

## Case Report

# Tooth and implant supported over denture : a case report

Avneet kaur, Narendra padiyar, Pragati kaurani, Sudhir meena

<sup>1</sup>Post Graduate Student, <sup>2</sup>Professor And Head, <sup>3</sup>Professor, <sup>4</sup>Reader Department of Prosthodontics, Mahatma Gandhi Medical College and Hospital Jaipur.

### Abstract

Overdenture is a good treatment option for elderly patients. It can be either be tooth supported or implant supported. Patients with few remaining teeth and Roots maintained under the denture base preserve the alveolar ridge, provide sensory feedback and improve the stability and retention of the dentures. Furthermore, the use of copings on the remaining teeth enhances the retention of the denture. It is a versatile and successful means of achieving long-term restoration of a partially edentulous jaw. Insertion and removal of the denture and routine oral hygiene are easy to perform. In an implant-supported overdenture, the optimal stress distribution on the implants and least denture displacement is desirable.

**Key Words:** Implant; Overdenture; Supported

Corresponding author: Dr. Avneet Kaur, Department of Prosthodontics, Mahatma Gandhi Medical College and Hospital Jaipur.

This article may be cited as: Kaur A, Padiyar N, Kaurani P and Meena S. Tooth and implant supported over denture: a case report 2017;3(2):33-36

**Article Received:** 08-02-17

**Accepted On:** 23-02-2017

### INTRODUCTION

Overdenture treatment uses a removable complete denture that overlies retained teeth, tooth roots, or dental implants. This treatment is not a new concept and practitioners have successfully employed existing tooth structures or retained roots to assist with complete denture treatment for more than a century<sup>1,2</sup>. Two or more, coronally modified or restored retained teeth abutments are frequently endodontically prepared and are used as abutments for an overdenture. The objective is to distribute stress concentration between retained abutments and denture-supporting soft tissues<sup>3,4</sup>. Retained tooth abutments can give better retention, support, and stability to an overdenture and also provide proprioception which would otherwise be lost with conventional denture treatment. Implant retained prosthesis is an option but is sometimes not possible due to insufficient amount of bone or economic reasons. Implant-supported overdentures are mainly useful for mandibular ridges, as they have undergone resorption and offer better retention than traditional dentures. However, the cost of implants is quite high hence the use of fewer implants (2 instead of 4) offers a less expensive option for an edentulous patient.

Placement of the implants for overdentures in the mandible should be planned explicitly, as masticatory load transmission in mandibular implant-supported overdentures differs substantially from that of implant-supported fixed restorations. Importance should also be given to location and the number of implants being placed in the dental arch, as well as the chewing function as horizontal forces and even moments can cause implant failure if these are ignored. Mandibular implant-supported overdentures are generally retained by at least 2 implants, which are placed in or slightly medial to the canine area. The loss of teeth is generally associated with esthetic, functional, psychological and social impairment of the individual's life which may have a high impact on the patient's self-esteem and health.<sup>5,6</sup> Periodontal disease and dental caries are indicated as main causes for the loss of teeth and are associated with cultural and social factors such as financial sources, educational level and the access to health services.<sup>7,8</sup> In regards to the rehabilitation alternatives such as the use of dental implants, fixed prosthesis, removable partial or complete dentures, the overdenture rehabilitation is a viable

and simple alternative and has been demonstrated to be efficient in these clinical situations.

#### Rationale for over denture concept

- Extraction of all natural dentition and replacement with complete denture is not the most desirable treatment
- Preventive prosthodontics emphasizes the importance of any procedure that can delay or eliminate further prosthodontic problems
- The over denture is a logical method for a dentist to use in preventive prosthodontics.

#### Indications

1. For patients who face the loss of remaining natural adult dentition. Therefore, younger the patient greater the indication
2. Patients with badly worn out dentition
3. Cleft palate cases
4. For congenital anomalies like microdontia and in selected partial anodontia cases.
5. Denture for patients with maxillofacial trauma.

#### Contra indications

- Uncooperative and under motivated patients
- Mentally and physically handicapped patients for whom good oral hygiene is difficult to maintain
- When a patient cannot afford.

#### Location of abutment teeth

Two teeth in each quadrant present an ideal situation.<sup>9</sup> E.g.

1. Cuspids, second premolars or second molars in each quadrant
2. Mandibular cuspids are most often utilized since they are usually the last teeth to be lost
3. Mandibular incisors can be used as over denture abutments if mandibular arch is intact.

#### Advantages and Disadvantages of overdenture

Advantages of overdentures include preservation of alveolar bone, proprioception, enhanced stability and retention and maintenance of vertical dimension of occlusion.<sup>10-13</sup> Overdenture can be easily converted to complete denture over a period of time. Disadvantages of overdenture include that oral hygiene is important in order to prevent caries and periodontal disease. The over-denture tends to be bulkier and overcontoured. This treatment modality is an expensive approach with frequent recall check ups of the patient than a conventional removable complete denture. In overdenture treatment, the teeth are included as part of the residual ridge. The most important advantage is that the patient has the psychological benefit of having his own teeth which outweighs all the disadvantages stated.

