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Fabricating an Interim Immediate Partial Denture in One Appointment (Modified Jiffy Denture). A Clinical Report

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Abstract

An immediate denture is fabricated before all the remaining teeth have been removed. Its advantages include maintenance of a patient's appearance, muscle tone, facial height, tongue size, and normal speech and reduction of postoperative pain. The purpose of this study is to describe the use of a patient's fixed prosthesis for fabricating an interim immediate partial denture in one appointment. Occlusion, occlusal vertical dimension, and facial support are maintained during the healing period in this procedure.

An immediate denture is fabricated before all the remaining teeth have been removed and inserted immediately after the removal of the teeth.[1] Generally, immediate dentures can be classified into two types, namely, conventional immediate denture (CID) and interim immediate denture (IID). CID is a complete or removable partial denture or overdenture fabricated for placement immediately after the removal of natural teeth as the definitive or long-term prosthesis. IID is a dental prosthesis to be used for a short time for reasons of esthetics, mastication, occlusal support, or convenience, or to condition the patient to the acceptance of an artificial substitute for missing natural teeth until more definitive prosthetic therapy can be provided.[2]

An IID's advantages include maintenance of a patient's appearance, muscle tone, face height, tongue size, and normal speech and reduction of postoperative pain.[3] After healing is complete, the immediate denture may be relined (CID) or replaced with a new prosthesis (IID).[4] Maintenance of occlusal vertical dimension (OVD) and centric occlusion with existing interocclusal contacts and cuspal inclinations would be particularly helpful. The inclination of the cusps of the teeth, the fifth factor of occlusion, refers to the angle between the total occlusal surface of the tooth and the inclination of the cusp relating to that surface. In an acceptable occlusal scheme, it is matched with other factors of occlusion, especially with anterior and posterior guidance. Therefore for the occlusal scheme be acceptable, selection of artificial teeth with the same cuspal inclination helps to match cuspal inclination with anterior and posterior guidance and make an acceptable occlusal scheme. It is better when the patient's appearance will not be altered.[2]

Techniques to construct an intermediate or transitional prosthesis or to reduce the time of fabrication have been reported.[5–7] Kahn and Haeberle constructed an immediate denture in one appointment using cold-cure, tooth-colored acrylic and visible light-cured resins.[8] Jiffy denture, an alternative economical IID, has been fabricated using a vacuum-forming machine without conventional laboratory processes.[9]

The purpose of this report is to describe the use of a patient's fixed prosthesis for fabricating an interim immediate partial denture in one appointment. Occlusion, OVD, and facial support are maintained during the healing period in this procedure.

Clinical report

A 47-year-old woman with a painful mobile maxillary fixed partial denture (FPD) was referred to the prosthetic department of Shahid Beheshti Dental School (Tehran, Iran). The patient had an implant bar-retained overdenture in her lower jaw and an existing maxillary long-span FPD supported by teeth 3, 4, 5, 11, and 12. Casting dowels had been made for teeth 4, 5, 11, and 12. Teeth 13, 14, and 15 had class one amalgam filling (Fig 1).

The maxillary FPD had 2 to 4 mm mobility buccolingually and 1 to 2 mm mesiodistally. Periapical radiographs (Fig 2) showed periapical lesions around abutment root apices and showed that tooth 12 had root fracture.

Figure 1 Intraoral view (maximum intercuspaion).

Abutment caries caused tooth/crown separation of all abutments except the left canine, resulting in FPD mobility. Consultation with the periodontal and endodontic departments revealed that horizontal bone loss and periapical lesions made the prognosis of all abutment teeth poor.

The patient insisted she did not want to be edentulous even for a short time because of social and esthetic concerns. Thus, it was decided to fabricate an interim immediate partial denture called a Jiffy denture by use of existing maxillary restoration.

