



Case Report

Oral rehabilitation through preventive approach: Overdenture and fenestrated denture

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Abstract

Achieving excellence in aesthetics and preservation of remaining structure is the ultimate goal in preventive prosthodontic. Overdenture is a conservative and preventive approach and is essentially a preventive prosthodontic concept as it endeavours to preserve remaining teeth and thus found to be eminently suitable for treating patients with few remaining natural teeth. This case report discusses the merits of using selectively retained roots and abutments to minimize alveolar ridge resorption underneath the complete denture fabricated as maxillary overdenture and mandibular fenestrated denture.

Key words

Overdenture, Residual ridge resorption, Proprioception.

Introduction

Despite of all preventive measures, edentulism is still a major health problem and may leads to changes in most of the domains i.e. it not only affects oral functions but also affects social life and day to day activities and hence affects overall quality of life .Therefore every effort should be made to prevent tooth loss and to preserve any remaining tooth and efforts should be directed to returning an individual to an

idealised state of oral being [1]. Preventive prosthodontics emphasizes on the importance of any procedure that prevents or delays future prosthodontic problems and overdenture is based on this preservative approach [2]. This case report discusses the merits of using selectively retained roots and abutments to minimize alveolar ridge resorption underneath the complete denture fabricated as maxillary and mandibular overdenture.

Case report

A 65 years old female patient reported to the Department of Prosthodontics and Crown and Bridge, Post Graduate Institute of Dental Sciences, Rohtak. Patient's chief complaint was difficulty in chewing and also complaints of unpleasant appearance. **(Photo - 1)**

Photo – 1: Intraoral preoperative.



Intraoral examination revealed presence of left lateral incisor, canine and first premolar and right first premolar and second molar in maxillary arch and right side canine only in mandibular arch. Clinically, grade one mobility was found in maxillary right second molar. Periodontal findings were significant with calculus and gingival recession, with no pocket formation. Also cervical caries were present in maxillary left canine.

Diagnostic full mouth X-ray i.e. **OPG (Photo - 2)** revealed bone loss around teeth, treatment options were discussed with the patient. After considering the invasiveness, time and financial aspects, it was decided to give tooth supported overdenture in maxilla and fenestrated denture in mandible.

Clinical procedure

Diagnostic impressions were made using irreversible hydrocolloid for the maxillary and

mandibular arch. Followed by that, diagnostic mounting was done to find the required adequate inter arch space. The treatment plan was divided into two phases.

- **Phase - I:** Restoration of caries and endodontic treatment of all remaining maxillary teeth following oral prophylaxis.
- **Phase - II:** Prosthodontic rehabilitation.

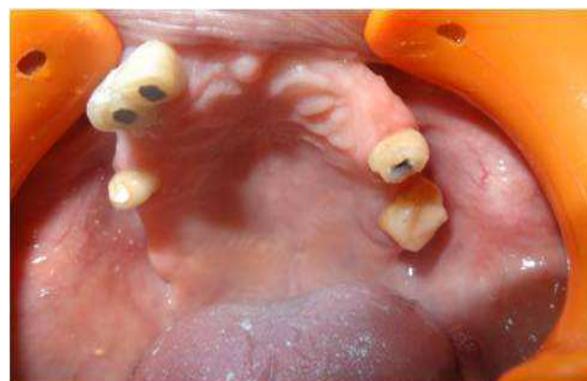
Photo – 2: OPG.



Phase – I: Endodontic treatment and oral prophylaxis

Firstly oral prophylaxis was carried out. Then, the restoration of the cervical caries was done. Following that, endodontic treatment was done for remaining teeth in maxillary and mandibular arch. **(Photo - 3)**

Photo – 3: Intra oral view after endodontic treatment.



Phase II Prosthodontic rehabilitation

Metal coping fabrication

The endodontically treated maxillary and mandibular teeth were prepared dome shape preparation with chamfer finish line for the fabrication of coping over them. Impressions were made with irreversible hydrocolloid and casting was done after die fabrication and fabrication of wax pattern. Coping was fabricated, polished and cemented using Glass ionomer luting agent. **(Photo - 4)**

Photo – 4: Copings in patient's mouth after cementation with GIC.



Prosthesis fabrication

Then primary impressions were made with additional silicone with the coping cemented.

Following custom tray were fabricated using self cured acrylic resins, border molding for maxillary and mandibular arch was done using the low fusing green-stick impression compound and secondary impression were made using zinc oxide eugenol paste. Then the Temporary denture bases were fabricated on master cast. Jaw relation recording was done. Casts mounted and teeth arrangement done. Followed by try in - During try in waxed dentures were checked in patient's mouth for esthetics, phonetics and occlusion. Then wax was removed from the labial and buccal surfaces of trial dentures leaving only sufficient wax to support teeth. PVS light body was placed on labial and buccal

surfaces and various movements like puckering, smiling and mouth opening were done. Putty index was made. Then light body was removed from the labial and buccal surfaces of denture and then putty index was re seated and wax was added into the gap created after removal of light body. Then prosthesis was acrylicised in heat polymerising resin with unaltered contours recorded previously.

