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Evaluation of the stomatognathic system in children with need for orthodontic treatment

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Statement of the Problem: Development of dental occlusion is a prerequisite for the success of any dental intervention.

Aim: The objective of this study was to evaluate the EMG activity of masticatory and perioral muscle; mandibular mobility; maxilla and mandible strength and tongue pressure in children with orthodontic treatment

Methodology & Theoretical Orientation: 64 children were selected and divided into three groups judged by the Index of Orthodontic Treatment Need (IOTN) criteria: GI: grade 1 (n=26; mean age 8.00±0.44), GII: grade 2 (n=28; mean age 8.89±0.44, n=26) and GIII: grade 3 (n=10; mean age 8.00±0.59). This study was approved by the Ethics Committee in Research of the School of Dentistry of Ribeirão Preto, University of São Paulo. Assessment of muscles activities were performed by EMG recordings of the right masseter (RM), left masseter (LM), right temporal (RT), left temporal (LT), orbicularis oris muscle, upper segment (right and left side) during rest, right and left laterality, maximum voluntary contraction with and without Parafilm M® and protrusion. Surface EMG was performed using Trigno™ Wireless (System Delsys). T-Scan® III Occlusal Analysis System was used to evaluate the intensity of the maxilla and mandible strength by maximum voluntary contraction. Tongue pressure was evaluated by Iowa Oral Performance Instrument (IOPI). The mandibular mobility was measured using a calliper.

Findings: The data obtained were tabulated and subjected to statistical analysis (SPSS 22.0; ANOVA; P<0.05). EMG activity was significant for rest: RM [(I=0.08±0.01), (II=0.08±0.01), (III=0.24±0.09)]; RT [(I=0.15±0.02), (II=0.16±0.03), (III=0.33±0.10)]; protrusion: LT [(I=0.11±0.01), (II=0.14±0.02), (III=0.24±0.08)]; right laterality: RM [(I=0.10±0.01), (II=0.16±0.03), (III=0.43±0.10)]. There was no statistically significant difference for EMG activity of the orbicularis oris muscle, tongue pressure, mandibular mobility and maxilla/mandible strength.

Conclusion & Significance: The authors concluded that children in grade 3 (IOTN) showed hyperactivity of mastication muscles and reduction in the tongue pressure.

Biography

Simone C H Regalo is a Titular Professor in the Department of Morphology, Physiology and Basic Pathology, Ribeirão Preto Dental School, University of São Paulo. She is leader of the CNPq research groups: Electromyography and the Multidisciplinary Center for Research in Bone Tissue. She has published more than 30 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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