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Scientific Programme

Abstracts of Congress Posters and Table Clinics

TC = Table Clinics

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The authors of abstracts marked (*) have either declared a financial interest or have not indicated whether or not they have a financial interest.

TOPIC 1: OCCLUSION AND TEMPOROMANDIBULAR DISORDERS (TMD)

CP1-01 OCCLUSAL FACTORS AND TEMPOROMANDIBULAR JOINT DYSFUNCTION

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AIM: To evaluate the role of occlusion in temporomandibular joint dysfunction (TMD).

SUBJECTS AND METHOD: One hundred patients with TMD (pain and clicking) and 100 students (control group). A minimum of 28 teeth had to be present in each subject. A clinical evaluation was conducted and plaster models were evaluated according to the number of permanent teeth, the number of correctly related antagonist pairs of teeth, and the number of incorrectly related antagonist pairs of teeth.

RESULTS AND CONCLUSION: There was significant correlation between incorrectly related antagonist teeth and symptoms and TMD (P = 0.041). This finding may be of assistance as an occlusal indicator for possible TMD.

CP1-02 EARLY TREATMENT OF CLASS II MALOCCLUSIONS WITH A METAL BONDED REPOSITIONING APPLIANCE

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AIM: Since the 1950's, functional orthodontics has been used to intervene in the growth of the craniofacial complex, and to correct its skeletal spatial arrangement. All known techniques are based on the principle of using an inclined plane to aid structural adaptation of tissues. This presentation will show the effectiveness of newly developed bonded repositioning device in the early treatment of three subjects with a Class II division 1 skeletal growth pattern.

MATERIALS AND METHOD: For establishment of the therapeutic position of the lower jaw and production of the appliance, orthodontic examination was undertaken. In addition, a three-dimensional condylograph was used. The appliance components were cast in the dental laboratory and bonded to the occlusal surface of the primary molars using an enamel etching technique.

RESULTS: Due to the small size of the metal components, there was no functional limitation and the therapeutic position of the mandible. An optimal Class I occlusion, harmonic facial profile and reduced neck lordosis provided evidence of the applicability of the technique.

CONCLUSION: The new position of the mandible provided by the appliance became an integrated component of the craniofacial system, which experiences self-regulation. Thus, the effectiveness of the repositioning elements is entirely independent of the patient's co-operation.

CP1-03 TEMPOROMANDIBULAR DISORDERS AND OCULAR Manifestations

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AIM: To investigate the correlation between pathological ocular manifestations and temporomandibular joint dysfunction in a sample of adult patients with temporomandibular disorders (TMD). TMD has been associated with different ophthalmic manifestations, such as orbital pain, anisocoria and ocular convergence defects.

SUBJECTS AND METHOD: Twenty adult patients found positive for TMD. The gnathological examination consisted of a clinical evaluation of muscular condition, orofacial pain, objective signs of articular dysfunction and radiological features. The ocular examination included complete ophthalmologic screening, in particular two tests were used: the Berens prisms test and measurement of the distances (centimetres) of the convergence near point.

RESULTS: Ophthalmic manifestations are often one of the first signs of maxillary system dysfunctions and could appear as a clinical complication in patients with chronic TMD.

CONCLUSIONS: Further investigation and early clinical intervention is encouraged because partial or complete regression of ophthalmic signs may occur when physiological function of the stomatognathic system is established.

CP1-04 FUNCTION AND OCCLUSION IN COMPLEX CASES

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In ‘complex cases’, patients may require occlusal rehabilitation (orthodontic and prosthodontic therapy) in addition to pain relief. Thus, pre-treatment modalities, especially for pain management are of importance. In such patients myofunctional and articulation disorders are common and they need interdisciplinary management encompassing speech therapy, logopedics, myofunctional therapy as well as orthodontic and prosthodontic treatment. It is important to realize that a definitive treatment plan should not be established before harmony of the musculoskeletal system is achieved. Occlusal rehabilitation should always follow diagnostic procedures and pre-treatment therapy. In some cases splint therapy determines the physiologic mandibular position and as such a definitive treatment plan cannot be established before splint therapy is finished. A problem arises when a patient reports temporomandibular joint pain during orthodontic therapy. In such cases, physiological joint and muscle function has to be re-established using diagnostic procedures and pre-treatment modalities.

The presentation will focus on clinical screening methods which will enable the orthodontist to differentially diagnose craniofacial pain symptoms and to distinguish between an ‘easy’ and a ‘complex’ case.

CP1-05 SYSTEMATICS OF TEMPOROMANDIBULAR MAGNETIC RESONANCE IMAGING DIAGNOSIS

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Systematics in magnetic resonance imaging (MRI) diagnosis can describe the pathology of the temporomandibular joint (TMJ) and will help to identify anatomic structures and diseases in three-dimensions. The images provide important information to evaluate chronic pathological disorders of occlusion. This presentation will show how to obtain an overview of the systematics of MRI of patients with temporomandibular dysfunction. Examples will include typical diagnostic representation of the para-sagittal and additional para-coronal and transverse level of the TMJ.

