EFFECT OF BLEACHING AGENTS ON BONDING TO PULP CHAMBER DENTINE - AN IN VITRO STUDY

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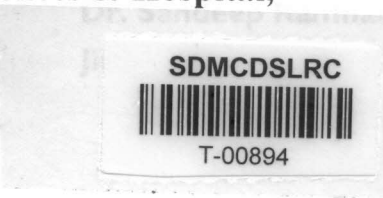

ABSTRACT

Background and Objectives: Subsequent to intracoronal bleaching, endodontic access cavities are frequently restored with bonded composite resin. Currently, the most commonly used intracoronal bleaching materials are hydrogen peroxide and sodium perborate. This in-vitro study was therefore conducted to determine the effect of intracoronal bleaching agents (35% hydrogen peroxide, sodium perborate and sodium perborate mixed with 35% hydrogen peroxide solution) on adhesion of bonding agent (Clearfil SE-bond) to pulp chamber dentine.

Method: 40 central incisors were divided randomly into four groups of 10 teeth each. After endodontic access and step-back preparation, the coronal part of the root canal upto 4 mm below CEJ was packed with intermediate restorative material. Bleaching agents were placed into the pulp chambers as follows:

Group 1: (control) distilled water.

Group 2: 35% hydrogen peroxide.

Group 3: sodium perborate mixed with distilled water.

Group 4: sodium perborate mixed with 35% hydrogen peroxide.

Treatment agents were removed after 7 days and a cotton pellet soaked with distilled water was placed in the pulp chamber and sealed with Cavit for another 7 days. The pulp chamber dentine was bonded with Clearfil SE-Bond and restored with composite (Clearfil

testing machine. Data was statistically analyzed using ANOVA followed by Tukey's post – hoc procedure.

One sample from each group was observed under SEM to visualize type of failure.

Results: It was seen that mean values of microtensile bond strength for the experimental groups were: Group 1: 5.32 ± 1.82 MPa, Group 2: 6.15 ± 1.22 MPa, Group 3: 9.25 ± 1.45 MPa and Group 4: 4.18 ± 0.97 MPa. Pulpal dentine treated with sodium perborate and distilled water (Group 3) had significantly higher mean bond strength when compared with the other three groups ($F = 48.2670$, $p = 0.0000$). Mean bond strength was found to be the lowest when dentine was treated with sodium perborate and hydrogen peroxide (group 4).

Interpretation and Conclusion: Whenever bonding agents are to be used during subsequent restorations after 'walking bleach', sodium perborate in distilled water is recommended bleaching agent.

Keywords: *Pulp chamber dentine; Bleaching agents; Self-etch dentin bonding agent; Microtensile bond strength.*