

Parafunctional Activity – The Rise of the Digital Splint

By Peter Watt

With digitally milled splints, accuracy and consistency go to a new level, and the intraoral scanner becomes an even more useful tool.

There is no stopping the digitisation of dentistry, and for good reason – it's making diagnosis, treatment planning and clinical execution more accurate.

It's reaching into every corner of the industry, with one of the more recent developments the digitally-milled occlusal splint. This is not a revolutionary change in the treatment of parafunction issues but it does offer the clinician a number of potential advantages, benefits and new options.

The benefit of a digitally-milled splint will be most obvious to the clinician who already uses an intraoral scanner – it is a logical extension of the digital workflow and its built-in accuracy. After all, why choose a thermoformed splint when a digitally milled splint that perfectly matches your perfect digital impression is just a "send" button away? But as Adam Novalija, General Manager of Andent laboratory in Melbourne points out, digital milling technology is even compatible with traditional impression-taking methods.

The advantages of a complete digital pathway are numerous, however:

- ◆ A quicker and less stressful impression-taking procedure
- ◆ No patient discomfort during impression-taking
- ◆ Less risk of human error
- ◆ Consistently accurate and predictable replication of the impression throughout the CAD/CAM process
- ◆ Slimline splint shape helps improve patient compliance
- ◆ Perfect compliance of bite records

CAD – Complete control of the design process, using state of the art software



Fig 1: Initial scan received/prepared



Fig 2: Articulation/occlusion



Fig 3: CAD design prepared



Fig 4: Final – ready for milling



CAM – Milled on the Roeders milling machine

- ◆ Faster turnaround thanks to the removal of the pack-and-send step (not to mention the cost)
- ◆ Better communication and job tracking
- ◆ A perfect digital file on record should a splint be lost or broken

Adam points to a key clinical advantage with the digital method: The clinician can accurately and precisely open up the vertical dimension to solve parafunction issues exactly to their prescription, and all by using CAD/CAM technology. Andent also has an advantage over many of its competitors, as well as users of benchtop mills, with its highly accurate and fast five-axis Roeders milling machines.

Adam is not knocking thermoformed splints by the way – Andent for one has no intention of phasing out these proven and reliable devices – but there is no denying that removing steps like analogue impression-taking and pouring of the model does lead to more consistent results.

"All of the benefits relating to intraoral scanning for crowns apply here, plus with the accuracy of the scan we can basically say, let's turn the dial and see how far we can move that occlusion, and we can give that to our machine, which is going

to make a splint exactly as per that CAD design. There is no human intervention that has that interpretation – it's exactly to the letter."

Parafunction might be a buzzword in the industry but it is merely a catchall phrase for a variety of common bite-related complaints, including bruxism, tooth sensitivity, TMJ issues, migraines and even neck and back pain. A splint may not be a cure but it can reduce or even remove discomfort and even provide a better night's sleep, and it is clearly effective in protecting healthy teeth.

"It's actually also great insurance for a crown or bridge or indeed any major cosmetic dental work," says Adam. "A patient who has invested in six veneers is likely to be happy to purchase a splint to protect them."



Finished – Ready for patient insert

The Andent digital splint is made from strong clear PMMA. It also fits more comfortably, clipping into the undercuts without the need for metal clasps.

Because the splint is CAD/CAM designed, Andent's technicians can dictate the thickness to achieve a slim, consistent occlusion. "That's the benefit of CAD/CAM," says Andent Business Development Manager Brendan Morrison. "You press a button and it gives you the same result every time – it doesn't have a bad day. So Dr Smith who likes his splints produced at 3mm opening and he wants them 2.5mm thick – well, that's just a setting and he gets that every time." ◆

If you want more information about digital splints, contact andent@andent.com or phone (03) 9650 6766