

Simplifying Direct Composite Restorations!

By Ara Nazarian, DDS

Over the years, the utilization of composite resin systems for intracoronal restoration of posterior teeth has increased dramatically with the improvements in physical and mechanical properties of these resin systems and patient demand for tooth-colored restorations. Restorative dentistry continues to evolve through innovations in these bonding systems and restorative materials that help the clinician establish proper function, shape, contour, and color. Because of these advancements, contemporary restorative materials and techniques allow minimal preparation of tooth structure and improvement in the longevity and aesthetics of the restoration.

There have been many different posterior composite techniques described in the literature that layer different opacities of composite (dentin, enamel, translucent) to mimic the multiple layers in a tooth. Personally, I have found this to be time consuming in a busy general practice and requiring a larger assortment of composite material. However, a new composite material system, *SonicFill* (Kerr Corp., USA/Kavo, Germany), makes it possible to use a simpler technique involving a single shade of composite to restore most posterior teeth with excellent aesthetic results. This article describes a simplified technique to consistently restore posterior teeth with this new composite in a fast, easy, and predictable manner.

Case Presentation

A patient presented for a routine hygiene visit and periodic oral examination. Upon clinical examination and probing, it was evident that tooth #3 had recurrent decay alongside an amalgam restoration that was about fourteen years of age. Also, the radiograph exhibited some interproximal decay extending slightly past the dento-enamel junction. The patient complained of occasional discomfort when flossing and to cold. In order to educate the patient, we captured an image of this tooth on the intraoral camera (RF Systems Lab), and indicated the areas of concern on the flat screen monitor (**figure 1**). Using the DemoDent (DemoDent Inc.) patient education model, we described what was occurring in the tooth (**figure 2**).

“There are three layers in a tooth as illustrated in this model. The white is the enamel, the yellow is the dentin, and the pink is the nerve. Your cavity is in between two teeth, where food and debris like to collect. When the cavity is in the enamel (white layer) you usually do not have any pain or sensitivity with it. In fact, by catching the cavity early, we can clean it out without any difficulty. Once the cavity has gone through the enamel and into the dentin (yellow layer), it spreads much more quickly. Patients may experience some sensitivity to hot, cold, and sweets depending on how deep it has extended. Once the cavity gets into the nerve (pink layer), patients experience constant throbbing pain. We want to prevent this by stopping the cavity as soon as possible.”

After explaining the situation using the image on the screen and the anatomical model, I have found that patients seem to understand their dental condition better and are very eager to get started. The patient elected to have the restoration replaced with a bonded composite restoration using SonicFill.

Prior to administration of local anesthesia, the occlusal contacts were recorded to help guide placement of the composite material (to avoid areas of centric contacts). An appropriate shade (A1) was chosen and a rubber dam (Coltene Whaledent) placed for isolation. After anesthetic was administered, a carbide bur Razor 557 (Axis, USA) was used to remove the decay. As the preparations got deeper, any remaining decay was removed using a slow-speed handpiece and large round H8-RA (Axis, USA). The preparations were extended to

remove the caries in the palatal fissure region. A matrix band MetaFix (KerrHawe, Switzerland) was placed over tooth #3 such that its position and shape would enable placement of a composite with an optimal distal contour. For optimal contour, gingival seal, and tooth separation a wedge (KerrHawe, Switzerland) was inserted between teeth #2 and #3 (**Figure 3**). It was important to burnish the band in the desired contact area against the adjacent tooth and make sure there was no spring back of the band. This would insure an excellent contact. Once tooth #3 was isolated by the matrix band, it was dried and a six generation primer/adhesive (OptiBond XTR, Kerr Corp., USA) was applied to all internal aspects of the preparation, including the cavosurface margins, for 20 seconds (**Figure 4**). The primer was first gently agitated with a regular microbrush applicator tip (Microbrush) (**Figure 5**). Because no rinsing of a separate etchant is required when using a self-etching technique, the collagen network was not subjected to the potential collapse associated with overdrying the dentin. A layer of the OptiBond XTR adhesive was placed, dried and then cured for 15 seconds with an LED curing light (Demi, Kerr Corp., USA).

