

Ask the Experts

LONGEVITY OF ANTERIOR COMPOSITE RESTORATIONS

Guest Experts

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QUESTION: What do we know about the longevity and reasons for failure of anterior composite restorations?

ANSWER: Restoring the esthetic and functional characteristics of anterior teeth predictably and reliably has been an important goal for clinicians.¹ Resin-based composites, or simply "composites," are the material of choice for the restoration of conservative defects in anterior teeth because of their adhesive and esthetic properties. In addition, composites can be used in selected cases for direct veneers, esthetic/functional tooth contour modifications, and diastema closures.

The longevity of composite restorations has been a topic of discussion for many years. Although this data might seem simple to determine, in reality it is a complex research question.² The available literature does not lead to a consensus among authors regarding the longevity of anterior composite restorations. Many variables affect longevity of composite restorations, including type of dentition,^{3,4} location and size of restoration,^{5,6} reasons for placement,⁷ type of material, etc. As adhesion plays an important role in the overall performance of composite restorations, the durability of the adhesive also can greatly influence the longevity of a composite restoration.⁸ Along those lines, the variability of the bonding substrate has been shown to influence the clinical effectiveness of adhesive restorations,⁹ although for earlygeneration enamel adhesives, acidetching and bonding were not critical for the longevity of anterior restorations.¹⁰

Since the development of the first composites over 40 years ago, these materials have evolved to a point where properly placed restorations can function successfully for many years. Clinical studies have found that 60 to 80% of all Class III and V composite resin restorations remain acceptable after 5 years of clinical service.^{8,11–15} The main reasons for replacement of anterior composite restorations are typically surface discoloration, secondary caries, and/or fracture of the restoration.

It is generally accepted that Class IV restorations do not last as long as Class III and Class V restorations. One study compared four different anterior composite restoration types over 5 years.¹⁶ Variables assessed included handling characteristics, gingival condition, surface staining, marginal

*Resident, Operative Dentistry Graduate Program, Department of Operative Dentistry, University of North Carolina, Chapel Hill, NC, USA [†]Resident, Operative Dentistry Graduate Program, Department of Operative Dentistry, University of North Carolina, Chapel Hill, NC, USA [‡]Associate professor, Department of Operative Dentistry, University of North Carolina, Chapel Hill, NC, USA staining, color deterioration, and overall longevity. The Class IV restorations had higher failure rates than Class III or V restorations. Longevity of large Class IV composite restorations placed in fractured anterior teeth has been shown to be relatively short.¹⁷ This is attributed to the relatively great amount of stress applied to these restorations during occlusal function.

In summary, there is a lack of conclusive data regarding the longevity of anterior composite restorations. However, it has been well established that the more complex the restoration, the shorter its lifespan.

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