

MANDIBULAR IMPLANT OVERDENTURE RETAINED WITH O-RING BALL

Abu-Hussein Muhamad¹, Abdulgani Azzaldeen²

1. University of Naples Federic II, Naples, Italy, Department of Pediatric Dentistry, University of Athens, Athens, Greece.

2. Department of Conservative Dentistry, Al-Quds University, Jerusalem, Palestine.

ABSTRACT:

Patients with resorbed ridges often have difficulty retaining conventional dentures. An implant supported overdenture is a good alternative treatment to a conventional denture for patients with complaints about the retention and stability of their removable complete denture. . These complaints more often have to do with the mandibular than the maxillary denture. Implant supported overdentures offer better results in the mandible than in the maxilla. The two implant overdenture in the mandible has since become standard for edentulous patients. This article describes a clinical procedure for an implant supported mandibular overdenture.

Keywords: Implants, overdenture, retention

INTRODUCTION:

Edentulous patients are a diverse group comprised of those who are anatomically deficient, medically compromised, economically depressed, geriatric, congenitally deformed, genetically affected as well as general population for a number of other reasons have been rendered edentulous^[1]. Edentulous patients have a severely resorbed mandible often experience problems with their conventional dentures because of an impaired load bearing capacity denture stability is believed widely to be resistance against other forces like anterior posterior forces, the patient satisfaction is directly influenced by the amount of denture retention. It has shown by several studies that several different strategies have been

introduced to overcome the problem, one of which is use of dental implant, implant supported overdenture offer many practical advantage over conventional and removable partial; denture, these include degree of bone resorption, reduced or eliminated prosthesis movements better esthetics, improved tooth positions and improved occlusal load directions.^[1,2]

Common treatment options for mandibular defects include the use of (1) no prosthesis, (2) conventional dental/tissue-supported prosthesis, and (3) implant-retained/supported prosthesis. Patient suffer from poor masticatory ability without prosthetic rehabilitation. Meanwhile, with conventional prosthetic treatment, patients regain some mastication ability;

they gain the most favorable masticatory outcomes with implant-retained prosthetic treatment.^[2,3,4]

Advantages of implant retained overdentures^[5,6,7,8]

- As few as two or four implants may be used.
- Provide good stability and retention.
- Improved function.
- Improved aesthetics.
- With a resultant reduced residual ridge resorption thereafter.

Disadvantages of Implant retained overdentures^[5,6,7,8]

- Expensive.
- Technique sensitive to restore.
- Great time and more treatment sessions needed.
- Maintenance problems.
- Require surgical intervention.

Indications^[5,6,7,8,9]

- Severe morphologic compromise of denture supporting areas that significantly undermine denture retention
- Poor oral muscular coordination
- Low tolerance of mucosal tissues
- Para functional habits leading to recurrent soreness and instability of prosthesis
- Unrealistic prosthodontic expectations

- Active or hyperactive gag reflexes, elicited by a removable prosthesis, e.g. roofless maxillary denture

- Psychological inability to wear a removable prosthesis, even if adequate denture retention or stability is present

- Unfavorable number and location of potential abutments in residual dentition. Adjunctive location of optimally placed osseointegrated root analogs would allow for provision of a fixed prosthesis

Contraindications^[5,6,7,8,9]

- Chemical dependency (like phenytoin)

- Uncontrolled systemic disorders

- Psychological (schizophrenia, dysmorphophobia).

Clinicians have found that conventional denture wearers have experienced different aspects of difficulties mainly due to a lack of stability and retention, continued loss of alveolar bone, ill-fitting dentures and a lack of chewing ability, compounded by social discomfort.

Implant-retained overdentures can be a simple treatment option to restore the edentulous mandible.^[1,9,10] Even full mouth oral rehabilitation can be done with the help of implants. In removable prosthesis implants are used for retention and stability. When height of residual ridge is low, then retention is compromised, but with the help of implants retention can be easily improved. The literature indicates that implant-supported overdentures in the mandible provide predictable results with

improved stability, retention, function and patient satisfaction compared with conventional dentures. [2,9,10,11,12]

With the continued advancements in dental implant therapy, it is becoming increasingly easier for the clinician to provide treatment solutions that can effectively meet functional, economic and social expectations of each individual patient. [2,9,10,11,12]

This article describes a clinical procedure for an implant supported mandibular overdenture.