CP1-06 ORTHODONTIC STABILIZATION OF CENTRIC OCCLUSION AFTER TREATMENT OF CRANIOMANDIBULAR DYSFUNCTION

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AIM: In subjects with craniofacial dysfunction, initial splint therapy can position the condyles in centric relation. This can, however, result in disturbances of the relationship of the maxillary and mandibular teeth. An orthodontic concept with a fixed appliance used in combination with a special maxillary bite plate for alignment of the teeth is introduced to obtain centric occlusion.

SUBJECT AND METHOD: An 18-year-old patient who had suffered from clicking joint sounds from 10 years of age, recurring limitation and a Class II malocclusion. Using manual functional analysis, suitable loading and occlusal vectors could be observed. Magnetic resonance imaging showed anterior disc displacement without repositioning on both sides. After initial splint therapy, which led to a significant improvement of the subjective and objective symptoms within a short period of time, the patient showed a centric condyle position and a posterior open bite. Using a maxillary plate with coverage of 15 to 25, the position of the lower jaw could be stabilized without inhibiting the occlusion. Fixed appliances at the first and second molars on both sides of the maxilla and the mandible and vertical elastics helped to extrude the posterior teeth back into occlusion.

RESULTS: Following treatment with a maxillary splint and fixed appliances, centric occlusion and relation were achieved.

CONCLUSION: The treatment results suggest that a purpose-made maxillary plate may help to maintain the position of the lower jaw. With simultaneous fixed appliance treatment, centric occlusion may also be improved.
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obtained from the Hungarian Central Statistical Office. The following data were collected: date of birth, gender, birth-weight, maternal age, region in Hungary, and type of cleft.

RESULTS: The yearly prevalence showed a decreasing tendency. There was significant male dominance. Regional differences were found in the prevalence of affected births.

CPS-102 EFFECTS OF ADHESIVE SYSTEMS ON THE BOND STRENGTH OF ORTHODONTIC BRACKETS  
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AIM: During fixed orthodontic appliance therapy inadequately bonded brackets can extend treatment time. The purpose of this study was to determine whether new adhesive systems affect the in vitro shear bond strength (SBS) of orthodontic brackets.

MATERIALS AND METHOD: Orthodontic brackets (Damon 3,Ormco®) were bonded to extracted bovine incisors using five different adhesive systems (Kurasper F, Kuraray Medical Inc; Transbond LR, 3M Unitek; Quick-Bond, Orthodontic Products Inc.). SBS was determined with a testing machine (Mecmesin, Versa Test, UK) 30 minutes and 24 hours after bonding, by applying an occlusogingival load to the bracket producing a shear force at the bracket-tooth interface.

RESULTS: The testing machine permits specific determination of bracket bonding. In vitro shear peel bond strength was acceptable for all the adhesive systems and no statistically significant differences were found.

CONCLUSION: All adhesive system combinations demonstrated acceptable shear bond forces with quick and easy debonding.

CPS-103 COMPARISON OF CLEFT-SIZE MEASURED FROM MODELS TO MRI ANALYSIS  
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AIM: To determine the cleft palate and jaw clefts size in patients with CLP using an imaging method (MRI) and compare this to the conventional method using alginate impression in patients with CLP.

RESULTS: Comparative measurements showed no significant differences concerning either the right (11.05 ± 7.42 to 11.00 ± 7.76) or left (8.17 ± 4.17 to 8.63 ± 4.5) jaw cleft and the right (4.95 ± 3.02 to 5.28 ± 3.45) or left (5.93 ± 2.68 to 6.23 ± 2.36) cleft palate.

CONCLUSION: The theory of soft tissue displacement by alginate impression material could not be disproved, within the limitations of this study. There is a need for further investigations for a more substantiated conclusion.

CPS-104 MICROSCOPIC EVALUATION OF DENTAL ABRASION WITH DIFFERENT BURS  
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AIM: To evaluate the superficial roughness of dental surfaces following orthodontic stripping using a new generation of diamond burs compared with traditional diamond burs. The diamond granules of the examined burs are held by a rhodium-platinum alloy instead of nickel-chromium.

MATERIALS AND METHOD: Three different traditional diamond stripping burs and a new type of rhodium-platinum diamond bur were evaluated. For each diamond bur different granulations were selected and the effects on the dental surfaces examined microscopically at various magnifications. Each test was repeated three times using new burs on each occasion.

RESULTS: There were large variations for the different granulations. Considering the same granulation, the dental surface treated with rhodium-platinum was slightly smoother than the others. There were also some differences among the other brands of traditional diamond burs.

