

Immediate Dentures

Chris C. L. Wyatt

Patients who are about to lose all of their natural teeth in one or both jaws pose a dilemma for themselves and their dentists. Usually a patient waits for at least six weeks after teeth are extracted before a conventional complete denture is placed. The extraction sites heal during this period accompanied by a rapid period of alveolar bone resorption^{1,2} before the dentist can make a direct impression of the residual ridge that is reasonably stable. Consequently, the patient suffers the social indignity and functional difficulty of going without teeth for several weeks before receiving a denture.³ The immediate denture offers a solution to this problem because it is constructed before and placed immediately after the natural teeth are extracted.

Benefits of Immediate Dentures

Patients are motivated to seek an immediate denture primarily because of concerns for their appearance. Progressive and irreversible residual ridge resorption is the inevitable consequence of tooth loss whether the patient receives a conventional or immediate denture.⁴ However, immediate dentures should ease the transfer from a natural to an artificial dentition. Duplication of the natural form, color, and arrangement of the teeth is

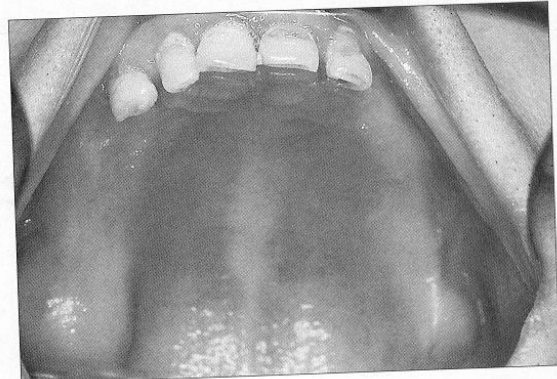
easier when the natural teeth are still present. The extraction sites may heal faster and more comfortably if protected by a denture base,⁵ much like a skin wound heals with fewer complications when covered by a bandage. An immediate denture may also help to preserve the labial plate of alveolar bone after the teeth are extracted and it may even retard the resorption of the residual ridge for a short time after insertion.⁶⁻¹⁰ Moreover, the lips, cheeks, and tongue should not have the opportunity to encroach upon the edentulous space when the denture is placed immediately. In fact, the discomfort of wearing a denture over the extraction sites may cause less anxiety to a patient during the first few days with an immediate denture than the discomfort of a pressure spot from a conventional denture.

Risks of Immediate Dentures

Patients who are poor surgical risks or who do not understand the procedure and its potential complications should not be treated with an immediate denture. It is a complicated procedure with responsibilities and costs that the patient must understand and meet. The outcome of treatment is not always predictable, and the patient must appreciate that it will be necessary to reline



11-1a



11-1b

the denture at the very least a few months after placement to compensate for rapid resorption of the residual ridge. And, despite the protection offered to the extraction sites, the immediate denture may actually predispose the mouth to infection if there is an overabundance of microbial plaque on the denture base.¹¹

Examination and Treatment Planning

The clinical procedures needed to produce an immediate denture are similar to those used to produce a conventional denture, although the uncertainty of estimating the shape of the residual ridge before the natural teeth are removed complicates the process. Frequently, the presence of bony prominences, especially associated with the anterior teeth and alveolus, provides a challenge to obtaining an accurate impression. Natural teeth that are misplaced or excessively mobile are also difficult to manage when recording the maxillomandibular relationship.

A treatment plan requires a thorough visual examination of the mouth with the help of a panoramic radi-

ograph and dental casts mounted on an articulator. Particular attention should be paid to the frena and to hard and soft prominences to assess whether surgery is required to construct a path of insertion for the denture when the teeth are extracted. Analysis of the occlusal contacts indicates, with the help of the study casts, whether the occlusal orientation of the natural teeth should be reproduced or altered on the denture. An esthetic analysis of tooth shape, size, arrangement, and color is conducted with advice from the patient. It can also be helpful to examine photographs of the patient when the teeth were free of disease.

