Compiled by Geoffrey M. Knight

Productivity increases with Class II resins

The use of composite resin as a Class II restorative material is both time consuming and technique sensitive, often caused by difficulties in achieving good isolation from the oral environment and predictable contacts at the proximal surfaces.

There is however, a growing bank of evidence confirming that satisfactory clinical results can be achieved with these materials when correctly handled and while increasing numbers of patients are asking for alternatives to dental amalgam dentists will continue to be under pressure to provide predictable and affordable tooth-coloured restorations.

Tooth isolation

A successful resin restoration requires isolation of a preparation from the oral environment in order to eliminate contamination from saliva, crevicular exudate and possible gingival bleeding.

The use of rubber dam enables the successful isolation of a tooth in most circumstances and is prescribed in many texts as a mandatory clinical procedure for the placement of a resin restoration.

In reality, placement of a straightforward, single restoration is often not cost effective using rubber dam.

Successful isolation of a tooth from saliva can be achieved by the use of strategically placed cotton roles and a small amount of TCA (trichloroacetic acid) placed at the cervical area will prevent crevicular exudate and arrest any slight bleeding of the gingival tissues that may occur during cavity preparation or matrix placement.

Before etching a tooth, dry the preparation and place a drop of TCA with a perio probe (or similar instrument) around the cervical region (Fig. 3) with special attention to the proximal areas. The application of TCA directly onto the gingival tissues will form a white eschar that lasts for about 1 hour. As TCA is a strong organic acid, special care must be taken when using it intra-orally. Patients feel no discomfort when it is placed on oral tissues but it is painful if it comes into contact with the skin.

After etching with 37 per cent phosphoric acid for 15 seconds, wash the preparation with copious ➤

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amounts of water and remove excess moisture with an evacuator.

When a restoration is to be placed in the lower arch position four cotton wool rolls, two in the lingual crevice, one in the buccal sulcus and one placed vertically with a tip against the opening of the parotid duct as shown in Diagram 1, Fig. 1. Placement of a vertical cotton wool roll also encourages patients to hold their mouths open during placement of the restoration. A fifth cotton roll may also be useful placed from the lingual sulcus around the back of the last lower molar.

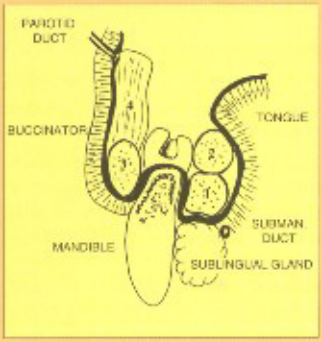

Diagram 1.

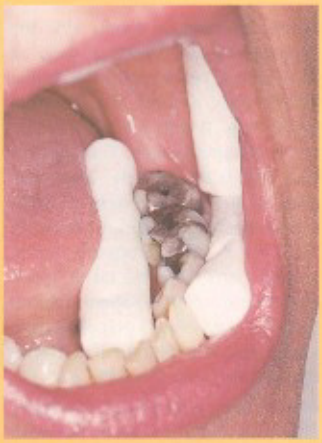

Fig. 1.

When a restoration is to be placed in the upper arch, moisture control is easier to achieve, usually by placing a cotton roll in the buccal sulcus and a further roll vertically against the parotid duct to absorb saliva and to assist patients keeping their mouths open during restoration placement (Diagram 2, Fig. 2). When a cavity preparation is situated in the buccal area close to the back of the mouth a number of companies manufacture pieces of heart-shaped absorbent cardboard designed to assist with cheek retraction and to absorb excess saliva from the parotid duct.

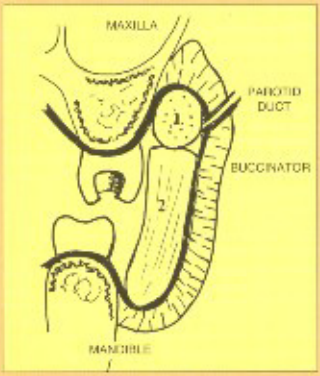

Diagram 2.

