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CRANIOMANDIBULAR DISORDERS AFTER SURGICAL TREATMENT OF MANDIBULAR FRACTURES

Garagiola U, Ghigliione V, Zellermaier E, Farronato D, Santoro G

Milan (Italy)

AIM: To evaluate the relationship between the surgical treatment of mandibular fractures and temporomandibular disorders (TMD).

MATERIAL AND METHOD: Fifty-two patients with facial trauma (18-35 years of age). Thirty-two subjects had no signs of TMD while 20 patients showed TMD. The use of a computerized kinesiographic programme permitted a graphic comparison of the data both in the diagnostic and in post-surgical phase.

RESULTS: Many patients did not receive adequate surgical treatment. In such cases fractures, rightly or wrongly, did not receive the required attention but were often postponed or even ignored, thus favouring conditions for consolidation in anomalous positions leading to functional and aesthetic problems.

CONCLUSION: A surgical approach should be based on general criteria of trauma therapy, restoring as soon as possible the original bone shape and the correct occlusal relationships to avoid craniomandibular disorders.

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THE EFFECT OF EXTRACTION AND NON-EXTRACTION ORTHODONTIC TREATMENT ON SMILE AESTHETICS

Singh P, Collins M

London (United Kingdom)

AIM: To test the hypothesis that non-extraction and premolar extraction Caucasian female smile photographs are scored equally, and to assess if there is a difference in the arch widths of these two groups.

MATERIAL AND METHOD: 10 young Caucasian females treated to a standard suitable for the postgraduate examinations (5 non-extraction, 5 extraction). Frontal smile colour photographs and dental impressions were taken of the subjects. The smile photographs were evaluated by 100 assessors comprising equal numbers of male and female orthodontists and male and female lay people. The assessors were also asked to record the factor that most influenced the scores awarded to the photographs. Dental casts were measured for arch width using digital callipers.

RESULTS: Statistical analysis was completed with an ANOVA test for smile photograph scores and a Mann-Whitney U test for comparison of cast measurements. Non-extraction smiles were scored more favourably than extraction smiles by both orthodontists ($P < 0.01$) and lay people ($P = 0.03$). This difference was attributed to lip position, tooth colour and tooth shape. There was no difference between male and female scores. The non-extraction group had greater maxillary ($P = 0.03$) and mandibular ($P = 0.02$) interpremolar distances compared with the extraction group, but the intercanine and intermolar widths showed no statistical difference. While previous investigations have shown there to be no difference between non-extraction and extraction smile scores awarded by lay people and orthodontists, this study showed the contrary. Whether this difference is due to buccal corridor space or not remains unclear. Only one assessor out of 100 found this to be a deciding factor in the scores awarded. This highlights that other factors such as lip position, tooth alignment and tooth colour and shape are also important in creating an aesthetically pleasing smile.

CONCLUSION: There is agreement between orthodontists and lay people when scoring smiles, with non-extraction smiles scoring more favourably. The arch form in the premolar region is narrower in the extraction group compared with the non-extraction group.

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THREE-DIMENSIONAL RELATIONSHIP BETWEEN MAXILLOFACIAL MORPHOLOGY AND MASSETER MUSCLES*

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Osaka (Japan)

AIM: To investigate the relationship between maxillofacial morphology and the volume and inclination of the masseter muscle in jaw deformities.

MATERIAL AND METHOD: Seven males (average of 27.4 years) with jaw deformities but no history of orthodontic treatment or apparent upper jaw deviation. Computerized tomography (CT) and magnetic resonance images (MRI) were used for measurement. The subjects' heads were photographed by CT and MRI between the mandibular border and infraorbitalis, parallel to the FH plane. The CTs were reconstructed to form heads using three-dimensional (3D) image analysis software (Imagnosis 3D, Imagnosis Co. Ltd.). Three planes were set (x, y and z) and the degree of asymmetry of the lower jaw was measured from the CT data. MRIs were also reconstructed, using 3D image-analysis software (Exavision LITE, Ziosoft Co. Ltd.). The volume and inclination of the masseter muscle from the MRI data was calculated, along with measurement of the inclination of masseter muscle, using an asymmetry index (AI). All data underwent correlation analysis.

RESULTS: The average volume of the deviation was 228.37 cm³ and that of non-deviation 254.47 cm³. In the frontal view, the average muscular inclination to the FH plane on the deviated side was 79.92 degrees and on the non-deviated side 80.18 degrees. In the sagittal view, the average deviation was 70.47 degrees and that of the non-deviated side 73.88 degrees. The average mandibular ramus length of non-deviation was shorter than that of deviation. AI of masseter muscle volume was correlated with the angle created by a line joining the mid-point of the deepest part of the bilateral mandibular notch in y and z planes, and menton with respect to x axis. There was no significant difference in masseter muscle inclination.

CONCLUSION: 3D evaluations were able to describe structural asymmetries and patterns of inclining degrees and rotation.

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AIRWAY CHANGES IN ANGLE CLASS II CASES AFTER FRÄNKEL II THERAPY

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Koriyama (Japan)

AIM: To clarify whether correcting the location of the mandible during the growth and development period using the Fränkel (FR) II improves respiratory function.

MATERIAL AND METHOD: Eleven subjects (6 males, 5 females, mean age 9 years 6 months) with an Angle Class II malocclusion; ANB: 5.7 degrees. The appliance was used for an average period of 9.7 months. The control group were 14 untreated Class II subjects (5 males, 9 females, average age 10 years 1 month) with an average ANB of 5.8 degrees. The study and control groups were radiographically compared at the initial examination (T0) and 1 year after (T1) starting FR II. Peak flow was measured for 12 months. Measurements at T0 and T1 were compared between the study and control groups.

RESULTS: At T0, no significant cephalometric differences were found between the groups. At T1, McNamara-Pog value and oropharynx width were significantly greater in the study group than in the control group ($P < 0.05$). In the study group, peak flow at T1 (288.5 ± 38.15 l/minute) was significantly greater than at T0 (211.0 ± 34.25 l/minute; $P < 0.05$).

CONCLUSION: Respiratory function in patients with mandibular retrusion can be improved by early initiation of functional orthopaedic therapy