#### Implant supported over denture

Some patients will not be able to wear their dentures irrespective of its perfect contours. The

implant-supported denture can be designed for these patients.

#### CASE REPORT

A 58-year-old male patient reported to the Department of Prosthodontics, Mahatma Gandhi Dental College and Hospital, Jaipur, with the chief complaint of difficulty in chewing food due to missing teeth. There was no relevant medical history affecting prosthodontic treatment. Intraoral examination revealed teeth present in maxillary arch 13,14,15,23,24,25,26 and completely edentulous mandibular ridge. Radiographic examination revealed poor bone support due to which only 13 and 23 were retained and other teeth were extracted irt maxillary arch and resorbed edentulous mandibular ridge. It was planned to construct a maxillary tooth supported overdenture and

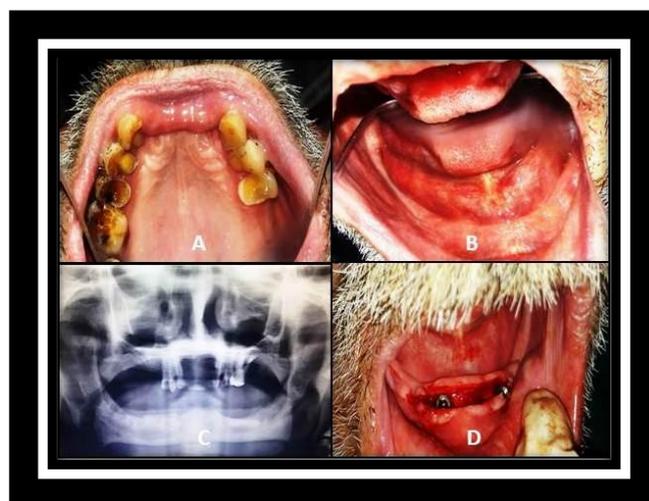
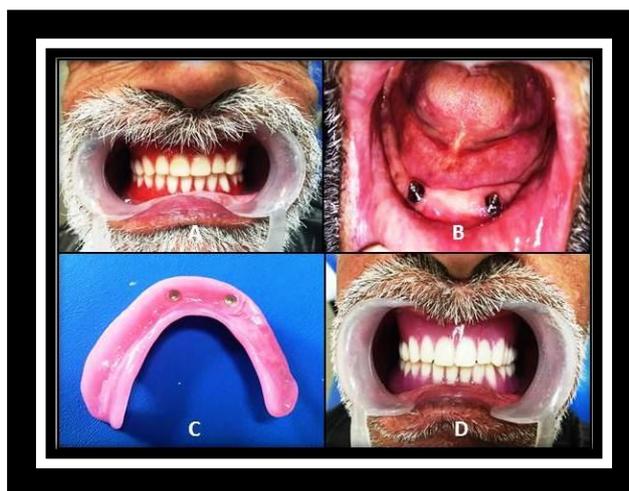


FIG 1: A - Preoperative maxillary arch. B - Preoperative mandibular arch. C - Preoperative -OPG. D - Implants placed in relation to 33 & 43



FIG 2: A - Postoperative -OPG. B - Metal copings in relation to 13 & 23. C - Maxillary master cast. D - Mandibular master cast.



**FIG 3: A - Try-in. B - Ball abutments placed. C - Metal housings placed in mandibular denture. D - Denture insertion.**

implant supported mandibular overdenture with ball attachments. Diagnostic casts were made. Wax rims were fabricated on diagnostic casts to determine the approximate vertical dimension of occlusion. Vertical dimension recordings were determined by phonetics and esthetics. The diagnostic articulation helped in assessing the available inter-arch space and was found to be adequate. The abutment teeth 13 and 23 were endodontically treated and than tooth preparation was done and metal copings were cemented. In mandibular arch two implants were planned of dimension 3.75\*10mm (GLOBAL IMPLANTS, ISRAEL) and were placed in canine region of both sides. Two stage surgery was done. In first stage the implants were placed and they were left for 3 months. In second stage healing abutments were placed for 10 days. Meanwhile denture fabrication was done. Primary impression of both the arches was made with alginate and a special tray was fabricated on the primary cast. Using conventional techniques border moulding was done and secondary impression was made with light body rubber base material (Aquasil, Dentsply). Record rims were made and the jaw relationship was recorded. Teeth arrangement was done and a try-in was done. After a satisfactory try-in, the waxed up denture was processed using heat cure acrylic. Once the denture was ready, vent holes were created in the mandibular denture. Healing abutments were removed and Ball abutments were placed on the implants. Retentive caps with metal housings were placed on ball abutments and were picked up by adding autopolymerizing acrylic resin in the space created in mandibular denture while maintaining upper and lower dentures in occlusion.

