MELISSA H. JOHNSON, DDS

Dr. Johnson graduated from the Herman Ostrow School of Dentistry at the University of Southern California. She trained and worked in military dentist for four years before entering private practice. She currently practices in Portland, Maine. Melissa has a passion for conservative dentistry and biomimetics. She loves to share this world through dental photography. Melissa is a member of the American Academy of General Dentistry and the Academy of Biomimetic Dentistry. She is grateful to Nuance Dental Specialists for collaboration in this case, and of course to SDI for the opportunity to work with their beautiful composites.

CASE PRESENTATION

Minimizing Removal, **Maximizing Esthetics**

With direct, adhesively bonded composite resin, contemporary dentists are able to deliver minimally invasive, esthetic results to patients when restoring Class I decay. However, intrinsic and extrinsic factors—including prep design, pathological agents, overall caries risk, and moisture control—add to the complexity of these otherwise straightforward composite restorations.

In this case report, a healthy 26-year-old male presented for his routine cleaning and exam. The exam revealed occlusal caries on 6 of his 8 molars (Figure 1), making him a high-caries-risk patient. Estimated sizes of the lesions, age, salivary flow, oral hygiene, and the use of a high-strength fluoride treatment were weighed to assist the patient and clinician in deciding on the best treatment outcomes. After reviewing all parameters, we decided to proceed with conservative composite restorations.

With no pain or sensitivity reported, the rational starting point was to treat the deepest decay first—teeth Nos. 18 and 19. In an effort to mitigate risk factors and create a sound, pain-free restoration, the following steps were taken: rubber dam isolation to combat intraoral humidity and the pooling of saliva; biomimetic techniques to reduce stresses created by the high configuration factor of the prep; and a high-quality polishing technique to ensure minimal plaque retention and reduce risk of recurrent decay.

The Procedure

After obtaining profound anesthesia, Nos. 18 and 19 were isolated with the use of a heavyweight rubber dam retained by a #13A clamp on No. 18. Guided by the use of caries detection dye (Figure 2), the occlusal caries were removed using a carbide bur. Caries detection dye was used for appropriate caries end-point removal and establishment of the peripheral seal zone (Figure 3). Completion of the prep included beveling of the enamel margins.

The selective etch technique was completed using 37% orthophosphoric acid [Super Etch, SDI] for 20 seconds before rinsing and drying. Two layers of a universal adhesive [Zipbond Universal, SDI] were applied and each was gently agitated for 30 seconds. A clean microbrush was used to remove pooling of the adhesive in the deepest part of the cavity prep. The adhesive was cured for 20 seconds [Radii Xpert, SDI] (Figure 6) and covered with a thin layer (0.5 mm) of flowable composite [Aura Easyflow, SDI], which was cured for 20 seconds. Following a rest period of 5 minutes for bond maturation (Figure 4), an A3 composite [Luna, SDI] was placed at angled increments of 1–1.5 mm, minimizing stresses. Each layer was cured for 20 seconds.

A dark yellow shade modifier [SDI Shade Modification system] was used to better match the patient's yellow dentin (Figure 5). The final layer of composite was placed using A2 composite [Luna, SDI]. Marginal adaptation was obtained with a composite brush and modeling liquid. Occlusion was adjusted with a fine diamond bur, and polishing was completed with a 3-point polishing system and polishing paste (Figure 6). A final radiograph was taken to confirm proper fill (Figure 7).

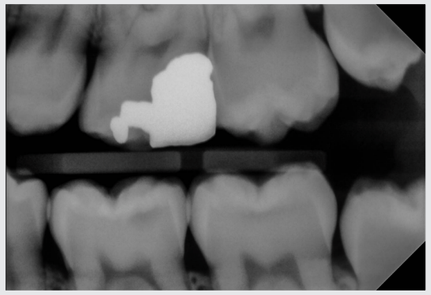

Figure 1—Preoperative radiograph

Conclusion

With secondary caries cited as the most common reason for re-treatment of restorations, proper technique is critical for placing even the most basic direct composites. When the focus is to first control the hostile oral environment, clinical efforts can be centered on the appropriate use of bonding systems, systematic placement of resin materials, and high-quality finishing and polishing protocols. These steps aim to eliminate postoperative sensitivity and augment the longevity of the restorations.

Figure 2—Initial preparation with caries detection dye in place

Figure 3—Complete caries excavation

Figure 4—Adhesive and flowable composite layers

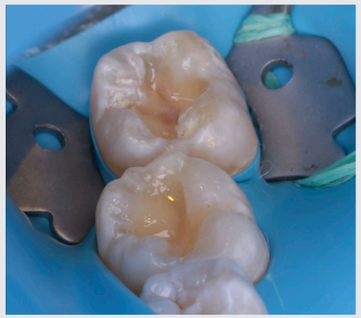

Figure 5—A3 Luna composite and color modification

Figure 6—Final restorations with rubber dam in place

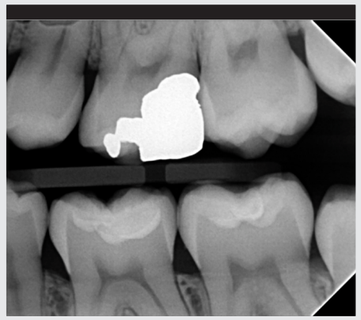

Figure 7—Final radiograph

GO-TO PRODUCTS USED IN THIS CASE

AURA EASYFLOW

Aura Easyflow is a light-cured, flowable composite, optimized to provide the right features for every layer of use. Whether it is used as a radiopaque liner under direct restorations or superficially to repair defects in esthetic zones, Aura Easyflow is engineered to maximize clinical success. Its nanohybrid filler system defines its versatility for multiple clinical needs to ensure high strength and natural esthetics.

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LUNA

Luna contains a hybrid of nano- and micron-sized particles to achieve optimal esthetics and strength. Nano particles assist in polishability and the maintenance of surface smoothness over time. Micron-sized particles contribute to strength and durability. Luna's hybrid filler makes it ideal for anterior and posterior restorations.

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