Scholars Journal of Dental Sciences Tooth Supported Overdenture: A Case Report

Article *in* Indian Journal of Dental Sciences · July 2021

DOI: 10.21276/sjds.2019.6.7.?

7 authors, including:

Jay Rahesh Dondani
Government Dental College And Hospital, Mumbai
19 PUBLICATIONS **28** CITATIONS

SEE PROFILE

Scholars Journal of Dental Sciences
Abbreviated Key Title: Sch J Dent Sci
ISSN 2394-4951 (Print) | ISSN 2394-496X (Online)
Journal homepage: http://saspjournals.com/sjds

OPEN ACCESS

Tooth Supported Overdenture: A Case Report

Dr. Satish Sudhakar Gadai[1*], Dr. Jyoti Tembhurne[2], Dr. Manish Chauhan[3], Dr. Avinash Kamle[4], Dr. Jay Dondani[5]

[1]Postgraduate student, Department of Prosthodontics, GDC Mumbai, Mumbai India
[2]Professor and Head, Department of Prosthodontic, GDC Mumbai, Mumbai India
[3]Associate Professor, Department of Prosthodontics, GDC Mumbai, Mumbai India
[4]Postgraduate student, Department of Prosthodontics, GDC Mumbai, Mumbai India
[5]Postgraduate student, Department of Prosthodontics, GDC Mumbai, Mumbai India

DOI: 10.21276/sjds.2019.6.7.? | **Received:** 02.07.2019 | **Accepted:** 09.07.2019 | **Published:** ?

***Corresponding author**: Dr. Satish Gadai

Abstract **Case Report**

Since long time overdenture has been the choice of treatment in patients with partially edentulous arches, particularly in the mandibular jaw for the advantages associated with it in the form of decreased ridge resorption, improved proprioception, better retention and support [1]. Significant advances in the treatment modality have popularized the use of attachment in the abutment teeth as compared to conventional overdenture fabricated on teeth. This case report describes a technique for the fabrication of overdenture on mandibular and maxillary canines and 2nd premolar, by the incorporation of custom attachment.

Keywords: Overdenture, Custom ball attachments, indirect method, Custom post patterns, ridge preservation, cast copings.

INTRODUCTION

Preventive prosthodontics emphasizes the importance of any procedure that can delay or eliminate the inevitable problems. Preventive prosthodontics advocates use of overdenture as one of the treatment modalities. There is inevitable time-dependent reduction in residual ridge dimensions in the absence of all teeth. To avoid this, two or more, coronally modified, restored/ retained teeth abutment are frequently endodontically prepared and used as abutment for overdenture [1, 2]. The objective is to distribute stress between retained abutments and denture supporting soft tissue. Retained abutments can give better retention and support to an overdenture and provide proprioception which would otherwise be lost conventional denture treatment [3-5].

CASE REPORT

A 55-year-old male patient reported to the department of Prosthodontics at Government Dental College and Hospital, Mumbai with a chief complaint of difficulty in chewing hard food and unpleasant appearance of face. The patient gave a history of loss of teeth 12 years back due to caries and gum disease. On examination 11,21,31,32,34,35 ,41 and 42 were missing and replaced with faulty acrylic facing fixed partial denture with 13 to 23, 36 to 43 (fig 1).

Fig-1: Acrylic facing fixed partial denture

The patient had a convex profile, and temporomandibular joint evaluation did not suggest any abnormality. After clinical and radiographic evaluation, a treatment plan in consultation with the patient was advised to retain the maxillary and mandibular canines and 2nd premolars. The proposed treatment included maxillary and mandibular tooth supported custom attachment overdenture. Informed consent was obtained from the patient. Intraoral examination after removal of old prosthesis revealed remaining maxillary and mandibular canines and premolars with normal alveolar ridge mucosa, while 12,16,22 and 36 were periodontically compromised and were extracted. For better hygiene maintains 14, 44 had extracted [4]. The maxillary and mandibular residual ridge was favourable with adequate bone height and width.

Fig-1: Fixed partial denture after removal

Fig-2(a): Endodontically treated canines and left 2nd premolar

Fig-3(b): endodontically treated canines and left 2nd premolar

Fig-4: post space preparation and gingival retraction done with 3-0 gingival retraction cord (Ultradent)

Fig-5: Border moulding and wash impression was done

Fig-6: Maxilla-mandibular relation was record

Fig-7: Try in of complete denture done

Fig-8: Custom ball attachment with metal coping and prefabricated female component

Fig-9: Ball attachment cemented in maxillary and mandibular canines and metal copping in 15, 45

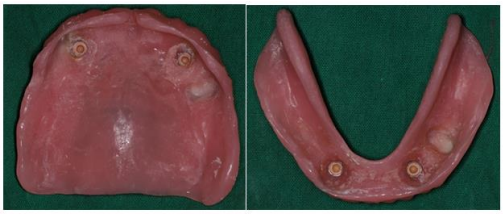

Fig-10: Female component of the attachment luted on the tissue surface of the mandibular denture with self-cure resin

Fig-11: Maxillary and mandibular dentures in occlusion

The teeth were endodontically treated and crowns of 15, 13, and 23,33,43,45 were horizontally sectioned using sectioning disk (fig.2). Root canals of maxillary and mandibular canines and palatal canal of 15 were prepared to receive the posts (fig.4). Root diameter was enlarged using peeso reamer number 4 while preserving 5mm gutta percha at the apex. Canals were recorded with the help of orthodontic wire and VPS in one stage impression technique. The fabrication of the post-coping pattern was completed in the laboratory. Appropriate size of attachment were selected according to the inter arch distance. Surveying was done to check the parallelism. The casting was done and subsequently tried in patient's mouth and the radiographs were taken to check the fitting. After conformed the fitting they were then lute to the abutment teeth using resin cement (Calibra, Dentsply Sirona)(fig.9).

