

## **Rehabilitating Distally Extended Edentulous patient with Fixed-Removable Prosthesis: A Case Report**

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**ABSTRACT:** Treatment of a complex, partially edentulous patient using a combination of fixed and removable partial dentures along with precision attachment as retentive elements has been considered as among the most sophisticated forms of care. Physiologic result can be obtained from a dental prosthesis only when the strain exerted on abutment teeth is considered in relation to the biologic union of the tooth to the supporting structures and the mechanical principles involved. So, Precision attachment system is one of the best treatment modalities which may assist prosthodontist to achieve better functions and aesthetics in substituting missing teeth and oral structures.

**KEYWORDS:** Precision attachment, Fixed-removable prosthesis, Distal extension, Esthetic, Kennedy's classification.

### **Introduction**

The awareness and demand for quality of dental treatment is relatively increasing in recent generation.<sup>1</sup> A unique concern of a removable denture when compared to others is retention. Retention is the ability of the prosthesis to resist the movement of denture away from the supporting tissues/teeth. The component of removable denture which provides retention is called as direct retainer, which can be either an extracoronal or intracoronal. The main drawback of extracoronal retainers used in partial dentures is visibility causing unesthetic appearance. Precision attachments provide solution for this problem, providing better esthetics, vertical support and better stimulation to the underlying tissue through intermittent vertical massage.<sup>2</sup>

So, the desire to balance between functional stability and cosmetic appeal in partial dentures gave rise to the development of Precision Attachments, since then, Precision Attachments have always been surrounded by an aura of mystery.

The precision attachment is constructed out of several materials and as the terminology implies, the fit of the two working elements is machined to very close tolerances, hence is

more precise in construction than is the typical laboratory fabricated attachment. The male portion also called as ‘rest’, ‘key’ or ‘patrix’ most often takes the shape of a “T” or “H” which fits an appropriately shaped slot.

The female attachment also called as ‘rest seat’, ‘key way’ or ‘matrix’ is fitted into the restoration in the tooth either by casting the gold to it or by placing it in a prepared receptacle in the restoration and attaching the two together with solder.

Advantages included are Improved esthetics (particularly important in anterior part of mouth), point of force application to the teeth is more apical than for occlusal or incisal rest thus shortening the lever arm and decreasing torquing forces, point of application of thrust applied through the device lies as close as possible to the long axis of abutment i.e., most favorable position, natural self-cleansing contours of teeth can be maintained. This paper describes a case report of a patient with mandibular unilateral distal extension, Kennedy’s class II condition rehabilitated by fixed-removable prosthesis joined by precision attachment.

### Case – Report

A 52 years old female patient walked into the department of prosthodontics, IDST, Modinagar with a chief complaint of missing teeth in the lower right back teeth region for 2 years. She gave a history of unsatisfactory acrylic partial denture wearing. On intraoral examination, it was noted that the patient had missing teeth 44, 46, 47 (Kennedy’s class I), fixed prosthesis 35, 36, 37 and completely edentulous maxillary arch. The remaining teeth in mandibular arch were periodontally stable (Figure 1).



Figure 1: - Pre-op intraoral photograph

After complete clinical and radiographic examination, a prosthetic treatment plan was established. Fixed removable prosthesis with extracoronal precision attachment was planned

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for mandibular unilateral distal extension and complete denture for maxillary arch. The treatment plan was explained to the patient and written consent was taken.

Tooth preparation was done irt 43 and 45 which in turn acted as abutment teeth to receive porcelain fuse to metal crown (Figure 2) and final impression made with addition silicone (President-coltene)(Figure 3). Bite registration done with Alu wax(Figure 4).Temporalisation of prepared abutment teeth were done with tooth colour self-cure acrylic- DPI India (Figure 5)



Figure 2: - Tooth preparation irt 43 and 45



Figure 3 :- Final impression



Figure 4: - Bite registration



Figure 5: - Temporization done

### Lab procedure.

Waxing up of abutments 43 and 45 was performed and milling of lingual area of metal ceramic setup was done. Articulation spaces and bulkiness were evaluated in order to proceed with optimal positioning of attachments using proper parallelometer mandrel. Metal ceramic

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crowns waxed up with attachment structure were casted and porcelain firing was done. Joint crowns were fabricated with the attachments in the laboratory and the trial of metal framework was done to check the exact fit of the crowns (Figure 6). Denture base and bite rim was fabricated for trial of the removable portion of the prosthesis (Figure 7). Fabrication of the removable part of the prosthesis was completed.



Figure 6 :- Metal framework try-in



Figure 7 :- Bite - rim

### Definitive prosthesis

Fixed part of the prosthesis was placed into the patient's mouth (Figure 8) and checked for proper fitting followed by the removable portion (Figure 9). After proper evaluation cementation of the fixed prosthesis was done and excess cement removed. Removable part of the prosthesis was placed and occlusion (Figure 10), evaluated and post-operative instructions were given.



Figure 8 :- Cementation of fixed prosthesis



Figure 9: - Positioning of removable part



Figure 10 :- Prosthesis in occlusion

### Discussion

Precision attachment is a connecting device consisting of two or more parts. One part is connected to the root, tooth, or implant and the other part to the prosthesis providing a mechanical connection between the two. These attachments allowed prosthesis to combine the advantage of fixed and removable restorations<sup>3</sup>. It was Dr. Herman Chayes who first reported the invention of attachment in the early 20th century<sup>4</sup>. 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.

Though precision attachments are also associated with certain disadvantages. Most of the attachments are very small and come with many parts to assemble, fabrication of such attachment require 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

A comprehensive evaluation, multidisciplinary approach and sequential treatment plan, worked out in harmony with the patient's esthetic demand and perceptions are important for a long term treatment outcome. Precision attachment can be used to improve retention, esthetic and function which is most conservative treatment option and offers excellent patient

acceptance. Attachment retention should be monitored and upgraded during time by replacing the retentive caps into the framework.

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