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SKELETAL EFFECTS OF SANDER'S BITE JUMPING APPLIANCE IN SUBJECTS WITH DIFFERENT AUXOLOGIC CATEGORIES

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AIM: To evaluate the functional treatment response of subjects with an Angle Class II malocclusion and mandibular retrusion with different auxologic categories and to determine whether the auxologic category might be a useful prognostic factor during treatment with Sander's bite jumping (BJ) functional appliance.

SUBJECTS AND METHOD: Thirty subjects (16 males 14 females; mean age 10.3 ± 1.2 years) with an Angle II Class malocclusion. For each subject a cephalometric tracing using Hasund's criteria was realized. The normal associations of cephalometric variables according to Hasund and Boë were utilized to classify subjects into growth categories according to Lavergne and Gasson's criteria. The subjects were then divided into six groups according to Petrovic's auxologic categories. The subjects were close to mandibular growth peak (CVMS stages 2 and 3). Sander's BJ appliance was used in all patients. Cephalometric tracings before (T0) and after (T1) treatment were compared to determine mandibular changes in the six categories with using the method of Pancherz. T1-T0 differences were calculated for OLP-Co and OLP-Pg. One-way analysis of variance was used to test differences between Petrovic's auxologic categories, each rotational group, and each sub-class of maxillary-mandibular differential growth.

RESULTS: Mandibular length (OLP-Pg + OLP-Co) was 5.83 ± 3.82 mm in group 1, 2.31 ± 0.81 mm in group 2, 3.36 ± 2.27 mm in group 3, 2.16 ± 1.12 mm in group 4 and 2.55 ± 1.80 mm in group 5. Analysis of variance did not show significant differences between the groups.

CONCLUSION: No between group significant differences in mandibular length changes were found. Auxologic category is not a prognostic aid for evaluating response to treatment with Sander's BJ functional appliance.

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FACIAL ASYMMETRY OF SKELETAL ORIGIN – CORRELATION OF SOME MANDIBULAR PARAMETERS AND DEVIATIONS

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AIM: To identify if deviation of mandible on left or right side is in correlation with the length of the mandibular corpus and ramus and also the size of gonial angle in subjects with facial asymmetry of skeletal origin.

MATERIALS AND METHOD: Thirty-one frontal cephalograms of subjects with face asymmetry of skeletal origin. The following parameters were analyzed: length of the mandibular corpus and ramus and also the size of gonial angle on the left and the right side and the degree of mandibular deviation (angle ANS-Me). Spearman test of correlation and multivariate regression analysis were used for statistical processing of the data.

RESULTS: There was a significant positive correlation of ANS-Me and gonial angle on the right side ($\alpha = 0.56$, $P < 0.05$) when deviation to the right side was present. The mandibular corpus on the left side and gonial angle on the right side also significantly affected the degree of deviation when a deviation to the right side was present ($P < 0.05$). There was a positive correlation of the mandibular corpus on the right side and angle ANS-Me when deviation was to the left side ($P < 0.01$). Multivariate regression analysis showed that a 61.7 per cent variation of ANS-Me was caused by other parameters that were not included in this multivariate regression model.

CONCLUSION: The length of the mandibular corpus and ramus and size of the gonial angle have a significant role, but there are other parameters that can influence the degree and side of mandibular deviation in subjects with facial asymmetry of skeletal origin.

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ERRORS IN DIGITIZING AND PROCESSING OF CEPHALOGRAMS

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AIM: To measure the 'real' amount of error in everyday cephalometrics and to discriminate between values that are more erroneous from those that are not. An additional aim was to compare data between digital versus classic radiography and different methods of processing.

MATERIAL AND METHOD: Thirty classic (film-based) and 30 digital cephalograms randomly selected. The Croatian analysis, Zagreb 82 MOD, was used together with values from most used international analyses such as Steiner, Downs and Björk. All data was processed by one analyzer in five non-consecutive repetitions and by five independent analyzers without repetitions. The error was measured as variability among examiners and repeated measurements in the case of one examiner. For computer processing Dolphin 10.5 was used.

