

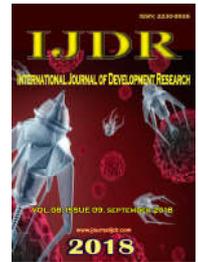


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## TOOTH SUPPORTED OVERDENTURE RETAINED WITH CUSTOM POST ATTACHMENT: A CASE REPORT

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### ABSTRACT

The concept of conventional tooth-retained overdenture is a simple and cost effective treatment than the implant overdentures. This usually requires selecting 2, 3 or more natural teeth to support the denture. Root canal therapy is then performed on these teeth and they are shaved down to the gum and customized posts are then attached into them so that the denture can be anchored on the top of that. This clinical report describes a method of fabricating a tooth supported overdenture retained with custom made posts.

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### INTRODUCTION

The prevalence of edentulism is also strongly associated with ageing although it is now well known that teeth can be kept all the life in many individuals (Gunnar, 2014). Over denture treatment uses a removable complete denture that overlies retained teeth, tooth roots, or dental implants. This treatment is not a new concept and practitioners have successfully employed existing tooth structures or retained roots to assist with complete denture treatment for more than a century (Siddharth Bansal, 2014). The presence of a healthy periodontal ligament maintains alveolar ridge morphology, whereas a diseased periodontal ligament, or its absence, is associated with variable but inevitable time-dependent reduction in residual ridge dimensions (Siddharth Bansal, 2014). To avoid this, two or more, coronally modified or restored retained teeth abutments are frequently endodontic

ally prepared and are used as abutments for an over denture. The objective is to distribute stress concentration between retained abutments and denture-supporting soft tissues. Retained root abutments can give better retention, support, and stability to an over denture and also provide proprioception which would otherwise be lost with conventional denture treatment. Overdenture is indicated in patients with few remaining retainable teeth in an arch. It is also preferred in patients with malrelated ridge cases; patients needing single denture; patients with unfavorable tongue positions, muscle attachments, and high palatal vault, which render the stability and retention of the prosthesis difficult (Rupandeep Kaur Samra, 2015). Implant retained prosthesis is an option but is sometimes not possible due to insufficient amount of bone or economic reasons.

### Case Report

A 70-year-old male patient reported to the Department of Prosthodontics, SGT Dental College, Gurgaon with the chief

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complaint of difficulty in chewing and speech. Intraoral examination revealed partially missing teeth in maxillary and mandibular arch. There was no relevant medical history. Only 33 and 43 were present in the mandibular arch and radiographic examination revealed good bone support and long roots. Maxillary teeth were Grade II mobile with poor bone support (Figure 1).



**Figure 1. Intraoral frontal view showing partial edentulous maxillary and mandibular ridge**

The different treatment options available for this patient's mandibular arch were extraction of the remaining teeth followed by conventional complete denture, implant supported over denture or tooth supported over denture. The patient disagreed on the implant retained prosthesis because of the cost and long term procedure. It was planned to construct a maxillary complete denture after getting all the remaining teeth extracted (Figure 2) and a mandibular tooth supported overdenture with customized post attachment. The treatment plan was explained to the patient and his consent was obtained. An orthopantomogram (OPG) and diagnostic casts were made. Wax rims were fabricated on diagnostic casts to determine the approximate vertical dimension of occlusion. Vertical dimension recordings were determined by phonetics and esthetics. The diagnostic articulation helped in assessing the available inter-arch space and was found to be adequate. Proposed abutment teeth 33 and 43 were treated with root canal treatment followed by fabrication of customized post. After which, it was decided to fabricate a mandibular overdenture. Elective endodontics was carried out with teeth 43 and 33 and they were prepared in a dome-shaped contour and hemispherically rounded in all dimensions with approximately 3–4 mm projecting just above the gingival (Figure 3). Post space was prepared and a direct method was used for the fabrication of post-coping patterns. Custom post patterns (Figure 4) were fabricated directly in the root canal with autopolymerizing resin (Figure 5) (Pattern resin) and a

pick-up impression was made using rubber base impression. The impression was poured with die stone (Type IV diestone). The fabrication of the post-coping patterns was completed in the laboratory. The casting of the patterns was done in Co-Cr alloy using conventional procedures. The copings were finished and polished and tried in the patient's mouth and the radiographs were taken. After that, they were luted to the abutment teeth using GIC luting cement.



**Figure 2. Maxillary arch after extraction of remaining teeth**



**Figure 3. Tooth preparation after post space done on 33 and 43**



**Figure 4. Custom post patterns**

A primary impression of the lower arch was made with irreversible hydrocolloid impression material (Alginate) and a special tray was fabricated on the primary cast after block out. Using conventional techniques border moulding was done and secondary impression was made with medium viscosity rubber base material. Record rims were made and the jaw relationship was recorded. Teeth arrangement was done and a try-in was accomplished.



**Figure 5. Custom Post placed in post space and evaluated for final fit**



**Figure 6. Final Denture**



**Figure 7. Final denture placed**

After a satisfactory try-in, the waxed up denture was processed using heat cure acrylic. Once the denture was ready, spaces were created in the mandibular denture for the prepared tooth to engage (Figure 6). The denture was delivered and the patient was given instructions about insertion and removal, eating and speaking as well as maintenance of the denture. Regular Periodic follow-up was carried out (Fig. 7).

## DISCUSSION

The prospect of losing all his teeth can be very disturbing for a patient. It also brings down patient's morale as it is an indirect reminder for being dependent on others and losing senescence. In such conditions, overdenture option as preventive prosthodontic treatment modality should be regularly imbibed in our dental practices because of its innumerable advantages Crum and Rooney graphically demonstrated in a 5 years study an average loss of 0.6 mm of vertical bone in the anterior part of the mandible of overdenture patients through cephalometric radiographs as opposed to 5.2 mm loss in complete denture patients (Crum, 1978). Rissin *et al.* in 1978 compared masticatory performance in patients with natural dentition, complete denture and over denture. They found that the overdenture patients had a chewing efficiency one-third higher than the complete denture patients (Rissin, 1978). Overdenture with attachments can redirect occlusal forces away from weak supporting abutments and onto a soft tissue or redirect occlusal forces toward stronger abutments thereby resulting in superior retention (Bambara, 2004). In the case reports described above customized posts were fabricated and maxillary conventional denture. A cobalt chromium alloy was used to cast the customized posts due to its cost, biocompatibility, rare allergies and resistance to corrosion These days implant treatment has become the norm, thus tooth supported overdentures have taken a backseat as a result of competitive commercialization of implants (Williamson, 1994). A tooth supported Overdenture is very much at the forefront as the treatment modality incorporating Preventive Prosthodontics concepts to the core.

## Conclusion

The bone loss of the alveolar process after tooth extraction occurs with great individual variation, impossible to predict at the time of extraction. The simplest way to prevent the bone loss is to avoid extraction of all teeth. To keep a few teeth for a tooth or root-supported overdenture has been shown to substantially reduce the bone loss. Customized posts are a simple and cost effective alternative treatment for enhancing the retention of tooth supported overdentures.

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