

Bonding for aesthetics and function

Nishan Dixit presents a case in which he provided a conservative approach for stabilising tooth surface loss for a nervous patient.

A patient presented at Blue Court Dental because he was unhappy with his broken, worn-down teeth and damaged restorations. He had severe tooth surface loss caused by a combination of habits, chiefly grinding (figs 1 to 3). The gentleman was in his 60s and had been living and working in the Middle East for 10 years, with little time or opportunity to do anything to address his dental concerns. He had previously only attended appointments for emergency treatment.

The aetiology of the patient's tooth wear was investigated, beginning with a thorough examination into his diet and general health. A visit to his general practitioner had ruled out gastric reflux, he was not taking any medication and his medical history was clear. Checks were carried out to ensure he was following an appropriate diet. The patient had historically been a heavy consumer of highly acidic beverages, but he had more recently reduced his intake. His oral hygiene routine was reviewed, including choice of toothpaste and mouthwash. He was instructed to use less-abrasive products in an attempt to curb further wear.

Treatment planning and diagnostics

A number of options were considered, ranging from the most conservative,



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Fig 1.



Fig 2.



Fig 3.



Fig 4.

non-destructive methods to more invasive treatments. Given the extent of the tooth surface loss, our goal was to balance the patient's occlusion and raise his bite by adopting a purely additive approach and avoiding any tooth preparation (fig 4). The plan was supported by the gentleman, who was a very nervous patient and therefore reluctant to undergo treatment involving the dental drill.

The worn dentition would be built up with composite bonding applied to the UR6 to UL4 and LR5 to LL5 (figs 5 to 7). This transitional plan would enable the patient's bite to be road-tested. Permanent, laboratory-made



Fig 5.



Fig 6.



Fig 7.



Fig 8.

crowns would remain a longer-term option, should these be indicated in the future. In preparation for the transitional bonding, the patient would also be treated for caries. His crowns would be replaced once the tooth wear had been treated and his condition made more comfortable.

The worn dentition would be restored in a three-step technique, with fabrication of models and a mock-up tried in the mouth, followed by direct



Fig 9.



Fig 10.



Fig 11.



Fig 12.



Fig 13.

☞ composite bonding. Photographs and occlusal records were taken. An intraoral scan was carried out to produce the models, which were used to create an indirect mock-up. A clear stent was made by the technician of the diagnostic wax-up using Kulzer Memosil 2 A-silicone. Using the same material, a second stent was produced for fabrication of the composite build-ups (fig 8).

The Kois Dento-Facial Analyser was used for the case articulation and evaluation of the incisal edge position and occlusal plane angle. Next, the



Fig 14.



Fig 15.

mandible was located in centric relation with a leaf gauge deprogrammer, which helped to ensure the patient's muscles were in the most relaxed position.

The mock-up, made with methacrylate temporary material, was placed in the patient's mouth to test occlusion and phonetics. The patient was content to proceed. He was very happy with the size, shape and length of the planned restorations and his speech was unaffected.

The patients' teeth were recorded as A3.5 on the Vita shade guide. He only wanted to achieve a subtle lightening of his teeth, so it was important for him to be in control of the bleaching process. Accordingly, he was provided with Boutique By Night 10 per cent carbamide peroxide home whitening gel for night-time application over two to three weeks. The tooth shade recorded after bleaching was A2.

Balanced occlusion with high-performing composite

At the bonding appointment, the teeth were isolated with PTFE tape and etched with 37 per cent phosphoric acid. Kulzer iBond Universal was applied and light-cured in accordance with the manufacturer's instructions. Kulzer Venus Pearl A2 shade was selected for the transitional composite bonding and Kulzer Signum liquid modelling resin was chosen to enhance sculpting.

I have been using Venus Pearl for many years in both the anterior and posterior regions. It is incredibly easy to handle and manipulate, with low rates of shrinkage and impressive versatility – packable for larger restorations and extremely durable for incisal edges. It exhibits exceptional colour adaptation and stability which can be relied upon. With predictable layering and finishing,

the properties of the material also facilitate polishing to a remarkably high lustre.

With the clear stent acting as a guide, the composite was applied in an alternate method (figs 9 and 10) beginning with the lower arch, each sextant discretely treated from molars to anteriors. The patient returned the following day for bonding of the upper arch, which was performed quadrant by quadrant in a similar alternate method.

Finishing and polishing was carried out, initially with Sof-Lex discs followed by the Kulzer Venus Supra finishing and polishing system, with a final polish using diamond paste. The patient was provided with a hard acrylic splint to wear at night to prevent damage to the transitional bonding.

Goal achieved with minimally invasive approach

The minimally invasive treatment was intended to be a transitional plan, delivering improved aesthetics and balanced occlusion, to help prevent further tooth wear (figs 11 to 13). It was approached as a 'road test' for the patient's new bite, with a view to further treatment in the longer term which may involve indirect, laboratory-made restorations (fig 14).

The patient's nervous disposition introduced an additional challenge to the case. He did not want the buccal composites replaced at that time, which was one of the compromises that had to be worked around when designing the treatment plan. Crown replacement and closure of the interdental spaces may be considered in the future and occlusion will need regular monitoring.

Whilst the patient's immediate goal of improving his smile has been achieved, our aim is to work with him to maintain function and aesthetics and avoid chipping. Future planning needs to account for potential wear and tear, possible staining and maintenance of function if adjustments are required. However, the transitional restorations are currently stable.

The outcome was excellent from the patient's perspective; his objective was achieved of attaining an improved smile with minimal intervention. He was incredibly pleased with the aesthetic effect and nowadays tends to smile more freely (fig 15).