

[\[Print Version\]](#)

[\[PubMed Citation\]](#) [\[Related Articles in PubMed\]](#)

The Angle Orthodontist: Vol. 69, No. 3, pp. 282–287.

Effect of resin cure mode and fluoride content on bracket debonding

Stephanie E. Steckel, DDS, MS;^a Frederick A. Rueggeberg, DDS, MS;^b Gary M. Whitford, PhD, DMD^c

^aS. E. Steckel, graduate student, Department of Orthodontics, Medical College of Georgia, Augusta.

^bFrederick A. Rueggeberg, DDS, MS, Professor, Department of Oral Rehabilitation, Director, Section of Dental Physical Sciences, Medical College of Georgia, Augusta, Georgia 30912. F. A. Rueggeberg, professor, Department of Oral Rehabilitation, and director, Section of Dental Physical Sciences, Medical College of Georgia, Augusta.

^cG. M. Whitford, regents professor, Department of Oral Biology, Medical College of Georgia, Augusta.

ABSTRACT

Enamel decalcification around brackets is sometimes observed during and after orthodontic treatment. Reports in the literature suggest that the preventive advantage of fluoride-releasing adhesive resins may be compromised by an increased incidence of bond failure. The purpose of this study was to determine the effects on shear debonding of incorporating fluoride into the bracket bonding system. Another purpose was to determine the effect of polymerization mode on debonding. Orthodontic brackets were bonded to bovine enamel using one of three types of adhesive resin—no-mix, chemically cured, or light-cured—each formulated with and without fluoride. The teeth were stored in artificial saliva for 24 hours or 30 days and then debonded in shear. Data analysis was performed using ANOVA followed by post-hoc multiple comparison between group pairs. It was found that: (1) fluoride had either no effect or it increased the bond value; (2) the no-mix adhesive demonstrated the lowest bond value; (3) the duration of storage in artificial saliva had no effect on the bond value of the chemically cured and light-cured adhesives but did affect the no-mix adhesive; and (4) the no-mix adhesive released significantly less fluoride than the two other products. Thus, the presence of fluoride in the bonding adhesive does not reduce the force required to debond in shear, and chemically or light-cured adhesives provide consistently higher bond values over extended immersion times than the no-mix product.

KEY WORDS: Orthodontic resin, Polymerization mode, Shear debond, Fluoride.

Submitted: March 1998

Accepted: July 1998.