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# It's all about OPTIONS

The role of resin modified glass ionomers in restorative dentistry.

By Dr. Ara Nazarian

**T**oday, 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 be difficult or where there is a high caries risk because of medications, diet, or personally have found the use of modified glass ionomer restorations to be successful. Some indications for use include the following: small Class I, II, Class V restorations; orthodontic teeth restorations; geriatric restorations; pit and fissure sealants; core restorations; root surface restorations; cervical abrasion; and abfraction lesions.

### The Presentation

A patient presented to our office for her six-month dental hygiene appointment where we performed periodic oral examination. During this examination, we identified a resin sealant on tooth No. 14—placed many years prior—was chipping down and there was some early and incipient decay present on the occlusal surfaces of teeth Nos. 13 and 15. Using 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).

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



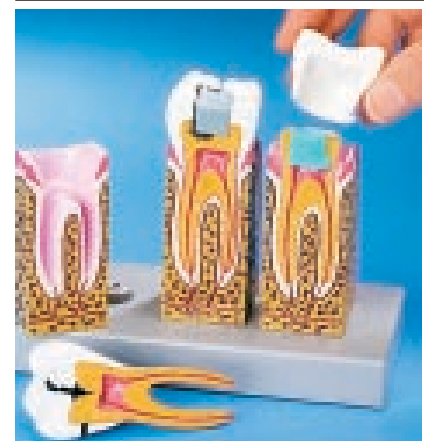
While Dr. Nazarian used the capsules, Riva Light Cure from SDI is also offered in powder liquid form. For more information, visit [sdi.com.au](http://sdi.com.au).

**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 occurring.

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.

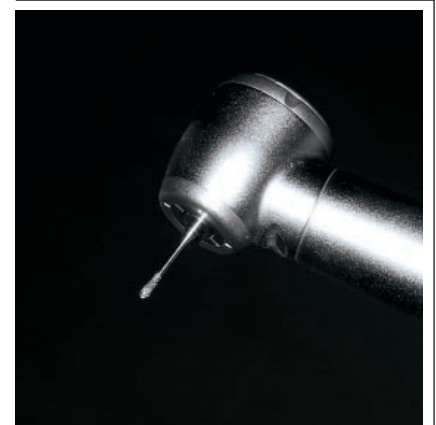
**THE PATIENT  
BETTER  
UNDERSTOOD  
HER DENTAL  
CONDITION  
AND WAS  
EAGER TO  
GET STARTED**

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.

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**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 Radium 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.

### 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

**FIG. 6**



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

## Dental Products Report

## Statement of Ownership, Management, and Circulation (Requester Publications Only) (Required by 39 USC 3685)

- Publication Title:** Dental Products Report
- Publication Number:** ISSN#0011-8737
- Filing Date:** 9/26/08
- Issue Frequency:** Monthly
- Number of Issues Published Annually:** 12
- Annual Subscription Price (if any):** \$120.00
- Complete Mailing Address of Known Office of Publication:**  
131 West First Street, Duluth, St. Louis County, Minnesota 55802-2065  
**Contact Person:** Ronda M. Hughes  
**Telephone:** 218-740-6526
- Complete Mailing Address of Headquarters or General Business Office of Publisher:** 6200 Canoga Avenue, 2nd Floor, Woodland Hills, CA 91367.
- Full Names and Complete Mailing Addresses of Group Publisher:** Tom Delaney, 10275 W Higgins Road Ste 300, Rosemont, IL, 60018  
**Editor in Chief:** Thais Carter, 10275 W Higgins Road Ste 300, Rosemont, IL, 60018  
**Managing Editor:** Frances Martin, 10275 W Higgins Road Ste 300, Rosemont, IL, 60018
- This publication is owned by:** Advanstar Communications Inc., 6200 Canoga Avenue, 2nd Floor, Woodland Hills, CA 91367. The sole shareholder of Advanstar Communications Inc. is: Advanstar, Inc., whose mailing address is 6200 Canoga Avenue, 2nd Floor, Woodland Hills, CA 91367.
- Advanstar Communications Inc.** is the Mortgagor under Credit Agreements dated May 31, 2007, with various lenders as named therein from time to time. The agent for the lenders is: Credit Suisse, Administrative Agent, Eleven Madison Avenue, New York, NY 10010. There are no Other Securities as of June, 2008.
- Does Not Apply
- Publication Title:** Dental Products Report
- Issue Date for Circulation Data Below:** August 2008

15. Extent and Nature of Circulation	Average No. Copies Each Issue During Preceding 12 Months	No. Copies of Single Issue Published Nearest to Filing Date
<b>A. Total Number of Copies</b>	154,138	149,203
<b>B. Legitimate Paid and/or Requested Distribution</b>		
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2. In-County Paid/Requested Mail Subscriptions Stated on PS Form 3541		
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4. Requested Copies Distributed by Other Mail Classes Through the USPS		
<b>C. Total Paid and/or Requested Circulation (Sum of 15b (1), (2), (3), and (4))</b>	113,476	106,358
<b>D. Non-requested Distribution</b>		
1. Outside County Non-requested Copies as Stated on PS Form 3541	37,706	40,497
2. In-County Non-requested Copies Stated on PS Form 3541		
3. Non-requested Copies Distributed Through the USPS by Other Classes of Mail		
4. Non-requested Copies Distributed Outside the Mail	2,439	1,942
<b>E. Total Non-requested Distribution (Sum of 15d (1), (2), (3) and (4))</b>	40,145	42,439
<b>F. Total Distribution (Sum of 15c and e)</b>	153,621	148,797
<b>G. Copies not Distributed</b>	517	406
<b>H. Total (Sum of 15f and g)</b>	154,138	149,203
<b>I. Percent Paid and/or Requested Circulation</b>	73.87%	71.48%

- Publication for a Requester Publication is required.**  
Will be printed in the October issue of this publication

**17. Name and Title of Editor, Publishers, Business Manager, or Owner:** Ronda M. Hughes, Audience Development Director  
**Date:** September 9, 2008

I certify that the statements made by me above are correct and complete.

*Ronda Hughes*