Procedure

Local anesthesia was infiltrated in the buccal and palatal mucosa of each abutment. After a suitable stock tray was chosen and after border molding of tray margins by wax (Detrey Division, Dentsply Ltd, Weybridge, Surrey, UK), an alginate (Tropicalgin, Zhermack, Italy) impression was made of the upper jaw. There was a probability of FPD removal from the mouth with alginate impression, but after removing the impression, the FPD did not remove from the mouth with the impression. The FPD was removed from the mouth with the left canine. Other tooth dowels remained joined to the FPD. All remaining teeth were extracted by a surgeon. During surgery, the laboratory process was begun. Because of the fracture probability of porcelain, dowel removal was not attempted except on tooth 12, which was easily removed from retainer. All dowels were cut from the apical portion of the cores, and the FPD was placed in its position in the impression (Fig 3).

Figure 3 Extracted FPD in place in impression.

The impression was poured in type III stone (Hinrizit stone, Ernst Hinrichs GmbH, Goslar, Germany; Fig 4). Adams clasps were made for the left and second molars with 0.7 mm stainless steel wire. Clasps were fixed with wax in proper position on the cast. Wax was added similar to the procedure for conventional dentures. Because of the existence of palatal torus in the posterior seal area, the posterior border of the denture was formed concave, and it did not cover the torus. Then laboratory putty (Activator Lab-Putty, Coltene, Langenau, Germany) was used to make an index from the entire cast (Fig 5).

Because there was not enough time for packing acryl in a flask, a putty index was used. The FPD was placed in position in the impression (Fig 3), and then the impression was poured in type III stone so that the stone penetrated into the retainers, and

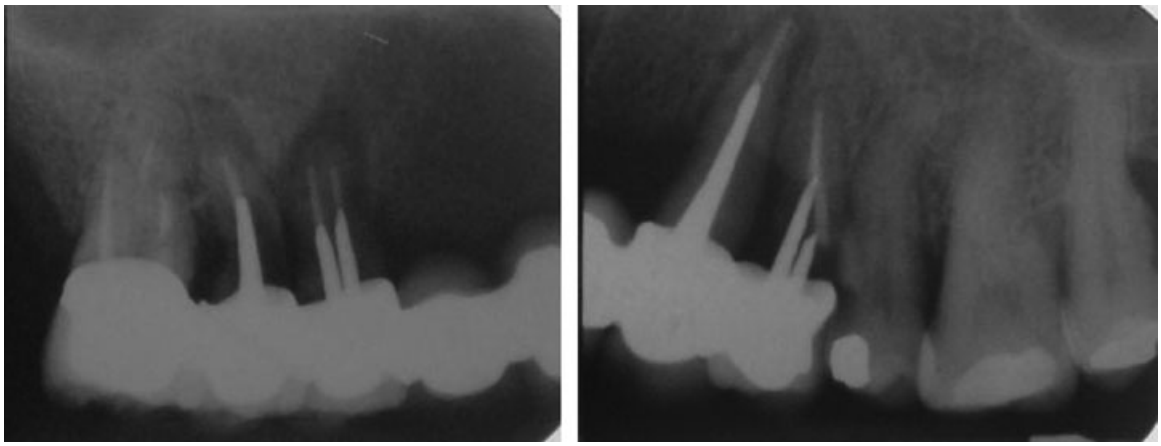

Figure 2 Periapical radiographs.

Figure 4 Prepared cast.

Figure 5 Putty index and clasps in place.

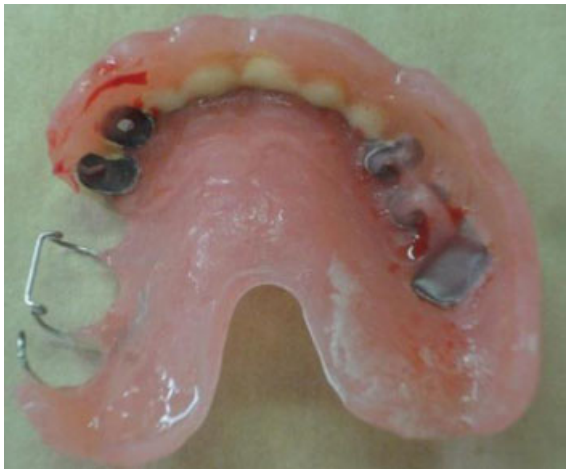

Figure 6 Reline with self-cure acryl.

