

## Immediate Overdenture

Tulika S Khanna, Sandeep Vivek Gurav, Sabita M Ram, DB Nandeeshwar

### ABSTRACT

The prime focus of dentistry is on preservation of teeth and other oral structures rather than replacing what is lost. An overdenture fulfills this by preserving alveolar ridge integrity and maintaining the proprioceptive ability of the periodontium. An immediate denture replaces the lost teeth and associated structures of the maxillae and mandible at the time of extraction. This case report combines the advantages of both overdenture and immediate denture and shows its stepwise fabrication.

**Keywords:** Overdenture, Immediate denture, Alveolar ridge preservation.

**How to cite this article:** Khanna TS, Gurav SV, Ram SM, Nandeeshwar DB. Immediate Overdenture. *J Contemp Dent* 2012;2(3):101-105.

**Source of support:** Nil

**Conflict of interest:** None

### INTRODUCTION

Edentulousness resulting from extraction of teeth often leads to psychological problems and social isolation of the patients. Immediate dentures are recommended to avoid the period of edentulousness and restore patient's social reforms at the earliest. They also act as scaffold to mold the residual ridge and protect it while healing takes place. Immediate denture can be planned by removing all the affected teeth or by preserving a few teeth to be used as overdenture abutments.

Less resorption of alveolar bone is seen with complete denture where few teeth are preserved under the denture.<sup>1</sup> The periodontium around the retained teeth maintains the proprioceptive mechanism which stimulates the underlying bone and thus prevents loss of bone.

Immediate overdenture with a few retained teeth gives the opportunity for a smooth transition from dentulousness to edentulousness.

### CASE REPORT

A case report for fabrication of immediate overdenture is presented.

A 62-year-old male patient reported to the Department of Prosthodontics with the complaint of missing multiple teeth and so he desired to replace them. He gave a history of loss of teeth in the last 1 year and had pain and difficulty in chewing and desired to have dentures as soon as possible. He was apprehensive about extracting all the teeth.

Extraoral examination revealed no loss of facial height. Temporomandibular joint movements were normal. Intraoral examination revealed upper and lower partially edentulous arches with 18 natural teeth present showing severe chronic periodontitis (Fig. 1).

Three teeth (3, 13, 15) exhibited grade III mobility and 10 teeth (2, 4, 9, 12, 14, 19, 20, 29, 30, 31) showed grade II mobility. Five teeth (5, 6, 11, 22, 28) exhibited grade I mobility. Gingival recession till the middle third of roots was seen with most of the teeth. No relevant intraoral findings were observed. Radiographic examination revealed significant bone loss around all teeth. As grades II and III mobile teeth were not salvageable, it was decided to extract them. Teeth with grade I mobility (5, 6, 11, 22, 28) were to be preserved as abutments for immediate overdenture.

Treatment planned was an immediate overdenture after intentional root canal treatment of the retained teeth (5, 6, 11, 22, 28).

### TREATMENT PROCEDURES

Diagnostic impressions of the maxillary and mandibular arches were made in irreversible hydrocolloid. The impressions were poured in dental stone and casts obtained. These diagnostic casts were used to fabricate special tray to get properly extended final impression. Prior to making the final impression, spacing between teeth, deep undercuts due to abrasion cavities were blocked intraorally with beading wax to facilitate easy removal of the impressions without tearing (Fig. 2).

The impressions were poured in dental stone and casts mounted on semiadjustable articulator using hand articulation (Fig. 3). As teeth present maintained the vertical and centric stops no jaw relation was required.



Fig. 1: Preoperative intraoral view

Posterior teeth which exhibited grades II and III mobility (2, 3, 4, 13, 14, 15, 19, 20, 29, 30, 31) were trimmed from the casts. The casts were modified so that they would closely resemble the final shape of the ridges immediately after extraction for insertion of the immediate partial denture. Modifications on the cast were done using Jerbi's guidelines in 1966.<sup>2,3</sup> Posterior surgical templates were made with clear acrylic on these modified casts to help manipulate hard and soft tissues during extraction<sup>2</sup> (Fig. 4). Arrangement of the posterior teeth was done on the articulator followed by waxing and carving. These waxed up maxillary and mandibular partial dentures were processed. Finishing and polishing was done to avoid any roughness that may irritate the extraction wounds. The dentures and stent were disinfected in 5% betadine solution for 8 hours.

