

Background: Bruxism was the commonest of the many parafunctional activities of the masticatory system. Opinions on the causes of bruxism were numerous and widely varying. It can occur on sleep as well as wakefulness. Bruxism was for long considered a major cause of tooth wear. Other effects of bruxism may include tooth movement and tooth mobility, as well as changes in oral soft tissues and jaw bone. Since the exact etiology and manifestations are unclear it was difficult to diagnose Bruxism. In this study we evaluated the area change that can occur on the lower jaw bone in those with Bruxism and comparing the results with nonbruxers.

Aims and Objective: To determine the surface area changes of the mandible, condylar and coronoid processes in Bruxers from Panoramic radiographs and to compare and contrast the changes with age and gender matched controls.

Materials and Method: The study was conducted in the department of Oral Medicine and Radiology. The total sample size was 40. The sample was divided into two groups, Bruxers and nonbruxers with 20 subjects in each group. Healthy volunteers aged between 20- 30 years diagnosed with Bruxism and Healthy volunteers aged between 20- 30 years diagnosed without Bruxism were included in group II (Non Bruxers). Bruxchecker was made use of in confirming the Bruxism in Group I. The Orthopantomogram was used as the imaging modality for the study. The measurements were made with the help of a software, Image J. All the measurements were tabulated and statistical analysis was made using ANOVA (Post hoc) followed by Dunnett t-test and unpaired t-test.

Results and Discussion: The present study was conducted to assess the mandibular surface area changes in bruxers and nonbruxers. It was carried out on a study group comprising 20 healthy individuals as controls in comparison with 20 bruxers (10

males and 10 females). A comparison of the mandibular surface area as a whole and also condylar and coronoid processes individually were carried out. Significant results were obtained in case of condylar and coronoid processes between the two groups. The surface area of condylar process of Group I was found to be lower than that of Group II. The surface area of the right coronoid process of group I was found to be less when compared to that of group II but the values of the left coronoid process of group I was found to be more when compared with group II. The surface area of the mandible showed no significant difference between the groups. There was significant difference between the genders in case of mandible, condyle and coronoid. The surface area of mandible and condylar process was found to be lower in female when compared to male. The surface area of coronoid process was found to be more in case of females when compared to that of males in Group I.

The results of our study show that while the overall surface area of bruxers remain unaffected when compared to controls, the condylar and coronoid process show significant change. The hitherto belief that the primary brunt of bruxism is borne by the masseter would require a revisit since alteration in tonicity of the masseter would reflect in surface area change of the mandible as a whole. An increase in the surface area of the coronoid process in bruxers was observed in our study which could be attributed to altered activity of the temporalis, a muscle largely responsible for the posture of the mandible. This could imply that bruxers show alteration in temporalis activity which would explain several clinical manifestations such as headache, neck pain, shoulder pain and altered posture and so on which we have observed in the clinical practice of neuromuscular dentistry. Further studies

examining the activity of the temporalis and masseter would further corroborate our findings and for the basis for future research in this arena.

Conclusion: This study is an original study that was carried out to assess the surface area changes in mandible and condylar and coronoid processes of Bruxers and nonbruxers. The results showed significant changes in the surface area of condylar and coronoid process in Bruxers when compared to the controls. This study was a step made to assess the bony changes in Bruxers which is seldom carried out by other researchers. We hope this study would be a stepping stone for the future studies in this field.

Key words: Bruxism, Condyle, Sleep Bruxism, temporomandibular joint, temporomandibular joint disorders.