

3132 Bonding of Fiber-reinforced Composite Post to Root Canal Dentin

A.-M. LE BELL, [L. LASSILA](#), and P. VALLITTU, University of Turku, Finland

Objectives: The aim of this study was to compare bonding of two different fiber-reinforced composite (FRC) posts in root canal dentin discs. Serrated titanium posts served as reference. **Methods:** Prefabricated carbon FRC posts with cross-linked polymer matrix and individually formed FRC posts with interpenetrating polymer network (IPN) matrix were compared. The crowns of extracted third molars were removed and post spaces (diameter: 1.5 mm) were drilled, etched and bonded. The posts were treated with dimethacrylate resin for 3 minutes and light-polymerized. A dual-polymerizing composite resin cement was used for cementing. After 26 days in water storage the samples were thermocycled (6000x) and cut into discs of thicknesses: 1, 2 and 4 mm (n= 8/group). Push-out force was measured by pushing the post from one end. Assessment of the failure mode was made by two independent operators under a stereomicroscope (1= adhesive failure between post and cement, 2= cohesive failure of post-system, 3= adhesive failure between cement and dentin). **Results:** The push-out force increased with increased height of dentin disc in all groups (ANOVA, $p < 0.001$). The individually formed FRC posts showed a trend for highest push-out force in all heights of dentin discs: 66.6 N (1 mm), 154.1 N (2 mm) and 371.1 N (4 mm) although the difference was not statistically significant. **None of the individually formed FRC posts showed adhesive failures between the post and the cement whereas 54 % of the prefabricated carbon FRC posts and 79 % of the titanium posts showed either complete or partly adhesive failure between post and cement.** **Conclusions:** There was no difference in push-out force between the posts. **However, contrary to the other posts, there were no adhesive (cement-post) failures with the individually formed FRC posts, suggesting better interfacial adhesion of cement to post in this group.**