

Avoiding Three Common Class II Problems: Voids, Microleakage and Poor Contacts



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The restoration of cavities involving marginal ridges poses a big challenge in developing proper anatomical contours with tight natural contact areas.

By Dr. Anand Narvekar

Restoration of MOD cavities may pose a challenge to the practitioner and when MOD is adjacent to another Class II, the work becomes more challenging. Despite the many advancements in resin restorations, we have seen many failures especially in Class II's. Out of the several reasons (microleakage, composite shrinkage, isolation etc.) for the failure of a Class II restoration, poor proximal contact remains a major concern.

Recent technological advances in adhesive dentistry along with the increasing patient demand for tooth-coloured restorations have forced the routine use of contemporary resin composites for the restoration of carious lesions. However, especially in Class II composite restorations, among the most difficult challenges to clinicians is achieving perfect adaptation of resin composite to the margins and the internal walls of the cavity and the prevention of overhangs at the cavosurface margin or gingival seat area. Unlike amalgam, composite resins cannot easily be condensed into all regions of the prepared cavity, which in turn affects the establishment of sufficient proximal contacts. In addition to that, the cervical proximal margins in Class II restorations are often considered to be weaker, as dentin bonding is often less predictable. So, we see more failures of Class II due to issues in the proximal box.

In recent decades numerous developments have been made in the field of matrices and wedges that are used in posterior teeth. As resin composite is becoming the most frequently used restorative, many of these products are specifically targeted for improved results with those materials.

The purpose of this article is to show how we can overcome the above-mentioned problems to achieve a longer lasting restoration.

- ◆ *How to Avoid Microleakage* – Select a restorative material like Shofu Beautifil II LS, developed with novel SRS (Steric Repulsion Structured) monomer technology. With low polymerization shrinkage of 0.8%, it has bio mimetic aesthetics with a chameleon effect, is easy to sculpt and polishes in an instant.
- ◆ *How to achieve natural, tight contacts* – Use naturally contoured matrix bands along with separator rings to produce optimal tooth separation. Flash is reduced and excellent, tight, natural contacts are achieved.

Case

A 25 year old male patient visited the clinic with a carious lesion on tooth #35 distally and #36 both mesially and distally. Tooth # 36 shows old composite restoration. The patient complains of sensitivity in the 35-36 region when exposed to cold or sweet. (Pic 01)



Pic 01 – A carious lesion on tooth #35 distally and #36 both mesially and distally. Tooth #36 shows old composite restoration.

Step 1

Rubber dam isolation was done with a heavy dam. This is important if you want to achieve optimal bonding to increase longevity of the restoration.

Step 2

Restoration of tooth #35. After the initial cavity preparation, a deeper carious lesion



Pic 02 – After the initial cavity preparation a deeper carious lesion was identified.



Pic 03 – After removal of decay, sharp edges and unsupported enamel and beveling of proximal box with the help of Super Snap (Shofu) double sided purple disk.

was identified. Caries dye was applied to effectively remove caries with the help of a slow speed round carbide bur. (Pic 02)

Step 3

After removal of decay, the tooth was prepared using a small double-sided Super-Snap Purple disk to bevel the proximal box, remove sharp edges and unsupported enamel.

Clinical tip: This is the most important step if you want to achieve great margin seal and avoid microleakage. (Pic 03)

Step 4

In order to achieve a natural contact, tooth #35 was restored first followed by tooth #36.

A Garrison pre-contoured premolar FX100 (gray) matrix band was placed

in between #35 and #36. Then an extra small (yellow) Fusion Wedge was placed in between. This provides a wedging effect and sealing of the band with the proximal box so that when composite is placed in the box it won't flow excessively beyond the band. This is the most common failure seen in Class II's. Additionally, the wedge stabilizes the band during ring placement (Composi-Tight 3D Fusion FX400 blue, short ring), preventing the band from moving. This is the most important step in doing perfect Class II restorations. (Pic 04)

Step 5

After placing the band, a routine procedure of selective etching was completed with 32% phosphoric acid etchant. Shofu 6th generation FL bond II primer and bond was then applied and photo cured as per instructions. A small amount of Shofu Beautiful Bulk Flow dentin shade was placed in the proximal box. (Do NOT photo cure) Due to its low viscosity, this material provides an excellent adaptation to irregular cavity geometry. Next, a small amount of Beautiful LS II dentin shade A2 was placed in the proximal wall with a plastic composite instrument to create a perfect wall following the contour of the band and then photo cured.

