Simone C H Regalo et al., Oral Health Dent Manag 2017, 16:2 (Suppl)
http://dx.doi.org/10.4172/2247-2452-C1-052

Analysis of the masticatory cycles efficiency in children with orthodontic treatment need

Simone C H Regalo, Marcelo Palinkas, Mariângela S P Nassar, Kranya V D Serrano, Marisa Semprini, Lígia M N Gonçalves, Bárbara L Lucas and Selma Siéssere
University of São Paulo, Brazil

Statement of the Problem: The measurement of masticatory efficiency is a complex work, but with the use of correct methodologies, it is possible to reproduce reliable results.

Aim: The objective of this study was to analyze the masticatory cycle's efficiency of the right masseter (RM), left masseter (LM), right temporal (RT) and left temporal (LT) muscles, in children with orthodontic treatment need.

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 RibeirãoPreto, University of São Paulo. The masticatory efficiency was evaluated by the ensemble average of the masticatory cycles, during the time. Surface EMG was performed using TrignoTM Wireless (Delsys).

Findings: The data obtained were tabulated and subjected to statistical analysis (SPSS 22.0; ANOVA; $P<0.05$). The masticatory process was analyzed during habitual chewing (consistent and soft food) for 10 seconds each. The values of ensemble average were normalized maximum dental clenching (4s). EMG activity was significant ($P<0.05$) for chewing of consistent food: LM [(I=0.77±0.12), (II=0.68±0.08), (III=1.44±0.57)]. Children in grade 2 showed higher value of the EMG activity for the masseter muscles in the habitual chewing of consistent and soft food. Children in grade 3 showed higher value in the EMG activity for the temporalis muscles in the habitual chewing of consistent and soft food (except RT in consistent food chewing).

Conclusion & Significance: The authors concluded that the grade type (IOTN) is related with the decrease of the masticatory efficiency, especially concerning EMG activity of the masseter (grade 2) and temporalis (grade 3) muscles.

Biography

Simone C H Regalo is Titular Professor in the Department of Morphology, Physiology and Basic Pathology, RibeirãoPreto 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.

simone@forp.usp.br

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