

## Implant Supported Over Denture Using Customized Abutment-A Case Report

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### ABSTRACT

A mandibular over denture supported by two implants is a cost effective treatment option for a maladaptive denture wearer. With ball attachment commonly practiced, their parallelism plays a vital role in long term success. The following report describes the procedure to correct a nonparallel implant abutment to retain a mandibular over denture using customized implant abutment.

**Key words:** Implant over denture, Customized abutment, Mandibular implant, complete denture

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### INTRODUCTION

Over denture is a dental prosthesis that covers and is partially supported by natural teeth, natural tooth roots or dental implants [1]. The connection between the implant and the restorative components plays a critical role in the long-term functional and esthetic success of the implant prosthesis. This article is a case report involving the use of customized abutment on each implant to ensure correct alignment among ball attachments and its retentive component.

### CASE REPORT

A 55 year old female presented with a chief complaint of an uncomfortable and non-retentive mandibular denture (Figure 1). Patient had no relevant medical history, had undergone extraction since 4 years and a denture wearer since then. After consultation with the patient, various treatment options, including fixed and removable prostheses, were presented. Due to limited financial resources, the decision was made to provide an IOD retained by 2 non-splinted implants in the anterior region, with a ball attachment.

Complete denture was fabricated (Figure 2) with conventional technique. CBCT was evaluated for bone and nerve evaluation. Due to narrow ridge two implants (Figure 3) were placed in the anterior mandible 3\*13 in 33 region and 3\*11 in 32 region (ADIN Dental Implant Systems Ltd., Israel) Following a 3-month healing period, the implants were exposed for prosthetic rehabilitation.

Impression was made with alginate for fabrication of custom tray (DPI Cold Cure, Denture Base Material,



Figure 1: Pre-operative frontal view.



Figure 2: Maxillary and mandibular complete denture.

Dental Products of India, Mumbai) (Figure 4) for implant level impression. Impression was made with custom tray using poly vinyl siloxane medium body impression material with open tray impression coping (ADIN Dental Implant Systems Ltd., Israel) hand tightened to implant (Figure 5). After retrieving the impression, Implant analog was then tightened to open tray coping and a definitive cast poured. As both implants were non parallel, a customized abutment was fabricated correcting the parallelism (Figure 6). The retentive component (matrix) was added to the abutment (Figure 7) and the existing over denture was adjusted to create adequate space for the retentive component to be transferred to the prosthesis. The abutment undercuts were blocked out. Venting holes were made in the over denture for expressing excess acrylic resin, and auto polymerizing acrylic resin (DPI Cold Cure, Denture Base Material, Dental Products of India, Mumbai) .Upon

removal of the denture, irregularities and voids in the intaglio surface of the denture around the attachments were filled in with additional auto polymerizing acrylic resin (Figure 8). Excess acrylic resin was removed; the denture was polished and inserted (Figure 9).

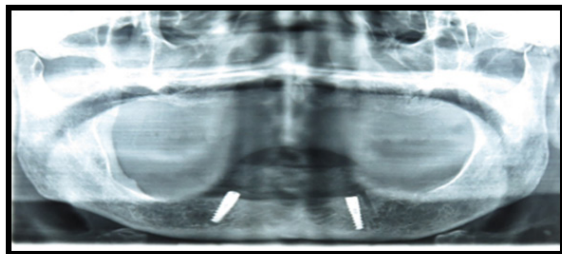


Figure 3: Implant placed in anterior mandibular region.



Figure 4: Custom tray fabricated for implant level impression.



Figure 5: Open tray impression with PVS medium body.

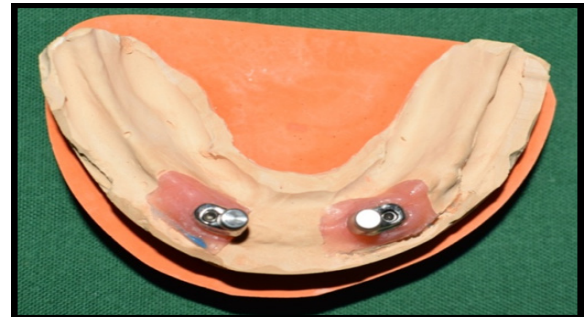


Figure 6: Customized Ball Attachment.



Figure 7: Venting holes for matrix attachment.



Figure 8: Mandibular denture with Matrix attachment.



Figure 9: Post-operative Frontal View.

## DISCUSSION

Implant over denture can be an optimum choice for completely edentulous patients, who cannot opt for fixed implant prosthesis due to compromised posterior bone quality, anatomical limitations, increased treatment cost, and systemic medical condition [2-4]. Over dentures may be retained by a number of different implants, which can be splinted or separate [5]. In 2002, McGill consensus published that the treatment modality of choice for the edentulous mandible should be a two-implant retained over denture [6]. Vere, Bhakta, and Patel stated: "Two free-standing implants in the canine regions, as the simplest option, would appear to be the treatment of choice to retain an over denture in the edentulous mandible" [7]. Authors have reported high implant survival rates for mandibular over dentures, and thus, successful treatment outcomes when over dentures are retained by two implants splinted or non-splinted [8].

The following treatment concepts have been summarized by Shadow sky (2001) [9]. The mandibular over denture retained by implants in the area between the foramina maintains bone in the anterior mandible. The average annual bony ridge height physiological shrinkage is about 0.4 mm in the edentulous anterior mandible. Studies have revealed better patient-based results when two-implant supported mandibular over dentures have been used compared with conventional lower dentures.

When two implants are used in the anterior mandible to retain an over denture, solitary ball attachments are more economical, easier to clean than bars that are more retentive, less technique sensitive, and more suitable for tapered arches. There appears to be no statistical difference when comparing long-term maintenance of mandibular implant over dentures retained by two implants in contrast to those retained by three or more implants.

Study by Walton et al. [10] has shown that there are a higher number of repairs required when the lingual inclination of implants was greater than 6 degrees or if the facial inclination was less than 6.5 degrees. The lingual inclination was estimated to be greater than 6 degrees for the patient presented in this report. A bar may have been considered as an option to correct the angulation problem. However, financial limitations and concern for oral hygiene access were contraindications to the use of a bar.

## CONCLUSION

This case report describes a procedure to manage a situation in which 2 none splinted mandibular over denture implant abutments that lack parallelism. This technique minimizes chair time and is an alternative to a more costly and complicated bar prosthesis.

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