

تأثیر روش‌های آماده‌سازی سطحی مختلف در استحکام باند سه نوع پست پیش ساخته همرنگ دندان با سیمان رزینی

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Title: Effect of various surface treatments of tooth – colored posts on bonding strength of resin cement

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Background and Aim: Various studies have shown that reliable bond at the root – post – core interfaces are critical for the clinical success of post – retained restorations. Severe stress concentration at post – cement interface increases post debonding from the root. To form a bonded unit that reduces the risk of fracture, it is important to optimize the adhesion. Therefore, some post surface treatments have been proposed. The purpose of this study was to investigate the influence of various surface treatments of tooth – colored posts on the bonding of resin cement.

Materials and Methods: In this interventional study, 144 tooth – colored posts were used in 18 groups of 8 each. The posts included quartz fiber (Matchpost), glass fiber (Glassix), and zirconia ceramic (Cosmopost) and the resin cement was Panavia F 2.0. The posts received the following surface treatments: 1- No surface treatment (control group), 2- Etching with HF and silane, 3- Sandblasting with Cojet sand, 4- Sandblasting with Cojet sand and application of silane, 5- Sandblasting with alumina particles, 6- Sandblasting with alumina particles and application of silane. Then, posts were cemented into acrylic molds with Panavia F 2.0 resin cement. The specimens were placed in water for 2 days and debonded in pull – out test. Statistical analysis was performed using ANOVA followed by Tamhane and Tukey HSD. Failure modes were observed under a stereomicroscope (10x). $P < 0.05$ was considered as the significant level.

Results: Surface treatments (sandblasting with Cojet and alumina particles, with or without silane) resulted in improved bond strength of resin cement to glass fiber post (Glassix) and zirconia ceramic (Cosmopost) [$p < 0.05$], but not to the quartz fiber post (Matchpost). In general, higher bond strengths resulted in higher percentage of cohesive failures within the cement.

Conclusion: Based on the results of this study, sandblasting with cojet and alumina particles increases bond strength of resin cement to glass fiber post (Glassix) and zirconia ceramic (Cosmopost). Generally, the bond strength of resin cement to the posts is affected by the post's composition and surface treatment.

Key Words: Fiber post; Cosmopost; Quartz fiber; Glass fiber; Bond strength; Surface treatment