem	sdksoydan@yahoo.com
Dymek	Mateusz	dymek@dentonet.pl		Uckan	Sina	suckan@yahoo.com
Downarowicz	Patrycja	p.downarowicz@wp.pl	UKRAINE	Kirjan	Tatjana	tata@infocom.zp.ua
Duozinska-Filkiewicz	Anna	abka_dudo@polska.ort.pl		Kurkina	Irina	tata@infocom.zp.ua
Herd	Anna	aherud@yahoo.com		Samray	Aleksey Nikolayevic	
Horoszko	Andrzej	betah@poczta.onet.pl		Uhryn	Myron	
Konty Gibinska	Wanda	recepcaj@ortodoncja-krakow.pl		Babov	levgen	babov_e@yahoo.com
Lewandowska	Aleksandra	mloda_lekarka@up.pl		Bedyk	Olesya V.	olesya_2308@mail.ru
Materna	Joanna	joannamaterna@go2.pl		Bodnar	Andrey Bogdanovic	dr_bodnar@ukr.net
Mohsin	Ayham	ayham@wp.pl		Celni	Aleksandr Ivanovic	
Niekra	Marcin	niekra@amg.gda.pl		Cheliy	Oleksandr	Dr_bodnar@ukr.net
Pawlak	Wojciech	wpawlak@mfs.am.wroc.pl		Dubnov	Artem	
Rogus	Pawel	pawelrogus@o2.pl		Fedirko	Igor	igorready@gmail.com
Skiba	Adam Dariusz	adam.skiba@yahoo.pl		Fiodorova	Aliona	
Socha	Marcin W.	mwsocha@wp.pl		Gocucova	Evgeniya	Effa.86@yandex.ru
Tabor	Pawel	tabor-pawel@wp.pl		Gotsytsova	Yevgeniya	klinika@litech.lviv.ua
Walter-Szulc	Anna	annawalter@wp.pl		Grygoryeva	Darya M.	dansiy4ka@yandex.ru
Wisniewski	Marcin	m-wisniewski_mfs@gmail.com		Holovko	Jelena	
PORTUGAL				Iakhno	Andriy	andriy.huk@gmail.com
Amado	Maria Isabel C.O.	isabel.amado@gmail.com		Kamalov	lurii	mail-1@bigmir.net
Marcelino	João P.	j.p.marcelino@gmail.com		Kaminskyy	Rafic	kamalov@rambler.ru
REPUBLIC OF SOUTH AFRICA				Kaminskyy	Valeriy Ivanovych	Mfs_k@mail.ru
Reyneke	Johan	drijprey@global.co.za		Khaek	Valeriy Valeriyovych	Mfs_k@mail.ru
ROMANIA				Korotchenko	Fadi	dr.fadyhaek@gmail.com
Chirila	Lucian V.	lucianchirila@yahoo.com		Kovalenko	Genadiy	
Chiscop	Iulia	iulia_chiscop@yahoo.com		Kovtuniak	Vitalij	kufab@ukr.net
Dorobantu	Mihai	dorobantu.mihai@gmail.com		Kurylo	Oleg	o_kurylo@bigmir.net
Gheorghiu-Milicin	Emilia	emilicin@aol.com		Lavryshyn	Oleh	medgarant.te@gmail.com
Harb	Adina	emilicin@aol.com		Lavryshyn	Ihor	medgarant.te@gmail.com
Mihai	Constantin C.	drmihaiconstantin_2005@yahoo.com		Linnyk	Solomiya	saule@ukr.net
Nicolescu	Ion	ionnicolescu@yahoo.com		Makeev	Victoria	klinika@litech.lviv.ua
Popovici	Florin	flrpop@yahoo.com		Malanchuk	Valentin	igorready@gmail.com
Stecker	Andreea	andreeastecker@yahoo.de		Martyts	Vladislav	mjurij1019@ukr.net
RUSSIA				Martovlos	Andriy	martovlos@gmail.com
Antosik	Max	proximo80@mail.ru		Matkovcka	Iuliia	lyulichka@yahoo.com
Askerov	Rustam	zolgat@yandex.ru		Matusyak	Igor Y.	prior@land.ru
Ausheva	Marina	mva_ort@mail.ru		Myagkova	Nataly	mnv63@ru66.ru
Bessonov	Sergey Nikolaevich	smile12000@mail.ru		Nykolyn	Vasyl	orto@b4net.lt
Chebotaiev	Sergei Yakovlevich	dr_aa@spik.ru		Proschyn	Oksana	ternopil@orthopro.com.ua
Chikurov	Georgij	dr.chikurov@mail.ru		Repuzhynskyy	Yosyp	ortoreim@front.ru
Dibirov	Timur	rumit.05@mail.ru		Rovetska	Nataliya	dr.rovetska@gmail.com
Ermakov	Alexey S.	stomatolog23@pisem.net		Ruban	Kateryna	lyulichka@yahoo.com
Ermolin	Dmitry	edv-1973@yandex.ru		Rushkovska	Alisa	
Filatov	Maksim	congress@doctour.ru		Shramai	Olekseii	impsh1979@gmail.com
Filatova	Nina	filatova.nina@mail.ru		Shuvalov	Sergey	dr.shuvalov@mail.ru
Semenov	Michail Georgievich	info@cleft.ru		Smaglyuk	Lyubov	lortex@kot.poltava.ua
Ivanov	Alexandre I.	syivanov@yandex.ru		Tymoshenko	Anatolii	
Ivanov	Sergey	syivanov@yandex.ru		Vecnyj	Vladimir Pavlovic	
Khayruitinova	Aygul	dr_kov@mail.ru		Vyacheslav	Bliznyk	tl@vait.com.ua
Kindzerskaya	Oxana	dr_kov@mail.ru		Volodina	Marina	muy@email.ua; marina-vla@yandex.ru
Ko	Vasily	Konstantin.Kurakin@gmail.com		Zaza	Ziot	orthoz.zaza@gmail.com
Krapalina	Kristina	v_krivosee@inbox.ru		UNITED ARAB EMIRATES		
Krivoseev	Vasily	cniiscmf@mail.ru		Mohamed Nissar	Nowshir	drnowshir@hotmail.com
Kudinova	Ekaterina	konstantin.kurakin@gmail.com		UNITED KINGDOM		
Kurakin	Konstantin	olga_vita73@mail.ru		Smith	Sydney	smithtmj@yahoo.co.uk
Lazarev	Alexandr			Atkins	Simon	s.atkins@sheffield.ac.uk
Lyashev	Ilya			Cronin	Andrew J.	andrew.cronin@tesco.net
Mitroshekov	Pavel			Downie	Ian P.	ianpdownie@tiscali.co.uk
Mokhirev	Mikhail	zolgat@yandex.ru		Johnston	Colin James	colinjohnston@doctors.org.uk
Muraev	Alexandr	muraev@rambler.ru		Popat	Hashmat	hashpapat@hotmail.com
Novikova	Tatiana	novikovadent@yandex.ru		Sandhu	Amandip	a.sandhu4@ntlworld.com
Ovchinnikov	Igor	kir1069@mail.ru		Smith	Keith G.	k.g.smith@sheffield.ac.uk
Podorozhnyi	Anton			Sugar	Adrian W.	adrian.sugar@wales.nhs.uk
Polekhin	Alexandr	plastikline@gmail.com		UNITED STATES OF AMERICA		
Potyayev	Vladimir	potyayeva@yandex.ru		Arnett	G. William	arnett@arnettcourses.com
Rogatina	Tatiana			Bourgeois JR	Sidney L.	bourgeois@uthscsa.edu
Andreishev	Andrey Ruslanovich	dr_aa@spik.ru		Falzone	Charles	chuckfalz@aol.com
Senyuk	Andrei	adrian-senluk@mail.ru		Gunson	Michael	gunson@arnettcourses.com
Serpukhovitin	Vladislav	serpvlad@yandex.ru		Mah	James	jamesmah@usc.edu
Shtol	Albina	albinf.shtol@rambler.ru		Mclaughlin	Richard P.	rpmclaugh@aol.com
Sokolovskiy	Vadym	vadim_sokolovski@mail.ru		Turner	Blake	blake.turner@med.navy.mil
Struanski	Alexander	normadent@rambler.ru		Way	David I.	drway@orthoway.com
Sviridov	Evgeny	drevgeny86@gmail.com				
Tarasenko	Svetlana	lustra@bk.ru				
Tarasenko	Igor	tarasenko@ibs.ru				
Techiev	Soslan Konstantinovich	zolgat@yandex.ru				
Vagapov	Zakir	smilewidely@yahoo.com				
Vakhney	Svetlana Nikolaevna	svakhney@mail.ru				
Vlasov	Mikhail	mikevlasovmfs@inbox.ru				
Vodahova	Asiyat					
Zangieva	Olga T.	zolgat@yandex.ru				
Zubrilin	Evgenij Vladimirovic	dent@online.nsk.su				

