
# "INFLUENCE OF POST FIT AND POST LENGTH ON FRACTURE REISTANCE- AN IN VITRO STUDY"



by

**DR. RAKSHITH S. SHETTY**

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**Under the guidance of**

**Dr. PRIYA HORATTI**
Professor

**DEPARTMENT OF CONSERVATIVE DENTISTRY & ENDODONTICS**
**S.D.M. COLLEGE OF DENTAL SCIENCES & HOSPITAL, DHARWAD**



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# ABSTRACT

**Background and Objectives**: As root filled teeth often have insufficient coronal tooth structure, placement of a post is occasionally necessary to provide adequate retention for the core and final restoration. The aim of the present study was to investigate (i) the impact of post fit (form congruence) and (ii) the influence of post length on the fracture resistance of severely damaged root filled extracted teeth.

**Methodology :** Forty single-rooted human teeth were root filled and divided into four groups (n = 10 per group). Post spaces were prepared with a depth of 6 mm (group 1, 3) and 3 mm (group 2, 4). Form-congruence with a maximal fit of the post within the root canal space was obtained in groups 1 and 2, whereas there was no form-congruence in groups 3 and 4. In all groups, glass fibre reinforced composite (FRC) posts were adhesively cemented and direct composite crown build-ups were fabricated without a ferrule. Specimens were subjected to thermocycling and cyclic loading followed by application of static load until failure. Loads-to-failure [in N] were compared amongst the groups.

**Results :** Post fit did not have a significant influence on fracture resistance, irrespective of the post length. Both groups with post insertion depths of 6 mm resulted in significantly higher mean failure loads (group 1, 274.27 N; group 3, 277.16 N) than the groups with post space preparation of 3 mm(group 2, 250.40 N; group 4, 255.48 N).

**Interpretation and Conclusions :** Within the limitations of this study, the fracture resistance of teeth restored with FRC posts and direct resin composite crowns without ferrules was