

24th International Conference and Exhibition on

DENTISTRY & ORAL HEALTH

April 17-19, 2017 Dubai, UAE

Relationship between the dentition phases with electromyographic activity, tongue pressure, mandibular mobility and maxilla/mandible strength

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Statement of the Problem: The dentition phases are associated with craniofacial growth and functions of the stomatognathic system. The objective of this research analysed dentition phases by electromyographic activity, maxilla/mandible strength, tongue pressure and mandibular mobility.

Methodology & Theoretical Orientation: 64 children were divided into three groups judged by the dentition phases: DG: deciduous dentition (mean age 4.65 ± 0.21), MG: mixed dentition (mean age 8.30 ± 0.28) and PG: permanent dentition (mean age 11.33 ± 2.25). This study was approved by the Ethics Committee in Research of the School of Dentistry of Ribeirão Preto, University of São Paulo. Assessment of muscle activities were performed by EMG recordings of the right masseter (RM), left masseter (LM), right temporal (RT) and left temporal (LT) during rest, right and left laterality, maximum voluntary contraction with and without Parafilm M and protrusion. Surface EMG was performed using Trigno Wireless (Delsys). T-Scan III Occlusal Analysis System was used to evaluate the intensity of the maxilla/mandible strength by maximum voluntary contraction. Tongue pressure was evaluated by IOPI and the mandibular mobility (maximum opening of the mouth, laterality and protrusion) was measured using a calliper.

Findings: The data obtained were tabulated and subjected to statistical analysis (SPSS 22.0; ANOVA; $P < 0.05$). Statistically significant differences were found for mandibular mobility at maximum mouth opening [(DG= 41.50 ± 1.60), (MG= 46.67 ± 0.81), (PG= 49.33 ± 2.36)]. There was no statistically significant difference for EMG activity, maxilla/mandible strength and tongue pressure. In the EMG activity, the deciduous dentition presented higher values during protrusion (RM; LM; RT), right laterality (LM; RT) and left laterality (LM). The mixed dentition presented higher values at rest to all muscles and the permanent dentition showed higher value at maximum voluntary contraction. In the tongue pressure the permanent dentition presented higher value.

Conclusion & Significance: There is relationship between the phases of the dentition with of the stomatognathic system functions.

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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