



BRUXISM: A LITERATURE REVIEW

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ABSTRACT

The word "brychein" is derived from the Greek word "brychein." The term bruxism refers to the grinding of teeth. It refers to jaw motions that are not part of the teeth and jaws' typical functional activity (e.g., speaking, chewing/swallowing). Bruxism can be a type of motor dysfunction characterised by teeth grinding and clenching. Awake bruxism is more common in women, whereas sleep bruxism has no gender preference. The three groups of bruxism aetiology are psychosocial factors, peripheral factors, and pathophysiological causes. Occlusal correction, behavioural adjustments, and a pharmaceutical approach are among the treatment options.

KEYWORDS : Bruxism, Clenching, Sleep Bruxism, Awake Bruxism

INTRODUCTION

Bruxism is an oral habit that involves involuntary rhythmic or spasmodic non-functional gnashing, grinding, or clenching of teeth, in addition to chewing movements of the mandible, which can cause occlusal injuries.

Bruxism is an oral motor disorder that has sparked attention in dentistry, sleep, and neurological studies. The American Academy of Sleep Medicine defines bruxism as "repetitive jaw muscular activity characterized by the clenching/grinding of teeth and/or thrusting of the mandible" that can occur while awake (awake bruxism) or while sleeping (sleep bruxism) [1]. According to the dictionary of dental prosthetics, bruxism, which is an unconscious oral habit of dysfunctional rhythmic pressing, clenching, or grinding of the teeth, is not part of the masticatory function that leads to occlusal injuries.

Bruxism is an oral parafunctional activity that has no connection to regular physiological functions including speech, breathing, chewing, or swallowing [2,6]

Cannot be termed a habit because there is nearly always a distinct underlying etiologic component, such as occlusal discrepancies, but Bruxism can be considered a habit if habitual grinding continues even after the causative reason is removed. [1]

Bruxing when awake in youngsters, which shows as teeth clenching and typically occurs without any cognitive awareness, particularly during stressful conditions or intense concentration. [1,2]

Bruxism can happen when you're awake or while you're sleeping. Bruxism during the day is a semi-voluntary 'clenching' behaviour that is also known as 'Awake Bruxism' (AB) or 'Diurnal Bruxism' (DB). AB is linked to life stress brought on by familial responsibilities or professional pressure.

Bruxism that occurs during sleep, whether during the day or at night, is known as 'Sleep Bruxism' (SB) [4]. Sleep bruxism is an oromandibular habit defined as a stereotyped movement problem characterised by tooth grinding and/or clenching that occurs during sleep. According to the most recent categorization of Sleep Disorders, sleep bruxism is now classed as a sleep associated movement condition.

ETIOLOGY

The cause of bruxism has yet to be determined. Bruxism is linked to anatomy, morphology, and tooth occlusion. Sleep disorders (sleep apnea/snoring) and involving the deep aminergic system are often considered causes of bruxism. Psychosocial factors such as stress or personal characteristics, as well as pathophysiological factors (e.g. illness, trauma, genetics, smoking, intake of excessive caffeine, medications and illicit drugs), sleep disorders (sleep apnea/snoring), and pathophysiological factors (e.g. illness, The occurrence of bruxism is caused by a combination of factors [7]. It is also clear that there is no universally effective treatment to prevent or lessen its recurrence.

FACTORS IN NEUROLOGY

Some neurological pathologies, such as dyskinesias, Parkinson's disease, and other extrapyramidal disorders, may be linked to parafunctional oral activity [8]

FACTORS OF PSYCHOLOGY

Several research on the role of psychosocial factors in the aetiology of bruxism have been reported in the literature, however none of them are conclusive due to the lack of large-scale longitudinal trials. In the presence of depression, heightened levels of aggression, and stress sensitivity, bruxers vary from healthy individuals. Children who brux are more worried than children who do not bruxism. [8] A multivariate large-scale population research of sleep bruxism found that living in a stressful environment is a significant risk factor.

MEDICATIONS

Several drugs have been shown to cause bruxism, including the following:

Amphetamines

L-dopa is a kind of dopamine that is produced in the brain.

Neuroleptics and antipsychotics are common causes of dyskinesias.

Drugs used for recreation, such as (heroin, cocaine, ecstasy, marijuana, crack, LSD, methadone).

Respiratory Factors

Bruxism, often known as habitual snoring, is directly linked to snoring. Many parents of mouth breathers have complained about their children's sleep bruxism.

One theory proposes a link between bruxism and upper airway blockage, with sleep bruxism being caused by obstructive sleep apnea. When sleeping in the supine posture, bruxism appears to be more common, which is linked to a higher risk of airway obstruction[9]

A relationship between bruxism and tonsillar hypertrophy has been discovered, which is strongly linked to upper airway blockage. Adenotonsillectomy surgery has been demonstrated to help certain children with bruxism.[8]. Allergic conditions such as asthma and respiratory airway infection can also induce bruxism.