The diagnostic impressions were made and custom trays were fabricated on the diagnostic models using light cure polymerising resin. Wash impressions of the maxillary and mandibular arches were recorded with condensation silicone Oranwash (Zhermack) after border moulding using low fusing impression compound (DPI tracing green sticks) (fig.5). Temporary record bases and occlusal rims were fabricated for recording the maxillomandibular relation (fig.6). The records were transferred to a mean value articulator and arrangement of teeth was done in. After try- in verification (fig.7), maxillary and mandibular dentures were processed using the conventional methods of processing. Bilaterally, the intaglio surface of the maxillary and mandibular denture in the canine area was relieved using carbide burs to incorporate the female component. The female component was attached to the mandibular dentures after picking them up from the male components in the corresponding relieved areas. Autopolymerizing resin (Q resin) was used for luting the attachments on the tissue surface of the mandibular dentures (fig.10). Excess resin from the areas was trimmed and finished. The polished dentures were then inserted in the patient's mouth providing support and proprioception (fig.11).

DISCUSSION

According to the literature, it is common to observe mutilated dentition due to periodontal disease and dental caries in the elderly population. In most situations, the patient is limited to being rehabilitated with complete dentures since other options are unsuitable. Pitfalls. The first denture was usually satisfactory but with each passing year and with each subsequent denture, patients became more intolerant of their prostheses. The resorption of bone began a vicious cycle of an ill-fitting denture, causing inflammation, which in turn increased the resorptive process, creating an even more unstable base, repeating the entire process once again. However, the use of selected teeth in strategic positions can greatly improve the final treatment result in terms of overdenture stability and retention. Progressive alveolar atrophy after tooth extraction can be prevented by retaining teeth or tooth root beneath an overdenture. To keep a few teeth and use them or their roots for a tooth or root supported overdenture has been shown to substantially reduce the bone loss in the mandible.

However, patient cooperation is mandatory for maintaining adequate oral hygiene to avoid caries and periodontal disease of the retained teeth. The considerable reduction in crown root ratio and the dome-shaped configuration of tooth abutment along with careful adjustment of contiguous denture base facilitates an axial resolution of occlusal forces.

The tensile stimulation of periodontal fibers results in the deposition of bone followed by a concomitant decrease in abutment mobility. The support provided by the abutment teeth is in addition to that supplied by the residual alveolar ridges. Stability and support are enhanced by the vertical vector component of the teeth retained in the alveolar ridge. Preservation of natural teeth for an overdenture preserves sensory inputs from the periodontal mechanoreceptors and is superior to achieve by the oral mucous membrane In case of mandibular abutments, the tensile forces on the periodontal ligament fibres may lead to deposition of bone, which facilitated improved retention, stability, and support of the mandibular denture over conventional dentures. These periodontal receptors by their proprioceptive feedback mechanism actively influence muscles of mastication and thereby the cyclic temporomandibular joint movements.

The attachment system supposedly plays an active role in prosthesis success rates but demands maintenance and recall preventing complications. Custom attachments revealed complications such as being time-consuming and incurring costs related to wearing and loosening of components that had to be changed. There have been reports of movement in different directions, resulting in damage and wear. Bearing this in mind, it is important that these complications be recorded when analysing prosthesis maintenance during follow-ups.

CONCLUSION

The use of overdentures is not a new concept; it is one that has become increasingly more popular as the emphasis on prevention in dentistry has grown. The root supported overdenture is a better alternative for a treatment option to conventional dentures since the proprioception is maintained and improves stability and retention. Despite recent development in dental implantology, the conservative approach of root preservation is still valid. Greater emphasis must be given on proper case selection, diagnosis, and treatment planning. By preserving the submerged root or teeth for overdenture, alveolar bone resorption can be reduced

considerably. Furthermore, there will be a drastic improvement in retention, stability, and support of the prosthesis. Overdentures thus become an alternative treatment for patients advised for total extraction. Oral hygiene instruction must be given to the patient and reinforcement of the same must be done. Recall examinations with radiographs at regular intervals of 6 months or less will maintain the prosthetic, restorative, and periodontal status of the patient at acceptable levels, which in turn leads to the success of the overdenture therapy. If we select our patients wisely, we can be relatively assured of a successful outcome for many years with overdenture patients.

REFERENCES

1. Winkler S. Essentials of complete denture prosthodontics, 2nd edn. Ishiyaku EuroAmerica, St. Louis.1996; 386-387.
2. Zarb, Hobrick, Eckert, Jacob. Prosthodontic treatment for edentulous patients: complete dentures and implant—supported prostheses, 13th edn. Elsevier, St. Louis.2012: 290–295.
3. Castleberry DJ. Philosophies and principles of removable partial overdentures. Dent Clin North Am. 1990;34(4):589-92.
4. Renner RP. The overdenture concept. Dent Clin North Am. 1990;34(4):593-606.
5. Hug S, Mantokoudis D, Mericske-Stern R. Clinical evaluation of 3 overdenture concepts with tooth roots and implants: 2-year results. Int J Prosthodont. 2006;19(3):236-43.