

Childhood Bruxism: A Case Report and a Clinical Review

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Abstract

Bruxism is the technical term for teeth grinding and clenching that causes facial pain. People unintentionally bite down too hard. Bruxism is triggered by people with certain types of personalities. The local reasons may be occlusal interference, high restorations or any irritating dental conditions. The systemic conditions may be the presence of endocrinal disorders, Parkinson's disease, chronic respiratory conditions and intestinal parasites. The present case report refers to a patient who reported to the department with the complaint of grinding of teeth (Bruxism). A brief review is made of the literature concerning the etiology, clinical diagnosis and the therapeutic approach of the disease.

INTRODUCTION

Sleep bruxism (SB) is an oral activity associated with jaw movements and tooth grinding. Sleep bruxism is believed to be highly variable over time, with subjects showing no activity on some nights and intense activity on others. Interestingly, during sleep, the jaw is usually open due to motor suppression, tooth contact most likely occurs in association with sleep arousal. This suggests that the central and/or autonomic nervous systems, rather than peripheral sensory factors, have a dominant role in SB genesis. However, some peripheral sensory factors may exert an influence on SB through their interaction with sleep-wake mechanisms. The consequences of SB may include tooth destruction, jaw pain, headaches, or the limitation of mandibular movement, as well as tooth-grinding sounds that disrupt the sleep of bed partners. (1-4)

Bruxism is a pathological activity of the stomatognathic system that involves tooth grinding and clenching during para functional jaw movements. Clinical signs of bruxism are mostly related to dental wear and muscular and joint discomforts, but a large number of etiological factors can be listed, as local, systemic, psychological and hereditary factors. The association between bruxism, feeding and smoking habits and digestive disorders may lead to serious consequences to dental and related structures, involving dental alterations (wear, fractures and cracks), periodontal signs (gingival recession and tooth mobility) and muscle-joint sensitivity, demanding a multidisciplinary treatment plan. (5-6)

CASE REPORT

A 12-year-old boy visited the Dept of Pedodontics, SDM College of Dental Sciences, Dharwad along with his parents. During the case history taking, his mother revealed that he clicked his teeth at night since four years. The child's medical history showed chronic respiratory problems, due to allergy. The history also ruled out the presence of any systemic disease like Parkinson's disease or Huntington's disease or any gastro esophageal reflux. The drug history ruled out the usage of any antidepressant medication. No previous dental treatment was reported. Ingestion of acid drinks or medication was denied.

Although the parents described the child as highly excitable, during the consultation he was extremely shy. He was a mediocre student in the school. Clinical examination revealed that the patient was late mixed dentition with Class I molar relationship on both the sides. There was no midline deviation or malocclusion. No occlusal interferences, mandibular deviation, mouth-opening limitation or any other clinical sign indicating temporomandibular dysfunction was noticed during intra oral clinical examination.

Good oral hygiene was observed. No carious lesions or gingival inflammation was present.

Figure 1

Fig 1: Increased Overbite due to Bruxism



The occlusal surfaces of all molar teeth were worn but sensitivity was not present.. A slightly increased overbite (2-3mm) was present (Fig 1, 2). The child had no history of pain, even with mechanical stimulation. The treatment plan for this patient was the placement of a Bruxism Splint made of clear transparent sheet, composed of poly Vinyl chloride, fabricated by vacuum press in which the sheet was heated and sucked over the mandibular cast. The splint was trimmed along the gingival margins (Fig 3). It was given primarily for the night use and the patient was referred for psychological monitoring and allergy treatment.

Figure 2

Fig 2: Wear facets on the primary molars



Follow-up visits were scheduled every third month to verify tooth wear and the result was satisfactory. With the combined effect of the Bruxism splint, psychological counseling sessions and treatment for the allergy, no further damage to the dentition and Temporo mandibular joint were seen. The splint was modified to allow adequate bone growth.

Figure 3

Fig 3;The Bruxism Splint has been placed.



