ABSTRACT

Backgrounds: Temporomandibular disorders (TMD) represent a group of significant problems in the general population. TMD is a general term used to denote all functional disturbances of masticatory system. Numerous treatment modalities had been advocated for TMD. Much controversy also exists in revealing the etiology factors of TMD.

Objectives: The objectives of this study were first to assess the effectiveness of soft occlusal splint in reducing the postural and maximum clenching electromyographic (EMG) activities of the anterior temporal and masseter muscles in TMD patients, comparing with healthy control subjects. Second is to reassess the effect of soft occlusal splint on muscles activities after six weeks of conservative treatments. Third is to assess the effectiveness of conservative treatments in resolving the pain of patients to resume routine oral function. Fourth is to identify characteristics that were more common among the TMD patients group, which might be indicative of soft splint treatment.

Methodology: In this study, 8 (44.4%) subjects with myofascial pain, 4 (22.2%) subjects with arthralgia with disc displacement, and 6 (33.3%) subjects with both disorders were selected from the patients referred to the Department of Oral Pathology, Oral Medicine and Periodontology, Faculty of Dentistry, University of Malaya. Conservative treatments that comprised patient education and self-care, analgesics and soft splint were prescribed for six weeks. Postural and maximum clenching EMG activity of the anterior temporal and masseter muscle were recorded with and without the splint before the conservative treatment, as well as after six weeks of conservative treatment. Signs and symptoms of patients were followed–up. Patient characteristics were recorded.

Results: Eighteen subjects comprised 9 (50%) Malays, 5 (27%) Chinese and 4 (22%) Indians. The mean age for the experimental group was 28.9 years, with an age range of 14-55 years; whereby males, mean age 33.3 years, age range 15-55 years; and female,
mean age 27.6 years, age range 14-42 years. Before conservative treatment, soft splint significantly reduced the maximum clenching EMG activity of the anterior temporal and masseter muscle of the TMD patients (P<0.05), but not the postural EMG activity (P>0.05); while for that of healthy control subjects, soft splint caused no significant difference (P>0.05). After 6 weeks of conservative treatments, soft splint only significantly reduced the maximum clenching EMG activity of the anterior temporal muscle (P<0.05). Thirteen (72.2%) subjects resumed their routine oral functions after 6 weeks of conservative treatments whereas the remaining 5 (27.8%) did not. All subjects had at least one form of parafunctional habits while 12 (66.7%) subjects had at least one form of adverse usage of the masticatory system.

Conclusion: This EMG results suggested that the soft splint might also reduce the parafunctional muscle activity of the TMD patients such as that of parafunctional clenching. The response of the muscle of TMD patients towards the splint might be more similar to that of healthy individuals as the patients were recovering from TMD. Conservative treatments that comprised patient education and self-care, analgesics and soft splint, seems to be an effective way in resolving the pain of the TMD patients to resume their routine oral function. It seems that functional overloading might be an important etiologic factor in TMD. It was suggested that TMD patients presented with functional overloading such as parafunctional clenching might be beneficial of soft splint treatment.
I would like to express my deepest gratitude and greatest respect to my supervisor, Professor Dr. Siar Chong Huat. Her unbending guidance, patient and kindness has made all this possible. Her favour is greatly appreciated for guiding me from the very start of this study until the end of the thesis write-up. I am immensely grateful to my co-supervisor, Associate Professor Dr. Goh Khean Jin from Unit Neurology of University Malaya Medical Centre, especially in providing invaluable advice and assistance in electromyography test and also in correction of the thesis draft. I am also thankful to Professor Dr. Rosnah Bt. Mohd Zain, the former Head of Department of Oral Pathology, Oral Medicine and Periodontology, especially for supporting my application for postgraduate research fund, scholarship and instrument purchasing. I would like to thank Professor Dr. Rahimah Abdul Kadir, the Dean of the Faculty of Dentistry; and Professor Dr. Tara Bai Taiyeb Ali, the former Head of Department of Oral Pathology, Oral Medicine and Periodontology, for their kind support.

I also wish to acknowledge all the lecturers, staffs and dental surgery assistants of the Department of Oral Pathology, Oral Medicine and Periodontology for their much appreciated advice and assistance. I appreciate the helping hands of the staffs of Unit Neurology of University Malaya Medical Centre, for the technical support. To all my fellow colleagues, they deserved a big thank you for their precious advice and help, as well as their kindness for creating a warm studying environment. Special thanks also to my fellow church members and pastor family for their encouragement and prayers.

Highest glory be to God, for His love, mercy and grace is never ending!

Highest gratitude be to my mum, Liuk Yu Jih Eng, for her love to me is never failing. I am pleased to extend my thanks to my sisters, Ing Kiong and Ing Hong as well as my brother, Ing Kuon, for their support and love that had made this journey so lovely. I wish to honour my dad, Liuk Sing Liing with my heartiest respect and gratitude. He is always in our sweet memory.

This study was funded by Vote F Research Grant F0161/2003B, University of Malaya. The researcher was sponsored by PASCA postgraduate scheme, University of Malaya.