Parafuncitonal Behaviors and Its Effect on Dental Bridges

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Abstract

Parafuncitonal behaviors, especially bruxism, are not uncommon among patient visiting dentists’ clinics daily and they constitute a major dental issue for almost all dentists. Many researchers have focused on the definition, pathophysiology, and treatment of these behaviors. These parafuncitonal behaviors have a considerable negative impact on teeth and dental prothesis. In this review, we focused on the impact of parafuncitonal behaviors on dental bridges. We summarized the definitions, epidemiology, pathophysiology, and consequences of parafuncitonal behaviors. In addition, we reviewed previous dental literature studies that demonstrated the effect of bruxism or other parafuncitonal behaviors on dental bridges and dental prothesis. In conclusion, parafuncitonal behaviors are common involuntary movements involving the masticatory system. They are more prevalent among children. These behaviors have deleterious effects on dental structures. Causes of parafuncitonal behaviors include anxiety, depression, smoking, caffeine intake, sleep disorders, or central neurotransmitter dysfunction. Bruxism and other similar masticatory system activity cause dental fracture, loss, and weardown of enamel or teeth. They can also affect different types of dental protheses both fixed and removable types. Parafuncitonal behaviors shorten the life expectancy of these protheses, and damage residual dentition and denture-bearing tissues.

Keywords: Parafunction; Parafuncitonal habits; Parafuncitonal behaviors; Dental; Bridge; Bruxism

Introduction

The masticatory system functions in one of two ways: a functional and a parafuncitonal way. Functional activity includes meaningful work such as speaking, eating, or chewing, whereas parafuncitonal behaviors indicate abnormal hyperactive functions conducted by the masticatory structures, i.e. tongue, teeth, oral muscles, etc. [1]. Bruxism (teeth grinding), clenching, thumb/digit sucking, lip or fingernail biting, and non-nutritive sucking exemplify parafuncitonal habits [2]. Functional activities are vital to smoothly perform essential functions of the oromandibular system without damaging it. On the other hand, parafuncitonal behaviors do not deliver a necessary function and they may lead to local tissue damage. The mechanism of parafuncitonal behaviors is different from functional activity [3].

Types of Parafuncitonal Behaviors

Given its close relation to dental field, bruxism is the parafuncitonal that has received special attention among researchers during the last three decades. Bruxism refers to teeth grinding or clenches that have deleterious effects on teeth or dental protheses. Next came non-nutritive sucking in which patients tend to suckle non-food items, particularly his thumb, any digit, or pacifiers in children. These behaviors disappear insidiously over time with progression of age. However, they may persist to the adult stage leading to significant damage of the masticatory and oromandibular structures. Non-nutritive sucking habit can easily be recognized through inspecting the teeth. Teeth of these individuals have pressure marks from the tearing mechanical force continuously applied to these teeth. Anterior open bite or posterior crossbite signs are also not uncommon. It is generally recommended to start active intervention to obligatorily cease these habits at the age of 3 years [4]. Other parafuncitonal behaviors include nail biting and lip or cheek biting [4].

Prevalence of Parafuncitonal Behaviors

Results from a research conducted on Saudi adolescents during the year 2006 depicted that lip and cheek biting was the most prevalent parafuncitonal behavior reported by 41% of participants. Nail biting was the second most common behavior having a figure of 29%. Both bruxism and thumb sucking constituted only 15% of the cases [5].

Sleep bruxism occurs in about 7-8% of the general population. It is more prevalent in children occurring in up to 40% of children around age of 11 years, and it is estimated to be more...
prevalent among females [6]. A more detailed research about bruxism showed that 20% of adults had bruxism (teeth clenching) during awakening, only 8% of bruxers are aware of their night bruxism. Noisy bruxism was reported in 14-20% of participating children below the age of 11 years. Of the affected participants, 10-20% had signs of bruxism during conducting the research [7].

Pathophysiology of Parafunctional Behavior

In spite of continuous efforts to understand the nature and mechanisms of parafunctional behaviors, an exact pathophysiology remains elusive. Researches have proposed many theories for the development, or more accurately the persistence, of parafunctional behavior. The most common theory is the psychological hypothesis that the parafunctional activity represents a regression to or maintenance at an oral stage of development in which the mouth and face are used to vent the individual’s stresses, frustrations, or anger [8]. Dopamine, serotonin, and noradrenaline are common neurotransmitters involved. Genetic causes were also studied [9]. Recent studies suggest that parafunctional behaviors develop due to central regulatory mechanisms and peripheral factors do not contribute to the pathophysiology [10].

Bruxism Definitions

Many definitions have been established for bruxism. According to the American Academy of Orofacial Pain, bruxism is a parafunctional activity such as grinding, clinching, gnashing or bracing of teeth which may occur either diurnal or nocturnal [11]. Diurnal and nocturnal bruxism are different entities, with different etiologies, pathophysiology, risk factors, and management plans [12]. American sleep disorders association adds to aforementioned definition the occurrence of one more feature such as tooth wear, tooth sounds, or discomfort of jaw muscles not explained by another medical illness [13]. The glossary of prosthetic terms, on the other hand, defines bruxism as an oral habit in which an individual involuntarily and rhythmically grinds or clenches his or her teeth. Such habit might cause dental trauma, often referred to as “occlusal neurosis” [14]. When this grinding occurs during the waking stage, it is called “bruxomania” [15]. Clinching is not an equivalent to grinding. Clinching is a centric bruxism, whereas grinding is an eccentric bruxism. Clinching is a static process of forceful closure of mandible and maxilla, so that the opposing teeth meet at an eccentric position. On the other hand, grinding features a dynamic state during which the mandibular arch moves at different positions causing sliding of dentation over each other [15].

Etiological and Risk Factors of Bruxism

Many factors have also been hypothesized to be associated with bruxism including anatomical abnormalities, psycholog-
stance loss [25].

Along with the impact of parafunctional behaviors on fixed dental protheses, researchers stated that such behaviors, including bruxism, had shortened the longevity of removable partial dentures [26]. As regards complete dentures, studies have depicted that bruxism had negative consequences on the residual dentition and denture-bearing tissues among those patients [27]. Furthermore, using a protective night device for the fixed prothesis had improved the bruxism related complications among the studied patients [28].

Conclusions

Parafunctional behaviors are common involuntary movements involving the masticatory system. They are not uncommon among the population, especially children. These behaviors have deleterious effects on dental structures. Causes of parafunctional behaviors include anxiety, depression, smoking, caffeine intake, sleep disorders, or central neurotransmitter dysfunction. Bruxism and other similar masticatory system activity cause dental fracture, loss, and wear-down of enamel or teeth. They can also affect different types of dental protheses both fixed and removable types. Parafunctional behaviors shorten the life expectancy of these protheses, and damage residual dentition and denture-bearing tissues.

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The authors declare that no competing or financial interests exist.

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