Disease Control

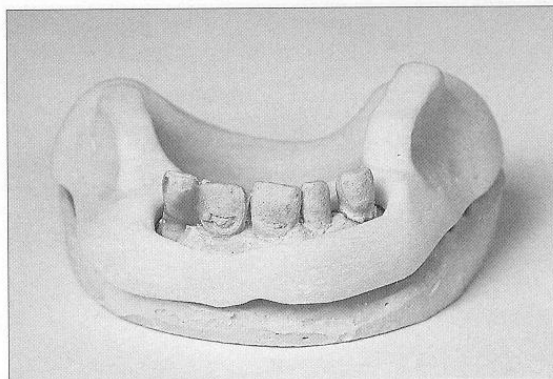
Preliminary treatment to eliminate infections, abnormalities, and inflammation is rendered before making the new denture. Usually, at the outset, all of the posterior teeth are extracted (**Figs 11-1a and 11-1b**). The presence of the anterior teeth, along with opposing premolars or molars when available, will provide the information needed to construct a denture that simulates the appearance of the natural teeth at the appropriate

vertical and horizontal relationship of the jaws. Irregular occlusal interferences are identified and eliminated at this stage to allow for an accurate recording of the maxillomandibular relation later as the denture is constructed.

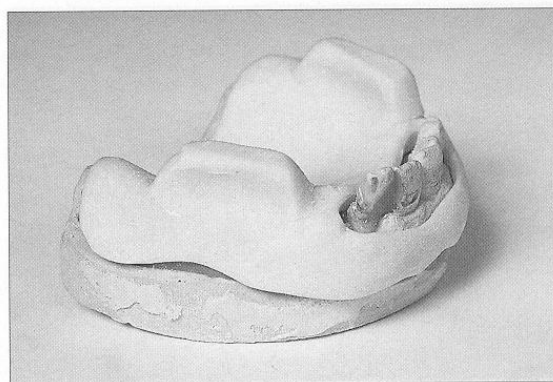
Making an Impression

There are several methods for making an impression for an immediate denture.¹²⁻¹⁵ The dual impression technique is particularly useful because it provides the opportunity to focus on the shape of the residual ridge and surrounding soft structures before focusing on the shape of the natural teeth. Initially, an impression is made of the residual ridge, including details of the functional vestibule. A second impression relates the ridge to the remaining teeth:

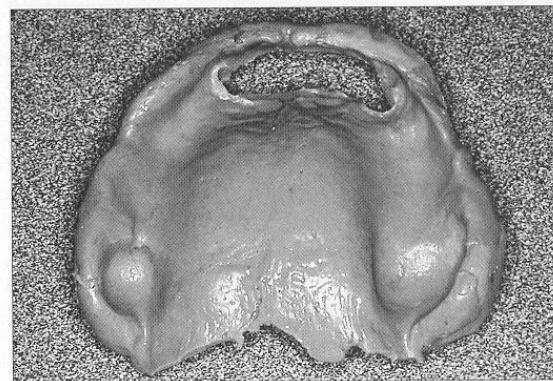
1. A hard record base wax is used to fill in "soft tissue" undercuts on a study cast of the dental arch and residual ridge.
2. An acrylic tray with an opening for the remaining teeth and a short handle bilaterally over the residual ridge is made on the study cast (**Figs 11-2a and 11-2b**).
3. The periphery of the tray, including the part that lies in the labial vestibule, is examined in the mouth and adjusted to lie within 2 to 3 mm of the vestibular depth. On the maxilla it lies along the vibrating line from one pterygomaxillary notch to the other, and on the mandible it covers the retromolar pads.
4. The fit of the tray is modified in the mouth with green impression compound to fit the functional vestibule.
5. A silicone adhesive is applied to the tray, and an impression of the mucosa is made with a polyvinyl siloxane material of low viscosity.
6. The tray with the impression is removed from the mouth (**Fig 11-3**), modified if necessary, and replaced on the mucosa to serve as the posterior part of a dual impression made with an alginate



