COMMENTARY

ONE-YEAR TENSILE BOND STRENGTHS OF TWO SELF-ETCHING PRIMERS TO BOVINE ENAMEL

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This timely article reports the findings of an in vitro study to evaluate microtensile bond strengths to enamel (bovine) of two self-etching primer/adhesives (ABF experimental and Clearfil SE Bond) and a total-etch primer/adhesive (One-Step) at 24 hours and after 1 year of storage in water at 37°C.

Self-etching primers typically produce etching patterns on enamel that are different and perhaps milder than those observed with phosphoric acid. Although it is difficult to correlate etching patterns with bond strength, there is a concern that bond strengths of self-etching primers/adhesives are less than those produced with total-etch primers/adhesives. The durability of these bonds has also been questioned owing to reduced demineralization, the formation of water trees near the bonded interface with some primers/adhesives, and the potential for hydrolysis of the adhesives.

The authors of the present study reported slightly increased bond strengths of the self-etching primers/adhesives after storage of specimens for 1 year. Since no degradation of the bonds was observed, it would be interesting to have a deeper understanding of the kinetics of polymerization of the adhesives tested to know if increased curing occurred with long-term storage at 37°C.

More research on the effects of etching is needed. The bonding of self-etching primers/adhesives to unground enamel is still unclear, although it appears that bond strengths to unground enamel are lower than those to ground enamel with some bonding agents.

The role of phosphoric acid applied to enamel before a self-etching primer/adhesive is used is also of interest. Several manufacturers recommend the use of phosphoric acid to condition unground enamel prior to the use of a self-etching primer/adhesive. But what happens to the ground enamel and dentin in a cavity preparation when the phosphoric acid is rinsed? Preliminary work suggests that the bond strength to enamel is increased and the bond strength to dentin is decreased when the use of a self-etching primer is preceded by the use of phosphoric acid.

Of course, by the time we have answers to these interesting questions, there will be newly formulated bonding agents with new questions.

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