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## Effects of fluoride application on shear bond strength of orthodontic brackets

Paul L. Damon;<sup>b</sup> Samir E. Bishara, BDS, DDS, D Ortho, MS;<sup>a</sup> Marc E. Olsen, DDS;<sup>d</sup> Jane R. Jakobsen, BA, MS<sup>e</sup>

<sup>a</sup>Samir E. Bishara, College of Dentistry, University of Iowa, Iowa City, Iowa 52242. S.E. Bishara is a professor of Orthodontics at the College of Dentistry, University of Iowa.

<sup>b</sup>P.L. Damon is a senior dental student and research assistant at the College of Dentistry, University of Iowa, Iowa City.

<sup>d</sup>M.E. Olsen is in the general practice and the residency program at the College of Dentistry, University of Iowa.

<sup>e</sup>J.R. Jakobsen is an adjunct assistant professor in the Department of Preventive and Community Dentistry, College of Dentistry, University of Iowa.

### ABSTRACT

The purpose of this study was to determine the shear bond strength and debonding failure modes of orthodontic brackets bonded to teeth that have been treated with various fluoride concentrations. Thirty-six recently extracted human premolars were divided into three groups: prophylaxis with pumice only, prophylaxis using a 13,500 ppm fluoridated pumice, and prophylaxis with pumice followed by application of a 2500 ppm fluoridated paste. The teeth were etched with a 37% phosphoric acid gel, then bonded with a metal orthodontic bracket. The teeth were mounted in phenolic rings and stored in de-ionized water at 37°C for 72 hours. A Zwick Universal Testing Machine was used to determine shear bond strengths. The residual adhesive on the enamel surface was estimated using the Adhesive Remnant Index. Analysis of variance was used to compare the various groups, and significance was predetermined at  $p \leq .05$ .

The results indicate that there were no significant differences in bond strengths between the treated and untreated teeth ( $p = .233$ ). The Chi Square test evaluating the residual adhesive on the enamel surfaces also showed no significant differences ( $p = .456$ ). In conclusion, the use of fluoridated prophylactic pastes with varying fluoride concentrations does not significantly affect shear bond strength or bond failure location.

**KEY WORDS:** Bonding, Fluorides, Shear strength.

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