

The comparison of shear bond strength and time effect of three dentin bonding agents on bleached enamel

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I. Objectives

The objective of this study is to compare (1) the effect of type of bonding agents: conventional and self-etching adhesive systems and (2) immediate and delayed bonding of hybrid composite resin on the 10% carbamide peroxide bleached enamel.

II. Materials and Methods

68 extracted, noncarious human molars stored at 4°C in physiologic saline were used in this study. The crowns of 90 teeth were cut at the CEJ and bucco-lingual half using low speed diamond saw. Each section was embedded in autopolymerizing acrylic resin. Control groups were not bleached and stored 10-days in saline and the other groups were bleached 6 hours per day with 10% carbamide peroxide gel (Opalescence[®], Ultradent Product, Inc, Salt Lake City, UT 84095, USA) for 10 days and stored in saline between the treatment. Then the specimens were divided randomly following groups: (1) One-Step[®] (OS) control, (2) OS immediate bonding, (3) OS delayed bonding, (4) Clearfil SE Bond[®] (SE) control, (5) SE immediate bonding, (6) SE delayed bonding, (7) One-up Bond F[®] (OU) control, (8) OU immediate bonding, and (9) OU delayed bonding. Immediate bonding was done 24 hours later following last bleaching procedure and delayed bonding was done 2 weeks later. All bonding procedures were applied following the manufacturer's instructions then Ultradent mount jig was used with Clearfil AP-X[®] composite resin.

24 hours after storage in 37°C distilled water, shear bond strength were tested by Instron testing machine (Type 4411, Instron Corp., Canton, Massachusetts, USA) at crosshead speed of 1 mm/min.

The data for each group were subjected to One-way ANOVA followed by Tukey's test at $p < 0.05$ to make comparisons among the groups.

III. Results

In One-step[®] and One-up Bond F[®] groups, the immediate bonding group showed lower bond strength than control and delayed groups.

In Clearfil SE Bond[®] group, there were no statistical difference of shear bond strength among groups.

Among bonding agents, One-up Bond F[®] showed significantly lower bond strength than One-step[®] and Clearfil SE Bond[®].

IV. Conclusions

In this experiment, enamel shear bond strength of One-up Bond F[®] is lower than Clearfil SE Bond[®] and One-step[®].

The immediate bonding with One-step[®] and One-up Bond F[®] showed lower shear bond strength than control and delayed bonding on bleached enamel surface.