

Preventive Denture Therapy For Geriatric Patients

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Citation

A Hooda, M Rathee, G Jain. *Preventive Denture Therapy For Geriatric Patients*. The Internet Journal of Geriatrics and Gerontology. 2009 Volume 6 Number 1.

Abstract

Tooth loss carries a number of consequences, from simple loss of function to long term deleterious effects on the remaining residual bone, oral proprioception, temporomandibular joints and facial appearance. Over-denture therapy envisages preventive prosthodontic concept since it attempts to conserve the remaining few natural teeth. The rationale of the treatment approach using tooth supported over-dentures in two elderly patients is discussed.

INTRODUCTION

Over-denture is a complete or partial denture prosthesis constructed over existing teeth or root structure. It has been successfully used for many years, however, its use has become increasingly more popular as the emphasis on prevention in dentistry has grown.

Complete dentures present many problems which may be avoided by retention of some natural teeth, and their supporting structures serve as a useful function for long periods of time. The biologic maintenance of neuromuscular mechanism, the temporomandibular articulation and the supporting structures of a denture can be accomplished by teeth than the mucoperiosteum. Retention of these teeth makes possible a denture which provides support, retention, stability, and comfort superior to that of a complete denture.¹ Alveolar bone is preserved and the occlusal vertical dimension and centric relation are maintained. Facial and lip changes are minimized and the masticatory performance is maximized. The patient benefits psychological, functional as well as biologic advantages.

CASE REPORTS

CASE 1.

A 65 years old female presented with chief complaint of difficulty in chewing food and wanted to get her missing teeth replaced. There was history of extraction of maxillary incisors three months back. Medical and family history was non-contributory.

Intra-oral examination revealed missing mandibular first molar on right side and first premolar, first and second molar on the left side. In maxillary arch, only bilateral canines with

grade one mobility, were present maintaining the vertical dimension. The natural teeth showed attrition. Oral mucosa and tongue were normal. (Fig 1)

Figure 1

Fig 1: Showing pre-operative view.



Oral prophylaxis was done. The maxillary canines were selected to act as abutments for overdenture and treated endodontically. The abutments were prepared till just above the gingival margin with a uniform taper of 3-5 degrees and apical chamfer at dentogingival junction. This design provides support and permits the stresses of occlusion to be directed along the long axis of the abutments and allow for some movement of the denture, with tooth not contributing in the retention of the denture. Metal copings were cast using standard technique and cemented over prepared canines. (Fig 2)

Figure 2

Fig 2: Showing metal copings cemented over prepared canines.



The over-denture was fabricated following the conventional technique of denture fabrication. The final prosthesis showed good esthetic and functional results.

CASE 2

A 73 years old male patient presented for extraction of left and right mandibular canines and wanted to get a new set of dentures.

On intra-oral examination, maxillary arch was completely edentulous, and left and right canines were the only teeth present in the mandibular arch. The right canine had cervical caries and left canine had cervical restoration with marked attrition and good periodontal support. No other significant finding was observed in the oral cavity. (Fig 3) The patient was motivated to retain the teeth.

Figure 3

Fig 3: Showing remaining natural teeth.



Root canal therapy was done in right and left mandibular canines. The canines were prepared to receive metal copings following principles of tooth preparation with the deviation that the flattened occlusal surface of abutments is rounded

in. Metal copings were made to cover the prepared teeth and cemented to place. (Fig 4)

Figure 4

Fig 4: Showing metal copings cemented over prepared canines.



Complete denture was fabricated following the conventional method except that the recess was created on the impression surface of the denture to accommodate the abutments. (Fig 5)

Figure 5

Fig 5: Showing complete denture over restored abutments.



DISCUSSION

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.² Healthy teeth with compromised periodontal status can be modified and retained for biomechanical and psychological advantages; this preventive approach can be achieved by means of over-dentures.³

The over-denture accomplishes three goals. First; it maintains teeth as a part of residual ridge, which gives psychological benefit and more support and retention to the

denture. Second goal achieved by the over-denture is biologic. Resorption of the alveolar ridge, which is worsened in complete denture wearer, is decreased.⁴ The third goal is achieved by over-denture is an increase in the manipulative skills in handling the denture as the proprioceptive impulses from periodontal membrane are preserved.⁵ It provides the option of conversion to accept the alteration in case any abutment is extracted.