The excess self-cure acrylic that came out of the vent holes was trimmed. Re-polishing was done in the vent hole region. The denture was delivered and the patient was given instructions about insertion and removal, eating and speaking as well as maintenance of the denture. Periodic follow-up was carried out.

#### **DISCUSSION**

The prospect of losing all the teeth can be very disturbing for a patient. It also brings down patient's morale as it is an indirect reminder for being dependent on others and losing senescence. In such conditions, overdenture option as preventive prosthodontics treatment modality should be regularly imbibed in our dental practices because of its innumerable advantages. In case of overdenture prosthesis, proprioception is maintained,<sup>14</sup> there is the presence of directional sensitivity; dimensional discrimination; canine response and tactile sensitivity. Various types of attachments are available and they have been widely used with removable partial/complete denture prosthesis, segmented fixed prosthesis, and implant supported prosthesis. Yet no single attachment is perfect for every case, so it is critical that the appropriate attachment should be selected for each individual situation. By analysing study models and radiographs, the clinician can make several important determinations, each of which will influence the final attachment selection. This is a viable alternative for the patients with some retained teeth and who are not prepared to undergo surgical procedure involved with implant placement. The overdenture is a better alternative for a treatment option to conventional dentures since the proprioception is maintained and improves stability and retention. It is necessary to have patient awareness about good oral hygiene to maintain the roots so that treatment remains satisfactory for a long time. In an implant-supported overdenture, 2 basic factors are to be minimized. One is the stress on the implants and the other is the movement of the denture. Numerous methods have been followed to achieve this goal. Cost is an important factor that determines the placement of implants. By reducing the number of implants required to support an overdenture, the cost can be considerably reduced. Two instead of 4 implants in the mandible can also offer an almost equal amount of stability to the denture. The over denture has innumerable advantages and applications compared with conventional complete denture. The success depends upon proper case selection with critical monitoring of various steps involved.

Prosthodontic rehabilitation of cases like partial anodontia not only improves function and esthetics dramatically, but also psychologically boosts the morale of the patients.

#### REFERENCES:

1. Fenton AH (1998) The decade of overdentures: 1970–1980. *J Prosthet Dent* 79:31–36.
2. Morrow RM, Powell JM, Jameson WS, Jewson CG, Rudd KD (1969) Tooth supported complete dentures: an approach to preventive prosthodontics. *J Prosthet Dent* 21:513–522.
3. Zarb, Hobrck, Eckert, Jacob (2012) Prosthodontic treatment for edentulous patients: complete dentures and implant -supported prostheses, 13th edn. Elsevier, St. Louis, pp 290–295.
4. Winkler S (1996) Essentials of complete denture prosthodontics, 2nd edn. Ishiyaku EuroAmerica, St. Louis, pp 384–401.
5. Okoje VN, Dosumu OO, Alonge TO, Onyeaso C. Tooth loss: Are the patients prepared? *Niger J Clin Pract* 2012;15:172-5.
6. De Marchi RJ, Hilgert JB, Hugo FN, Santos CM, Martins AB, Padilha DM. Four-year incidence and predictors of tooth loss among older adults in a southern Brazilian city. *Community Dent Oral Epidemiol* 2012;40:396-405.
7. Saintrain MV, de Souza EH. Impact of tooth loss on the quality of life. *Gerodontology* 2012;29:e632-6.
8. De Marchi RJ, Leal AF, Padilha DM, Brondani MA. Vulnerability and the psychosocial aspects of tooth loss in old age: A Southern Brazilian study. *J Cross Cult Gerontol* 2012;27:239-58.
9. Galagali G. Ectodermal dysplasia and its prosthetic rehabilitation with over denture-A case report. *J Indian Prosthodont Society* 2000;11:42-4.
10. Morrow RM, Feldmann EE, Rudd KD, Trovillion HM. Tooth-supported complete dentures: An approach to preventive prosthodontics. *J Prosthet Dent* 1969;21:513-22.
11. Morrow RM, Rudd KD, Birmingham FD, Larkin JD. Immediate interim tooth-supported complete dentures. *J Prosthet Dent* 1973;30:695-700.
12. Dodge CA. Prevention of complete denture problems by use of “overdentures”. *J Prosthet Dent* 1973;30:403-11.
13. Thayer HH. Overdentures and the periodontium. *Dent Clinic North America* 1980;24:369-77.
14. Thayer HH. Overdentures and the periodontium. *Dent Clin North Am* 1980;24:369-77.

**Source of support:** Nil

**Conflict of interest:** None declared

This work is licensed under CC BY: *Creative Commons Attribution 4.0 License*.