Title: A Case Report of Bruxism and Its Management with the Help of Occlusal Splints.

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Abstract:
Bruxism is considered as normal habit, but in case of certain circumstances like increased frequency of episodes and strength of the masticatory muscles, it can turn into pathological
phenomenon. Bruxism is an umbrella term used for the parafunctional habits of grinding and clenching of teeth. It can occur during wakefulness (clenching) or during sleep (bruxism). The early diagnosis and treatment can prevent the consequences of the breakdown of the dentition and the orofacial pain. This case report presents the successful treatment of occlusal splint therapy in patients with severe bruxism.

**Keywords:** Bruxism, attrition, clenching, malocclusion, splints

**Introduction:**
Tooth grinding and clenching is an activity of importance to the dental specialist as it involves tooth damage, breakage of dental restorations, temperomandibular disorders and possible induction of temporal headache. Bruxism is thought to be an involuntary nonfunctional activity involving masticatory system and is regarded as by teeth clenching or grinding of teeth. It is classified as a psychophysiological disorder and it may occur during waking or sleeping, consciously or unconsciously. This habit is quite common during childhood and can lead to negative consequences on the stomatognathic system. Prevalence of bruxism in children is from 7% to 15.1% and girls are more commonly affected than boys. It is always a challenge for both for the dentist and the patient to treat such type of occlusal related disorders. Various treatment modalities were considered in the management of bruxism, occlusal splint is one of them. The art and science of dentistry can be considered in the occlusal splint design and function. This case report presents the successful treatment of occlusal splint therapy in a patient with severe bruxism.

**Case report:**
A 31 year old male patient came with a complaint of severe loss of coronal tooth structure in the upper anterior region of the jaw. The patient was also complaining of the sensitivity of the maxillary anterior teeth to hot and cold beverages. Medical, drug and social history were within normal limits. Clinical examination revealed maxillary anterior teeth showing severe attrition while other teeth had less attrition. (Fig. 1) The patient also complained of infrequent pain at the temporomandibular joint with a clicking sound since 4-5 months. By thorough examination and history of the patient the diagnosis of the bruxism was made and the patient was planned for the treatment with the help of a permissive occlusal splint. The permissive occlusal splint was prepared on the models and given to the patient for the daily use. (Fig. 2, 3 and 4) All the instruction for the use of the occlusal splints were given to the patient and follow up of the patient was done after 3 months and patient shown improvements in the symptoms and the attrition of the teeth were also stopped.

**Discussion:**
Marie Pietkiewicz in 1907 introduced the term ‘la bruxomanie’. It was then implemented as ‘bruxism’ to designate gnashing and grinding of the teeth happening lacking a functional purpose. Glossary of Prosthodontic Terms called bruxism as an oral habit of parafunctional grinding and clenching of teeth. Bruxism etiology is multifactorial and still not completely understood. It can involve local, systemic or psychological factors and related to sleep disorders. Previously, peripheral factors such as occlusal discrepancies and deviations in orofacial anatomy have been measured the main causative factors for bruxism.
These factors are known to play a minor role, if any. Recently, the focus is more on central factors, psychosocial factors like stress and certain personality characteristics. Further, it has been shown that bruxism is part of a sleep arousal response. The diagnosis of sleep consists of clinical signs and symptoms such as tooth wear, pain in the facial muscles, headaches reported or observed by polysomnographic changes (in cases of nocturnal bruxism). Various treatment modalities have been proposed like pharmacological, psychological, and dental. Pharmacological management includes drugs like benzodiazepines, beta blockers, anticonvulsants, dopamine agents, muscular relaxants, antidepressants, and others. Local injections of botulinum toxin can be administered for the patients with severe bruxism for the elimination of symptoms. But, its effectiveness and pharmacological safety are not known. The psychological management involves a behavior therapist like sleep hygiene, relaxation to control stress, psychotherapy, hypnosis, and biofeedback. Dental management of bruxism include tooth surface restoration, occlusion adjustment, and orthodontic treatment.

Occlusal splint therapy is commonly used for the diagnosis of bruxism and with many types of appliances available currently for neuromuscular stabilization. These devices are also called as flat plane, myo-relaxation splint or inter-occlusal splint. It was used not only to stabilize the TMJ but also protect the teeth, relax masseter and temporalis muscles, increase inter-vertebral and inter discal space, allow the balance of bite forces and decrease bruxism activity. Occlusal therapy is the art and science of establishing neurovascular harmony in the masticatory system by formation of mechanical lockage for the parafunctional forces with the help of removable appliances.

Previous studies had shown many signs and symptoms treated with occlusal splints. Our case report showed that the patient presented a decrease in or elimination of the signs and symptoms related to bruxism, after a period of 6 months of occlusal splint usage. One of the most frequent clinical signs was the presence of temporomandibular joint clicking sound click which occurs mainly during the early phase of mouth opening. In our case using the occlusal splint, there was a marked decrease of the joint noises, considering that this sign was disappeared. The various types of occlusal splints available are permissive, non-permissive, hydrostatic and silicon splints. Splints distribute the forces across the masticatory system. Thus decreases the episodes of bruxism and its effects.

The exact mechanism of action of occlusal splints is not completely known. Some theories were put forward to explain its mechanism like: alteration or improvement of the occlusal condition, alteration or raising in the vertical dimension, change in peripheral (motor or afferent) impulses to the central nervous system, alteration of the TMJ condylar position, placebo effects and increase in the cognitive awareness. The occlusal splits also function for the providing diagnostic information in various ways. The dental practitioner can determine potential neutral zone impingements, envelope of function, anterior guide requirements, and parafunctional habits and can also obtain information about vertical dimension of the patients wearing occlusal splints.

Conclusion:
Bruxism is commonly seen oral parafunctional habit having adverse effects on the dentition. Early diagnosis and management can not only decrease the symptoms, but also prevent psychological trauma to the patient. Our case report had shown the successful management of the patient using occlusal splints. Studies should be done on occlusal splints including of a large number of patients of bruxism.

References:

Figure legends:
Fig. 1: Clinical picture of the patient showing severe attrition of the maxillary anterior teeth and also attrition of all other teeth present.
Fig. 2 and 3: Maxillary and mandibular models prepared for the construction of the occlusal splints.
Fig. 3: Placement of the occlusal splint in the patient mouth.

Figures:
Fig.1:
Fig. 2:

Fig. 3:
Fig. 4: