



RESEARCH ARTICLE

IMPLANT RETAINED MANDIBULAR OVERDENTURE: A VIABLE TREATMENT OPTION FOR LONG SPAN BILATERAL PARTIAL EDENTULISM

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ABSTRACT

Rehabilitation of distal extension partial edentulism prosthetically has remained a significant challenge over the years. Conventional partial dentures are not accepted satisfactorily by the patient due to lack of adequate retention and stability and reduction in bite force particularly in the mandible. Implant retained overdentures can bridge the gap between traditional removable prosthesis and fixed implant restorations.

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INTRODUCTION

Conventional removable partial denture has been the common treatment modality for partial edentulous patients. It can impact the quality of life of geriatric population if it is inadequate in function. This treatment modality has several drawbacks specially in case of mandibular denture. Implant retained overdenture can provide successful outcome and overcome the functional deficiencies of the conventional denture. The practical advantage of these dentures over the conventional one is decreased bone resorption, decrease in prosthetic movement, better retention and occlusal function with maintenance of vertical dimension. The attachment systems for retaining the overdentures can be stud, bar, telescopic and magnetic attachments. In this case report ball and socket attachments have been used to retain the denture in place.

CASE REPORT

A 37 year old patient reported to the department for rehabilitation of his partial edentulous mandible. The chief complaint of the patient was compromise in retention of a conventional mandibular partial denture. His dental history was extraction of periodontally compromised teeth in the lower arch followed by conventional removable partial denture.

Clinical examination revealed long span distal extension partial edentulism with missing 35, 34, 33, 32, 31, 41, 42, 43, 44, 45, 46 and 47 with overlying healthy mucosa (Fig. 1 & Fig. 2). Orthopantomograph was advised to evaluate the bony architecture. There was moderate resorption in the lower right posterior region. The interarch space was assessed. Routine blood examination revealed no pathological finding and patient had no significant medical history. After thorough examination a implant retained overdenture was planned for this particular patient. Two stage surgical protocol was followed for this case. Patient was premedicated with antibiotics and NSAIDS before the surgery. Mandibular partial denture was fabricated in a conventional manner and occlusion was checked. Deflecting contacts in both centric and eccentric positions were eliminated. Diagnostic impressions for maxillary and mandibular arch were made with irreversible hydrocolloids before surgical procedure. The casts were poured. A surgical template was prepared with clear acrylic and holes were made for proper placement of the implant (Fig. 3). Orthopantomograms and casts were studied carefully to select the implant position (Fig. 4). These holes were used for the pilot drill. A midcrestal full thickness incision was given in the respective region of implant placement. Once the flap was reflected the osteotomy began by placing pilot drill with copious irrigation. The final osteotomy after sequential drilling.



Fig 1: Maxillary arch

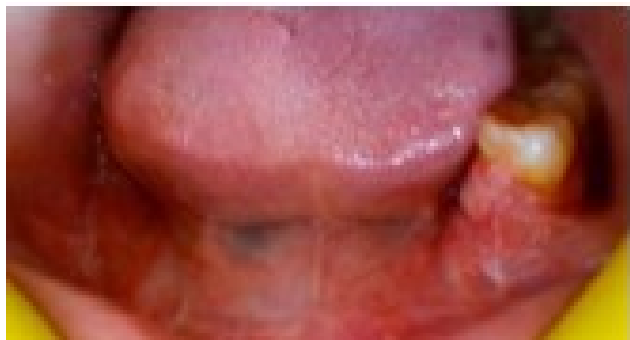


Fig 2: Mandibular arch



Fig 3: Stents for positioning implants



Fig 4: Postoperative orthopantomogram

Then the implants were placed with a torque of 45/N cm² by a torque measuring wrench which ensures good primary stability. Endosseous root form implants (3.5x11mm) (Adin, Dental implant system Ltd. Israel) were placed. The cover screws were placed and the implants were covered with mucosa and suture given. Patient was instructed to use disinfectant mouth rinse for 3-5 times daily.



Fig 5: After Second stage surgery

Sutures were removed after seven days. Radiographs were taken after 3 months to check osseointegration.

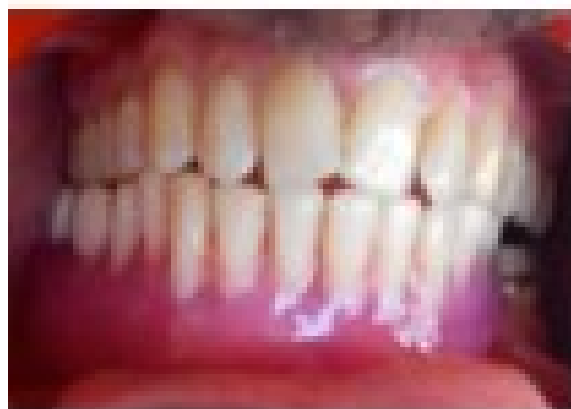


Fig 6: Implant supported prosthesis in place

The implants were exposed in 2nd stage surgery after satisfactory osseointegration (Fig. 5). The cover screws were removed and the sites were irrigated with normal saline. Healing collars were placed for 1 month.



Fig 7: Intaglio surface of the overdenture

Mandibular denture was relined with a soft tissue conditioning material (GC Reline, soft TM). After 1 month the fit of the denture was checked before addition of attachments. Ball and socket overdenture abutment of 2mm diameter (NP-0022) was selected. Seating of the abutment was verified. The attachments were placed and O-rings on the abutments were blocked out. Acrylic resin was removed from the tissue surface of the denture to allow passive fittings.

A round bur was used to vent the pick up space toward the surface of the denture. Vents were placed on the lingual aspect of denture teeth. CG pattern resin was used to fill up the pick up space. Then the denture was placed over the abutments (Fig. 6). Complete seating of the denture was ensured (Fig. 7 & Fig. 8). Patient was asked to maintain light pressure until the resin polymerized. The pick up resin was trimmed properly and polished.



Fig 8: occlusal surface of the overdenture

The denture was again checked for proper fit and occlusion in centric position. Patient was instructed for maintenance of oral hygiene and prosthesis. Patient was trained for the placement and removal of the prosthesis. The patient was instructed to remove the prosthesis at night. A soft bristle brush was indicated to remove the plaque from attachments. Patient was recalled periodically and found quite satisfied with the denture.

Discussion

Conventional removable prosthesis are frequently complained of inadequacy to provide functional requirements. Dental implant retained overdentures in this case provided overall satisfaction and enhanced nutritional status.

This denture also allows the tongue and perioral muscles to resume its normal function and provides stability to the denture. In this case ball attachments were used for sufficient space availability and placement of implants were parallel to each other. Incorporation of matrices into the overdenture in the laboratory was avoided in this case. The method used here ensures proper fit of the denture. This case ensures proper implant parallelism and maximum initial stabilization, path of placement and removal.

CONCLUSION

Restoration of a resorbed distal extension situation is a challenge. Among different treatment modality an implant retained overdenture can accept the challenge. It has been accepted widely but still controversy remains regarding the design, selection of appropriate attachment system and techniques of fabricating the over denture. However, further research need to be conducted to improve the success rate of mandibular implant supported overdenture.

Consent: Patient's written informed consent obtained.

Conflict of interest: There is no conflict of interest.

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