



BRUXISM IN PEDIATRIC PATIENT: A CASE REPORT

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ABSTRACT

The nonfunctional clenching or grinding of teeth is known as bruxism. In children and teenagers, these behaviours are rather prevalent. The psychologist and paediatrician require assistance in determining whether this dysfunctional conduct requires treatment. The disorder can be defined as a multidimensional problem in which determining the need for therapy depends on recognising the nature of the symptom (duration, intensity, and harm) as well as the likely theoretical explanation.

Bruxism can start as soon as the teeth emerge. The period of mixed dentition (i.e., ages 7-15) has the highest frequency in children, with a lower incidence in late adolescence. Bruxism may be triggered by the formation of new occlusal connections.(1)

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INTRODUCTION

The term "bruxism" comes from the Greek word brygmós, which means "gnashing of teeth."

Bruxism is a diurnal or nocturnal parafunctional activity that includes unconscious clenching, grinding, or bracing of the teeth, according to the American Academy of Orofacial Pain.

"Due to repetitive and unconscious contraction of the masseter and temporalis muscles, non-functional contact of the mandibular and maxillary teeth results in clenching or tooth grinding."

"Parafunctional grinding of teeth" is defined as "an oral habit characterised by involuntary rhythmic or spasmodic non-functional gnashing, grinding, or clenching of teeth other than chewing movements of the mandible, which can result in occlusal damage and periodontal breakdown."

The International Classification of Sleep Disorders includes bruxism (ICSD). After sleep, talking, and snoring, bruxism is the third most frequent sleep disturbance.(2)

The prevalence of bruxism in children is high and persists throughout their growth. If nocturnal bruxism is considered a sleep problem, early treatment may result in the prevention of temporomandibular joint dysfunction.

The prevalence of bruxism in children with otitis media or a common ear infection caused by an allergy or other illnesses of the Eustachian tubes could imply that this is the source of the habit's initiation.

The trigeminal nerve appears to stimulate nuclei in both the jaw and the middle ear.(1)

As a result, the concept that risk factors are antecedents of TMJ dysfunction should be investigated further. If bruxing is frequent and intense, it can lead to a variety of issues. High tooth mobility, which is seen in bruxing youngsters in the morning, can cause gingivitis to develop into deeper periodontal structures, resulting in alveolar bone loss. The occlusal wear on 90% of tooth grinders is bright and uneven. Abrasion and pulp exposure can lead to dental abscess and pain.

TMJ disturbances and pain may result from bruxism, it occurs more frequently in girls than in boys and in children over 15 years of age.

There is a positive correlation between subjective symptoms (TMJ sounds, tenderness in jaws, difficulty in mouth opening, and pain during chewing and muscle tenderness). There is a high association of headaches; forehead pain is observed in 2.5% of 7-year-old and 15.7% of 15-year-old bruxers. When headaches occur in many of the children, school absences or parental attention may lead to secondary gain, which in itself maintains the complaints associated with this habit.(1)

Nomenclature

- 1901: Karolyi M – "traumatic neuralgia"
- 1907: Marie Pietkiewicz – "bruxomania"
- 1931: Frohman – "bruxism"
- 1972: Drum – "emotional loaded parafunction"

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- 1971: Ramjford Ash – “centric and eccentric bruxism⁽²⁾

Classification

Classification Bruxism may be classified according to several criteria

By when it occurs

- Awake bruxism: This is presented when the individual is awake
- Sleep bruxism: This is presented when the individual is asleep
- Combined bruxism: This is present in both situations.

By etiology

- Primary, essential or idiopathic bruxism:
- For which no apparent cause is known
- Secondary bruxism: • Secondary to diseases (coma, icterus, cerebral palsy)
- Medicinal products (e.g. antipsychotic medication, cardioactive medication)
- Drugs (e.g. amphetamines, cocaine, ecstasy).^[2]

By motor activity type

- Tonic: Muscular contraction sustained for more than 2s
- Phasic: Brief, repeated contractions of the masticatory musculature with three or more consecutive bursts of electromyographic activity that last between 0.25 and 2s apiece
- Combined: Alternating appearance of tonic and phasic episodes. Approximately, 90% of the episodes of SB are phasic or combined, unlike in AB, where episodes are predominantly tonic.

