PRECISION ATTACHMENT: A CONNECTING LINK BETWEEN FIXED & REMOVABLE PROSTHESIS: A CASE REPORT

A Case Report

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ABSTRACT

Satisfactory restoration in a patient with a partially edentulous situation can be challenging especially when unilateral or bilateral posterior segment of teeth is missing. Successful restoration can be done with various conventional and contemporary treatment options. One such treatment modality is precision attached partial dentures. It provides better retention and esthetics in distal extension cases. This paper describes a case report of a patient with Maxillary and Mandibular Kennedy's class I mod. II extension edentulous span restored with an attachment retained partial denture having an extra coronal precision attachment (Ceka attachment: Preci-vertix and preci-sagix).

KEYWORDS: Kennedy's classification, Precision attachment, Matrix and Patrix, preci vertix and sagix.
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INTRODUCTION:

From their first introduction to the dental profession, precision attachments have been surrounded by an aura of mystery, implying that great skill is required in their successful use. This has served as a contributing factor in discouraging their general use. From the patient's viewpoint, a precision attachment appliance offers more comfort and security than a corresponding appliance with clasps, with an obvious advantage in esthetic appearance[1,2,3].

By definition, the term precision denotes “the quality or state of being precise”. Precision attachments are sometimes said to be a connecting link between the fixed and removable type of partial dentures because it incorporates features common to both types of construction[4].

Precision attachments retain and attach a removable bridge or partial denture on natural teeth, vital or nonvital. Some serve as retainers for full dentures (overdenture) where few abutments remain. The main purpose of each precision attachment besides retention is its concealment within or under a restoration as an esthetically better alternative to a visible clasp retainer[5,6].

Inherent in the conceptions which have led to the development of precision attachments are two basic objectives[7]. These are:

1. To relate the desired platform to the available tooth support.

2. To distribute as far as possible the load to be thrust on the teeth by the appliance.

In order to achieve these two objectives precision attachments have been constructed into two halves, a matrix and a patrix, the two halves being so arranged that they articulate with one another to form a precise but separable joint. The two halves are also referred to as the male and female parts. The abutment retainers houses a slot (female portion) which fits, (embraces or envelops) the male portion[8,9,10].

PROSTHETIC REHABILITATION

- **DIAGNOSTIC PHASE**

A 43 year old female patient, reported to the department of Prosthodontics, Ahmadabad Dental College & Hospital; complaining of missing teeth. Intraoral examination revealed missing 14, 15, 24, 25, 26 teeth in Maxillary arch and missing 31, 34, 35, 36, 41, 44, 45, 46, 47 teeth in Mandibular arch (Fig 1).

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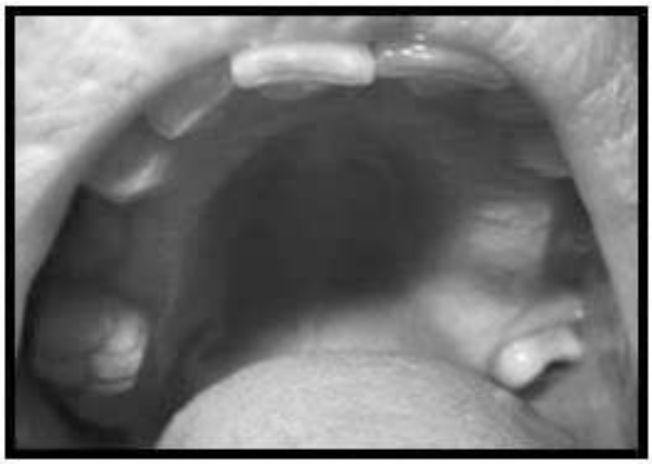
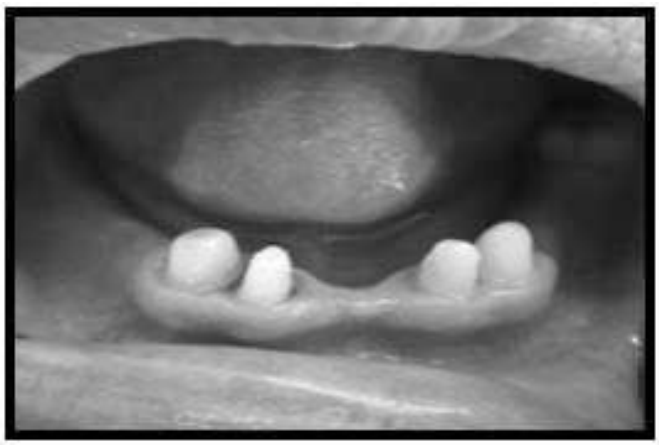


Pre-treatment intra oral view maxillary arch.