Two most significant factors for the success of the over-denture are the selection of the proper type of patient and establishing careful mode of treatment that will satisfy both the patient and the dentist.⁶ Root canal therapy is a necessary phase of preparation for the selected teeth, single rooted or double rooted teeth with readily accessible canals are preferable. Periodontal evaluation is a critical stage in the construction of an over-denture. Strategically located remaining teeth with poor crown root ratio or broken down crowns with good root support may be treated and prepared for use as support for complete over-dentures.⁷ Teeth that are mobile because of bone loss can become acceptable for over-denture support when the clinical crown is reduced to near ridge height. Careful considerations must be given in the selection of young patients as the needs and failures can be much greater in these patients.⁸ Preservation of teeth on both arches should be considered as an over-denture possibility particularly if opposed by a complete complement of natural teeth. However, because of its smaller basal seat potential and propensity for resorption, the mandibular arch is commonly considered as an over-denture recipient. The location of the remaining teeth is important. The isolated teeth located in the areas of arch that are subjected to the most occlusal stress, bone resorption and related more dynamically to changes in vertical dimension. The cuspid bicuspid and molar teeth are the most often utilized as abutment for over-denture support.

The various techniques used in the treatment of teeth to serve as abut for over-denture ranges from simple tooth modification and reduction, tooth preparation with cast coping to endodontic therapy with amalgam plug or cast coping utilizing some form of attachments.⁹

The possible complications and failures of over-dentures can be tooth decay, gingivitis, endodontic failure, vertical root fracture. The incidence of tooth decay is between 6%-35% which can be controlled by covering the abutment with cast copings, use of bonding agents and maintenance of oral

hygiene.¹⁰ The incidence of gingivitis is between 4-13% as reported by Jorgensen.¹¹ The abutments can be maintained with meticulous home care and professional guidance. Most common cause of endodontic failure were periapical lesions developed in 19.8% of endodontically treated teeth and 37% in vital teeth. Vertical root fracture is more common in maxilla when opposed by natural teeth and represents 30.9% of over-denture abutment failures.¹²

Over-denture is an outstanding mode of treatment. Emphasis on proper patient selection, patient motivation, basic prosthodontic principles, maintenance of oral hygiene, proper home care and recall visits can assure successful outcome of over-denture therapy.

CONCLUSION

When all dental restorative treatment possibilities have been considered, have resulted in failure or have been found impractical for whatever reasons, the decision to render the patient edentulous must be faced. The selective use of retained vital roots and more constant ridge height and contours will contribute to long lasting denture stability.

References

1. Dodge CA. Prevention of complete denture problems by use of "over dentures". *J Prosthet Dent* 1973; 30: 403-11.
2. Pound E. cross-arch splinting versus premature extraction *J Prosthet Dent* 1966; 16: 1058-68.
3. Brewer AA, Fenton AH. The overdenture. *Dent Clin North Am* 1973; 17: 723-46.
4. Crum RJ, Rooney GE Jr. Alveolar bone loss in overdentures: A 5-year study. *J Prosthet Dent* 1978; 40: 610-3.
5. Levin AC. Periodontal discriminatory ability in human subjects with natural teeth, overlay dentures and complete dentures. *J Dent Res* 1979; 42: 12-6.
6. Toolson LB, Smith DE. A five-year longitudinal study of patients treated with overdentures. *J Prosthet Dent* 1983; 49: 149-56.
7. Lord JL, Teel S. The overdenture: Patient selection, use of copings and follow-up evaluation. *J Prosthet Dent* 1974; 32: 41-51.
8. Ettinger RL, Taylor TD, Scanderrt FR. Treatment needs of overdenture patients in a longitudinal study: Five-year results. *J Prosthet Dent* 1984; 52: 532-7.
9. Henking JP. Overdentures. *J Dent* 1982; 10: 217-25.
10. Keltjens HM, Schaeken MJ, van der Hoeven JS, Hendriks JC. Caries control in overdenture patients: 18-month evaluation on fluoride and chlorhexidine therapies. *Caries Res* 1990; 24: 371-5.
11. Budtz-Jorgensen E. Prognosis of abutments in elderly patients with controlled oral hygiene. A 5 year study. *J Oral Rehabil* 1995; 22: 3-8.
12. Ettinger RL, Qian F. Post-procedural problems in an overdenture population: A longitudinal study. *J Endod* 2004; 30: 310-4.

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