COMMENTARY

EFFECT OF BLEACHING ON STAINING SUSCEPTIBILITY OF RESIN COMPOSITE RESTORATIVE MATERIALS

Walter G. Renne, DMD*

Evidence in the literature is contradictory about the effect that tooth-whitening products have on the surface staining susceptibility of composite resins. Some studies show that carbamide peroxide products may increase the staining susceptibility of composites and others show no appreciable changes. Overall, it appears that carbamide peroxide may have some negative effects upon the physical and mechanical properties of tooth-colored materials including an increase in surface roughness. One question is whether a slight increase in surface roughness caused by carbamide peroxide translates into an increased susceptibility to staining.

This study evaluates the staining characteristics of three major resin categories after bleaching; the nanofills, the nanoceramics, and the microhybrids. Multiple samples from each group were prepared and finished with silicone carbide paper disks in an attempt to standardize the surface polish of all the samples. The technique created a uniformly smooth surface but one that was microscopically rough. The samples were then exposed to a 20% carbamide peroxide solution and subsequently placed in either coffee or tea in a manner that simulated a 5-year average daily exposure to these substances.

The authors of this study concluded that bleaching did not increase any staining susceptibility of the materials tested.

One peripheral aspect of the issue may be whether the degree of polish makes a clinical difference. Surface finish becomes important if carbamide peroxide can roughen a highly polished surface enough to increase staining susceptibility relative to control samples. The samples in this case were polished to a uniform smoothness with a 1,200-grit silicone carbide disk. On a microscopic level, this may still be rough enough to absorb stains from the beginning. A very highly polished surface can be microscopically smooth, and carbamide peroxide may be able to alter surface roughness enough to create a measurable increase in staining susceptibility relative to controls. This may explain why some authors have published studies where highly polished samples exposed to carbamide peroxide have shown an increase in staining. However, based upon this in vitro study, it is apparent that a 20% carbamide peroxide bleaching solution does not significantly increase the staining effects of tea or coffee on any of the studied materials when polished to a level achievable with a 1,200-grit silicone carbide polishing disk.

*Clinical instructor, Department of Oral Rehabilitation, Medical University of South Carolina, Charleston, SC, USA

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