

## CASE REPORT

# TOOTH SUPPORTED OVERDENTURE - A PREVENTIVE CONCEPT TO REHABILITATE THE RUINS

### ABSTRACT

Preventive prosthodontics emphasize the importance of any procedure that can delay or eliminate future prosthetic problems. Overdenture is essentially a preventive prosthodontic concept since it attempts to conserve the few remaining natural teeth. The success of the overdenture treatment depends upon the proper attachment selection for each 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. This is a case report of a successful prosthetic rehabilitation of a patient with attachment retained overdenture utilizing stud attachment.

**Keywords:** Cast metal coping, Overdenture, Stud attachment, Tooth supported.

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## INTRODUCTION

The concept of overdentures is a positive means for delaying the process of complete edentulism and helps in the preservation of bone.<sup>1</sup> As it involves preservation of teeth and alleviate consequences of conventional complete denture, it is a preventive therapy.<sup>1,2</sup>

An over denture is any removable dental prosthesis that covers and rests on one or more remaining natural teeth, tooth roots, and/or dental implants. Synonyms are Over lay denture/Hybrid Prosthesis/ Tooth Supported Denture/ Superimposed dentures/ Onlay denture.<sup>3,4</sup>

The basic principles of overdenture therapy are the continued preservation of alveolar bone around the retained teeth and improved masticatory efficiency, retention & stability of the prosthesis. The continuing presence of periodontal sensory mechanisms guide jaw functions in a better way.<sup>1</sup>

## CASE REPORT

A 57-year-old male patient presented with chief complaint of difficulty in chewing food due to multiple missing upper and lower teeth. Intra oral examination revealed root stumps in relation to 36, 37. Grade 1 mobility was noticed for 34, 43. All the remaining teeth were extracted years back as reported by the patient. Various available treatment options including tooth supported overdenture, implant supported overdenture, conventional complete denture was explained to the patient. With patient consent it was planned to make an attachment retained tooth supported overdenture in mandibular arch and conventional complete denture in the maxillary arch. Root stumps were extracted. A tentative jaw relation was done to assess interarch space. Intentional endodontic therapy of 34 and 43 was done and post space was prepared after periodontal evaluation (figure 1, 2). The selected root abutments were reduced to 2-3 mm height and contoured to convex or dome shaped surface (figure 3). Impression was made in addition silicone elastomeric impression material (figure 4). Cast post and coping with Rhein 83 attachment (male part) was fabricated and cemented on the abutment with glass ionomer

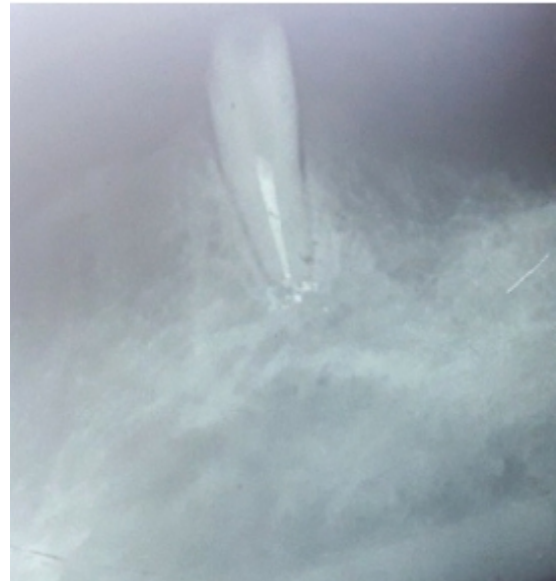


Fig. 1: Post space of 34



Fig. 2: Post space of 43



Fig. 3: Preparation of abutments

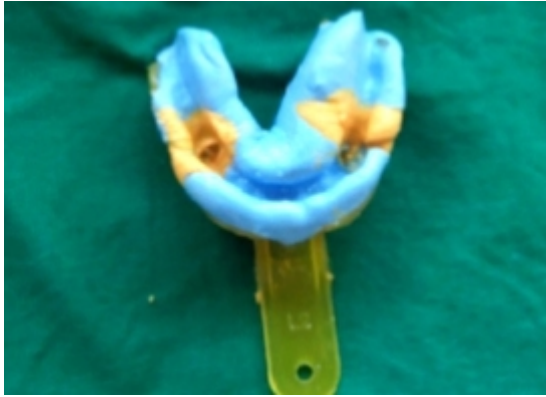


Fig. 4: Elastomeric impression



Fig. 6: Metal encapsulator attached to denture base

cement. (figure5). The complete denture-try- in and processing was done. The metal encapsulator with O- ring(female part) was attached to denture base with autopolymerising acrylic resin.(figure 6).

The patient was given the usual home-care instructions about wearing and home care of dentures. The importance of maintaining the health of retained teeth was stressed upon, since all the advantages of overdentures solely depend upon their continued presence. Gentle cleaning and massage with soft tooth brush using fluoride tooth paste, removal of denture at night and meticulous denture hygiene with denture brush and mild soap were explained.

The immediate recall visit was scheduled after 24 hours, later 2 weekly visits, then fortnightly visits and thereafter once in every six months. At recall visits, the oral health status was monitored. Dentures were assessed for retention and stability and occlusion was refined whenever required (Fig 7-9).

