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Case Report

Fabrication of Immediate and Definitive Overdenture from the Existing Full Arch Fixed Dental Prosthesis in an Elderly Patient

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Abstract

This clinical report describes the fabrication of an immediate and definitive overdenture from the patient's dislodged full arch fixed partial denture. The immediate overdenture was fabricated with visible light activated denture base resin in a single visit, and replicated the patient's esthetics and occlusion. Patient's response to the immediate overdenture was evaluated for two months, and the definitive overdenture was fabricated using of the immediate overdenture. The use of the patient's full arch fixed partial denture to fabricate the immediate and definitive overdentures facilitated the restoration of the occlusal vertical dimension, esthetics, occlusion, and social appearance.

Keywords: Immediate overdenture; Fixed dental prosthesis; Geriatric

Introduction

Common reasons for the failure of the fixed partial dentures (FPD) include the secondary caries of the abutments, dissolution of the luting cement, chipping of the veneer layer, and fracture of the framework. Patients presenting with a chief complaint of the dislodgement of the full arch FPD, associated with the breakdown of the abutments due to secondary caries, are often encountered in the prosthodontic practice [1,2]. Cementation of the prosthesis is usually not feasible in these patients due to the loss of the resistance and retention form of the abutments. These patients can be successfully rehabilitated with the overdentures, fabricated by using the existing dislodged FPD. The present clinical report describes the fabrication of the immediate and definitive overdentures from the patient's preexisting FPD. The use of the FPD for the fabrication of the overdenture preserved the patient's original information like the esthetics, phonetics, facial height, and the occlusal vertical dimension.

Clinical Report

A 72-year-old woman with a maxillary FPD extending from the right second molar to the left first molar presented with a complaint of mobility of the prosthesis (Figure 1). The patient informed that the FPD had been in place for about 20 years, and there was a history of the recurrent dislodgement of the FPD in the recent past. Patient's medical history was noncontributory, and there was no history of occlusal or temporomandibular disease. Clinical examination revealed 3-4 mm mobility in the FPD, and it appeared to be separated from all the abutments except the maxillary right lateral incisor and the left canine. Radiographic assessment revealed the presence of a single long span FPD in the maxillary arch supported by multiple endodontically treated teeth. Other significant intraoral findings included the presence of full coverage crown on the mandibular right first molar, a fixed prosthesis spanning from the mandibular right first premolar to the mandibular left first molar, generalized chronic marginal gingivitis of the teeth supporting the fixed prosthesis, and the gingival enlargement in the mandibular anterior region. Examination of the abutments after the removal of the mobile maxillary FPD displayed carious breakdown of the abutments, negating the possibility of cementation of the prosthesis. The patient asserted that she did not want to be without the teeth for even a short time to avoid social embarrassment. Therefore, it was decided to fabricate an immediate overdenture from the existing maxillary FPD in the same visit, for which an informed consent was obtained [3,4].

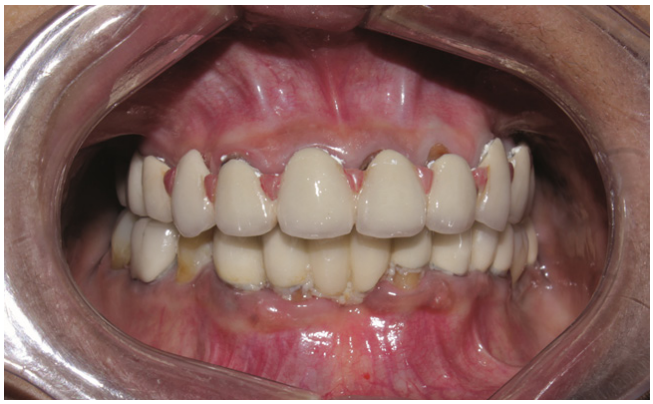

Figure 1: Initial intraoral situation. Patient presented with complaint of mobility of maxillary full arch fixed dental prosthesis.

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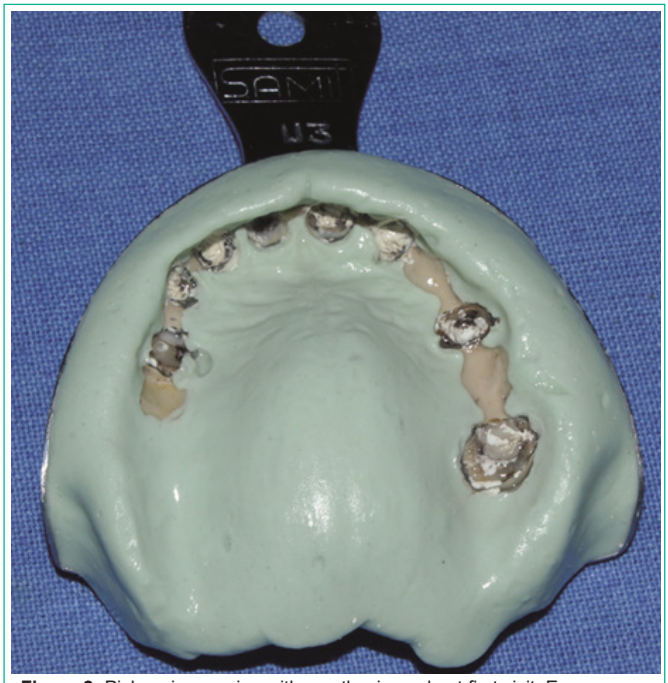

Figure 2: Pick up impression with prosthesis made at first visit. Excess impression material was cut using sharp blade and cast was poured.

