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Case Report

IMPLANT SUPPORTED OVERDENTURE- A CASE REPORT

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A B S T R A C T

The management of the completely edentulous patient prosthetically has been a key task withComplete maxillary and mandibular dentures being used as conventional modality. Problems like lack of comfort, retention, stability and inability to masticate have been reported by patients while adapting to their mandibular denture. Implant-supported overdentures overcome these complications and have been a common treatment for edentulous patients for over past 20 years with predictably good results. These offer advantages like decreased bone resorption, reduced prosthesis movement, better esthetics, improved tooth position, better occlusion, increased occlusal function and maintenance of the occlusal vertical dimension over conventional complete dentures and removable partial dentures. This article presents design and fabrication technique of the implant-retained overdenture that uses two freestanding mandibular implants.

INTRODUCTION

Edentulism imposes various challenges to the patient as well as the clinician, among which bone resorption especially in mandible is crucial to be considered while prosthodontic rehabilitation**.** Mandibular two-implant supported overdenture is shown to be exceptionally superior to the conventional removable complete denture in various studies.[1] Randomized and non-randomized clinical trials with the observation period from six months to nine years have confirmed better performance of implant supported overdenture to conventional removable prosthesis.[2] Also these are treatment modality of choice in cases where facial support is needed as it restores both dental and alveolar tissues thus satisfying esthetic concerns.[3] With the continual innovations in technology, treatment modalities nowadays can effectively satisfy functional, economic and social needs of individual patient.

Case Report

A 55-year-old male patient reported for the prosthodontic rehabilitation of his edentulous jaws with ill-fitting mandibular denture and insignificant past medical. His dental history included extraction of the periodontally involved teeth and their replacement with maxillary and mandibular immediate dentures. These dentures were relined on several occasions.

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Clinical examination included an evaluation of size and shape of the edentulous ridge, palpation for undercut and an assessment of condition of the mucosa. Clinical examination revealed completely healed maxillary and mandibular edentulous ridges.Mandibular ridge exhibited a moderate degree of alveolar ridge resorption in posterior region. Overlying mucosa was healthy and normal. Temporomandibular joint examination was found to be normal. Evaluation of the existing dentures revealed inadequate denture extensions, poor retention and stability. Orthopantomograph was advised to evaluate bone availability and architecture. The inter-ridge distance was assessed. Routine blood examination revealed no abnormal findings. A treatment plan was prepared after a standard protocol that included fabrication of a conventional complete denture for the maxillary arch and a 2- free standing implant-supported overdenture for the mandibular arch. This treatment plan was explained to the patient and was approved by him.

Treatment procedure: Maxillary and mandibular dentures were fabricated in conventional manner. Bilateral balanced occlusal scheme was selected. Deflecting contacts in both centric and dynamic parafunction were eliminated. The mandibular denture was duplicated in a 2-part top and bottom poly vinyl siloxane (ReprosilTMDentsply) using clear auto-polymerized acrylic resin (DPI self cured Acrylic resin, Clear). This was used as a surgical template. The desired implant location was marked on the duplicate denture and stone cast. Corresponding implant position and angulations were marked on the surgical template with an indelible ink pencil. Vertical space analysis of the denture was performed. Adin (Touareg

TM) implants of 11.5 mm length and 3.75 mm diameter was selected. It was decided to use ball and socket type of attachment system. Implant surgery included alveolar ridge reduction and placement of the implants with the help of a surgical template (duplicate mandibular denture). Implant surgery was carried out in a 2-stage surgical protocol. Surgery was performed under local anesthesia. The osteotomy sites were prepared in the B and D region with the help of surgical template. A guide pin was used to ensure that the second implant was as parallel as possible to the first. The selected implants were placed at the prepared sites. Surgical cover screws were placed. The flaps were approximated with primary closure. The patient was told not to wear the lower denture for two weeks following surgery. Antibiotics were prescribed for seven days. Patient was advised to use disinfectant mouth rinse (Listerine) 3-5 times daily. Instructions were given regarding oral hygiene maintenance. The sutures were removed in two weeks. Dietary restrictions were lifted after 2 weeks of implant placement. The intaglio surface of the denture was relieved. Soft tissue conditioning material (GC Reline Soft TM) was applied to the intaglio surface of the denture according to the manufacturer's directions and the excess liner material was trimmed. The denture was finished, polished and inserted into the patient's mouth. This allowed the patient to wear the removable prosthesis during the period of osseointegration without transmitting excessive forces to the surgical sites. The patient was seen on a regular follow-up visits and the denture was relined as needed. Three months later and after confirmation of the osseointegration, the patient was presented for the second stage surgery.

At this stage, the implants were exposed, the surgical cover screws were removed and the sites were irrigated with sterile normal saline (Normal saline Flush). Healing collars were placed, and the gingival tissues were allowed to mature for one month (Fig 1).

