

## History of Bruxism

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### Abstract

Bruxism is an oral habit that consists of involuntary rhythmic or spasmodic, non-functional teeth grinding or clenching, in contrast to the chewing movement of the mandible. The unbalanced contact of the two jaws can manifest as involuntary teeth grinding, primarily due to the reflex contact of the jaws at night.

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Bruxism is a prevalent condition among adults and is increasingly observed in adolescents and children. Early intervention is crucial to prevent acute and, in more severe cases, chronic pain, periodontal damage, and potential tooth loss. Its frequency can lead to orthodontic complications and pathological changes in the periodontal ligament. Bruxism may result in persistent jaw pain, ranging from mild tooth wear (Fig. 1 and 2) to complete dislocation of teeth. If left untreated, it can cause significant damage to the dentition, periodontium, and oral mucosa; pathological changes in the muscles involved in mastication; head and neck pain; temporomandibular joint (TMJ) deformities; and even hearing impairments. Therefore, early detection, accurate diagnosis, and timely treatment are essential.

The pathological phenomenon of bruxism is rooted in evolutionary instinct. In early human history, clenched teeth were used for defence, obtaining food, or as a weapon. As civilisation advanced, tooth clenching evolved into a psychoemotional and occlusal behaviour used to express anger, hostility, or frustration, both in humans and some animals. Across various cultures, teeth grinding has been symbolically linked to suffering, physical pain, madness, and the protection of property.

References to teeth grinding as an expression of emotional states appear throughout the Bible. In the Old Testament, gnashing or grinding of teeth is portrayed as an expression of rage, hatred, and despair. For example, Job 16:9 states, “His anger has torn and persecuted me. He gnashes his teeth against me; my enemy watches over me with flashing eyes.” Similarly, Psalm 37:12 says, “The wicked devises evil against the righteous; he gnashes his teeth against him,” and Psalm 112:10 echoes this sentiment.

In the New Testament, Acts 7:54 describes the crowd listening to Stephen's defense: "They were cut to the heart and gnashed their teeth at him." In contrast, the Gospels often use the expression metaphorically to evoke fear, failure, or damnation. Those deemed unworthy of the kingdom of God are cast "into outer darkness, where there will be weeping and gnashing of teeth" (Matthew 13:42, 50). The same imagery is used to describe the fate of those without a wedding garment (Matthew 22:12–13), the wicked servant (Matthew 24:51), the one who buried his talent (Matthew 25:30), and those who fail to enter through the narrow gate (Luke 13:28).

Over the decades, researchers have identified numerous causes of bruxism. In the early 20th century, Viennese physician Moritz Károlyi referred to bruxism as "traumatic neuralgia," identifying it as a cause of pyorrhoea (now known as periodontitis). In 1908, he designed a flat occlusal bite guard to protect teeth from the forces of clenching and grinding—a device that has remained in use for over a century.

Sigmund Freud believed that the roots of bruxism lie primarily in psychosexual development and behaviour. He emphasised the influence of psychological disturbances, including stress, depression, and anxiety—conditions that remain pervasive in modern society.

Today, it is generally accepted that chronic stress and mental health disorders play a significant role in the development of occlusal parafunctions and TMJ disorders, though they are not the sole cause. (1) Other contributing factors include interceptive occlusal contacts, malocclusion, trauma or micro trauma, hormonal imbalances, arthritis, orthopaedic conditions, and inflammation of the masticatory muscles. Modern recognition and diagnosis of bruxism have become more sophisticated throughout the 20th and 21st centuries.

Emotional states have a powerful influence on brain activity and physiological responses. Chronic pathological stress and emotional disturbances often stem from unresolved trauma in personal or professional life. These stress signals are processed in the limbic system and hypothalamus, where they trigger emotional responses and activate the sympathetic nervous system. The subsequent release of adrenaline increases respiration and heart rate, elevates muscle tension, and raises blood sugar and blood pressure—physiological hallmarks of stress. Any external trigger that causes this chain reaction is classified as a stressor.

Our ancestors typically responded to these biological warning signals with motor activity. In contrast, individuals in modern, developed societies are often constrained by social norms that discourage such physical responses. Suppression of emotional and motor expressions burdens bodily function, contributing to neuromuscular disorders such as bruxism. Research indicates that individuals with compulsive, controlling, or aggressive tendencies are more susceptible to developing bruxism. This unconscious habit results in progressive damage to the dentition and periodontium, increased tension and hypertrophy in the masticatory muscles, chronic head and neck pain, TMJ disorders, and, in some cases, auditory problems.

Bruxism is categorised as a parafunctional activity. Contraction of the temporalis and masseter muscles leads to the compression of the dental arches, while contraction of the pterygoid muscles produces lateral movements, potentially affecting the TMJ. Nocturnal bruxism is marked by rhythmic contractions of the masticatory muscles, with peak activity during REM (rapid eye movement) sleep. Based on mandibular

movement, bruxism can be classified as centric, lateral eccentric, anterior eccentric, mixed eccentric, or extra eccentric.

The term *bruxism* is derived from the French *la bruxomania*, coined by Marie and Pletkiewicz in 1907.(2) The actual term is derived originally from the Greek word βρυχεῖν (*brukhein*) to gnash or roar.

Elliot M. Frohman was likely the first to use the term *bruxism* in 1931, initially referring to it as a psychological condition.(3) He later noted that “bruxism is not necessarily audible.” Miller later differentiated between nocturnal grinding (bruxism) and habitual daytime grinding (bruxomania).

In 1953, Thomas Shanahan, in his article *Physiological and Neurological Occlusion*, described tooth grinding in people with nervous hypertension as a form of neurological occlusion.(4) In 1954, Kimball noted that both bruxism and bruxomania were habits that negatively impacted the condition and functionality of dentures.(5) In 1957, Weinberg documented asymmetric wear in the dentition—showing that the functional cusps of maxillary and mandibular teeth wore down more on the compensating side than on the working side during bruxism. That same year, Nadler reported that the etiology of bruxism could be local, systemic, psychological, or occupational, though he identified psychological causes as the most significant. Bruxism encompasses a range of abnormal oral habits, including excessive gum chewing, pencil biting, and chewing foreign objects. Parafunctional behaviours may also reflect attempts to manage frustration or psychological tension.

Research into bruxism is ongoing and increasingly complex. Continued interdisciplinary studies are essential for developing effective diagnostic and therapeutic interventions that restore normal oral and neuromuscular function.

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Figure 1 and 2. Teeth of a patient with bruxism (left side) and normal (right side).