"Immediate Denture – Preventing Psychological Trauma of Complete Tooth Loss"

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ABSTRACT

Occupational demands can be stressful to an individual, especially for those in service. Some professions do not allow the state of complete edentulism to be exposed even if one has few anterior teeth present. Immediate denture (ID) is one such prosthetic option that reinstates the dentulous state without being detected. We present a case of an elderly male patient who was on vacation from service and desired to have a denture without ever looking completely edentulous. The patient had maxillary and mandibular anterior natural teeth present, but presented mobility and supraeruption. Successful replacement of entire natural teeth with an ID was done. The three critical areas of ID fabrication have been discussed to enable better understanding of the procedures especially among undergraduate students.

Keywords — *complete denture, alveoloplasty, surgical guide, denture trial*

INTRODUCTION

An immediate denture (ID) is a complete or partial denture that is made to be installed immediately after extraction of the natural teeth. 1 It differs from immediate overdenture (IO) as IO is supported by natural tooth/implant and tissue. The advantages of ID treatment are mainly related to the prevention of humiliating effects of tooth loss on an individual which are basically psychological in nature. Under healthy conditions, after extraction of a natural tooth the patient has to wait for at least a period of 3 months until bone remodelling has completed and the socket is covered with some layer of mineralized compact bone. 2 The remodelling of bone is however not affected by any nerve disorders like facial paralysis or neuralgia.3 For ID, multiple teeth are usually extracted before denture insertion and bone remodelling takes place irrespective of wearing a prosthesis. This results in the need of relining the denture after some months of ID insertion. 4 Clinically the fabrication of an ID differ critically in four areas from the conventional complete denture. They are the final impression making, the teeth arrangement, the fabrication of surgical template and finally the post insertion denture relining after some time.

This article in the form of case report revisits these above mentioned critical areas through a pictorial presentation of the steps which most of the students fail to understand during their academics.

CASE REPORT

A male patient aged 52 years reported to the department of prosthodontics for replacement of missing teeth. Patients social history revealed that he is a teacher in a government school since last 25 years and is presently on vacation. He hesitated to undergo his prosthetic treatment since he was apprehensive about looking completely edentulous in front of his students. Therefore, he desired his treatment to be completed without anyone noticing the loss of his existing natural teeth. Medical and drug history were non contributory. Extra oral examination revealed a long maxillary lip in relation to the lower third proportion of the face **(Fig 1A)**. Facial profile disclosed a convex profile **(Fig 1B)**. Intra oral examination revealed presence of few maxillary and mandibular anterior teeth along with certain roots **(Fig 1C)**. The periodontal condition of the teeth was considered to be unfavorable for supporting an overdenture or to be retained. After having undergone routine diagnostic investigation procedures, the treatment options presented to the patient were an ID as first choice or conventional complete denture after extraction of remaining teeth. The patient was not indicated for implant supported prosthesis in the present state. The patient opted for the ID treatment. The prosthetic treatment started by recording a thorough case history and making of a preliminary diagnostic impression using irreversible hydrocolloid (CA 37; Cavex, Haarlem, Holland). The special tray for final impression was designed by blocking the area of the natural teeth with a double layer of modelling wax (Hyderabad Dental Products, Hyderabad, India) **(Fig 2A)**. A vertical stop was provided within the wax spacer on each cast **(Fig 2 A, B)**. A thin layer of aluminium foil was then adapted over the wax **(Fig 2C)** following which, self cure tray resin (Fortex; Lucite Intl, Durham) was adapted separately for edentulous and dentulous areas **(Fig 2C)**. A different individual tray was fabricated for the

portion where teeth were present **(Fig 2D)**. The same procedure was done for the other cast. Definitive impressions for both arches was made using a dual impression technique in which all supporting soft tissues were recorded under