By period of occurrence

- Past bruxism
- Current or present bruxism. They are frequently difficult to tell apart.

By severity

- Mild as occurring less than nightly, with no damage to teeth or psychosocial impairment
- Moderate as occurring nightly, with mild impairment of psychosocial functioning; and
- Severe as occurring nightly, and with damage to the teeth, temporomandibular disorders and other physical injuries, and severe psychosocial impairment.

While awake

- Worsens throughout the day, may not be present on waking
- Rarely associated
- Usually clenching, occasionally clenching and grinding
- Stronger evidence for a relationship, but not conclusive
- 22.1-31% • Mostly females • Unclear.⁽²⁾

How many people grind/clench their teeth?

Most people clench or grind their teeth from time to time. Interviews or questionnaires (self-report based method) asking: 'do you grind/clench your teeth during sleep?' have found that 10% of the adult population will say 'yes' to the choice of 'frequent as three times a week.'

According to epidemiological research, bruxism decreases with age. However, because to the diverse age groups reported and the challenges that may develop when using the self-report method to children/or their parents, there is a lot of variation in the reports of bruxism in children (3.5–40.6 percent).

The frequency of teeth grinding/clenching during sleep declines to 1.1 percent as persons get older (465 years). It's worth noting that there's no difference between men and women who grind or clench their teeth at night. It is crucial to note, however, that these frequencies are based on information provided by people, and there is certainly a lot of ambiguity about the correctness of such data. An epidemiological research of bruxism employing the polysomnographic (PSG) approach without video and audio recordings was recently published, with an overall prevalence of 7.4% reported.⁽³⁾

Etiology

Bruxism is thought to be caused by a number of factors, while the exact cause is unknown.

Although bruxism is a parafunctional activity, it is debatable whether it is a subconscious habit or completely involuntary.

Psychosocial factors

The key triggering component is thought to be emotional stress.

Genetic factors

According to research, there may be some hereditary vulnerability to developing Sleep bruxism. The fact that 21–50% of people with SB have a direct family relative who had SB as a kid shows that hereditary factors are at play.

Medications

- Dopamine agonists
- Dopamine antagonists
- Tricyclic antidepressants
- Selective serotonin reuptake inhibitors
- Alcohol, cocaine
- Amphetamines.

Other possible associations

- Parkinson's diseases
- Torus mandibularis
- Oromandibular dystonia
- Rett syndrome
- Down syndrome
- Trauma
- Atypical facial pain⁽²⁾

The prevalence of bruxism in children has been observed to range from 7% to 88 percent. The information provided for children is comparable to that provided for adults. The variations in reported prevalence rates are likely due to differences in defining the ailment and the diagnostic signs and symptoms for the behaviour in question.

The rate of occurrence varies depending on the definition. If physical abnormal wear aspects are employed as the criterion, Lindqvist (1971) found that 47 percent of all children have bruxism. According to Kuch, Till, and Messer (1979), around 30% of children have unusual characteristics.

Approximately half of this group was recognised as bruxers solely based on parental reports. Atypical wear facets on the teeth, in both toddlers and adults, usually indicate that the person grinds their teeth. Atypical wear facets in adults are a historical marker of grinding at some point in the past; as a result, atypical wear facets can tell you very little about current grinding.

The same general caution applies to children. Atypical wear facets on newly erupted teeth, on the other hand, may indicate more recent grinding. Clenching, on the other hand, is more difficult to notice during a dental exam. Instead, self-reported pain in the TMJ, the musculature of the face, neck, or shoulders, or directly in the teeth are the most common correlates of clenching.