Fabrication of the Immediate Overdenture in Single Visit

A well extended impression of the maxillary arch along with the FPD was made with the irreversible hydrocolloid impression material (Figure 2). The impression was poured with type III dental stone to generate the definitive cast (Figure 3). Model release agent was applied to the cast, and was allowed to dry. Light activated denture base resin sheet was adapted on the palatal portion, labial and buccal vestibules, hamular notches, and the posterior palatal seal area of the cast to develop the denture base portion of the immediate overdenture (Figure 4). The soft resin was pressed in the embrasure areas of the FPD to achieve the mechanical retention. The cast was placed in the curing chamber to expose the resin to the activation light for 10 minutes, as per the manufacturer recommendation. The prosthesis was retrieved from the working cast, and finished and polished following the standard laboratory protocol. The immediate overdenture was delivered in the first patient visit, and the recall appointment was scheduled. At the recall appointment, various treatment alternatives like the extractions of the remaining maxillary teeth and immediate complete denture, extraction of the teeth followed by implant supported prosthesis, and preservation of the teeth and overdenture therapy were discussed with the patient [5,6]. Patient declined the option of the immediate complete denture and implant supported prosthesis due to apprehension of the surgical procedure and economic limitations. Patient agreed to receive the conventional overdenture treatment, for which the informed consent was obtained. The patient wore the immediate overdenture for two months, and the patient's response to the treatment including the esthetics, phonetics, comfort, and occlusion were evaluated during this time [7,8]. Since it was observed that the patient was satisfied with the immediate overdenture, it was planned to convert the existing prosthesis into the definitive overdenture.

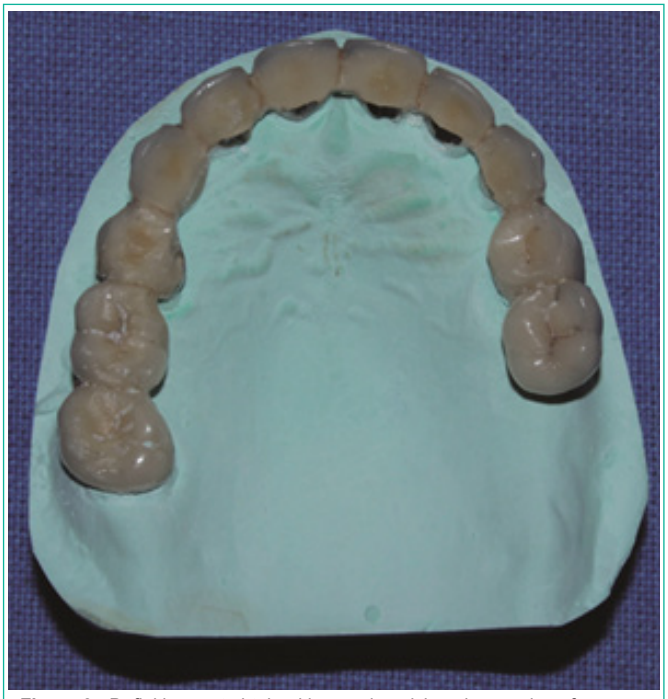

Figure 3: Definitive cast obtained by pouring pick up impression of prosthesis.

Figure 4: Immediate overdenture fabricated by using visible light activated resin in single visit. Patient wore immediate overdenture for a period of two months.

Fabrication of the Definitive Overdenture from Immediate Overdenture

Initially, face bow record was obtained with the immediate overdenture, and was transferred to the semi adjustable articulator. For making the impression, the peripheral extensions of the immediate overdenture were modified in the sulci and the frenal areas, and the border molding was carried out (Figure 5). Tray adhesive was applied on the internal surface of the immediate overdenture, and wash

Figure 5: Border molding of immediate overdenture. This was followed by wash impression with polyvinyl siloxane impression material and pouring of maxillary cast.

