

## Bruxism

This report presents a basic understanding of bruxism and its diagnosis, highlighting its effect on the teeth and periodontium.

The diagnosis of bruxism is clear if there are signs of excessive tooth wear or if the patient is aware of the habit. However, it is often difficult to pinpoint the type of bruxism and its intensity.

This diagnosis is extremely important, since bruxism is a key prognostic factor. In the patients in the Perioproject database, the diagnosis was reached by considering the set of signs and symptoms throughout the course of the entire monitoring period. This enabled a more certain diagnosis and the capacity to analyze the real impact of this factor. However, we also noticed how difficult it can be to make the diagnosis during the initial examination.

Some patients recognize the signs of bruxism several days after discussing the possibility of suffering from it with their dentist. In some patients, most of the signs and symptoms may coincide, while in others, they may go completely unnoticed, first appearing as toothache for no apparent reason.

We will first discuss the signs and symptoms of bruxism, and then take a closer look at the types of bruxism and their impact on the teeth and periodontium.

### Signs and symptoms of bruxism

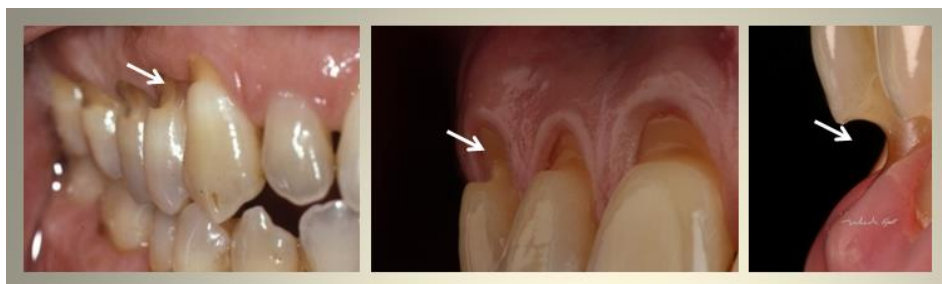
In order of importance, these are the main signs and symptoms:

1. Recognition of having the habit.
2. Excessive tooth wear: occlusal attrition and abfraction.  
Grinding or eccentric bruxism is caused by the sliding of the jaw while the teeth are clenched. The resulting tooth wear is mainly located on the incisal edges and occlusal surfaces (occlusal attrition).

The following picture shows the wear of the occlusal area of the anterior and posterior teeth.



Clenching or centric bruxism is produced by contracting the jaw muscles, while maintaining the teeth in occlusion. In this case, there would be less occlusal wear, appearing in the form of wear facets, but preserving the cusps. In this type of bruxism, most wear occurs at the cervical level, in a rounded shape called abfraction. This is shown in the following photographs.



There is no clearly defined boundary between grinding (eccentric bruxism) and clenching (centric bruxism), just as occlusal and cervical tooth wear may coincide to a greater or lesser extent in many patients.

It is common to find both types of wear of the occlusal area and in the area of the tooth neck in patients with severe bruxism, as

shown in the following photographs. 20 years have passed between A and B.



The following four clinical cases show tooth wear that occurs over 20 years. Case A is mild eccentric bruxism. Cases B and C present mild centric bruxism, and Case D is severe centric bruxism, with extensive abfractions (arrow) and a history of fissures and root fractures. The abfractions of the upper teeth were filled with composite, which became detached and filtered in many areas.



3. Fatigue, muscle spasm and pain.

Excessive working of the muscles that close the jaw is reflected in muscle hypertrophy, which is often visible and, in particular, palpable. Such excessive working can cause episodes of pain and muscle contracture, which is greater in areas where the muscle is attached. This often occurs upon waking, accompanied by a sensation of lockjaw. The muscles in the vicinity of the throat can hurt a lot when examined, and are called trigger points.

Sometimes the head, neck and back muscles are involved, presenting a pattern of overall muscle spasm, which the person refers to as cervical or neck pain. Pain may radiate to the joint, which can be confused with earache.

4. Toothache and sensitivity, with no apparent cause.

The extreme force of bruxism can cause sensitivity and even severe pain of the molars receiving the greatest load, without any other reason for dental pain. In extreme cases, the person complains of this added pain at a time when they have a lot of other problems. These problems could be triggers for bruxism.

This pain may not be clearly associated with a single tooth, but instead radiates to several different teeth, affecting the areas where the closing muscles are attached. People who suffer from this condition indicate the location of the pain by holding their jaw in their hand, rather than pointing to a particular tooth. Some patients even confuse the contracture with an abscess. These episodes may recur and may occur in other teeth.

5. Limited opening of the mouth and difficulty in keeping it open for very long, due to muscle pain. In the absence of bruxism, two and a half or three fingers together fit inside the open mouth, as shown in the following photograph. Two or fewer fingers could be related to bruxism.



6. Sensation of having padded teeth. This happens most often as the result of teeth clenching, especially when they have lost part of their

support. It is usually described as a feeling of having loose teeth, in a padded space or with a certain degree of elasticity.

