

Bruxism And Its Management-An Overreview

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Abstract

Bruxism is defined as a periodic movement disorder, characterized by tooth grinding and clenching occurring during sleep, associated with rhythmic masticatory muscular activity. The results showed that the vast majority had pain symptoms, difficulty in opening the mouth, pain while chewing. Temporomandibular disorders a collective term that embraces several clinical problems, involve the masticatory musculature and the temporomandibular joint and associated structures. It has been identified as a major cause of non-dental pain in the orofacial region and are also considered to be a sub-classification of musculoskeletal disorders. This review article mainly outlines the various aspects of bruxism, the diagnostic and the therapeutic modalities.

Keywords: *Bruxism,temporo-mandibular joint,non-dental pain.*

I.Introduction

Bruxism is derived from the Greek word meaning “gnashing of teeth”. People who suffer from bruxism are referred to as “bruxists”. Some of the definitions of bruxism include: “A movement disorder of the masticatory system characterized by teeth grinding and clenching during sleep as well as wakefulness’ as defined by Cawson et al.^[1] Shetty et al., defined bruxism as the “non-functional contact of the mandibular and maxillary teeth resulting in clenching or tooth grinding due to repetitive, unconscious contraction of the masseter and temporalis muscles”.^[2] “Parafunctional grinding of teeth or an oral habit consisting of involuntary rhythmic or spasmodic non-functional gnashing, grinding or clenching of teeth in other than chewing movements of the mandible which may lead to occlusal trauma.” was the definition proposed by Lobbezoo et al in 2006 and Persaud et al defined it as the ‘Periodic repetitive clenching or rhythmic forceful grinding of the teeth.’^[3,4]

II. Prevalence and etiology

From the beginning of 1970, the prevalence of signs and symptoms associated with bruxism has been analyzed in numerous epidemiologic studies in different populations.^[5,6] According to these studies and literature reviews, approximately one-third of the adult population reports symptoms and approximately 40–60% have signs of TMD. The treatment needed owing to bruxism in adults was estimated at 16% in a meta-analysis.^[7] The prevalence figure of treatment need itself indicates that bruxism is a significant health problem. The highest prevalence of TMD symptoms in bruxist patients is reported in the 20 to 40 age population and after the retirement age the

prevalence gradually decreases.^[8] Variables conventionally used to describe the functional status of the masticatory system have been reported to be, at best, of modest value in the estimation in healthy young subjects of the individual risk of developing TMD. The etiology of bruxism is considered multifactorial and may be viewed in the light of contributing factors. They are of three types: Predisposing factors, which may increase the risk of developing a condition; initiating factors may cause the onset or incidence of the condition; while perpetuating factors may contribute to the maintenance or persistence of the condition in focus. Studies have reported significant psychosocial risk factors for bruxism, mainly a stressful lifestyle, and this evidence is increasing, but still not conclusive.^[9] Emotional stress is considered to be the main triggering factor.^[10] Research suggests that there may be a degree of inherited susceptibility to develop SB.^[11] 21–50% of people with SB have a direct family member who had SB during their childhood, suggests that there are genetic factors involved.^[12] Occlusal interferences also contribute majorily to bruxism habits.

III. Risk factors

Over the years a variety of etiological or contributing risk factors have been proposed. Some of these factors are related to dental occlusion, behavioral factors such as clenching, micro trauma caused by repeated overloading of the jaw system, joint hyper-mobility, or external trauma.^[7] A succession of articles has described the functional relationship between the temporomandibular and craniocervical neuromuscular systems and impaired jaw function following a whiplash trauma, trauma following endotracheal intubation or third-molar extraction has also been disclosed as a possible risk factor to TMD^[13]. Furthermore, psychological factors and depression, social and general health factors, inflammatory diseases and pain in the neck) or back^[14].