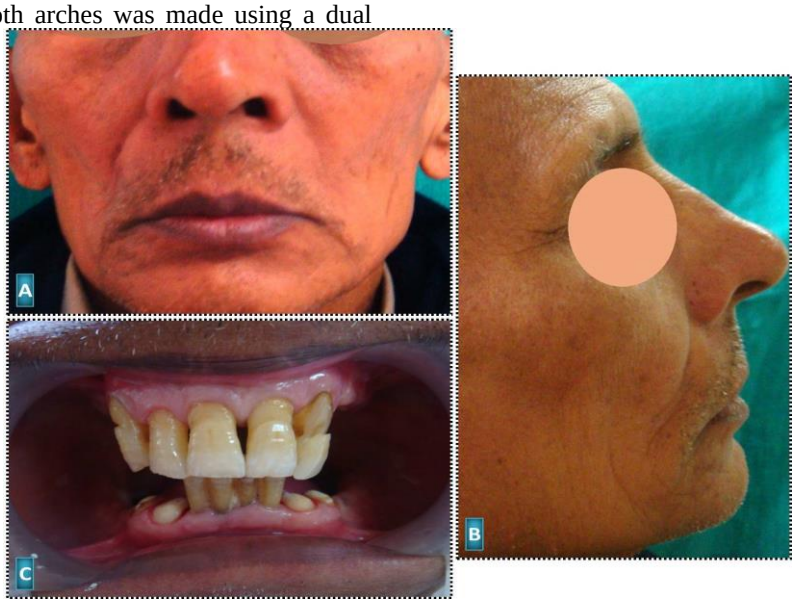

Figure 1: (A) Extra oral view showing long maxillary lip (B) Convex facial profile (C) Remaining natural anterior teeth

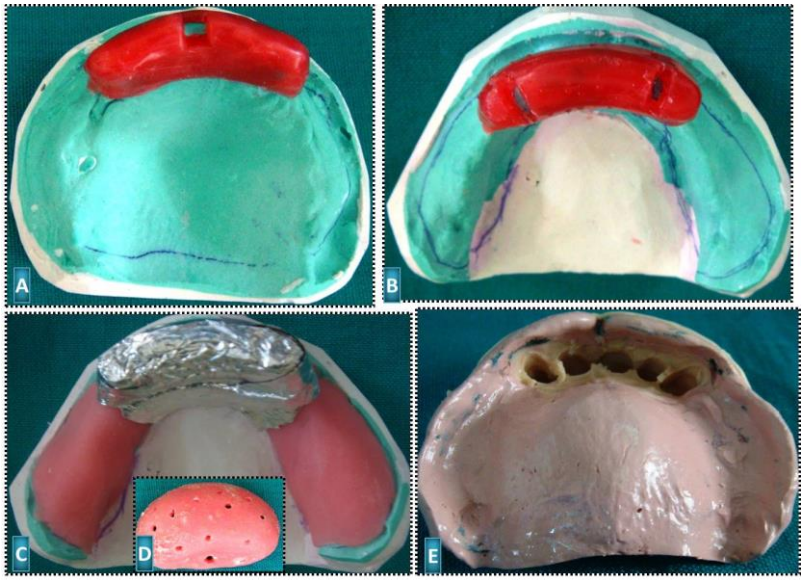

Figure 2: Wax spacer with a vertical stop on (A) Maxillary cast (B) Mandibular cast (C) Aluminum foil adapted over wax spacer (D) Area of special tray to cover the teeth (E) Dual impression using irreversible hydrocolloid and zinc oxide eugenol impression paste

function (Zinc oxide eugenol, DPI) while the natural teeth were recorded in a static state using irreversible hydrocolloid **(Fig 2E)**. After recording the jaw relations the posterior teeth were arranged on a mean value articulator **(Fig 3A)** which was tried in the patient's mouth **(Fig 3B)**. The anterior teeth were then arranged by removing one natural tooth from the cast and replacing it with an artificial tooth **(Fig 3 C, D, E).**

The entire trial denture tooth arrangement was completed, finished and polished **(Fig 3F)** to be processed into heat cure denture base acrylic (DPI, India). For preparing the surgical guide the final costs were first duplicated into the dental stone **(Fig 4A)**, following which a two sheet base plate wax (Moyco Industries, Inc, Philadelphia, PA) was adapted over each cast **(Fig 4B,C)**. These were then invested to form a mold **(Fig 4D)** from which two clear acrylic self cure surgical templates were prepared **(Fig 4E)**. On the day of insertion all natural teeth in the maxillary and mandibular arch were extracted followed by determining the need of alveoloplasty/gingivoplasty using the surgical template **(Fig 5A, B)** which was followed by placement of a suture **(Fig 5C)**.

