

## Fracture strength in teeth restored with three dowel core systems before and after load cycling: An in vitro study

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### Abstract

The aim of this in vitro study was to compare the fracture resistance and failure mode of endodontically treated teeth restored with three different post and core systems before and after load cycling. In this interventional study, forty-two maxillary incisors selected. After root treatment, they were randomly divided into six groups of 7. In group 1 and 2, casting post and core was used. In group 3 and 4, Dentatus-posts and composite cores were used and in group 5 and 6, FRC posts were used. Cyclic loading was performed in group 3, 4 and 6. There after compressive load was applied at a 45° angle to the long axis of the tooth at a crosshead speed of 1 mm min<sup>-1</sup> until the fracture occurred. One-way ANOVA and Tukey-Karmer test were used to determine the difference of the failure loads between the groups. The load cycling had no statistically significant effect on fracture strength among groups. Teeth restored with cast posts-and-cores exhibited significantly higher resistance to fracture than para post group ( $p < 0.05$ ). In cast post and core group and para post group, fracture mainly occurred in the root and it was unresorable but in FRC post and composite group, it mainly occurred in the composite cores. Fracture resistance of teeth restored with cast post and core, dentatus post and FRC pose were not affected by load cycling. The created fractures in casting post and core and dentatus post were undesirable and in root, which made the restoration of the teeth impossible.

### Reaxys Database Information

#### Author keywords

Cast post and core; Dentatus post; Fracture resistance; FRC post; Load cycling

#### Indexed Keywords

**EMTREE drug terms:** acrylic acid resin; glass fiber; glass ionomer; titanium

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