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Bond Strength of Reinforced Indirect Composite Resins to Dental Alloys

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Recently, new indirect composite resins as a substitute of ceramic have been developed. This study was undertaken to evaluate the shear bond strength of the reinforced indirect composite resins to dental alloys. Three different composite resin systems (Artglass[®], Sculpture[®], Targis[®]) and ceramic (VMK 68[®]) were bonded to Ni-Cr-Be alloy (Rexillum III[®]) and gold alloy (Deva 4). All specimens were stored at 37°C distilled water for 24 hours and the half of specimens were thermocycled 2000 times at temperature from 5°C to 60°C. A Shear bond strength testing was carried out using a universal testing machine, and debonding surfaces were examined using the stereoscope and scanning electron microscope.

The results were as follows :

1. The shear bond strength of reinforced indirect composite resins to dental alloys were approximately half those of ceramic to dental alloys ($P < 0.01$).
2. There was no significant difference in the shear bond strength among the several reinforced indirect composite resins ($P < 0.05$).
3. Type of alloy did not affect on the bond strength of resin to metal, but the shear bond strength of ceramic to gold alloy was higher than that of ceramic to Ni-Cr-Be alloy ($P < 0.05$).
4. The shear bond strength of Artglass and Targis to gold alloys were significantly decreased after thermocycling ($P < 0.01$).
5. Sculpture showed cohesive, adhesive, and mixed failure modes, but Artglass and Targis showed adhesive or mixed failures. And ceramic showed cohesive and mixed failures.

Oral

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The Fractural Strength and Marginal Fitness of Reinforced Composite Bridge

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Fiber-reinforced composite (FRC) was developed to serve as structural component for dental appliance such as prosthodontic frameworks. A new FRC provides the potential for fabrication of a metal-free, excellent esthetic prostheses.

The purpose of this study was to evaluate the fractural strength and the marginal fitness of fiber-reinforced composite bridge in posterior region.

Sixteen bridges of each group, Targis-Vectris, Sculpture-Fibrekor, In-Ceram, were fabricated. All specimens were cemented with Panavia 21 on the master dies.