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Case Report

Unleashing the potential of mandibular tooth supported overdenture to enhance stability and support – A case report

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ABSTRACT

Treating patients using tooth supported overdentures can help in preservation of the remaining natural teeth which can provide psychological, functional and anatomical benefits. Retaining roots can provide preserving proprioceptive receptors and increase the stability of dentures, hence it is the favoured treatment for elderly patients with a few remaining teeth.

This case report describes a tooth supported mandibular denture retained using a custom made coping to enhance the retention of the prosthesis.

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1. Introduction

Preventive prosthodontics emphasizes on the dictum of MM De Van which states that “perpetual preservation of what remains is more important than the meticulous replacement of what is lost”.¹ Natural teeth/tooth supported overdentures should be considered as a treatment option in patients which fewer remaining teeth to prevent resorption of alveolar bone due to extraction of all natural remaining teeth. The occlusal forces transmitted to the alveolar bone through the periodontal ligament stimulate bone formation, thereby preserving bone. The mandibular teeth are particularly prone to rapid reduction in bone height after their loss, with studies showing that the rate of resorption in the edentulous mandible is four times higher than in the edentulous maxilla.²

Overdentures provide a positive means of delaying complete edentulism and contribute to bone preservation. Furthermore, they offer the patient the satisfaction of retaining their natural teeth. Despite advancements in dental implantology, the conservative approach of preservation

of roots followed by an over denture still remains valid. Retaining natural roots bring several advantages, including maintenance of alveolar bone, improves prosthesis support, provides proprioceptive feedback, enhances esthetics as well as psychological benefits. This paper presents a case report on the rehabilitation of a mandibular tooth supported overdenture. The prosthesis is retained using custom made copings which enhance stability and support.

2. Case Report

Past medical history was insignificant and dental history revealed patient had undergone extraction under local anesthesia without any complications. After discussing the various treatment modalities with the patient, taking their intra oral and present health condition into consideration, tooth supported mandibular overdenture was planned with conventional complete denture prosthesis for the upper arch.

3. Procedure

In the first visit, diagnostic impressions were taken in which diagnostic casts was fabricated, after surveying the cast, jaw

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Fig. 1: Intra oral view- Maxillary and Mandibular arch

relations were recorded and articulated to check if there is adequate interocclusal space was available for overdenture fabrication. Elective endodontic treatment was carried out for the remaining molars. The remaining teeth were reduced in height to enhance crown root ratio and the abutment teeth were prepared intra-orally with chamfer finish line. They were shaped as domes with a coronal extension of 3-4mm above the marginal gingival to accommodate the metal copings. Impressions of the upper and lower arches were taken to create primary cast. During the subsequent appointment, the metal copings were cemented onto the lower teeth. The next appointment, final impression was recorded after border moulding using special impression tray prepared on the primary casts.



Fig. 2: Tooth preparation followed by recording final impression

On the fourth appointment, jaw relations were recorded. Teeth setting was done after mounting of the casts followed by try in procedure. On the next appointment, the final dentures were delivered. After 24 hours, the patient was recalled for follow up. The final occlusal adjustments were done on that day.



Fig. 3: Cementation of metal copings

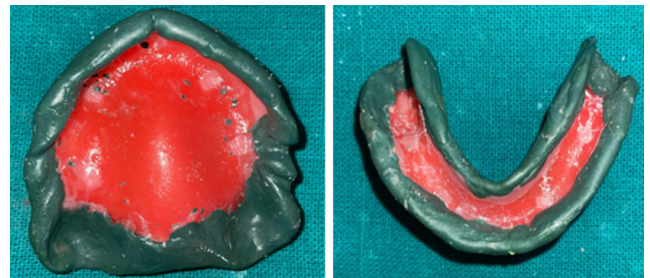


Fig. 4: Border moulding done in maxillary and mandibular arch



Fig. 5: Final impression recorded using light body impression material



Fig. 6: Jaw relation recorded

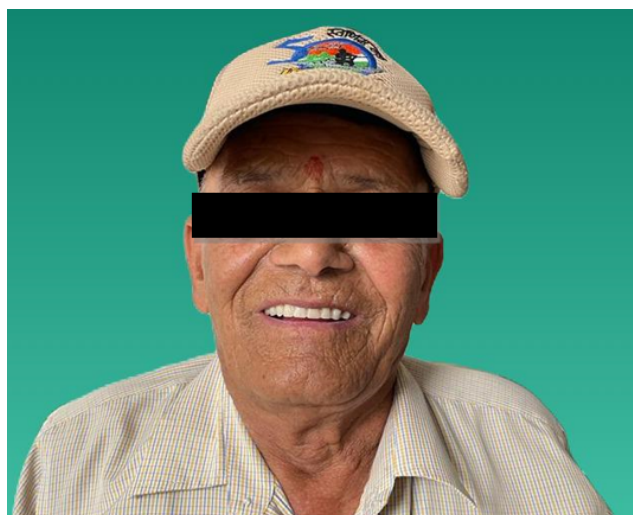


Fig. 9: Final post operative frontal view



Fig. 7: Teeth arrangement



Fig. 8: Try in

4. Discussion

Fabrication of tooth supported overdenture in patients with fewer remaining natural teeth offers a conservative approach of root preservation. In a study conducted by Rissin et al in 1978, the masticatory performance of individuals with natural dentition, complete dentures and overdentures was compared. The findings revealed that patients with overdentures exhibited a chewing efficiency that was approximately one third higher than those wearing complete dentures.³

As aging progresses the reduction of residual ridge couples with decreased dexterity can lead to difficulty in adapting to traditional denture prosthesis. The preservation of root offers several benefits from the conventional dentures which include preservation of alveolar bone,⁴ maintenance of proprioceptive receptors and improved prosthesis stability.⁵ In cases where there additional retention is required, the modifications can be made in the design of the overdenture and attachments can be incorporated. However patients wearing overdenture face a challenge of maintaining their oral hygiene, therefore it is crucial to provide thorough oral hygiene instructions to patients and reinforce their importance.⁶ Regular recall examinations accompanied by radiographs taken at an interval of six months or less helps in maintaining patient's prosthetic, restorative and periodontal status thereby ensuring the success of overdenture therapy. Judicious selection of patients and the establishment of a meticulous treatment approach ensures satisfaction for both the patient and the dentist. Zarb et al⁷ highlighted the benefits associated with overdentures, particularly in terms of retention and stability especially while considering the mandibular dentures. Additionally, he emphasized the value of maxillary overdentures when they oppose

remaining mandibular anterior teeth, as they contribute to the preservation of the ridge by mitigating resorption caused by masticatory stress.^{8,9}

5. Conclusion

The presented case report describes a simple alternative to conventional complete denture by utilizing the existing natural teeth to enhance the retention and stability of the prosthesis. This method not only promotes excellent patient acceptance but also adheres to the fundamental principles of Prosthodontics by avoiding unnecessary extraction of remaining natural teeth for replacement of missing teeth.

6. Source of Funding

None.


7. Conflict of Interest


None.

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