COMMENTARY

EFFECT OF WHITENING DENTIFRICES ON THE SUPERFICIAL ROUGHNESS OF ESTHETIC RESTORATIVE MATERIALS

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Whitening dentifrices may cause removal of stains and whitening of teeth by chemicals (peroxides), abrasives, or a combination of these. There is a concern that use of these dentifrices on resin-based restorative materials may result in a degraded or roughened surface that might be even more likely to accumulate plaque and stains.

The authors have evaluated the surface roughness (Ra) of two resin composites (Durafil VS and Esthet-X) and one resin-modified glass ionomer (Vitremer) following simulated toothbrushing with a silica-containing dentifrice (Crest Regular), two bicarbonate-containing dentifrices (Crest Extra Whitening, Dental Care), an alumina/silica-containing dentifrice (Rembrandt Plus Whitening), and a calcium carbonate–containing dentifrice (experimental). The Rembrandt Plus Whitening dentifrice also contains carbamide peroxide, whereas the experiment dentifrice contains hydrogen peroxide.

The initial Ra of the restorative materials was measured on surfaces produced by a Mylar matrix. Although a matrix-prepared surface is a common control for polishing studies, a more clinically relevant design might have included a finished/polished surface as a baseline.

There is an assumption that rougher, larger, or harder particles will produce increased loss of material (wear) in three-body abrasion. This assumption must be viewed cautiously because wear is often influenced not only by the properties of the abrasive but also by the properties of the opposing surface. A particle that produces a low Ra does not necessarily imply that the particle is less aggressive in removing material.

The authors have demonstrated that dentifrices containing silica and bicarbonate abrasives produced a rougher surface than those dentifrices containing alumina/silica or calcium carbonate abrasives and peroxides.

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