



MANDIBULAR IMPLANT SUPPORTED OVERDENTURE WITH MAXILLARY TOOTH SUPPORTED OVERDENTURE: A PREVENTIVE PROSTHODONTIC APPROACH

Dental Science

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ABSTRACT

The concept of conventional tooth-retained overdentures is a simple and cost-effective treatment than the implant overdentures. And in fully edentulous patients. The implant-supported prosthesis is an alternative to the conventional removable denture especially in mandible requiring more retention stability, function and esthetics.

The concept of overdentures may not be the elixir, but it is a positive means for delaying the process of complete edentulism and helps in the preservation of bone. To top it all, it gives the patient the satisfaction of having prosthesis with his natural teeth still present. In this article, case report with maxillary tooth supported overdenture and mandibular implant supported overdenture is discussed.

KEYWORDS

Preventive, Implant Supported, Coping, Overdenture

INTRODUCTION

Extraction of natural dentition and replacement with a complete denture is not the most desirable treatment.¹ Due to extractions, there is loss of teeth and periodontal structures. This leads to lack of stimulation leading to a continuous ridge resorption, leading to a poor denture foundation. In order to delay bone resorption post extraction or loss of teeth, preventive measures that emphasize the importance of any procedure that can delay or eliminate future prosthodontic problems are being encouraged.² As the emphasis on prevention is grown in the dentistry overdenture is a preferred treatment modality. The overdenture technique was originally introduced to reconcile a need for maximum support in morphologically compromised dental arches.¹ However the most important physiologic goals related to this therapy are; continued preservation of alveolar bone around the retained teeth, and the continuing presence of periodontal sensory mechanisms that guide and monitor gnathodynamic functions.¹

Moreover, in completely edentulous patients, the use of conventional dentures has long offered benefit by providing improvement in function and esthetics.³ More recently, the emphasis of conventional denture therapy has shifted toward implant-supported mandibular overdentures as potentially a preferred treatment option for edentulous patients.⁴⁻⁶ Retention and stability problems of the mandibular prosthesis often cause complaints of oral function in complete-denture wearers. This article presents a case report of fabrication of maxillary coping type tooth supported overdenture and mandibular implant supported overdenture.

CASE REPORT

A 54 year old female reported to department of prosthodontics with a chief complaint of missing teeth causing inability to masticate food and difficulty in speech. she wanted replacement of missing teeth so that the function can be restored.

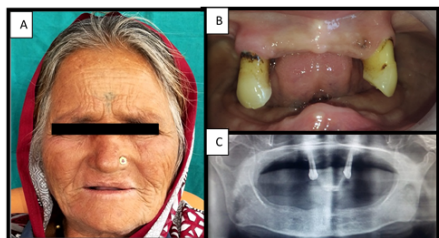


Fig.1- A. Preoperative extraoral view. B. Preoperative intraoral view. C. Preoperative OPG

On examination, She had partially edentulous maxillary arch with Kennedy type I modification 1. ie 13 and 23 were present and completely edentulous mandibular arch. Radiographs were made showing adequate bone support with 13 and 23 (fig. 1), then diagnostic impressions were recorded and diagnostic jaw relation were recorded at the anticipated occlusal vertical dimension (fig. 2) to assess the inter-arch space. It was found to be sufficient for an overdenture with short copings with 13 and 23 and mandibular two implant supported overdenture

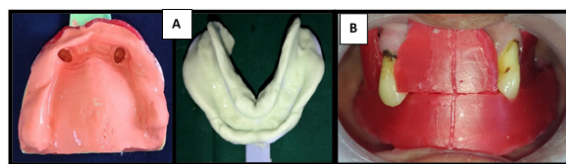


Fig.2- A. Diagnostic impressions. B. Tentative jaw relation

After intentional root canal of 13 and 23, they were prepared with tapered round end diamond point with chamfer finish line made subgingivally. Preparation for the post (fig. 3A) was done 4 mm short of the apical length. Custom post was prepared with the help of a trimmed matchstick with pattern resin (Duralay inlay pattern resin). The copings were dome shaped and extra pattern resin was trimmed off. Care was taken to see if there was complete penetration into the prepared canal and no bubbles are present. These were then sprued and finally casted in Base metal alloy (Hera P, Heraenium at cobalt chromium alloys, Heraeus Kulzer). The copings obtained were checked for fit in the patient's mouth and finally cemented with glass ionomer cement. (fig. 3B) The thickness of the copings was 1 mm.

