

Tooth Supported Overdenture –A Case Report

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ABSTRACT

Tooth loss can occur by progressive caries, accidents, and gum problems. This can affect the beauty, smile, and chewing efficiency of an individual. This can be corrected by replacing the teeth with an artificial denture. Today, with the stress on the preventive measures in prosthodontics the use of overdenture has increased. Overdenture is a treatment option for individuals with very few teeth. So, preserving the root under the denture will maintain the proprioception, preserve the alveolar ridge by preventing residual ridge resorption and maintain denture stability. This will help to transfer the occlusal force along the tooth long axis and prevents the dislodgement of denture. Overdentures have diverse positive attributes like they decrease the pressure on soft tissue and transmit it to the underlying bone, which increases the ridge integrity, stability and patient comfort. An artificial denture can be contoured and characterized to give a more aesthetic lifelike appearance. Individuals with a minimum number of teeth can be rehabilitated with overdenture to improve the positive effect on patient confidence and self-respect. Presence of teeth provides a psychological and emotional impact on the person's mind of having natural teeth in his mouth which adds to his/her personal confidence.

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I. Introduction

In this advance era innumerable treatment options are available for replacing a missing tooth in individuals. Conventional complete dentures are the most common prosthesis given till age for complete edentulism. Due to various reasons this may not always be completely satisfactory for all the patients. Factors such as mastication, speech, and aesthetics are very important and given almost consideration when prosthesis is planned, minimal modification to this conventional procedure for the advantage of the patient can enhance the overall success of prosthetic rehabilitation. The overdenture, complete or partial denture prosthesis constructed over existing teeth or root structure, is essentially a preventive prosthodontics concept it attempts to conserve the few remaining natural teeth or root, as an alternative to surgical removal. Overdenture help to partly overcome many of the problems posed by conventional complete dentures like progressive bone loss, poor stability and retention, loss of periodontal proprioception and low masticatory efficiency. Preservation of tooth leads to safeguarding the bone which renders the upcoming issues related to the rehabilitation of missing teeth. A tooth supported overdenture play a vital role in preventive prosthodontics as a method to preserve the existing natural teeth which also reduces bone disintegration. Bone begins to disintegrate spontaneously in the absences of teeth or retained roots thus preservation of tooth is directly equivalent to the preservation of bone.

II. Case report

A 57-year female patient reported to the department of Prosthodontics and Crown & Bridge at Government Dental College and Hospital, Mumbai with the chief complain of difficulty in chewing food due to missing teeth and having desire to improve esthetics. After clinical evaluation, the patient was diagnosed with partial edentulous maxillary and mandibular arches. In maxillary arch 13, 15, and 23 teeth were present [Fig 1]. In mandibular arch 33, 34, and 43, 44 teeth were present. Both maxillary and mandibular arches had favourable bone height and width. Radiographic examination revealed that the remaining teeth had adequate bone support.

The different treatment options available for this patient were

1. Extraction of the remaining teeth followed by conventional complete denture in both arches.
2. Rehabilitation with implant supported overdenture.
3. Endodontic treatment of remaining teeth and fabrication of tooth supported overdenture in both maxillary and mandibular arches.

After thorough explanation of the treatment plan to the patient and taking her consent, it was decided to use the remaining teeth as abutments and fabricate tooth supported overdenture in both maxillary and mandibular arches. All remaining teeth were required to undergo oral prophylaxis, pocket elimination procedures. Elective endodontic treatment was carried out for 13, 15, and 23, in maxillary arch and 33, 34, 43, and 44, in mandibular

arch. After endodontic treatment the coronal portion of teeth was prepared to create adequate space for overlying denture. The teeth were reduced to 2 to 3 mm above the alveolar ridge and rounded in dome-shaped contour and composite restoration was done [Fig 2]. Types of overdentures are coping & non coping type in this case we had opted overdenture without coping abutment because patient has low caries index.

