

**Comparison of regional bond strength among
different types of posts luted with different
types of cements**

(An in Vitro study)

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Abstract

This in vitro study was carried out to investigate the effect of post space regions (coronal, middle and apical), the effect of post types (manually milled zirconia post, prefabricated fiber post, prefabricated zirconia post) and the type of cement used (GIC, self-adhesive resin cement) on the bond strength between the posts and root dentin by using push-out test.

Forty eight mandibular premolars extracted for orthodontic reasons (single rooted) were instrumented with ProTaper system (for hand use) and obturated with gutta percha for ProTaper and AH26® root canal sealer following the manufacturer instructions. After 24 hours, post space was prepared using Zirix and Glassix drills no.3 creating 8 mm depth post space. The prepared samples were randomly divided into three main groups (16 samples each) according to the type of post used (Group **A**. Manually milled Zirconia post, Group **B**. Prefabricated fiber post and Group **C**. Prefabricated zirconia post)

Each group was subdivided into two subgroups (each subgroup contained 8 samples) according to the type of cement used (subgroup **A1**: Manually milled zirconia post cemented with GIC, subgroup **A2**: Manually milled zirconia post cemented with Speed cem), (subgroup **B1**: Prefabricated fiber post cemented with GIC, subGroup **B2**: Prefabricated fiber post cemented with Speed cem) and (subgroup **C1**: Prefabricated zirconia post cemented with GIC, subgroup **C2**: Prefabricated zirconia post cemented with Speed cem). After cementation and incubation for 24hrs, at 37°C and 100% humidity, each root was sectioned horizontally into 3 slices (2 mm in thickness) representing the coronal, middle and apical regions of the post space. Push out bond strength test was

performed and measured using a universal testing machine (Tinius-Olsen) at across head speed of 0.5 mm/min.

The results showed that regarding the root region, the bond strength values increased significantly from apical to coronal region for all types of posts in both tested cements. For the effect of post type, The manually milled zirconia post cemented with the self-cured resin cement (Speed cem) showed higher bond strength values.

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In conclusion the retention of post restoration was affected by root region, type of post and type of cement used.