Pre-treatment intra oral view after removal of faulty prosthesis in mandibular anterior arch (Fig 1)

Patient had faulty restoration in lower anterior teeth. Patient was not willing for removable prosthesis. Implant supported prosthesis was ruled out due to financial reasons as well as long duration of treatment for the same. Hence, extra coronal bilateral precision attachments, Preci-sagix in Maxillary arch and Preci-vertex in Mandibular arch were planned, and patients consent was taken after explaining the details of the treatment.

Diagnostic impressions were taken & diagnostic mounting was done to evaluate current occlusal plane, inter arch space in edentulous areas, occlusal interferences and occlusion. Radiographic evaluation of selected abutment teeth was also done through IOPA.

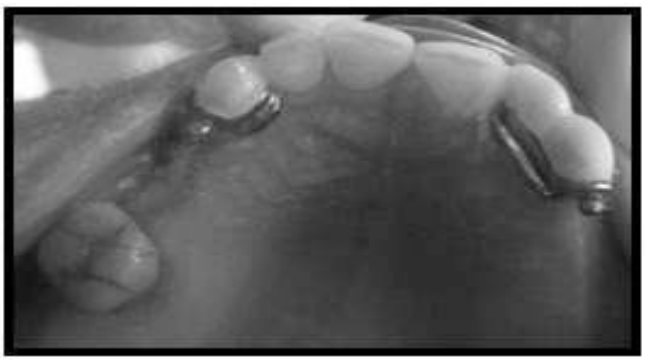
Planned treatment was PFM (Porcelain fused to metal) joint crowns with precision attachment in 13, 22, 23, 32, 33, 42, and 43 & cast partial denture with precision attachment in 14, 15, 24, 25, 26, 34, 35, 36, 44, 45, 46, 47.

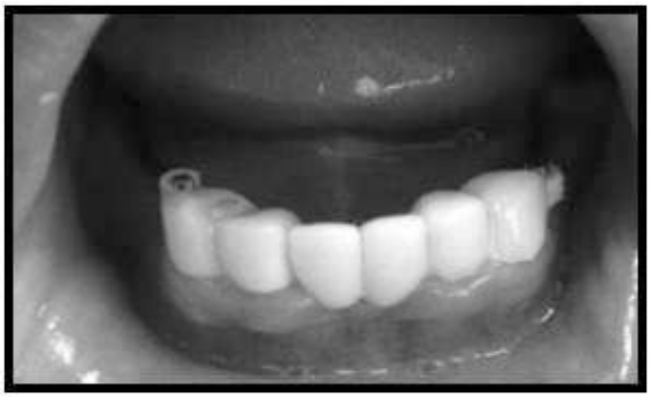
- **TREATMENT PHASE**

Tooth preparation was done following the basic principles in 13, 22, 23, 32, 33, 42 & 43. Gingival retraction was done and final impression was made using two-step technique using Elastomeric impression material. Impressions were poured in dental stone. Wax up of prepared teeth was performed and the articulation spaces and bulkiness were evaluated in order to proceed with optimal positioning of attachments using parallelometer mandrel (Fig 2).

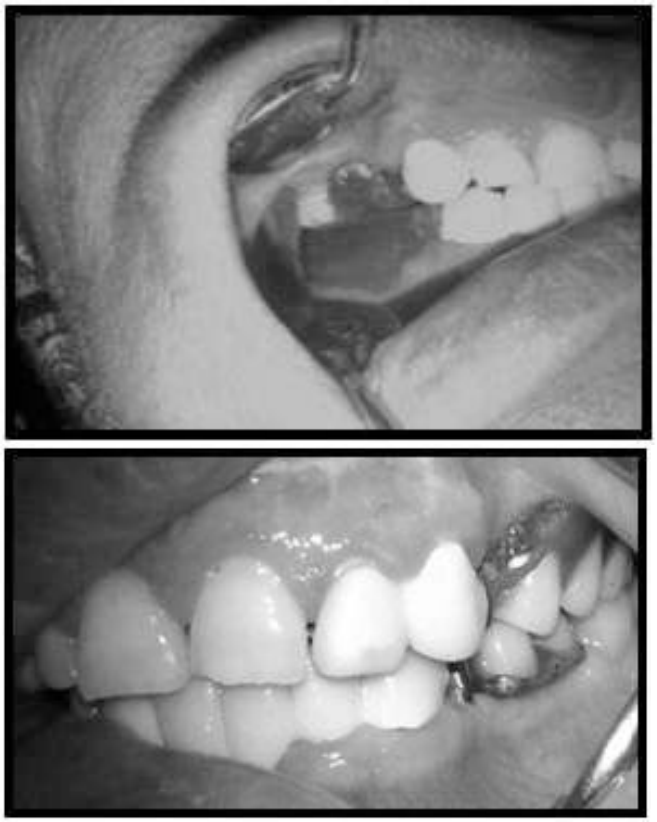
Wax up and positioning of attachment using parallelometer (Fig 2)

Joint crowns were fabricated with the attachments and the trial of the same was done to check the exact fit of the crowns (Fig 3). Framework was fabricated and jaw relation & final try in was done (Fig 4). Partial denture was acrylised and tried in patient mouth.



