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COMMENTARY

SHEAR BOND STRENGTH OF ENAMEL TREATED WITH SEVEN CARBAMIDE PEROXIDE BLEACHING AGENTS

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This study is one of a growing number of studies over the past decade that evaluate the effect of tooth bleaching products on enamel-composite bond strengths. It is a timely topic because of the widespread use and acceptance of this form of esthetic enhancement by patients, and the ever-increasing number of companies that introduce "new" products in every year. Since practitioners are often faced with the task of restoring teeth that have been first subjected to either home or in-office bleaching, it is crucial to understand the potential impact this may have on adhesive procedures and how to minimize or avoid it.

Current light-cured dental adhesives polymerize by a free radical polymerization that involves light-activated redox initiators. As pointed out by the authors, the problem with enamel that has been subjected to a bleaching regimen is that it collects hydrogen peroxide that has been released from the breakdown of carbamide peroxide. The low molecular weight of hydrogen peroxide allows it to penetrate completely through the enamel and into the dentin. The embedded hydrogen peroxide leaches out over time, decomposing into water and oxygen. This released oxygen causes incomplete polymerization of the adhesive resin that is in contact with these areas.^{1,2}

The authors distinguish their experimental approach from previous studies by choosing to evaluate various concentrations of currently available home bleaching products to observe their effects on enamel-resin composite bond strength. Their results confirm what the majority of previous studies in this area have shown, that a delay of 2 weeks after the cessation of bleaching allows enamel-to-resin composite bond values equal to those of nonbleached controls. The current authors did not study the effect of their bleaching products on immediate or 1-week bond strengths. The assumption the reader is asked to make is that there would be a significant reduction on shear bond values of enamel to resin composite because of the bleaching regimen. The

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authors also used a lengthy bleaching regimen for their specimens—42 days of 8-hour exposure—probably much more time than most dentists advise for their patients.

Finally, the authors refer to other options that have been suggested in the literature that clinicians can select to use when faced with having to restore teeth that have been subjected to a bleaching regimen, in addition to waiting for 2 weeks. These include the use of an ethanol-based adhesive system, the application of a sodium ascorbate solution, and the simple act of reducing the surface layer of enamel, as with beveling the enamel or preparing for a veneer.³⁻⁵ All have been shown to reduce or reverse the negative effect that bleaching has on enamel-to-resin bond strengths.

The main point to be taken from this study is that clinicians should consider delaying any adhesive restorative procedure on bleached enamel for at least 2 weeks. As new products and techniques continue to evolve in this area, there will be a continued need for their evaluation to determine whether the data from previous studies are still pertinent to our decisions regarding restoring bleached enamel.

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