

CASE REPORT

BONE IS BOON: WHY NOT TO PRESERVE IT? – A CASE REPORT

ABSTRACT

Various studies have mentioned that removal of all remaining natural teeth and the wearing of conventional complete dentures for a long time generally results in alveolar bone loss^{1,2}. The major loss of alveolar bone results in compromised retention, stability and support for conventional complete denture. Therefore it is recommended to save the existing bone for successful present prostheses and in future.

Conventional complete dentures have varying degree of success rate in terms of retention, stability and chewing efficiency. All these parameters are very much related to the quality and quantity of underlying bone, which is ultimate foundation for complete dentures. Root supported overdentures have been proven successful in the treatment of edentulism due to improved retention, stability and proprioceptive sensation. Several techniques have been described for the successful restoration of the edentulous mandible: this procedure is simple and uses relatively inexpensive equipment and material. The attachments incorporated in overdentures provide retention, minimizing possible movement along the path of insertion. This type of prosthesis is successful in patients with advanced ridge resorption, providing an excellent result at a reduced cost along with preservation of residual alveolar ridge.

Keywords- Ball and Socket Attachment, Edentulism, Overdenture

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INTRODUCTION

Muller de van stated that “the preservation of that which remains is of utmost importance and not the meticulous replacement of that which has been lost.” Edentulism impairs oral function with both aesthetic and psychological changes which make adaptation of conventional complete dentures difficult^{3,4}. Extraction of all the teeth should not be recommended as alveolar mucosa is never intended to bear the occlusal load of complete denture as it enhances rapid loss of alveolar bone⁵. The bone remains in a good condition around healthy tooth/root. Therefore it is preferable to preserve roots and their surrounding bone for planning overdentures. Larry d herwig said that the best implants in the world are natural teeth or remaining roots⁶. Overdentures supported by roots have been a traditional part of prosthodontic treatment planning². In 1970's overdentures gained popularity over conventional complete dentures⁷. The root overdenture transfer of occlusal forces to the alveolar bone and proprioceptive feedback through the periodontal ligament of the retained roots. It also helps to prevent occlusal overload and consequently avoid residual ridge resorption adjacent to the roots and the rest of the residual ridge⁸. They also provide improved function compared to conventional complete dentures such as improved biting force and chewing efficiency, and even phonetics. Complete tooth loss results in loss of sensory feedback of periodontal receptors that has been part of the sensory programme throughout life⁹.

Grossly, overdentures are of two types i.e. tooth/root supported and implant supported. The tooth/root supported may further be classified as non coping overdenture, coping overdenture and attachment overdenture. There are many types of overdenture attachments and bar system. Simple ball-and-socket type of attachment for extra retention is commonly used for root supported overdentures, because of simple procedures and lesser cost¹⁰. The ball-and-socket attachment delivers high retention for full and partial dentures, providing a simple, inexpensive overdenture at chair side. The overdenture supports a nylon ring/keeper that is incorporated into an overdenture on tissue side in relation to ball post. The post allows the dentist to utilize remaining roots to support the retention of a

denture. The overdenture is retained by the nylon rings and the ball abutments. One of the major benefits to the clinician is that nylon rings are easily replaceable in the clinic. Incorporation of attachment housings in mandibular complete denture can be done either by a direct intraoral or an indirect laboratory technique.

This article describes a simple, predictable technique for intra orally attaching a mandibular root supported overdenture with ball and o-ring attachments.

CASE REPORT

A 62 year old male patient (fig. 1a) reported to the department of Prosthodontics, BBD College of Dental Sciences, Lucknow, with the complaint of missing teeth and difficulty in chewing. On intraoral examination it was found that, maxillary arch was completely edentulous and 33, 34, 43, 44 teeth were present in the mandibular arch (fig. 1b). The rest of mandibular arch was moderately resorbed. Various options of prosthodontic rehabilitation were discussed with the patient including extraction of remaining teeth followed by conventional complete dentures; implant supported overdenture and, overdenture with ball and o-ring attachments. The patient was told about advantages and disadvantages of all options. Finally patient agreed for overdenture with ball and o-ring attachments. The aim for planning overdenture was to preserve bone around roots and to enhance retention, stability and support for mandibular denture, which otherwise are compromised in many cases.

PROCEDURE

1. The teeth no. 33, 34, 43, and 44 were prepared incisally/occlusally till 1 mm above gingival margin, after endodontic treatment. Access cavities of teeth 34 and 44 were restored with composite resin (Tetric N Ceram, Ivoclar).
2. Maxillary and mandibular complete dentures were fabricated with conventional techniques and dentures were delivered. Postinsertion adjustments were performed till satisfaction of dentist and patient.
3. Optimum post size was determined for 33 and 43 teeth and it was made sure that at least one millimeter of lateral tooth structure remained



Fig. 1(a) Intraoperative photo of patient



Fig. 1(b) Preoperative photo of patient



Fig. 3(a) Drill for post space



Fig. 3(b) Countersink Drill



Fig.4 Preparation of Post space in abutments



Fig. 2 Access Post Overdenture System



Fig.5 Access post with ball attachment cemented in abutment teeth



Fig. 6 Nylon keeper placed on ball attachment



Fig. 7 Nylon keeper attached in mandibular denture



Fig. 8 Happy patient with overdenture

4. Post space were prepared (fig. 4) using Peeso reamer (Mallifer , Dentsply) followed by the color-coded primary drill(fig.3a) exactly correlated to post size.
5. The countersink/root facer preparation was done with the respective countersink drill (fig. 3b). This preparation was to check further seating of post apically.
6. Cementation of post with ball attachment (fig. 5) (Access Post Overdenture, EDS, USA) was done with resin cement (Rely X, 3M).
7. The colored spacer band was placed below the ball of the attachment to block out the undercut of the ball.
8. The nylon keeper was placed on ball attachment (fig. 6). Disclosing paste was applied on the nylon keeper and mandibular denture was seated and the denture was relieved enough from marked area to allow the denture to sit passively over the nylon cap.
9. Dough mix of self cure acrylic resin (Travelon, Dentsply) was placed into the relieved site of the mandibular denture. The mandibular denture was seated over the attachments with nylon keeper and kept in position until the acrylic resin sets, which made nylon keeper attached in denture (fig. 7).
10. The excess acrylic resin was removed carefully with the help of acrylic trimmer.
11. The ball attachment snaps in easily when mandibular denture is seated. Both the patient and the dentist may very well appreciate the extra retention due to ball and O ring attachment.
12. The denture now has the added retention supplied by the ball-and-O ring attachment. Patient was highly satisfied with the grip of mandibular denture (fig. 8).
13. Over the time, the nylon keeper would wear and will affect retention. The nylon keeper may be replaced by drilling out the old one and adding a new one by similar procedure.

DISCUSSION

In many cases of full mouth extraction, some natural teeth and their supporting structures can be restored to health which serves a useful function for long periods of time. Overdentures prevents the patients from “chewing on gums” and can serve purposefully in rehabilitating new denture wearers to their new means of mastication¹¹. Crum and Rooney conducted 5-year clinical study which showed that patients treated with complete maxillary dentures and mandibular overdentures demonstrate less vertical alveolar bone reduction than patients with complete maxillary and mandibular dentures³. Use of attachment in overdentures not only enhances retention but also improves masticatory efficiency, proprioceptive ability and esthetics^{6,8}.

CONCLUSION

This technique described placement of attachments in remaining teeth by incorporating ball-and-O ring attachment into newly made mandibular denture. This case report offered better retention, improved masticatory efficiency and proprioception along with preservation of remaining bone around the restored teeth/ roots.

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