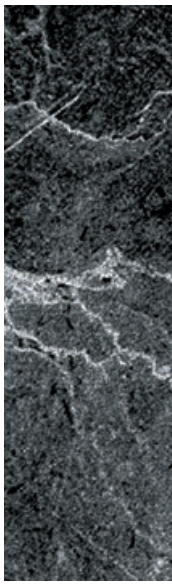
Ask the Experts



GLASS IONOMERS AND RECURRENT CARIES

Associate Editor
Edward J. Swift Jr, DMD, MS*

QUESTION: Do glass ionomers prevent or reduce recurrent caries?

ANSWER: Fluoride release from glass ionomer materials is sustained at relatively low concentrations over time, and appears to continue indefinitely. Glass ionomer fluoride content can be recharged by the application of topical fluoride sources including dentifrices, gels, varnishes, and rinses. Recharging helps to ensure the sustained fluoride release.

The concentration of fluoride released from glass ionomers is relatively low, and appears to be less than that necessary to provide any antimicrobial effect. However, in microenvironments—for example, tooth/restoration interfaces—even a low concentration could be enough to tip the demineralization/remineralization balance in the positive direction.

Numerous in vitro studies using various artificial caries models have demonstrated that glass ionomers greatly reduce the extent of recurrent lesions. The in vitro studies are supported by some research in the clinical setting. For example, Donly and colleagues reported an in situ study showing that resin-modified glass ionomer restorations could inhibit demineralization on adjacent proximal surfaces. Donly and colleagues also reported an in vivo study in which resin-modified glass ionomer restorations had less marginal demineralization than amalgam restorations in primary molars.

However, Randall and Wilson's excellent systematic review of clinical trials on recurrent caries inhibition reported that, although there is some suggestion of a positive effect, there is no *conclusive* evidence either for or against an inhibitory effect by glass ionomers.

In summary, it is quite possible that glass ionomer materials could reduce the frequency and severity of recurrent caries. These materials provide sustained, rechargeable release of fluoride that has proved beneficial in many laboratory studies, and in some clinical ones. However, the clinical effectiveness of glass ionomers in preventing recurrent caries is poorly substantiated by the scientific gold standard of randomized controlled clinical trials.

SUGGESTED READING

Preston AJ, Agalamanyi EA, Higham SM, Mair LH. The recharge of esthetic dental restorative materials with fluoride in vitro—two years' results. Dent Mater 2003;19:32–7.

Donly KJ, Segura A, Wefel JS, Hogan MM. Evaluating the effects of fluoride-releasing materials on adjacent interproximal caries. J Am Dent Assoc 1999;130:817–25.

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Donly KJ, Segura A, Kanellis M, Erickson RL. Clinical performance and caries inhibition of resin-modified glass ionomer cement and amalgam restorations. J Am Dent Assoc 1999;130:1459–66.

Randall RC, Wilson NHF. Glass-ionomer restoratives: a systematic review of a secondary caries treatment effect. J Dent Res 1999;78:623–37.

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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