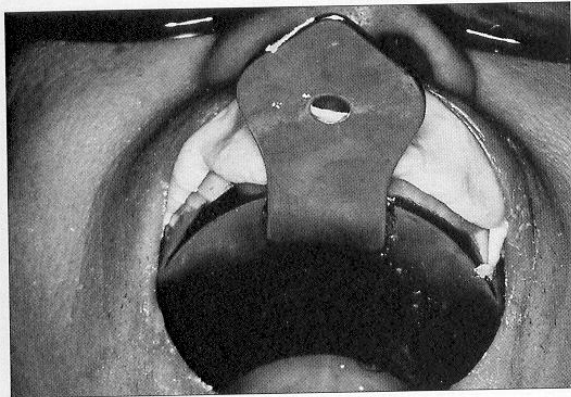
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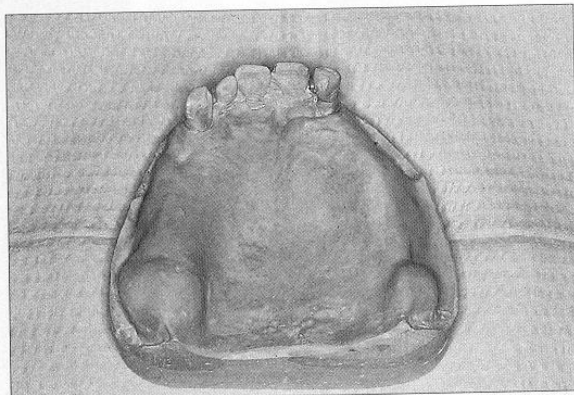
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material in a stock metal tray (Fig 11-4a). The alginate impression includes the shape of the teeth anteriorly and the tray with the polyvinyl siloxane impression of the mucosa posteriorly (Fig 11-4b).

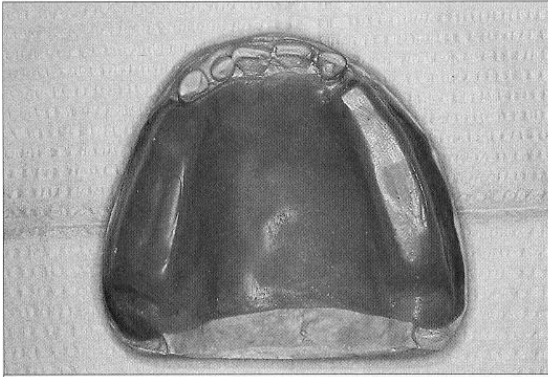
7. The dual impression is removed from the mouth, disinfected in 2% glutaraldehyde for 10 minutes, and cast as soon as possible in dental stone (Fig 11-5).

Occlusal Records and Selection of Tooth Color

Fabrication and utilization of record bases and occlusal rims are similar to those used for the conventional complete denture except that they must accommodate the natural teeth (Fig 11-6). The occlusal rims are adjusted to accommodate the existing vertical dimension of occlusion (VDO) if the natural teeth occlude acceptably in the mouth (Fig 11-7). Otherwise, the VDO is established using the esthetic and anatomic principles described for the edentulous patient. Occlusal rims support the inter-occlusal and face-bow records (Fig 11-8) used to mount the casts on an articulator, again in a manner similar to the technique used for the conventional denture. An appropriate match to the color of the natural teeth is made unless the patient desires a change. The selection should be made under different light sources to compensate for the phenomenon of metamerism, especially if the immediate denture is expected to match the color of natural teeth in the opposing jaw.¹⁶

