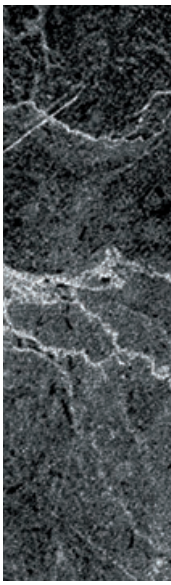

Ask the Experts

COMPOMERS

Guest Expert
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QUESTION: Is there a place for "compomers" in dentistry?

ANSWER: Compomer materials were introduced to the dental profession in the early 1990s. Their proper name, polyacid-modified resin composites, indicates that they most strongly resemble resin composites but that they have been modified somewhat. Modification involves the introduction of some of the components of glass ionomer cements. This means that as they mature, they take up a small amount of moisture, which promotes an acid–base reaction. The main benefit of this is that it makes compomers capable of releasing clinically useful amounts of fluoride.

Compomers resemble traditional composite resins in that their setting reaction is a polymerization that is usually light-initiated by blue light at a peak of 470 nm. However, there is one brand that is a two-paste system, namely Dyract-Cem (Dentsply De Trey, Konstanz, Germany), that is used for luting. Cure is brought about as a result of mixing the two pastes, each of which contains a component of the free-radical initiator system. However, the set material does not differ in any fundamental way from light-cured compomers.

A key feature of compomers is that they contain no water and the majority of components are the same as for composite resins. These are macromonomers, such as Bis-GMA blended with viscosity-reducing diluents, such as triethylene glycol dimethacrylate. The resin matrix is filled with nonreactive inorganic powders, such as quartz or silicate glass. Compomers contain additional monomers that differ from those in conventional composites, which contain acidic functional groups. This acid-functional monomer is very much a minor component. Compomers also contain some reactive glass powder of the type used in glass ionomer cements.

Despite the presence of these additional components, compomers are predominantly hydrophobic, although less so than conventional resin composites. They set by a polymerization reaction, and once set, the minority hydrophilic constituents draw in a limited amount of water to promote secondary neutralization reactions that are similar to the setting processes in glass ionomer cements. Compomers do not bond to tooth structure as glass ionomers do, so they must be used with conventional bonding agents.

Clinical evidence has been accumulating over the years since the introduction of compomers that they are very clinically effective. They have been widely used in pediatric dentistry, particularly for Class II restorations. They have also been used as fissure sealants and for

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cementing orthodontic bands. In adults, they are generally used for Class V restorations. Typical clinical results over 2 to 3 years show high grades on all criteria, with only minor amounts of marginal discoloration and some loss of marginal integrity. Wear behavior is also reported to be good.

Overall, the conclusion from numerous published clinical studies is that compomers perform well in a variety of uses in restorative dentistry. Their fluoride release, ease of handling, and good esthetics make them materials of choice for particular applications, especially in children's dentistry. So there really does seem to be a place for them in restorative dentistry.

SUGGESTED READING

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Editor's Note: If you have a question on any aspect of esthetic dentistry, please direct it to the Associate Editor, Dr. Edward J. Swift Jr. We will forward questions to appropriate experts and print the answers in this regular feature.

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