

Fabrication Of Removable Partial Denture In Aesthetic Zone Immediately After Extraction: A Case Report

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Abstract

Fabrication of conventional removable prosthesis is a time-dependent procedure. The intermediate time period is crucial as the stomatognathic system undergoes constant change especially when teeth are extracted. Fabrication of immediate denture is a well-documented procedure with evidence based results which implicate the necessity of maintaining the maxillo-mandibular relations, along with proper masticatory function, speech and preventing further ridge resorption in the extraction site. This case report highlights the cases to be selected for immediate rehabilitation unit the final prosthesis is fabricated.

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I. Introduction

Interim removable partial dentures (RPDs) are a valuable cosmetic stopgap for partially dentulous patients in need of definitive prosthodontic care.¹ For patients requiring extraction of teeth in the esthetic zone, RPDs can be fabricated for immediate placement so missing teeth are not evident following surgery and during healing.

Immediate denture is a prosthesis constructed to replace the lost dentition, associated structures of the maxillae and mandible and inserted immediately following removal of the remaining teeth. Generally conventional immediate dentures and interim immediate dentures are documented in the literature.¹ The interim prosthesis is designed to replace the missing area instantly after extraction of natural teeth and can be used for a short time after tooth extraction till the achievement of healing. The immediate denture may be relined or replaced with the newly fabricated final denture.² The interim immediate denture provides advantages such as preservation of facial appearance and height, muscular tone, phonetic and reduction of post-extraction pain.^{3,4} This clinical report aims at elaborating the same-day fabrication and delivery of an interim removable partial denture.

II. Clinical Report

A 52-year-old male pre-sented to the department of Prosthodontics, Dr. R Ahmed Dental College & Hospital, with a chief complaint of replacement of teeth in the anterior region. The patient had received no dental care for at least five years and had no medical conditions that would contraindicate dental treatment. Clinical and radiographic examination reveals that the right and left mandibular lateral incisor were grade II mobile, along with exposure of root (Fig 1). Additionally, these two laterals were inclined to their mesial aspect, which could be a hindrance to the fabrication of future prosthesis.

The patient consented to extraction of 32 and 42. Thorough oral examination was conducted along with evaluation of the orthopantomograph (OPG) (Fig 2). The OPG revealed bone resorption around 32 and 42. Missing anterior teeth, along with root exposure was his prime area of concern. Cosmetic replacement along with planning an immediate interim removable partial denture (RPD) was considered the treatment of choice, until definitive prosthodontic treatment could be delivered to the patient. The patient was intimated that a interim RPD was

intended for cosmetic replacement of missing teeth. Effective function can only be achieved through definitive prosthesis.

Prosthesis Design and Immediate Fabrication

Impressions of the maxillary and mandibular arches were made with alginate impression material (DPI, IMPRINT Alginate Impression Material) and casts fabricated with Type 3 dental stone (Kalabhai Kalstone, Green). The area of the casts where teeth would be removed were carved to the anticipated shape of the edentulous ridges. The immediate interim partial denture was designed using wax pattern and selection of semi-anatomic teeth (Acryrock, shade B2) (Fig 3). Shade was selected prior to extraction. Next the casts were mounted on mean value articulator, and the occlusion checked for overjet, overbite and possible interferences.

Fit of the interim RPD was verified on the mandibular diagnostic cast, with maximum intercuspation. Surgical appointment was arranged priorly, selecting a particular date when the prosthesis would be ready to be inserted in the mouth. On the same day teeth 31 and 41 were atraumatically extracted (Fig 4), and prosthesis was delivered after minor adjustments were made to facilitate retention & stability of the prosthesis (Fig 5). Protrusive movement was directed toward the patient's remaining natural maxillary anterior teeth and checked for any interferences. Post delivery instructions were given with particular emphasis on soft diet and not removing the denture post-insertion for a period of 12-14 hours (Fig 6).

The patient returned to the clinic after one week for follow-up. The soft tissue healed adequately and the alveolar ridge was well-adapted to the intaglio surfaces of the denture base at the extraction sites (Fig 7). Rescheduling was arranged for further comprehensive dental care.

III. Discussion

Immediate dentures are oral rehabilitation prosthesis planned on the same day of extraction of the involved teeth. Extraction socket heals by secondary intention. The healing takes 4-5 months to regain its contour. In this process maintaining the shape and its surrounding oral tissue becomes important. Immediate denture not only gives an instant rehabilitation option, but also acts as a splint which arrests bleeding from the freshly extracted site and provides a scaffold for maintaining the original contour in which the bone remodelling will take place. This denture is worn as an interim option till the fabrication of permanent dentures.²

The primary difference between an immediate denture and a conventional, or permanent, denture lies in the intimate contact of the denture to the underlying intaglio surface.³ Immediate denture being temporary in nature, acts primarily as a scaffold for future formation of bone whereas conventional RPD is worn to prevent further resorption. Immediate dentures also protect the overlying mucosa till the bone regenerates.^{3,4} The immediate denture needs constant relining and adjustment as the remodelling of bone continues for a period of 4-5 months post-insertion.⁵