Arranging and Evaluating Denture Teeth in Wax

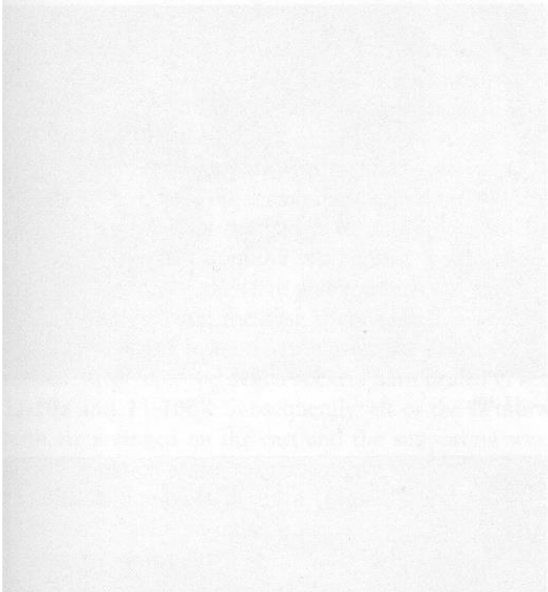
The dental technician receives from the dentist a detailed prescription containing the information needed to arrange the denture teeth in wax on the articulated casts. The teeth are arranged following the guidelines



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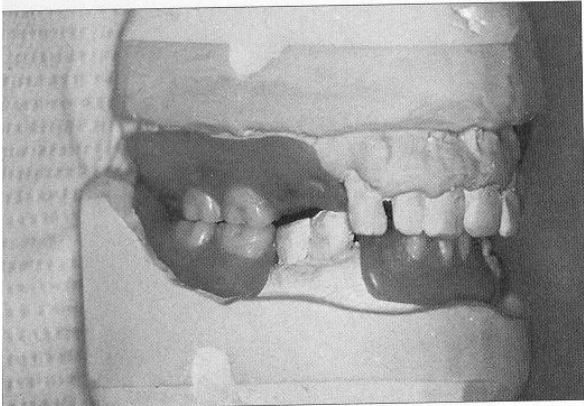


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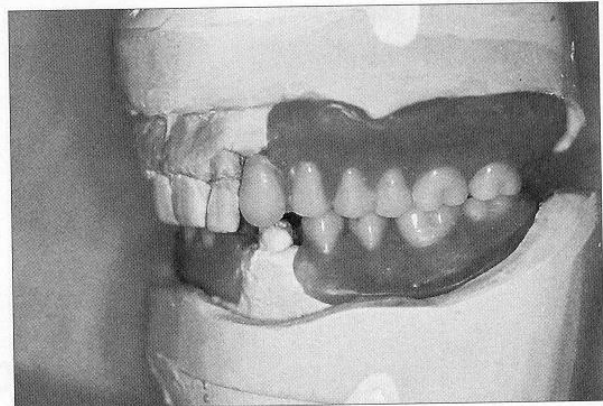
recommended for the conventional denture but with direct reference to the exact position and shape of the remaining natural teeth. As a general principle, the artificial teeth are arranged to replicate the position of the natural teeth. Consequently, the dental technician is instructed to replace the natural teeth on the master cast exactly as they are in the mouth unless there are strong indications clinically that the natural teeth have been displaced. In any case, the dentist must ensure that the

technician arranges the denture teeth in the position most compatible with the activity of the surrounding muscles.

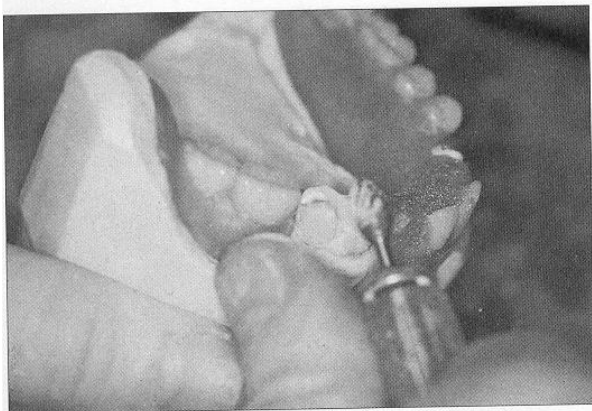
Initially, the missing teeth are arranged in wax to occlude maximally on the articulator (**Figs 11-9a and 11-9b**) so that they can be assessed in the patient's mouth. Occlusal contacts in the mouth with the mandible in the most retruded and relaxed position should replicate the contacts on the articulator. A new