CASE DETAIL:

A 53-year-old male patient without any medical contraindication for implant therapy presented with an illfitting, lower complete denture that she had been wearing for four years. The clinical and radiographic findings revealed slight to moderate mandibular ridge resorption with an ill-fitting lowerdenture (Figs. 1 & 2a,b,c).

The patient was given the option of placing two implants to support his existing lowerdenture. The treatment plan was accepted and included an immediate functional loading by using a O-ring ball attachment-supported mandibular overdenture. (Figs3)

At the surgical appointment, following the administration of local anaesthetic, a mid-crestal incision was performed and a full-thickness flap was reflected. In addition, osteotomies were prepared in type II bone. Bone taps were used to countersink the sites, after which two implants

Tapered implants were placed with the handpiece and hand ratchet. The implants were torque to 35 N (Figs 4a-e). Immediately after implant surgery, the mandibular denture was seated in the patient's mouth and adjusted to provide clearance in the area of the balls (s). two balls (4 mm in length) were torqued to 30 N (Figs. 5a-e). Following the suture of the flap with 4-0 vicryl, the processing rings were placed over the locators and were picked up directly in the mouth using hard selfcuring acrylic (Rebase II, Tokuyama) . The patient was given post-operative instructions, including the use of 0.12 % chlorhexidine gluconate three times a day.

He was furthermore prescribed 500 mg of amoxicillin (to be taken every six hours for seven days). The patient was then informed that the implant-supported overdenture was to be left in place for 48 hours. Two days later, he was seen for a follow-up visit and the healing process was uneventful. .

After six months, the patient returned for another followup visit and all two O-ring balls were torqued to 30 N (Figs. 6). It was determined that all two implants had achieved full integration.

Currently, the patient is on a six month recall to ensure the proper maintenance of the implants and the prosthesis. The last maintenance visit was 12 months post-placement and all implants have maintained healthy soft tissue and a stable bone level.

DISCUSSION:

Anterior alveolar ridge resorbs slower than posterior. So, in anterior region, ridge height is high and there is absence of any limiting structure. After first premolar mental foramen is present, from where mental nerve passes. Two implants were placed in canine region in this case. Positioning of the implants in canine region is better than positioning of implants in premolar region. Kennedy Class 1 patient with bilateral distal extensions and anterior missing teeth often are restored with a fixed partial prosthesis anteriorly and Class1 removable partial denture. This eliminates the unfavorable rocking leverages that exist when replacement denture teeth are anterior to the fulcrum line. If only two canines are remaining, a cross-arch tissue bar can be placed to gain favorable distribution forces. Likewise, independent implants in the premolar region allow greater amplitude of rocking of the restoration compared with implants in canine regions. When implants are placed in canine region, the anterior movement of the prosthesis is reduced, and the prosthesis even may act as a splint for the two implants, thereby decreasing some of the stress to each implant. [2,9,10,11,12]

When denture was placed on implants, soft liner was placed in denture to prevent the extra load on implants. After three months soft liner was replaced with o ring and sleeve. Three months' time was taken for Osseointegration. After osseointegration implants are ready for loading. [10,11,12]

In this report, ball attachment was applied because, it is reported that ball attachment are less costly, less technique sensitive, and easier to clean than bars and less wear or fracture of the component than that of gold alloy bars. Moreover, the potential for mucosal hyperplasia reportedly is more easily reduced with ball attachments. It was also reported that the use of the ball attachment may be advantageous for implant-supported overdentures with regard to optimizing stress and minimizing denture movement. [8,9]

The approach in this report using ball attachments with healing abutments as supporting structure has an advantage of being incorporated at the chair side. Even though the patient was satisfied with chewing ability with three implants, the patient reported higher satisfaction of increased stability with the fourth implant. The healing abutments can later be changed to other attachment if needed.

Review paper by Gallucci et al (2009) and a 10 years clinical trial by Meijer et al (2009), among many others, have shown that there is no difference in the clinical and radiographic performance of two or four implants supporting a mandibular overdenture. Hence, having established that immediately loaded four implants supporting a mandibular overdentures are comparable to delayed loaded implants, it would be interesting to see if these results can be replicated when two implants were used in conjunction with unsplinted attachments such as locators. [8,9,10,11,12]

CONCLUSION:

Combining ball attachments with additional abutment with healing abutment may be beneficial in increasing

the stability. Further follow-up is needed to evaluate long-term result.

