

An 2/2 Implant Overdenture

Tanuj Minocha¹, Khurshid Mattoo², Nupur Rathi³

¹Department of Periodontics, Divya Jyoti College of Dental Sciences, B.R. Ambedkar University, Modinagar, Uttar Pradesh, India, ²Department of Prosthodontics, College of Dentistry, Jazan University, Jazan, Kingdom of Saudi Arabia, ³Department of Prosthodontics, Divya Jyoti College of Dental Sciences, B.R. Ambedkar University, Modinagar, Uttar Pradesh, India

ABSTRACT

Overdentures can be either tooth or implant supported. Completely edentulous patients whose economic condition Thwarts them to invest in the expensive implant (number based) treatments should be motivated to have at least a two implant-supported overdenture since the prosthesis offers most of the advantages of conventional tooth-supported overdenture. We report a case of an elderly female patient who was reluctant toward surgery, but with moderate education was treated successfully with a two staged, two implant-supported overdenture using a ball abutment with o ring attachment.

Key words: Abutment, complete denture, osseointegration, overdenture

INTRODUCTION

In the year 1965, Brånemark *et al.*^[1] instituted the process of bone formation around titanium alloy called osseointegration which later found its clinical application in dentistry. In the past three to four decades, no field like implant has seen so many researchers dedicating their thought process to a particular field. As a result of those efforts, dental implants have been successfully used in the treatment of the complete and partial edentulous situations.^[2,3] Among various implant prosthetic options, the use of implants for overdentures has gained popularity in the middle- and low-income countries since they are a better alternative to non-conservative prosthetic options like a fixed partial denture.^[4] The fully bone-anchored prosthesis where multiple implants are used, the role of a periodontist also becomes tedious in maintaining oral hygiene. The removable implant-supported prosthesis has minimized dentist's role in oral hygiene maintenance, including that of the patient itself. However, implants are supposed to survive for the edentulous lifetime and therefore the role of periodontist still remains especially to treat the soft and hard tissue complications surrounding the implant fixture. The advantage of overdentures in addition

to better practicing oral hygiene also includes control over denture movements and efficient mastication.^[5]

This article, in the form of a case report, presents a case of a completely edentulous situation that was successfully restored to a two-implant two-staged overdenture.

CASE REPORT

An elderly female aged 59 years reported to the department of prosthodontics with a chief complaint of inability to masticate because of a lack of natural teeth. The patient was recommended by her friend who had previously received an implant-supported prosthesis a few years back in the same institute. Medical, social, drug, and other relevant histories did not reveal anything that could modify the treatment plan. Hematological and radiographic investigations were within the normal limits. Orthomopantograph of the patient showed a moderately built maxillary and mandibular residual alveolar ridges [Figure 1a]. Extraoral and intraoral features were within the normal range with no significant negative findings. The treatment options offered to the patient were decided after a comprehensive evaluation. The options presented were an implant-supported

Address for correspondence:

Khurshid Mattoo, Department of Prosthodontics, College of Dentistry, Jazan University, Jazan, Kingdom of Saudi Arabia.
E-mail: drkamatoo@rediffmail.com

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maxillary and mandibular fully bony anchored prosthesis as the first choice or a removable prosthetic option for both maxillary and mandibular residual alveolar ridges with a minimum of two implants. The patient did not consent, for maxillary implant-supported prosthesis, but consented for mandibular two implant-supported overdentures. A complete denture with bilateral balanced occlusion was fabricated for the patient using routine clinical and laboratory procedures. The denture was duplicated into a clear acrylic surgical guide which was used to place two fixtures (Nobel Bio care, Goteborg, Sweden) during a stage one surgery [Figure 1b]. After placing the implant fixture [Figure 1c], the alignment between the two implant bodies was verified with guide pins [Figure 1d], following which the area was approximated with nylon sutures [Figure 1e]. The patient was put on a course of antibiotics and anti-inflammatory analgesics for a 2 week period. These included a broad spectrum of amoxicillin (500 mg) and diclofenac sodium (50 mg). The sutures were removed after a week following which the patient was instructed to wear the complete denture that was relieved in the surgical area. After a period of 4 months, the osseointegration was radiographically verified [Figure 1f]. In the second stage, the implant area was exposed locally [Figure 2a] and a healing cover was placed over the implant fixture after using the locator bar (#8589-2) attachment [Figure 2b].