11-9a



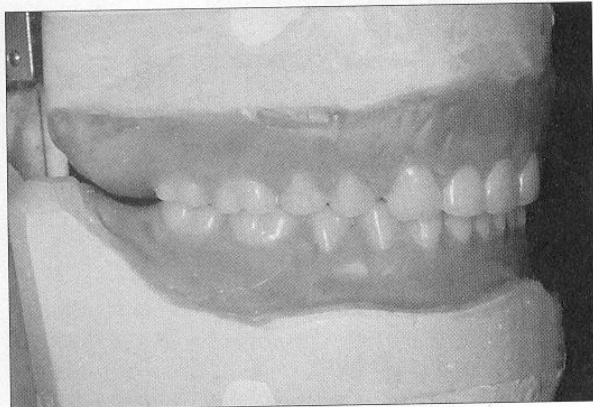
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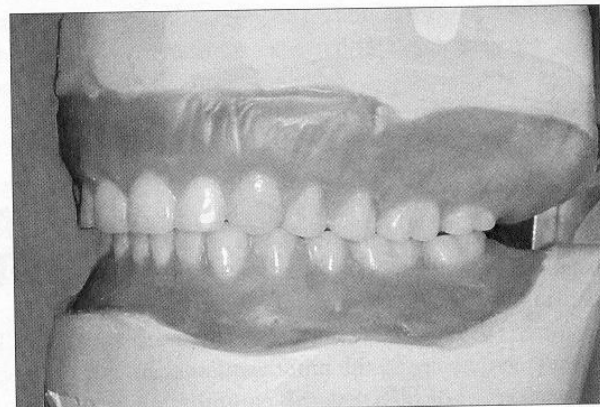
11-10a



11-10b



11-11a



11-11b



11-12

occlusal record is necessary if there is a discrepancy between the clinical occlusion and the contacts produced on the articulator. When the articulation of the casts coincides with the maxillomandibular relationship, the patient is asked to approve of the arrangement of the replacement teeth. Then, the dental technician is instructed to remove the remaining “natural teeth” from the cast. The dentist may wish to participate in the removal of the teeth from the cast because it will be the dentist who extracts the teeth and contours the residual ridge. In either case, the cast is contoured when the teeth are removed to represent closely the shape of the residual ridge after the dental sockets have healed (Figs 11-10a and 11-10b). Subsequently, all of the denture teeth are arranged on the cast and the supporting wax carved to simulate the natural gingiva and alveolus as usual for a complete denture (Figs 11-11a and 11-11b). And, finally, an index is made to preserve the orientation of the maxillary cast on the articulator.

Constructing a Surgical Guide

The master cast and denture teeth are embedded in a stone mold within a processing flask. The flask is heated, and the wax is removed from the mold as described in Chapter 8. When the mold is open and the master



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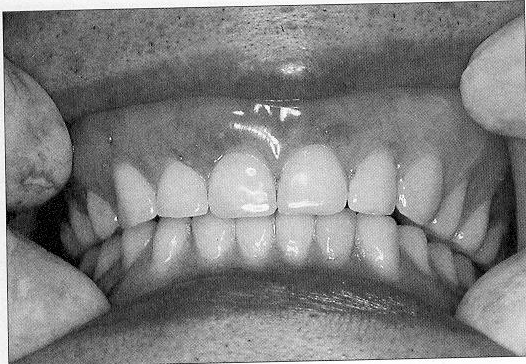
cast exposed, an alginate impression is made of the denture-bearing area on the cast. The impression is poured immediately in dental stone, and a surgical guide is formed from a clear polycarbonate material (Precision Vacuum Adaptor, Omnidental) on the duplicate cast (Fig 11-12). This guide serves as a transparent replica of the denture base that will help to locate pressure spots on the denture base when the immediate denture is placed after the teeth are extracted.