Posterior teeth (2, 3, 4, 13, 14, 15, 19, 20, 29, 30, 31) were extracted under local anesthesia. During extraction surgical stent was used as a reference to perform conservative alveoloplasty. The stents were tried over the extracted sites till they could be placed without tissue blanching. The dentures were now inserted intraorally (Fig. 5). Patient was instructed not to remove the denture for the first 24 hours and to swallow blood and saliva which collects in mouth. Cold packs were given to patient



Fig. 3: Final casts mounted on semiadjustable articulator



Fig. 4: Surgical templates

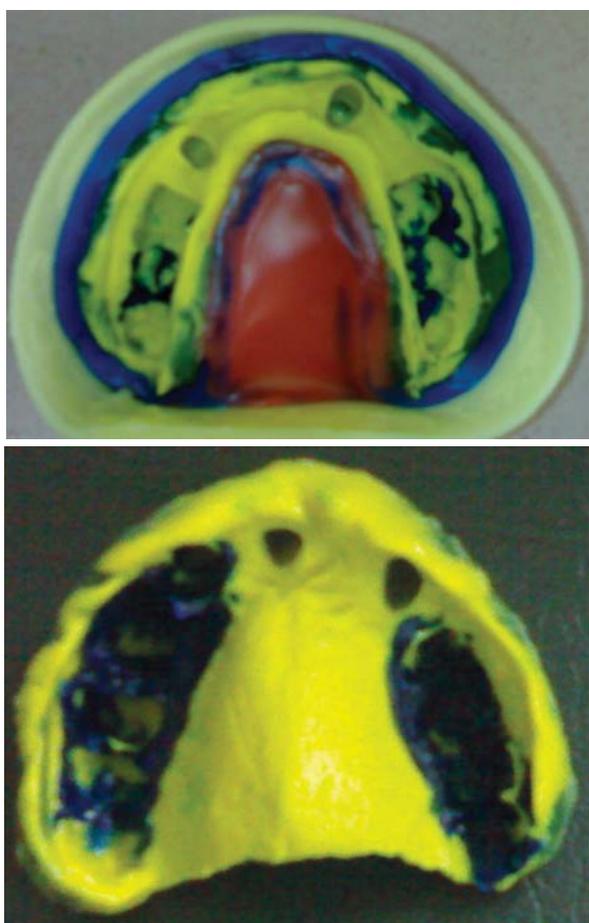


Fig. 2: Final impressions

immediately after extraction. Patient was asked to have liquid diet for that day and was recalled after 24 hours. At the recall visit the dentures were removed carefully and tissues checked for any sore spots. Occlusal adjustments were done at this visit.

During the course of healing of posterior ridges, mandibular teeth (22, 28) which were to serve as overdenture abutments, developed increased mobility and were required to be extracted. The treatment plan had to be changed at this stage. The patient would now receive an immediate overdenture for the maxillary arch and immediate denture for the mandibular arch. This was informed to the patient and consent was taken.

Intentional root canal treatment of the remaining abutment teeth (5, 6, 11) was carried out. After 3 months, posterior ridges healed well. Preliminary impression of maxillary and mandibular arches was made in alginate impression material. The impressions were poured in dental stone and casts were obtained. A partial impression tray was fabricated on these casts, this would record the edentulous distal extension region of the arch. The border molding was carried out on this tray and wash impression with zinc oxide eugenol (ZOE) was taken. The impressions were examined for completeness and placed back intraorally. This was done for both the arches. The impressions were picked up in perforated stock metal tray

which covered the anterior teeth and the posterior edentulous impression (Fig. 6). The picked up impression was poured in dental stone and master casts were retrieved. Self-cured temporary denture bases and occlusal rims were fabricated on the final cast. Jaw relation was carried out. Teeth selection was done keeping the patients' natural teeth in mind for shape, size and color. Master casts were mounted on semiadjustable articulator using face bow transfer and centric relation record.



