

# Restoration of Proximal Contact in Direct Class II Resin Composites

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## PURPOSE

In Class II restorations, the restoration of proximal contacts is a challenge with any direct restorative material. The Tofflemire and other circumferential matrices have long been the standard for amalgam restorations, because of ease and speed of application, and because they constrict around gingival margins when tightened, lessening the chance of an overhanging restoration. It has also been long recognized that circumferential matrices produce relatively flat proximal surfaces unless they are contoured prior to placement of the restoration (Yetto, 2003).

Increased usage of resin composites for Class II restorations has increased the difficulty of restoring proximal contacts, because the consistency of the material does not displace a band toward an adjacent tooth as effectively as does amalgam (Brackett & Covey, 2000). Spring-loaded rings with tines that engage the

line angles of the teeth and provide proximal separation, in addition to that produced by wedging, have been very effective in compensating for this shortcoming of resin composites (Hilton & others, 2001; Yetto, 2003). The only limitation of these separating rings is that, when too little tooth structure remains on the facial or lingual surface for them to engage, these surfaces must be restored before the rings are applied.

Separating rings are usually sold with metal segmental matrices that have the advantage of being precontoured. Because these rings are not circumferential, all adaptation along gingival margins must be provided by wedges, and it is difficult to reproduce facial and lingual contours in extensive restorations. While the precontoured shape of these matrices produces some rounding of marginal ridges relative to circumferential bands, this shape restricts access for the exact contouring of marginal ridges prior to light curing.

The following case illustrates that circumferential bands can be paired with separating rings in order to realize the advantages of both.

## DESCRIPTION OF TECHNIQUE

A patient presented with carious lesions on the mesial and distal surfaces of tooth #13. Anesthesia was administered and rubber dam isolation placed. Pre-wedging (Wizard Wedges, Teledyne Waterpik Technologies) was done in order to separate the teeth and protect the rubber dam and gingival tissues (Figure 1).

Preparation and caries removal were accomplished (Figure 2). An ultra-thin metal matrix band was burnished and shaped before it was placed on a Tofflemire retainer (Teledyne Waterpik Technologies, Inc, Ft

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Figure 1. Pre-wedging prior to preparations.



Figure 2. Completed preparations.



Figure 3. Tofflemire retainer, burnished band, mesial and distal wedges and rings.



Figure 4. Completed restorations.

Collins, CO, USA). Wedges were placed mesially and distally, and two separating rings (G-rings, Garrison Dental Solution, Inc, Spring Lake, MI, USA) were placed to increase separation (Figure 3). The preparations were etched with 35% phosphoric acid (Ultraetch, Ultradent, Products, Inc, South Jordan, UT, USA) for 15 seconds, then rinsed with water and air dried. A coat of dentin primer/bonding agent (PQ-1, Ultradent Products) was applied to the dentin and enamel, gently air thinned and light cured for 20 seconds. Resin composite (Amelogen Universal, Ultradent Products) was placed in three increments, curing each for 40 seconds.

After removing the matrix band and retainers, the restoration was light cured for an additional 40 seconds from both the lingual and facial. The restoration was then contoured with finishing diamonds (ET, Brasseler USA, Savannah, GA, USA) under air/water spray. Final polish was achieved with the Enhance polishing system (Dentsply Caulk, Milford, DE, USA) and interproximal finishing strips (Sof-lex, 3M ESPE, St Paul, MN, USA) (Figure 4).

## SUMMARY

Although this technique performed well in the case presented, it becomes more advantageous with larger restorations. This would be especially true for core build-up restorations of missing cusps, although such cusps must be restored prior to placement of separating rings. Clear plastic matrices are available and permit effective curing of resins, but the authors find the pre-set contours of these matrices not sufficiently adaptable to differing clinical situations and prefer metal matrices, even though these necessitate additional light curing after matrix removal.

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## References

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