Figure 3: (A) Posterior teeth arranged on articulator (B) Clinical denture trial (C) Alternate tooth removed and replaced (D) Completed maxillary arrangement (E) Adjustment of overjet and overbite (F) Completed teeth arrangement

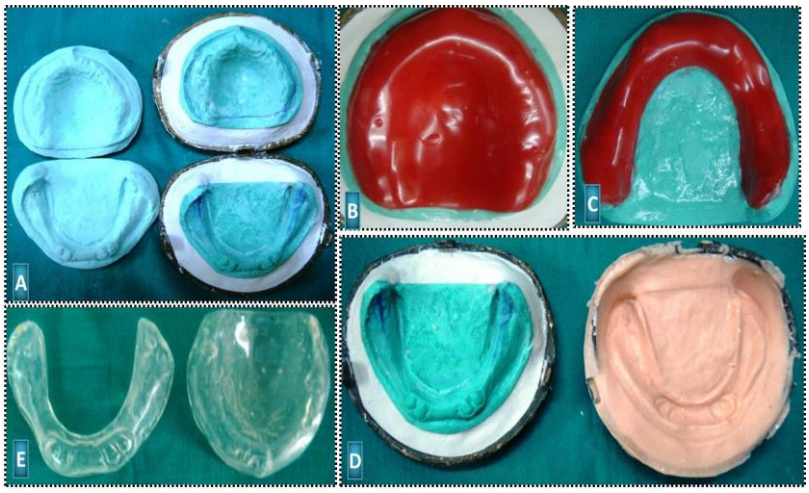

Figure 4: (A) Duplicated casts (B) Wax adaptation maxillary duplicate cast (C) Wax adapted on mandibular duplicate cast (A) Mold (A) Clear acrylic template

The dentures were then inserted **(Fig 6A)** and the occlusion was checked on either side **(Fig 6B, C)**. The patient received instructions regarding care and maintenance and follow up treatment. The denture was relined after a period of 5 months and the patient expressed his satisfaction with the outcome of the dentures.

DISCUSSION

Immediate denture has many advantages over conventional complete denture. One of the chief advantages of ID is its use as a surgical splint to control post extraction bleeding and provide a conducive atmosphere for adept healing. [5] However, there is little margin of error in achieving such an objective. Therefore the surgical template fabrication is an important aspect of the ID fabrication. The critical areas are the material proportion between powder and liquid of either a heat cure denture base or a self cure denture base acrylic. The transparency of the final template is directly affected by the amount of powder incorporated therefore less powder and more liquid is recommended. Since the surgical template and the final denture have the same tissue surface, the surgical template when transparent allows the surgeon to locate the pressure areas.[6] Non visibility through clear acrylic does not allow the surgeon to determine the amount of alveoloplasty that needs to be done. The minimum thickness of the template has been recommended to be 2 mm so that it is rigid. The fabrication of the surgical template should be done on the duplicate of the modified master cast for the denture.

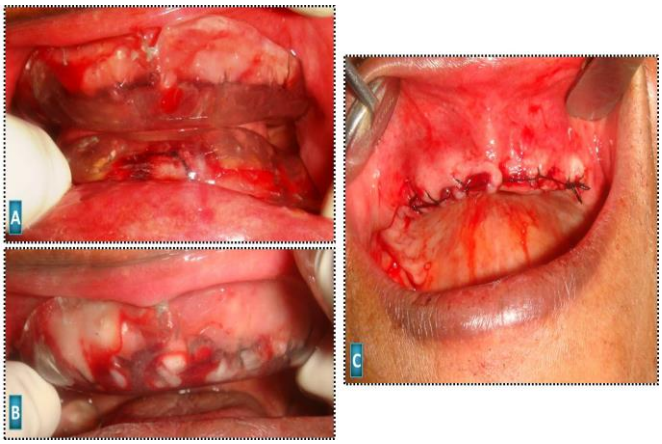

Figure 5: Use of template to identify pressure areas (B) before and (C) after correction (D) suture placement