Fig. 5: Insertion of immediate partial denture



Fig. 6: Final impressions

Arrangement of posterior teeth was done on the articulator and posterior try-in carried out in patient. Anterior teeth arrangement was completed on the articulator after trimming teeth on the cast which were to go for extraction (9, 22, 28) and contouring those which were to serve as overdenture abutments (5, 6, 11). The abutment teeth (5, 6, 11) were reduced to a dome shape only 2 mm above the gingival margin (Fig. 7). After the complete teeth arrangement and wax up, processing of the dentures was done. While packing relief was placed over the prepared abutment teeth to cater for the resiliency of the soft tissue of the ridge to get better stability.

Intraoral modification of the abutment teeth (5, 6, 11) was done before the extraction in the same way as done on the cast (Fig. 8). Amalgam plugs were placed on the root canal-filled teeth. Immediately after extraction, the dentures were inserted in patient's mouth (Fig. 9). Necessary occlusal corrections were done. Patient was asked to wear the denture for the first 24 hours and was recalled the next day. Instructions regarding eating, speaking, denture cleanliness were given to patient. Patient was also explained about the possibility to reline or remake the denture later. At the recall visit fluoride application of the abutment teeth was done to minimize the risk of caries in these teeth.

## DISCUSSION

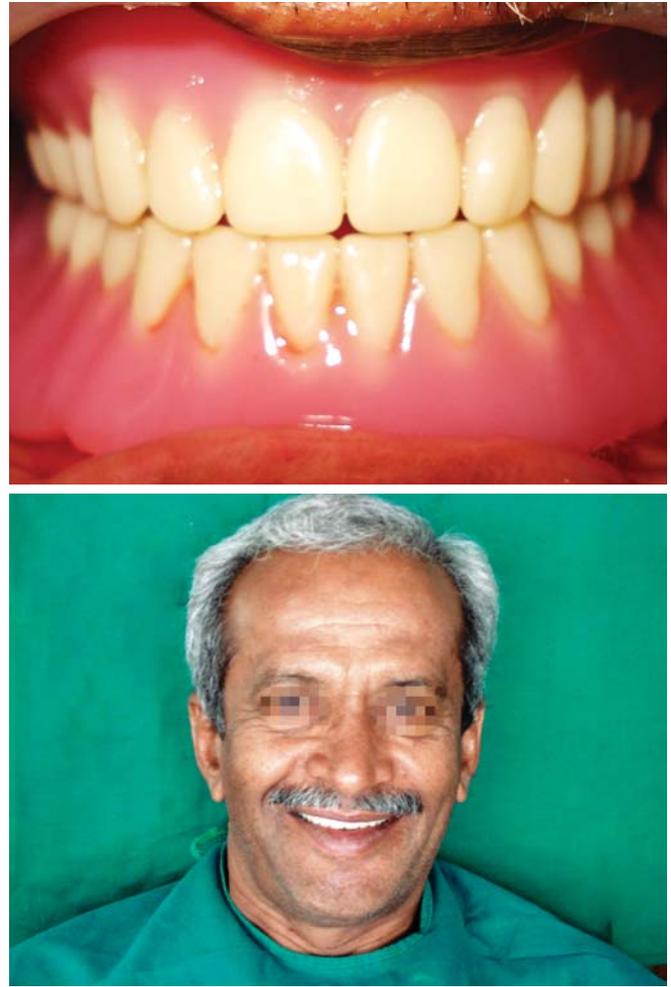
Patients who are about to lose all of their natural teeth in one or both jaws may create a dilemma for themselves and their dentists. A conventional complete denture requires a significant postextraction waiting period before prosthetic impressions can be attempted on a reasonably stable residual ridge. The patient must go without teeth for several weeks leading to functional difficulty and social indignity before receiving the denture. The complete immediate denture offers a solution to this problem because it is constructed before the natural teeth are extracted and placed immediately afterward giving patient security and confidence.<sup>2</sup>

Other advantages of immediate denture being the denture acts as a bandage or splint to help control bleeding; to protect against trauma from the tongue, food or teeth if present in the opposing arch, and to promote rapid healing.<sup>1,4</sup> Patients regain adequate function in speech, deglutition and mastication much sooner compared to conventional complete denture, many patients are not afraid to have teeth removed if they can have them replaced immediately. The remaining teeth aid in establishing the vertical dimension of occlusion and in positioning the artificial replacement. The disadvantages include initial high ridge resorption which often makes relining or remaking compulsory.

