AESTHETIC UPDATE

Compiled by Geoffrey M. Knight

The plum pudding resin restoration

Public demand for affordable tooth coloured dentistry and improvements in the physical properties of restorative materials, has encouraged more dentists to routinely use composite resins to restore posterior teeth.

The two main impediments to direct resin usage are the difficulty dentists have in achieving predictable proximal contacts and the time consuming process of contouring the occlusal surface, particularly when cusp overlays are involved.

Over the years there have been numerous attempts to use the opposing arch as a template to create the occlusal component of a restoration. Most of the procedures described have been tricky and time consuming, factors that may account for the lack of acceptance into everyday dentistry that these techniques would appear to deserve.

Although purists may well be critical of a technique described without the use of rubber dam, it is well to remember that the primary objective of the dam is to assist with moisture control and this can often be achieved by other means. However, an inability to create an acceptable moisture free environment would be a contraindication to use this technique.

The following procedure enables clinicians to produce large composite resin restorations that may include cusp overlays. The resultant restoration will have predictable contact areas and a functional occlusal table within an envelope of protrusive and lateral movements. Furthermore, the technique will save a dentist at least 10 minutes of clinical time with occlusal contouring.

• A patient presented with a large fractured amalgam restoration in a lower right second permanent molar that had both buccal and lingual fracture lines associated with the remaining cusps (Fig. 1). The various restorative options were discussed with the patient who chose to have the tooth restored with a direct composite resin restoration.

• Figure 2 shows the tooth prepared for placement of the restoration. The amalgam and residual caries were removed and remaining occlusal enamel tapered back to just over the occluso-buccal margins (Diagram 1). The preparation was air abraded to round over line angles and assist with retention and trichloroacetic acid was used at the gingival margins to control exudate. Finally, the tooth was etched with 37 per cent phosphoric acid for 10 seconds and washed and dried with clean air.

• Proximal margins were created using the Palodent* matrix system. A resin modified glass ionomer cement (RMGIC) (Fuji Bond LC)† lining was placed and cured. A further layer of RMGIC was smeared over the base and after a hybrid composite resin was placed up to the level of the proximal margins, photoinitiation was applied for 20 seconds (Fig. 3). After removal of the

*Amalgadent, Malvern, Vic.
†G-C, Japan

Fig. 1.

Fig. 2.

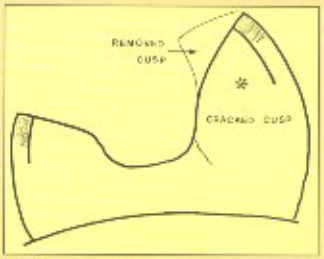

Diagram 1.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 8.

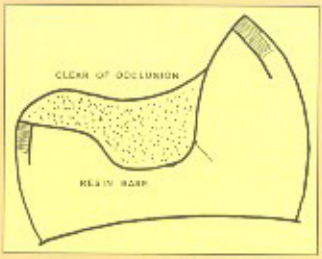

Diagram 2.

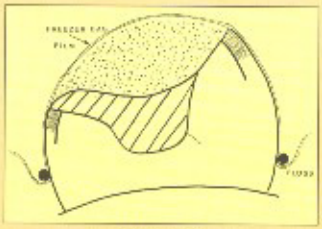

Diagram 3.

Fig. 9.

matrices the proximal surfaces were cured for a further 20 seconds. The proximal areas were finished with an abrasive strip and examined for overhangs and marginal defects. *Finishing the proximal areas at this stage makes it much easier to thread dental floss later in the restorative process.*

• The occlusion was analyzed using articulating paper and any interferences within the envelope of occlusal movement were eliminated with a high speed round bur (Fig. 4; Diagram 2). Note the paper points used as matrix wedges as well as for moisture control.

• The tooth was then re-etched with 37 per cent phosphoric acid for 10 seconds, washed and dried with clean air. After the region was isolated from moisture with cotton wool rolls, a layer of RMGIC was applied to the occlusal surface and an increment of a condensable composite resin (Glacier)‡ judged to be slightly more than required to complete the occlusal table was placed onto the surface (Fig. 5).

‡Southern Dental Industries, Bayswater, Vic.

Fig. 6.

Fig. 10.

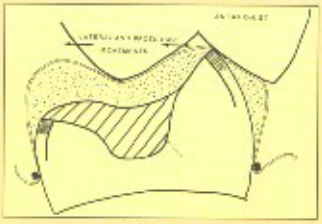

Diagram 4.

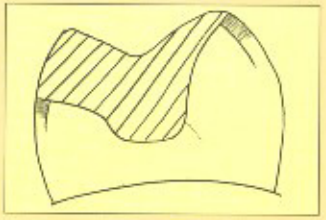

Diagram 5.

Fig. 7.

• A piece of freezer bag film about 2 cm square was placed over the restoration and dental floss was passed through the mesial and distal proximal surfaces and tied on the buccal (Diagram 3). *Looking very much like a Plum Pudding* (Fig 6). Freezer bag film is relatively strong, thin, easy to control in the mouth and does not adhere to uncured composite resin. ▶

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• The patient was asked to place the tongue as far back as possible on the roof of the palate (this was done to achieve a retruded occlusion) and bite together moving the jaw backwards, forwards and sideways over a full range of mandibular movements (Diagram 4). With the tongue remaining at the back of the palate the patient was asked to close together again and the buccal aspect of the restoration was cured for 10 seconds to tack the restoration in place (Fig. 7). After opening the occlusal table was cured for a further 20 seconds (Fig. 8).

• The dental floss and film were removed exposing an occlusal table that extends slightly over the buccal and lingual surfaces but not into the proximal areas (Fig. 9). The restoration required the removal of excess resin buccally and lingually with minor contouring of the occlusal table to create a more anatomically appearing surface prior to final polishing (Fig. 10). Overlaid fractured cusps are also afforded protection using this technique (Diagram 5).

Some may argue that this extends composite resin beyond its acceptable clinical usage and although ongoing results do not support this, practitioners have the right to decide what works in their hands. However, there are real biological and financial benefits for a patient, who has received a functional restoration with minimal tooth preparation at a lesser cost than an indirect restoration. The ability of a practitioner to provide this service in a single visit, without laboratory costs, enables an hourly return on time that is often superior to that achieved with indirect techniques. □

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Dental ceramic fused to metal restorative materials
ISO 9693:1991
IPS Classic
IPS Classic 'V'
IPS Gingiva
IPS Gingiva Kit

Implants for surgery – Ceramic materials based on yttria-stabilized tetragonal zirconia (Y-TZP)
ISO 13356.2:1997
Cosmopost

These products are distributed by Ivoclar Pty Ltd, 1-5 Overseas Drive, Noble Park Vic 3174.