

## Effect of posts on the fracture resistance of load-cycled endodontically-treated premolars restored with direct composite resin.

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### Abstract

**AIM:** The aim of this study was to investigate the fracture resistance and failure mode of premolars restored with composite resin using various prefabricated posts. **METHODS AND MATERIALS:** Sixty sound maxillary premolars were divided into four equal sized groups. All but the control group received endodontic treatment followed by placement of mesiodistoclusal (MOD) composite restorations (Tetric Ceram) as follows: Group T = no post, Group DT = fiber reinforced composite (FRC) post (DT Light), Group FL = prefabricated metal post (Filpost). The control group (C) had no cavities prepared. After thermal and load cycling, static load was applied at a 30 degrees angle until fracture. Failure modes were categorized as restorable and non-restorable. Data were analyzed using the analysis of variance (ANOVA) and Duncan tests ( $\alpha = 0.05$ ). **RESULTS:** The mean values of fracture loads (N) for all groups were: C (880+/-208); T (691+/-239); DT (860+/-269); and FL (388+/-167). Statistically significant differences ( $P < 0.05$ ) were observed for all groups except between groups C and DT. The Chi Square test showed failure modes in groups C and DT were mostly restorable. The most non-restorable fractures were observed in group FT. **CONCLUSION:** Intact teeth and the teeth restored with composite and quartz fiber posts had a similar fracture resistance and the failure modes were mostly restorable. The lowest fracture resistance and the most non-restorable failures were observed in conjunction with metal posts. **CLINICAL SIGNIFICANCE:** The results of this in vitro study suggest the use of a quartz fiber post used in conjunction with an MOD composite resin restoration improves fracture resistance in an endodontically treated premolar.

### Reaxys Database Information

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