

ABSTRACTS

OF LECTURES AND SCIENTIFIC POSTERS

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AIMS: To evaluate the clinical effectiveness of a completely customised lingual appliance in combination with a Herbst-appliance by testing the null hypothesis of not achieving complete space closure without compromising the canine relationship.

SUBJECTS AND METHOD: Seventy five consecutive patients treated with a completely customised lingual appliance (WIN, DW-Lingualsystems, Germany) including a Herbst-appliance treated in one orthodontic centre were retrospectively assessed. Twenty-six (12 male/14 female) had at least one missing lower premolar where the Herbst-appliance was used to reinforce anchorage for lower molar protraction, presenting a total of 35 sites (10 both-sided/15 single sided). No extractions were undertaken in the upper jaw. None of the 75 patients were excluded from the study. Analysis was based on measurements using plaster casts and intraoral photographs, which were scaled to the corresponding casts, taken at the beginning of treatment (T0), on insertion of the Herbst-appliance (T1), following removal of the Herbst-appliance (T2) and at the end of treatment (T3).

RESULTS: The null hypothesis was rejected: complete space closure was achieved for all patients at T3 without worsening the pre-treatment canine relationship. Furthermore, an existing Class II canine relationship at T0 or T1 could be successfully improved.

CONCLUSION: Patients with developmentally absent lower second premolars can be treated successfully using a completely customised lingual appliance combined with a Herbst-appliance, even if no extractions in the maxilla are undertaken.

Scientific Posters

55 PERCEPTION OF TREATMENT OUTCOME AFTER RAPID MAXILLARY EXPANSION AND FACEMASK THERAPY

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AIMS: Rapid maxillary expansion (RME) and facemask therapy is considered to be effective for correcting skeletal Class III malocclusions. The purpose of this study was to evaluate the perception of soft tissue changes of RME and facemask therapy from the perspective of lay people, dental students and orthodontists and to compare these with lateral cephalometric measurements.

MATERIALS AND METHOD: Pre- and post-treatment lateral cephalometric radiographs of 10 patients treated with RME and a protraction facemask were used to generate standardized profile silhouettes. The subjects were selected according to varying degrees of improvement in ANB angle. The profile silhouettes were judged by lay people, second and fifth grade dental students and orthodontists (n = 50 each group) using a five-point Likert scale. They also chose the most attractive silhouette from randomly selected silhouettes. Eight angular and five linear measurements were used to evaluate skeletal and soft tissue changes. One-way ANOVA, paired *t*- and Pearson correlation tests were used for statistical analysis.

RESULTS: Significant increases in SNA and ANB angles were found at the end of treatment ($P = 0.001$). Upper incisor to NA (mm) and overjet and H angle also showed significant increases ($P < 0.05$). The increase in ANB angle was found to be correlated with treatment outcome assessments of orthodontists ($P = 0.047$). It was observed that the scores of orthodontists for profile silhouettes were greater than for other groups when the change in ANB angle was greater. Furthermore, there was strong agreement between the evaluations of lay people and second-grade dental students. General concordance was found between participants in their aesthetic profile preferences.

CONCLUSION: Although orthodontists' and other groups' profile aesthetic preferences were similar, orthodontists were more focused on the improved skeletal normality after RME and protraction facemask therapy. Perception of improvement in profile might change due to the degree of education and dental training.

56 QUALITY OF LIFE OUTCOMES OF CLASS III TREATMENT WITH FACEMASK AND RAPID MAXILLARY EXPANSION: PATIENT AND PARENT PERCEPTIONS

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AIMS: Malocclusion may be an important determinant for oral health related quality of life (QoL) since it may have functional, psychological, physiological and social impacts. In this respect, early intervention may be beneficial for the patients. However, wearing extraoral appliances in public and living with intraoral anchorage appliances may also worsen QoL. Recording parents' perceptions of treatment is also important to understand the experiences of patients from another point of view and determine their impact on parents' feelings.

AIMS: To quantify and compare static friction in conventional orthodontic appliances and self-ligating brackets, depending on the type of ligature with 0.014 inch nickel titanium (NiTi) archwire in different crowding situations.

