

[\[Print Version\]](#)

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

The Angle Orthodontist: Vol. 67, No. 3, pp. 189–196.

Evaluation of a resin-reinforced glass ionomer cement for use as an orthodontic bonding agent

Akira Komori, DDS, PhD;^b Haruo Ishikawa, DDS, MSD, PhD^{a, c}

^aHaruo Ishikawa, DDS, MSD, PhD, Department of Orthodontics, Nippon Dental University, 2-3-16 Fujimi, Chiyoda-ku, Tokyo 102 Japan, Phone: 81-3-3261-5511, Fax: 81-3-3261-5891, E-mail: haruishi@tokyo.ndu.ac.jp

^bA. Komori is an instructor and research fellow in the Department of Orthodontics at Nippon Dental University.

^cH. Ishikawa is a professor and chairman in the Department of Orthodontics at Nippon Dental University.

ABSTRACT

A resin-reinforced glass ionomer cement, distributed commercially as “Fuji Ortho” (FO), has recently been developed for orthodontic bracket bonding procedures. The purposes of this study were to determine the tensile and shear bond strength of FO, to measure the amount of cement remaining on the enamel after bracket removal, and to evaluate the effects of experimental strain on the enamel surface. SEM evaluation demonstrated that polishing with 2400-grit waterproof abrasive paper followed by treatment with polyacrylic acid produced a smooth enamel surface without debris. No significant differences were seen in bond strengths between 24 hours and thermal cycling. Tensile and shear strengths of FO were significantly higher after thermal cycling than with conventional glass ionomer cement, at 3.4 ± 0.7 MPa and 17.9 ± 4.5 MPa, respectively. The Adhesive Remant Index (ARI) indicated that FO adhered firmly to the unetched enamel surface and its scores showed 2 to 3 after thermal cycling. Results of this investigation suggest that FO may serve as an advantageous alternative to composite resin for the bonding of orthodontic brackets.

KEY WORDS: Resin-reinforced glass ionomer cement, Unetched enamel, Bond strength, Bracket bonding, Bovine teeth.

Submitted: June 1996

Accepted: November 1996.