

Occlusal splints have long been used to effectively treat a range of TMD and TMJ disorders, bruxism, headaches and neck pain. While dental splints certainly remain a useful treatment for these conditions, more dentists are seeing occlusal splints as a preventative treatment to protect and preserve dentition in patients that are not necessarily afflicted with a TMD or TMJ disorder.

That approach makes occlusal splints a natural fit for the long-term protection and preservation of many cosmetic cases including crowns and implants.

Occlusal splints are not just helpful for protecting cosmetic work. While regularly occurring sleep bruxism affects around eight percent of people, almost everyone will experience isolated incidences of stress-related teeth grinding. That makes dental splints an excellent solution for diligent patients who have committed to good general oral health, and care about protecting their natural enamel from the threat of generalized night grinding and clenching — particularly during stressful times.

What are the latest in splint materials and technology?

Dental splints were historically manufactured from hard acrylic materials that were prone to warping during the curing process. This made a precise fit difficult to achieve, and poor fitting occlusal splints often caused patient discomfort. This has been largely corrected today with more advanced manufacturing techniques and more sophisticated materials including hard resins used in conjunction with acrylics. That continues to make acrylic hard splints still very useful today in treating severe teeth grinding or clenching where strong protection of opposing dentition is required.

Thermoplastics — sometimes used with hard acrylic or resin — have been introduced in more recent years to improve patient comfort and fit. Thermoplastics are made from a liquid monomer and powder polymer that are heat cured. This gives thermoplastic occlusal splints greater flexibility to drastically improve patient comfort while also retaining its original shape. Thermoplastic dental splints also deliver superior contouring ability, which further improves patient comfort and ensures a more precise fit.

While soft dental splints tend to be manufactured solely from thermoplastic, some occlusal splint types retain a hard acrylic or resin layer. This is particularly useful in treating TMJ. The hard acrylic layer is used to provide a more durable surface that maintains rigidity and protection against opposing dentition, while the thermoplastic base is more comfortable for the patient.

Perhaps the greatest advancement in dental splints has come in manufacturing. CAD/CAM milling, and more recently 3D printing, now provide much more precise contouring. This

achieves a much better fit, which not only improves the treatment outcome, but also boosts patient comfort and therefore patient compliance. These more sophisticated manufacturing techniques have also drastically reduced clinical time with far less chair-side adjustments required.

The dentist simply takes an intraoral scan or physical impression. Physical impressions are 3D scanned and digitized at the dental lab, or intraoral scans are sent directly to the dental laboratory for review. The dental lab then uses specialized software to analyse the splint dimensions to minimise the occlusal thickness and reduce the risk of perforation or over bulking.

Once the digital splint design is approved, the dental splints are milled from a solid block of thermoplastic material or 3D printed.

What are the differences between occlusal splint types?

Type of Splint	Hard Splint (traditional)	Hard Splint (milled)	Hard Soft
Material	Hard acrylic	Hard acrylic	Thermoformed dual laminate material
Method of manufacture	Heat processed	CAD Milled	Thermoform
Add on options	Yes	Yes	No
Design options	Flate Plane, Michigan, NTI, Gelb	Flate Plane, Michigan, NTI, Gelb	Flate Plane, Michigan, NTI, Gelb
Recommended Use	Bruxism, Long Term Wear, TMJ Disfunction. Not recommended for patients with cosmetic restorations	Bruxism, Long Term Wear, TMJ Disfunction. Not recommended for patients with cosmetic restorations	Bruxism, Long Term Wear, TMJ Disfunction. Best suited for protection of cosmetic restorations
Ease of fit	Medium	Medium	Medium to Easy
Comfort	Medium	Medium	Medium to soft
Repairable	Easy	Limited	Limited
Longevity	Long term	Long term	Medium long term
Records needed	Upper or lower model with relevant antagonist. Bite registration highly recommended	Upper or lower model with relevant antagonist. Bite registration highly recommended	Upper or lower model with relevant antagonist. Bite registration highly recommended
Repair instructions	Consult with laboratory with sufficient records	Consult with laboratory with sufficient records	Consult with laboratory with sufficient records

What are the different occlusal splint types?

There are many different occlusal splint types currently on the market. From hard to soft — or a combination of both — the type of occlusal splint you choose depends on the severity of the condition you're treating and the outcome your patient wants to achieve. Here are some common occlusal splint types and how to use them:

Hard splint

Hard splints are typically manufactured from hard acrylic materials, and are made to fit over the upper or lower arch. Hard dental splints are fabricated with a flat occlusal plane to ensure a tight fit. This also provides even contact with the opposing teeth, which is particularly useful for protecting dentition in patients with moderate to severe bruxism, or in patients who frequently grind or clench their teeth. Hard splints are typically designed to be worn at night, and help to keep the jaw in a neutral position to reduce pressure. Hard splints will wear down over time, and may chip or fracture in extreme bruxism cases. As such, hard splints should be assessed for wear and replacement in regular patient check-ups.

Soft/hard splint

Soft/hard dental splints tend to be made from a combination of hard acrylic and softer thermoplastic material. Typically, a layer of hard acrylic is sandwiched together with a layer of softer thermoplastic to create a two-layer occlusal splint. The hard acrylic creates a durable outer shell to protect teeth from grinding and clenching. The inner thermoplastic layer fits directly over the teeth to improve patient comfort. Soft/hard splints can be made to fit over the upper or lower teeth, and are useful in the treatment of mild to moderate bruxism. As soft/hard splints are generally more comfortable than hard splints, they are also helpful for improving patient compliance. As such, soft/hard splints could be considered for use with patients who are particularly sensitive or apprehensive about using hard splints.

How can a dental lab help with occlusal splints?

Whether your patients want to protect cosmetic or restorative dentistry, save their teeth from preventable wear and tear, or treat chronic disorders such as bruxism, TMD and TMJ, your dental laboratory can help connect you with many different occlusal splint types.

You should be able to rely on your dental lab to help ensure the perfect dental splint fit and function for each and every patient. They should be able to provide expert advice on the best materials and occlusal splint types for individual cases to help you provide the personalized treatment solutions and outcomes that your patients expect.

[Partnering with Preferred Dental](#) will help you to better manage patient expectations and reduce clinical time while delivering the best dental experience to all. We are a full-service dental lab with a wide range of splint solutions available to ensure you're always providing highly personalized treatments that are designed to achieve the best outcomes for your patients.

And with more than 40 years' experience working directly with dentists, we understand the pressure you're under to meet patient expectations on tight timelines. We're dedicated to taking the stress out of the process, and only manufacture the best dental splints

That's how we can deliver quality you can trust at competitive prices and on flexible turnaround-times to suit your needs and budget.