IV. Types of bruxism

There are various classifications proposed for bruxism, but it can be mainly classified as primary (idiopathic) bruxism, in which case there is no associated medical condition and Secondary (iatrogenic) bruxism, in which case there is an associated medical condition such as coma, icterus, cerebral palsy. Another classification subdivides bruxism into two types based upon when the parafunctional activity occurs as Sleep Bruxism (SB-during sleep) and Awake Bruxism (AB-during consciousness). The causes of sleep and awake bruxism may be different, but the effects of the condition caused by both of them on the teeth are the same. The treatment is also often dependent upon whether the bruxism happens during sleep or whilst awake. e.g., an occlusal splint worn during sleep in a person who only bruxes when they are awake will probably have no benefit.^[4] Some authors have even suggested that sleep bruxism is an entirely different disorder and is not associated with awake bruxism.^[3] According to the International Classification of Sleep Disorders revised edition (ICSD-R), the term “sleep bruxism” is associated only to a particular period of time, i.e. if a person with sleep bruxism were to sleep during the day and stay awake at night then the condition would not occur during the night but during the day hence

referring to it as parasomnia.^[5] bruxism hence forms a major component of Temporomandibular joint Disorders (TMD).

V. Signs and symptoms of bruxism

There are a plethora of symptoms that can be regularly noted in bruxists, and they aid as an important diagnostic tool. They include regular and periodic contractions of the jaw muscles, grinding of teeth, accompanied by a characteristic sound that may even awaken the Bruxer's bed partner, a slight dull morning headache, difficulty in opening the mouth widely in the morning due to stiffness in the jaw muscles and long-lasting pain in the face. Other less common symptoms include pain resembling earache, slight dizziness, hearing problems and swelling (occasionally) on the side of lower jaw caused by clenching. Intraorally abnormal tooth wear, tongue indentations, linea alba along the occlusal chewing plane, multiple gingival recession, reduction of salivary flow, breakage of fillings and/or teeth and sudden change in occlusion can be seen.

VI. Diagnosis of bruxism

The ICSD-R listed the following diagnostic criteria for sleep bruxism^[11]. The minimal criteria should include both of the following: Symptom of tooth-grinding or tooth-clenching during sleep, and one or more of the following: abnormal tooth wear; grinding sounds and/or discomfort of the jaw muscles. The above mentioned criteria can be additionally supported by using a polysomnography which can depict activity of jaw muscles during sleep with no associated epileptic activity and no other medical or mental disorders (e.g. sleep-related epilepsy, which may cause abnormal movement during sleep) and the presence of other sleep disorders (e.g. obstructive sleep apnoea syndrome).

V. Clinical presentation in bruxism

Some of the diagnostic features for bruxism include functional tooth wear (i.e.,) attrition facets, widened periodontal ligament (PDL) space, trabeculation of the alveolar bone, exostosis formation, masticatory muscle tiredness, recurrent migraine, fractured filling (or) split teeth, soreness of the oral mucosa beneath the denture, tenderness on percussion, mucosal ridging of tongue and cheeks, increase in size of temporal and masseter, lateral pterygoid, deviation of the lower jaw on opening, limited opening and increased mobility of teeth.

VI. Treatment of bruxism

The management of bruxism encompasses a multistage approach. The initial step is to eliminate the causative factors such as behavioral habits, occlusal disturbances and musculoskeletal discrepancies and finally to manage the intraoral and extraoral disturbances caused by the habit. According to Welden E. Bell. ^[16] daytime bruxism, can be controlled by habit training to voluntarily leave the teeth separated or ajar. The use of remainders such as a small piece of chewing gum patted along the occlusal surface of the molar teeth may be helpful. Nocturnal Bruxism may be reduced by sleeping flat on the back without a pillow, by autosuggestion that "I will not clench my teeth while asleep" or by positive posthypnotic suggestion.

He also formulated the tension control program that included the following:

Medicinal therapy in the form of tranquilizers (i.e. a dose of 25 mg hydroxyzine 1 h before bedtime).

Psychological care including counseling, autosuggestion, hypnotherapy (or) psychotherapy, relaxation techniques, stress management, behavioral modification, habit reversal and hypnosis (self-hypnosis or with a hypnotherapist).

Cognitive behavioral therapy has been recommended by some for treatment of bruxism ^[17].

