

NEW PRODUCT review

by NEWTON FAHL, JR., D.D.S., M.S.



Dr. Newton Fahl, Jr. graduated from Londrina State University, Brazil, in 1987, and received his M.S. degree and Certificate in Operative Dentistry from the University of Iowa College of Dentistry in 1989. He is a member of the AACD and is a founding member and vice-president of the Brazilian Society for Esthetic Dentistry. Dr. Fahl has lectured internationally on cosmetic and restorative dentistry. He is on the editorial board of REALITY and has consulted with several manufacturers in product development and refinement. Dr. Fahl maintains a private practice in Curitiba, Brazil.

TETRIC CERAM

DIRECT POSTERIOR COMPOSITE RESTORATIONS — A GREAT IDEA

Since composite resins started being utilized in the posterior segment, much has been reported about the benefits of such technique. The main and perhaps the most important advantage of the direct utilization of composite resins seems to be the non-invasive nature of the procedure. Being able to solely remove the carious tissue preserving all remaining structures, including sound undermined enamel, associated with adhesive techniques that promote tooth reinforcement has projected dentistry into a new era of excitement and health promotion. Presently, cavity preparations can be performed at a much faster pace, since there is no box form to be carried out. We simply remove the caries and the tooth is ready to be restored. This is when the fun part comes into play. We manipulate a tooth-colored mass of composite, and in a matter of minutes, a “white filling” is born. Something resembling a tooth that pleases not only us dentists but also, and maybe foremost, our thankful patients. But is this all there is to posterior composites? Certainly not.

THE NEED FOR A PARADIGM SHIFT

When I first started placing posterior composite restorations, I always felt something was lacking to make them look like a real tooth and not just a white filling. Since not having been trained to perform posterior composites in dental school, the restorative technique I started to employ was incremental in nature — to compensate for the polymerization shrinkage — but somewhat similar to amalgam in that the occlusal anatomy had to be achieved by grinding excess restorative material away. In seeking my own improvement, I started observing natural teeth and looking for what made them appear so natural. The first thing mother nature taught me was anatomy. The second was color. I realized then that the only way I could ever come close to making a direct posterior composite restoration appear truly natural would be by completely integrating form and color at the tip of my placement instruments by means of a refined incremental composite layering protocol. That again was a challenge in itself because I needed highly sculptable restorative materials presenting an adequate shade range, not to mention the wear resistance necessary in stress bearing areas. As with anything else in dentistry, it took a while to reach a comfort zone where considerably more complex procedures could be performed in adequate time with satisfaction and financial reward. Personally, I think it was worth the time and effort.



Figure 1: Tetric Ceram is a highly sculptable ceromer available in regular syringes and unit dose tips.



Figure 2: Occlusion and anatomical determinants should be used as guidelines.



Figure 3: The unit dose tips facilitate inserting the material into the cavity.



Figure 4: Triangular ridges are built-up with high value increments.



Figure 5: A high chroma shade is injected and sculpted in-between the ridges.

NEW CEROMER TECHNOLOGY

There are presently several composite restoratives for use in direct posterior restorations. Most of them come in expanded shade range with varying opacity and translucency to allow the clinician to artistically perform polychromatic restorations. One such material has been introduced that allows predictable reproduction of the naturalness found in natural dentition, in addition to presenting an improved polymer technology. Tetric Ceram (Ivoclar, Vivadent, Amherst, NY) is a new ceromer system with an enhanced filler composition (Figure 1). A unique combination of silanized filler particles (Ytterbium trifluoride, barium-aluminum-fluorosilicate glass, spherical ceramic particles, and pyrolytic silica) make up 80% of the total mass by weight and contribute to the wear resistance of Tetric Ceram. Its increased polishability and surface smoothness is originated from a reduced medium particle size which varies from .04 μm to 3 μm . However, Tetric Ceram still polishes like a hybrid composite. For anterior restorations where a high gloss is desired, it should be used as a dentin replacement and a microfill composite should be used as the surface layer. An added attribute of Tetric Ceram is its sculptability. A special rheological modifier consisting of silicate platelet agglomerates was incorporated into the ceromer restorative that allow the material to be easily inserted and sculpted to the desired form without significant slumping. This feature is particularly important when a composite stratification technique is utilized and there is a need for precise volume and form reproduction with each increment.