ADDITIONAL ABSTRACT

Effect of Genioplasty Distraction Osteogenesis on Suprahyoid Muscles in Rabbits

Ryosuke KUBOTA, Kenji KAKUDO,

Osaka Dental University ,Osaka ,Japan

Introduction: Recently, surgical treatment for obstructive sleep apnea syndrome (OSAS) has been shown to effectively improve upper airway dimensions. Of the surgical managements, maxillomandibular advancement (MMA), genioplasty distraction osteogenesis and genioplasty osteotomy, have become common surgical procedures. However, the effect of advancement on surrounding soft tissue such as the suprahyoid muscle is not clear.

This study examined the effect of genioplasty distraction osteogenesis on the suprahyoid muscles in comparison with that of genioplasty osteotomy.

Material and Methods: We performed genioplasty distraction in six Japanese white rabbits (DO group). Three days after osteotomy, we began forward lengthening at a rate of 0.5 mm/day for 10 days. To establish a control group, another six rabbits were treated by standard genioplasty with fixation by titanium plates after advancing 5mm all at once (O group). The animals were sacrificed at postoperative weeks 2 and 4. Histological analysis was performed, focusing especially on vascular regeneration. Cross-sections of the geniohyoideus, connected mandibular and hyoid bone and parallel to the direction of advancement, were prepared and stained by hematoxylin-eosin (H-E) and alkaline phosphatase (ALP).

Results: Two weeks after surgery, there were no significant histological changes between the DO group and the O group. Four weeks after surgery, H-E staining showed that in the DO group the area of cross-sectional surface of muscle fiber bundles was significantly larger than that in the O group. Furthermore, ALP staining demonstrated that the number and diameter of blood vessels increased significantly in the DO group.

Conclusion: These findings suggested that blood vascular regeneration were promoted by gradual traction of genioplasty distraction osteogenesis on geniohyoideus muscles compared with genioplasty osteotomy.

Topic:

Management of obstructive sleep apnea