Processing the Denture

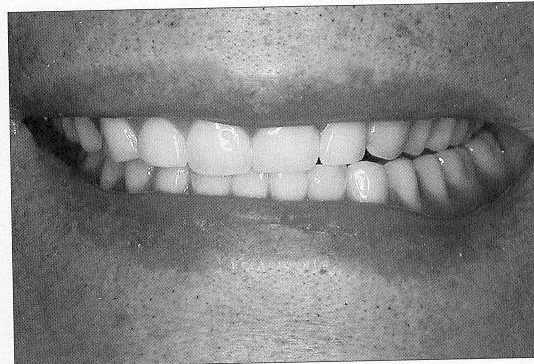
The dental technician packs the mold with acrylic resin, processes the resin, refines the occlusal contacts, and polishes the denture as usual. Subsequently, the denture along with the surgical guide is disinfected in preparation for extracting the teeth.

Inserting the Immediate Denture

The teeth are extracted and the clear surgical guide used, as mentioned above, to demonstrate where the denture base is concentrating pressure on the residual ridge. Areas that require adjustment will show as blanched tissue through the guide (Fig 11-13), so that



11-14a



11-14b

the denture can be adjusted or the alveolar bone and soft tissue modified surgically if necessary to accommodate the denture. Other adjustments to the denture-supporting tissues are also completed with the help of the surgical guide before the surgical wounds are sutured and the denture inserted (**Figs 11-14a and 11-14b**). Occlusal irregularities can be adjusted now if they are interfering with the use of the denture, but usually an occlusal remount of the denture on the articulator is postponed until the following day when the patient's proprioception is not disturbed by the anesthetic.

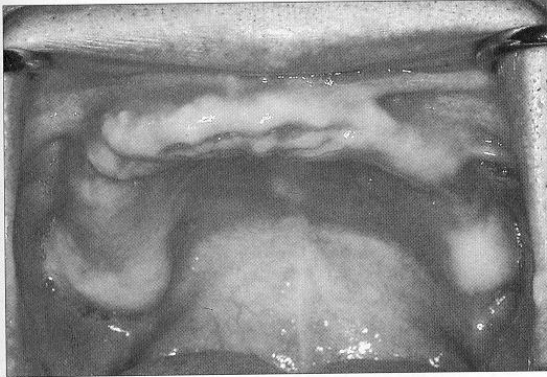
The patient should receive instructions on postsurgical care, including what to expect from the denture and how to cope with the short- and long-term changes of the residual ridge. Specific advice must be given on the need to leave the denture in the mouth until the dentist removes it the following day. If the denture is removed by the patient during the first 24 hours, it is very likely that it cannot be reinserted for several days because of swelling of the surgical site. The patient is advised also that the denture will protect the wound and reduce the risk of bleeding during the first few days when the wound is most vulnerable to trauma.

Postsurgical Modifications

As the residual ridge undergoes rapid resorption during the weeks and months following denture placement (**Figs 11-15**), the patient's progress should be monitored carefully, especially over the first week or so. The dentist removes the denture on the day following placement to:

1. Clean it and to evaluate the surgical wound.
2. Adjust the base using pressure indicator paste to locate particular areas of pressure if necessary.
3. Examine occlusal contacts and remount the denture on the articulator using a new interocclusal record to refine the contacts.
4. Re-emphasize to the patient the need for denture hygiene.
5. Offer further advice on the management of dentures and on the importance of regular oral evaluations.

During the first week, additional assessments and adjustments to the denture are made as needed for the patient's comfort, and the sutures are removed usually after one week. When the patient is comfortable, an assessment is scheduled every month for at least three



11-15

months. If the denture loosens substantially during this period, relining it directly with a soft material (ViscoGel, Dentsply DeTrey) is appropriate. After three months, it is usually necessary to relin the denture with an autopolymerizing hard lining material (Total, Stratford-Cookson).

The transition from natural teeth to a complete denture is never easy for a patient, and it can inflict persistent psychological problems.³ Nevertheless, the immediate denture offers a transition that should allow the patient to continue with a normal social routine. Complete healing with calcification of the dental socket takes about 9 months with a 20% to 30% reduction in overall volume of the residual ridge.¹ Usually, therefore, an indirect (laboratory) heat-processed relin of the denture is performed when healing is complete, sometime between 9 and 12 months. Eventually, the patient should accept the denture with few problems but with the knowledge that resorption of the residual ridge continues indefinitely and that the edentulous mouth with the denture will need regular care and attention.

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