The patient was asked to continue wearing complete dentures with additional relief provided in the implant area. Once the gingival healing was completed, the healing caps were removed and the abutment was selected after measuring the tissue thickness from the apical rim of the implant body to gingival crest. Two ball abutments were placed over the implant fixture [Figure 2c] and their respective O rings [Figure 2d] were placed over the ball head. The denture was relieved in the area and the two rings were attached to the denture using self-cure fast setting pink acrylic resin [Figures 1 and 2e]. Excess acrylic was allowed to flow through the lingual surface of the denture [Figure 2f]. The patient continued to wear the modified denture using implant retained attachments. The patient was put on a follow-up for a period of 1 year where the patient was evaluated by a team of a periodontist and a prosthodontist. At the first follow-up visit, there was mild gingivitis around the right abutment due to the settling of the denture on one side. The patient was eating only on one side and therefore was educated about a new masticatory pattern that she has to follow. The condition was resolved and verified at the next follow-up visit.

DISCUSSION

The use of two implants to support an overdenture is the minimum requirement for implant prosthetic option, although more than two can be placed and are desirable. Using a four implant overdenture since not being always ideal, therefore, is an additional financial burden to the patient.^[6] The treatment modality of implant overdenture has evolved from the fixed

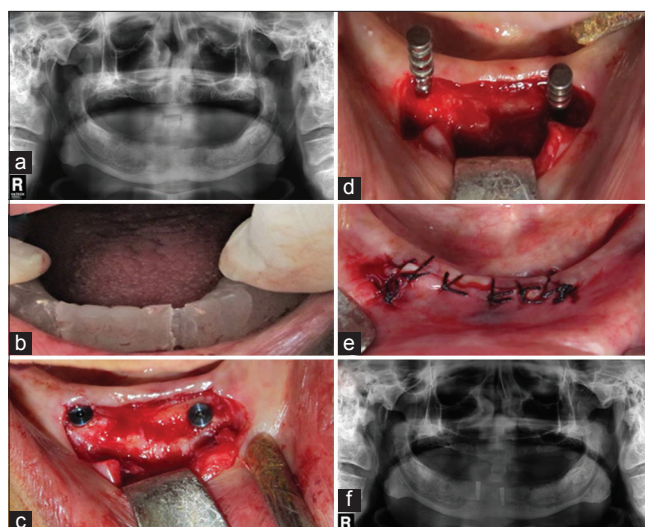


Figure 1: (a) Pre-operative radiograph (b) surgical guide (c) implant placement (d) guide pin verification (e) suture placement (f) post-operative radiograph

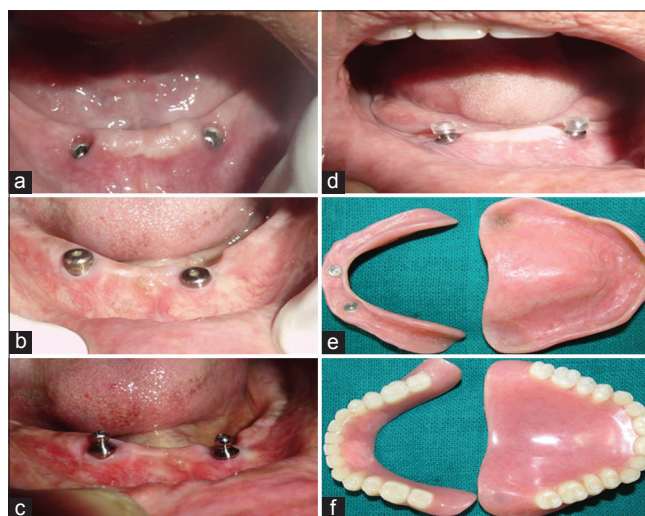


Figure 2: (a) Exposing implant area (b) healing screw (c) abutments placed on the fixture (d) O-rings placed on the abutment (e) finished complete denture tissue surface (f) finished lingual surface

tissue-integrated prosthesis in which the alignment of various implants determines the successful placement of the fixed restoration.^[7] The abutment alignment is therefore critical and the criticality increases as the number of implants increases. The two implants can either be splinted together with a bar or they can be given individually as in this case. The advantage of keeping the two implant abutments separated is that only one side needs to be corrected in case there is any error in alignment with the denture.^[8] In the case of bar supported overdenture, if there is any change of alignment on one side, the entire bar is affected. The individual implant also provides better hygiene maintenance around the implant, especially on mesial surfaces. Oral hygiene maintenance does not require special aids like

interdental brushes. Technically, the two implants using a ball and o ring attachment are less technique sensitive in terms of material errors that are incorporated within a prosthesis. Most of the material induced errors are not under the control of the operator and hence are incorporated irrespectively. The efficiency of complete denture prosthesis is enhanced since the prosthesis is stable over the abutments. Shifting of occlusal surfaces during mastication increases chewing time by decreasing the cuspal efficiency of food penetration.

CONCLUSION

Economic viability in the middle- and low-income country makes 2/2 implant overdenture prosthetic options more attractive for both dentist and patient. Since there is no added procedure of casting alloys like that of a bar supported overdenture, the individual attachment supported overdenture becomes even cheaper than its counterpart.

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