The material selected for the composite restoration was SonicFill (Kerr Corp., USA) which has a chameleon effect and can also be bulk filled, allowing it to blend in with the rest of the tooth surface. Utilizing the SonicFill handpiece (KaVo, Germany) the material was dispensed into the preparation and bulk filled (**Figure 6**).

SonicFill's composite incorporates a highly filled proprietary resin with special modifiers that react to sonic energy. As sonic energy is applied through the handpiece, the modifiers cause the viscosity to drop (up to 87 percent), increasing the flowability of the composite and enabling quick placement and precise adaptation to the cavity walls. When the sonic energy is stopped, the composite returns to a more viscous, non-slumping state that is perfect for contouring. Increased levels of photo-initiators in the composite material allow a full 5mm depth of cure in 20 seconds. Studies indicate that SonicFill composite has a low 1.6 percent volumetric shrinkage and a high radiopacity (267 percent of Al).

Once tooth #3 was completely built up and shaped (**Figure 7**), it was cured completely and then the sectional matrix was removed. The restoration was then shaped, trimmed and finished using carbides #7408 (Axis, USA). Additional polishing was achieved using a finishing point (KerrHawe, Switzerland) (**Figure 8**). The occlusion was checked and verified making sure there were no interferences in lateral and protrusive movements (**Figure 9**).

This case is a great example of how one can achieve an acceptable esthetic result using a single shade of composite material that blends in with the surrounding tooth structure and bulk filled at the same time as opposed to the use of 2 or even 3 different shades with a layering technique. In a busy practice, use of a universal composite posterior bulk filled composite like SonicFill, not only saves operator time, but also allows for predictable and promising long lasting options when preservation of tooth tissue is of paramount importance.

Images



Figure 1 - Preoperative condition showing cavity

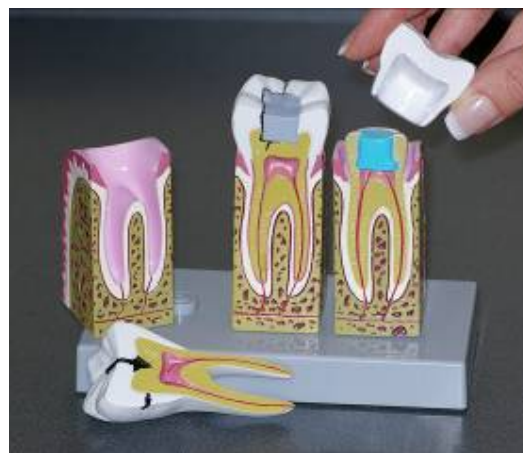


Figure 2 - DemoDent patient education model illustrating condition



Figure 3 - Tooth prepared and isolated.

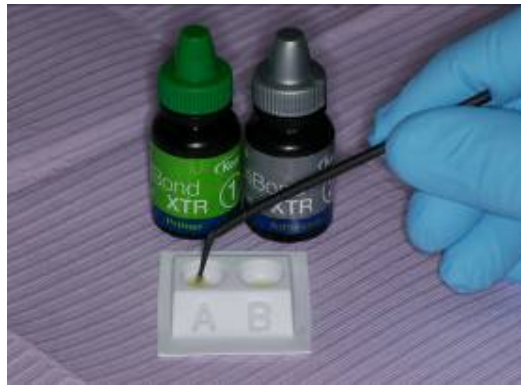


Figure 4 - OptiBond XTR (Kerr Corp., USA)



Figure 5 - Application of OptiBond XTR



Figure 6 - SonicFill placement (Kerr Corp., USA/Kavo, Germany)



Figure 7 - Shaping the composite before curing



Figure 8 - Polishing of composite (HiLuster Plus - KerrHawe, Switzerland)



Figure 9 - Composite cured, finished and polished



Dr. Nazarian maintains a private practice in Troy, Michigan with an emphasis on comprehensive and restorative care. He has earned a Fellowship, Mastership, and Diplomat in the International Congress of Oral Implantologists (ICOI). His articles have been published in many of today's popular dental publications. Dr. Nazarian is the director of the Reconstructive Dentistry Institute. He has conducted lectures and hands-on workshops on aesthetic materials and dental implants throughout the United States, Europe, New Zealand and Australia. Dr. Nazarian is also the creator of the DemoDent patient education model system. He can be reached at (248) 457-0500 or at the Web site www.aranazariandds.com