7. In some patients with bruxism, especially those who clench their teeth, the bone in some areas of the mouth overdevelops, forming bumps called tori. This happens most often in the lower lingual anterior teeth and the upper buccal teeth.

In the following case, abfractions coincide with bilateral lingual tori. The difference between the two clinical images is 20 years. The patient had moderate centric bruxism and had worn a dental guard for all that time.



The following cases are of a unilateral torus, two truly striking tori and a thickened buccal bone layer in the lower anterior sextant of a patient with abfractions and centric bruxism.

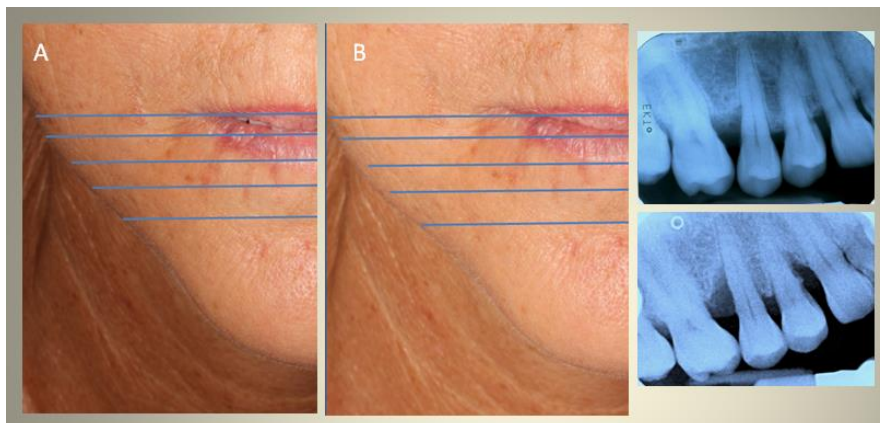


The number of signs and symptoms of bruxism varies greatly between patients. In the following case, attrition of the incisal edge coincides with emerging abfractions, lingual torus and hypertrophy of the masticatory muscles; as well as the patient being aware of her bruxism for years.





On other occasions, there are few manifestations. The following case is that of a patient who recognizes that she suffers from severe bruxism in the form of tooth clenching, and who has not been wearing the guard that was made for her 15 years ago. She experiences discomfort when chewing in the first sextant, corresponding to the formation of two intraosseous defects. The only objectifiable sign of bruxism was hypertrophy of the masseters, the contraction of which can be clinically observed (B).



In the worst case, as previously discussed, bruxism first appears as toothache for no apparent reason, and in the absence of other signs or symptoms.

## Considerations on the nature of bruxism and its impact on the teeth and periodontium

There does not appear to be any major consensus with regard to the definition of the possible types of bruxism. One attempt to reach consensus (Lobbezoo et al., 2013, J.O.R.) has proposed the following definition of bruxism and a scale to measure it: it is a repetitive activity of the jaw muscles characterized by grinding or clenching of the teeth or by bracing and thrusting the jaw. It can occur during the day or at night.

There are three different degrees: possible (based on one's own perception and medical history), probable (based on the above and on clinical examination) and definite (based on the above and records of the patient's activity during sleep).

We wished to contribute our own experience, after monitoring the evolution of more than 200 patients with bruxism for 20 years.

First, bruxism has been estimated to be present in 10% to 20% of the population. While probable, this observation cannot be proven for certain, as bruxism and its variants are not clearly defined, which is also true of their degrees of intensity. It is quite possible that everyone has clenched their teeth at one time or another.

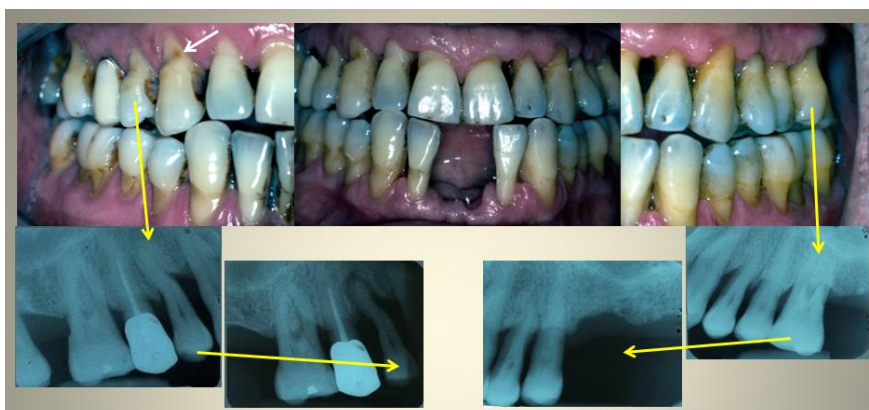
With regard to the time factor, bruxism seems to be highly dynamic, changing over the course of a person's life. It has been described as being less frequent after the age of 65. This is the case in our experience. Another interesting fact is that emergency appointments for toothache associated with bruxism are two to three times more frequent during the transition from spring to summer.

