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Advantages of bulk fill composite for treating multi-surface pediatric caries

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Efficiency is an especially important consideration when working with children, as pediatric dentists know just how quickly a treatment can go from routine to unpleasant when a procedure drags on or attention spans reach their limit. Pediatric treatments ideally proceed as fast as possible while providing results that will last as long as necessary to prevent retreatment.

Accuracy and comfort also greatly influence the pediatric experience, extending to the dentist's own choice of materials and treatment procedures. Providing a comfortable and welcoming environment for the child can help to avoid any potentially unpleasant dental experiences. And properly treating the oral situation the first time means your patients are less likely to end up back in the chair for retreatment. It's estimated that between 50–70 percent of all dental treatments are due actually to retreatment, so for this reason (among others), pediatric dentists place high priority on selecting products and treatments that deliver fast, reliable and predictable results.

Dental caries present as one of the most common cases seen by pediatric dentists, and each of the treatment plans available for pediatric patients have their pros and cons. Stainless steel crowns and amalgam continue to be viable options, but for many families, esthetics are of high importance, even for primary teeth. To maintain optimal esthetics, composite restorative materials are becoming increasingly popular.

When administering a composite restorative, our office prefers to use the bulk fill technique, specifically with 3M™ Filtek™ Bulk Fill Posterior Restorative. It's a fast and easy option that blends in well with the surrounding teeth. Plus, it offers better wear resistance than other products on the market. Choosing a composite material that has excellent wear resistance is important, especially with patients who might grind or wear their teeth. Utilizing a composite also offers the opportunity to be more conservative in tooth preparation, avoiding unnecessary removal of healthy tooth structure.

Case Presentation

The patient was an 8-year-old girl who presented after an existing restoration placed by another practitioner had debonded. The previous restoration, on tooth K, was likely a glass ionomer; the caries in the tooth had previously been excavated and the tooth was as seen in Figure 1. In addition to the lost restoration, tooth B was abscessed.

To replace the missing restoration, a stainless steel crown was an option, but given that the area had already been treated with a direct restoration and the patient was slightly older and more cooperative, it was determined that treatment with a composite would be both efficient and more esthetic. Consent was also given for the extraction of the abscessed tooth B.

The area was anesthetized and refinements were made to the old tooth preparation to ensure full caries excavation and beveled margins (Fig. 2). The final preparation was a depth that would have required multiple layers of traditional, non-bulk fill composite and was very broad buccal-lingually, almost approaching a cusp replacement. A distal-occlusal preparation was considered, but it was determined that occlusal preparation alone would be adequate for this particular case, especially given that it was on a primary tooth.


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An Isolite was placed for isolation and the preparation was thoroughly cleaned. A selective etch was performed on the enamel, followed by use of 3M™ Scotchbond™ Universal Adhesive. The adhesive was scrubbed into the preparation for 20 seconds, briefly air dried for five seconds, and then light cured for 10 seconds. This particular adhesive offers a consistent bond strength and virtually no post-operative sensitivity. It's also moisture tolerant, allowing us to work better in a wet environment, which can be particularly beneficial with pediatric patients. The material is quick and simple to use, with no mixing—one step, one coat.

3M™ Filtek™ Bulk Fill Posterior Restorative was then dispensed into the restoration, beginning at the deepest portion and with the capsule tip withdrawn slowly as the cavity was filled (Fig. 3). To help prevent voids, it is important to not lift the tip out of the dispensed material while dispensing. Once dispensing was complete, the capsule tip was dragged against the cavity wall while it was withdrawn from the field. A bulk fill composite was chosen, as opposed to a sandwich technique with a glass ionomer followed by composite, because speed of the procedure coupled with one high-quality material is very important when treating a child with multi-surface restorations. Glass ionomers can offer the benefit of fluoride release, but for me, the most important activity for the long-term success of a restoration is proper isolation, attention to detail and effective home care.

Shaping was then performed with composite instruments, and the area was cured with the 3M™ Elipar™ S10 LED Curing Light for 20 seconds on the occlusal surface. With the chosen composite material, full-depth light curing can be achieved at a depth of up to 5 mm for a Class II restoration or 4 mm for a Class I restoration by using a high-intensity curing light, such as the one mentioned here.

Occlusion was then checked and a brief finishing and polishing procedure was performed (Fig. 4). Because the restoration was placed on a primary posterior tooth, a limited amount of time was devoted to finishing and polishing, but, as seen in the images, the material finishes very nicely even with minimal time spent on this step. In order to achieve the maximum result, I used the 3M™ Sof-Lex™ Diamond Polishing System, which imparts a paste-like gloss in the convenience of a rubberized system. I prefer this product because it's quick and easy—the total time spent performing the restoration procedure was under five minutes.

Following the restoration, the abscessed tooth was then extracted in the same appointment. The patient did remarkably well with both procedures.


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Conclusion

The quick treatment time achieved in this procedure is typical for a bulk fill case and exemplifies the advantages of the material, particularly for pediatric treatments. When dealing with children, it is key that the procedure is easy and works fast. Using restorative materials such as Filtek™ Bulk Fill posterior restorative helps to ensure that the treatment will be finished in a timely manner. Preparing young patients for a lifetime of good oral health is one of the main goals of all pediatric dentists; by treating caries with efficient and reliable tools, this important goal will be achieved.

About the author

Dr. Joshua Wren received his undergraduate B.A. degree in biology from the University of Mississippi and his Doctor of Dental Medicine degree from the University of Mississippi Medical Center School of Dentistry. He then completed the Pediatric Dentistry residency program at the University of Kentucky College of Dentistry, where he obtained his Specialty Certificate in Pediatric Dentistry. His passion is providing the most positive dental experience for your child. He is a board-certified pediatric dentist who also enjoys educating other dental professionals in all topics of pediatric dentistry. Dr. Wren is a speaker for the world-renowned online dental community, Dentaltown. His specific interests include preventive dentistry and early orthodontic treatment. Dr. Wren has over 200 hours of continuing education in orthodontics. Dr. Wren is married to Lexie Wren, and they have two children, Emory and Elliot.

Dr. Wren has received honorarium from 3M Oral Care.

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