Simplifying Everyday Direct Posterior Restorations

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Direct posterior composite restorations are the bread and butter of general dental practices, and are the restorations most often performed as part of everyday dentistry.

The frequency with which these restorations are placed provides clinicians with ample opportunities to practice this treatment procedure. Yet, the techniques associated with placing direct posterior composite restorations continue to instill some trepidation and concerns among dentists, and these everyday treatments remain fraught with the potential for complications due to the technique sensitivity of the protocol associated with their placement.1–2
Dentists’ everyday concerns about the direct posterior treatments include:

• Postoperative sensitivity. Does the patient experience a painful feeling after treatment?3–4
• Less-than-ideal esthetics. Even though patients typically have few esthetic expectations for posterior restorations, is the restoration white or tooth-colored, or brown or gray?
• Light or nonexistent contacts. Does food get stuck between the patient’s teeth? Are the interproximal contours concave or substandard?
• Voids or unfilled margin areas apparent on radiographs. There’s nothing worse than seeing a Class II composite restoration with poorly sealed margins on a bitewing during a hygiene re-care appointment and hoping it’s not your dentistry.5

Fortunately, the reality is that dentists can easily modify their direct posterior composite restoration protocol to achieve consistently ideal results and gain greater confidence when performing these procedures. The first step is selecting a nanohybrid bulk-fill composite for everyday posterior restorative dentistry that demonstrates such advantages as decreased polymerization shrinkage, high-quality sculptability, and lifelike esthetic qualities that are indistinguishable from natural dentition.6 Then, although it is possible to use a single 4mm increment of this composite to create restorations that can be fully cured within 10 seconds (without the need for a flowable composite liner), placing a complementary flowable composite in the preparation helps minimize the potential when placed in increments of up to 4mm.

Tetric EvoFlow Bulk Fill demonstrates ideal radiopacity, so it is easily distinguished from enamel and dentin on radiographs. Tetric EvoFlow Bulk Fill creates a dentin-like opacity, ideal for use as a cavity liner. The opacity blocks discolored preparation floors and prevents restorations from looking too translucent.

If you typically only place flowable resins sparingly, place Tetric EvoFlow Bulk Fill more copiously to replace the dentin in the tooth. Its 4mm curing depth, decreased shrinkage stresses, and opacity will benefit the restoration. Less layers equates to a more monolithic restoration. Multiple layers increase both the chance for voids and the time needed to restore the tooth.

Fewer shades means less ordering and less inventory to stock. Shade selection is simplified for the team and restorative dentist. You realize efficiency and esthetics that meet patient expectations.

**Helpful TIPS and TRICKS for everyday bulk-fill restorations**

Curing 4mm increments enables dentists to more efficiently place everyday posterior composite restorations and be more successful at fully curing the material. This equates to not only greater efficiency, but also less chance of postoperative sensitivity from under-cured composites.

Bulk-fill flowables reduce shrinkage stresses to the tooth, even when placed in increments of up to 4mm.

**TIP**

Solo Practice Is DEAD. BIG Dentistry squeezing your profits? Feeling the effects of Walmart pricing in your area? Frustrated with the business side of dentistry? Like it or not, dentistry is changing... commoditization is on the horizon for every solo practitioner... While solo practice is DEAD for most that refuse to adapt and change, it doesn’t have to be that way for YOU. And, whether you’ve hit a ceiling, struggling to grow, or, are in good shape and want to continue to grow a leading practice in your area, there is hope. But first, you must understand the forces at work in the marketplace and know what you can do to WIN against BIG Dentistry by taking steps to de-commoditize your practice, NOW. That is the ONLY way your practice will survive. If you’re ready to fight to save your practice, grow your bottom line profits bigger, faster than ever before, all while “sticking it” to BIG Dentistry, act now to claim your 100% FREE, no-obligation DVD/CD valued at $199. “De-Commoditizing Dentistry: How to Compete Against Big Dentistry & WIN!” just go to: www.SoloPracticeIsDead.com. Or, call 503-339-6000 today and request your FREE package. Supplies are limited. www.SoloPracticeIsDead.com
for postoperative sensitivity and other potential complications.\(^7\)\(^8\)

Most importantly, making use of proper isolation and matrix armamentarium facilitates ideal contacts and contours to reduce chairtime and enhance predictability.

The following cases—examples of the types of direct posterior treatments dentists provide on an everyday basis—demonstrate an efficient protocol for placing bulk-fill composite to achieve predictable and esthetic restorations.

**Everyday case No. 1**

A 37-year-old female patient presented with a carious lesion on the distal surface of the maxillary second premolar (Fig. 1), in addition to existing amalgam restorations in all posterior teeth in the same quadrant.

The patient was informed about the carious lesion, and treatment options were discussed, including direct composite restoration using a bulk-filled composite. The patient elected to have all existing amalgam restorations in the quadrant removed and re-restored at the same time the carious tooth with the bulk-fill composite (e.g., Tetric EvoCeram Bulk Fill).

The patient was anesthetized, and under rubber-dam isolation, the cavity on the distal of the maxillary right second premolar was removed, along with all existing amalgam restorations in the quadrant. The enamel surfaces were beveled to allow blending of the composite to the enamel interface, to enhance the chameleon effect.