Figure 7 Modified Jiffy denture in mouth.

the FPD was fixed on the cast. Therefore, during acrylic resin setting, the FPD did not move, and the occlusal relationship was not altered.

After washing the wax and using a separator medium on the cast, cold-cure resin (Acropars, Marlik company, Roodbar, Iran) was mixed and inserted on the whole tissue surface of cast as a thin layer. The putty index was inserted over the cast. After removing excess acryl, this complex was put in a pressure pot under 30 psi pressure for 20 minutes.

After acryl setting, the denture was separated from the cast, finished, and polished similar to a conventional denture. At this stage, stone was removed from inside the FPD. During the laboratory process, the patient's teeth had been extracted, and bleeding had been controlled.

Chairside cold-cure resin (GC Corporation, Tokyo, Japan) was mixed and poured inside the hollow space of the FPD and was molded in the patient's mouth (Fig 6). For better retention, the denture was relined by tissue conditioner (GC tissue conditioner, GC Corporation, Tokyo, Japan) with the closed-mouth technique.

The denture was delivered to the patient (Fig 7). She had no complaint of pain. Her recalls were scheduled for 24 hours, 48 hours, and 1 week. She was instructed that the denture should be relined after 3 to 6 months, and after 1 year, a new conventional denture should be made. Four days after patient delivery, the tissue conditioner was replaced with permanent chairside soft liner (Coe-Soft, GC Corporation, Tokyo, Japan), as she wanted to travel out of country for a long time, and under this condition a liner with long durability was indicated.

Discussion

For functional and esthetic purposes, in this treatment modality, an immediate denture was made using an existing FPD. One of this treatment's weaknesses is the probability of separation of the FPD from the denture base. There is no such concern in the retainer area because resin infiltration in retainers makes a firm connection. In the pontic area, polymerization shrinkage of acrylic resin processing makes some space between the denture base and FPD. This space was corrected in the mouth with cold-cure resin during chairside relining.

One way to improve this connection is making macro undercuts in connecting areas of the resin base and FPD pontics. Creation of grooves and holes in pontic porcelain and infiltration of resin in them make a firm connection. Also, using porcelain etching, the silane and bonding agent can create a micromechanical bond to improve the denture base/FPD connection. Although in this treatment, these methods (macro- and

micromechanical bonding) were not used, there was no separation between the denture base and FPD after 8 months.

In this treatment modality, the FPD-to-cast relationship was fixed with stone penetration into retainers during resin processing. Therefore, resin polymerization shrinkage could not change the FPD connection to the cast that was indicative of the patient's oral tissues. As a result, the FPD relationship to the maxillary ridge was preserved intact, and occlusion was the same as with the FPD in the patient's mouth.

In addition, in this method there was no need for the cast modification done in CID construction in areas of teeth to be extracted, or for cast trimming to match denture base and oral tissue.[10] Final matching between the denture base and area of extraction is controlled with chairside cold-cure acrylic resin in the mouth, making a more exact match between mucosa and tissue surface of denture than in other cast modification techniques.

Consultation with the periodontal and endodontic departments revealed that horizontal bone loss and periapical lesions made the prognosis of all abutment teeth poor. Therefore, an overdenture treatment plan was rejected.

Three remaining teeth were maintained because of no mobility despite a poor crown-to-root ratio. Retentive clasps were used to improve temporary prosthesis retention, which was weighted as a result of a porcelain-fused-to-metal FPD. On the other hand, a metal frame strengthens a denture base, especially in patients with a single maxillary denture and natural mandibular teeth. In addition, the remaining teeth were useful to preserve OVD.

This treatment method has some limitations. There must be multiple crowns and FPDs to use, though it may be possible to do this with fewer crowns and FPDs if they are distributed properly in the mandibular or maxillary arch. The other limitation of this method is that existing FPDs and crowns should be esthetically and functionally acceptable, and the patient should be satisfied with them. Finally, although this patient has not started final treatment because of personal reasons (traveling), after 8 months of follow-up, she is satisfied with her dentures and feels comfortable.

Summary

The study describes using a patient's fixed prosthesis to fabricate an interim immediate partial denture in one appointment. Occlusion, OVD, facial support, and esthetics are maintained during the healing period in this procedure.

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