Types

Daytime bruxism, also known as diurnal bruxism, is the conscious or subconscious grinding of teeth that occurs most often during the day. It can also happen in conjunction with non-functional behaviours like chewing pencils, nails, cheeks, and lips. Unless a patient has an organic brain ailment, it is typically silent.

Nocturnal bruxism: is the unintentional grinding of teeth that is characterised by repetitive patterns of masseter EMG activity during night.

Clenching (CENTRIC BRUXISM): a forceful clenching of the teeth is a common symptom of increased muscle tone caused by emotional stress. It can also happen while you're doing a lot of heavy lifting or doing other strenuous activities. Bruxism is a type of abnormal clenching that happens when there is no physical or emotional stimulus (centric bruxism). In most cases, habitual clenching does not result in apparent jaw movement, although teeth with repeated clenching activity, on the other hand, may shift or loosen teeth with deflective early contacts. Patients rarely realise they are clenching their teeth.[8]

ECCENTRIC BRUXISM: Eccentric bruxism is the grinding of the lower teeth against the upper teeth for no apparent reason during excursive paths. If left untreated, it can cause severe attrition and wear of the occlusal surfaces, as well as hypermobility of teeth. It can also contribute to adaptive changes in the TMJs, such as flattening of the condyles and eventual loss of eminentiae convexity. The masseter muscles in severe bruxers are frequently enlarged, sometimes to the extent of visible changes in facial form. Muscle spasms, cracked teeth, and fractured fillings are all symptoms of bruxism[11]. It appears as a screeching, grating noise in the middle of the night, which has kept many partners awake. One of the most peculiar elements of bruxism is that the bruxer is often completely oblivious of his or her behaviour. Bruxers face some of the most challenging difficulties in restorative dentistry, and the difficulty rises with the degree of the wear they cause.[11,16]

SLEEP BRUXISM: Sleep is divided into 3–5 cycles of non-rapid eye movement (NREM) and rapid eye movement (REM) periods, with a REM latency of 90–120 minutes. Light sleep

(stages 1 & 2) and deep sleep (stages 3 & 4) are two types of non-REM sleep (stages 3 & 4). The majority of SB episodes occur during light periods of non-REM sleep (stages 1 and 2), with a small percentage (10%) occurring during REM sleep in connection with sleep arousals. Momentary (3–15 s) cortical brain activations, elevations in heart rate, and motor activity characterise the latter. Muscles are usually relaxed to the point of paralysis during REM sleep, yet brain activity is identical to that seen when awake. SB during REM sleep could be a mild form of REM sleep behaviour disorder, a parasomnia in which vivid dreams are played out while sleeping. Talking, shouting, hitting, kicking, sitting, springing out of bed, arm thrashing, and grabbing are examples of dream-enacting behaviours.[11]

Children With Bruxism

At night, jaw clenching is quite common in children under the age of five. It can be extremely weak at times, or it can be strong enough to wake up parents and siblings. The parents are frequently distressed and concerned.[8] If the condition persists, it may result in dental lesions and malocclusions in the future. Teeth grinding can be caused by a variety of reasons, including local, systemic, and psychological ones. This condition can affect both primary and permanent dentition. It has been noticed in children during two stages of primary and permanent tooth eruption, and it normally disappears during adolescence.

Because occlusal interferences develop spontaneously during tooth eruption, most children grind their teeth at some point. Bruxism is frequent throughout the mixed dentition stage, and some children acquire such severe bruxism patterns that their deciduous teeth are worn flat. There are numerous more explanations for why children grind their teeth. The child who "has worms" is arguably the most popular.[16]

There may be a variety of factors that enhance the likelihood of bruxism, although their effects are minimal in the absence of occlusal interferences. Because all children experience occlusal interferences at some point in their lives, this assertion becomes academic. Despite the amount of noise produced by bruxism, the problem is not generally problematic. The defiance of a youngster to bruxism is so high that it poses no damage to the dentition.

Diagnosis

Subjective reports, clinical tests, and trial oral splints are all used at the chairside to detect bruxism. The following are the diagnostic criteria for the SB based on the International Classification of Sleep Disorders: The presence of (a) regular or frequent tooth grinding sounds while sleeping and (b) one or more of the following clinical signs:[18] I abnormal tooth wear, (ii) transient morning jaw muscle pain or fatigue, and/or temporal headache, and/or jaw locking upon awakening, all of which are consistent with reports of tooth grinding while sleeping. Because patients may sleep alone (or be edentulous) and have concurrent TMD or medical illnesses, chairside diagnosis has several limits and may not be useful.

