Comparison of the Effect of Four Non-Metal Posts on Fracture Resistance of Endodontically Treated Teeth Restored with Composite


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Abstract

Statement of problem: The fracture resistance of the root canal is mainly associated to the kind of the post used for treatment, and studies indicate that there are still different opinions about the fracture resistance of root canals when Non-Metal posts are used.

Purpose: The purpose of this study was to compare the fracture resistance of four adhesive non-metal posts with different MOEs against compressive load in endodontically treated teeth.

Materials and Method: In this In-vitro experimental study, a total of 40 recently extracted mandibular premolars were selected, sectioned adjacent to the CEJ, and endodontically treated. The specimens were randomly assigned to four groups (n=10). Post spaces were prepared and the fiber D.T. Light posts, D.T. Composi post, D.T. white posts and Cosmopost were cemented. Composite resin (Lumiglass) cores were built up. After simulating the PDL, the specimens were embedded in acrylic resin, and then secured in a Universal Testing Machine. A compressive load was applied at a 45° angle to the long axis of the tooth until fracture, at a crosshead speed of 1mm/min. The data were analyzed, using one-way ANOVA and Tukey’s test (p <0.05).

Results: The teeth restored with D.T. white fiber posts exhibited significantly higher resistance to fracture. Those restored with the other 3 groups were statistically similar (p >0.05). Fractures observed in the fiber groups would allow further restorations of the tooth, whereas unrestorable, catastrophic fractures were observed in the Zirconia (Composi) group.

Conclusion: Since Zirconia post should be used catiously due to the unfavorable and unrestorable fractures created, fiber posts are indicated, in endodontically treated teeth.

Key words: Fiber posts, Zirconia posts, Fracture resistance.