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# An Alternative Approach to the Immediate Overdenture

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## Abstract

A procedure is described for fabricating an immediate complete overdenture where several teeth retain an interim fixed partial denture (FPD) until the complete denture is finished. Nonessential posterior teeth were first extracted. An interim fixed restoration was fitted to five strategic teeth, and the four maxillary incisors were reduced to the gingival margin. The reduced teeth and the maxillary right molars were extracted at subsequent visits. After 3 months of healing, an immediate prosthesis was fabricated using the interim restoration as a guide. Artificial teeth were tried in the mouth and approved by the patient, and the prosthesis was completed. As no extractions were performed at this time, the prosthesis was delivered in a clean, bloodless field. The remaining five strategic teeth were fitted with dome-shaped metal copings. This procedure allowed better control over the esthetic result and the occlusion and was less traumatic for the patient.

When it becomes necessary to remove teeth, an immediate denture will enable the patient to continue to engage in social and business activities without an embarrassing period in which they have neither natural nor artificial teeth.[1] Standard procedures for fabricating conventional immediate dentures entail the extraction of all posterior teeth and roots and elimination of undercut areas that could hamper the insertion of the prosthesis. After substantial wound healing, impressions are made. Intermaxillary relations are recorded, and the artificial posterior teeth tried in. The dental technician then substitutes artificial teeth for the remaining anterior teeth on the cast, while improving the esthetic arrangement if necessary. The remaining anterior natural teeth are extracted in one visit, and the prosthesis immediately inserted.[2]

Advantages of immediate dentures include pressure to soft tissue by the immediate denture to prevent tissue collapse, protection of extraction sites, and reduction of bleeding and postextraction pain.[3] Reduced alveolar ridge resorption,[4-6] producing smooth, round, formed ridges, and more resilient soft tissue[5,6] has also been discussed. Muscular support of the lips and cheeks is retained, enabling the esthetic harmony of the face to be more easily restored.[3] Immediate transition from natural teeth to prostheses makes the adjustment to speaking and eating easier.[3]

There are disadvantages, however. The patient must function without posterior occlusion until the alveolar ridges have undergone initial healing (3-6 weeks)[7] and completion of the prosthesis (4 weeks). The occlusal vertical dimension (OVD) and centric relation may be difficult to assess once the posterior teeth are lost. Prostheses cannot be fully assessed before completion, so the treatment outcome is not always predictable.[8] Because the anterior teeth cannot be modified to create an esthetic arrangement acceptable to the patient, the definitive prosthesis may not achieve its greatest esthetic potential. Multiple extractions performed in one visit may be traumatic and accompanied by pain and swelling, which complicate the patient's adaptation to a new prosthesis.[9] Fitting the prosthesis is an unpleasant experience for the dentist who must adjust the prosthesis while working in a bloodied field. The prosthesis that replaces several teeth extracted at the same visit will be subjected to a greater degree of procedural error.[9] It may fit adequately only for a short period and will require continued renewal of interim resilient lining materials. Adjustment and interim relining may continue for months, and a new prosthesis may be required after 8 to 12 months.[3] Treatment cost increases with the increased number of maintenance visits.

Techniques to construct an intermediate or transitional prosthesis or to reduce the time taken for its fabrication have been reported.[10-14] Kahn and Haeberle[15] constructed an immediate transitional complete denture in one appointment using self-polymerizing, tooth-colored acrylic, and visible light-cured resins. A speedy economical interim immediate denture ("jiffy" denture) using a vacuum-forming machine without conventional laboratory procedures has also been described.[16]

A technique has been reported in which the remaining teeth are cut off at the gingival margins instead of extracting them

