



# Simplifying Restoration Placement, Polishing and Finishing



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## Conceptual

Direct resin restorations are the most common treatment rendered in the general practice.

A systematic approach to preparation and placement of these restorations improves both efficiency as well as predictability, and finishing is simplified.



**Figure 1:** Patient presented with caries on the occlusal distal and buccal cervical of the 2nd premolar and a defective cervical amalgam on the 1st molar.

Caries and defective restorative materials (Figure 1) are removed with carbides and diamonds with a high-speed handpiece. Subsequent selection of adhesive type selection dictates how the smear layer will be managed and how much enamel is present post preparation. Total-etch adhesives (ie., 5<sup>th</sup> generation) require that the smear layer be removed, which occurs when the dentin is acid etched. Whereas, self-etch adhesives (7<sup>th</sup> generation) are able to penetrate through the smear layer to create a hybridized layer with the underlying dentin [1]. Maintenance of the smear layer with self-etch adhesives is associated with much lower post-operative sensitivity compared to the use of total-etch adhesives [2]. Total-etch adhesive systems are therefore recommended when large areas of enamel are present around the preparation, whereas self-etch adhesives provide a more predictable bond and superior strength to dentin and are recommended when the preparation is predominantly supported by dentin [3]. Some clinicians use a selective etch technique (self-etch plus separate

etch in just the enamel) as this maximizes bond strength, but is also much more technique sensitive.

The teeth are isolated and a sectional matrix (Slick Band XR, Garrison Dental, Spring Lake, MI) was placed on the distal of the 2<sup>nd</sup> premolar and a Composi-Tight 3D Fusion (Garrison Dental) wedge was placed interproximally. A Composi-Tight 3D ring (Garrison Dental) was placed to shape the composite to be placed. A 7<sup>th</sup> generation adhesive (Connexio™, Centrix Dental, Shelton, CT) was mixed and applied with a Benda micro applicator (Centrix Dental) to the dentin surface only and then light-cured for 20 seconds. In this case, to ensure the highest bond to the enamel margins, a selective etch technique is used. Onyx, a 40% phosphoric acid etching gel (Centrix Dental) was applied to the enamel only, rinsed after 20 seconds and then air dried. An additional coat of Connexio™ was applied to all enamel and dentin surfaces and light-cured.

A thin layer of VersaFlo® flowable resin (Centrix Dental) was applied into the proximal box and across the pulpal floor as a liner and then light-cured. As flowable composite resins adapt better than stiffer composites (hybrids, microfills and nano resins) they seal the dentin better, decreasing post-operative sensitivity potential [4,5]. The remainder of the proximal box was filled to the level of the pulpal floor with VersaLite® (Centrix Dental) a hybrid light-curable composite and light-cured. A final layer of VersaLite® was placed and the appropriate anatomy formed before light-curing. Should the preparation be very deep, a layer of SuperCure Q® (Centrix Dental) a light-curable bulk fill composite can be placed over the flowable liner, as this has a deeper depth of cure and can be placed in thicker increments (up to 8mm). For anterior restoratives, a final layer of chameleon-like microfil can be placed for maximum esthetics. This would then be overlaid with a nano resin as the final layer. The author's preference is to use a final layer of microhybrid or nano resin due to its better wear characteristics and higher gloss potential after polishing [6]. The ring, wedge and matrix were removed and the cervical preparations addressed.

Connexio™ (Centrix) a self-etch adhesive compatible with all self-cure, dual-cure and light-cure resins was applied to both cervical preparations with a Benda micro applicator and light-cured. Under occlusal loading during mastication or tooth-to-tooth contact, the tooth can microflex, leading to restoration “pop-out” or opening of the gingival margin. Stiffer resins, as they have a modulus of elasticity greater than the tooth, are prone to this in the cervical area. Flowable resins are more flexible having similar modulus of elasticity as the tooth are less prone to issues on the cervical and, since this is a low-wear area, the flowable resins are ideally suited for that area as the final restorative material. VersaFlo® flowable resin was applied to fill half the cervical preparations, due to the depth of the prep, and light-cured. A final layer of VersaLite® was placed to full contour and light-cured.

