Influence of Cement Type and Thickness on Polyfiber Post Adhesion

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Objectives: To examine the effect of cement type and thickness on push-out bond strength of polyfiber endodontic posts (888102 Spirapost PFS Tapered, Zenith Dental) luted with different resin cements into canals obturated with gutta-percha and an epoxy-resin based sealer (AH26, Dentsply). Materials and Methods: Forty-eight single-rooted teeth were decoronated, filed, cleaned, and sequentially shaped with ProTaper (Dentsply Tulsa) rotary files up to #F3. Teeth were divided into two groups of 24 specimens each and obturated with gutta-percha and AH26. Post space preparation and cementation were completed a week after obturation. Ten-millimeter-deep post spaces were prepared using size 4 (group 1) and 6 (group 2) Gates Glidden drills. The teeth in each group were then divided into three subgroups according to luting cements (RelyX Unicem, 3M ESPE; Panavia F4, Kuraray; Clearfil SA, Kuraray). Following cementation of the polyfiber posts, 1-mm thick horizontal sections were obtained from specimens and subjected to push-out test. The data were statistically analyzed with two-way ANOVA and Bonferroni tests. Results: Both cement type and thickness had significant effects on bond strength values (p<0.05). The push-out bond strength varied significantly between the two groups, irrespective of luting agent; specimens in group 1 showed higher bond strength values than group 2 (p<0.05). In other words, bond strength values decreased with increasing thickness of the cements. Regarding luting agents, while RelyX Unicem showed the highest bond strength values in group 1 and 2 (11.1±3.1 MPa and 6.5±2.3 MPa, respectively), Panavia F4 exhibited the lowest values (8.9±3.6 MPa and 4.6±2.0 MPa, respectively). Conclusions: Push-out bond strength values achieved with the Spirapost system are significantly affected by the thickness and type of resin cement. Clinical Significance: The fit between endodontic posts and post spaces should be as tight as possible for higher adhesion.