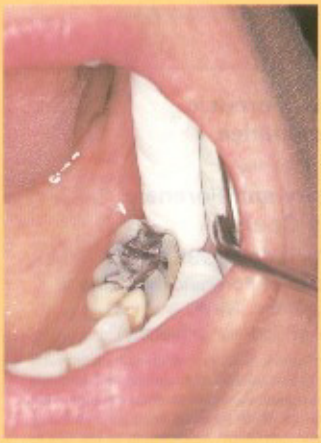

Fig. 2.

Fig. 3.

Placing cotton rolls as described above will usually provide sufficient time to place a single resin restoration in most situations. When a more complex procedure is required the cotton rolls can be removed when they become laden with saliva and replaced with fresh rolls although isolation of the area with rubber dam in such cases is obviously the technique of choice.

Once the area has been isolated, the cavity preparation may be dried with clean, oil free air. It is often useful to check that the triplex air is not contaminated with either oil or water by blowing air over the reflecting surface of a mouth mirror.

Matrix selection

There are many techniques available for achieving proximal contacts with composite resin, an indication that there is no universally successful technique.

The introduction of the Palodent BiTine sectional matrix holder (available in Australia from Amalgadent (008) 808 450) has facilitated the task of achieving contacts with composite resin, however it is important that practitioners are aware that **no single system is appropriate for all clinical situations!**

The matrix holder is applied with a pair of rubber dam clamp holders and functions so as to hold the sectional matrix and separate the teeth simultaneously. The metal ➤

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sectional matrix supplied with the Palodent system is often difficult to place interproximally and the use of preformed mylar contact bands (available from Ivoclar) are often useful as alternative matrices. The bands require sectioning with scissors to about 1.5 cm length. Once in place, the bands are clear and so facilitate better curing than metal bands and the highly polished mylar surface creates a superior proximal surface to the metal.

Wedging

The use of wedging during placement of proximal restorations has played an integral role in preventing overhanging margins and achieving contact points particularly when alloy restorations are being placed.

The forces generated at the proximal wall of the matrix band during placement of a composite resin restoration are a fraction of those when an amalgam is being placed, yet dentists have been trained to wedge as firmly as possible and so continue to do so. Apart from generating a negative proximal contour, traditional wedging techniques also causes trauma and bleeding to the proximal gingivae. Both situations best avoided, particularly when a resin restoration is being placed.

Paper points make excellent interproximal wedges for the placement of composite resins. By choosing a point of a size that will fit firmly into the inter proximal space, the matrix band is held firmly enough against the cavity margin to prevent overhangs forming, a positive proximal contour is maintained, gingival exudate or bleeding is largely absorbed and there is minimal trauma to the proximal gingivae. All positive attributes when restoring a tooth with composite resin (Diagram 3).

Furthermore, when using the BiTine matrices it was often difficult to negotiate the tines around wooded wedges, however paper points are easily deflected to accommodate the tines.

Plastic wedges have a single point contact when used on teeth with convex proximal profiles and two contact points when used on teeth with concave proximal profiles and are a poor choice for dental wedging.

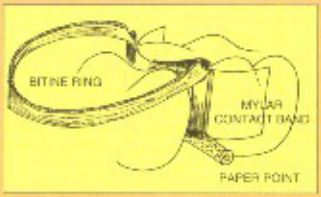

Diagram 3.

Technique summary

Following is a technique summary that will in many cases improve the quality and predictability of a proximal margin as well as reduce the clinical time required to place a restoration. No single technique can be used in all clinical situations and this technique will often require adaptation to a particular clinical environment.

- Upon completion of the cavity preparation, evacuate excess moisture from site.
- Dip a periodontal probe into TCA and run the probe subgingivally around the cervical margins to reduce crevicular exudate and gingival bleeding (Fig. 3).

Fig. 4.

Fig. 5.

- Etch the cavity with 37 per cent phosphoric acid for 15 seconds, wash with copious amounts of water and evacuate excess moisture.
- Apply cotton wool rolls as described for temporary isolation of the cavity site from saliva (Fig. 1).
- Dry the area with clean, oil free air.
- Cut a mylar contact band and place it interproximally.
- Insert a paper point until the proximal space has been filled and the matrix is firmly positioned against the cavity walls.
- Place the BiTine matrix holder with a rubber dam clamp holder to position matrix (deflecting the paper point) and to apply separating pressure on the interproximal region (Diagram 3, Fig. 4).
- Place the restoration (Fig. 5).

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