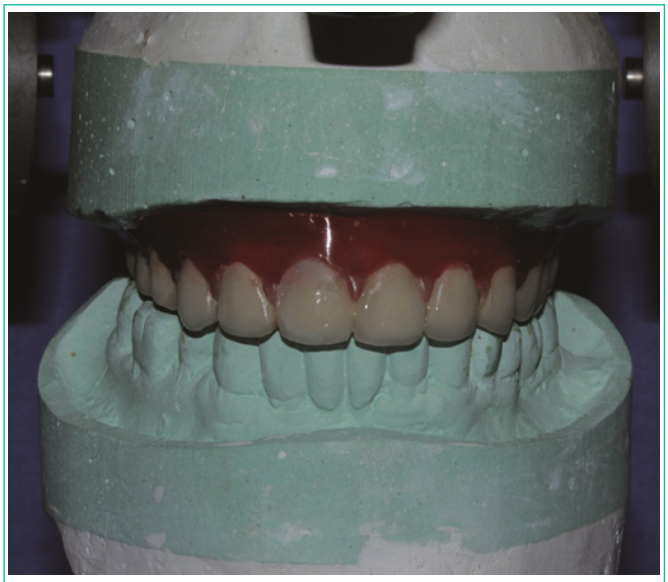

Figure 6: Wax trial denture fabricated for clinical try-in, using patient's fixed dental prosthesis.

Figure 7: Definitive overdenture during retrieval from denture processing flask.

impression was made with light body polyvinyl siloxane material using the closed mouth impression technique. The impression made using the overdenture was poured with type III dental stone, but the cast was not separated from the overdenture. The maxillary cast attached to the overdenturewas mounted on the articulator by using the facebow record made earlier, while the mandibular cast was mounted with the centric relation record. The maxillary mounting was removed from the articulator, and the immediate overdenture was separated from the maxillary cast. The FPD was disengaged from the denture base carefully with laboratory micromotor handpiece and bur. Temporary denture base was adapted on the cast, and the FPD was connected to the temporary denture base using the baseplate wax. The cast was reattached on the articulator, and the occlusion of the maxillary denture was developed with the mandibular arch (Figure 6). Clinical try-in of the waxed denture was carried out, followed by the processing of the denture by using the compression molding technique. The ceramometal FPD was protected from damage by coating it with a thick layer of silicone putty prior to the investing procedure. The penetration of the resin in the retainers during the packing stage resulted in mechanical retention between the denture base and the FPD. Polymerization of the resin was carried out by following the manufacturer recommended polymerization cycle. The denture was retrieved carefully from the flask (Figure 7), and the finishing and polishing was performed. The denture insertion was carried out, the recall appointment was scheduled after twenty-four hours, and the patient was followed up every month for the initial three months (Figure 8).

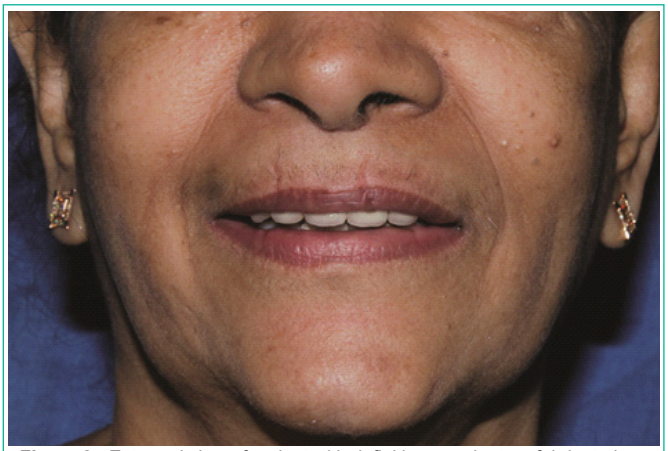

Figure 8: Extraoral view of patient with definitive overdenture fabricated using patient's fixed dental prosthesis, after three months of insertion.

Discussion

The patient requested that the transition from her existing dentition to prosthodontic replacement be in a short time span and with a minimum alteration in esthetics, speech, and nutrition. Therefore, fabrication of immediate overdenture using her existing FPD was performed in a single visit, followed by fabrication of the definitive overdenture after an observation period of two months. There were two alternatives to fabricate the definitive overdenture at this stage, one being fabrication of a new overdenture using a different set of teeth, and the other was to convert the existing immediate overdenture to the definitive prosthesis. Authors preferred the conversion of the immediate overdenture to the definitive prosthesis as it permitted the accurate replication of patient's esthetics and

occlusion, and would also be time saving and cost effective [9,10]. A fixed or removable implant supported prosthesis might be considered as the definitive treatment in the similar clinical situation. However, many elderly patients are physically frail, may have chronic medical problems, or sometimes homebound with limitations in mobility. While some can travel to the dental office independently, others may require the assistance of a caregiver. A few, who are institutionalized, might require the dentist to provide care for them at their place of admission. These factors may obviate the possibility of the implant supported prostheses in these elderly patients, and emphasize the need of conservative treatment methods like the overdentures.

Summary

The fabrication of a maxillary immediate and definitive overdenture from the patient's dislodged full arch fixed dental prosthesis has been described. The use of the patient's full arch prosthesis to fabricate the immediate and definitive overdentures resulted in the reduction in time span of the treatment, and facilitated the restoration of the patient's occlusion and esthetics.

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