Figure 6: A pointy, flame-shaped instrument is used to create sulci and fossa.



Figure 7: Tints and opaques are applied internally to enhance polychromy.

Tetric Ceram comes in 15 shades keyed to Ivoclar's guides (Biochromatic and Chromascop), in addition to the Vita shade guide. The complete kit is available with ten body shades, three opaque shades, a pedo, and a translucent shade. The majority of these shades are chameleon like blending nicely into tooth structure. The system is available in regular syringes and pre-loaded unit dose tips.

NATURAL COMPOSITE STRATIFICATION

In order to make your direct posterior restorative procedure a lot easier, faster, and more enjoyable, first a few marks must be visualized and established in the missing tooth structure. The anatomy to be achieved can be emulated by



Figure 8: Artist brushes are used to smooth the final translucent layer and improve marginal adaptation.



Figure 9: Tetric Ceram permits the achievement of proper occlusal anatomy with the natural stratification technique.

observation of a sound contra-lateral tooth and by the occlusion and anatomical determinants of the tooth to be restored (Figure 2).

- Three shades can usually be used for the majority of cases and should be utilized to sequentially build the following anatomical marks:
 1. **Triangular ridges.** The shade for building up the triangular ridges should be selected from sound cusps or cusp tips. These usually present a whitish hue and an elevated value; usually A1 or the pedo shade will do the job for you.
 2. **In-between-ridge pits.** This high chroma shade (usually A3, 5, A4 or B3) is selected from the freshly-cut dentinal surface and/or

cervical third. This could also be called the “in-between-ridges” shade. 3. **Surface layer.** Depending on the intensity of the translucency elicited by the occlusal enamel surface, a more or less translucent shade can be employed. As a rule of thumb, the transparent shade from Tetric Ceram will work reasonably well most of the time as the surface layer imparting a very life-like effect to the restoration.

- **Build-up the triangular ridges** — Squirt a sufficiently small amount of composite from the unit dose tip into the cavity, laying it against the cavity wall. The unit dose system facilitates inserting and sculpting the material thus minimizing chances of overcontouring (Figure 3). Using a fine-tipped instrument such as the mini # 1 Goldstein Flexi Thin Composite Instrument (Hu-Friedy, Chicago, IL), mold the increment of composite to the desired shape of the triangular ridge stopping .5 mm short of the cavosurface margin of the cavity to allow room for the translucent surface layer. Repeat this step for as many triangular ridges as exist, light curing one at a time to minimize stress induction from polymerization shrinkage (Figure 4).
- **Fill in the in-between-ridges pits** — Inject the high chroma composite selected into all pits between the triangular ridges you have created, remaining shy of their crest (Figure 5). With a pointy, flame-shaped instrument such as the PKT (Figure 6), develop and refine the internal anatomy using anatomical determinants of the tooth being restored to create sulci and fossa. Light cure this layer.

- **Place internal stains** — Tints and opaques (i.e., Kolor + Plus, Kerr, Glendora, CA; Creative Color, Cosmedent, Chicago, IL) can be applied to render the restoration even more polychromatic and natural. Usually ochre and brown tints elicit a sense of depth when flowed into pits and fissures. White and/or colored opaques help enhance the polychromy when applied at the crest of triangular ridges (Figure 7). Light cure after this step.
- **Sculpt the surface layer** — As the final layer, inject the translucent composite over the underlying, already polymerized composite “skeleton” and shape it to proper anatomical form with instruments. Drag and smooth the translucent composite to greater adaptation against the cavosurface margins with fine-tipped artist brushes (Figure 8). If additional characterization is desired, pits and fissures can be further stained before light curing of the surface layer.

The restoration should be finished, polished, and any anatomical refinement/occlusal adjustments made. Next, it should be etched and resealed with a surface sealer to ensure prolonged longevity. The end result is a conservative, highly esthetic, and wear resistant restoration (Figure 9). *AFD*

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