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Case Report

Dentistry Section

# Precision Attachments for Aesthetics and Function: A Case Report

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## ABSTRACT

Successful restoration of the dentition requires plenty of contemporary and conventional treatment techniques and planning and attachment retained partial dentures are one such kind of treatment modality in prosthodontics. Limited space for extracoronal attachments is a serious gap in the design and the fabrication of a precision attachment Removable Partial Denture (RPD). A custom semi-precision attachment with a partial denture offers strength and improved aesthetics in cases with minimal space. This article presents a method of fabrication of semi-precision attachment to eliminate metal display and enhance aestheticity.

**Keywords:** Removable partial denture, Semi-Precision attachment, Custom attachments

## CASE REPORT

A 38-year-old female was presented to the Department of Prosthodontics, with a failing dentition. Examination revealed that some of the teeth required conservative and endodontic treatment. There was reduced vertical facial height due to loss of mandibular posterior teeth. She was diagnosed for full-mouth rehabilitation. According to the Kennedy's Classification System and Applegate's rules, the maxillary partially edentulous arch was classified as Class III and the mandibular arch as Class I [Table/Fig-1].

Patient was advised to wear the interim removable prosthesis with an increased vertical dimension for 1 month, to determine the appropriate vertical dimension. Restorative and endodontic treatment procedures were initiated. Post and core was customised for the grossly mutilated maxillary anterior teeth. Single metal ceramic crowns and a cast partial denture were planned for the maxillary and mandibular arches.

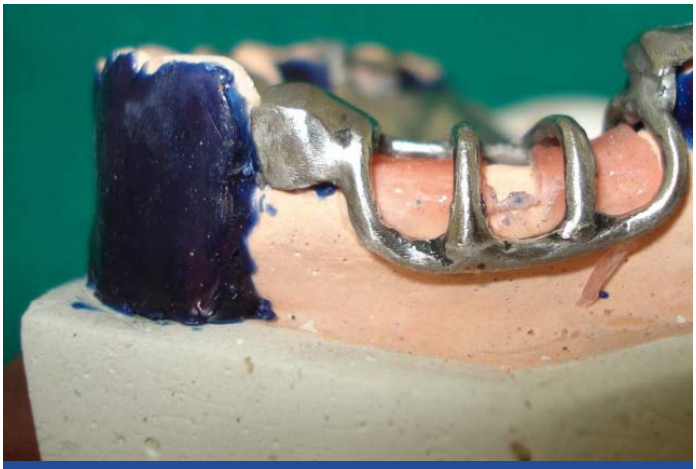
The RPD for the mandibular was designed and fabricated in the conventional manner. While designing the maxillary partial denture, it was seen that a clasp would have to be placed on the right central incisor. Since the clasp would appear unaesthetic, a custom precision attachment (CPA) was fabricated on the right central incisor to make it more aesthetic and pleasing without compromising on the principles.

**[Table/Fig-1]:** Intra oral Pre-operative view

**[Table/Fig-2]:** Wax-up of the maxillary partial denture framework

### Technique

- Preliminary impressions were made and the casts mounted on a semi-adjustable articulator with the pre-established vertical dimension.
- The diagnostic wax-up was completed and the RPD designed. A-P palatal strap major connector was designed for maxillary and lingual bar for the mandibular arch, respectively.
- A putty matrix of the completed diagnostic wax-up was made to evaluate of the existing space for the extracoronal attachment.
- Maxillary teeth were prepared and full contour wax-up made. The wax-up was separated carefully, where the use of an attachment was required.
- The patrix was added to the distal surface of the anterior abutment wax-up on the master cast (central incisor).
- The dental surveyor was used to maintain parallelism with the collateral side and the additional guide plane surfaces.
- The crowns were fabricated and veneered.
- A pick-up impression of fixed components was made and poured to obtain the cast.
- The patrix was positioned on the cast and parallelism was obtained with the milling tool attached to the surveyor.



**[Table/Fig-3]:** Framework trial on the final cast

**[Table/Fig-4]:** Framework trial : Frontal view

- The crowns were luted and a special impression of the entire maxillary area was made with elastomer and poured in die stone.
- The partial denture wax-up was done conventionally. Care was taken when the patrix was covered with the wax [Table/Fig- 2].
- The final fit of the custom housing and the frame was evaluated and verified intra-orally [Table/Fig-3 & 4].
- After the patient's approval of the waxed-up RPD, they were acrylized and inserted [Table/Fig-5].

Continual periodic follow- up to monitor the function and maintenance of the partial denture was done.

## DISCUSSION

Despite, a growing trend to use fixed dental prosthesis to maintain more teeth in older age-groups and an increasing use of dental implants, removable dental prosthesis are still prevalent [1].

The visibility of anterior tooth surfaces with lips at rest or during function is an important factor in determining prosthodontic outcome. Any prosthetic treatment, removable or fixed, that involves their replacement is considered to be critical [2]. All RPD with attachments, especially the extracoronal type, are considered more efficient in providing retention and restoring function and aesthetics [3,4].

Edentulism leads to an acknowledged impairment of oral function with both, aesthetic and psychological changes. Depending upon the clinical need and demand, restoration of the lost structure can be achieved by using conventional methods [5]. The aim of prosthetic reconstruction is to preserve and restore health, aesthetics, and function [6].

A full-arch fixed prosthesis can be fabricated, if sufficient and properly situated abutments remain or sufficient number of implants can be placed. However, both extensive fixed dental prosthesis and implant-supported prosthesis can be financially burdensome to patients [7]. Since the patient was aversive to surgical procedure, implant supported prosthesis was not considered.

**[Table/Fig-5]:** Acrylized Partial denture

Retainer selection for removable dental prosthesis mainly depends on the remaining tooth structure, the intra- and inter-maxillary relationships, aesthetics, and financial aspects [8].

While clasps potentially interfere with aesthetic demands in the anterior region, attachments are almost invisible in the labial region. These attachments are designed to be placed intracoronally or extracoronally. They serve the same purpose as that of the clasps, i.e., to retain and attach a fixed partial denture or RPD to natural teeth [9-11].

Disadvantages of intracoronal attachments are: (1) More tooth reduction; and (2) at least 3 mm of height is needed [9,12,13].

When extracoronal resilient attachments are used for RPD, there is often lack of space for the attachment, so that the denture tooth can be placed over it. Even the small commercial attachments available in the market, occupy a great deal of edentulous space posterior to the abutment tooth [14]. The CPA, in this case, consisted of extracoronal male and female components. The guide plane was incorporated in the patrix and the rest in the matrix of the attachment. The housing has a rest and guide planes as basic components of the RPD.

These customised attachments overcome the disadvantages associated with the use of the intracoronal attachments, which are (1) excessive tooth reduction; (2) compromised embrasures; and (3) poor esthetics. The other advantages are handling- ease, and wide-choice of alloys [13].

This clinical report describes a method of eliminating the display of metal on the labial surface of maxillary anterior teeth used as abutments for a RPD, by using a CPA.

## CONCLUSION

A comprehensive evaluation, multi-disciplinary approach and a sequential treatment plan, worked out in harmony with the patient's aesthetic demand and perceptions are important for a long-term successful outcome. The CPA is the most conservative treatment option and offers excellent patient acceptance. Its versatility in clinical applications makes it one of the successful designs for RPD. It does not limit the patient's choice to have an implant-supported prosthesis, whenever they are psychologically and financially prepared.

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