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Aesthetic and Functional Full Mouth Rehabilitation of a Patient Using Extra Coronal Attachments: a case report

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Abstract

Achieving aesthetic and functional requirements in full mouth rehabilitation using combined fixed and removable dentures is difficult. Strategic diagnosis and treatment planning are required to overcome this challenge. Numerous conventional and cutting-edge treatments can result in successful restorations. One such method of treatment is precision attachment retained partial dentures. Selecting strategic abutments is key to the success of the partial denture. This case report describes full-mouth rehabilitation of maxillary and mandibular arches using fixed and attachment retained cast partial dentures.

Keywords: Precision attachment, Extra coronal attachments, Full-mouth rehabilitation.

1. Introduction

Restoration of partially edentulous arches is challenging, especially in cases, when unilateral or bilateral posterior teeth are missing [1,2]. Patients with partial dentition had the highest prevalence of Kennedy's class I (44.3%) & II (20.7%) [3]. Due to the absence of the distal abutment in these circumstances, making a fixed partial denture is challenging. In these situations, a cast partial or an acrylic partial denture can be made. A removable prosthesis can be replaced with an implant-supported prosthesis. However, this is not always possible due to insufficient bone or economic constraints [4]. In such cases, a combination of fixed and removable dentures provides an alternative solution. Attachment-retained prostheses meet both aesthetic and functional requirements [2], and these are also called extra-coronal attachments. Numerous studies have shown a survival rate of 83.35% for five years, 67.3% for up to 15 years, and 50% when extrapolated to 20 years [1]. These extra coronal attachments can improve retention and stability and act as stress breakers, thus reducing alveolar bone resorption. This case report describes a full mouth rehabilitation using a combination of fixed and removable dentures with OT extra coronal attachments in the maxillary and mandibular arches.

2. Case Report

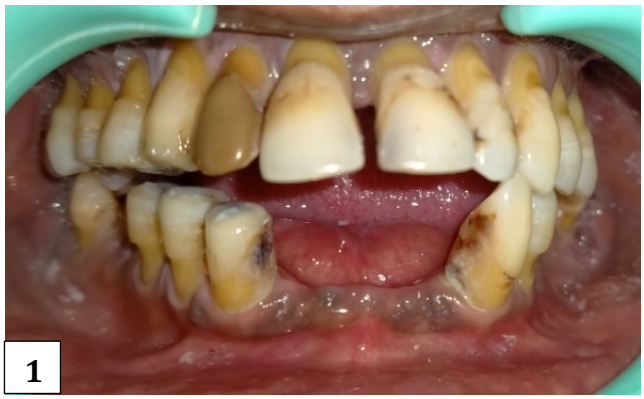
A 55-year-old male patient came to our dental clinic with a chief complaint of poor aesthetics and masticatory function. Intraoral examination revealed missing lower anterior teeth 32 to 42, posterior teeth 36 and 46, and maxillary posterior teeth 26,27 (Figure 1). Maxillary anterior teeth are proclined with severe discolouration of 12. Generalized gingival recession and generalized abrasion of maxillary and mandibular teeth. Grade 2 mobility was present for 11, 12, 21, 22, and 37. On radiological examination, OPG furcation involvement was seen 16, 17, 47, and 48 (Figure 2). The remaining maxillary and mandibular canines and premolars showed moderate bone support. The treatment plan included extraction of hopeless teeth (i.e., 11, 12, 21, 22, 16, 17, 37, 47, 48) and root canal treatment for 13, 14, 15, 23, 24, 33, 34, 43, 44, 45 followed by prosthetic rehabilitation of maxillary and mandibular arches with combined fixed and removable dentures. Inter-arch space was found to be 15 mm, which is sufficient for precision attachments.

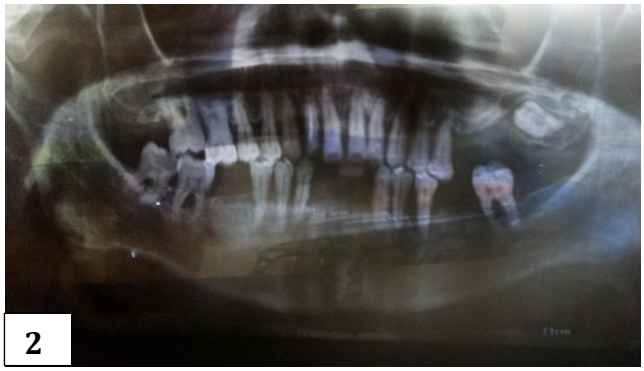
In the first appointment, root canals were performed for all the mentioned teeth. Extractions were done in the maxillary arch and then in the mandibular arch, and the ridges were allowed to heal for four weeks. Tooth preparations were done for the remaining maxillary and mandibular teeth to receive a fixed prosthesis (Figure 3). Additional silicone impression material (Photosil Putty and light body DPI, Mumbai) was used to make impressions, and die stone was used to produce casts (Kalstone, Kalabhai, Karson, Mumbai). In order to register bites, occlusal rims were used. The occlusal rims were used to mount the maxillary and mandibular casts on the mean value articulator. Wax-up was done and the Rhein OT attachment was attached to the wax

pattern and cast. The metal trail was checked in the patient, and bite registration was once again made using bite registration wax (Figure 4). The bisque trail was checked and the try-in was done for the cast partial denture (Figure 5). Finishing was done for the fixed partial denture and the cast partial denture for the maxilla and mandible were fabricated in heat cure resin (Trevlon Hi-Impact, Dentsply, Gurgaon). Mutually protected occlusal was given and the fixed partial denture was cemented using type 1 GIC (GC Corporation, Tokyo, Japan). The cast partial denture was attached to the fixed partial denture using OT precision attachment (Figures 6a and b). The patient was given home care instructions for the insertion and cleaning of the prosthesis.

