

Fiber Post Surface Treatment with Hydrogen Peroxide Increasing Push Out Bond Strength

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Abstract

To evaluate the effect of treating post surfaces with hydrogen peroxide (H_2O_2) on the push out bond strength of fiber posts luted with composite resin in endodontically treated teeth. Thirty extracted human mandibular first premolar teeth were decoronated at the cemento-enamel junction. The roots were endodontically treated, and post spaces were prepared for DT light Posts #1. Posts were divided in 6 groups by soaked for 2 different durations in 3 different concentrations of H_2O_2 and were then cemented in the prepared root canals using Excite DSC[®] and Multicore flow[®]. Each root was sliced into six 1 mm thick specimens representing the coronal, middle and apical regions. A push-out test was performed with an Instron testing machine. Data were analyzed with three-way analysis of variances and Tukey HSD test. Root region had no effect on push-out bond strength, whereas there were statistical differences based on the duration and concentration of H_2O_2 treatment. While post surface treatment with 30% H_2O_2 for 10 minutes showed the highest push-out bond strength ($p < 0.05$), there was no statistically significant difference between post surface treatment with 35% H_2O_2 for 5 minutes and 30% H_2O_2 for 10 minutes ($p > 0.05$). The highest push-out bond strength was achieved by treatment with 30% H_2O_2 for 10 minutes. However, post surface treatment with 35% H_2O_2 for 5 minutes may be an alternative method for improving post retention while reducing clinical procedure time.

Keywords: Post Surface Treatment, Hydrogen Peroxide, Push Out Bond Strength, FRC Posts, Endodontically Treated Teeth

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