

The Effect of Different Surface Treatments on Flexural Strength and Modulus of Elasticity of Fiber Posts

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Abstract

Background and Aim: The aim of this study was to evaluate the effect of various surface treatments on flexural strength and modulus of elasticity of two different types of glass fiber and quartz fiber posts.

Materials and Methods: In this experimental in vitro study eighty FRC posts of two different types: forty DT-light posts (quartz fiber) and forty Whitepost DC (glass fiber), were used and randomly divided into 4 groups (n=10): 1. No surface treatment (control), 2. Laser irradiation, 3. Air-borne particle abrasion, 4. Hydrogen peroxide 10%. To evaluate flexural strength and modulus of elasticity, 3-point bending test was performed in universal machine in Torabinejad searching center of dental school of Isfahan University and maximum fracture load was recorded. Then flexural strength and modulus of elasticity were calculated with formula. Data were analyzed by one-way ANOVA, Tukey and t tests.

Result: Before surface treatment the flexural strength and modulus of elasticity of DT-light posts were significantly higher than Whitepost DC ($p < 0.05$). There was no significant difference in flexural strength and modulus of elasticity between different groups of Whitepost DC with control group ($p = 0.16$ & $p = 0.15$, respectively). But in DT-light posts there were statistical significant differences in flexural strength and modulus of elasticity only between air-abraded group and control. ($p = 0.02$ & $p = 0.002$, respectively)

Conclusion: Surface pretreatments of glass and quartz fiber posts with laser and hydrogen peroxide 10% have no adverse effect on their flexural strength and modulus of elasticity.

Keywords: Fiber post, Surface Treatment, 3-Point Bending Test, elastic Modulus.