Clinical Case

Using Triodont V3 Rings and V3 Matrices to control the contact points for direct posterior composites
by Dr Graeme Milicich, BDS
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A 22-year-old patient presented with extensive decay in several teeth.

The high caries risk status was associated with her being a professional rower and her constant use of sports drinks for electrolyte and hydration management while training. To manage her high risk status, she has substituted the sports drinks for plain water and now uses solid energy sources for her electrolyte and energy requirements.

To manage the biofilm imbalance and species shift that has become established, she has commenced a treatment program using the Carifree™ range of pH elevation products to help in the re-establishment of a healthy biofilm.

The second premolar had a symptomless, very deep lesion, close to the pulp. Once the decay had been removed, the decision was made to leave a thin layer of affected dentin directly over the pulp horn to avoid a potential exposure.

Sectional Triodent matrices and the appropriate Wave-Wedges were placed to adapt the gingival margins of the V3 Matrices to the cavity margins. The pin-tweezer tabs on the occlusal section of the matrices were then bent on to the occlusal surface of the adjacent teeth to improve visibility. The matrices were then stabilized with molar (green) and premolar (yellow) Triodent V3 separator rings and the contact points burnished with a ball burnisher. The occlusal surface of the V3 Ring tines have a low profile and sit flush with the occlusal surface of the teeth, improving access and visibility.

The closed sandwich restoration technique was chosen to provide a sound, impermeable seal to isolate the deep affected dentin using Fuji IX Xtra (GC) to replace the lost deep dentin and to layer this with Gradia Direct (GC), bonding the two layers of the restoration with GBond (GC), a self-etching bonding agent.

The closed sandwich technique used in this restoration utilizes a selective etching concept to create the best bonds possible to both dentin and enamel. The enamel margins were selectively etched with 37% phosphoric acid gel to provide the best bond possible to enamel, and the dentin was conditioned with 10% polyacrylic acid to create the best GIC bond possible. Once the Fuji IX Xtra GIC was placed and manipulated with a micro-brush dipped in Fuji Lining and the Fuji Lining polymerized with an LED curing light, GBond was liberally painted over the enamel and GIC surfaces and air-thinned after 15 seconds then polymerized.

A thin layer of radio-opaque flowable was then placed over all the internal surfaces and proximal box margins and polymerized. Composite increments were then placed using the 0.5 C-Factor concept until the restoration layering was completed. Removal of the Triodent V3 Rings and sectional matrices revealed a restoration that required very little finishing in the marginal ridge and embrasure regions.
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1. Completed cavity ready for restoration. Triodont sectional matrices, Wave-Wedges and V3 Rings have been placed to create sound contact points.

2. Enamel margins are selectively etched with 37% phosphoric acid gel for 15 seconds and rinsed.

3. The dentin is conditioned with 10% polyacrylic acid for 10 seconds, rinsed and gently dried.

4. Fuji IX Xtra is carefully injected into the depths of the cavity and manipulated on to the dentin using a very small micro-brush dipped in Fuji Lining. The Fuji Lining is polymerized for 10 seconds.

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GBond (self-etching resin bonding agent) is liberally applied to the etched enamel and GIC surfaces for 10-15 seconds. Any dentin that was not covered by the GIC is also effectively bonded at this stage with the GBond. The GBond is then vigorously air-thinned until there is no movement in the bonding layer before polymerizing.

A thin layer of radio-opaque flowable is placed over all internal surfaces and polymerized.

Using the 0.5 C-Factor concept, Gradia Direct was then used in incremental layers to build up the restoration.

Completed restoration build-up.

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V3 Rings and matrices removed. There is a film of bonding agent on the tooth and some thin flash in the region of the marginal ridges that required minimal effort to finish off.

Completed restoration with good marginal ridge contours and sound, wide contact points.