

Direct resin restorations: Proximal contours the key to success

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One of the most challenging aspects of direct posterior resin restorations is achieving good proximal contacts with proper contours. This can become especially challenging when the resulting proximal preparation is wide and the adjacent tooth leaves a large space interproximally.

The goals of posterior direct restorations include:

- Tight contact with the adjacent tooth's proximal surface
- Contour gingiva to the contact that fills the space without food traps
- Buccal and lingual contours that prevent food impaction interproximally

These goals often are not met routinely as circumferential matrices tend to constrict the buccal and lingual contours resulting in inadequate contacts and poor anatomical form. Sectional matrix and ring retainers were introduced in an attempt to combat this and allow the practitioner to achieve better contacts and contours. But, those also had some challenges when the proximal preparation resulted in a box that extended to include a portion of the buccal and lingual walls or space was present between the tooth being treated and the adjacent tooth. The proximal tines of most available rings would jump into the preparation and they had no tooth structure to brace against. This resulted in a constricted contact and narrowed anatomy of the restoration.

The newest generation rings such as the V3 (Triodent) were developed to overcome the negatives of the prior rings available. These rings have wider tines that are able to contact more tooth structure even when preparation has eliminated portions of the buccal and lingual cusps interproximally or there is a greater distance with the adjacent tooth. As with its predecessor the V-ring,



FIG 1: V3-ring straddling the wedge placed interproximally



FIG 2: The V3-rings, molar (green) and premolar (yellow)



FIG 3: Stacked V3-rings allowing placement at adjacent proximals



FIG 4: Preparation for a MOD direct restoration on a mandibular first molar with an open contact on the distal

the tines are designed to straddle the wedge instead of sitting adjacent to it making placement easier (Figure 1). The added benefit is that proximal separation is greater making for a tighter final contact. As all teeth are not created equal, no single ring is ideal for every situation and what fits a molar proximal may not be ideally suited for a premolar contact. With that in mind, Triodent provides two different sized V3-rings, a green for molar contacts and a yellow for premolar contacts (Figure 2). An added improvement from their original ring is the tines have an increased angle to the rings loop to make stacking the rings for placement on adjacent proximals easier

when both the mesial and distal will be restored on the same tooth (Figure 3).

CASE REPORT

A typical clinical situation involves the need to restore both proximal surfaces on the same tooth. This as discussed can be challenging especially when caries removal requires more of the interproximal to be removed. The goal in today's restorative dentistry is to conserve as much tooth structure as possible and only remove carious dentin and enamel. But this can still result in challenges to restoring the interproximals.

The patient presented with an open con-



FIG 5: Sectional matrix placed on the mesial/distal along with wedges and V3 retainer rings are stacked



FIG 6: Application of Bond1-SF adhesive applied with the frocked tip on the syringe to all prepared surfaces and scrubbed for 20 seconds



FIG 7: Application of Bond1-SF adhesive applied with the frocked tip on the syringe for 20 second vigorous rubbing of the prepared surfaces



FIG 8: The appearance of the prepared surface following application of Bond1-SF demonstrates a glistening surface on the dentin

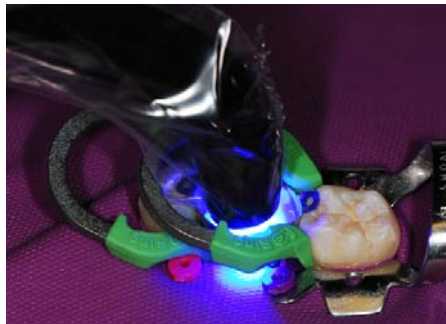


FIG 9: The adhesive is light cured for 10 seconds



FIG 10: Cone burnisher used to adapt Artiste shade B3 dentin to preparation



FIG 11: First layer of Artiste following light curing, showing development of lobes within the dentin layer



FIG 12: Artiste Maverick posterior pit tint applied with an endodontic file to accent the pits and fissures then light cured



FIG 13: Acorn burnisher being used to adapt the Artiste shade B enamel layer

tact between the first and second molars with resulting interproximal caries as a result of chronic food impaction. Following caries removal it was noted that the distal box was relatively wide, but the mesial box preparation was narrow due to the minimal caries in this area (Figure 4). Sectional matrix were placed at both the mesial and distal of the tooth to be restored. A small wedge (pink) was placed at the mesial and a large (purple) distally. Trident V3-rings were placed at both the interproximals (Figure 5).

