



Research Article

**A UNIQUE TECHNIQUE OF CUSTOMISING PRECISION ATTACHMENT TO REHABILITATE DISTAL EXTENSION PARTIAL EDENTULOUS CASE**

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**ABSTRACT**

Today's practitioners are provided with an ever improving armamentarium of materials, changing techniques and a better understanding of the oral environment. This makes it all the more important to reconcile what is actually feasible with the patient's own expectations.

A prosthesis may be required for missing teeth to restore appearance and speech, to improve chewing, or to spread occlusal load over a wider area. Constructing a restoration may prevent migration of teeth adjacent to a space, or overeruption of the opposing teeth.

For bilateral missing teeth there are many treatment options, among one of them is Precision attachments. This can transform patient's attitude to the wearing of removable prosthesis. They are more stable and retentive than conventional dentures and for these reasons are better tolerated.

The current paper is a unique and cost effective technique of duplicating commercially available precision attachments to fabricate the prosthesis.

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**INTRODUCTION**

Precision (Prefabricated) and semi-precision (customised) attachments are used in dentistry for the retention of removable or semi-removable prosthesis. [1] In order to achieve distribution of the loads on the available tooth support, the precision attachments have been constructed in two halves, a matrix and patrix.

They are indicated for use in the restoration of multiple deficiencies of the partially edentulous mouth. They are generally two types 1) Rigid type- which are designed to prevent movements when fully articulated and 2) Movable type- which are designed to allow specific movements when fully articulated.

**Case report**

A 75 years old male patient reported to the Department of Prosthodontics, KLE VK Institute of dental sciences, Belagavi, with the chief complaint of missing upper back teeth and wants them to be replaced. Patient gave the history of extractions, root canal treatment of lower teeth and fixed bridges with the same.

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On intraoral examination 14,16,17,24, 26 and 27 were missing, and mandibular arch was restored with porcelain fused to metal bridges. On radiographic evaluation of 13, 15, 23 and 25, all these abutment teeth were periodontally sound.

Patient was given treatment options for the rehabilitation of the missing teeth with cast partial dentures, implants, removable prosthesis and precision fit fixed-removable partial dentures. With patient's consent, the treatment plan to restore the missing teeth with unique, simple and cost effective semi-precision attached prosthesis was decided.

**Treatment Procedure**

The maxillary and mandibular diagnostic impression was made using irreversible hydrocolloid impression material (Ruthinium Alginate, Ruthinium Group, Italy) and casts were poured using class-III dental stone (Kalastone, Kalabhai Karson Pvt Ltd, India).

Tentative maxillomandibular jaw relation and articulation was done on semi-adjustable articulator (Hanau Wide-View, Whip Mix Corp, USA) to know the availability of space for the type of precision attachment selection. Rhen 83 (OT CAP, Rhen 83, USA) attachment system was selected.

Abutment teeth preparation was carried out with respect to 13, 15, 23 and 25 (Figure no-1) and secondary impression was

made (Figure no-2) with two stage elastomeric impression technique (Flexceed Putty type and Flexceed Light body, GC, India) and master cast was obtained using class-IV die stone (Kalrock, Kalabhai Karson Pvt Ltd, India).



Figure no 1 Teeth Preparation done



Figure no 2 Elastomeric impression of prepared teeth.

Since four Rhien 83 (OT CAP, Rhien 83, USA) were required for maxillary bilateral distal extension, for cost effectiveness, the attachment were duplicated in putty consistency addition silicon material with indexing method (Aquasil, soft putty/regular set, DENTSPLY, Germany) (Figure no-3), and the attachments were recovered by adding the Pattern Resin (GC Dental Products Corp, Japan) to the index.

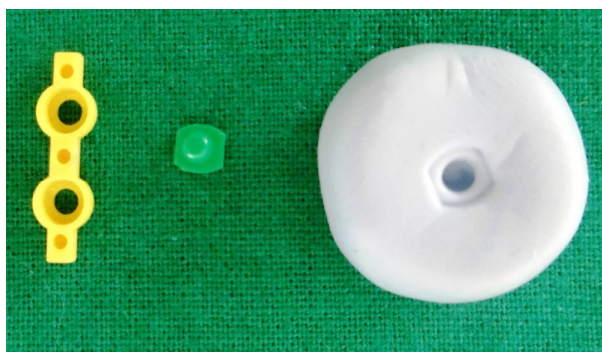


Figure no 3 Duplicated attachment putty index.

Wax patterns (Kronenwachs, BEGO, Germany) of prepared abutment teeth with respect to 13, 15, 23 and 25 were fabricated to receive porcelain fused to metal prosthesis and relief was provided on the crest of the ridge in the region of 16, 17, 26 and 27 to receive distal cantilever. For the distal cantilever portion, the prefabricated wax bar was modified of length 1.5cm and attached to the distal terminal portion of the wax copings and the duplicated patrix portions of Pattern

Resin were attached in the position of 16, 17, 26 and 27 teeth. Investing and casting was carried out.

