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## The fine distance between Chewing and Bruxism

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Mastication is an essential function for survival of human organisms and has long been a subject of study in the dental literature. Knowledge of how the mandible moves during mastication has greatly influenced procedures in clinical dentistry. The aim of this overview is to give basic description of the classical studies of the physiology, function and neural control principles of the mastication. Mastication is the action of breaking down the food, preparatory to deglutition. This breaking down action is highly organized complex of neuromuscular and digestive activities. The duration and forces developed in the power stroke vary within, between individuals and for the type of the food chewed. Observation of masticatory movements may be of diagnostic value for assessing disorders of the stomatognathic complex system. The action of masticatory muscles during chewing varies between subjects in amplitude, onset timing, and duration of the chewing cycle. For dentists, understanding mastication is of utmost importance. The teeth that we repair, restore, move or periodically extract and replace, masticate food for our patients, allow good speech pronunciation, posture and preserve esthetics of the patients face

A Mastication Cycle is comprised of three phases: Opening Time (OT), Closing Time (CT) and Occlusal Time (OcT). Normal cycle time varies from 600-900 milliseconds. The Turning Point (TP) is the point at which the jaw ceases opening and begins closing. This TP is shown in millimeters in three dimensions relative to CO - Centric Occlusion with teeth together. The Terminal Chewing Position (TCP) Point is the point at which the teeth cease moving together (maximum bolus compression). Dysfunctional mastication can have several causes: TM joint pathologies, muscle pathology, tooth interferences or tooth pain avoidance. Mastication analysis can be excellent tool in diagnosing of these problems (Fig.1). According to the results from the non-parametric statistical analysis, the frequency of the following signs and symptoms was significant: Fatigue and muscle pain, joint sounds, tinnitus, ear fullness, headache, chewing impairment and difficulty to yawn ( $p < 0.01$ ) and otalgia ( $p < 0.05$ ). As to the parafunctional oral habits, there was a significant presence of teeth clenching during the day and night ( $p < 0.01$ ) and teeth grinding at night ( $p < 0.05$ ). Although bruxism is a frequent habit in adults (Fig. 1), its causal factors are complex and still not fully understood. Until a few years ago peripheral factors, such as occlusal disorders and anatomical alterations, were the most commonly implicated. However, current research has questioned the action of occlusion on the origin of bruxism, promoting conceptual change that suggests the influence of the central nervous system and psychogenic factors. Thus, we believe that the multifactorial theories may be the most plausible hypothesis (Fig. 2). Bruxism can cause signs and symptoms of temporomandibular disorders (TMD). Moreover, it will affect and slowly destruct structures of the masticatory system, causing significant problems to the patients.

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