

## ABSTRACT

**Introduction:** The aim of this study was to evaluate the fracture resistance of teeth filled with 4 different endodontic sealers.

**Methods:** Hundred single rooted extracted mandibular premolars were decoronated to a length of 11 mm. The teeth were randomly divided into 6 groups (n = 20 for each group). In group 1A, the teeth were left unprepared and unfilled (negative control), and in group 1B, the teeth were left unobturated (positive control). The rest of the roots were prepared by using the ProTaper System up to a master apical file size of F3. In group 2, Epoxy resin based sealer (AHPlus) + gutta-percha; In group 3, mineral trioxide aggregate-based sealer (MTAFill apex) + gutta-percha; In group 4, Calcium phosphate cement based sealer (Chitra-CPC)+gutta-percha and in group 5, Bioceramic based sealer (Endosequence BC) + gutta-percha. All root specimens were stored for 2 weeks at 100% humidity to allow the complete setting of the sealers. Each specimen was then subjected to fracture testing by using a universal testing machine at a crosshead speed of 1.0 mm/min until the root fractured. The force required to fracture each specimen was recorded, and the data were analysed statistically.

**Results:** The fracture values of groups 4 and 5 (Chitra-CPC and Endosequence BC Sealer) were significantly higher than those of group 2 and 3 ( $P < .05$ ). There was no significant difference between groups 4 and 5 ( $P > .05$ ).

**Conclusions:** In contrast to MTA Fill apex and AH Plus, Chitra-CPC and Endosequence BC increased the force to fracture in root-filled single-rooted premolar teeth.