Talking with Patients

Bite Guard

Lee W. Boushell, DMD, MS*

WHAT IS IT?

The bite guard is a device that covers the biting surfaces of the top or bottom teeth. Other names for this device include bite splint, occlusal guard, occlusal splint, night guard, and occlusal orthotic device. It may be fabricated from hard or softer, flexible materials depending on the condition diagnosed and the goals of the treatment. Frequently, the surface of the bite guard is carefully shaped so that, when being used, the teeth, jaw joints, and jaw muscles can assume a position and level of activity that promotes optimum protection of these structures.

WHEN IS A BITE GUARD NEEDED?

You or your dentist may discover an excessive amount of wear on the biting surfaces of your teeth. Wear will occur if the top and bottom teeth are habitually rubbed together, a process generally referred to as grinding. Grinding may occur during the day or night and may involve some or all of the teeth (Figure 1). More severe grinding generally occurs at night while sleeping. Damage caused during grinding will be more rapid and severe when pressure is simultaneously applied to the teeth. The additional pressure that forces teeth together is called clenching. Repeated clenching, with or without grinding, may cause teeth to crack and fillings/crowns to fail. *Bruxism* is the term dentists frequently use to describe the process of grinding and clenching. The bite guard is used to protect the biting surfaces from grinding and allows clenching pressures to be evenly distributed over all of the teeth (Figure 2).

Grinding and clenching may also aggravate jaw joints that are experiencing deterioration. Joint deterioration is frequently painful and in some cases feels like an ear ache on one or both sides. Bite guards lower the amount of pressure that is applied to the joints and may help reduce joint swelling and pain. The shape of the bite guard may be designed to temporarily modify the position of the joints in order to foster healing.

Joint design allows the muscles to move the jaw to a position where the greatest numbers of teeth contact. Fatigue and pain may result when this movement requires excessive use of the jaw muscles. Patients may experience headache, a sense of tiredness of the jaws, or an aching of the teeth when jaw muscles are being overused. Jaw muscles are able to apply traumatic forces to the joints or teeth, resulting in damage to these structures. The bite guard allows your dentist to lower muscle activity in two ways: (1) it allows the jaw to shift to a position that requires minimal muscle activity, and (2) it strategically controls the timing of front and back tooth contact in a way that reduces muscle activity (Figure 3).

The bite guard is frequently a useful aid in determining contributing factors of jaw or muscle pain. When bite guard treatment results in pain relief, your dentist may recommend treatment that results in improved relationships between jaw joints and teeth. Treatment may only require selective change to portions of teeth that interfere with normal function. More severe problems with how teeth fit together may require orthodontic repositioning of your teeth. Jaw surgery, in addition to orthodontics, is occasionally required. Longterm bruxism may result in a need for extensive restoration of the teeth. The bite guard is frequently utilized to protect new restorations

*Assistant professor, Department of Operative Dentistry, University of North Carolina at Chapel Hill School of Dentistry, Chapel Hill, NC, USA



Figure 1. A patient with excessive wear resulting from grinding the lower front teeth.



Figure 2. A hard bite guard is used to protect the teeth from grinding and clenching.



Figure 3. An example of a bite guard that covers the top teeth, distributes biting pressures, and establishes a jaw position/tooth contacts that reduce muscle activity. The blue dots and red lines are areas that have been refined to ensure proper function of the bite guard.

while simultaneously minimizing jaw muscle activity.

HOW IS A BITE GUARD MADE?

Your dentist makes replicas (models) of your teeth from a soft impression material placed in your mouth. The nature of your condition may also require measurement of your jaw position and precisely how your teeth fit together. The models of your teeth are assembled on an artificial jaw and a soft (vinyl) or hard (acrylic) material is custom fitted to the biting surfaces of the top or bottom teeth. Hard bite guard materials are necessary when the condition requires careful control of the jaw position and timing of tooth contact. Refinement may be necessary as the bite guard is placed in your mouth (Figure 3). Additional appointments with further adjustment of the bite guard may be required. Ongoing habits of grinding or clenching will lead to wear of the bite guard. Readjustment, repair, or replacement may become necessary.

CONCLUSIONS

The bite guard is used to protect teeth from habits of grinding and/or clenching. Bite guards are also helpful in reducing the loading of the jaw joints and teeth. Some bite guards are designed to allow joint position and tooth contact timing such that damaging muscle activity is reduced. Treatment with a carefully adjusted bite guard may help in the diagnosis of pain causing tooth and jaw relationships. Bite guards are also useful in planning and implementing changes necessary to improve relationships between the joints, teeth, and muscles. Bite guards help protect extensive restoration of the teeth. Your dentist can advise you of the appropriate bite guard for your situation.

DISCLOSURE

The author does not have any financial interest in the manufacturers whose materials are discussed in this article. Copyright of Journal of Esthetic & Restorative Dentistry is the property of Blackwell Publishing Limited and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.