

بررسی استحکام باند برشی کامپوزیت به فلزات غیر قیمتی با آماده‌سازی‌های سطحی مختلف

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**متخصص دندانپزشکی ترمیمی

Title: Evaluation of shear bond strength of composite resin to nonprecious metal alloys with different surface treatments

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Background and Aim: Replacing fractured ceramometal restorations may be the best treatment option, but it is costly. Many different bonding systems are currently available to repair the fractured ceramometal restorations. This study compared the shear bond strength of composite to a base metal alloy using 4 bonding systems.

Materials and Methods: In this experimental in vitro study, fifty discs, casted in a Ni-Cr-Be base metal alloy (Silvercast, Fulldent), were ground with 120, 400 and 600 grit sandpaper and divided equally into 5 groups receiving 5 treatments for veneering. Conventional feldspathic porcelain (Ceramco2, Dentsply Ceramco) was applied on control group (PFM or group1) and the remaining metal discs were air-abraded for 15 seconds with 50 µm aluminum oxide at 45 psi and washed for 5 seconds under tap water. Then the specimens were dried by compressed air and the groups were treated with one of the bonding systems as follows: All-Bond 2 (AB), Ceramic Primer (CP), Metal Primer II (MP) and Panavia F2 (PF). An opaque composite (Foundation opaque) followed by a hybrid composite (Gradia Direct) was placed on the treated metal surface and light cured separately. Specimens were stored in distilled water at 37°C and thermocycled prior to shear strength testing. Fractured specimens were evaluated under a stereomicroscope. Statistical analysis was performed with one way ANOVA and Tukey HSD tests. P<0.05 was considered as the level of significance.

Results: Mean shear bond strengths of the groups in MPa were as follows: PFM group 38.6±2, All-Bond 2 17.06±2.85, Ceramic Primer 14.72±1.2, Metal Primer II 19.04±2.2 and Panavia F2 21.37±2.1. PFM group exhibited the highest mean shear bond strength and Ceramic Primer showed the lowest. Tukey's HSD test revealed the mean bond strength of the PFM group to be significantly higher than the other groups (P<0.001). The data for the PF group was significantly higher than AB and CP groups (P<0.05) and the shear bond strength of the MP group was higher than CP group, but was not significantly different from AB (P>0.05).

Conclusion: Based on the results of this study, the most reliable treatment for fractured metal-ceramic restorations would be the replacement of the restoration. If this is not possible, adhesive resin cements containing filler and phosphate-based monomers (especially MDP) such as Panavia F2 could be recommended for bonding composite to base metal alloys.

Key Words: Metal-ceramic restoration; Porcelain repair materials; Base alloys

چکیده

زمینه و هدف: در ترمیم‌های فلزی-سرامیکی غالباً شکستگی اتفاق می‌افتد. با توجه به هزینه‌بر بودن و صرف وقت زیاد برای ساخت مجدد، بهتر است این شکستگی‌ها ترمیم شود. مطالعه حاضر با هدف ارزیابی اثر عوامل شیمیایی مختلف برای آماده‌سازی سطحی فلزات غیر قیمتی جهت باند به کامپوزیت انجام شد. در این مطالعه استحکام باند برشی کامپوزیت به آلیاژ غیر قیمتی توسط ۴ سیستم باندینگ با باند فلز-سرامیک مورد مقایسه قرار گرفت.

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