

# IMMEDIATE DENTURE WITH UNUSUAL BONE MORPHOLOGY: A CLINICAL REPORT

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## Abstract

Construction of immediate denture is always challenging, as the arrangement of artificial teeth cannot be observed at a try-in appointment. This report describes the clinical case of a patient presenting unusual large alveolar ridges, bony prominences, severe undercuts, and bulbous tuberosities, rendering the arbitrary teeth setting and positioning difficult. An extensive surgical correction of alveolar ridges was required to facilitate the placement of an immediate denture, satisfying the patient demands.

**Key words:** immediate denture - alveoloplasty.

IAJD 2011;2(1):40-44.

# PROTHÈSE IMMÉDIATE AVEC MORPHOLOGIE OSSEUSE DÉFECTUEUSE : À PROPOS D'UN CAS CLINIQUE

## Résumé

La réalisation d'une prothèse immédiate est parfois problématique, puisque la disposition des dents artificielles et l'insertion de la prothèse peuvent être difficiles. Ce rapport décrit le cas clinique d'une patiente présentant de larges crêtes alvéolaires et tubérosités, des proéminences osseuses et des zones de contre-dépouilles. Une chirurgie de régularisation des crêtes alvéolaires était indispensable pour faciliter le placement de la prothèse immédiate, assurant ainsi le confort et la satisfaction de la patiente.

**Mots clés:** prothèse immédiate – alvéoloplastie.

IAJD 2011;2(1):40-44.

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## Introduction

Immediate denture is defined as a removable dental prosthesis fabricated for placement immediately following the removal of natural tooth or teeth. Immediate dentures allow patients to continue their social activities without being in an edentulous state. This report describes the clinical case of a patient presenting unusual large alveolar ridges, bony prominences, severe undercuts, and bulbous tuberosities. The insertion of the immediate denture required extensive surgical reduction and reshaping of the alveolar ridges.

## Clinical report

A 62 year old woman presented to the Department of Prosthodontics at the Government Dental College,

Trivandrum, Kerala, India for the replacement of her lost teeth. She complained about her unsightly appearance. The oral examination revealed the presence of the following teeth:

7	8	9	10	12	14
20	21	22	23	24	25
26	27	28	29		

Her mandibular anterior teeth were extruded and the anterior overjet was of 7mm. Extensive bony undercuts were observed on the buccal aspect of the maxillary and mandibular ridges. The level of anterior maxillary ridge crest was 5mm coronal to the posterior ridge crest. Similarly in the mandible, the height difference was 7mm. Both the tuberosities were bulbous with severe undercuts (Fig.1).

The case was evaluated and treatment plan was evolved. The patient was a teacher, so she asked for immediate

replacement of the extracted teeth in order to continue her professional duties. Anatomical features can make this procedure difficult. As prosthetic skill alone cannot circumvent these problems, the patient was referred to the Department of Oral and Maxillofacial surgery for alveoloplasty in order to create favourable ridges for prosthetic rehabilitation. Treatment plan was formulated to fabricate an immediate denture. It was also decided to extract all the posterior teeth 21 days prior to impression.

## Procedure

Step 1: Maxillary and mandibular arch impressions were made with irreversible hydrocolloid impression material (Alfina®, Prevest Denpro LTD, Jammu, India). Casts were prepared

