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COMMENTARY

SHEAR BOND STRENGTH EVALUATION OF COMPOSITE RESIN ON ENAMEL AND DENTIN AFTER NONVITAL BLEACHING

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Following whitening procedures, it is often recommended to wait at least 2 weeks prior to placing a direct esthetic restoration to allow any residual oxygen left in the tooth to be eliminated. It is well known that residual oxygen can interfere with the polymerization of the resin and thus affect the bond strength to enamel and dentin.

Occasionally following endodontic therapy, the tooth discolors and requires either the placement of a restoration or bleaching of the tooth prior to the final restorative procedure. Nonvital tooth whitening using a paste placed in the pulp chamber and left for several days is a commonly used procedure. The above article describes the effects of sodium perborate and carbamide peroxide on the bond strengths of enamel and dentin at 1 day and 1, 2, and 3 weeks after bleaching.

The study clearly demonstrates the negative effect of residual oxygen on enamel and dentin after 24 hours; however, it does not present a statistical difference in bond strengths after 1 week for either carbamide peroxide or sodium perborate. Is interesting to note the diffusion of the hydrogen peroxide into the enamel and how it affects the bond strength, at least in the first 24 hours after the bleaching procedure.

Two factors not tested in this study are the effect of bleaching on the immediate bond strength after 10 minutes or less and the effect of bleaching on microleakeage. These values are of great clinical importance since they are indicators of the potential bond strength in restorations with a high C-factor. Also unknown is the effect of bleaching on microleakage. Perhaps a future study should be performed using a push test instead of a shear test method; this might be a more clinically relevant method of evaluating the effect of bond strength on dentin.

Of great importance for future research is the evaluation of a combination of 10 to 15% carbamide peroxide and sodium perborate used over a 2- to 3-week period. This paste is fairly popular with clinicians who want to increase the whitening effect on the tooth without increasing the potential for external root resorption.

It would appear from this article and from what is described in the literature that oxygen has a deleterious effect on the initial bond strengths of enamel and dentin to composite.

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