Retaining roots beneath dentures aids in preservation of proprioception and reduce bone resorption. By retaining



**Fig. 7:** Final casts



**Fig. 9:** Insertion of maxillary immediate overdenture and mandibular immediate denture



**Fig. 8:** Abutment teeth (5, 6, 11) prepared intraorally and anterior teeth extraction

the mandibular canines in the use of an overdenture, the resorption of the alveolar bone surrounding these teeth was shown to be reduced by eight times between the canines and it also preserved in both height and width posterior to the canines.<sup>4</sup>

In the present case, the selected abutment teeth were reduced so that only 2 mm crown remains above gingival margin. The reduction in crown height for overdenture has several advantages. This creates adequate space for the overlying artificial denture tooth and denture base, reduces the lateral stresses and lever action of the tooth. It also forms the basis of using periodontally compromised teeth which otherwise would have been indicated for extraction.

The retained tooth roots, used for overdenture, transfer occlusal forces to the alveolar bone through the periodontal ligament and maintain alveolar ridge morphology.<sup>5,6</sup>

Pacer and Bowman found that the overdenture patient possessed more typical sensory function which is closer to natural teeth than a complete denture patient in discriminating between occlusal forces. The periodontal receptors also actively influence the cyclic joint movements of mastication by influencing the muscles of mastication by their proprioceptive feedback mechanism.<sup>7</sup>

The two-phase procedure was followed to ensure proper healing of posterior segment before denture placement and at the same time avoids initial rapid resorption in crucial maxillary and mandibular posterior regions.

## CONCLUSION

A smooth psychological and physiological transition of patient from dentulousness to edentulousness is very important for the success of complete denture therapy. Immediate denture and overdenture treatment modality play very important role in the same. The combined advantages of immediate denture and overdenture can be gained by careful multidisciplinary approach. Thorough treatment planning and patients cooperation is important aspect of these otherwise time consuming and tedious procedures. With more emphasis on implant retained prosthesis, one should not ignore the easy and economical way of ridge preservation by overdenture way.

## REFERENCES

1. Nimmo A, Winkler S. Conventional immediate denture. In: Winkler S (Ed). Essentials of complete denture prosthodontics (2nd ed). New Delhi: Ishiyaku EuroAmerica Inc AITBS Publishers 2000:361-74.
2. Stillwell KD, Amir J. A clinical pathway for complete immediate denture therapy: Successful prosthetic management for hopeless dentitions. *Gen Dent* 2008;6:380-89.
3. Jerbi FC. Trimming the cast in the construction of immediate dentures. *J Prosthet Dent* 1966;16:1047-53.
4. Crum RJ, Rooney GE Jr. Alveolar bone loss in overdenture a 5-year study. *J Prosthet Dent* 1978;40:610-13.
5. Fenton AH. The decade of overdenture 1970 to 1980. *J Prosthet Dent* 1998;79:31-36.
6. Morrow RM, Feldmann EE, Rudd KD, Trovillion HM. Tooth-supported complete denture: An approach to preventive prosthodontics. *J Prosthet Dent* 1969;21:3-22.
7. Pacer FJ, Bowman DC. Occlusal force discrimination by denture patients. *J Prosthet Dent* 1975;33:602-09.

## ABOUT THE AUTHORS

### Tulika S Khanna (Corresponding Author)

Reader, Department of Prosthodontics, MGM Dental College and Hospital, Navi Mumbai, Maharashtra, India, e-mail: ktuls18@gmail.com

### Sandeep Vivek Gurav

Lecturer, Department of Prosthodontics, MGM Dental College and Hospital, Navi Mumbai, Maharashtra, India

### Sabita M Ram

Dean, Department of Prosthodontics, MGM Dental College and Hospital, Navi Mumbai, Maharashtra, India

### DB Nandeeshwar

Professor and Head, Department of Prosthodontics, Bapuji Dental College and Hospital, Dabangere, Karnataka, India