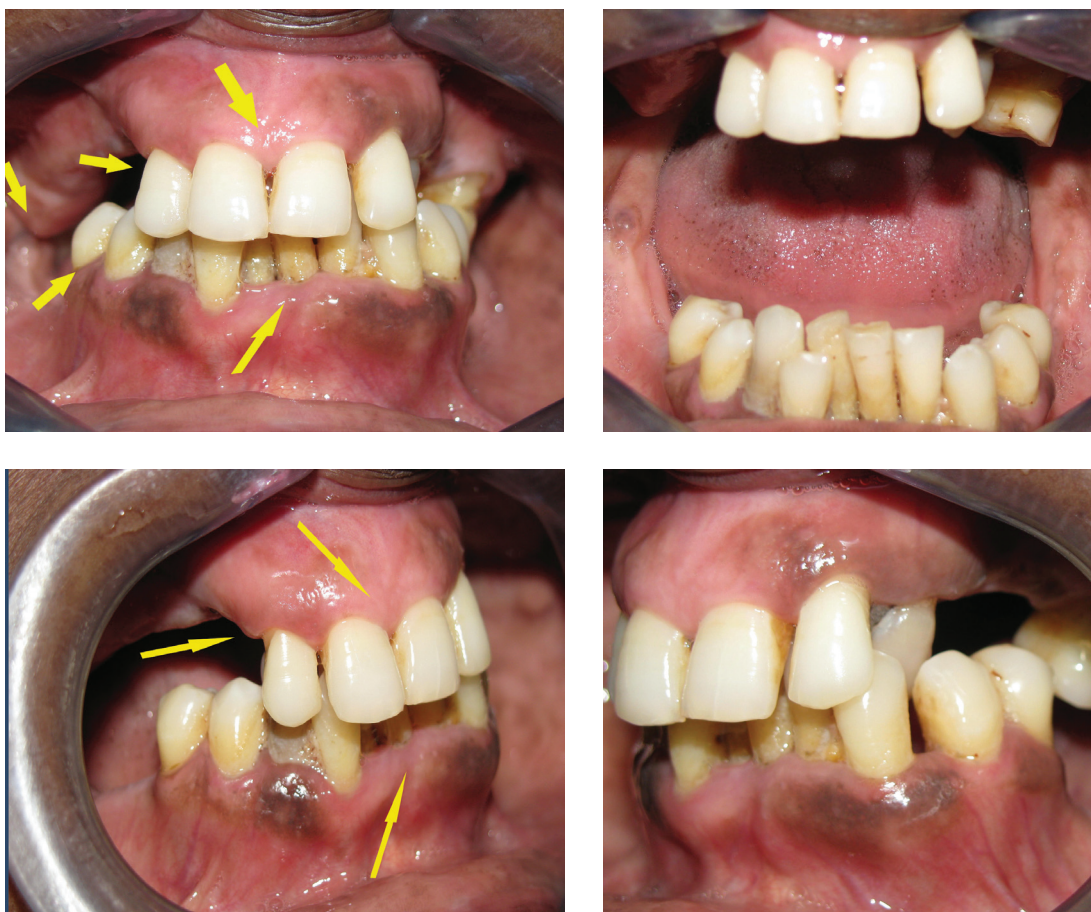


Fig.1: Preoperative photos: frontal, right and left lateral views.

in type III dental stone (Gypstone®, Prevest Denpro LTD, Jammu, India).

Step 2: Custom trays were fabricated for both the maxillary and mandibular arches. Using low fusing compound (Hiflex®, Prevest Denpro LTD, Jammu, India), border moulding for the posterior segment of the maxillary and mandibular ridges were done. Then, portion of the tray covering the anterior segment of the arch was trimmed off. To relate the posterior segmental impression to the remaining teeth and supporting tissues, an impression of the anterior region was made, while keeping the posterior impression in place, using addition silicon elastomeric impression material, heavy body (Elite P & P®, Zhermack, Italy). Secondary impression of the entire denture bearing area was made using addition silicon elastomeric impres-

sion material, regular body (Reprosil®, Densplay, Delhi, India).

Step 3: The master cast was poured in type IV dental stone (Adentatec®, GMBH, Germany). Master cast was duplicated in reversible hydrocolloids. Undercut areas were marked for future reference (Fig.2), especially for surgical purpose.

Step 4: The maxillomandibular jaw relations were registered.

Step 5: Posterior teeth arrangement was completed and evaluated in patient's mouth to confirm maxillomandibular relation records. Long axes of anterior teeth were marked. Another line was scribed 9 mm above the free gingival margin of each tooth for further reference during mock surgery and anterior teeth setting [1].

Step 6: After posterior try in, the denture bases with teeth were seated

on the articulator. Mock surgery was performed. Surgical stent was fabricated for both the maxillary and mandibular arch (Fig.3) [2].

Step 7: Temporary denture bases with posterior teeth were sealed on the modified master cast [3]. Arrangement of anterior teeth was completed (Fig.4). The denture was prepared.

### Surgical phase

The patient underwent multiple surgical procedures in a single sitting, i.e.: elimination of anterior maxillary and mandibular undercuts, reducing the prominent premaxilla, bilateral maxillary tuberosity reduction and levelling of the ridges height. All procedures were performed aseptically under local anesthesia using 2% lignocaine with 1:100,000 dilution of

