

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 ± 82), Targis-Vectris(176.25 ± 18.93), Sculpture-Fibrekor(120.35 ± 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.

When we've to do something for those teeth, we often make a partial denture with simple crowns for abutments on them or extract.

However, a partial denture with clasps often makes the condition worse because the separate abutments will be easily loose because of the actions of the clasps as you know.

In that point of view, I think that Konus crowns and/or magnetic attachments can be one for the best options for the abutments of teeth with poor prognosis.

The stresses upon those teeth can be more vertical and a partial denture with them can be easily repaired if something happened.

011-3

Removable Partial Denture for Unilateral Edentulous Case

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When teeth including incisors remained only unilaterally in partially edentulous situation, designing a partial denture is so difficult that restorative dentists get a trouble in attaining the sufficient retention, support, stability and esthetics for the long term success.

The patient in the case has only one central incisor on the left side of the upper arch. Residual ridge was moderately absorbed and the periodontal support of remaining teeth were poor.

Major connector was designed to cover the entire palate to get the maximum support from the mucosa. We solved the dislodging movement of the denture and the fatigue of the direct retainers with the precise fitting indirect retainers and proximal plates. As the abutment for the partial denture is central incisor, we utilized the small, resilient, extracoronal attachment(Technoroach®, CM) as a major direct retainer.

Good result in the aspect of function and esthetics was achieved. This type of design would be suggested as one of the esthetic restorative options for the difficult partially edentulous situation.

Oral

011-4

Mechanical Properties of I-Bar Clasps in Clinical Use

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I-bar clasps are popular direct retainers for distal-extension removable partial dentures. However, science-based criteria on mechanically preferable shape of I-bar clasp is scarce. This study aimed to investigate the variation of factors of I-bar clasp shape used in partially edentulous patients, and to clarify the effect of the variation on stiffness and stress of I-bar clasps by finite element analysis. Factors of 23 I-bar clasps of 17 patients as thickness, width, taper, radius of curvature, length, and relation to oral structures were measured. A three-dimensional finite element model was made corresponded with each measured I-bar clasp with vertical and horizontal straight sections connected with a curved section. A concentrated load of 5 N was applied at the lowest point of the I-bar tip that contacted the abutment in the buccal portion, and maximal equivalent stress and stiffness of each clasp were evaluated. Values of the factors, stiffness, and maximum