

**PRECISION ATTACHMENTS IN DISTAL EXTENSION CASES: AN ENLIVENING IDEA****Dr. Jinson James<sup>1\*</sup>, Dr. Arya Aravind<sup>2</sup>, Dr. Jasmin Cyril<sup>3</sup>, Dr. George Francis<sup>4</sup> and Dr. Paul Kariyatty<sup>5</sup>**<sup>1,2,3</sup>Post Graduate Student, <sup>4</sup>Professor and Head of The Department, <sup>5</sup>Reader Department of Prosthodontics Crown and Bridge, St Gregorios Dental College Chelad, Kothamangalam.**\*Corresponding Author: Dr. Jinson James**

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**ABSTRACT**

The desire to balance between functional stability and cosmetic appeal in partial dentures gave rise to the development of precision attachments.<sup>[1]</sup> Satisfactory restoration in a patient with a partially edentulous situation can be challenging especially when unilateral or bilateral posterior segment of teeth is missing. In distal extension cases dentures requires support from teeth, mucosa and the underlying alveolar ridges which are subjected to many forces that unduly effect the abutment teeth and the residual ridges during functional activity.<sup>[5]</sup> Precision attachment is an interlocking device, one component of which is fixed to an abutment or abutments, and the other is integrated into a removable dental prosthesis in order to stabilize or retain it. This article provides an overview and a simplified approach through a case report for treating the patient.

**KEYWORDS:** Attachment retained denture, Precision attachments, Removable partial denture, Distal extension**INTRODUCTION**

Precision attachments offer considerable advantages because of their flexibility. Nevertheless, they have been ignored in the past largely due to notable cost and an inadequate grasp of their application.<sup>[1,2]</sup>

The last decade has seen the public become better informed and hence, a dental surgeon who familiarizes himself with precision attachments will add a new dimension to his treatment Options Precision attachments could be extracoronal and intracoronal.

Attachment-retained cast partial dentures facilitate both aesthetic and functional replacement of missing teeth.

Studies have shown a survival rate of 83.35% for 5 years, of 67.3% up to 15 years, and of 50% when extrapolated to 20 years.<sup>[3,4]</sup>

**CASE REPORT**

A 68 -year-old female patient reported to the Department of Prosthodontics, St.Gregorios Dental College, Ernakulam, with the chief complaint of missing mandibular posterior teeth.

The medical history of the patient was taken, and it shows no relevant medical history affecting the prosthodontic treatment. Intraoral examination revealed well-formed maxillary and mandibular ridges in Class I ridge relationship. It was noted that the patient had

missing right mandibular 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> molar unilaterally Kennedy's Class II In this particular case of distal extension, patient was not willing for a removable prosthesis. Implant placement was also not chosen since the bone width was compromised. Hence an attachment retained removable partial denture was chosen as a treatment option.

After complete clinical and radiographic examination, a prosthetic treatment plan was set up. An extracoronal precision attachment (Rhein 83-matrix part and its sleeve matrix) combined prosthesis was planned for mandibular unilateral distal extension arch since the crown height of the abutments being good enough for a removable partial denture with extracoronal attachment (Rhein 83) for lower distal extension.

After intentional RCT of the abutments, Tooth preparation was done on 44,45 to receive porcelain fused to metal crowns. The abutments prepared were temporized after making definitive impression.

After metal trial and jaw relation was also done using a biteblock.

Joint crowns were fabricated with the attachments in the laboratory and the trial of the same was done to check the exact fit of the crowns, the ceramic powder was added to the abutments and porcelain firing was done.<sup>[3]</sup>

The fixed component with matrices (male part) were

tried in patient mouth and a pick-up impression was made with PVS impression material.

Cementation of crowns was done with glass ionomer cement and acrylic prosthesis was attached with ball attachment. Occlusal contacts were evaluated in centric and eccentric positions. Patient was recalled after 1 week for post insertion evaluation. Patient was instructed to maintain proper oral hygiene.



**Tooth preparation done.**



**Wax up done**



**Final Cementation.**



**Metal trial done**



## DISCUSSION

The precision attachment is sometimes said to be a connecting link between the fixed and the removable types of partial denture because it incorporates features common to both types of construction.<sup>[5]</sup>

Rehabilitation of a distal extension partially edentulous patient become challenging when patient is neither fit to place implants nor to have a removable prosthesis.

Fixed partial denture is not in option as there is no distal abutment. The solution of such a critical situation is to give combined prosthesis. A combined prosthesis carries the advantage of fixed prostheses without surgical intervention, where an acrylic prosthesis is retained with an extracoronary attachment to tooth.<sup>[7,8]</sup>

The main advantage behind the decision to use precision attachments for patients with removable prostheses together is retention, esthetics (no clasp), support (resistance to movement of the prosthesis toward the tissues), stabilization (resistance to horizontal movement of the prosthesis), and fixation (resistance to separation of the RPD).<sup>[9]</sup>

The prosthesis with distal extension was named to this type of prosthesis. Attachments are used as alternative to clasps in removable partial denture therapy for both aesthetic and functional purpose.<sup>[10]</sup>

A removable partial denture with a retained attachment system is one of the treatment modalities which may assist prosthodontist to achieve better functions and aesthetics in substituting missing teeth and oral structures.

Precision attachment is mostly indicated for long span edentulous arches, distal extension bases and non-parallel abutments (Gupta et al, 2013).<sup>[7]</sup>

Precision attachment is a connector consisting of 2 or more parts. One part is connected to root, tooth or implant and other part to the prosthesis. The attachment system used is extracoronary attachment (Rhein 83) positioned on distal surface of crown as an extension.

Fixed removable prosthesis was firstly introduced by Dr. James Andrews (Munot et al, 2017; Walid, 1995; Jain, 2013).<sup>[10]</sup>

With proper case selection, diagnosis and treatment plan, precision attachment denture is a good treatment option. The limitations associated with this attachment are its fabrication requires well-trained lab technicians and with time due to wear and tear parts of attachment needs to be replaced (Angadi et al, 2012).<sup>[5]</sup>

## CONCLUSION

This case report clarifies the dilemma of giving either fixed or removable prosthesis in cases where distal

abutment is missing. Combined prosthesis is the solution of placing prosthesis in distal extension cases without surgery.<sup>[7]</sup>

A comprehensive evaluation followed by a sequential treatment planning, worked out in harmony with the patient's esthetic demands, perceptions, and periodic recall every 3 months and preventative therapy is very important for a long-term successful outcome of precision attachment retained removable partial denture.

The success of prosthodontic rehabilitation requires crucial balance between modern and conventional treatment technique. The attachment retained partial dentures are one such type of prosthodontic rehabilitation technique.<sup>[9]</sup>

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