The etiology of abfraction has been attributed to the resulting overload of certain occlusal forces. The vector of the clenching force is not fixed, but rather it varies among the wear facets that are created. The impact of such forces in the cervical region is related to abfraction. These, in turn, are invariably associated with gingival recession, but the impact on the rest of the periodontium has yet to be clarified.

The slight variance in the clenching forces transmitted to the periodontium could be associated with swaying forces, the harmful effect of which has been speculated in terms of the periodontium. The true role of bruxism in healthy periodontium has yet to be clarified, but a reasonable hypothesis would seem to be that a periodontium that has been reduced by periodontal disease could withstand less clenching force and the resulting swaying movement of the teeth, especially in the presence of inflammation caused by bacterial plaque. Graphically speaking, this swaying movement is similar to using a forceps to move the tooth a little every day.

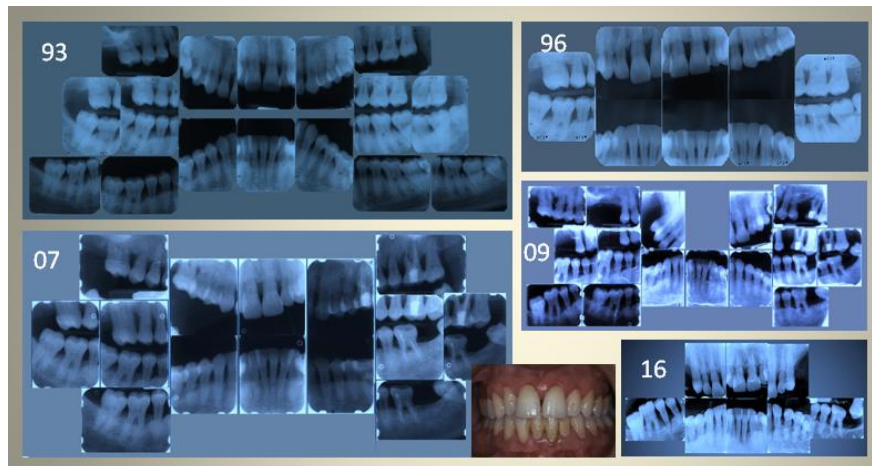
Regardless of the above reasoning and according to our research and that of other authors, bruxism doubles the risk of tooth loss, with a greater impact if combined with smoking. The following pictures show the evolution of a patient with clenching or centric bruxism. Heavy tobacco use also played a part. There are evident abfractions in the first sextant (white arrow).

Tooth loss due to periodontal disease in this patient was among the highest in our sample and happened over the shortest time. Over the course of 10 years of maintenance care, premolar 15 and molar 27 were lost, among other teeth.

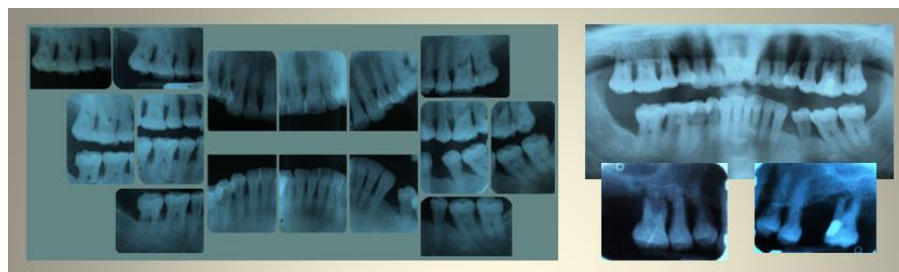


The following clinical case was one of the worst evolutions in our database. Along with heavy smoking, the centric bruxism was extreme, as recognized by the patient. However, signs of tooth wear were mild.





Our most dramatic case of the combination of bruxism and tobacco use in patients under periodontal maintenance care was the loss of molars and some of the top premolars over five years. The only signs of bruxism were occlusal facets. The diagnosis of bruxism was based solely on recognition of the habit by the patient.



These cases contrast with one monitored for 20 years (case A, B), with extreme occlusal and cervical wear, but in which there was no tooth loss. The patient was a non-smoker and regularly wore a dental guard. In spite of this, she suffered highly extensive tooth wear. This might suggest that the degree of wear is not related to periodontal effects.

In our database, bruxism was associated with tooth loss due to periodontal disease, especially in association with smoking. However, extreme bruxism in itself might be associated with the loss

of support and subsequent tooth loss, based on our clinical experience. This is the case with the patient in which vertical defects appeared in the top premolars.

## Conclusions

The tooth wear produced by the two types of bruxism appears to be different. It is greater in the occlusal region with grinding (eccentric), and greater in the cervical region with clenching (centric).

However, there is no clearly defined line between the two types of wear, since these concur to varying degrees in many patients.

The role of bruxism in the healthy periodontium has yet to be clarified. However, it seems logical to postulate that the reduced periodontium would more poorly withstand the extreme forces of bruxism, especially clenching.

In our database, bruxism is clearly associated with tooth loss if accompanied by tobacco use. However, extreme bruxism could, in the absence of smoking, contribute to tooth loss in certain situations.