3. Discussion

Implants are gaining popularity nowadays, but due to inadequate bone or economic reasons, removable partial dentures are still in existence. Acrylic partial dentures with clasps cause problems in patients with improperly aligned teeth [10].





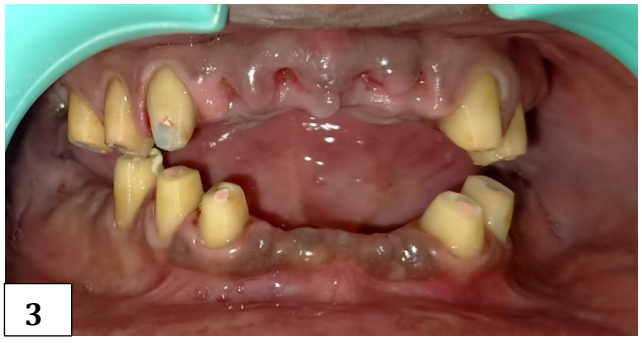
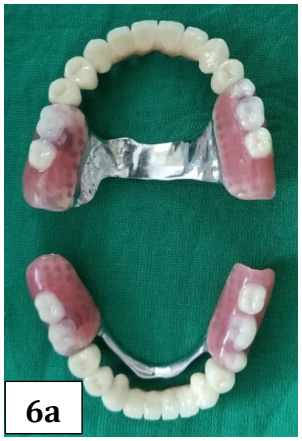
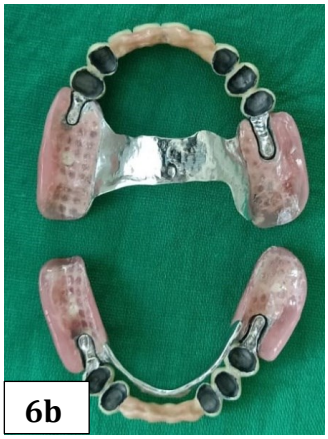
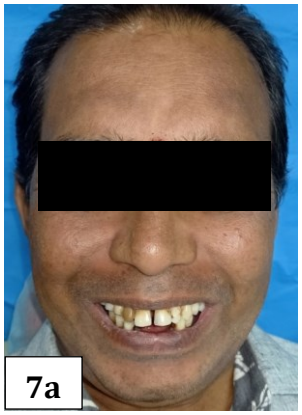


Figure 1. Intra-oral condition
Figure 2. Orthopantomagram
Figure 3. Tooth preparations







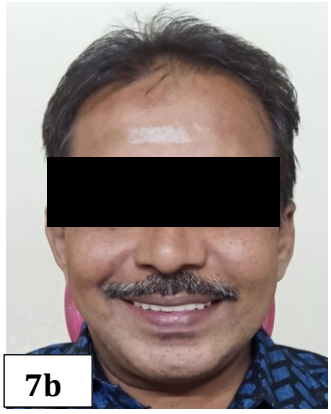


Figure 4. Metal Trail
Figure 5. Bisque Trail
Figure 6a. Cast partial framework
Figure 6b. Intaglio surface
Figure 7a. Pre-operative
Figure 7b. Post-operative

Precision and semi-precision attachments are the only options in these types of cases to improve the aesthetics, function, and longevity of the prosthesis. Glossary of Prosthodontic terms 9 defines an attachment as a connector consisting of two or more parts [8]. One part is connected to a root, tooth, or implant, and the other part to a prosthesis. It consists of a male part (patrix) and a female part (matrix) closely connected to each other [2]. One of the main advantages of these attachments is that they act as stress breakers and reduce the torquing forces on the abutment. Proper case selection for precision attachments will give an excellent aesthetic and functional outcome [10]. However, one of the main disadvantages of these attachments is they cannot be repaired. So, proper motivation and post-operative maintenance are required for these types of prostheses [7].

In this case, OT cap attachments (OT CAP, Rhein 83 Inc., USA) were used that provide standard retention to the maxillary and mandibular dentures. Cast partial framework provides cross-arch stabilization and also reduces residual ridge resorption. Anterior fixed partial dentures provide aesthetics, and both fixed and removable partial dentures combinedly provide function to the patient.

6. Conclusion

Prosthetic rehabilitation of a full mouth is challenging for any dentist. Achieving both aesthetics and function requires a meticulous diagnosis and treatment plan. Partial dentures with clasps give an unaesthetic appearance which will impact the patient's confidence and also damages the abutment teeth. In such cases attachment retained partial dentures will survive for a long time and fulfil the aesthetic and functional needs of the patient (Figures 7a & b).

Conflicts of interest: Authors declared no conflicts of interest.

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