After finishing and polishing denture insertion was done. The denture provides patient with improved facial appearance, stability and retention during function. **(Photo - 5, Photo - 6)** Patient was educated and instructed about oral hygiene measures. Patient recalled after 24 hours and then recalled for future visits. Patient reported with satisfaction with her denture.

Photo – 5: Maxillary and mandibular finished dentures.

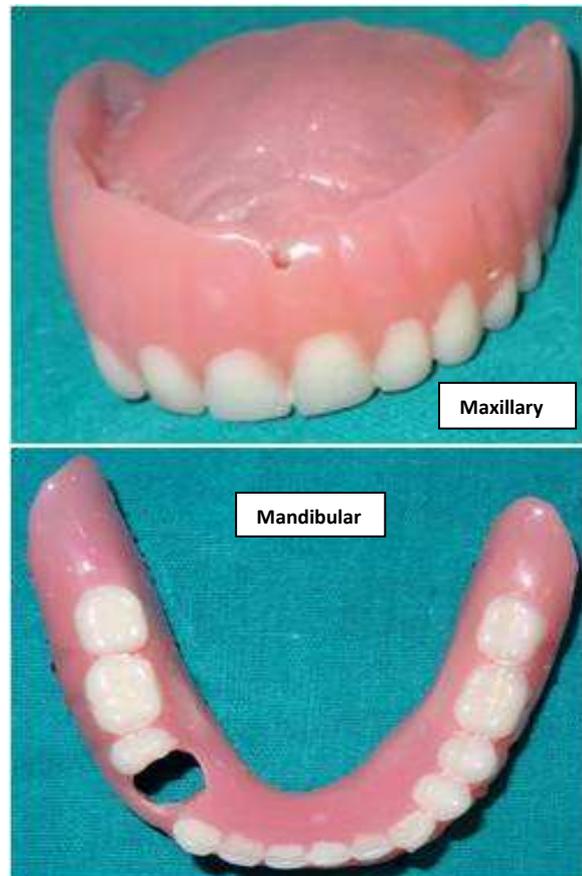


Photo – 6: Pre-operative view and post-operative view.



Discussion

Periodontal ligament maintains the structure of alveolar ridge. Removal of teeth removes PDL and its organizational influence on surrounding alveolar bone integrity and thus increase rate of residual ridge resorption [3, 4]. A study by Crum and Rooney compares bone loss in patients wearing conventional denture and overdenture and found that bone loss is more in patients with conventional denture [5]. Various studies have shown that there is a continuous resorption of residual alveolar ridge in completely edentulous patient with complete denture and this continuous resorption may

leads to serious prosthodontic problem and cause difficulties both for the patient and the dentist in the management of complete denture [6, 7, 8, 9]. Thus over denture accomplishes three major goals - it improves retention and support, decrease rate of resorption of alveolar ridge, increase in patients manipulative skills and enhances patients' denture coordination.

Tooth supported or Implant supported overdentures thus holds a new hope for completely edentulous patients. Implant supported overdentures though are the latest advancements but they also have some disadvantages like time and expense and also implants do not restore neuromuscular pathways therefore every efforts should be made to preserve remaining teeth and practise preventive dentistry by the use of overdenture. In a study by Renner, et al. 50% of the roots that were used for overdenture remains immobile and 25% of the roots which were initially mobile becomes less mobile and 25% roots which were initially mobile becomes immobile this is probably because of decreased crown: root ratio [10]. Most common problem encountered in overdenture is caries and gingivitis around abutment teeth [1]. NaF gel and 4% SnF₂ is effective in reducing caries and gingivitis around overdenture abutments [11, 12]. Chewing efficiency of overdenture patient is higher than that of conventional denture wearer [13, 14]. Various studies have shown that satisfaction and acceptance level of patient with overdenture is superior when compared with conventional denture and these patients accustomed to their prosthesis within shorter span of period [15, 16]. Overdenture overcomes many problems encountered by complete denture patients or conventional denture patients like progressive bone loss, poor retention and stability, low masticatory performance, loss of proprioception and therefore act as a panacea for complete denture

patients [17]. Though use of implant is also becoming very popular in order to overcome various conventional complete denture problems, however because of economic constrains or considering the economic norms and also because of lack of awareness patients usually cannot go for such procedures and therefore in such patient overdenture acts as a troubleshoot for patients with very few remaining teeth and this conservative approach is still valid. Overdenture is essentially a preventive prosthodontic concept, as it endeavours to conserve or preserve the remaining few teeth or roots and thus considered as a conservative and preventive approach.

Conclusion

Overdenture though not a new concept it is conservative and preventive approach. It is technique sensitive procedure but with proper patient selection and proper home care measures by the patient it can become an outstanding mode of treatment in patients with few remaining teeth or roots.

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