Bruxism can start as soon as the teeth emerge (Arnold, 1981). The period of mixed dentition (i.e., ages 7-15) has the highest frequency in children, with a lower incidence in late adolescence. The formation of new occlusal contacts could be a cause of bruxism.⁽¹⁾

Case report

A 6-year-old female patient and her mother visited the Department of Paedodontics and Preventive Dentistry at Jaipur Dental College. As this is her second appointment, the patient is highly cooperative.



Figure 1A Alginate Impression of the patient



Figure 1B Cast model prepared

Her height was 3 feet and 9 inches, and she weighed 27 kg. There is no medical history that is relevant. Medical history in the family is also unimportant. There are no other oral habits. Further investigation revealed that the patient had previously brushed her teeth once a day with a tiny toothbrush and fluoridated toothpaste.

Her gait is normal, and she has a straight posture and a mesomorphic body type. Her lips are competent and her face is convex.



Figure 2 Thin Polyethylene sheet



Figure 3 Marking of the occlusal facets



Figure 4 Vacuum forming machine



Figure 5 Vacuum pressing procedure



Figure 6 Marking on the sheet for trimming



Figure 7 Finishing and polishing



Figure 8 Placement of the Night guard

She had 21 teeth in her mouth and no apparent anomalies in the soft tissues. A slightly increased overbite (4–5 mm) was present.

Occlusal facets were discovered after a closer study, which could be one of the signs of attrition present. Her mother admitted to clicking her teeth at night during the case history interview.

After a comprehensive history and clinical examination, bruxism was diagnosed, and the patient was prescribed a night guard.

Armamentarium required for fabrication of night guard:

- Alginate powder
- Impression trays
- Dental stone

- Polyethylene sheets
- Plastic bowl
- Spatula
- Marking pencil
- Cutter

1. Procedure: Alginate impression of lower arch is taken, and cast-model was prepared.(Figure-1A and Figure 1B)
2. Thin polyethylene sheets was used for making night-guard (fig -2)
3. Occlusal facets marked with orange colour (Figure-3)
4. Vacuum forming machine is used for making night guard. (Figure -4)
5. Vacuum press procedure was used for covering the polyethylene sheet on cast.(Figure -5)
6. Markings are done on cast & Polyethylene sheet was trimmed till 2 mm below the gingival margin, excess sheet is cut with the help of cutter .(Figure -6)
7. Finishing and polishing was done (Figure -7)
8. Night guard was delivered to patient, adjustments was done according to teeth structure of patient.(Figure -8)
9. Oral hygiene instructions were given to patient and advised for keep the appliance clean.
10. Instructions to wear the appliance at night and during day time whenever possible after school hours were given.

DISCUSSION

Treatment modalities for bruxism are as follows

- Behavioural modification, which includes teaching the patient how to properly rest their tongue, teeth, and lips, as well as how to rest the tongue upward to reduce pressure on the jaw while keeping the teeth apart and lips closed.
- Stress management
- Lifestyle changes
- Improvement in coping mechanisms
- Tooth wear: For replacing worn teeth, direct hybrid composite resin restorations may be the best option. Worn dentitions are commonly connected with bruxism, but its relationship with acid eating, smoking, and periods of gastric reflux also increases tooth structure loss, which leads to occlusal instability, reduced vertical dimension, muscular discomfort, and TMJ pain and dysfunction. As a result, the treatment plan should be structured in such a way that it encompasses, as much as feasible, symptom control and the elimination of causes.
- Occlusal splints: A specifically fitting plastic mouth appliance that can be worn at night is produced to absorb the stresses generated during biting. This appliance also supports in modifying the patient's behaviour and helps to prevent future harm to the teeth. To avoid constant abrasion of the teeth and for the patient's comfort. A bite plate is made to cover all of the teeth's occlusal surfaces. For primary tooth protection, a soft-based material such as polyethylene can be utilised; the thickness of the sheet employed should be sufficient to avoid perforation and boost impact resistance.
- Drugs: A few medications (e.g., benzodiazepines, muscle relaxants) may be found to be useful for a limited period of time, especially if secondary pain is present. Acute clonazepam medication improves the

bruxism index, including objective and subjective sleep quality, while having no effect on mood, performance, or psychophysiological markers upon awakening, indicating that the medicine is well tolerated.⁽⁴⁾