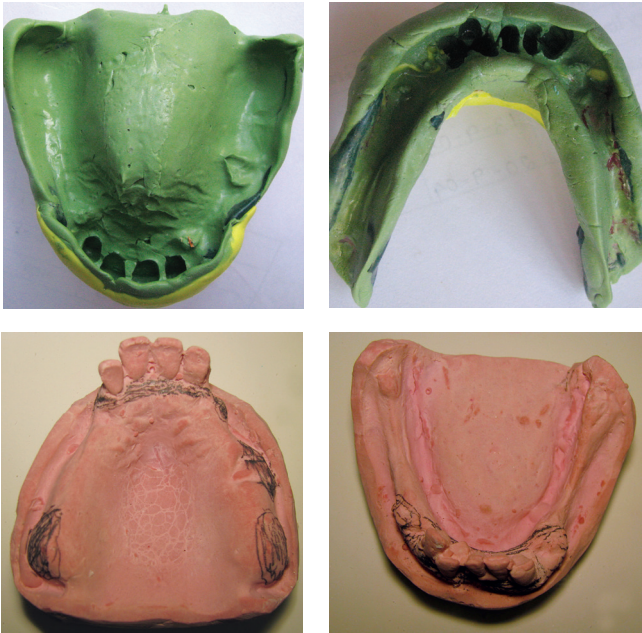


Fig. 2: Photos of impressions and master casts.

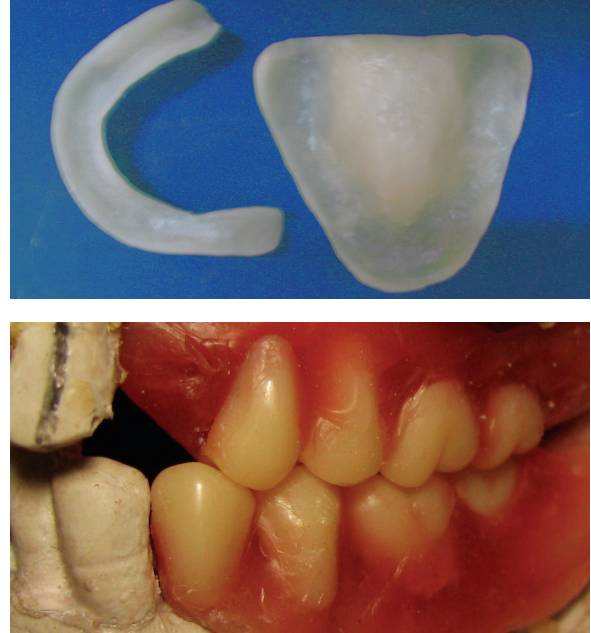


Fig 3: Surgical stent and upper and lower denture bases.



Fig. 4: Arrangement of anterior teeth.

adrenalin (R-CAINE ADR®, Arco Life sciences (India) Pvt LTD).

Vertical bony and soft tissue hyperplasia was seen in the maxillary tuberosity bilaterally. A crestal incision was made; the mucosa was undermined and fibrous tissue excised. The excess bone was removed with bur under coolant irrigation. The flap was trimmed and closure was done with 3-0 silk sutures.

Intraseptal alveolotomy was done to remove the anterior maxillary undercuts and to reduce the large anterior maxilla. The six anterior maxillary teeth were removed. The interdental septa were excised. The entire labial plate was fractured inwards [4]. The height of the anterior maxillary ridge was reduced by approximately 4 mm (Fig.5).

The posterior edge of the canine eminence was reduced. The excess of

gingival tissue was trimmed and continuous sutures were realised.

The anterior mandibular teeth were extracted and the height of the ridge was reduced by approximately 5mm. Labial undercuts were eliminated in the incisor and premolar regions. The flap was readapted and sutured. The surgical stent provided excellent guidance for the alveoloplasty (Fig.6).

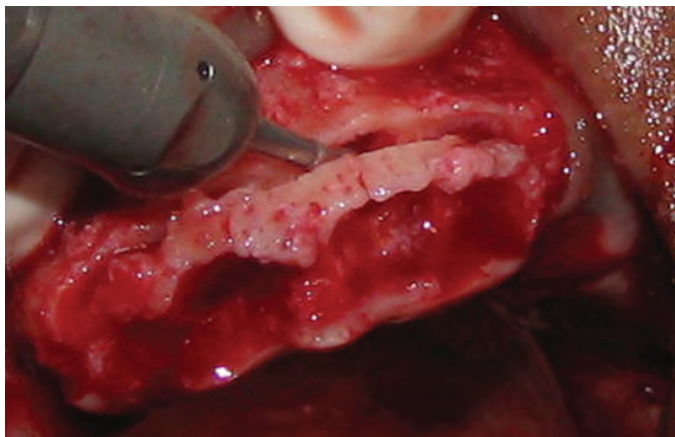


Fig.5: Vertical reduction of the maxillary anterior ridge.

