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Maxillary transverse discrepancy: Posture and gait analysis before and after RPE

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Introduction: In the last decades the hypothesis that there is a correlation between dental occlusion and posture has been under investigation by a lot of authors, especially because it has been suggested that disorders of the masticatory system can affect body posture as a whole. The present study aimed to evaluate the effects of rapid palatal expansion (RPE) on gait and posture in children with maxillary transverse discrepancy; differences before and after RPE were assessed.

Methods: 50 patients were enrolled, age and BMI were respectively: 9.6 ± 2.1 years, 18.1 ± 1.1 kg/m², divided into 3 groups: 10 control subjects (cs), 20 patients with unilateral posterior cross-bite (cbmono), 20 patients with maxillary transverse discrepancy and no cross-bite (nocb). The analyses were carried out in three stages. In the first phase after oral examination, every subject underwent gait analysis, Romberg test and surface emg. after 2 month of the end of rpe' activation it has been executed surface emg. the last phase was 3 month after the removal of the RPE. The test was executed by means of a 6 cameras stereophotogrammetric system (60-120 Hz, bts) synchronized with 2 bertec force plates and a novel pedar plantar pressure system. 3dimensional (3d) joint kinematics, center of pressure displacement (cop), plantar pressure distribution during gait and post-urographic parameters were estimated. One way anova or kruskal wallis test was performed among the variables in order to compare the 3 group of subjects, paired t-test was performed instead when comparing a and b conditions within the same group of subjects ($p < 0.05$), tamane t2 or bonferroni correction was used where needed. The presence of asymmetries in each population of subjects was also investigated in term of significant differences between left and right side 3d joints kinematics.

Results: The post-urographic analysis doesn't reveal significant difference between cbmono, nobc and control groups. The variables of gait analysis are significant before and after treatment. Surface emg shows an increase of muscle's force after treatment with a delay of the recruitment of masseter and temporal muscles.

Conclusion: It seems to be a relation between occlusion and body posture. It is expressed by dynamic posture in cranio-caudal direction.

Biography

Martina Mason is a student at University of Padua .

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