Bio feedback technique

Genuine understanding and empathy.

The treatment of Bruxism can also be done by classifying the patients into reversible and irreversible stages.

Irreversible bruxism- Occlusal adjustments at initial stages through selective grinding, occlusal rehabilitation, orthodontics and oral rehabilitation at advanced stages.

Reversible bruxism- the main aim is to control the contributing factors and psychic factors by psychotherapy, relaxation, yoga and medications.

Behavioural approaches

This procedure can be used for bruxism during awake as well as for sleep bruxism. While awake patient can be trained to control their jaw muscle activities through auditory or visual feedback. for sleep bruxism auditory, electrical, vibratory or taste stimuli can be used for feedback ^[14]. Other behavioral approaches include psychoanalysis, hypnosis, progressive relaxation, meditation, self-monitoring.

Biofeedback:

Biofeedback works on the principle that “bruxers can unlearn their behavior when a stimulus makes them aware of their adverse jaw muscle activities”. Mittelman explained an EMG technique that offers the daytime bruxer with auditory feedback from his/her muscle activity. This provides information on their muscle activity. Nissani used a taste stimulus to awaken the patient, in case of sleep bruxism^[19]. In recent years, contingent electrical stimulation (CES) has appeared in an attempt to reduce the masticatory muscle activity associated to sleep bruxism.

Oral splints

Oral splints are the most advocated treatment for patients suffering from bruxism as well as for temporo-mandibular joints disorders. An occlusal splint is a removable dental appliance that covers several or all the upper or lower teeth. Occlusal splints are typically constructed of hard acrylic resin. There are various types of occlusal splints available such as

Flat plane splint. This splint covers all the upper teeth, and its flat surface will help reduce tooth grinding and relax jaw muscles. However, it does not prevent tooth clenching because the lower teeth are still exposed.

Modified Hawley splint. This splint fits on the upper jaw and makes contact with only the six lower front teeth. This hence keeps the posterior teeth from touching and prevents both grinding and clenching. It is generally worn only at night because constant wear may allow the back (posterior) teeth to shift.

NTI-tss (Nociceptive Trigeminal Inhibition Tension Suppression System). The NTI oral splints fit on the upper front teeth. As it fits only to a very less number of teeth it provides a great deal of stress.

Drug therapy

Drug that affects muscle function by exerting a paralytic effect through an inhibition of acetyl choline release at the neuromuscular junction in botulinum toxin. Tan and Jankovic concluded that this drug can be administered as a safe and effective treatment for severe bruxers. They also stated that this treatment modality should be confined to patients who are refractory to conventional treatments and placebo controlled studies are needed before evidence based recommendations can be given^[20]. Other drugs that are being recently used are:

Nonsteroidal anti-inflammatory drugs (NSAIDs) -- to relieve pain. These drugs include ibuprofen (Advil, Motrin) and naproxen (Aleve).

Local anesthesia injections

Corticosteroid injections, for severe cases

VII. Bruxism and the periodontium

Past theories suggested that bruxism may be also a potential risk factor for overload of the teeth-supporting tissues, viz., the periodontium as well as on natural teeth and restored implant supported dentitions.^[21,22] Bruxism can seriously exacerbate existing periodontal disease, making the attachment apparatus more vulnerable to breakdown. The force from clenching and grinding can damage the teeth's supporting tissues, deepening periodontal pockets and increasing tooth mobility.

VIII. Conclusion

In otherwise healthy individuals, bruxism should not be considered as a disorder, but rather as a behavior that can be a risk (and/or protective) factor for certain clinical consequences. In the absence of a causal treatment, the management of bruxism focuses to prevent progression of dental wear, reduce teeth grinding sounds, and improve muscle discomfort and mandibular dysfunction in the most severe cases. Counselling and behavioral strategies, splint therapy, medications, and contingent electrical stimulation have shown heterogeneous results in resolving the events associated with bruxism. Long-term studies with a wide severity spectrum of sleep bruxism patients, and comparing the effect of different treatments should be performed to elucidate the importance of each intervention in the resolution of the signs and symptoms commonly referred by the patients.

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