

APPLICATIONS OF PROTOCOL OF TMD TREATMENT WITH OCCLUSAL SPLINT AND ELECTROMYOGRAPHIC EVALUATION

Marco Antonio Moreira Rodrigues da Silva, Caroline Vieira e Silva, André Luís Botelho, Cláudia Maria de Felício and Ana Maria Bettoni Rodrigues da Silva

São Paulo University, Ribeirão Preto, SP, Brazil
E-mail: marco@forp.usp.br Web: www.forp.usp.br

INTRODUCTION

Surface electromyography (EMG) can currently be considered a very useful instrument which allows a quantitative assessment of masticatory muscles in patients with temporomandibular dysfunction (TMD) (FERRARIO et al. 2000). The purposes of this study were: to correlate the clinical assessment data before and after the treatment with an occlusal splint for a group patients with TMD, classified according to the RDC / TMD; to compare the results obtained with EMG, before and after treatment with an occlusal splint; to compare the EMG results for this group suffering from TMD and an asymptomatic control group.

METHODS

The electromyographic examination (DeGötzen, srl, Milan Italy) of the masseter (M) and the anterior temporal (AT) muscles was carried out in the first assessment session (Phase 1), after one week (Phase 2) and after five weeks (Phase 3) of treatment, aiming at verifying the stability of the splint and the evolution of the muscular activity in 15 normo-occlusion subjects (Control Group) and 15 patients (TMD Group). The EMG waves were analyzed using the software, and the following EMG indices were calculated: percentage overlapping coefficient (POC) of the M and TA muscles; torque coefficient (TORS); asymmetry index (ASIM); activity index (ATTIV) and the total electrical activity (IMP). For data

expressed at measurement interval levels, nonparametric statistics were adopted, using the Wilcoxon test for the paired data in the intra-group analysis (among the phases). Data at ratio level were analyzed through parametric statistical means: paired data t test for intra-group analysis, independent sample t test for among-group analysis. The significance level was established at 5%.



Figure 1: FARC splint.

RESULTS AND DISCUSSION

After treatment, a statistical significance was found in mouth opening, as well as in the remission in the pain at palpation of a significant portion of the assessed muscles and the TMJ. A significant difference was obtained for the masseter POC and IMP, immediately after the first splint adjustment. When comparing the first phase, without the splint, to the second phase, with the first splint adjustment, a significant difference was observed in the values for masseter POC, ASIM and IMP. There was a significant difference between phase 1, without the splint, and phase 3, with the adjusted splint, for M and TA POC values, ASIM, ATTIV, and IMP. Throughout the entire treatment, there were no significant

differences concerning the EMG index in the examinations performed without the splint. There was a statistical significance between the TMD and the control groups in the beginning and in the end of the treatment, with significant differences observed in POC values for both muscles and ATTIV.

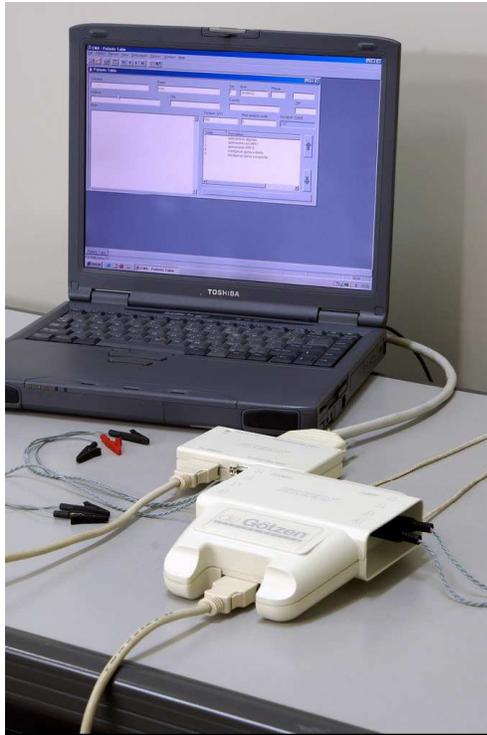


Figure 2: Freely EMG apparatus.

SUMMARY/CONCLUSIONS

The occlusal splint, without provoking permanent changes, proved effective to promote the balance of electromyographic activities during its use, and efficient in relieving the symptoms. The EMG parameters allow its scientific use in identifying neuromuscular unbalance, and as such, this assessment tool allowed an objective analysis and evaluation of the different phases of the traditional treatment for TMD in dentistry, differentiating patients with TMD and asymptomatic individuals.

REFERENCES

Ferrario, V.F.; Sforza, C.; Serrao, G. et al. (2000). An eletromiographic investigation of masticatory muscles simmetry in normo-occlusion subjects. *Journal of Oral Rehabilitation*, **27**, 33-40.

ACKNOWLEDGEMENTS

The State of São Paulo Research Foundation (FAPESP) and Coordination for the Improvement of Higher Education Personnel (CAPES).