Fluoride In Restorative Materials: Does It Make A Difference? (1/03)


The purpose of this clinical study was to examine the incidence of secondary caries in Class V restorations in xerostomic patients using a conventional glass-ionomer (Ketac-Fil, 3M ESPE), a resin-modified glass-ionomer (Vitremer, 3M ESPE) and a resin composite (Z-100, 3M ESPE). Forty-five patients received three restorations of each type in the same arch. The patients were instructed in the use of neutral fluoride gel in custom trays and recalled every six months for two years. The restorations were evaluated for material loss, marginal integrity and recurrent caries. Patients were categorized as fluoride compliant or non-compliant. The conventional glass-ionomer demonstrated a significantly greater number of restoration failures overall than the resin-modified glass-ionomer or resin composite restorations. The conventional glass-ionomer failures were due to loss of anatomic form secondary to the erosive effect of topical fluoride use. However, no conventional glass-ionomer restoration failures due to marginal caries could be documented throughout the study. For patients not using topical fluoride, recurrent caries reductions for both the conventional glass-ionomer and resin-modified glass-ionomer restorations were 80% greater than that of resin composite restorations. Results suggest that fluoride-releasing restorative materials can provide local therapeutic caries inhibition in non-compliant fluoride users.

DIS comment: Secondary caries remains the primary reason for the replacement of all restorations. The ability of fluoride-releasing materials to reduce the incidence of secondary caries formation in patients remains controversial. An abundance of laboratory research confirms the ability of fluoride-releasing materials to reduce the demineralization of adjacent tooth structure. However, clinical evidence is much more equivocal, with smaller controlled studies suggesting an increase in caries inhibition and larger surveys unable to show any significant effect. The authors suggest that the caries inhibition by fluoride-releasing materials could be limited or easily masked by multiple variables in study design such as case selection, diagnosis, and operator differences. Clinical studies have shown the excellent retentive abilities of glass-ionomer restorative materials, although loss of anatomic form has been a common problem. Xerostomic patients display an unusually hostile environment for restorative materials and especially conventional glass-ionomer restorations. The resin-modified glass-ionomer restorative materials are typically less technique sensitive and have better mechanical properties. This study supports the continued use of glass ionomer-type restorative materials as a viable option in Class V lesions in non-compliant patients at high risk for caries.