The signs and symptoms of bruxism:

- Abraded teeth
- Facial pain
- Hypersensitivity in teeth
- Tense facial and jaw muscles
- Headaches
- Jaw dislocations
- Injury to the tooth enamel, exposing the dentin
- Popping sound during TMJ activity
- Impressions on tongue
- Injury to the inside of the cheek (4–9)

What is the definition of daytime clenching?

clenching during the day Awake bruxism is regarded to be distinct from sleep bruxism since it is characterised by tooth clenching.

Awake bruxism is primarily reactive, and stress or worry can cause or intensify it. It is reported by 20% of the population, with females reporting it more commonly. Although people with awake bruxism are generally unconscious of the behaviour, conscious awareness can be used to detect it.

As a result, if a doctor educates the patient about the habit and then requests the patient's report, awareness will improve. Patients with SB typically report bruxism while awake: mild SB patients are more aware of daytime clenching and stress than severe SB patients.

TMJ issues (e.g., jaw muscle tension/pain, joint noise, reduced jaw opening capacity), tooth wear, and tongue indentation have all been linked to awake bruxism. Furthermore, bruxism during sleep and awake hours may aggravate temporomandibular problems.⁽⁵⁾

Assessment/diagnosis of bruxism at departments/clinics

Although bruxism is not a life-threatening disorder, it can negatively effect one's quality of life, especially when it comes to dental difficulties such as tooth wear and frequent fractures of dental restorations. Some of the methods used in clinic to assess bruxism are as follows:

Questionnaires Questionnaires are extensively used in both academic and therapeutic settings. This method can be utilised on a large population, however it has the drawback of obtaining subjective information. Self-reports are useful for physicians and researchers to assess bruxism presence and absence, but it has been discovered that roughly 80% of bruxism episodes are not accompanied by noise. As a result, a huge majority of adults and children are completely ignorant of their bruxism.

The following is a questionnaire for detecting bruxer:

Have you ever been overheard grinding your teeth at night?

Is your jaw ever tired or sore when you first wake up in the morning?

Are your teeth or gums ever painful when you first wake up?

Do you ever get a temporal headache when you first wake up in the morning?

Do you ever notice yourself grinding your teeth throughout the day? Do you ever notice yourself clenching your teeth throughout the day?

Clinical Observations/Evaluation Examination of the Patient The diagnosis of bruxism is based on a number of factors, including the patient's medical history, tooth mobility, tooth wear, and other clinical findings.

Bruxism clinical and anamnestical indicators

Tooth grinding or tapping sounds have been described (usually reported by bed partner) Tooth wear might be evident in the typical range of jaw movements or in an eccentric posture. Hypertrophy of the masseter muscle during voluntary contraction Morning discomfort, weariness, or stiffness in the masticatory muscles (sometimes, headache in the temporal muscle region) Hypersensitive tooth or teeth to cold air or fluids The temporomandibular joint clicks or locks. Indentation of the tongue on the cheek⁽⁶⁾

CONCLUSION

The data on bruxism in children does not support a single etiological explanation for determining the mechanism of initiation or control; bruxism is best defined as multidimensional.

The link between bruxism and the importance of the oral cavity as a source of emotional expression is not clearly established. Different dental or behavioural treatments may be required depending on the stage of the disorder, whether there is malocclusion or tooth damage, and the age of the kid in terms of permanent dentition, hormonal, endocrine, and allergy triggers.⁽¹⁾

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