

sponding elasticities of impressions and the compatibility of stone.

**Key workds :** impression material, model material, dimensional change

01-7

## 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<sup>®</sup>, Sculpture<sup>®</sup>, Targis<sup>®</sup>) and ceramic (VMK 68<sup>®</sup>) were bonded to Ni-Cr-Be alloy (Rexillum III<sup>®</sup>) 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.

01-8

## 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.

Strength evaluation was accomplished by using a universal testing machine (Instron).

The marginal fitness test was measured by using the stereoscope ( $\times 50$ ).

The results were as follows. :

1. The fracture strength according to the materials was significantly decreased in order In-Ceram( $238.81 \pm 82$ ), Targis-Vectris( $176.25 \pm 18.93$ ), Sculpture-Fibrekor( $120.35 \pm 20.08$ ) bridges. ( $P < 0.05$ )
2. FRC resin bridges were not completely fractured, while In-Ceram bridges were completely fractured in the pontic joint.
3. The marginal accuracy according to the materials was significantly decreased in order of Targis-Vectris( $60.71 \mu\text{m}$ ), Sculpture-Fibrekor( $73.10 \mu\text{m}$ ), In-Ceram bridge( $83.81 \mu\text{m}$ ) ( $P < 0.001$ ).
- 4 The fitness of occlusal sites had a lower value than marginal site. ( $P < 0.001$ ), and the marginal gaps of near the pontic were greater than that of outer sites of pontic ( $P < 0.001$ ).
5. The result of this study suggested that metal-free fiber reinforced composite bridges are not available for clinical use in posterior region, but are available for clinical use in anterior region, short span bridge.

## Oral Session II(AAP)

## Ballroom II

OII-1

### Aichi-Mag system(Magnetic Attachments) Used as Additional Retention in Partial and Full Overdenture

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The idea of applying magnetic attachments for additional denture retention and stability had been conceived since the early 1970's. However shortage of materials corrosion, insufficient attractive force and size became problems in clinical application. In 1993, February 7th. The Neodymium-Iron-Boron magnetic attachment, Magfit Ex 400/600 was introduced nail on wide in Japan through NHK Broadcasting.

Neodymium-Iron-Boron magnetic attachments are superior to other magnets because of its excellent resistance to corrosion. Clinical results in terms of function, esthetics, comfort and patient satisfaction are excellent.

Based on clinical evaluations so far, I conclude that Nd-Fe-B magnetic attachments can be used with great success in many cases where other means of mechanical retention are difficult to apply satisfactorily.

OII-2

### A Few Cases of Partial Dentures Using Konus Crowns and Magnetic Attachments

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Sometimes we meet a patient who has few teeth or unpredictable teeth in his mouth and in that case we are at the very moment whether to extract or save those remaining teeth.