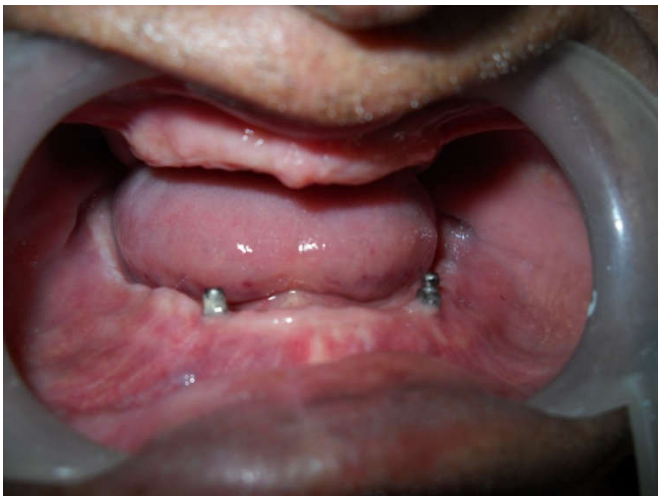

Fig 1 Healing Collars Placed

Mandibular denture was relined with a soft-tissue conditioning material (GC Reline Soft TM). After one month, the comfort and fit of the dentures was checked before proceeding with the addition of attachments. Ball and socket over-denture abutment of 2 mm diameter (NP-0022) was selected. Seating of the abutments was verified .The attachments were placed and O rings (RS—2662, soft pink) were blocked-out on the abutments (Fig 2).

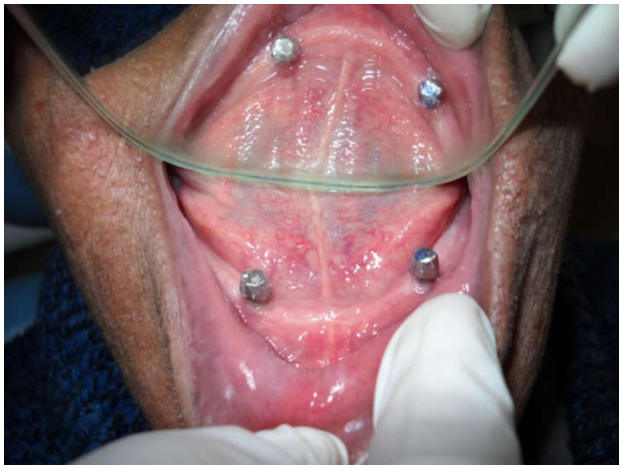

Fig 2 Attachments Placed

Acrylic resin from the intaglio surface of the denture was removed to allow passive fit of the denture against the tissue. Pressure indicating paste (Mizzy Prestige Dental Products) was used to verify that no contact of the denture base with abutment or attachment. A No. six round bur was used to vent the pick up space toward the surface of the denture. The vent was situated lingual to the denture teeth. The pick-up space was half filled with CG Pattern Resin and the mandibular denture was placed over the abutments. The complete seating of the denture was verified and the patient was asked to maintain light occlusal pressure in the centric relation position while the resin polymerizes. The pick-up resin was trimmed and polished in the venting area (Fig 3).

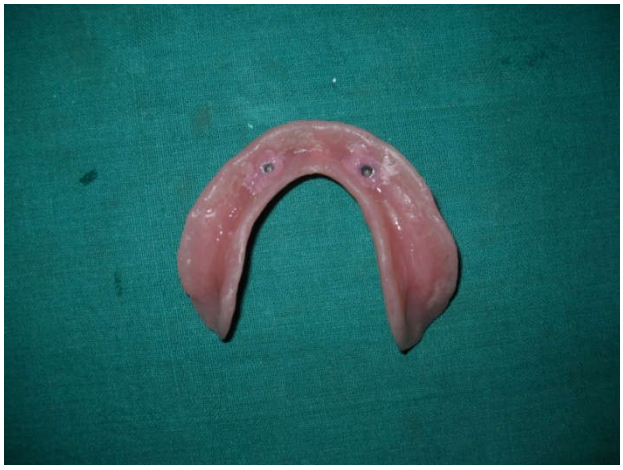

Fig 3 Abutments Picked Up and Polished

Fit and occlusion of the dentures was rechecked in centric relation position. Centric relation records were obtained and a laboratory remount for final occlusal refinement was done. Home care instructions were given to the patient. The patient was trained to place and remove the prosthesis properly. First recall was attended after 24 hours. The regular follow up was advised every six months. Patient was instructed to remove their prosthesis at night. A soft single-tufted brush was indicated to keep attachments free from plaque and calculus. The patient is successfully using the overdenture since two years and is satisfied with it (Fig 4).

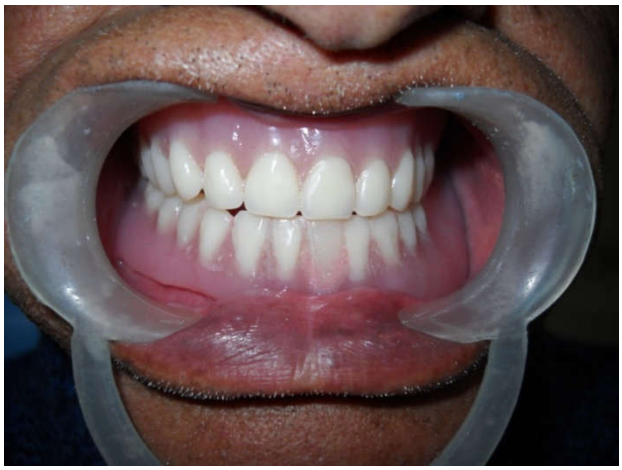

Fig 4 Post Insertion Picture

DISCUSSION

Because of sufficient bone height and width in the interforaminal region mandibular anterior region was selected for implant placement. Further two implants were planned in present case as not much difference between the use of 2 implants versus 4 implants for overdentures is shown in literature.[4] Also studies have shown no significant differences in the peri-implant health between two implants and four implants.[5]

Implant supported mandibular overdenture patients have shown not only enhanced overall satisfaction and nutritional status,[6,7] but also ease of fabrication and cost effectiveness over conventional removable prosthesis. [8,9] Therefore, the two implant-retained overdenture should be considered as the first treatment option for mandibular edentulous patients.

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