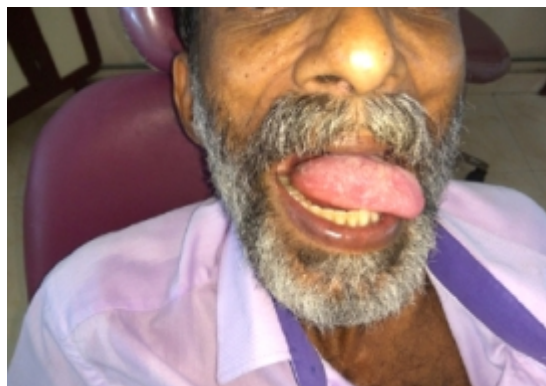


Fig. 5: Cast post and coping with attachments cemented on abutments

Fig. 7,8,9 : Post insertion images of stable and retentive denture

Passivity of contact between denture and gingival area of the abutments was assessed. Less post insertion sore spots were noticed. Overdenture showed short adjustment period, better retention, stability, high chewing performance and good patient acceptance.

## DISCUSSION

When few firm teeth are present in an otherwise compromised dentition, they can be retained and used as abutments for overdenture fabrication. This helps to improve the retention and stability of the final prosthesis significantly. Also it gives the patient the satisfaction of having a prosthesis with natural teeth still present.<sup>5</sup> Ledger and Atkinson advocated leaving 'stumps' under artificial dentures for support. Schweitzer et al reported that the approach dates back to 1800's. Prothero described prosthetic devices retained by telescopic crowns, bars and screws. Brill reported on overdentures and termed the appliance as hybrid.<sup>6</sup>

The general requirements of overdenture abutments are:<sup>7</sup>

1. Bilateral distribution of endodontically treatable abutments
2. >5mm periodontal attachment
3. Healthy attached gingiva >3mm
4. No bony undercuts
5. 4mm abutment height.

The rationale for short round coronal surface is to eliminate or minimize lateral occlusal stress and the objective of giving an attachment is to improve the retention of denture. The use of attachments can redirect occlusal forces away from weak supporting abutments and onto soft tissue. They act as shock absorbers as well as provides superior retention.<sup>6</sup>

Treating the abutment endodontically improves the crown root ratio and provides sufficient interocclusal clearance for placement of artificial teeth. Mobility of abutment is a minor concern because modifying crown root ration usually result in its remission.<sup>2,7</sup>

In a 4-year-study, Renner and his co-workers showed that 50% of roots, used as overdenture abut-

ments remained immobile. In addition, 25% of roots that were initially mobile became less mobile.<sup>1,8</sup>

As far as location of abutment teeth is considered, two teeth in each quadrant present an ideal situation so that stress is distributed over a rectangular area. Cuspids, or first premolars and second molars in each quadrant, mandibular cuspids are most often utilized since they are usually the last teeth to be lost. Mandibular incisors can be used as over denture abutments if mandibular arch is intact.<sup>9</sup> Next most favourable form for support and stability is a tripod configuration. Ex: 2 canines and a second premolar.<sup>3</sup>

Since edentulous ridges and the remaining roots are often compromised, the prosthesis that relies on resilient attachments is better able to divert occlusal forces away from weak abutment teeth.<sup>3</sup> The metal O-ring attachment system is considered to be a good resilient attachment for overdentures. Also Stud attachments occupy a small vertical space and the male units on the different roots do not require parallelism.<sup>10</sup> Small head of the attachment limits the amount of material that has to be removed from the denture. The nylon cap provides 3-5 pounds of retention. Thus, this concept is cost effective.<sup>10</sup>

## CONCLUSION

An over denture has many advantages compared with conventional complete denture. Prosthodontic rehabilitation of cases like partial anodontia not only improves function and aesthetics dramatically, but also psychologically boosts the morale of the patients more. The retained teeth apart from supporting and anchoring the appliance, contribute towards continued preservation of alveolar bone and periodontal proprioception. The success depends upon proper case selection with critical monitoring of various steps involved.

## REFERENCES

1. Renner RP, Gomes BC, Shakun ML, Baer PN, Davis RK, Camp P. Four-year longitudinal study of the periodontal health status of overdenture patients. *J Prosthet Dent.* 1984 May;51(5):593-8.

2. Morrow RM, Feldmann EE, Rudd KD, Trovillion HM. Tooth-supported complete dentures: an approach to preventive prosthodontics. *J Prosthet Dent.* 1969; 21(5):513-22.
3. Heartwell C M, Rahn A O. Syllabus of complete dentures. Philadelphia Lea and Febiger Publishers. 4th edition
4. Modalavalasa HK, Shankar YR, Kumar PS, Kumar TS. A Novel Overdenture Telescopic Prosthesis. *J Orofac Res* 2015;5(2):56-60.
5. Samra RK, Bhide SV, Goyal C, Kaur T. Tooth supported overdenture: A concept overshadowed but not yet forgotten!. *J Oral Res Rev* 2015;7:16-21
6. Dhir R C. Clinical assessment of the overdenture therapy. *J Indian Prosthodont Soc* 2005;5:187-92
7. WFP Malone, DL Koth, DA Kaiser, E Cavazos, SM Morgano. Tylman's theory and practice of fixed prosthodontics. Medico Publishers. 8th edition
8. Tabassum, Omkar Shetty. Access to better dentures. *Guident.* 2016; 9(13):14-6
9. Prakash VS, Shivaprakash G, Hegde S, Nagarajappa. Four and two tooth supported - Conventional over denture: Two case reports. *Int J Oral Health Sci* 2013;3:61-4
10. Winkler S. Essentials of complete denture prosthodontics. AITBS Publishers. 2nd edition.