

Unique Characteristics of the Giomer Restorative System

A line of regenerative materials for anterior and posterior restorations

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The direct composite market is indeed large, and finding materials that distinguish themselves can be difficult. A composite system has been developed that separates itself from the field by offering excellent handling and physical properties with the added benefit of sustained fluoride release and rechargeability.^{1,2}

The “giomer” is a unique class of restorative materials that have the distinguishing feature of a stable surface pre-reacted glass core (S-PRG) that is coated with an ionomer lining in a resin matrix.³ This arrangement allows for protection of the glass core from moisture, giving it long-term esthetics and the durability of conventional composites with ion release and recharge.⁴

The giomer line is versatile and complete with flowables, sealants, nanohybrids, and bulk-fill materials. Beautifil® II, Beautifil® Flow Plus, BeautiSealant, BeautiCem, and both Beautifil bulk-fill materials (Shofu, www.shofu.com) provide a complete restorative system that was designed to meet esthetic demands

of the profession while promoting long-term tissue health through sustained fluoride release.⁵

A 13-year follow-up to an in vitro study of giomer-based restorative material found a 66% retention rate and a secondary caries rate of only 3.27%.⁶ A high amount of fluoride release with the ability to be recharged has been shown along with physical properties that rival other composite systems.⁷ This fluoride release is substantial and desired to decrease

chances of recurrent decay, particularly in a less than ideal environment where an increase in acidity is found.⁸ A potential reduction of secondary caries and maintenance of surface luster has been shown long term with this material.^{2,5}

The giomer restoratives come in a variety of formulations, each with a particular handling characteristic. The Beautifil Flow Plus material has both a “zero-flow” and a “low-flow” formulation, and the new Beautifil Bulk Flowable



FIG. 1



FIG. 2



FIG. 3



FIG. 4

(1.) Patient with less than ideal hygiene needed both anterior and posterior restorations. (2.) After decay removal, Mylar matrix placement and total phosphoric etch, a bonding agent was used followed by a thin layer of Beautifil Flow Plus and finished with Beautifil II composite. (3.) A contoured matrix was used to form a good gingival seal, keep out crevicular fluids, and provide anatomic form to the material. (4.) Maxillary anterior restorations were finished using giomer material and enhanced with Super-Snap disks. A final 20-second cure was then applied.



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material has extremely similar handling but with a 4-mm depth of cure. The hybrid line features a universal “nano” as well as a “packable” material depending upon the characteristics and need of the practitioner.

Case Presentation

Anterior Restorations

A patient with poor hygiene came in for an operative appointment needing both anterior and posterior restorations (Figure 1). The giomer restorative system, which provides materials for regenerative restorations in all regions of the mouth, was chosen. Decay was removed, a Mylar matrix was placed, and a total phosphoric etch technique was used. A bonding agent was applied, air thinned, and cured before a layer of Beautifil Flow Plus was placed in a 1-mm layer over the entire dentinal area and cured for 20 seconds. A nanohybrid composite, Beautifil II, was then placed, shaped, and cured (Figure 2).

Adjacent teeth were restored in the same fashion using a contoured matrix (Figure 3). After placement of the giomer restorative material, the restorations were shaped and polished with disks, Super-Snap® Singles (Shofu), and given a final cure of 20 seconds from the lingual and facial (Figure 4).

Posterior Restorations

A 330 bur was used to access interproximal decay in the posterior and decay removed with a #2 round bur (Figure 5).

Matrices were placed and phosphoric acid etch was done for 15 seconds on enamel surfaces, followed by a thorough rinsing. BeautiBond was then placed, air thinned, and cured.

A thin 1-mm layer of Beautifil Flow Plus was placed on all dentin and cured. Beautifil®-Bulk fill was then placed to complete the restorations in a single 3 to 4 mm placement (Figure 6). Occlusion was adjusted with a #6 high-speed round bur and final shaping and polishing were done with a OneGloss® (Shofu) disposable cup.

Final Results

The fluoride release and rechargeability of giomer materials results in highly biocompatible restorations that resist plaque accumulation despite a less than ideal oral environment. The giomer restorative system provides a unique niche in the restorative market by providing materials that are regenerative in nature but have the esthetic and functional characteristics of many other composites.

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(5.) Posterior decay was removed from interproximal areas using a 330 and #2 round bur. (6.) View of completed restoration.