The preparation was rinsed and lightly dried to eliminate and pooled water. A solvent free self-etch adhesive (Bond1-SF, Pentron Clinical Technologies) was vigor-

ously rubbed into the prepared dentin and enamel surfaces for 20 seconds (Figure 6 and 7). The resulting surface should have a glistening surface (Figure 8) and is then light-cured for 10 seconds (Figure 9).

A layer of Artiste dentin shade B3 (Pentron Clinical Technologies) a nano composite was adapted to the pulpal floor, proximal boxes and over all prepared dentin surfaces. Lobes were formed and pits/fissures developed with a cone burnisher then light-cured (Figure 10 and 11).

To replicate a more natural esthetic appearance, a brown tint, Artiste Maverick posterior pit tint (Pentron Clinical Technologies) was applied with a #8 endodontic hand file to the pits and fissures

created in the dentin later of composite and light-cured (Figure 12).

A layer of Artiste enamel nano composite, shade B (Pentron Clinical Technologies) was placed over the dentin composite and an acorn burnisher was used to adapt it and create the anatomy (Figure 13). The restoration was light-cured from the buccal followed by the lingual and finally the occlusal surfaces (Figure 14). The restoration is now ready for finishing and polishing (Figure 15).

The Trident V3-rings, wedges and matrix were removed (Figure 16). As the proximal contacts are often very tight as a result of this ring system, it may be necessary to use a locking haemostat to remove

restorative section

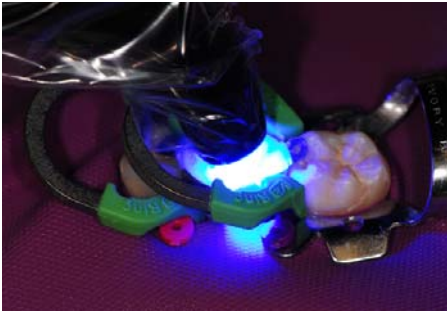


FIG 14: Restoration is light cured



FIG 15: Direct resin restoration following placement of Artiste nano composite prior to finishing



FIG 16: Retainers, wedges and sectional matrix removed



FIG 17: Direct resin restoration following contouring with finishing carbides and diamonds



FIG 18: Direct resin restoration following finishing and polishing, which was accomplished with Fini finishing system

the matrix. Needle shaped finishing carbides and diamonds are used to remove any flash on the buccal and lingual. This was followed by football shaped carbides and diamonds to contour the cavosurface margin (Figure 17). Final polishing was performed by Fini polishing disks (Pentron Clinical Technologies) followed by polish paste on a felt point.(Figure 18)

CONCLUSION

Posterior direct resin restorations can be accomplished resulting in good proximal contours and tight contacts with the Triodent V3-ring, matrix and wedges. Combined with a simple layering technique using Artiste composite allows replication of natural esthetics and anatomy.

About the AUTHORS



Dr. Kurtzman is in private general practice in Silver Spring, Maryland, USA. He has lectured both nationally and internationally on the topics of Restorative dentistry, Endodontics, Implant surgery and Prosthetics and has over 180 published articles. He has earned Fellowship in the AGD, AAIP, ACD, ICOI, Pierre Fauchard, Academy of Dentistry International, Mastership in the AGD and ICOI and Diplomat status in the ICOI and American Dental Implant Association (ADIA).

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