



Systemic Condition Associated with Bruxism- A Case Report

**K. Mahesh Kumar^{a++}, Vundela Rajashekar Reddy^{a#*},
Ambika K. Nandini^{a†} and Nagalakshmi Chowdhary^{a‡}**

^a *Department of Pedodontics and Preventive Dentistry, Sri Siddhartha Dental College and Hospital,
Sri Siddhartha Academy of Higher Education, Tumakuru, Karnataka-572107, India.*

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJPR/2023/v13i2254

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/101806>

Received: 15/04/2023

Accepted: 20/06/2023

Published: 09/07/2023

Case Study

ABSTRACT

Bruxism is a condition characterized by grinding and involuntary clenching of teeth. It is risk factor for development of dysfunction. The psychologist's paediatrician need help in deciding whether dysfunctional behavioural is in need of treatment or not. Many factors associated in children's who brush are anxiety personality attention deficient, hyper activity disorder and parafunctional activity habits. The most important characteristics of bruxism is no functional contact of mandibular natural teeth resulting of clenching of grinding of teeth. The present case report refers to the asthmatic patient who reported to the department with complains of grinding of teeth which was managed with occlusal splints.

Keywords: Bruxism; habits; night guard appliance; asthma.

⁺⁺ Post Graduate Student;

[#] Reader;

[†] Senior Lecturer;

[‡] Professor & HOD;

*Corresponding author: Email: drvrajashekarreddy@gmail.com;

1. INTRODUCTION

Unlike chewing movements of the mandible, which may result in occlusal injuries, bruxism is an oral habit that involves involuntary rhythmic or spasmodic non-functional grinding, or clenching of the teeth [1]. Maria Pietkiewicz first described this condition in the medical literature in 1907 [2]. According to the American Academy of Sleep Medicine (AASM), bruxism is a movement condition that is connected to sleep [3]. There are two types of bruxism: sleep bruxism (SB) and awake bruxism (AB). The risk factors for irregular tooth wear and the onset of temporomandibular dysfunction (TMD) are unknown to someone with SB. According to recent research reports, SB may also contribute to primary headaches [4], which are thought to be primarily controlled by the central nervous system [5] and may be related to abnormalities in the brain's Gabaergic and glutamatergic systems [6]. In addition to body movements, breathing issues, increased muscle activity, and heart rate irregularities, bruxism may also be accompanied by sleep disturbances [7]. Studies have reported a wide range of prevalence rates for SB in children. Additionally, it has been found that children are more likely affected than adults to develop SB [8], with prevalence rates ranging from 13% to 49%. [9] This present case report explains how child was treated with a night guard related to bruxism which was associated with asthmatic condition.

2. CASE PRESENTATION

A 7-year-old boy with his parents reported to department with chief complaint of grinding of teeth during night time for 2 years and presented with history of muscle pain in cheek region in day time. On medical history, the patient is under medication for asthma. The child was suffering from asthma since the age of 5 months and was admitted in the hospital. The patient underwent a treatment for two years and didn't report any asthmatic attack, so they discontinued the medications. In Past dental history, they revealed that it was their first visit. No other oral habits present. In personal history, the parents revealed that the child is isolated and doesn't interact with his peers in school. On further questioning, patient gives history of brushing once a day with medium bristle tooth brush using fluoridated toothpaste. The child is well built and nourished, normal gait with straight posture, mesomorphic body type, convex facial profile

(Fig. 1). On extra-oral examination, no facial asymmetry was seen, the lips were competent, the patient had pain in the cheek region during mouth opening and no deviation, crepitus and clicking was seen on examining the temporo-mandibular joint. On intra-oral examination palpation of the muscles (masseter on both sides) (Hypertrophy of masseter muscle) and pain with no indentation seen in the buccal vestibule. On hard tissue examination, the patient identified as mixed dentition, Occlusal surfaces of all molar teeth were worn-out, no sensitivity, presented attrition with relation to 85 46 65 26 55 75 36. Class 2 dental caries 54 and class 3 dental caries 53. (Figs. 2,3) Based on the history and clinical examination, we diagnosed as nocturnal type bruxism. So, with available treatment options, night guard appliance was considered along with restoration of caries teeth.

A soft night guard appliance, made up of ethylene-vinyl acetate was fabricated. For the fabrication of appliance alginate impression was taken and working model was prepared with dental stone. The night guard was fabricated on maxillary and mandibular arch (Fig. 4). The appliance was delivered to the patient after finishing and polishing (Fig. 5). During the restoration of the carious teeth, the patient had severe gag-reflux and was finding it difficult to keep his mouth open. Instruction to wear the appliance at night and during day time whenever possible after school. Then patient was also encouraged to maintain good oral hygiene and also was instructed to maintain the appliance. The parents were also encouraged to seek a psychiatric evaluation. After this, the patient was followed up after a month and it was revealed that the night grinding was stopped.

3. DISCUSSION

The exact cause of bruxism is still unknown, but it has been shown to have a number of factors, including central ones involving brain neurotransmitters or the basal ganglia, psychosocial ones like stress and anxiety, and peripheral ones like problems with dental occlusion. While previously thought to be a disorder or disease, bruxism is actually a parafunctional oral habit [8]. It has been suggested that respiratory problem including asthma and upper airway infections are the cause of bruxism [10]. The results of earlier studies are supported by the fact that children with bruxism experienced more respiratory issues than children without [11-13].



Fig. 1. Patient profile



Fig. 2. Occlusal view of maxilla



Fig. 3. Occlusal view of mandible



Fig. 4. Night guard appliance



Fig. 5. Occlusal splints in maxillary arch

Grechi et al. [12] conducted an analysis of children with airway conditions and discovered a significant predominance of bruxism, which is consistent with the results reported in a number of previous studies.

