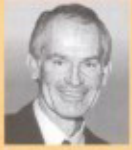

Co-ordinated by Geoffrey M Knight

Old problems, new technologies, new techniques

Full upper and lower dentures have become a less than unacceptable treatment option for many patients with severely worn dentitions, yet alternative solutions tend to be complex and carry significant financial commitments.

Improvements in the adhesion of dental materials to tooth structures and improved properties of composite resins now provide dental practitioners with a relatively simple, non invasive and low cost alternative to restoring severely worn dentitions.

The patient

A male patient aged 72 years presented with a broken down dentition and a history of bruxing (Fig. 1, 2). He spoke of waking up occasionally with a bitter taste in his mouth, suggesting a mild gastric reflux that may be exacerbating his occlusal wear. His gingival health was good despite very average oral hygiene.

Fig. 1. Patient presents with broken down dentition.

Fig. 2. A substantial amount of the body of the incisors has been lost.

Treatment plan

The proposed treatment plan involved building up occlusal tables on the canine and first bicuspid teeth using direct composite resin to regain a function vertical dimension. Direct composite resin crowns would then be placed on the eight incisal teeth. This procedure effectively creates an anterior occlusal splint, stabilizing the vertical dimension yet allowing a small amount of occlusal wear for patients to 'bed in' group function guide planes. Depending upon the patient's age, the remaining teeth in the lateral segments move into the occlusion within three years. Figure 3 shows a patient with severe occlusal wear. Figure 4 shows the patient immediately after the occlusion was restored and Figure 5 shows the patient 11 years later. (Note the graying moustache).

Fig. 3. Patient presents with a severely worn dentition.

Fig. 4. Clinical picture immediately after opening the bite with direct composite resin crowns.

Fig. 5. Eleven years later composite crowns are showing some wear, however, the patient remains comfortable with the aesthetics.

While there is wear of the composite resin, the aesthetics remain significantly better than when the patient first presented. As with most splint therapy, associated symptoms such as TMJ disorders and neck pain predictably resolve.

Two major challenges using this direct technique have been achieving predictable retention of composite resin reconstructions of extensively worn teeth and secondly creating the aesthetics that ceramists achieve with porcelain.

Clinical technique

Minimal tooth preparation involved plaque and pellicle removal with a non fluoride prophy paste and lightly abrading the cervical margins with a slow speed pointed diamond bur to optimize adhesion at the restorative interface. TCA was placed on the cervical gingivae to reduce crevicular exudates.

Improving retention of the resin crown was achieved by cutting a slot in each tooth, (avoiding pulpal tissues) 1.5 mm long and 1.5 mm deep with a #1 round slow speed bur. All teeth were treated with a self etching bonding resin prior to composite resin placement.

The slots were filled with a flowable composite and a 10 mm long, lightly resin impregnated PDS F3 fibre* was pushed into each slot with a perio probe followed by a 10 second photo cure (Fig. 6). The outcome of this procedure creates a series of fibre reinforced slots that provide superior retention for future composite resin coronal restorations (Fig. 7, 8).

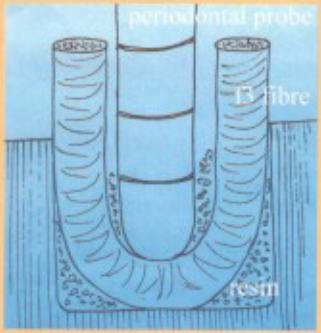

Fig. 6. 1 cm long f3 fibre bonded into dentine slot using a perio probe.

Composite resin cores were constructed using Filtek Supreme*, with a particle size of 20 nm, the material has both high strength and excellent optical properties. Highlights within the laminates using white tint improves the optics and adds to overall aesthetics (Fig. 9).

Fig. 7. Fibres placed into upper arch.

Fig. 8. Fibres placed into lower arch.

Cores can either be constructed on the canine and bicuspid teeth first to ▶

Continued from page 25

Fig. 9. Crown cores constructed using nano filler particle composite resin.

establish vertical dimension and then place crowns on the incisors or else (with a little experience) construct the upper arch first followed by the lower arch.

Facial and proximal surfaces were then covered with a thin layer of microfill composite resin, Filtek enamel shade†. Microfill resins are required to generate a bright, long lasting high gloss surface (Fig. 10).

Micro hybrid resins can be polished to a relatively high sheen but will lose their luster after about three months.

After anatomical contouring and polishing, the clinical result has fulfilled the outcomes that the patient required (Fig. 11, 12, 13).

Patients should be recalled after one week to adjust the occlusion and further polish the composite

Fig. 10. Enamel shade microfill resin cover, enhances value and polishability. Interproximal paper points prevent overhand and absorb gingival exudates.

Fig. 11. RHS view of completed reconstruction.

Fig. 12. LHS view of completed construction.

Fig. 13. Facial view of completed reconstruction.

surfaces. A final recall is suggested after a further three months for fine tuning the occlusion and final polishing.

Disclosure:

The author has a financial interest in Professional Dentist Supplies Pty Ltd.

*Professional Dentist Supplies Pty Ltd, Melbourne, Vic.
†3M ESPE, Thornleigh, NSW.