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Direct bonded fibre reinforced bridges

One of the best things about dentistry is the uniqueness of each clinical situation.

While single tooth implants have made a large impact within the profession they are time consuming, clinically demanding and sadly, tend to be over diagnosed and prescribed.

Part of the menu of options that are available for clinical situations involving a missing

tooth is the single tooth direct resin bridge. The predictability of these bridges has been enhanced substantially with the inclusion of various fibres to improve their strength, particularly at the interface between the pontic and abutment.

The fibres

High density, plasma etched polyethylene, ceramic and carbon fibres are all means of reinforcing composite resin. The resin adheres well to all these materials and unlike metals the fibres flex slightly with the composite resin and are less likely to debond.

The retention of a pontic in the lateral segments of the mouth can often be enhanced by the removal of an existing restoration from the abutment tooth either proximal to or adjacent to the pontic.

Removing a Class II restoration situated adjacent to a pontic enables the placement of a reinforcing fibre that will substantially improve the strength of the bridge (Diagram 1).

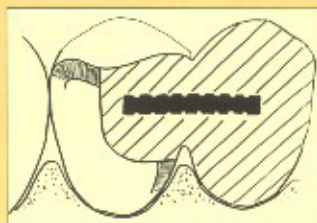


Diagram 1

When an unrestored proximal surface on the abutment tooth butts up against the pontic, the removal of the restoration and the placement of a small circular hole through the proximal surface enables the fibres to pass through the hole to enhance

- Finally place a small amount of enamel shade at the occlusal third of the pontic to create a natural appearance.

Single tooth bridges are best constructed as cantilevers as it eliminates torque stresses between abutments, allows the space to move within the occlusion and finally is easy to floss and keep clean.

- Place a small increment of enamel shade in the space between the abutment and pontic, sculpting to create an anatomical contour and cure.

• At the adjacent proximal surface place a sectional matrix, wedge with a paper point. *Composite resin does not require solid wooded wedges that make gingival tissues bleed and interferes with the placement of the bitine ring.* Place a bitine ring with a pair of rubber

dam clamp holders to create the molding for the proximal contour of the pontic (Fig. 6).



Fig. 6.

- Apply a thin layer of RMGIC into which an enamel shade microfill resin is placed. Photo-initiate 20 seconds, remove the bitine ring, section matrix and paperpoint and cure facial and lingual surfaces for a further 20 seconds.

• Add hybrid resin to the lingual surfaces to create anatomical contours and cure.

- The bridge is now ready for final contouring.

• 'Rough-in' the occlusal surfaces with a course emery disc and the facial and lingual surfaces with a course high speed tapered diamond bur.

• Use a fine tapered twelve fluted carbide bur to complete contouring of the proximal, labial and lingual surfaces.

• A slow speed pointed diamond is useful for the final contouring of the pontic against the gingival surfaces.

• Generate anatomical contouring on the occlusal surfaces with a high speed bullet shaped stone.

• It is essential to confirm that there are no occlusal interferences on the pontic in normal occlusion, lateral movements and finally at the extremes of mandibular movement where bruxing and clenching occurs.

A pontic will fracture if there is a heavy occlusal load in any of these situations.



- Use a fine Softflex disc to finish contouring of the abutment and pontic surfaces before finishing with a rubber polishing cup.
- The bridge is completed by placing a resin coating over the surface to protect any RMGIC exposed at the occlusal surfaces (Figs. 7 and 8).



Fig. 7.



Fig. 8.

While there are some dentists who view this clinical approach as a temporary compromise to 'real dentistry' the perception of patients is quite different. Certainly, about 5 per cent of these bridges may fail and patients must be warned about the possibility. However, clinical records that follow many of these bridges for up to 25 years suggest that they are not a temporary restoration and they certainly fulfill all the criteria for minimum intervention adhesive dentistry.

The *biological costs* for the teeth are reduced as there is minimal

removal of healthy tooth structure.

The *fiscal costs* are reduced for both patient and dentist. These bridges can be charged out for the same fee for a single tooth cobalt-chrome denture as they are certainly a better alternative than a removable prosthesis and the dentist doesn't have to deal with laboratory costs.

The *emotional costs* to the dentist is reduced as a practitioner is achieving an excellent hourly return and enjoys the option of having to deal with an unsatisfactory outcome (euphemism for failure) by simply removing the bridge and refunding the patient. Dentists can expand their practices in two ways, by doing the same things for more patients or more things for the same patients. □