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The non invasive fibre reinforced resin bridge

There are many clinical situations where a provisional bridge is indicated without preparation of adjacent tooth structures.

The range of clinical applications includes provisional pontics prior to implant placement and to maintain the space of an exfoliated tooth during orthodontic treatment.

Orthodontic treatment presents particular problems when constructing provisional pontics as the occlusion has not been stabilized and there are

potential occlusal interferences that may challenge the survival of a bonded pontic.

Ribbon* has recently introduced a fibre called Ribbon-THM (Thinner, Higher Modulus) that is composed of thinner fibres with a higher fibre count that is particularly useful for the construction of such non invasive resin bridges.

Woven fibres are extremely strong and resist fracturing. However, placing them only on the lingual surface of an abutment and pontic will improve the strength at the isthmus but will not prevent failure of the pontic from occlusal fatigue.

A substantially stronger bridge may be constructed by wrapping the fibres around the facial and lingual aspects of the abutment tooth and extending the fibres into the pontic space.

A nine year old boy was referred by his orthodontist to place a provisional bridge replacing tooth 21 that had been lost through trauma. ►

The occlusion was tight and during mandibular movements there were instances where the lower teeth intruded into the potential anatomical profile of the 21.

Prior to placing the reinforcing fibre, a wooden wedge was inserted firmly between the right central 11 and lateral incisors 21 to slightly increase the interproximal space between the two teeth (Fig. 1).



Fig. 1.

Orthodontic separating rings may also be used but have to be placed about 24 beforehand. Further to this, the space created by a ring may be in excess of that required.

After placing the wedge the abutment tooth 11 was cleaned with a slurry of pumice and water, washed, dried and etched with 37 per cent phosphoric acid cream for 10 seconds, washed and dried with oil free air.

The width of the distal aspect of the abutment to three quarters the width of the pontic space was measured and a strip of Ribbond-THM was cut twice this length and soaked with bonding resin.

A Mylar strip was inserted at the distal margin of 11 between the tooth and wedge, and the abutment surfaces were coated with bonding resin on the facial and lingual surfaces.

Small increments of Nulite-F† were placed on the lingual and facial surfaces around which the Ribbond fibre was looped. The fibre was then

crimped with a pair of tweezers on the mesial margin to create a close adaptation to the tooth surface (Fig. 2).

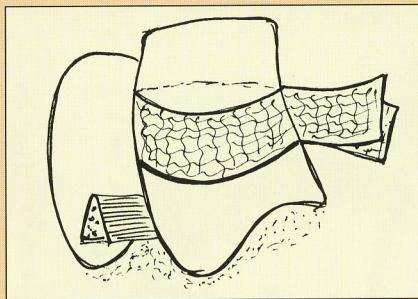


Fig. 2.

Holding the crimped fibres in place the resin was spot cured on both surfaces for 10 seconds after which the fibres extending into the pontic space were cured for a similar time.

A thin layer of hybrid resin was placed on the lingual surface of the abutment and the lingual aspect of the fibre extension into the pontic space. The patient was then asked to bite onto a 3 cm square section of freezer bag while the lingual aspect of the bridge was cured, contained within the occlusion by the freezer bag (Fig. 3).

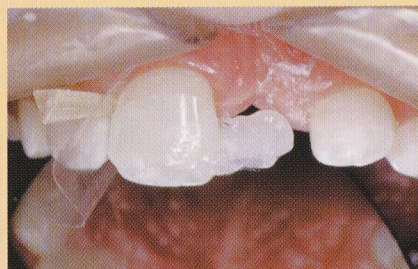


Fig. 3.

A thin layer of microfill resin with a shade matching the body of the tooth was placed over the labial surface and cured.

A small increment of incisal shade microfill resin was placed in the proximal area and after the Mylar strip was wrapped over the labial surface this increment was cured.

A sectional matrix was placed under the pontic extension with the concave margin against the abutment tooth (Fig. 4).

A capsulated resin-modified glass ionomer cement (RMGIC) was placed between the pontic arm and the matrix and whilst the matrix was



Fig. 4.

held firmly against the gingival tissues the RMGIC was cured.

Following this, the facial aspect of the pontic was generated by placing an increment of body shade microfill resin over the labial aspect of the pontic and placing an incisal shade microfill resin at the proximal margins. The distal margin created by placing a paper point into the interproximal space to act as a wedge followed by a Mylar strip and after placing an increment of resin wrapping the Mylar strip around the labial surface and curing.

Diligent removal of occlusal interferences resulted in a somewhat aesthetically compromised pontic. However, this was a more preferred outcome than dealing with a removable prosthesis (Fig. 5).



Fig. 5.

For a more detailed account of pontic construction, readers are referred to the November 1997 issue of the *ADA News Bulletin* or on the web at www.dentalk.com.au go-Aesthetic Update go-Direct Bonded Fibre Reinforced Bridges.

Direct resin bridges provide dentists with an ever increasing range of solutions to every day clinical situations. Their applications are constrained more by dentist's imagination than the quality and range of materials currently available. □

†Nulite Systems International Pty Ltd, Hornsby NSW 2077.