

## PROSTHETIC REHABILITATION WITH IMPLANT SUPPORTED OVERDENTURE: A CASE REPORT

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### ABSTRACT

The rehabilitation of the completely edentulous maxillary and mandibular arches has always been a major concern. To restore the maxillary and mandibular edentulous arches removable complete denture have been used in the past because of the cost efficacy and improvement of the functions. However some patients complain of poor adaptation leading to inability to masticate and discomfort. Implant-supported overdentures are extensively practised since long and can be a good treatment option for such edentulous patients. The advantages of Implant supported overdentures includes decreased bone resorption, good aesthetics, enhanced occlusion and maintenance of the vertical dimension of occlusion. The present article describes the management of completely edentulous maxillary and mandibular ridges with the implant-retained overdenture using locator as the choice of attachment.

### KEYWORDS

Implant supported Overdenture, Maxillary overdenture, Mandibular overdenture, Edentulous rehabilitation.

### INTRODUCTION

Edentulism is one of the worst phase an individual can go through. Complete teeth loss in the maxillary and mandibular arches leads to residual ridge resorption along with the changes in vertical dimension, phonetics and esthetics.<sup>1</sup> Specially in resorbed edentulous ridges the masticatory functions of an individual is highly altered.<sup>2</sup> Patients rehabilitated with the conventional complete denture often complains of unstable and unretentive dentures because of the resorption. Apart from the conventional dentures, Overdentures helps the individual to maintain a stable and retentive prosthesis.<sup>3</sup>

According to GPT 9 Overdenture is defined as- Any removable dental prosthesis that covers and rests on one or more remaining natural teeth, the roots of natural teeth, and/or dental implants.<sup>4</sup>

According to GPT 9 Implant Supported Denture is defined as- Dental prosthesis such as, fixed complete denture, fixed partial denture, removable complete overdenture, removable partial overdenture, as well as maxillofacial prosthesis which can be supported and retained in part or whole by dental implants.<sup>4</sup>

Implant supported denture either fixed or removable serve a boon for such individuals . Oral functions significantly improve as well as the bone is preserved.<sup>5</sup> Implant supported overdentures are slightly economical compared to the full mouth rehabilitation with implant supported fixed prosthesis.<sup>6</sup>

Implant supported overdentures are designed based on the method of attachment and desired support from implant and ridge mucosa. The selection of stud, magnet, locator or bar depends on a factors such as type of prosthesis, number of implants, patient's expectations and the amount of retention required.

Locator attachments provide dual retention, one is mechanical and another is frictional. The advantage of the locator attachment is that it can be used in cases of limited inter arch space and can accommodate inter implant angulations upto 40 degree.<sup>7</sup>

## **CASE REPORT**

A 50 year-old female patient reported to the Department of Prosthodontics and Implantology at Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital, Hingna, Nagpur with the chief complaint of inability to chew food. There was no relevant Past medical history found. The dental history included extraction of periodontally involved teeth and the subsequent replacement with maxillary and mandibular dentures. The Mandibular denture was ill-fitting and hence the patient stopped using the denture . Clinical examination revealed completely healed maxillary and mandibular edentulous ridges. The ridges were knife edged

and resorbed. A normal and healthy overlying mucosa was visible.

Temporomandibular joint examination was normal, with no abnormal clicking sounds and deviations. For evaluation of the architecture of the bone Orthopantomograph and Cone Beam Computed Tomography was advised. No abnormal findings were detected in the routine blood examination. The treatment options were discussed with the patient, all the cons and pros were explained of the conventional as well as implant supported overdenture. Patient was also informed about the Implant supported fixed prosthesis option. Due to financial constraints patient agreed for the implant supported overdenture. A standard protocol was followed and the treatment plan was prepared. It included fabrication of Implant Supported overdenture for the maxillary arch with 3 Implants and 2 implants for the mandibular arch.

### Surgical Phase

A two stage implant placement procedure was considered. In the first stage, considering bone thickness and anatomical regions, For maxilla 3 implants measuring 3.75 by 10mm were planned, one implant in right canine,1 in left canine region and 1 implant in the left central incisor region (Fig 1.A.) and two implants measuring 3.75 by 10mm were placed in the right and left canine region for mandible (Fig 1.B.). Second stage procedure was performed 3 months later where the implant was exposed and cover screw was removed. A postoperative Orthopantomogram was taken to visualize the position of the implants. (Fig 2.) The depth guage was used to measure the height of the soft tissues and the healing abutments were placed to form the soft tissue cuff. Following two weeks the healing abutments were removed, and the and locators were placed with the locator driver.

### Prosthetic Phase

The patient had difficulty in mastication hence a conventional complete denture was fabricated after 1 month with the complete healing of the gingival tissues. Same denture was utilized and converted into the implant supported overdenture. Vent holes were created in the denture to accommodate the metal housing. O Rings were placed over the locators (Fig 3.A and Fig 3.B.) and were covered with the metal housing with a black resilient male component (Fig 4.A and Fig 4.B.) . The denture was placed over the ridge to check the fit of the locator attachment, slight space was present between the locators and the denture. Lubricant was applied over the intaglio surface of the denture except the vent holes and over the metal housing. Chairside relining material was injected through the denture vent holes and allowed to cure with the patient biting in centric relation. The excess resin on the intaglio surface was removed and polished. The Black resilient male component was removed from the metal housing and replaced with the retentive caps.(Fig 5.) The denture was seated and modified for the occlusion. The prosthesis was functioning well on future recalls. The clinical assessment showed good result with the proper maintenance of the oral hygiene. The radiographic findings showed minimal bone loss around the implants.



**Fig 1.A**



**Fig.1.B**

Fig 1. A and B. Surgical placement of Implant in Maxillary and Mandibular Arch



Fig 2. Postoperative OPG



Fig 3.A



Fig 3.B

Fig 3 A and B . Locators attached to the Implants of Maxillary and Mandibular arch.  
O Rings placed over the locator.



Fig 4.A



Fig 4.B

Fig 4. A and B. Placement of the Metal Housing over the Locators



Fig 5. Pick Up Of The Metal Housing To The Denture Base

## CONCLUSION

Implant supported overdentures can be a great choice for the rehabilitation of the edentulous maxilla and mandible. It is a reliable, simple and cost effective treatment. This rehabilitation improved esthetics, masticatory efficiency, speech and retention. In spite of advantages of the treatment, controversies pertaining to the design of the overdenture, use of appropriate attachment system and the techniques still exists. It is essential to follow a standard treatment protocol, regarding the treatment options among the implant experts is mandatory.

## CONFLICT OF INTEREST & SOURCE OF FUNDING

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