All patients should provide a thorough history. Clinical examination and relevant investigations carried out to attain a correct diagnosis and treatment plan. The formulated diagnoses and treatment plan as well as the costs and timeframes involved need to be thoroughly discussed with the patient to obtain informed consent before proceeding with treatment.^{2,6} It is also vital that the clinician has a clear understanding of the patient's expectations of treatment and whether these can be achieved in the proposed treatment, particularly in those patients who have never worn dentures before. Patients need to be vividly aware of the limitations of a removable prosthesis in general and the purpose of immediate dentures.⁷ The prosthesis should be evaluated for retention, stability and support with assessment of the occlusion and peripheral extensions, paying close attention to areas that are over or under extended around denture bearing tissues.^{7,8} The occlusion should be checked and the occlusal vertical dimension (OVD) and free way space noted.⁹ Aesthetics should be evaluated visually. Opinion of the patient on their existing denture should be given importance. Accepted aesthetics can be used to guide the final prosthesis.^{6,10}

Maintaining a set protocol for immediate dentures is crucial.^{7,10} Wearing the denture for about 24 hours after surgery is vital to control bleeding and also maintain the healing scaffold.¹¹ Regular visit for follow-up with the dental surgeon is recommended as the fit changes with healing process.^{10,12}

In some cases immediate dentures can last as long as conventional or permanent dentures.¹³ Though it is always advisable to opt conventional denture over immediate denture as the mode of fabrication of the later along with the choice of denture base material as well as the semi-anatomic teeth used are of greater quality than the interim RPD.^{3,14}

Advantage of Immediate Denture	
1.	They immediately rehabilitates prosthetically after tooth extraction.
2.	They provide protection to gum during the healing process, and achieving haemostasis.
3.	An immediate denture allows establishing speech patterns early.
4.	Allows retaining normal muscle behaviour following a period of edentulousness.
5.	Immediate RPD can reduce the rate of alveolar resorption.
6.	Immediate denture helps avoid challenges to adaptation following extractions before definitive prosthesis is fitted.
7.	Maintaining psychological well-being is of utmost priority and immediate removable denture provides the same.

Table 1: Advantages of immediate denture

Disadvantage of Immediate Denture	
1.	The biggest disadvantage is the additional cost.
2.	Another disadvantage is that it is not possible to predict the arrangement of teeth and how it will look like before the teeth are extracted and the immediate denture is inserted.
3.	Since planned extraction happens in immediate RPD fabrication , the same teeth are scraped off from the cast and the future prosthesis is designed directly on the cast without anterior or posterior try-in. Fabrication of custom-made prosthesis unlike immediate dentures, requies elaborate steps with detailed recording. Thus the fit of immediate denture is not as ideal as permanent dentures. ¹⁵
4.	Alveolar bone shrinkage may occur after an extraction, causing soreness or loosening of the denture. ¹⁶ With bone remodelling process, immediate dentures may require periodic adjustment or relining for comfort. Immediate RPD should be worn for a period of 4 to 6 months, until complete remodelling of bone takes place.

Table 2: Disadvantages associated with Immediate denture

IV. Conclusion

Immediate dentures are never the permanent solution to missing areas of alveolar bone or teeth. However the promptness of rehabilitation along with achieving haemostasis, aiding in speech and maintaining the confidence of the patient becomes the advantage of this procedure. However proper diagnosis and treatment planning is mandatory along with decision to extract mobile teeth and restore carious teeth. The clinician must have a vivid understanding of the patient’s expectations of treatment outcome, particularly in those cases who have never worn dentures before. Awareness of the limitations of a removable prosthesis in general and also the issues associated with an immediate denture. Denture wearing is a complex phenomenon. It is largely dependent on the psychological acceptance of the patient and neuromuscular ability to cope with the dentures. The technical knowledge of the clinician also has a pivotal role to play in its success.

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Fig.1: Pre-operative photograph



Fig 2: OPG taken prior to extraction



Fig 3: waxed up arranged semi-anatomic teeth

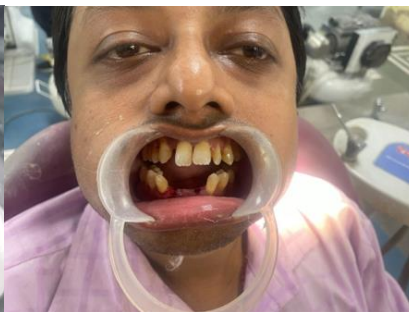


Fig 4: Socket after immediate extraction



Fig 5: The fabricated immediate RPD Prosthesis

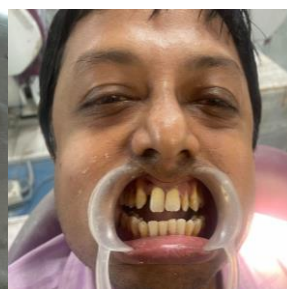


Fig 6: Post-insertion frontal image

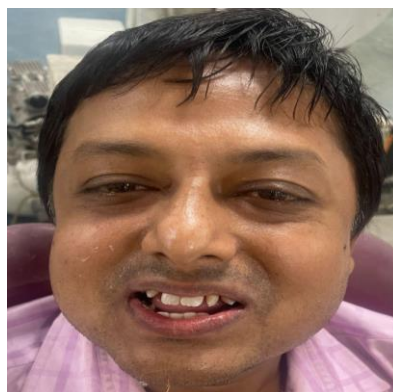


Fig 7: Confident smile of the patient post-insertion