

Changes in duration of the chewing act and cycle in patients undergoing orthognathic surgery

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Abstract

The aim of this study was to verify the electromyography duration of masticatory muscles before and after orthognathic surgery. The individuals performed the usual chewing of a latex rubber piece. There was differences in the duration of the masticatory act and cycle, before surgery individuals had significantly higher values. Therefore, the dentofacial deformities influenced the masticatory function of these individuals.

Keywords: electromyography, orthognathic surgery, masticatory function.

Introduction

The orthognathic surgery is used to correct the severe malocclusions¹. Most patients with dentofacial deformities (DFDs) can show changes in stomathognathic functions, mainly in chewing². Electromyography (EMG) provides a practical and objective tool for the evaluation of chew³. The aim of the study was to analyze the data of the electromyographic activity of masticatory muscles in individuals with DFDs undergoing orthognathic surgery, considering the act duration (AD) time, period in which the muscle remains active and the cycle duration (CD) involving the time elapsed between the onset of muscle activity until the early next activity.

Results and Discussion

The study was approved by the Research Ethics Committee of FOP-UNICAMP (process 074/2012). Twenty DFDs individuals aged from 18 to 40 years were evaluated before, 3 and 6 months after orthognathic surgery. The individuals chewed a 2-cm piece of rubber latex, for 60 seconds in habitual manner while the surface electromyography of the masseter and temporalis muscles was carried out. In the electromiograms the first two seconds were neglected, considering the subsequent time interval of 10 seconds for the AD and CD calculations. Friedman test and the Dunn test as *post hoc* were applied ($\alpha=0.05$).

Regarding the AD, the values were significantly higher before surgery for the evaluated muscles compared to the postoperative periods (figure 1), whereas for CD the respective values were significant higher for the right masseter, left and right temporal muscles (Figure 2).

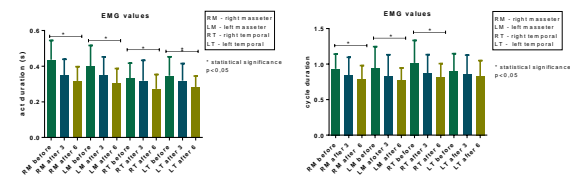


Figure 1. Act duration values for masseter and temporalis muscles. Figure 2. Cycle duration values for masseter and temporalis muscles.

The findings may be associated with the slowdown during the function as a way to adapt to the presence of DFDs. Moreover, our results are in line with a previous study, showing differences among individuals with DFDs before and after orthognathic surgery with shortening chewing cycle⁴. Thus, the EMG can be considered a useful tool for monitoring these aspects in clinical practice.

Conclusions

The presence of DFDs influenced masticatory function, resulting in lower values of the durations of masticatory act and cycle.

Acknowledgement

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