Preliminary impressions of maxillary and mandibular arches were then made with irreversible hydrocolloid. Impressions were poured in dental stone and custom trays were fabricated on diagnostic casts with double wax sheet spacer and self-cure acrylic resin (Cold Cure Denture Base Material). Border moulding was done with low fusing impression compound in both the arches. The spacer was removed from the trays and final impressions of maxillary and mandibular arches were made using medium viscosity rubber base material [Fig3]. The impressions were poured with dental stone and final cast were obtained [Fig 4]. All the undercuts areas on the final casts were blocked and occlusal rims were made on the denture base of auto polymerizing acrylic resin. The occlusal rims were adjusted in the patient's mouth and jaw relations were recorded. The establish records were transferred to an articulator and the arrangement of teeth was done [Fig5]. After try in verification in patients mouth [Fig 6]. The maxillary and mandibular dentures were processed using the conventional methods of processing. After completing denture processing, the denture was trimmed, finished, and polished [Fig 7], and evaluated intra orally for retention, aesthetics, occlusion, comfort and any sharp margins or irregularities. Finally, the dentures were delivered [Fig 8] and their maintenance guidelines were advised. Patient showed satisfaction with the dentures during insertion appointment. The patient was reviewed a day later, after, 1 week, and after one month. Simple alternative to the conventional complete denture has provided the patients with a lot of benefits. The patients were satisfied with the prosthesis in terms of comfort, function and esthetics at the follow up appointments.



Fig 1: Preoperative photograph extra oral and intra oral



Fig 2: Tooth preparation with composite restoration



Fig 3: Border moulding and final impression of maxillary and mandibular arches



Fig 4: Final impression pour in dental stone

Fig 5: teeth arrangement



Fig 6: Try in



Fig 7: Finished complete denture prosthesis



Fig 8: Post insertion

III. DISCUSSION

Fabrication of tooth supported over denture is a step in the direction of preventive prosthodontics. The residual ridge reduction coupled with reduced dexterity at advanced age impairs the adaptation to denture prosthesis. The obvious way to prevent denture problems is to save the natural teeth. Healthy teeth with compromised periodontal status can be modified and retained for biomechanical and psychological advantages. Rehabilitation of the completely edentulous patients is extremely necessary as edentulism has an adverse effect on the patients' physical wellbeing. When patients present with few remaining teeth a partial denture cannot be made as the remaining teeth do not provide adequate support and the extraction of these teeth is undue loss of patients' available dental structure. Two most significant factors for the success of the overdenture are proper

selection of the patient and establishing careful mode of treatment that will satisfy both the patient and the dentist. Teeth that are mobile because of bone loss can become acceptable for overdenture support when the clinical crown is reduced to near ridge height. The main objective in using tooth- supported overdenture is to preserve the remaining supporting tissue and to restore missing structures in such a way as to provide maximum service for maximum amount of time. A major premise of tooth supported overdenture treatment is to transfer occlusal forces along the long axis of the supporting tooth, to minimise the horizontal torque and to allow for a more optimum situation for periodontal ligaments. It maintains the abutment as a part of the residual ridge which in turn provides more support than a conventional complete denture. When the teeth are retained, alveolar bone integrity is maintained as they support the alveolar bone. However, when teeth removed alveolar bone resorption process begins. With the preservation of the teeth there is also preservation of the periodontal membrane and this in turn preserves proprioceptive impulses resulting in better occlusal awareness, biting forces and consequent neuromuscular control. In routine clinical practice, overdenture should also be considered as a treatment modality for a patient who has few teeth left in the oral cavity.

IV. CONCLUSION

Tooth supported overdentures are still an excellent and economic therapeutic concept when compared to other expensive treatment options such as implant supported overdenture. In this study use of remaining teeth abutment as an aid to support complete denture is presented. Use of overdentures has been favoured often because of mechanical advantages. Even though the retained teeth may be periodontally compromised, they still may provide sufficient support for the transmission of masticatory pressure and periodontal ligament receptors to initiate a jaw opening reflex. The abutments enhance support and stability of the denture and slow the rate of alveolar resorption.

Overdentures thus become an alternative treatment for patients advised for near total extraction .Oral hygiene instructions must be given to the patient and thorough reinforcement of the same has to be done. Follow up should be done regularly so as to maintain the vertical height of the alveolar bone and also prevent any detrimental effects occurring beforehand.

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