ABSTRACT

'It is more important to preserve what already exists than to replace what is missing' as stated by MM Devan has never been challenged or disapproved. As a dentist our main aim should be prevention which not only includes prevention of caries and or periodontal disease but also prevention of residual alveolar bone loss after teeth are extracted. The resorption being progressive and irreversible and if allowed to proceed to excessive levels it will jeopardize the ability to construct satisfactory removable prosthesis. It was due to this stated uncontrollable bone resorption that other techniques for alveolar bone maintenance were evaluated, over-dentures being one of them. This is a clinical report which describes use of selectively retained teeth as abutments to minimize alveolar ridge resorption below the complete dentures.

Keywords: Overdenture, Residual ridge resorption, Abutment.

INTRODUCTION

In the past when patients presented themselves as candidates for a denture with teeth that were badly broken down with periodontal involvement or without the ability to financially support an extensive restorative treatment, those teeth were extracted that could have been retained under more favorable conditions which leads to severe residual ridge resorption. Over dentures helps to overcome this problem along with other problems posed by conventional complete dentures like poor stability, retention, loss of periodontal proprioception, low masticatory efficiency, etc. Over denture therapy is essentially a preventive prosthodontic concept since it attempts to conserve the few remaining natural teeth. There are two physiologic tenets related to this therapy: the first concerns the continued preservation of alveolar bone around the retained teeth while the second relates to the continuing presence of periodontal sensory mechanisms that guide and monitor gnathodynamic functions.

CASE REPORT

A 60-year-old male patient reported to the department of Prosthodontics, Crown and Bridge and Implantology with the chief complaint of difficulty in chewing and dissatisfaction with his speech. Patient gave history of loss of teeth since three years due to caries and gum problems.

Clinical and radiographic examination revealed that maxillary canines were periodontally sound with no mobility, no periapical pathology. There was insufficient buccal sulcus depth present bilaterally in maxillary posterior region due to the early loss of posterior teeth and alveolar bone loss. Patient did not agree for extraction of remaining maxillary teeth and also could not afford implant supported over denture, due to poor economic conditions.

After careful consideration of the various treatment plans, the patient opted for a tooth supported overdenture. Usually canines, premolars, and incisors are retained for overdenture support. In this case, we preferred to retain canines which are favorable abutments clinically and at the same canine possess more number of proprioceptors in their periodontal ligaments.

PROCEDURE

Step 1: Preparation of Copings

After obtaining the consent of the patient, intentional root canal treatment were done on 13 and 23 (Fig. 1), abutments were prepared to receive 3 mm height coping with a chamfer finish line (Fig. 2). The finish line was prepared subgingivally. After the tooth preparation impression with putty (Photosil soft putty, DPI, India) and light body (Photosil light body, DPI India), of polyvinyl siloxane elastomeric impression material was made using putty wash technique (Fig. 3).

The impression was poured with die material to obtain cast on which wax pattern for copings were prepared in inlay wax. The patterns of the copings were dome shaped with an anti-rotation provision. The patterns were then sprued, invested and casted. After retrieving casting from the investment, it was finished and its fit and parallelism was evaluated on the cast using surveyor. Later the fit was checked in the patient’s mouth, after which they were cemented on to the abutments with glass ionomer cement (Fig. 4).
Step 2: Fabrication Overdenture

Primary impression was made with irreversible hydrocolloid (Algitek, Alginate dental impression material, DPI, India) (Fig. 5) to obtain primary cast. A custom acrylic resin tray was fabricated over the cast using 2 mm wax spacer to accommodate the final impression material.

After adjusting the custom tray, border molding was done with green stick compound and a secondary impression was made with light body elastomeric material (Fig. 6). Master cast was obtained by pouring the secondary impression with type IV gypsum product (die stone).

Copings on master cast were covered with wax, and trial denture base was fabricated with chemically cured acrylic resins after applying separating media over the master cast. The placement of wax over the copings, prevents the fracture of the abutments on master cast during removal of temporary acrylic trial denture base at the time of dewaxing.

Occlusal rims were fabricated and the upper cast was mounted on to the semiadjuatable articulator using face bow (Fig. 7). Later lower cast was mounted using the centric records (Fig. 8). Teeth arrangement was completed and try-in was done. Trial denture was processed and inserted into the patients mouth. Occlusion was corrected and the patient was given proper instructions regarding the maintenance of the denture and follow-up visits after every 6 months was done (Figs 9 and 10).

Patient was asked to clean the impression surface of the denture with soft bristle brush. He was asked to keep the denture in a container containing water during night. The patient was asked to maintain oral hygiene by brushing around the copings and rinsing after taking meals.

DISCUSSION

It is a documented fact that after the loss of the teeth the residual alveolar ridge undergoes rapid loss in all
Fig. 5: Primary impression

Fig. 6: Secondary impression

Fig. 7: Face-bow transfer is done

Fig. 8: Cast mounted on semiadjustable articulator

Fig. 9: Intraoral view of prosthesis

Fig. 10: Extraoral view after denture insertion
dimensions. The residual ridge resorption (RRR) is stated to be rapid, progressive, irreversible and inevitable and has been well observed and documented in literature. It is equally well observed that bone is maintained around long standing teeth and implants. Retaining teeth as over denture abutments seems to slow the rate of alveolar bone resorption. The physiologic objective is to provide for the tensile stimulation of as many of the oblique periodontal fibers as possible, the end result is the deposition of more bundle bone followed by concomitant decrease in abutment mobility. The support provided by the abutment teeth is in addition to that supplied by the residual ridges. The stability is enhanced by the vertical component of the retained tooth/root in the alveolar bone. The factors of border seal and tissue adaptation are more constant during function in over dentures than in conventional dentures, and retention is enhanced by the increased support and stability. An additional feature is proprioception through the periodontal fibers, over dentures gives the patient a sense of discrimination to touch and pressure, which is less possible by using conventional complete dentures.5

CONCLUSION

Inspite of the popularity of Branemark introduced ‘third dentition of titanium roots’, i.e. implants, still the natural tooth/root supported over denture remains excellent treatment modality, because of its available periodontal proprioception and the maintenance of bone support which is not present in the implant supported prosthesis. Well fabricated overdenture with good oral hygiene is the most successful treatment option for preventing/minimizing residual ridge resorption.

REFERENCES