Electrophysiological instruments are the only way to make a definitive diagnosis of bruxism. PSG (Polysomnography) is a laboratory-based test that can detect SB as well as other sleep disorders such sleep apnea, periodic limb movements, and parasomnias. Brain activity (electroencephalogram), eye movements (electrooculogram), jaw/leg movements (electromyogram), heart rate/rhythm (electrocardiogram), thoracoabdominal motions, oronasal airflow, and oxygen saturation are all examples of objective PSG recordings.[11,18].The PSG is not feasible for detecting bruxism in the dentistry environment since the cost is rather high and the patients are significantly inconvenienced. Furthermore, recordings are made in an unknown setting

rather than in a dental office.

Management Of Bruxism

Mouth Protectors (Occlusal Splints)

For "bruxers," a mouthguard may be beneficial. Occlusal splints protect the teeth by cushioning them and preventing them from grinding against one another. Mouthguards, on the other hand, are most effective for those who suffer from sleep bruxism because they can be used at night.

If you grind your teeth at night, custom-made mouthguards can help protect your teeth from wear and injury. A mouthguard can also help to relieve any tension or soreness in the jaw.

Over-the-counter mouthguards are more expensive than custom-made mouthguards. They may, however, be a superior option for some patients.

Personalized mouthguards are available in a variety of thicknesses. They may be tailored to the exact size and form of the jaw. Because they are composed of durable acrylic, custom mouthguards are usually more comfortable than store-bought versions. Plastic is commonly used in over-the-counter mouthguards.[20] Custom-made mouthguards may be more comfortable than plastic mouthguards.

For severe bruxism, over-the-counter mouthguards may not be as effective as customised solutions. Because of the soft, squishy material, some people find that wearing a soft night guard actually intensifies their muscle clenching or grinding. However, for bruxers who are experiencing minimal tooth grinding, they are a cost-effective and realistic therapy option.

Contingent electrical stimulation

In an attempt to minimise the masticatory muscle activity associated with sleep bruxism, contingent electrical stimulation (CES) has reappeared. The reasoning behind CES is to suppress the bruxism-causing masticatory muscles by administering low-level electrical stimulation to them when they become active, i.e. during a bruxism episode[27]. Two investigations used CES in patients with signs and symptoms of sleep bruxism and myofascial pain, and found that utilising CES reduced the number of EMG episodes per hour of sleep, but had no effect on pain or muscular tension scores[6]. These findings in a sample of women with sleep bruxism and myofascial pain also revealed that CES' efficacy in reducing nocturnal bruxism occurrences was limited to active participants. Even if these findings are encouraging, the unknown effect on tooth wear as well as the limited impact on pain symptoms may limit its widespread use.

Dental correction

Correction of the teeth

In severe circumstances, such as when tooth wear has resulted in sensitivity or the inability to chew properly, your dentist may need to modify your teeth's chewing surfaces or use crowns to fix the damage[27].

Medications that relax the muscles

Taking a muscle relaxant for a brief length of time before bedtime. Medication isn't very effective for treating bruxism in general, and additional research is needed to assess its efficacy.

Anxiety or stress medication

Antidepressants or anti-anxiety drugs taken for a short period of time to help you cope with stress or other emotional concerns that may be triggering your bruxism.

Botox Injections

Botulinum toxin (botox) injections may help lessen teeth grinding discomfort and frequency in otherwise healthy

patients. A medical expert injects a little dose of botulinum toxin into the masseter muscle during the therapy of bruxism with the neurotoxic protein. This is a big muscle that regulates the activity of other muscles. Bruxism cannot be cured with Botox. It acts as a muscle relaxant for a short period of time[30]. This aids in the reduction of teeth grinding as well as its associated adverse effects and symptoms. The benefits are usually only available for three to six months. As a result, treatment is often repeated.

Treatment with biofeedback

Biofeedback is a technique that assists people in becoming aware of and eliminating unwanted behaviours. The treatment aids in the reduction of both waking and sleeping bruxis[26]. A professional therapist teaches bruxers how to control their jaw muscle activity and movements during biofeedback treatment. Electromyography provides visual, vibratory, and aural feedback throughout this training.

Electromyography is a technique used in electrodiagnostic medicine. Electrical activity generated by skeletal muscles is measured and recorded during this method.

CONCLUSION

In the absence of a cure, bruxism management focuses on preventing tooth wear, reducing teeth grinding sounds, and, in the most severe cases, improving muscular soreness and mandibular dysfunction. Counseling and behavioural methods, splint therapy, medicines, and contingent electrical stimulation have all shown mixed results in resolving EMG episodes related with sleep bruxism, and most RCTs did not look into the impact of other symptoms like pain or tooth wear progression. Long-term studies with a wide severity spectrum of sleep bruxism patients, evaluating the effect of different therapies, and elucidating the value of each intervention in the resolution of the signs and symptoms usually referred by patients should be conducted. At least in asymptomatic patients with just modest dental wear, the option of not treating bruxism should be examined further. Even more research is needed to effectively treat awake bruxism, which currently lacks RCTs.

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