Finishing was initiated by shaping and contouring the composite restorations with a finishing diamond (Komet USA, Rock Hill, SC) in a high-speed handpiece with water spray. (Figure 2) Once the shape and contour had been established, a Couture™ Cups and Points were used (Centrix Dental, Shelton, CT). The Couture medium (green) point was placed into a slow-speed handpiece and, using very light pressure and water spray, the buccal surface was polished. (Figure 3) This was repeated with the Couture UltraFine (blue) polishing point, using very light pressure and water spray, to reach a high gloss finish. (Figure 4) Couture cups in medium (green) and UltraFine (blue) were utilized to polish the occlusal surface. (Figures 5 & 6) The cups work well on the occlusal surface, and fit its anatomy, whereas the points are better suited to the buccal/lingual and proximal surfaces. Very light pressure with water spray is recommended, as higher pressure will actually leave a rough surface after application. An alternative to using water with the cups is the use of Couture Diamond Polishing Paste (Centrix Dental) as a lubricant during polishing. For maximum polish and the smoothest surface finish, use the Couture Diamond Polishing Brush (Centrix Dental), also used with light pressure and water application at a slow speed. (Figure 7) An optional additional step is to use the Couture Diamond Polishing Paste in a prophy cup with light pressure. The diamond polishing paste has been reported to produce the smoothest surface finishes [7]. The final restorations demonstrate a very smooth, highly polished finish, providing a durable restoration (Figure 8).



**Figure 2:** Finishing was initiated by contouring the composite restorations placed with a finishing diamond in a high speed hand piece.



**Figure 3:** A medium (green) Couture point is used to polish the cervical surface in a slowspeed with water and light pressure.



**Figure 4:** A ultra fine (blue) Couture point is used to polish the cervical surface in a slowspeed with water and light pressure



**Figure 5:** A medium (green) Couture cup is used to polish the occlusal surface in a slowspeed with water and light pressure.



**Figure 6:** A ultrafine (blue) Couture cup is used to polish the occlusal surface in a slowspeed with water and light pressure.



**Figure 7:** Final polishing is performed with the Couture diamond polishing brush in a slowspeed hand piece with water and very light pressure.



**Figure 8:** Final contoured and polished composites as viewed from the buccal.

### Conclusion

Direct resin restorations can be simplified with proper selection of the restorative materials selected providing predictable results and culminating in a highly polished, direct restoration with minimal effort in just a few simple steps. The better the polished surface of the resin, the less plaque and stain adherence, and the better the long-term esthetics. Additionally, this has a positive effect on gingival marginal health due to less plaque retention, meaning lower inflammation. With this significant research showing the role of oral inflammation in systemic health, it is more important than ever that clinicians take all available steps to finish restorations to maximize hard and soft tissue health.

### Author Bio

Dr. Gregori Kurtzman is in private general practice in Silver Spring, Maryland. A former Assistant Clinical Professor at the University of Maryland, Baltimore School of Dentistry, Department of Endodontics, Prosthetics and Operative Dentistry, he is also a former Assistant Clinical Director of the AAID Implant Maxi-Course at Howard University College of Dentistry. Dr. Kurtzman has lectured both nationally and internationally on the topics of Restorative dentistry, Endodontics and Implant surgery and prosthetics, removable and fixed prosthetics, Periodontics and has over 550 published articles. He is privileged to be on the editorial board of numerous dental publications, a consultant for multiple dental companies, a former Mastership Program Director for the Maryland AGD, he has earned Fellowship in the AGD, 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). Dr. Kurtzman has been honored to be included in the "Top Leaders in Continuing Education" by Dentistry Today annually since 2006. He can be contacted at [dr\\_kurtzman@maryland-implants.com](mailto:dr_kurtzman@maryland-implants.com).

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