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Tooth Supported Maxillary Overdenture: A Treatment Modality Overshadowed but Still Not Omitted-A Case Report

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ABSTRACT

Background

The concept of overdentures developed as a simple, time saving and cost-effective alternative to prolong the retention, stability and function of the last few remaining teeth in a compromised dentition. Tooth supported overdentures are more stable, retentive and patients can chew greater than conventional complete dentures.

Case

A 70-year-old female patient reported to the Department of Prosthodontics and Crown-Bridge, BPKIHS, Dharan for prosthetic rehabilitation of maxillary and mandibular edentulous ridges. Intra oral examination revealed, completely edentulous lower arch and 11, 21 and 22 teeth were present in upper arch. Treatment plan was made to rehabilitate tooth supported maxillary overdenture prosthesis and conventional mandibular denture.

Conclusion

Tooth supported overdenture has many advantages over implant supported prosthesis such as, simple, economical, time saving, preserve tooth structure and alveolar bone, provide retentive and stable prosthesis, preserve proprioception, patient psychological benefits. So, now a day this treatment modality overshadowed but still not omitted.

Keywords: overdenture; proprioceptor; residual ridge.

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INTRODUCTION

The overdenture is defined as a removable partial denture or complete denture that covers and rests on one or more remaining natural teeth, the roots of natural teeth and/or dental implants; a prosthesis that covers and is partially supported by natural teeth, natural tooth roots and/or dental implants-GPT:8.[1] Overdentures are also called overlay denture, overlay prosthesis, superimposed prosthesis, on lay denture, hybrid dentures, superimposed dentures, telescoped dentures, biologic dentures, coping prosthesis, crown and sleeve prosthesis.[2] The idea of overdentures was introduced at the World Dental Congress by Butler, Roberts and Hays in 1861.[3] Now, most dentists are aware of the detrimental effect of wearing complete dentures and these effects can be minimized by overdentures. The commonest outcome of wearing complete dentures are residual ridge resorption, loss of occlusal stability, undermined aesthetic appearance and compromised masticatory function.[4] The most significant advantages of the method are the preservation of the remaining alveolar bone as well as improved prosthesis stability and retention. Thus, they provide psychological, functional as well as biological advantages for the patients.[5]

CASE PRESENTATION

A 70-year-old female patient reported to the Department of Prosthodontics and Crown-Bridge for prosthetic rehabilitation of maxillary and mandibular edentulous ridges. Intra oral examination revealed, completely edentulous lower arch and 11, 21 and 22 teeth were present in upper arch (Figure 1). All the treatment modalities were discussed with the patient including implant supported overdenture, implant supported fixed prosthesis and conventional complete denture. But due to economical reason and time restrictions patient rejected implant supported prosthesis and selected for tooth supported overdenture as it was conservative, less time consuming. The treatment plan was made to rehabilitate tooth supported maxillary overdenture prosthesis and conventional mandibular denture.

Fabrication technique:

1. After proper evaluation of the patient, it was decided to retain maxillary central and lateral incisal, proceed with intentional root canal treatment (RCT) followed by metal coping to the three teeth. Mandibular conventional and maxillary over denture was planned to reduce the impact on the bone by conventional denture in upper anterior and also to improve the retention and stability. Patient consent was taken and treatment started.

2. Endodontic treatment was performed i.r.t 11, 21 and 22 and abutment teeth were prepared to create adequate space for the denture. The teeth were reduced to 1 to 2 mm above the alveolar ridge, and the roots were rounded to a dome-shaped contour and chamfer subgingival finish line prepared (Figure 2). Maxillary impression was made with putty and light body polyvinyl siloxane elastomeric impression material (Figure 3) for fabrication of metal coping.

3. Metal coping was cemented i.r.t. 11, 21 and 22 (Figure 4).

4. Maxillary and mandibular arches impressions were made with irreversible hydrocolloid impression material (Figure 5) and special tray was fabricated with auto-polymerizing resin.

5. Border moulding was done using low fusing greenstick compound and maxillary final impression was made with light body Poly vinyl siloxane impression material and mandibular final impression was made with zinc oxide eugenol impression paste (Figure 6) and cast was poured.

6. Denture base and occlusal rims were fabricated and jaw relations (Figure 7) were recorded using face bow transfer and recorded jaw relation was mounted on semi-adjustable articulator.

7. After teeth arrangement, try-in was done in the patient's mouth and patient's approval was taken (Figure 8).

8. The dentures were then processed as a conventional denture. Finishing and polishing of denture was done carefully so that the contour of the polished surfaces remained unaltered and final prosthesis delivered to the patients (Figure 9).