DISCUSSION

The prevalence of bruxism in children is estimated to range from 7% to 15.1%.(3–5) A few studies confirm a higher rate in females than males. Some authors describe bruxism as a condition of multifactorial etiology, determined by an association of psychological, local and systemic factors

The Signs and symptoms of bruxism may include

- abraded teeth
- facial pain
- oversensitive teeth
- tense facial and jaw muscles
- headaches
- dislocation of the jaw
- damage to the tooth enamel, exposing the inside of the tooth (dentin)
- a popping or clicking in the temporomandibular joint (TMJ))
- tongue indentations
- damage to the inside of the cheek (7-12)

There is also evidence that, in younger children, bruxism may be a consequence of the immaturity of the masticatory neuromuscular system .Vanderas and others have demonstrated that stress and anxiety may be directly related to bruxism, as patients suffering from bruxism show a higher catecholamine level, generally ascribed to emotional stress.A

study has demonstrated that several psychological techniques have been efficacious in reducing signs of bruxism when they were applied to 33 children aged 3–6. Craniofacial growth involves distinct structures and follows a complex chronological pattern, peaking in prepuberty. Thus, when removable prostheses are placed in young children, osseous discrepancies may arise. The bite-plates are usually removable and quarterly revision appointments are scheduled to monitor patients' bone growth and the eruption of permanent teeth. (13-18)

The various treatment modalities documented are:

Behavior modification teaching the patient how to rest his/her tongue, teeth, and lips properly, and learning how to rest the tongue upward may relieve discomfort on the jaw while keeping the teeth apart and lips closed.

- stress management
- lifestyle changes
- improved coping mechanisms (13)

Tooth wear

The technique of choice for restoration of the worn teeth is the use of direct hybrid composite resin restorations. Worn dentitions are usually related to the presence of bruxism but its association with acid feeding, smoking habit and episodes of gastric reflux increases the loss of tooth structure leading to occlusal instability, reduced vertical dimension, muscle tenderness, TMJ pain and dysfunction. Thus, treatment plan must involve control of symptoms and removal of causes, as much as possible. (13)

Occlusal splints

A specially-fitted plastic mouth appliance may be worn at night to absorb the force of biting. This appliance may help to prevent future damage to the teeth and aid in changing the patient's behavior. A bite-plate covering the occlusal surfaces of all teeth should be used by patients suffering from bruxism to prevent continuous abrasion. The use of biteplates reduces muscular activity, thus giving more comfort to the patient. A soft-based material is chosen to protect the primary teeth, the thickness has to be sufficient to prevent perforation and increase resistance to impact.

Harada et al investigated the effect of stabilization splint (SS) and palatal splint (PS), which had the same design as

SS except for the elimination of the occlusal coverage, on sleep bruxism (SB) using a portable electromyographic (EMG) recording system. h(-1). Both splints significantly reduced SB immediately after the insertion of devices. There was no statistical difference in the effect on SB between the SS and PS (P both splints reduced the masseter EMG activities associated with SB; however, the effect was transient. (19)

Landry and Rompre compared the effect on sleep bruxism and tooth-grinding activity of a double-arch temporary custom-fit mandibular advancement device (MAD) and a single maxillary occlusal splint (MOS). Short-term use of a temporary custom-fit MAD is associated with a remarkable reduction in sleep bruxism motor activity. To a smaller extent, the MOS also reduces sleep bruxism. (20)

The efficacy of occlusal splints in diminishing muscle activity and tooth-grinding damage remains controversial. Dube et al compared the efficacy and safety of an occlusal splint (OS) vs. a palatal control device (PCD). No difference was observed between the devices. Moreover, no changes in respiratory variables were observed. Both devices reduced muscle activity associated with SB. (21)

The impact of an occlusal splint (OS) compared with cognitive-behavioral treatment (CBT) on the management of sleep bruxism (SB) has been poorly investigated. The CBT comprised problem-solving, progressive muscle relaxation, nocturnal biofeedback, and training of recreation and enjoyment. However, the effects were small and no group-specific differences were seen in any dependent variable (22)

Biofeedback Biofeedback involves an electronic instrument that measures the amount of muscle activity of the mouth and jaw - indicating to the patient when too much muscle activity is taking place so that the behavior can be changed. This is especially helpful for daytime bruxers. Further research is needed to develop a treatment program for bruxers who clench during the night. (13)

Medications

A few medications (e.g., benzodiazepines, muscle relaxants) may be helpful for a short-term period, particularly when there is secondary pain. Acute clonazepam therapy significantly improved not only the bruxism index but also objective and subjective sleep quality, with unchanged mood, performance and psychophysiological measures upon awakening, suggesting good tolerability of the drug. (23)

SUMMARY AND CONCLUSION

As this article deals with isolated clinical case therefore its findings cannot be generalized. We suggest that more epidemiological investigations should be made to provide a better understanding of the etiological, predisposing, risk and clinical factors in bruxism. Bruxism is becoming an increasingly common condition in children. In treating this parafunctional habit, clinicians play a leading role in determining possible etiological factors. At certain times, the dentist may be the first person to notice this multifactorial disease due to the presence of the oral findings, therefore it is the moral duty of the dentist to warn and make the parents aware of this disease so that timely intervention can be taken for the healthy upbringing of the child.

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