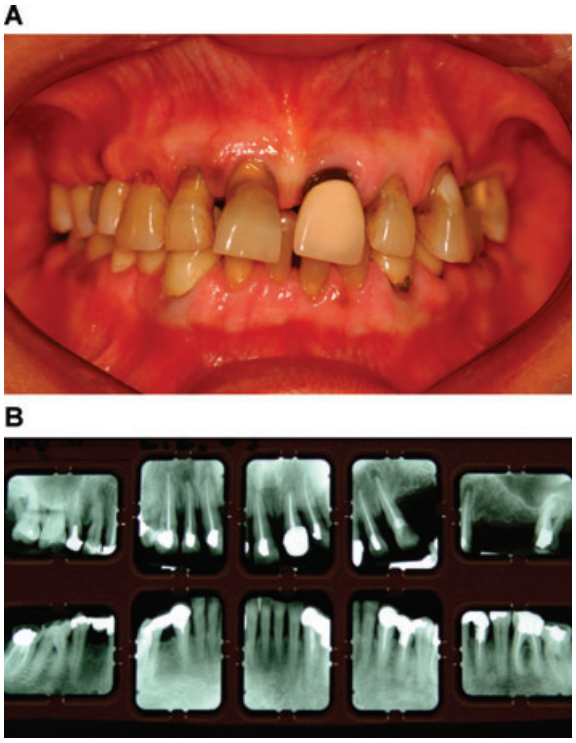


**Figure 1** (A) Pretreatment (frontal view); (B) pretreatment radiograph.

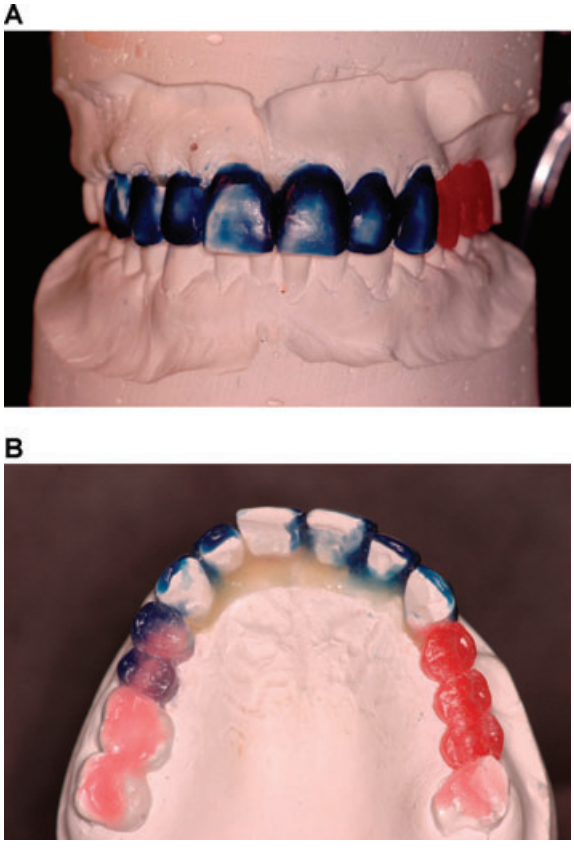


**Figure 2** (A) Diagnostic set-up (frontal view); (B) occlusal view.

**Figure 3** Tooth preparations and incisors cut to the gingival level.

**Figure 4** The interim restoration.

**Figure 5** The teeth prepared for metal copings.

**Figure 6** The interim restoration with retaining posts.

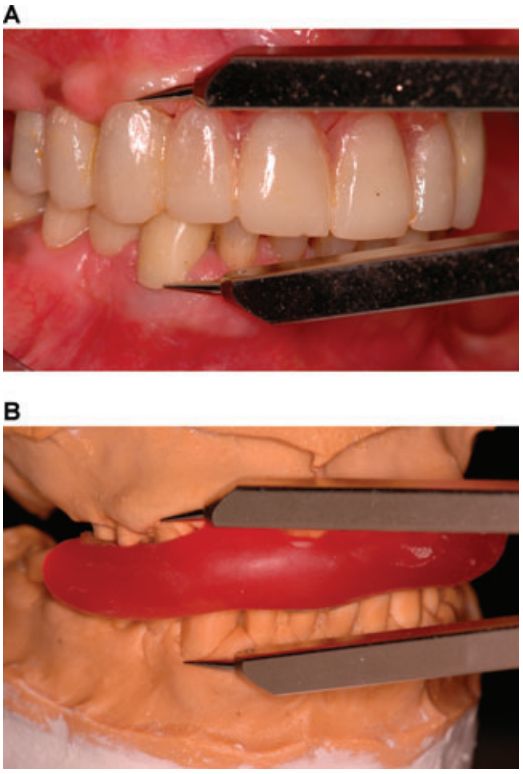

**Figure 7** (A) The OVD measured with the interim restoration in situ; (B) casts articulated with the wax occlusal rim.

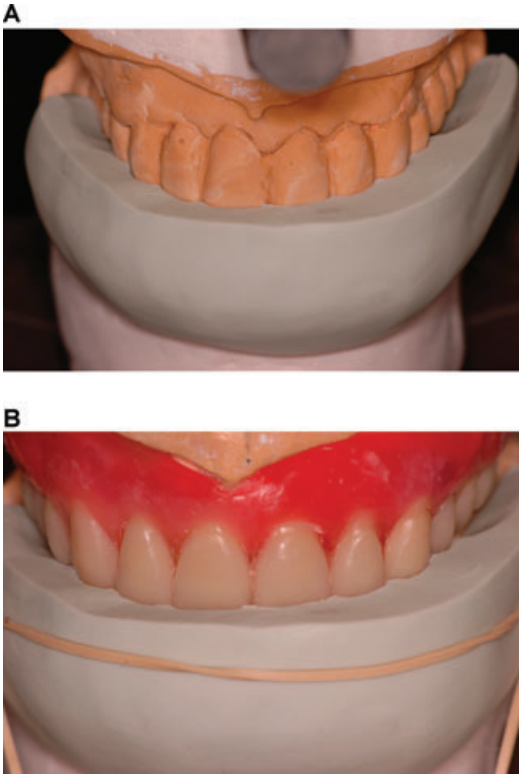

**Figure 8** (A) The silicone index of the maxillary interim restoration; (B) prosthesis set up with silicone index.

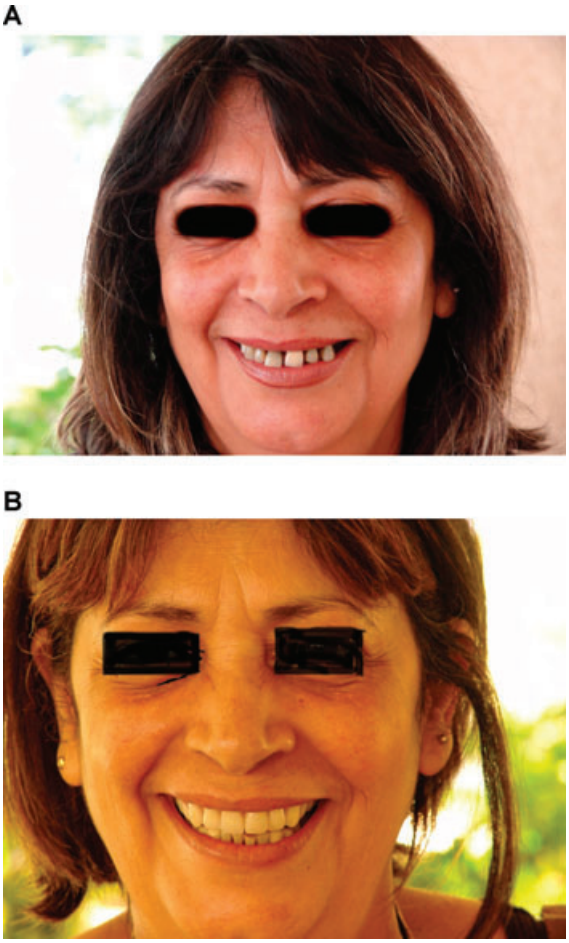

**Figure 9** (A) Smile before treatment; (B) smile at completion of treatment.

at the time of prosthesis insertion.[17] This procedure is less stressful for the patient and allows the prosthesis to be adjusted in a clean, blood-free environment. The roots are extracted at a later date.

The purpose of this report is to describe the use of an interim provisional fixed restoration fitted before fabrication of an immediate overdenture. The posterior occlusion is maintained during the healing period. The trauma of multiple extractions at one visit is avoided, and the occlusion and esthetics of the removable prosthesis can be assessed before its insertion.

## Clinical report

A 53-year-old woman presented, complaining of pain, poor esthetics, loose teeth, and difficulty in eating. The patient had no significant medical history but was a heavy smoker. She had had nonsurgical periodontal treatment for the last 5 years and had a high standard of oral hygiene. Clinical examination revealed an unrestored mouth with generalized severe chronic periodontitis and pocket depths of up to 10 mm. The OVD was slightly reduced. The posterior occlusal support was reduced, with tooth mobility, missing teeth, overerupted teeth, and tooth migration.