CONCLUSIONS: The use of the rhodium-platinum burs for orthodontic stripping is recommended, with more optimal finishing of the dental surface.

CPS-105 MOLECULAR BIOLOGICAL INVESTIGATION OF MUSCULAR MIGRATION AFTER TREATMENT WITH BOTULINUM TOXIN A  
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AIM: Botulinum toxin A (Botox) is used often in the treatment of muscle hyperfunction. For a better understanding of the possible morphological and chewing changes in patients induced by Botox therapy, muscle fibre and myosin heavy chain (MyHC) mRNA alterations were examined.

MATERIALS AND METHOD: The investigation was carried out on 14-week-old pigs (7 treated animals, 8 controls). For total immobilisation of the right masseter, the Botox injection was distributed into 10 areas. After a 56 day period, muscle tissue was taken from the left and right side of the masseter (three regions), temporal (two regions), medial pterygoideus and geniohyoideus muscles, using a standardized method. The muscle fibre cross-sections were examined immunohistochemically. Fibre staining was accomplished with antibodies specific to MyHC. The MyHC mRNA changes were analysed by real-time PCR. Muscles adapt to stress by changing fibre type and mRNA content.

RESULTS: Paralysed masseter muscles showed atrophic changes and the other masticatory muscles hypertrophic changes. The results indicated that the normal distribution of type II fibres (Ila and Iib) in masticatory muscles were changed. The Botox injection resulted in an increase in masticator Ila and Iib fibres. On the other hand, the masseter without Botox in the treated group showed a significant increase in type I MyHC.

CONCLUSION: Treatment with Botox can lead to uncontrolled changes in affected and unstructured muscles shapes. These changes may cause a new muscle imbalance.

CPS-106 MECHANICAL RESISTANCE TO TRACTION FORCES OF MINI-SCREWS UTILIZED AS ANCHORAGE  
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AIMS: The aims of this study were: 1) to evaluate and quantify the mechanical resistance of mini-implants to traction forces and compare this resistance with diameter and length; 2) to determine if resistance to traction is constant when mini-implants are analysed for a second time, and 3) to microscopically evaluate the superficial behaviour of mini-implants.

MATERIALS AND METHOD: The traction force resistance of 12 mini-implants (Lei Medical Corporation) were analyzed using an electromechanical machine (berrett model elb-5W). Statistical analysis was carried with SPSS 12.00 for Windows.

RESULTS AND CONCLUSION: Mini-implants with a larger diameter and length improved resistance. Traction resistance significantly decreased in all groups, with the exception of the mini-implants with an increased diameter and length.

CPS-107 THE RELATIONSHIP BETWEEN DENTAL DEVELOPMENT AND ARTICULATION DISORDERS  
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AIM: To analyse the relationship between articulation disorders (AD) and tooth and jaw position in the early and mixed dentition.

RESULTS: The yearly prevalence showed a decreasing tendency. There was significant male dominance. Regional differences were found in the prevalence of affected births.

SUBJECTS AND METHOD: Eleven primary schools in the Rhine-Main area were selected and oral investigations were arranged for 710 first graders (age range: 5.8 to 7.2 years) and for 709 fourth graders (age range: 8.8 to 11.5 years). The study focused on the results of tooth status and orthodontic findings such as sagittal, vertical and transversal disorders of the teeth and jaws. During an informal discussion, the articulation of the children was judged as ‘remarkable’ or ‘not remarkable’.

RESULTS: Articulation improved with age. While 19.7 per cent of the first graders speech was audibly altered, the ratio was 9.6 per cent for the fourth graders. Regarding orthodontic findings, children in the younger age group showed a significant association with the vertical parameter ‘open bite’ (with AD 28 per cent, without AD 3.5 per cent). Less pronounced relationships existed between AD and transverse disturbances such as a lateral crossbite (with AD 11.4 per cent, without 5.8 per cent). Children in the older age group showed a relationship of false speech in connection with sagittal tooth migration with less of space in the supporting (25.0 per cent with AD compared with 11.1 per cent without AD) as well as in the anterior (with AD 33.1 per cent, without AD 25.8 per cent) zones.

CONCLUSION: Articulation disorders can be heard more often during the early and mixed dentition, if certain tooth positions and associated morphological changes are present. In the early dentition vertical anomalies, and, in particular, an open bite were associated with problems in correct articulation, while in the mixed dentition a lack of space in the anterior and supporting zones with a following reduction of tongue area seems to hinder clear articulation.

CPS-108 TREATMENT APPROACH TO CONGENITALLY MISSING TEETH: A CASE REPORT  
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AIM: To illustrate a treatment technique for congenitally missing lower teeth by transplanting extracted teeth from the upper jaw.