



## OVERDENTURES: A SIMPLIFIED APPROACH TO THE PROBLEM PATIENT – A CASE REPORT

**Dr. Ravikumar Akulwar**

Assistant Professor Dept. of Prosthetic Dentistry, Government Dental College & Hospital, Mumbai 400001, Maharashtra, India.

**ABSTRACT** Tooth-supported overdentures are prostheses that consist of complete or partial denture prostheses constructed over existing teeth or root structures. One of the main advantages of overdentures over conventional complete dentures is the preservation of alveolar bone and proprioception. Overdentures provide greater retention, stability, and support compared to conventional complete dentures. This clinical case report describes the step-by-step fabrication of tooth-supported mandibular overdentures.

**KEYWORDS :** Overdentures; Preventive Prosthodontics; Edentulous arch; Retention; Proprioception; Alveolar Bone

### INTRODUCTION

Complete denture prostheses are generally prescribed for completely edentulous patients to replace missing teeth, restore function, and enhance esthetics.[1]

Conventional complete dentures rest on mucosal tissues, which may lead to instability, and patients often experience denture loosening during function.[5]

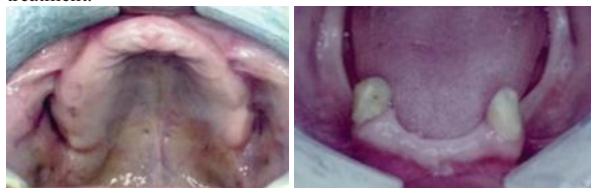
Overdentures are recommended for patients who retain a few teeth within the arch. Retained teeth or tooth-root abutments provide improved retention, support, and stability, and also preserve proprioception, which is otherwise lost with conventional complete dentures. [2,4]

Attachment-retained dental prostheses can further improve esthetics and function. Although implant-retained prostheses are a viable option, they may not always be feasible due to insufficient bone or financial constraints.[7]

This clinical case report describes the step-by-step fabrication of a tooth-supported mandibular overdenture.

### Case Report

A 49-year-old female patient reported to the Department of Prosthodontics at Government Dental College and Hospital, Mumbai, with the chief complaint of difficulty in chewing due to missing teeth. There was no relevant medical history affecting prosthodontic treatment.



**Figures 1 and 2: Intraoral View Shows an Edentulous Maxillary Arch, and only 33 and 44 were Present in the Mandibular Arch**

The patient's dental history revealed previous extractions of severely carious maxillary and mandibular teeth. Intraoral examination showed well-formed maxillary and mandibular residual alveolar ridges. Only teeth 33 and 44 were present in the mandibular arch. Radiographic examination revealed adequate bone support and long roots. [Figures 1 and 2]

Various treatment options were discussed, including extraction of the remaining teeth followed by conventional complete dentures, implant-supported overdentures, and tooth-supported overdentures.

The patient declined the implant-retained prosthesis due to the need for additional surgery and financial constraints.

Diagnostic impressions were made using irreversible hydrocolloid impression material (alginate) for the edentulous maxilla and partially edentulous mandible. Diagnostic casts were poured using Type III gypsum (dental stone).

Temporary denture bases and wax rims were fabricated on the diagnostic casts to determine the tentative jaw relationship. The vertical dimension was established using phonetics and esthetics. The jaw relation was transferred to an articulator, which helped assess the inter-arch space and confirmed adequate space for abutment copings.

Based on clinical, radiographic, and diagnostic evaluations, the treatment plan included a conventional complete denture for the maxilla and a tooth-supported overdenture for the mandible. The treatment plan was explained to the patient, and informed consent was obtained.



**Figure 3: Post Space Preparation with 33 and 44**

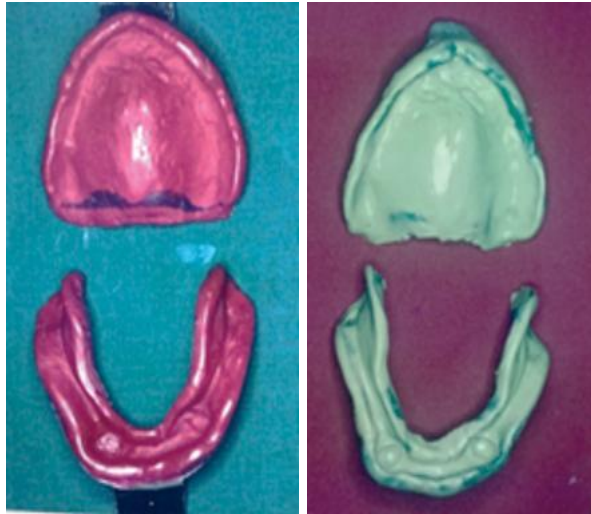
Intentional endodontic treatment was performed on teeth 33 and 44. The teeth were prepared into dome-shaped contours with hemispherical rounding, projecting approximately 3–4 mm above the gingival level. Post space preparation was completed, and a direct-indirect technique was used to fabricate post coping patterns. [Figure 3]

Custom post patterns were fabricated directly in the root canals using autopolymerizing resin. A pickup impression was made using addition silicone impression material. The impression was poured with die stone, and the post coping patterns were completed in the laboratory.



