## Ask the Experts

## BONDING TO FLUOROSED ENAMEL

Associate Editor Edward J. Swift Jr., DMD, MS\*



QUESTION: When bonding composite to fluorosed enamel, should I do anything different from when I bond to normal enamel?

ANSWER: The prevalence of enamel fluorosis has increased as fluoride has become more widely available in fluoridated water, dentifrices, and various other sources. Therefore, fluorosed enamel is frequently encountered when bonding a resin-based composite restoration, pit and fissure sealant, or orthodontic bracket.

The severity of fluorosis varies from mild to severe, depending on the amount of fluoride that is consumed during tooth development. While the subsurface layer of enamel becomes porous with increasing severity, the surface itself is hypermineralized. Therefore, relative to normal enamel, acid conditioning of fluorosed enamel might be compromised.

Recent research using self-etch and etch-and-rinse adhesives has provided some information that might be helpful in guiding the clinician in attempting to bond to fluorosed enamel. For the two-step, self-etch system Clearfil Protect Bond (Kuraray, Tokyo, Japan), Ermis and colleagues confirmed that adhesion to fluorosed enamel was significantly less than adhesion to normal enamel when the enamel was not instrumented in any way. However, grinding with a diamond instrument significantly improved adhesion to both types of enamel, and the resin bond to fluorosed enamel was the same as that to normal enamel.

These authors also reported that grinding had a slightly less

dramatic effect for the three-step, etch-and-rinse system OptiBond FL (Kerr, Orange, CA, USA). However, as with the self-etch system, grinding fluorosed enamel improved its bond strength to a level similar to that of normal enamel.

The severity of fluorosis appears to affect self-etch materials more than it does etch-and-rinse adhesives. Etching with phosphoric acid before application of the self-etch adhesive improves enamel bonding. Also, there is some evidence that extending the normal etching time can improve the bond of etch-and-rinse adhesives.

Editor's note: *This same topic will* be addressed further in the next issue of the Journal.

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## SUGGESTED READING

Ermis RB, De Munck J, Cardoso MV, et al. Bonding to ground and unground enamel in fluorosed teeth. Dent Mater 2007;23: 1250–5. Weerasinghe DS, Nikaido T, Wettasinghe KA, et al. Micro-shear bond strength and morphological analysis of a self-etching primer adhesive system to fluorosed enamel. J Dent 2005;33:419–26. Ateyah N, Akpata E. Factors affecting shear bond strength of composite resin to fluorosed human enamel. Oper Dent 2000; 25:216–22.

Editor's Note: If you have a question on any aspect of esthetic dentistry, please direct it to the Associate Editor, Dr. Edward J. Swift Jr. We will forward questions to appropriate experts and print the answers in this regular feature.

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