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Title: Fracture Resistance of Structurally Compromised Roots Restored with Glass and Quartz Accessory Fiber Posts

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Abstract: Introduction: Glass and quartz fiber posts are extensively used in the restoration of structurally compromised roots, particularly if the accessory fiber posts (AFP) accompany them. The aim of this study was to evaluate the effectiveness of glass versus quartz AFPs.

Methods: Forty mandibular premolars were randomly assigned to 4 groups (n=10). The clinical crowns were removed and the canals were flared and restored as follows: Group 1: Exacto, Group 2: Exacto + 2 accessories, Group 3: D.T. Light post and Group 4: D.T. Light + 2 accessories. All posts were cemented with Duo-link resin cement and the cores were built with Z250. Following one-week water storage, they were subjected to 45º compressive loads in universal testing machine with the crosshead speed of 0.5 mm/min. The maximum loads and failure modes were recorded and analyzed with Two-way ANOVA and Fisher's Exact Tests (p=0.05).

Results: There was a reduction in the fracture resistance of teeth restored with AFPs, but Two-way ANOVA test showed no statistically significant difference (p=0.094). There was also no statistically significant difference among glass and quartz post (p=0.462). The number of unfavorable fracture was lower in roots with accessory (p=0.695) and glass (p=0.695) fiber posts but neither was statistically significant.

Conclusion: Although AFPs filled most of the canal space, they had no effect on the fracture resistance and failure patterns. Glass and quartz fiber posts, with or without accessories, were equally effective in structurally compromised roots.

Fracture resistance, accessory fiber post, quartz, glass, compromised roots.

Presentation: Poster