Figure 6: (A) Extra oral view with patient demonstrating anterior balanced occlusion (B) Intra oral view of right side (C) Intra oral view of left side

Another important clinical critical area is the impression making. Traditionally partial edentulous or partial dentulous arches have been managed successfully using a dual impression technique which records the tissues under rest while recording the teeth in an anatomic position. The same impression technique is also used in cast partial denture fabrication or immediate overdenture fabrication.[7,8] The amount of displaceable mucosa should be noted at the time of intra oral examination. [9] For definitive impression, one has to design the special tray according to a particular situation. The tray can be designed either to record the two components (anatomic and non anatomic) separately or one tray can be used for making a uniform impression of the entire area using a medium body elastomeric impression material. [10,11] whichever tray design is utilized, the objectives of final impression should be to record the limiting structures in a functional state. Therefore, border molding of the tissue supporting area is mandatory.

The status of existing teeth has a direct impact on the fabrication of ID. Supra eruption of natural teeth should be considered as a potential source of incorporating error into the teeth arrangement of the final denture. When teeth erupt beyond incisal plane, they have a definite impact on the existing vertical dimensions therefore reliability of conventional methods (mechanical) used for recording vertical jaw relation is not recommended where supraeruption exists. [12] Physiological methods of verifying the amount of free way space are highly recommended. [13]

In the ID follow up the patient should be recalled within 24 hours to examine the tissue response to dentures and check the inflammatory process. Anti inflammatory and antibiotics should be prescribed to minimize post extraction infection and pain. [14]

CONCLUSION

The patient chosen for immediate denture treatment should be ideally indicated for such prosthetic option. Teeth should not be sacrificed if they can be restored. The option of overdenture should be explored first.

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REFERENCES

[1] The Glossary Of Prosthodontic Terms. J Prosthet Dent. 2005; 94: 10-92.
[2] Mattoo KA, Yadav L, Rahman SU. Immediate overdenture - a treatment option for bone preservation. Journal of Medical Sciences and Clinical Research 2015; 3 :3879-82
[3] Yadav P, Mattoo KA, Kumar S. An innovative complete denture for a facial paralysis patient. Clinical Dentistry 2011: 60-64
[4] Zalkind M, Hochman N. Converting a fixed partial denture to an interim complete denture: esthetic and functional considerations. Quintessence Int 1997; 28: 121-5.
[5] Heartwell CM, Salisbury FW. Immediate complete dentures: An Evaluation. J Prosthet Dent. 1965; 4: 615-623
[6] Khan Z, Heaberle CB. One-appointment construction of an immediate transitional complete denture using visible light-cured resin. J Prosthet Dent 1992; 68: 500-2.
[7] Mattoo K, Singh M, Singh SP. Precision retained partial denture - A proxy treatment option for full mouth rehabilitation. Med Res Chron 2014; 1: 144-149
[8] Hickey JC, Zarb GA, Bolender CL. (1990). Boucher's Prosthodontic treatment for edentulous patients. 10th Ed. St Louis: Mosby, 534-62.
[9] Caputi S, Murmura G, Ricci L, Varvara G, Sinjari B. Immediate denture fabrication: a clinical report. Annali di Stomatologia 2013; 4: 273-277
[10] Jivanescu A, Marcauteanu C, Bratu D. immediate complete denture – a case report. TMJ 2003; 53: 293-96
[11] Shukla S, Bharathi SS, Nair C, Kumar A. Immediate Denture. Journal of Dental Sciences and Oral Rehabilitation 2015; 6: 00-00
[12] Brar A, Mattoo KA, Singh Y, Singh M, Khurana PRS, Singh M. Clinical reliability of different facial measurements in determining vertical dimension of occlusion in dentulous and edentulous subjects. Int J Prosthodont Restor Dent 2014; 4; 68-77
[13] Mattoo KA, Sivach A, Jain S. Gnatho dynamic teeth arrangement in complete denture prosthesis. Journal of Medical Sciences and Clinical Research 2015; 3: 3875-78
[14] Kelly KE. Follow-up treatment for immediate denture patients. J Prosthet Dent. 1967; 1:16-19.