A horizontal and vertical overlap of 8 mm was recorded with the mandibular anterior teeth in contact with the palatal gingivae. Esthetic impairment was evident (Fig 1).

Several treatment options for the maxilla were presented to the patient to develop a functional and esthetic dentition. The relatively high proportion of failure of implants in the maxilla, especially in heavy smokers,[18] was explained and their use was excluded. An anterior fixed partial denture (FPD) with a posterior removable partial denture (RPD), retention of several strategic abutment teeth and an overdenture, and a conventional immediate denture were other available options. As the patient was not prepared for the costly and lengthy orthodontic treatment required to construct a fixed prosthesis, she decided on an immediate overdenture in which she could retain her natural teeth until the prosthesis was fitted.

### Procedure

Stone casts were poured from irreversible hydrocolloid (Alginoplast, Heraeus Kulzer GmbH, Wehrheim, Germany) impressions and mounted on a semi-adjustable articulator (Hanau H2, Hanau Engineering Co., Inc., Buffalo, NY). The articulator was adjusted to increase the OVD by 2 mm. Teeth were altered on the cast and modified by repositioning, carving, and adding wax to the plaster teeth to form a pleasing tooth arrangement (Fig 2). The altered cast was duplicated, and an interim restoration constructed to replace teeth #4-15.

In the mouth, the OVD was increased by adding light-cured composite resin (Filtek P60, 3M ESPE, St Paul, MN) to the occlusal surfaces of the maxillary right molars (to be extracted later). The maxillary right premolars, both canines, and the maxillary left second molar were prepared for crowns. The incisors were cut 2 mm coronal to the gingival margins (Fig 3), and the interim restoration was fitted (Fig 4). Selective grinding was performed on the mandibular teeth (#19, 20) to obtain an acceptable occlusal plane. An FPD was inserted, replacing the mandibular right premolar.

At subsequent appointments, the maxillary right molars (#2, 3) and the incisors (#7-10) were extracted. After 3 months of healing, the interim restoration was removed, and the abutment teeth (#4-6, 11, 15) shortened to create space for the denture teeth (Fig 5). Preformed metal posts (Dentatus Ltd., New York, NY) were fitted to teeth #6 and 11 to increase the retention of the interim restoration (Fig 6).

Primary alginate (Alginoplast) impressions for the maxillary overdenture were made. The OVD was measured between the gingival margins of the maxillary and mandibular right canines with the provisional restoration in situ (Fig 7A). The interim restoration was replaced by a wax occlusal rim adjusted to the same OVD and transferred to a Hanau semi-adjustable articulator (Fig 7B). Artificial teeth were chosen to resemble the interim restoration. The cast of the interim restoration was also articulated, and a silicone index was used to guide the technician in setting up the teeth (Fig 8). The artificial teeth were tried in the mouth and approved by the patient. In the trial prostheis, a final border-molded impression (Isocompound, GC, Tokyo, Japan) with a silicone wash (Speedex Light Body, Coltene Whaledent, Altstatten, Switzerland) was made using the closed mouth technique. The prosthesis was processed in a conventional manner with a cast chrome cobalt framework to strengthen it. The denture was inserted, and postinsertion adjustments were made. Metal (Fly, Biesse SRL, Bologna, Italy) dome-shaped copings were fitted to the prepared teeth (#4–6, 11, 15), and the prosthesis refitted. Figure 9 shows the patient before and after treatment. Further postinsertion visits were scheduled weekly until the dentures were comfortable. Alveolar resorption was monitored, and the prosthesis relined after 6 months. The patient continued to function without further masticatory impairment and the maxillomandibular relationship was maintained throughout.

## Summary

A treatment modality has been described in which several teeth were retained, and an interim FPD was fitted. The patient retained her posterior occlusion until an immediate denture was completed. A try-in of the anterior teeth enabled esthetic modifications to be made, making the appearance of the definitive prosthesis more predictable. Extraction of anterior teeth was deferred until after the prosthesis was inserted, allowing adjustments to be made in a clean, bloodless field. This procedure avoided the trauma of multiple extractions accompanied with the insertion of a new prosthesis at the same session.

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