

## ABSTRACT

### BACKGROUND

Restoration of endodontically treated teeth remains a major challenge in dentistry, especially in cases of severe coronal destruction. Such cases require post retained restorations. The main reasons hampering the long term success of post retained restorations are loss of retention and root fracture. Retention can be improved by using resin based luting cements. Root fractures can be minimized by using fiber posts. Kersten *et al.*, 1986 reported that shape of the root canal plays an important role in successful treatment, apart from the efficiency of different root canal filling techniques especially in oval shaped canals. Only few studies have demonstrated the fracture resistance and retention of different prefabricated post systems in oval shaped root canals and determined the respective failure modes.

### AIM

To compare and evaluate the fracture resistance and retention of three different fiber reinforced posts in endodontically treated teeth with oval-shaped canals.

### MATERIALS AND METHODS

Sixty human mandibular premolars with oval canals were selected for the study. The samples were decoronated at the level of CEJ to obtain a root length of  $13\pm 1$ mm. Cleaning and shaping of the samples were performed using Rotary Protaper files till F3 size, followed by obturation of the root canals. The samples were then

divided in to 3 groups (n=20) according to the fiber posts used. Group 1 (Everstick Post), Group 2 (RelyX Post), Group 3 (Macrolock Oval Post). Post space preparation was done and posts were luted with the respective dual cure resin cement. Each group was then divided into 2 subgroups (a&b) n=10 for fracture resistance and retention tests respectively. For fracture resistance test core build up was done with direct composite and light cured. The retention test did not require any core build up. Fracture resistance and retention tests were performed on each group using universal testing machine at a cross head speed of 1mm/min. Failure modes were also evaluated.

## **RESULTS**

The results showed that the fracture resistance of group 3a (Macrolock Oval Post) was significantly higher than the other two groups. Group 1a had least fracture resistance. More number of unfavourable fractures were seen in Group 1a. The retention of group 3b (Macrolock Oval Post) was significantly higher than the other two groups. Group 1b had least retention.

## **CONCLUSION**

Fracture Resistance and retention of all the three groups were statistically significant i.e, Macrolock Oval Post > RelyX Post > Everstick Post.

**Key words** : Everstick post, Macrolock oval post, oval shaped canals, Endorez.