

PROCEDURE FOCUS

Dr. Todd C. Snyder

RESIN MODIFIED GLASS IONOMER SANDWICH

Posterior aesthetic resin restorations (ie. composite fillings) have always been susceptible to sensitivity, microleakage and wear due to inherent material properties of resin restorative materials, resin based adhesives and operator induced errors. The ability to consistently and profoundly adhere and seal dentin with any posterior aesthetic resin restorative materials has been very elusive to dental manufacturers. This is due primarily to resin polymerization shrinkage, water sorption by the resin materials, mechanical resin adhesion and the hydrophobic tendencies of the materials used. The ability to seal tooth structure with a resin restoration has the best chances of sustainability when an enamel margin exists along the entire cavosurface margin of the preparation for resins to permeate. However research has shown dentin and enamel adhesions will all weaken and eventually fail over time.

Understanding the shortcomings of resin based restorations most certainly brings up the question, is there a better way to achieve an aesthetic result and avoid most of the inherent resin problems. The only restorative materials currently available that truly bond and seal tooth structure are glass ionomers. The addition of a resin component to glass ionomers in the early 1990s improved the material by providing superior physical properties allowing them to be used in thicker increments as actual restorative materials and yielded the name, resin modified glass ionomers (RMGIs).

"Any generation of bonding agent can be placed directly on the RMGI..."

One type of utilization for the RMGIs is known as the "open sandwich" technique. The preparation design for a posterior resin restoration does not change in any way for this technique, only the materials and placement technique have been modified. The first step of the procedure is to place a weak 20% polyacrylic acid (cavity conditioner) on the enamel and dentin tooth structure where the RMGI is to be applied. After 10 seconds it is rinsed away and the tooth structure is lightly dried. This is followed by a single increment of a RMGI placed over the dentin (Fuji II LC, G.C. America). This layer of RMGI extends onto the interproximal cavosurface enamel and/or cementum margin where it is allowed to self cure or photo cure based on the type of material chosen. This initial increment is placed

directly onto the cementum, enamel and dentin without the need for any resin bonding agents. By avoiding placement of a bonding agent on dentin that is in close proximity to the pulp, sensitivity is virtually guaranteed to be avoided. The thickness of the RMGI can vary based on the size of the preparation; however enough space needs to be maintained to place a 1-2mm thick increment of composite resin on top of the RMGI. The next step is to fill the remaining 1-2mm of preparation by utilizing a bonding agent and a single layer of composite. Any generation of bonding agent can be placed directly on the RMGI and the surrounding tooth structure per manufacturer instructions. The single layer of composite can then be placed without concerns of multiple layers, polymerization shrinkage and the possibility for voids in the material during placement. If a preparation does not include an interproximal component the RMGI can still be placed as an initial increment followed by a bonding agent and composite, this is known as a "closed sandwich" technique.

Dr. Todd C. Snyder received his doctorate in dental surgery at the University of California at Los Angeles School of Dentistry and maintains a private practice in Laguna Niguel, CA. Dr. Snyder lectures both nationally and internationally on numerous aspects of dental materials, techniques, and equipment. Dr. Snyder has been on the faculty at U.C.L.A. in the Center for Esthetic Dentistry, and currently at Esthetic Professionals. Additionally, Dr. Snyder is a consultant for numerous dental manufacturing companies and has had the opportunity to research and recommend changes for many of the materials now being used in dentistry. Furthermore, Dr. Snyder has authored numerous articles in dental publications and is a F.A.C.E. graduate.



GC America Presents

Sandwich Technique Clinical Step-by-Step Guide

Open Sandwich Technique Using Self-Cured Glass Ionomer



Class II preparation with deep subgingival box.



Placement of GC Fuji IX™ GP EXTRA in box to the gingival margin and occlusally.



Self-curing of GC Fuji IX™ GP EXTRA.



Apply G-BOND™, then place KALORE™ composite, followed by light-curing.



Final, esthetic glass ionomer and composite sandwich technique restoration.

Closed Sandwich Technique Using Light-Cured Glass Ionomer¹



Class II preparation with shallow supragingival box.



Placement of GC Fuji II™ LC occlusally.



Light-curing of GC Fuji II™ LC.



Apply G-BOND™, then place KALORE™ composite, followed by light-curing.



Final, esthetic glass ionomer and composite sandwich technique restoration.

¹ Self-curing glass ionomer is also suitable for this technique



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