It's all about OPTIONS

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The role of resin modified glass ionomers in restorative dentistry.

By Dr. Ara Nazarian

Today, restorative dentistry emphasizes minimally invasive approaches. This encompasses prevention, remineralization, and when needed, adhesive restorations. These approaches lessen the chance for subsequent adverse outcomes, including advancement of tooth decay, pulpal involvement and tooth fracture.

As dentists, our goal is to have the knowledge of various dental products to select the best material for any given scenario. In cases where isolation may blem resulting in moisture con- on or where there is a high car- because of medications, diet, or ersonally have found the use of dified glass ionomer restorations eful. Some indications for use the following: small Class I, II, estorations; Class V restorations; us teeth restorations; geriatric ons; pit and fissure sealants; core s; root surface restorations; cervi- on; and abfraction lesions.

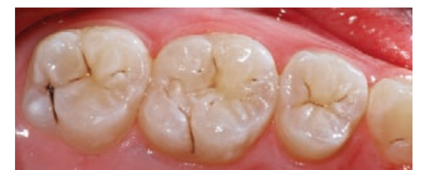
e Presentation

atient presented to our office her six-month dental hygiene ointment where we performed periodic oral examination. Dur- this examination, we identified a resin sealant on tooth No. -placed many years prior—was king down and there was some and incipient decay present on usal surfaces of teeth Nos. 13 and uring an image of these teeth on the intraoral camera (RF Systems Lab), we indicated the areas of concern on the flat screen monitor (**Fig. 1**). Using the DemoDent (DemoDent Inc.) patient education model, we described what was occurring in the tooth (**Fig. 2**).

While Dr. Nazarian used the capsules, Riva Light Cure from SDI is also offered in powder liquid form. For more information, visit *sdi.com.au.*

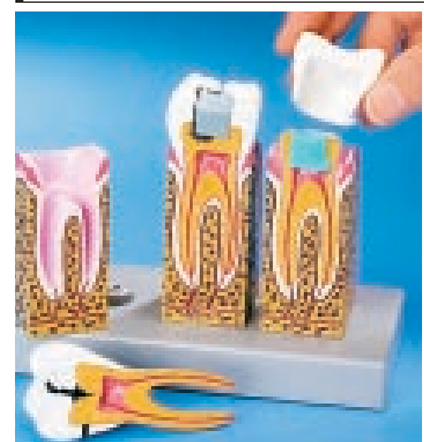
There are three layers in a tooth, as illustrated by the model in **Figure 3**. The white is the enamel, the yellow is the dentin, and the pink is the nerve. We explained to the patient that her cavity is in the biting surface of the tooth, where food and debris like to collect. When the cavity is in the enamel (white layer) she would not usually have any pain or sensitivity with it. We told her that by catching the cavity early, we can clean it out without the need for anesthetic in most cases. Once the cavity has gone through

FIG. 1



Pre-operative occlusal view of teeth Nos. 13, 14, 15 indicates areas of concern.

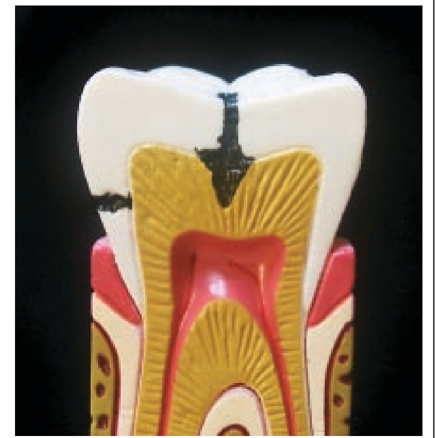
FIG. 2



DemoDent patient education model system helps describe what is occuring.

the enamel and into the dentin (yellow layer), it spreads much more quickly. Patients may experience some sensitivity to hot, cold, and sweets, depending upon how deep it has extended. Once the cavity gets into the nerve (pink layer), patients experience constant throbbing pain. We emphasized that 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 found that the patient better

FIG. 3



Close-up view of progression of decay as seen in three layers of a tooth.