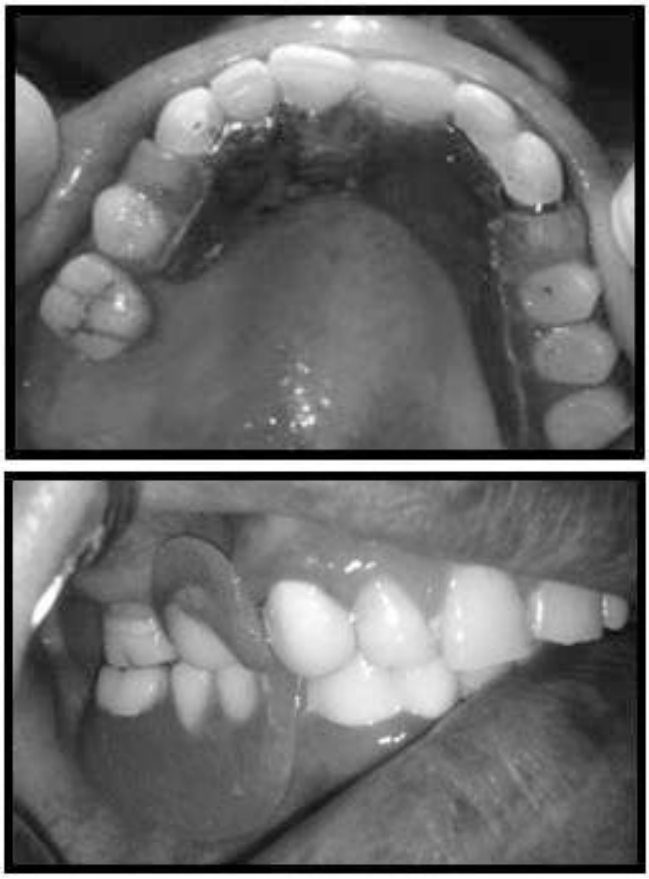


Try in of joint PFM crowns with attachment (Fig 3)



Jaw relation and try in (Fig 4)

After that, the matrix part was picked up in denture using self cure acrylic. After setting of acrylic, excess material was removed and finishing and polishing was done. This pink cap (matrix) would fit into the round surface of the beveled bars (part of fixed prosthesis) providing snap kind of retention (Fig 5).



Final prosthesis (Fig 5)

- **MAINTAINANCE PHASE**

The patient was explained about the usage and maintenance of the prosthesis. Proper follow up schedule was planned at 1st week, 1st month and 2nd month and then every six month to evaluate fit of prosthesis, hygiene, plaque control etc.

DISCUSSION

Precision attachment is a connector consisting of two or more parts. One part is connected to a root, tooth, or implant and the other part to the prosthesis providing a mechanical connection between two. These attachments allowed prosthesis to combine the advantage of fixed and removable restorations[9, 11].

It was Dr. Herman Chayes who first reported the invention of attachment in the early 20th century. Precision attachment gives a removable prosthesis

the exceptional feature of improved esthetics, less postoperative adjustments, and improved comfort.
It is mostly indicated for long-span edentulous arches, distal extension bases, and nonparallel abutments. There is a wide range of attachments available for use in all manners of restorative procedures, from partial dentures to implant-supported prosthesis.
By analyzing study models and x-rays, the clinician can make several important points of determination, each of which will influence final attachment selection[12, 13]. Apart from improving esthetics and retention of removable partial dentures, the availability of precision attachment has made designing of removable partial dentures more flexible. Various cases with esthetic and retention challenges can be solved with correct selection of attachment.

Thus, unnecessary surgery and cutting of sound tooth for abutment preparation can be avoided in restoring missing teeth. However, precision attachments are not without disadvantages. Most of the attachments are very small and come with many parts to assemble. Construction of such attachment requires skill from dental technicians which cannot be acquired easily and needs training. The parts of the attachment are usually exposed to wear and tear and needed to be replaced over time.

CONCLUSION

Removable partial dentures still have a good place as a treatment option for partially edentulous Kennedy's class I and class II conditions. With proper case selection and treatment plan, precision attachment such as CEKA attachments system can be used to improve retention, esthetics, and function of removable partial denture. With the mentioned procedure, allows fabrication of very functional and comfortable prosthetic solution for the long span edentulous extension patient cases. Attachments retention can be monitored and upgraded during time just replacing retentive caps into the framework of dentures for patients comfort and satisfaction.

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