Metal try in was done to evaluate the fit of the casting and further they were subjected to porcelain layering. Cementation of the prosthesis was done (Figure no-4) using Glass ionomer luting cement (GC Luting & Lining Cement, GC corp, Japan).



Figure no 4 Cementation of bridge with incorporated attachment.

After the cementation, for the fabrication of customised precision-fit maxillary removable partial denture, an elastomeric impression (Flexceed Putty type and Flexceed Light body, GC, India) was made with two stage impression technique.

The cast was poured using class-III dental stone (Kalastone, Kalabhai Karson Pvt Ltd, India) and on this record occlusal denture base was fabricated, tentative maxillomandibular jaw relation was recorded and mounting was done on the semi adjustable articulator (Hanau Wide-View, Whip Mix Corp, USA).

Teeth arrangement and try in (Figure no-5) was done followed by acrylisation using Heat cure acrylic resin (Meliodent, Makevale Acrylics PVT, LTD, India) and final finishing and polishing was done.

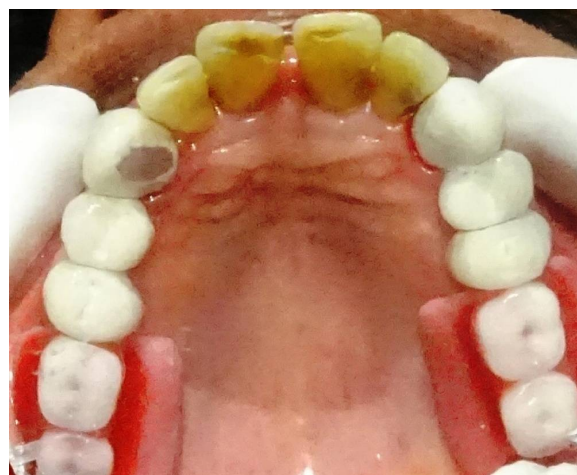


Figure no 5 Try -in of the prosthesis.

For the retention of precision-fit removable partial denture, tissue surface of the matrix portion was relined using soft liner (GC Dental Products Corp, Japan). Removable partial denture was inserted and evaluated for the occlusion, comfort and aesthetics (Figure no-6). Post insertion instructions were



given to the patient and follow-up appointment was scheduled.

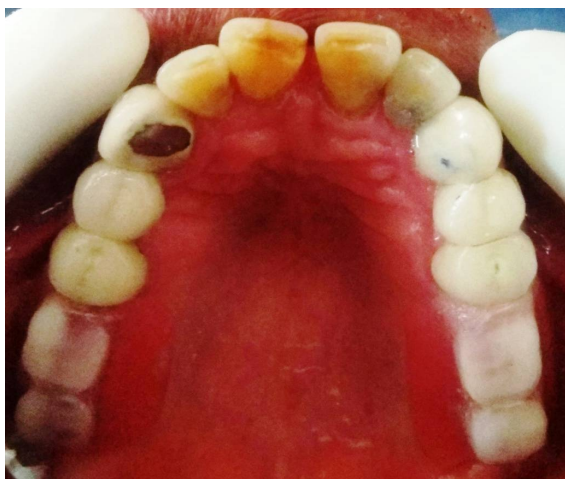


Figure no 6 Final prosthesis inserted.

## DISCUSSION

Precision attachments have been used successfully over the years to restore the missing teeth in fixed and removable prosthesis. They are more stable and retentive than conventional removable partial dentures and for these reasons are better tolerated. These are considered best treatment option in cases where fixed prosthesis are contraindicated (Feinberg & Feinberg, 1984).<sup>[6]</sup>

No one attachment can fulfil the requirements of all clinical situations. The choice of attachment depends on height of the clinical crown, space adjacent to the abutment tooth and the occlusal surface of the opposing arch,<sup>[2]</sup> ease of repair and adjustment.

The retrospective studies showed a survival rate of 83.3% for 5 years, 67.3% up to 15 years and 50% for 20 years (Owal, 1991, 1995). The survival rate of semiprecision attachment is quite satisfactory.

Because of bilateral distal extension space, fixed partial denture is not indicated and patient was not in favour of implants due to high cost, surgical intervention, and time consuming and age factor. Since conventional cast partial and interim partial denture require more surface coverage, discomfort and inconvenient to wear. The type of precision attachment was selected for this particular patient is due to ease of duplication of the attachment, easy to wear and requires less manual dexterity by the patient.

The described technique was unique and an attempt was done to make the prosthesis cost effective and simple for the replacement of missing teeth. Further evaluation is necessary for the longevity of the prosthesis.

## CONCLUSION

The precision attachments are more versatile and frequently used now a day for many clinical scenarios. The use of attachment requires through knowledge, training, skill, ability and judgement of the clinician for the successful prosthesis.

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