

# **Comparison of fit among different types of post restorations luted with conventional cement**

(An in vitro study)

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## *Abstract*

This in vitro study was carried out to measure and compare the cement film thickness for post space regions (coronal, middle and apical) along horizontal planes between the margin of the root dentine and the post.

Thirty-two extracted human maxillary canines, mandibular canines and maxillary central incisors were instrumented with ProTaper system files (hand use) following manufacturer's instructions and obturated with gutta-percha for ProTaper and AH26® root canal sealer. After 24hrs of incubation at 37°C, post space was prepared using FRC Postec® plus drills no.3 and ER Cera reamer size 70, creating 10 mm deep post space. The prepared samples were then randomly divided into four main groups (8 samples each) according to the type of post used (Group **A**: fabricated cast metal), (Group **B**: fabricated zirconia post), (Group **C**: prefabricated glass fiber reinforced composite post), (Group **D**: prefabricated zirconia post). After cementation and incubation period of 24hrs, each root was sectioned horizontally into 3 discs (2mm in thickness) at the coronal, middle and apical regions of the post space. The cement thickness between post and root dentine was measured (in  $\mu\text{m}$ ) by using a stereomicroscope.

The results of this study showed that the lowest mean of cement thickness was in group **C** ( $35.28\mu\text{m}$ ), followed by group **A** ( $78.12\mu\text{m}$ ) and group **D** ( $81.9\mu\text{m}$ ), and all three groups demonstrated acceptable cement thickness, while group **B** produced unacceptable cement thickness ( $127.34\mu\text{m}$ ). One way ANOVA test revealed a statistically highly significant difference for the cement thickness among four post types used within each region of the root.

In conclusion, within the limitations of this study, it was concluded that the root region and type of post system have an effect on cement thickness along post space.