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FIGURES:



Figure 1,2a,b,c: Initial Photos



Figure 3: Mandibular ridge 3 months post extractions and prior to implant surgery.



Fig.4a: Tissue reflected, post alveoplasty. Marking A, B, C, D, & E positions for planning implant placement and future implant placement.



Fig.4b: position and parallelism

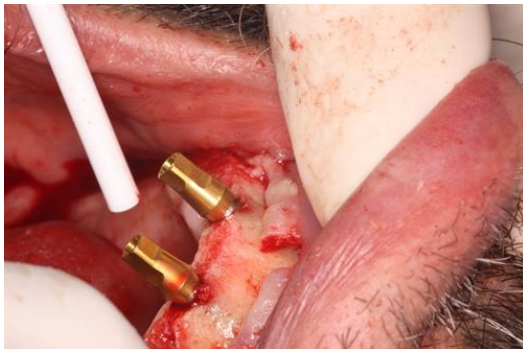


Fig.4c: Position and parallelism



Fig.4d: Final of implants after abutments were removed and cover screws placed. Will allow approximately 3 months healing before exposure.

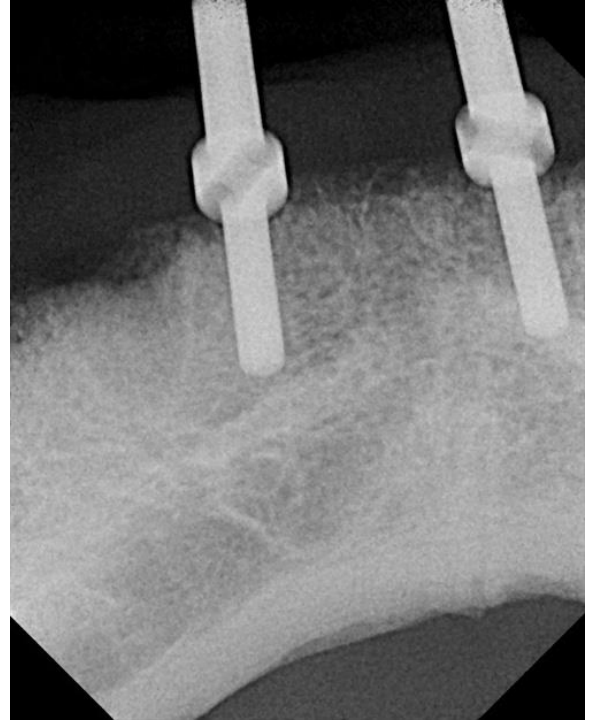


Fig.4e: parallel and depth



Fig.5a.: Final of implants exposed and attachments placed.



Fig.5b: Occlusal view



Fig.5c: View of denture, processing rings were later removed and replaced with new O-rings.

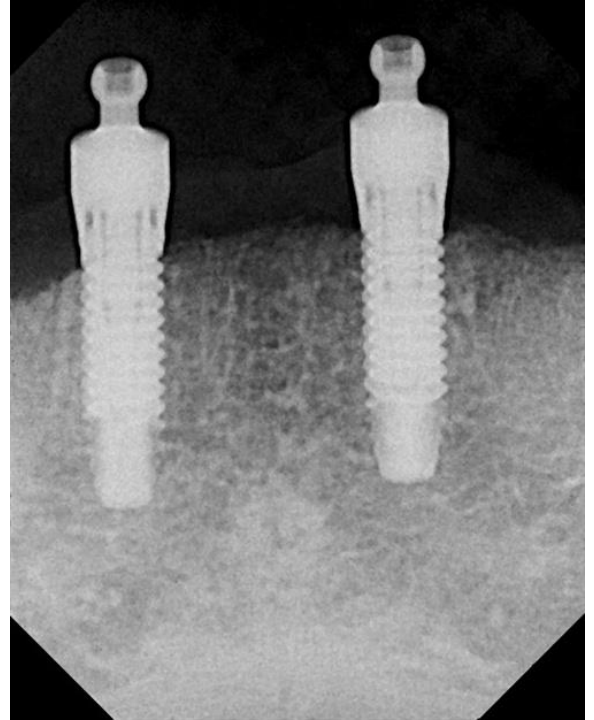


Fig.5e: Radiographics Implants with attachments.



Fig.5d: View of maxillary denture with the mandibular implants with balla attachments



Fig.6: Final