In order to improve airflow, children with obstructed airways frequently move their mandible forward and downward, according to DiFrancesco et al. [11] which may stimulate receptors in the upper airways, intensifying tonus and causing bruxism. The reported change in the

position of the mandible in the present case may be connected to the fact that children with respiratory issues had a higher prevalence of bruxism [14,15].

The diagnosis and clinical evaluation of bruxism is typically a difficult process that calls for a variety of tests, such as clinical examination, intraoral devices (the so-called mandibular advancement devices) for assessment, recording muscle activity, electromyography (EMG), and PSG [8].

3.1 AASM Clinical Diagnostic Criteria for SB [14,16]

Recently patient, parent, or sibling reports of hearing teeth grinding during sleep at least three to five evenings per week over the past three to six months. Abnormal tooth wear, hypertrophy of the masseter muscles on voluntary forceful clenching, discomfort, fatigue, or pain in the jaw muscles (transient, morning jaw-muscle pain and headache) helps in the diagnosis of bruxism.

Treatment of bruxism is recommended to be multidisciplinary, for both children and adults which are aimed to protect wear and tear of teeth like intraoral devices, oro-myofunctional exercise, cognitive-behavioral therapies, meditation, hypnosis, sleep hygiene, biofeedback and or use of medications such as benzodiazepines, botulinum toxin etc [14,15,17].

4. CONCLUSION

Bruxism is a sleep related disorder and most commonly affects the pediatric population. The etiology, treatment of bruxism and ways to rehabilitate such patients should be well known by the pediatric dentist. The most common cause of bruxism is due to stress during the childhood for which the parents should be taught to manage the stressful situations of their children. Also parents should report with children as early as possible to prevent loss of tooth structure and muscle hypertrophy.

CONSENT

As per international standard, parental written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard guideline participant consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. The Academy of Prosthodontics. The glossary of prosthodontics terms 8th edition. *J Prosthet Dent.* 2005;94(1): 10-29.
2. Alves CL, Fagundes DM, Soares PBF, Ferreira MC. Knowledge of parents/caregivers about bruxism in children treated at the pediatric dentistry clinic. *Sleep Sci.* 2019;12(3):185-9.
3. Sateia MJ. International classification of sleep disorders-third edition: Highlights and modifications. *Chest.* 2014;146(5): 1387-94.
4. Zielinski G, Ginszt M, Suwała M, Szkutnik J, Majcher P. Influence of sleep bruxism on primary headaches in children: A 2013–2018 literature review. *Pediatr. Med. Rodz.* 2019;15:374–377.
5. Firmani M, Reyes M, Becerra N, Flores G, Weitzman M, Espinosa P. Sleep bruxism in children and adolescents. *Rev Chil Pediatr.* 2015;86(5):373-9.
6. Dharmadhikari S, Romito LM, Dzemiđić M, Dydak U, Xu J, Bodkin CL et al. GABA and glutamate levels in occlusal splint-wearing males with possible bruxism. *Arch Oral Biol.* 2015;60(7):1021-9.
7. Saczuk K, Wilmont P, Pawlak Ł, Łukomska-Szymańska M. Bruxism: Aetiology and diagnostics. A literature review. *Prosthodontics.* 2018;68(4): 456-63.
8. Beddis H, Pemberton M, Davies S. Sleep bruxism: an overview for clinicians. *Br Dent J.* 2018;225(6):497-501.
9. Alfano CA, Bower JL, Meers JM. Polysomnography-detected bruxism in children is associated with somatic complaints but not anxiety. *J Clin Sleep Med.* 2018;14(1):23-9.
10. Motta LJ, Bortoletto CC, Marques AJ, Ferrari RA, Fernandes KP, Bussadori SK, Bussadori SK. Association between respiratory problems and dental caries in children with bruxism. *Indian J Dent Res.* 2014;25(1): 9-13.
11. DiFrancesco RC, Junqueira PA, Trezza PM, de Faria ME, Frizzarini R, Zerati FE. Improvement of bruxism after T & A surgery. *Int J Pediatr Otorhinolaryngol.* 2004;68(4):441-5.

12. Grechi TH, Trawitzki LV, de Felício CM, Valera FC, Alnselmo-Lima WT. Bruxism in children with nasal obstruction. *Int J Pediatr Otorhinolaryngol.* 2008;72(3): 391-6.
13. Eftekharian A, Raad N, Gholami-Ghasri N. Bruxism and adenotonsillectomy. *Int J Pediatr Otorhinolaryngol.* 2008;72(4): 509-11.
14. Bulanda S, Ilczuk-Rypuła D, Nitecka-Buchta A, Nowak Z, Baron S, Postek-Stefańska L. Sleep bruxism in children: Etiology, diagnosis, and Treatment-A literature review. *Int J Environ Res Public Health.* 2021;18(18):9544.
15. Huang MN, Tang SJ. Sleep bruxism in children. *Br Dent J.* 2022;233(10): 825.
16. Da Silva CG, Pachêco-Pereira C, Porporatti AL, Savi MG, Peres MA, Flores-Mir C et al. Prevalence of clinical signs of intra-articular temporomandibular disorders in children and adolescents: A systematic review and meta-analysis. *J Am Dent Assoc.* 2016;147(1): 10-18.e8.
17. Demjaha G, Kapusevska B, Pejkovska-Shahpaska B. Bruxism unconscious oral habit in everyday life. *Open Access Maced J Med Sci.* 2019;7(5):876-81.

© 2023 Kumar et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<https://www.sdiarticle5.com/review-history/101806>