

Comparison of Bond Strength in Different levels of Post space of Fiber-Reinforced Post luted with Different Resin Cements

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Abstract

This in vitro study was carried out to investigate the effect of post space regions (coronal, middle and apical) and the mode of polymerization (dual- , self-cured) of the resin cement on the retention of the translucent fiber post to root canal dentin by using the conventional pull-out and push-out tests.

Thirty-two extracted single rooted mandibular first premolars were instrumented with ProTaper Universal system files (For hand use) following manufacturer's instructions and obturated with gutta-percha for ProTaper and AH26® root canal sealer. After 24hrs in the incubator, post space was prepared using FRC Postec® Plus drills no.3 creating 8mm deep post space. The prepared samples were randomly divided into two main groups (16 samples each) according to the resin cement mode of polymerization (Group **A** Dual-cure, RelyxU100), (Group **B** Self-cure, SpeedCem). Then each group was subdivided into two groups (each with 8 samples) according to the test performed (**A1**: RelyxU100 and Push-out test, **A2**: RelyxU100 and pull-out test, **B1**: SpeedCem and push-out test, **B2**: SpeedCem and pull-out test). After incubation period of 24hrs, For push-out groups (**A1**, **B1**), each root was sectioned horizontally into 3 slices (2mm in thickness) represents the coronal, middle and apical regions of the post space. Pull-out and push-out bond strength test were measured using a universal testing machine (Tinius-Olsen) at a cross head speed of 0.5 mm/min.

The result of this study showed that, regarding the root region, the bond strength values decreased significantly from the coronal to the apical region in both cements tested. For the mode of polymerization, no statistical significant difference was detected between the dual- and self- polymerized resin cements.

In conclusion, the retention of fiber post was affected by the root region while the mode of polymerization didn't affect the bond strength. When measuring

the bond strength of luted fiber post, the push-out test appears to be more dependable than the conventional pull-out.