RESULTS: Higher error levels than expected were found for all measured or calculated values. Digital radiographs demonstrated significantly lower value variability in repetitions than classic images. The highest variability was calculated (ratio) for interincisal angle (15.31° interexaminer, 8.77° intraexaminer), and the lowest in the distance from the lower incisive tip to the N-B line (2.52° interexaminer, 2.02° intraexaminer). Manual measuring showed no significant difference for most variables compared with computerized measurements.

CONCLUSION: Digital radiographs cause significant lower variability in repeated measuring than film-based. Because there is no difference between manual and computer measuring, the error is due to identifying points and anatomical structures. Cephalometry is a reliable diagnostic method, but it cannot be the only one.

RELIABLE JUDGEMENT OF FACIAL AESTHETICS OF CLASS III PATIENTS: ESTABLISHING THE OPTIMAL PANEL SIZE

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AIM: To determine the required panel size of judges formed by laypeople, orthodontists and maxillofacial surgeons, respectively, ensuring a reliable judgement on facial aesthetics of Class III patients.

MATERIALS AND METHOD: Standardized profile photographs of 18 Caucasian adults (10 males, 8 females; mean age 24.5 years) with skeletal Class III malocclusions were evaluated for attractiveness by three panels, consisting of 23 maxillofacial surgeons, 56 orthodontists and 61 laypersons. A 10-graded visual analogue scale was used and the ratings were recorded as profile assessment score. Intraclass correlation coefficient (ICC) was calculated, relating the variability between the patients to the total variability. The optimal panel size was obtained through the Spearman-Brown prophecy formula. The optimal panel would be the one for which the smallest number of randomly selected judges (N) yields an ICC(N) equal or larger than 0.8.

RESULTS: ICC (single measures) for laypeople, orthodontists and maxillofacial surgeons were 0.126, 0.217 and 0.129 respectively. ICC (average measures) were 0.898, 0.939 and 0.773 for the same groups. Reliable judgement on facial aesthetics of Class III patients is possible when the panel consists of at least 27 randomly selected laypeople, 14 orthodontists and 27 maxillofacial surgeons (ICC (N) = 0.8)

CONCLUSION: The highest ICC (single measures) for orthodontists is possibly due to the fact that most of them were trained at the same institute. Lower ICC (single measures) for maxillofacial surgeons, similar to that of laypeople, shows a larger diversity of opinions, possibly reflecting a different training background. A thorough calibration procedure should be undertaken to keep a good level of heterogeneity. Keeping the panel size to a minimum avoids unnecessary effort and expense in future studies involving aesthetic evaluation of Class III malocclusion patients when evaluated by these three types of judges.

HYPODONTIA – DIFFERENCES BETWEEN SAMPLES FROM THE GENERAL POPULATION AND UNIVERSITY CLINIC PATIENTS

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AIM: This research is part of a hypodontia heredity project, which has been ongoing in Prague from the mid-1970s. Cohorts of hypodontia probands and their families were collected from the general population and partially from university clinic patients.

SUBJECTS AND METHOD: Three hundred and sixty two probands (135 boys, 227 girls) with hypodontia of any teeth except third molars were selected from Prague schoolchildren and 182 (58 boys, 124 girls) from the orthodontic and endodontic departments at a university stomatology clinic. Profanes and first-degree relatives were examined; hypodontia was diagnosed and recorded from radiographic evidence.

RESULTS: 1. More girls than boys were seen in both hypodontia samples. The proportion of girls over boys in the clinical sample was significantly higher. 2. Differences were noted in the morphological types of missing teeth. Hypodontia of lateral incisors was more frequent in the clinical profanes, and hypodontia of premolars had a greater occurrence in the general population sample. 3. Differences between the two samples in terms of the frequency of hypodontia among relatives of probands were not significant.

CONCLUSION: The minor differences found between the two samples should not limit further genetic analysis. Thus, the combined group of 564 probands and their relatives could be evaluated as a whole in future studies.

CEPHALOMETRIC ANALYSIS OF SWEDISH ADULTS WITH TURNER SYNDROME

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AIM: Turner syndrome (TS) is a genetic disorder caused by numerical and/or structural aberration of the X-chromosome. TS affects females with a prevalence of 1/2500 live female births. The aim of this study was to compare cephalometric variables from adult females diagnosed with TS to a standardized reference group of healthy 30-year old females, and to evaluate the possible effects of growth hormone therapy on the subjects with TS.