MATERIALS AND METHOD: An observational study of friction forces of conventional brackets (Low Profile MBT .022, American Orthodontics, Sheboygan, Wisconsin, USA), passive self-ligating brackets (Damon Q .022, Ormco Corporation, Orange California, USA) and active self-ligating brackets (Innovation Roth .022, Dentsply GAC International, Bohemia New York, USA) was designed. The brackets were studied with 0.014 inch NiTi archwire to quantify static friction. With the conventional bracket group, elastomeric and metallic ligatures were compared. The sample was analyzed with ANOVA at a confidence interval of 95 per cent. Statistical results were validated with a Cronbach's alpha, within 2 weeks by the same operator.

RESULTS: Passive self-ligating brackets showed the lowest static friction rates when used with 0.014 inch NiTi archwire (0.029 N/mm). Conventional brackets had the highest friction rates when used with elastomeric ligatures (12.003 N/mm). Static friction increased proportionally with the degree of crowding, despite the type of ligature used in conventional brackets and the type of self-ligating bracket. All values obtained were statistically significant ($P < 0.05$).

CONCLUSION: Self-ligating brackets show the lowest static friction. Active self-ligating brackets had higher friction rates than passive self-ligating brackets. With conventional brackets, friction increased with elastomeric ligatures.

324 EFFECTIVENESS OF VIDEO IN DELIVERING INSTRUCTION TO ORTHODONTIC PATIENTS: A REVIEW OF LITERATURE

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AIMS: At the commencement of orthodontic treatment, patients must have very good oral hygiene and they need to maintain it until the end of treatment. Treatment with fixed appliances requires extraoral hygiene care, as the components will predispose to plaque retention in the mouth. Hence, effective oral hygiene instruction must be provided to prevent future problems such as gingivitis and demineralization of enamel. However, little is known about how long patients retain the knowledge after receiving instruction. Thus, the aim of this review was to determine the effects of a video on oral hygiene behaviour and knowledge retention compared to other methods of instruction given to orthodontic patients.

MATERIALS AND METHOD: A literature search was conducted using electronic databases for articles published until November 2017. The search was performed using keywords: video, instruction, orthodontics, oral hygiene, information retention. English language papers and all types of studies were considered in this review.

RESULTS: The search with a combination of the keywords resulted in 33 articles. However, only five studies were relevant and used for this review. All of the studies were questionnaire based study and assessed the short-term (immediately after instruction) and up to 8 weeks for long-term. Four studies showed significant improvement of knowledge with video instructions, however, one study reported little difference among the methods of instruction used. For oral hygiene status, only two studies were found to evaluate plaque and gingival index before and after instructions were given. One study declared that there was no significant difference in oral health status between the methods while another showed significant improvement in a video instruction group.

CONCLUSION: The impact of knowledge retention is crucial as it facilitate patient compliance towards treatment. There is paucity in the literature regarding the effects of video instruction to orthodontic patients. None of the studies assessed maintenance of the oral hygiene behaviour and retention of knowledge in follow-ups longer than 8 weeks.

325 A CEPHALOMETRIC ANALYSIS OF THE DIFFERENCES IN CRANIOFACIAL CHARACTERISTICS: STUDY FROM LARGE A SOUTHERN ITALIAN COHORT

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AIMS: Reference standards for orthodontic diagnosis, such as linear and angular cephalometric measurements of the face and cranial base differ between girls and boys and change with age. Therefore, the aim of this cross-sectional study was to determine cephalometric standards in a large sample of children from the southern part of Italy.

MATERIALS AND METHOD: Initial lateral cephalograms of healthy children, with various types of occlusion and with no history of orthodontic treatment, were examined by one operator with no attempt to select only subjects with balanced and acceptable profiles. For the analysis 1059 lateral cephalograms of healthy children, between 8 to 12 years, with various types of occlusion, all with no history of orthodontic treatment before cephalometric analysis were examined. Seven angular and three linear measurements, and three ratios were

considered. The angular measurements were SNA, SNB and ANB angles, the divergency angle SN[^]GoMe, the angle of the upper maxillary inclination PN[^]Pal, the upper and lower incisor inclination I[^]SN, i[^]GoMe. The three linear parameters were the length of the anterior cranial base Se-N, the length of the maxillary body PNS-A1, and the length of the mandibular body Go-Pg. The three ratios were the anterior cranial base to maxillary length Se-N/PNS-A1, the anterior cranial base to mandibular length Se-N/Go-Pg, and the maxillary to mandibular length PNS -A1/Go-Pg.