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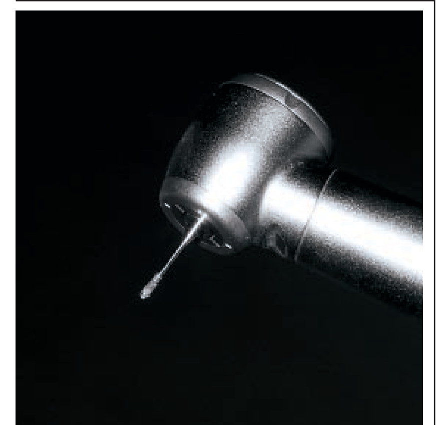
THE PATIENT BETTER UNDERSTOOD HER DENTAL CONDITION AND WAS EAGER TO GET STARTED

understood her dental condition and was eager to get started.

Treatment

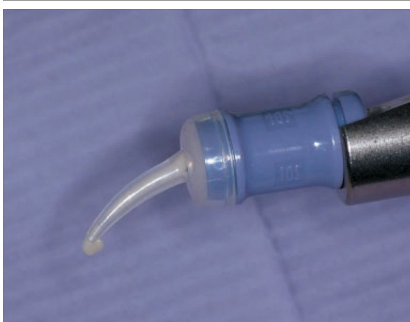
Once the patient agreed to treatment, she was scheduled for the restorative part of the procedure. All risks, benefits, and alternatives regarding the use of a resin modified glass ionomer were discussed with the patient. We chose to use Riva Light Cure (SDI), a combination of glass ionomer and composite resin. These fillings are a mixture of glass, an organic acid, and resin polymer that hardens when

FIG. 4



Using micro-preparation burs (Komet) to remove old resin restoration and any decay.

FIG. 5



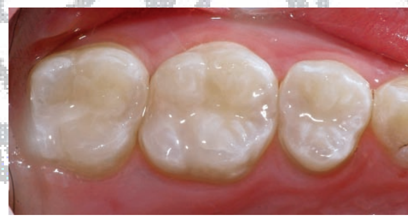
The Riva Light Cure material capsule.

light cured. The light activates a catalyst in the restoration that causes it to cure in seconds. This combination of a glass ionomer and resin has excellent esthetics, high fluoride release and chemically bonds to the tooth structure. In fact, it has free movement of fluoride, which provides benefits to surrounding and adjacent tooth surfaces. Fluoride is held within the glass ionomer matrix without being bound by the structure. If the level outside the glass matrix is lower, then fluoride ions are released. Conversely, if the fluoride level is higher (e.g., topical fluoride) then fluoride will recharge the glass ionomer matrix. Also, they are not subject to shrinkage and microleakage, as the bonding mechanism is an acid-base reaction and not a polymerization reaction.

Using micro-preparation burs (Komet), the old resin restoration and any decay was removed from tooth No. 14 as well as any staining or decay from teeth Nos. 13 and 15 (**Fig. 4**). Riva Conditioner (SDI) was applied to the teeth for 10 seconds and then washed thoroughly. Any excess water was removed, taking care not to desiccate the tooth, but in fact keep it slightly moist. The Riva Light Cure RMGI (SDI) capsule was activated and placed in an amalgamator for 10 seconds. Once activated, the capsule was loaded in the dispensing gun and placed into the preparations (**Fig. 5**).

Final set was achieved after light curing for 20 seconds using the Radii Plus (SDI). After light curing, we finished the restorations under water spray, using Q-Finisher burs (Komet). As seen in the postoperative image (**Fig. 6**), the combination of glass ionomer and resin in this new class of material yielded an esthetic and functional restoration that has high fluoride release and bonds to the tooth structure.

FIG. 6



Post-operative occlusal view of teeth Nos. 13, 14, and 15.

Conclusion

After many decades of improvements in oral health, tooth decay is on the rise again. Much of the blame can be placed on today's diet consisting of fast food, soda pop, sport juice, and energy drinks. Another factor that comes to mind is aging Baby Boomers who are living longer. A majority of these patients may be taking medications that are causing severe dry mouth (xerostomia) that results in a high caries rate; or they simply are unable to brush and floss properly because of hand dexterity issues. Hence, resin modified glass ionomer restorations can be used as a treatment modality for patients who are at high risk for caries. Whatever the situation, it is important for all dentists to recognize

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