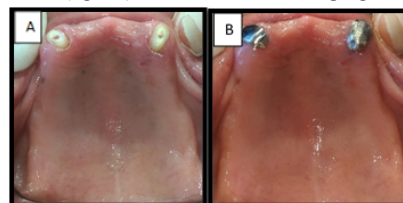


Fig.3- A. Tooth preparation. B. Primary copings in place

Primary impression for the maxillary and mandibular arch was made with alginate (Neocolloid). The impressions were poured and special trays were fabricated with self-cure acrylic resin. Border molding was done for both the arches with low fusing compound. Final impression

for the maxillary and mandibular arch was made with regular body elastomer (Aquasil, Dentsply Caulk). (fig. 4)

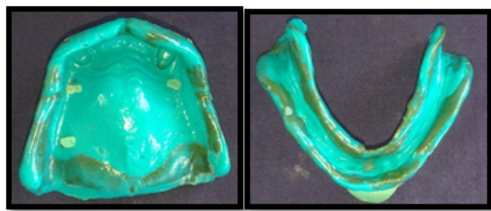


Fig.4- Maxillary and mandibular final impressions

Master casts were prepared by pouring the impressions in Type IV gypsum (Ultrarock, Kalabhai Karson Pvt. Ltd.) Copings on the master cast were covered with wax and record base fabricated after applying separating media. Placement of wax over abutments prevents the fracture of the cast during removal of the temporary record base at the time of dewaxing. Occlusal rims were fabricated; maxillomandibular relations recorded and transferred onto the semi-adjustable articulator with the help of face-bow(fig.5A).

Teeth setting was done, evaluated in the patient's mouth for phonetics, vertical and centric relation and finally esthetics(fig.5B). Vertical dimension was verified and centric and eccentric contacts checked. Patient's approval was taken, and the curing of the final denture was done in heat-cure acrylic resin (Lucitone199 denture base material, Dentsply, Germany). Denture insertion was carried out(fig.5C).

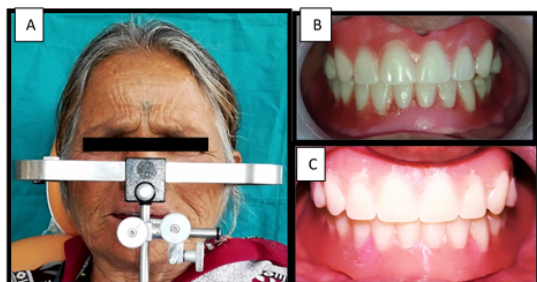


Fig.5- A. Facebow record. B. Try-in of waxed up denture. C. Denture insertion prior to implant placement

The proposed position of the implants were determined by using radio opaque markers incorporated in the denture teeth of the new prosthesis. After that the denture was duplicated for the use of a surgical guide to ensure accuracy. Proper antibiotic regimens were given to the patient and surgery was carried out with proper sterilisation protocol. Implants(Myriad™ Snap) were placed in canine regions bilaterally of size 3.3×8 mm in both regions(Fig. 6A). Sutures were given followed by postoperative antibiotics.

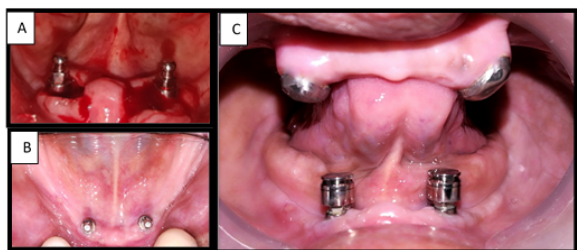


Fig.6- A. Implant placement. B. Implants after healing period. C. Maxillary copings and mandibular implants with housings

After 8 days suture removal was done. And after 3 months prosthetic phase was carried out in which relief holes were drilled at healing abutment position and a passive path of insertion and removal of the denture over the attachments was established. After appropriate moisture control and block-out procedures, auto polymerizing acrylic resin was injected into the relief holes while stabilizing the denture. The patient was asked to gently close into centric occlusion. After polymerization, stability and adequate encasement of the attachment housing in the acrylic resin was confirmed. After that the definitive attachments were inserted into the metal housing and adequate engagement of the abutments were confirmed intraorally. Then

adjustment in the polished surfaces of the denture was carried out for patient comfort and occlusal adjustments were done followed by denture insertion.

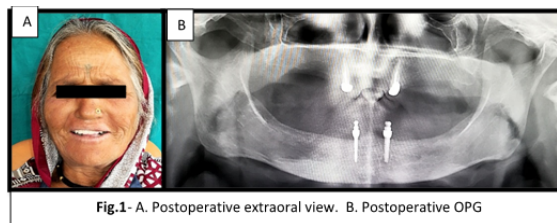


Fig.1- A. Postoperative extraoral view. B. Postoperative OPG

DISCUSSION

Overdenture therapy constitutes essentially a preventive prosthodontic concept as it endeavors to preserve the few remaining teeth and the supporting structures.^{3,7-9} The teeth which are too weak to support a fixed partial denture and are considered unsuitable to support a removable partial denture can oftentimes be usefully conserved and suitably modified to act as abutments under overdentures for useful span of time.

The literature and clinical experience indicate that the implant-supported prosthesis provides predictable results with improved stability and function and a high degree of satisfaction as compared with conventional removable dentures.^{1,2,8,10} Clinical studies in the literature in which implants were used in the mandible anterior to the foramen indicate that the success rate for implants in the mandible is 95 percent or greater. This data indicate that implant-supported prostheses should be considered in planning treatment for the fully edentulous patient.

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