Clinical tip: With this technique, the cavo surface margins can be sealed perfectly, with no air bubbles or under filled areas ensuring a tight seal in the proximal box. (Pic 05)

Step 6

After removal of the band and the ring, you can appreciate the nice natural contour of the tooth. (Pic 05) The remainder of the



Pic 04 – A Garrison pre-contour premolar FX100 (grey) band was placed in between #35 and #36 along with an extra small (yellow) Fusion Wedge.



Pic 05 – Proximal wall was built with Beautiful LS II (Shofu) dentin shade A2, you can clearly see the natural contour.

cavity was filled in increments with Shofu Beautiful II LS dentin A2 shade. Some individual characterisations were created using white stains to mimic natural hypoplastic areas of the tooth. Build-up of the final enamel layer was done with Shofu Beautiful II LS Incisal shade. Anatomical form of the natural tooth was achieved during build-up of the restoration and photo cured. The final photo cure was done with Glycerine to avoid formation of the oxygen-inhibited layer on the composite. (Pic 06)



Pic 06 – The cavity was filled with dentin shade and final layer enamel shade mimicking natural anatomy with some hypoplastic white stains.

Step 7

Finishing and polishing of the proximal wall was done with the help of Super-Snap Purple disk, followed by Super-Snap X-Treme Green disk and Pink disk.

Step 8

Restoration of tooth #36. A tall molar FX300 (blue) band selected for mesial and FX150 (red) band selected for the distal-proximal box. The bands were stabilized with extra small (yellow) and small (blue) Fusion Wedges respectively. The bands were selected as per the height of the proximal box on each side. The tab on the marginal aspect of the FX300 band was bent over the adjacent tooth so that the height of the proximal wall is known. The FX400 (blue, short) ring was placed and the proximal wall / mesial contact built up with composite the same as described earlier in Step 5. (Pic 07)



Pic 07 – A tall molar FX300 (green) band was selected for mesial and FX150 (red) band for the distal-proximal box. Both bands were stabilized with extra small (yellow) and small (blue) Fusion Wedges respectively. Then a FX400 (blue, short) ring was placed and the proximal wall / mesial contact was built up.

Step 9

Making distal contact with the FX500 (orange, tall) ring was described in step 5. (Pic 08)

Step 10

After removal of all rings and bands (Pic 09) the resulting Class I cavity was filled with composite (Shofu Beautiful II LS) in small increments to avoid C factor, while mimicking natural anatomy. Brown stains were added to give a natural effect. (Pic 10)



Pic 08 – Making distal contact with a FX500 (orange, tall) ring.



Pic 09 – After removal of all rings and bands, the resulting Class I restoration is now ready for filling.



Pic 10 – The cavity was filled with composite Beautiful II LS (Shofu) in small increments to avoid C factor, while mimicking natural anatomy. Brown stains were added to give a natural effect.

Step 11

The rubber dam was removed and occlusion checked with 40 micron articulating paper in static occlusion and again in dynamic occlusion with patient in upright position. (Pic 11)

Step 12

Finishing and polishing was done using Shofu OneGloss, aluminium oxide impregnated silicone polisher. A Super



Pic 11 – Rubber dam was removed and occlusion checked with 40 micron articulating paper in static occlusion.



Pic 12 – After finishing and polishing.

Buff disk was used after soaking in water for 20-30 seconds to achieve the final high gloss. (Pic 12)

Conclusion

Resin composites are considered to be the state-of-the-art materials with which to facilitate direct posterior restorations. However, the restoration of a MOD cavity is often a concern for the clinician, who has to overcome problems associated with the adequate handling of interproximal areas as a result of constraints in clinical access. Given the aforementioned inherent limitations, the presence of any proximal anatomical variations in premolars or molars can pose a challenge to the practitioner. Proper reproduction of the proximal concavity is largely dependent on the shape and relation of the sectional matrix and corresponding wedge. Use of advanced systems like the Garrison Composi-Tight 3D Fusion kit along with composite materials like Shofu Beautifil II LS combined with proper technique as described in this article, optimal aesthetics and function can be achieved to create predictable lasting MOD/ Class II restorations.

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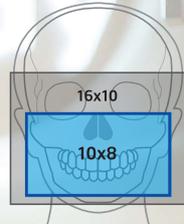
His keen eye for aesthetics extends beyond dentistry as he is an avid and globally acclaimed photographer with his photographs published in industry-wide publications-dental,auto-media, wildlife, Photography, health that too cover stories.

Dr.Anand's dental work is reflected in leading Asian dental magazines and publications is an adjunct faculty at various private dental institutes and a mentor at the leading photography forum-photography club of India. He is advocater for MiCD Global Academy. He conducts workshops for Articulators, Photography and Direct resin Restorations. He is key opinion leader for Shofu South Asia Pacific, S.A.M articulator Germany, Bausch Dental Germany, Strauss and Garrison Dental U.S.A.

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