**Figure 4: Cast Coping After Cementation**

The patterns were cast in cobalt-chromium alloy. The cast copings were finished, polished, and tried intraorally. They were then luted to the abutment teeth using glass ionomer cement. [Figure 4]



**Figures 5 and 6: Primary Impression and Final Impression**

Preliminary impressions of both arches were made using impression compound. Primary casts were poured in dental plaster, and custom trays were fabricated. [Figure 5 and 6]

Border moulding was performed, followed by final impressions using a selective pressure technique with light-body addition silicone impression material. Final casts were poured in dental stone. [Figure 6]



**Figures 7 and 8: Maxilla Mandibular Jaw relation and wax-up denture Try-in**

Temporary denture bases and occlusal rims were fabricated on the final casts. Maxillomandibular jaw relations were recorded and transferred to an articulator. The teeth arrangement was completed, and a wax try-in was performed. [Figures 7 and 8]



**Figure 9: Final Prosthesis (Maxillary Complete Denture and Mandibular Overdenture)**

After achieving satisfactory esthetics and function, the dentures were processed using heat-cure acrylic resin. The maxillary complete denture and mandibular tooth-supported overdenture were delivered to the patient. [Figure 9]



**Figures 10 and 11: Extraoral Preoperative View and Postoperative View**

The patient was instructed on denture insertion, removal, maintenance, and adaptation for eating and speaking. Regular follow-up visits were scheduled to monitor function and oral health. [Figures 10 and 11]

### DISCUSSION

The preservation of natural teeth in overdenture therapy plays a crucial role in maintaining alveolar bone integrity and enhancing proprioception.[3] In the present case, retaining teeth 33 and 44 provided significant advantages in terms of support, stability, and retention of the mandibular prosthesis.

Residual ridge resorption is a continuous process following tooth extraction, and conventional complete dentures often accelerate this process due to a lack of periodontal ligament stimulation. Tooth-supported overdentures help reduce this resorption by preserving periodontal proprioception and transmitting functional forces through the retained roots. [3,5]

The dome-shaped preparation of abutment teeth, along with intentional endodontic treatment, minimized the risk of caries and periodontal breakdown while ensuring adequate space for the prosthesis. The use of cast copings further improved the longevity of the abutments by protecting them from wear and enhancing stress distribution. [6]

Compared to implant-supported overdentures, tooth-supported overdentures offer a more economical and less invasive alternative.[8,9] This makes them particularly suitable for patients with financial constraints or inadequate bone volume for implant placement, as seen in this case.[7]

The success of overdenture therapy depends on meticulous treatment planning, proper case selection, and patient compliance with oral hygiene and follow-up visits. Regular recall is essential to monitor the health of abutments and surrounding tissues.

The overdentures, a complete or partial denture prosthesis constructed over existing teeth or root structures. [8]

The advantages of an overdenture are [9,10]

Preservation of alveolar bone, as preserving teeth, retains not only the alveolar bone supporting the teeth but also the alveolar bone adjacent to the teeth.

Preservation of proprioceptive response by preserving teeth along with the periodontal ligament also preserves that which gives better tactile sense and neuromuscular control.

Improve retention and stability by providing an attachment device.

Patient accepted this type of overdenture treatment because the patient experienced improvements in function and esthetics while still maintaining some of the patient's own teeth.

This case demonstrates that even a minimal number of retained teeth can significantly improve the prognosis of a removable prosthesis and patient satisfaction.

## CONCLUSION

Tooth-supported overdentures represent a conservative and effective treatment option for partially edentulous patients. They provide improved retention, stability, support, and proprioception compared to conventional complete dentures, while also preserving alveolar bone.

In patients where implant therapy is not feasible due to economic or anatomical limitations, overdentures serve as a practical and successful alternative.

This case highlights the importance of preserving natural teeth whenever possible and demonstrates that a simplified overdenture approach can yield satisfactory functional and esthetic outcomes with proper planning and execution.

## REFERENCES

- [1] Zarb GA, Bolender CL. Prosthodontic Treatment for Edentulous Patients. 13th ed. Mosby; 2013.
- [2] Brewer AA, Morrow RM. Overdentures. 2nd ed. Mosby; 1980.
- [3] Crum RJ, Rooney GE Jr. *J Prosthet Dent.* 1978;40:610–613.
- [4] Rissin L et al. *J Prosthet Dent.* 1978;39:508–511.
- [5] Tallgren A. *J Prosthet Dent.* 1972;27:120–132.
- [6] Preiskel HW. *Overdentures Made Easy.* Quintessence; 1996.
- [7] Misch CE. *Dental Implant Prosthetics.* 2nd ed. Mosby; 2015.
- [8] Kumar R, Gupta S. *J Indian Prosthodont Soc.* 2015;15:180–184.
- [9] Bansal SD, Aras R. *J Clin Diagn Res.* 2013;7:2951–2954.
- [10] Mhatre SM, Thombare AK. *J Indian Prosthodont Soc.* 2012;12:191–195.