9. The patient was pleased with the treatment's outcome. She was recalled for follow up after a day, 1 week, 1 month, and 6 months.

Figure 1: Intra oral view.

Figure 2. Retained tooth preparation.

Figure 3. Impression after tooth preparation.

Figure 4: Coping cemented.

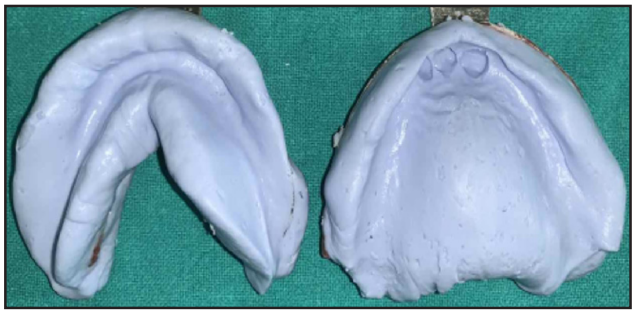

Figure 5. Primary impression.

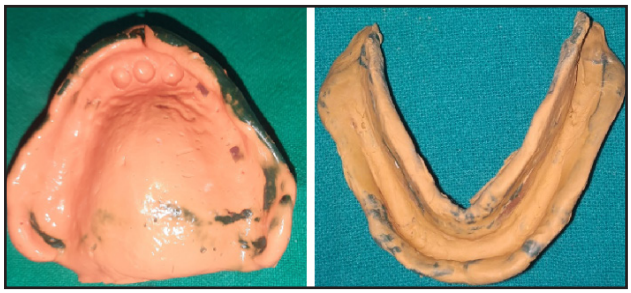

Figure 6. Border moulding and secondary impression.

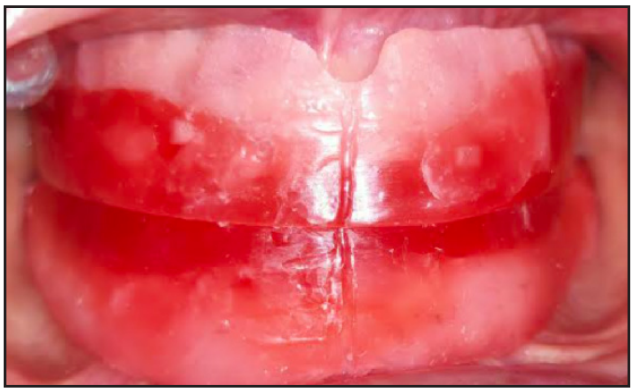

Figure 7. Jaw relation.

Figure 8. Try-in (Right, Front and Left view).

Figure 9. Final prosthesis (Before and After).

DISCUSSION

While implant supported overdenture for edentulous ridges have recently become more common, the conservative approach to root preservation followed by an overdenture is still valid.[6] Dentists have become more aware that retained tooth with complete dentures is valuable and various authors have described advantages of maintaining teeth, or tooth roots, under complete dentures.[7] Preservation of at least two roots improve the stability, retention, chewing efficiency, and decrease anterior bone resorption.[8] According to Robert L Defranco tooth supported overdenture achieve three important goals that are maintainces of the abutment as a part of the residual ridge which in turn provides more support and retention, maintain alveolar bone integrity, decrease alveolar bone resorption, preservation of the periodontal membrane and preserves propioceptive impulses resulting improvement of the occlusal awareness, biting forces and neuromuscular control.[9] A tooth supported overdenture is very much at the frontline as the treatment modality comprising Preventive Prosthodontics concepts to the core. Let us not forget our fundamental, rather renew them and incorporate them into our clinical practice on a daily basis. An overdenture is empirical and possible treatment option of conventional complete denture. Prognosis of overdenture is determined by selection of appropriate abutments, ideal position of retained tooth, and multidisciplinary team work.[10] Rissin et al. compared masticatory performance in patients with natural dentition, over denture and complete denture wearer. They found that the over-denture patients had a chewing efficiency one-third higher than the complete denture patients.[11] Crum and Rooney found eight times more bone loss in the patient with complete denture than overdenture.[12]

CONCLUSIONS

Tooth supported overdenture has many advantages over implant supported prosthesis such as, simple,

economical, time saving, retentive, stable, and aesthetic. Which also helps in preservation of alveolar bone and improves proprioception. The clinical protocol is simple to follow and can be used in any dental practice. This is a case report of rehabilitation of an edentulous patient with maxillary tooth supported overdenture and mandibular complete denture.

Patient consent: written consent to publish this case has not been obtained. This report does not contain any personal identifying information.

Conflict of interest: None

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