

Prosthodontic Rehabilitation of Mandibular Tooth Loss Using Radicular Retention and Support-A Preventive Approach



Medical Science

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Dr. Manu Rathee

Senior Professor and Head, Department of Prosthodontics, Post Graduate, Institute of Dental Sciences, Pt. B.D Sharma University of Health Sciences, Rohtak, Haryana, India.

Dr. Poonam Malik

Flat No. 33A, Plot No. 17, Sector 18, Dwarka, New Delhi, India

ABSTRACT

Removable overdentures gaining support and retention either from roots of teeth or implants have more predictable prosthodontic outcome. This clinical report describes the fabrication of mandibular overdenture retained by post system and maxillary flexible removable partial denture for oral rehabilitation.

Introduction

Edentulism leads to an impairment of oral function with aesthetic and psychological changes. Moreover, adaptation to conventional complete dentures is a complex learning process, when considered on a somatic and psychological basis due to ongoing residual ridge resorption, physiological intra-oral changes and the development of altered muscular patterns. As per De Van's dictum, "it is more important to preserve what already exists than to replace what is missing," and it has never been disapproved. It is therefore acknowledged that patients with removable overdentures gaining support and retention either from roots of teeth or implants have more predictable prosthodontic outcome. This clinical report describes the fabrication of mandibular overdenture retained and supported by post system and maxillary flexible removable partial denture for oral rehabilitation the patient.^[1-6]

Case Report

A 35-year-old female reported with the chief complaint of missing teeth. Intraoral examination revealed partially edentulous maxillary and mandibular arches. In the mandibular arch, first premolars were present bilaterally and were vital. (Fig 1) There was moderate ridge resorption in relation to bilateral mandibular posterior ridge. In the maxillary arch, right canine and premolars, and left first premolar were present. These were periodontally sound, with slight gingival recession.



Figure 1. Intraoral preoperative view.

The patient was dissatisfied by the previous ill fitting removable partial dentures. All the possible treatment options were explained to the patient. After a careful consideration the treatment mutually agreed was decided as an overdenture with semi-precision attachments for mandibular arch and a flexible partial denture for maxillary arch. An informed consent was obtained from the patient.

Clinical Procedure

Diagnostic impressions were made using irreversible hydrocolloid for the maxillary and mandibular arch. The diagnostic mounting revealed adequate inter arch distance for necessary components and esthetic and functional placement of acrylic teeth.

Creation of the Post Space

Post space was made to use approximate size of the extra coronal attachment. Canals were prepared using passo reamers of 4 size corresponding to the size of extra coronal attachment. Obturated root canals were explored with passo reamers in a sequential manner on mandibular premolars bilaterally to remove gutta percha 4mm short of the apical foramen. After achieving adequate post space on mandibular premolars bilaterally, the pre-fabricated semi precision attachments were inserted individually into each canal for checking the parallelism and fit. These attachments were then cemented on mandibular premolars bilaterally using glass ionomer cement and verified by intraoral periapical radiograph. (Fig 2)



Figure 2. Radicular attachments in mandibular premolars.

Prosthodontic Phase

Custom trays were fabricated using self cure acrylic resin, border moulding was done using low fusing green-stick material and final impressions were made. Record bases were fabricated and occlusal wax rims were prepared. Jaw relations were recorded and the casts were mounted on a semiadjustable articulator, teeth arrangement and further try-in procedures were carried out. The maxillary prosthesis was processed using injection molding technique for flexible denture and mandibular overdenture was processed using the conventional compression molding technique.

The intaglio surface of mandibular denture in premolar region was relieved bilaterally using carbide burs to incorporate female component. The female component was an elastic module acting as an elastic O-ring. (Fig 3) This was incorporated in the intaglio surface of the denture base. (Fig 4)

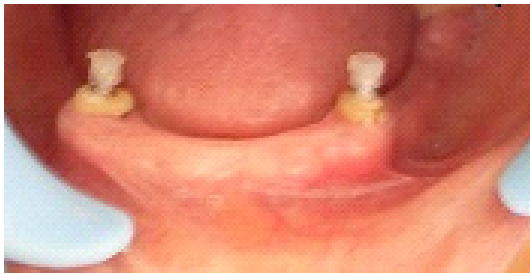


Figure 3. The elastic module on the attachments.



Figure 4. Intaglio surface of prosthesis.

The finished and polished dentures were then inserted in the patient's oral cavity. The radicular post and attachment provided support and retention maintaining the proprioception.

Discussion

The physiological basis of overdenture therapy lies in the continued retention of reduced natural teeth under the denture base. The abutment teeth so retained apart from supporting and anchoring the appliance, contribute towards continued preservation of alveolar bone and periodontal proprioception. As advocated by some authors such as, Atwood^[7] who observed that the residual ridge resorption after tooth loss was chronic, progressive, cumulative, irreversible and perhaps inevitable and also Loisel^[8] et al who reported that in patients wearing complete lower overdenture, there was no discernible change in the anterior alveolar ridge height over a period of two years. In this case the retained teeth were the premolars. The premolars form the ideal location for an overdenture abutment as they are link between the occluding molars and incising incisors, thus they serve the purpose. Also as the teeth were prepared to the gingival level, the lost height of the coronal portion itself provided the space for the overdenture attachment. The added advantage of stud type of attachment is that they were low profile, no parallelism required, easy hygiene maintenance and enhanced crown/root ratio. The overdentures are a superior health service compared to the conventional mucosa supported complete dentures.

Conclusion

Oral rehabilitation is receiving more emphasis when a patient has few retainable teeth to support the conventional prostheses. The pitfalls of the mucosa supported complete dentures can be partly overcome by retaining the few teeth or even roots of the teeth. Hence, overdentures are a valid approach to preventive prosthodontics.

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