A matrix ring (Composi-Tight Soft-Face 3D XR Ring, Garrison), sectional matrix band (4.6mm Bicuspid Matrix, Slick Band), and a wedge (Wedge Wand) were placed prior to performing the Class II preparation. In particular, the band was placed carefully to ensure proper contour during composite placement and prevent less-than-ideal tooth form in the completed restoration (Fig. 2).

If not placed properly, additional contouring using rotary instruments would be necessary in any areas with inadequate access after curing.

The teeth were selectively etched with phosphoric acid gel (Ultradent) on the enamel only, for 15 seconds (Fig. 3). After thorough rinsing, the preparations were dried (Adec air dryer), and a universal adhesive (Adhese Universal VivaPen, Ivoclar Vivadent) was applied (Fig. 4) and light-cured for 10 seconds.

The Viva Pen delivery system was preferred for treating multiple teeth to enable uninterrupted delivery of fresh adhesive to the teeth. Additionally, because the selected universal adhesive is indicated for use on both dry and moist dentin, it was less technique-sensitive.

The dentin replacement layer was created first by placing a layer of flowable composite in shade IVA. Available in three shades that match the A2 to A3 range to help reduce inventory and the time required to choose ideal dentin-matching shades, the selected flowable composite demonstrates a dentin-like opacity (which prevents final...
restorations from appearing gray) and high radiopacity that’s easily distinguishable on radiographs.

Although using flowables as a liner is a controversial subject. The most popular use of flowables is as a highly adaptive cavity liner to reduce microleakage and voids that may cause postoperative sensitivity.7–9

Recent advances in monomer technology have led to a new category of bulk-fill flowable composites designed to address material shortcomings of earlier products. New bulk-fill flowable composites promote effective use of 4mm increments while decreasing the shrinkage stresses produced during polymerization.

Adhese Universal Adhesive was applied and light-cured.

The flowable material was placed as a dentin replacement, appearing initially as highly translucent but becoming more opaque after curing.

The restorations were created by placing a single increment of shade IVA Tetric EvoCeram Bulk Fill composite, which was sculpted and cured for 20 seconds.
When first placed, the flowable material is highly translucent and becomes more opaque following a 10-second cure (Fig. 5, see pg. 89), making it an excellent material for dentin replacement or opaquing discolored preparation floors. However, when the preparation floor is highly discolored, utilizing a specific flowable opaquer is still recommended to achieve highly esthetic results.

After depth and opacity were idealized, the restorations were created by placing a single increment of shade IVA bulk-fill composite, which was sculpted and cured for 20 seconds (Fig. 6, see pg. 89).

Although the manufacturer recommends a 10-second cure, it makes sense in the clinical environment to increase curing time depending on access, light proximity, and intensity variations. For Class I restorations, occlusal surfaces were cured for 20 seconds. Class II restorations were cured for 10 seconds from the occlusal, the ring and band removed, and the proximal surfaces cured for an additional 10 seconds. Both the practitioner and the assistant had curing lights, which reduced overall procedure time by enabling curing of multiple teeth and surfaces simultaneously.

The occlusion was adjusted, and the restorations finished and polished using cups and polishing paste on an OptraFine brush. A final radiograph was taken, demonstrating the material’s radiopacity and void-free qualities, as well as the restorations’ ideal interproximal contours and monolithic qualities (Figs. 7 & 8).

Everyday case No. 2
A 40-year-old male patient presented with interproximal decay between teeth #13 and #14. Agreed-upon treatment would involve removal of decay from the distal of tooth #13 and the mesial of tooth #14, followed by restoration of both teeth using a bulk-fill composite (Tetric EvoCeram Bulk Fill).

The patient was anesthetized, rubber-dam isolation established to maintain a clean, dry field (Fig. 9), and the caries removed. A matrix system was placed as described in Everyday Case No. 1 (Fig. 10). After removing the caries and finalizing the outline form, the cavosurface margin was beveled with a diamond to promote ideal enamel surface bonding and esthetic blending of the restorative material with the enamel interface.

The teeth were selectively etched and rinsed, and universal adhesive was applied and cured for 20 seconds.

A flowable composite—it self-adapts as it flows into the proximal boxes and along the pulpal floors to reduce the likelihood of voids—was placed as the dentin replacement layer and cured (Figs. 11 & 12). A bulk-fill composite was placed as the final restorative layer, sculpted and light-cured. After removing the matrix system, the restorations were cured again from the buccal and lingual aspects, and excess material was removed from the proximal surfaces using a #12 scalpel. Disks (Flexidisc, Cosmedent) were used to round the marginal ridge areas, creating ideal contours prior to removing the rubber dam (Fig. 13).
After removing the rubber dam, the occlusion was adjusted and the restorations polished (Fig. 14). A postoperative radiograph confirmed placement without voids at the tooth interface or in the restorative material, as well as how correct placement of the matrix system facilitates optimal contours when restoring adjacent proximal surfaces (Fig. 15).

Conclusion

The properties of today’s bulk-fill materials reduce shrinkage stress, minimize postoperative sensitivity, and help to prevent marginal failure. Their advantageous characteristics make placing everyday direct posterior restorations easier, less time-consuming, and less technique-sensitive. The deeper depth of cure (e.g., 4mm) lowers the chances for under-curing the material (which also could otherwise contribute to postoperative sensitivity), while their ability to be placed in a single increment, or with a liner, further decreases the likelihood of internal voids in the restorative material.

References


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