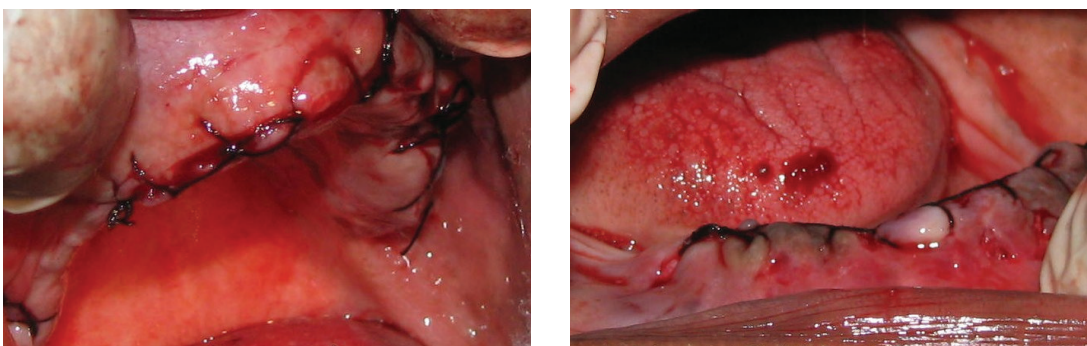


Fig.6: Immediate post operative view of the alveolar ridges after alveoplasty.

The denture was inserted. Analgesics and antibiotics were prescribed. The patient was recommended bland, semisolid, pureed diet, nutritional supplements and plenty of oral fluids. Post insertion instructions were given. The sutures were removed after 7 days and the healing was uneventful (Fig.7).

During the review visit, a slight midline shift in the denture was noticed. Despite that, the patient was quite happy about her appearance, since she had a similar midline shift in her natural dentition.

## Discussion

When complete extractions of remaining teeth become unavoidable,

an immediate denture is a solution. This process will help avoiding the embarrassment of appearing in the public without teeth. Also, immediate dentures can minimize changes in the patient's appearance that can occur when natural teeth are removed. Because the dentures provide continual support, the tongue, lips, and cheeks will not change position [5].

Construction of immediate denture is challenging, since the arrangement of artificial teeth cannot be observed at a try-in appointment, since they are made before the teeth are extracted [6]. Sometimes, anatomical variations can make difficult the realisation of satisfactory prosthesis and/or the insertion of this immediate removable prosthesis. In these cases, surgical

alveoplasty and reshaping of alveolar ridges are required.

Edentulous ridge alveoplasty is indicated for routine elimination of sharp (knife-edged) ridges or removal of undesirable contours, undercuts or prominences. When the mandibular or maxillary edentulous ridges require multifocal, moderate or greater amounts of recontouring, use of diagnostic casts to identify areas of concern and fabrication of surgical guides are recommended [7].

This clinical report shows a case with unusual large alveolar ridges having bony prominences, severe undercuts, and bulbous tuberosities. Extensive osteotomies and reshaping of alveolar ridge were necessary to

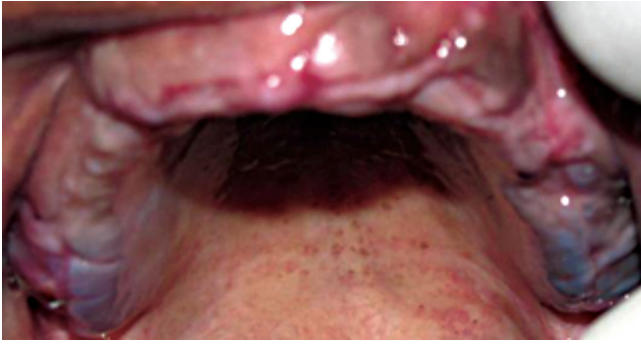


Fig.7: Healing on Day 7 after surgery.



Fig. 8a: 7th day postoperative smile with prosthesis in place.

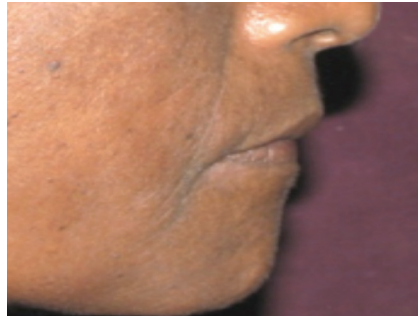


Fig. 8b: Lateral view



Fig. 8c: Frontal view

facilitate the proper insertion of the denture.

With this approach, the patient could avoid the social stigma of appearing without teeth and she was satisfied with the final result (Figs. 8a, 8b, 8c). Retention and stability of the denture was excellent. Moreover, the immediate denture restored the func-

tional aspects and helped accelerating the healing period.

The excellent co-ordination between the prosthodontist and surgeon resulted in good aesthetics, retention and stability of the denture. This clinical report reiterates that ideal service can be offered by a multidisciplinary approach.

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