

Tooth Supported Overdenture Retained with Custom Attachments: A Case Report

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ABSTRACT

Background: Preservation of alveolar bone is the main aim of conventional tooth-retained overdenture. Preservation of teeth for overdenture can improve retention and stability provide sensory feedback. In this case report, partial edentulous patient was treated with a tooth supported overdenture using Access Post System. The final restoration was stable, well retained and esthetic, serving as a conservative approach to root preservation.

Keywords: Over denture, access post system, sensory feedback, retention.

INTRODUCTION

Complete edentulous state affect oral and general health as well as quality of life.¹⁻³ For patient satisfaction, the dentures are influenced by various factors such as denture quality, the available denture bearing area, the quality of dentist-patient interaction, patient previous experience with dentures, patient's personality and psychologic well-being.³⁻⁵ Replacement of the lost tissues by means of complete dentures is complete challenge for both the dentist and the patient.⁴⁻⁵

One of the most effective way of preserving the residual ridge and the proprioceptive feedback is by retaining the roots and fabricating an overdenture. Overdentures provide increase in function, retention, and stability that leads to better esthetics and phonetics in denture wearers. Root-supported overdentures gain their retention and stability from the use of attachments.⁶⁻⁷ The attachments help to redirect the occlusal forces

away from weak supporting abutments and onto soft tissue, or redirect occlusal forces toward stronger abutments and away from soft tissues. They act as shock absorbers and stress redirectors as well as providing superior retention. Attachments are often used in overdenture construction by either connecting the attachments to cast abutment copings or connecting into the prepared post space of the abutment teeth. This article ⁸⁻⁹reports a conservative approach to root preservation followed by replacement of missing teeth using Access post attachment mandibular overdenture.

CASE REPORT

A healthy 55 years old man with few remaining natural teeth is reported with a chief complaint of difficulty in chewing. Clinical examination revealed partially edentulous maxillary arch and partially edentulous mandibular arch. Moderate amount of calculus and stains

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Fig 1: Preoperative view.



Fig 5: Try in.



Fig 2: Primary impression.



Fig 6: Overdenture attachment post cemented on abutment.



Fig 3: Facebow record.



Fig 7: Denture with nylon cap.



Fig 4: Cast partial denture.

present along with gingival recession but no mobility and no pocket formation. Teeth present in upper arch were 11,12,13,14,15 and 21,22,23,24,25 (Figure 1, Figure 2). Teeth present in mandibular arch is 33,34 and 43,44 fig. Loss of teeth had occurred due to decay, mobility and lack of oral hygiene practice in earlier life. His home oral hygiene regimen on presentation was poor. It was planned cast partial denture and metal ceramic



Fig 8: Final prosthesis insertion.

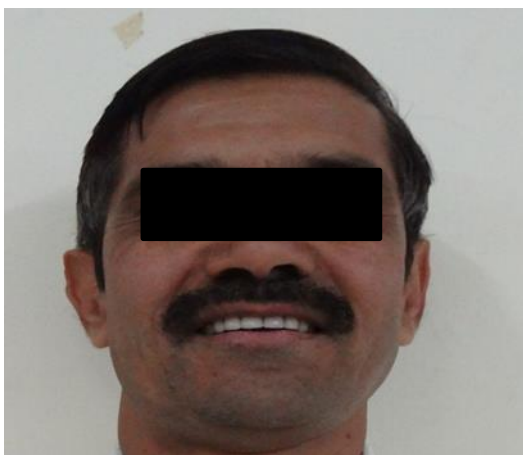


Fig 9: Postoperative extraoral view.

crowns with maxillary arch to restore function and esthetics to optimum. It was concluded that mandibular canines and premolars can serve as abutments for an overdenture thus providing required retention and stability. Diagnostic mounting revealed adequate interarch distance for necessary components and esthetic and functional placement of acrylic teeth.

After completing endodontic treatment with the mandibular canines and premolars primary impression was recorded with alginate. Using conventional techniques border molding was done, secondary impression was made using medium body addition silicone (Aquasil™ Ultra Monophase, DECA Regular Set, Dentsply) and master cast was obtained. Face bow transfer was done and casts were mounted on semi adjustable articulator using jaw relation records (Figure 3). Following teeth arrangement try-in was done, vertical dimension was verified and centric and eccentric contacts were evaluated. Facial and

functional harmony was studied and patient's approval was obtained. Denture was then waxed and flaked for processing. After curing lab remounting and selective grinding was done. Finally dentures were finished and polished. Post space preparation was done and Access Post was then cemented using glass ionomer cement (Figure 4 and Figure 5). The female cap was then attached chair-side to the denture using auto polymerizing acrylic resin (Figure 6). For this purpose, rubber band was used to cover the height of contour of the head to avoid locking and the nylon cap was placed on the ball of the post. Once the nylon cap was picked up, rubber bands were removed and flash trimmed. The denture was adjusted and equilibrated. Post insertion instructions were given along with a recall appointment.

The following day mouth was inspected for any sore areas and final corrections were done. The designed prosthesis served as an esthetic and functional solution in the management of this patient (Figure 7 and Figure 8).

DISCUSSION

The basic overdenture concept requires preservation of residual hard and soft tissues.⁹⁻¹⁰ Tallgren concluded that anterior mandible height resorbed four times faster than maxillary ridge with conventional dentures.^{9,14} It was concluded in a 5-year study that retention of mandibular canines for overdentures led to preservation of alveolar bone.⁹⁻¹⁵ The overdenture patients had a chewing efficiency which was one-third higher than that of complete denture wearers⁹⁻¹⁶. The success of the overdenture treatment depends upon the proper attachment selection for the particular case. Attachment selection is based on available buccolingual and inter arch space, amount of bone support, opposing dentition, clinical experience, personal preferences, maintenance problems and cost.^{9,17} Access posts are stud attachments that work well with overdentures, as they are the simplest of all.⁹ They occupy a small vertical space and the male units on the different roots do not require parallelism. The ball and socket attachment of Access post allows rotation of the denture attachment. Small head of the attachment limits the amount of material that has to be removed from the denture.¹⁸ The nylon cap provides 3-5 pounds of

retention. The technical work required is minimal and can be carried out at chairside, thus making it cost effective.⁹ (The locator root attachment is classified as a universal hinge, resilient attachment for endodontically treated roots and is a low vertical profile attachment with a complete attachment vertical height requirement of only 2.5 mm, which permits its use in tight inter-arch spaces. The unique dual retention (internal and external aspect) innovation provides the locator attachment with a greater retention surface area than certain other attachments. Cakarar et al. concluded that the locator system showed superior clinical results than the bar attachments, with regard to the rate of prosthodontic complications and the maintenance of the oral function.⁸

Access post overdenture is superior to any other passive overdenture because flange and second tier dissipate functional stresses and prevents "bottoming out" eliminating the high apical stresses under function common to other passive posts.⁹⁻¹⁹ Lack of retention of complete mandibular dentures is a common complaint among the complete denture patients.²⁰ With the inception of osseointegrated implants, the concept of overdentures has become more popular, but not all patients are able to afford the treatment costs. A tooth-borne overdenture may be advised whenever a few teeth remain in the arch. The incorporation of attachments in overdentures into everyday dental practice will open up another dimension in dental treatment planning and patient satisfaction.

CONCLUSION

In conclusion to obtain successful overdenture rehabilitation the dentists must be careful during case selection and abutment preparation and a proper periodic follow-up.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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