RESULTS: Changes in angular and linear parameters during the observation period occurred mostly between the ages of 10 and 12 years. The three ratios varied from age and were not characterised by a progressive rise in mean values. Se-N/Go-Pg was greater in 11 ($P < 0.05$) and 12 ($P < 0.01$) year-old boys; the cranio-maxillary index Se-N/PNS-A1 was greater in 9-year-old girls ($P < 0.05$), whereas the maxilla-mandibular index PNS-A1/Go-Pg was greater in 9-year-old boys ($P < 0.01$).

CONCLUSION: The findings provided useful reference cephalometric normative measurements for the 8 to-12 year old southern Italian child population. Significant differences between boys and girls in the length of the anterior cranial base and ratio were observed.

326 REPRODUCIBILITY OF THE INDEX OF ORTHOGNATHIC FUNCTIONAL TREATMENT NEED SCORES DERIVED FROM PLASTER CASTS AND THEIR THREE-DIMENSIONAL DIGITAL EQUIVALENTS

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AIMS: To determine the reproducibility of Index of Orthognathic Functional Treatment Need (IOFTN) scores derived from plaster casts and their three-dimensional (3D) digital equivalents.

MATERIALS AND METHOD: Thirty sets of plaster casts were selected to represent the pre-treatment malocclusions of patients requiring combined orthodontic-orthognathic surgical treatment. Casts were scanned using the 3Shape R1000TM desktop digital scanner and 3D models were produced using 3Shape OrthoAnalyzer™ computer software (3Shape Ltd, Copenhagen, Denmark). Four examiners independently determined the IOFTN scores for the plaster casts and digital models, on two occasions, two weeks apart, to test their inter- and intraoperator reliability. Additional information and clinical photographs were provided on all occasions.

RESULTS: Weighted kappa scores for intraoperator agreement with the major categories of IOFTN (1-5: treatment need) showed good to very good agreement for the plaster casts and digital models, with a range of 0.83 to 0.98 and 0.78 to 0.83, respectively. The weighted kappa scores for interoperator agreement with the 'gold standard' showed moderate to very good agreement, with a range of 0.58 to 0.82 for the plaster casts, and 0.65 to 0.92 for the digital models. Intraoperator agreement with the IOFTN sub-categories (1-14: feature of malocclusion) showed moderate to very good agreement for the plaster casts and digital models, with kappa scores with a range of 0.53 to 0.77 and 0.58 to 0.90, respectively. Interoperator agreement with the IOFTN sub-category gold standard showed moderate to good agreement for the plaster models, with a range of weighted kappa scores of 0.53 to 0.77; and moderate to very good agreement for the digital models, with a range of weighted kappa scores of 0.58 to 0.90.

CONCLUSION: There was moderate to very good intra- and interoperator reliability for both plaster and digital models, when using the IOFTN. It is concluded that digital models are an acceptable alternative to plaster casts for examining the malocclusion of those patients requiring combined orthodontic-orthognathic surgical treatment and determining treatment need.

327 THE INFLUENCE OF INTERDENTAL SPACING ON PERCEIVED SMILE AESTHETICS

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AIMS: This cross-sectional study aimed to assess the influence of varying patterns and sizes of interdental spacing on perceived smile aesthetics amongst general dentists, orthodontists, lay people and children.

MATERIALS AND METHOD: A photograph of the ideal smile was digitally manipulated to display varying patterns and sizes of interdental spacing. In total, 25 images were shown per questionnaire to 40 participants in each group. Each photograph was aesthetically judged and ratings were recorded on a visual analogue scale (VAS).

RESULTS: The ideal image was preferred to interdental spacing by all groups ($P < 0.05$). The images with generalised spacing had a low VAS rating, and were deemed unaesthetic, compared to the ideal image. This result was statistically and clinically significant ($P < 0.00$). The difference in VAS scores between children and professional groups was statistically significant ($P < 0.05$), with children being the most critical group. A 0.5 mm increase in the size of the space, resulted in a statistically significant reduction in VAS ratings ($P = 0.00$).

CONCLUSION: Interdental spacing is disliked by all groups, and the size and pattern of spacing has an influence on aesthetic perception. Professional groups tolerated interdental spacing more than the lay groups. The large variation in VAS ratings highlights that aesthetics can mean different things to different people at different times.