



A SIMPLE METHOD TO DUPLICATE A DENTURE FOR AN IMPLANT SURGICAL GUIDE

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A duplicate of an existing prosthesis is often used as a surgical guide to assist in surgical placement of a dental implant. Various duplication methods have been described in the literature.¹⁻⁵ Generally, the existing denture is evaluated and determined to be adequate for esthetics and function, embedded in an impression material, retrieved, and the space inside the mold is filled with an acrylic resin. These methods, however, require special instruments or materials for the duplication procedure that may not be readily available.

Irreversible hydrocolloid material is a widely used impression material because it is accurate, easy to use, and relatively inexpensive.⁶ This article describes a procedure for duplicating an existing interim removable partial denture (IRPD) using irreversible hydrocolloid impression material and a plastic container. This procedure is simple and employs materials that are commonly used and readily available in a dental laboratory.

PROCEDURE

1. Evaluate the existing IRPD for its use as a surgical template for implant placement, and clean the prosthesis in a stain-removing solution (Tartar and Stain Remover; Henry Schein, Melville, NY) in an ultrasonic cleaner (BioSonic UC300; Coltene/Whaledent, Inc, Cuyahoga Falls, Ohio) (Fig. 1, A).

2. Make a small hole in the bottom of a plastic container (GladWare; The Glad Products Co, Oakland, Calif) using tungsten carbide burs (E-cutter; Brasseler USA, Savannah, Ga) to assist in removing the hydrocolloid from the container after it sets (Fig. 1, B).

3. Mix irreversible hydrocolloid impression material (Jeltrate; Dentsply Caulk, Milford, Del) to a fluid consistency using 1.5 times the amount of water recommended by the manufacturer, and pour the mixed material inside the plastic container, until the container is half full. Place the IRPD with the intaglio surface down into the hydrocolloid and allow the impression material to set.

4. Apply a blast of compressed air into the hole at the bottom of the plastic container to separate and lift the body of hydrocolloid from the container.

5. Cut 3 V-shaped index notches into the hydrocolloid in the premolar and distal areas using a surgical blade (carbon steel surgical blade number 25; Miltex Inc, York, Pa) to permit orientation of the subsequent mold section, and coat with a thin layer of petroleum jelly (Vaseline; Unilever, Greenwich, Conn).

6. Attach 3 wax sprues (Surgident Periphery Wax; Heraeus Kulzer, South Bend, Ind), 1 inch tall, extending vertically from the denture base area. Place 1 sprue in the middle to introduce the duplicating material and the others on the distal of the denture

base to vent air.

7. Reseat the indexed hydrocolloid body into the container (Fig. 1, C), then pour a second mix of the hydrocolloid to engage the indices and to cover the exposed denture surface to produce a mold of the prosthesis. Do not cover the sprues. Separate the mold from the container after the hydrocolloid sets.

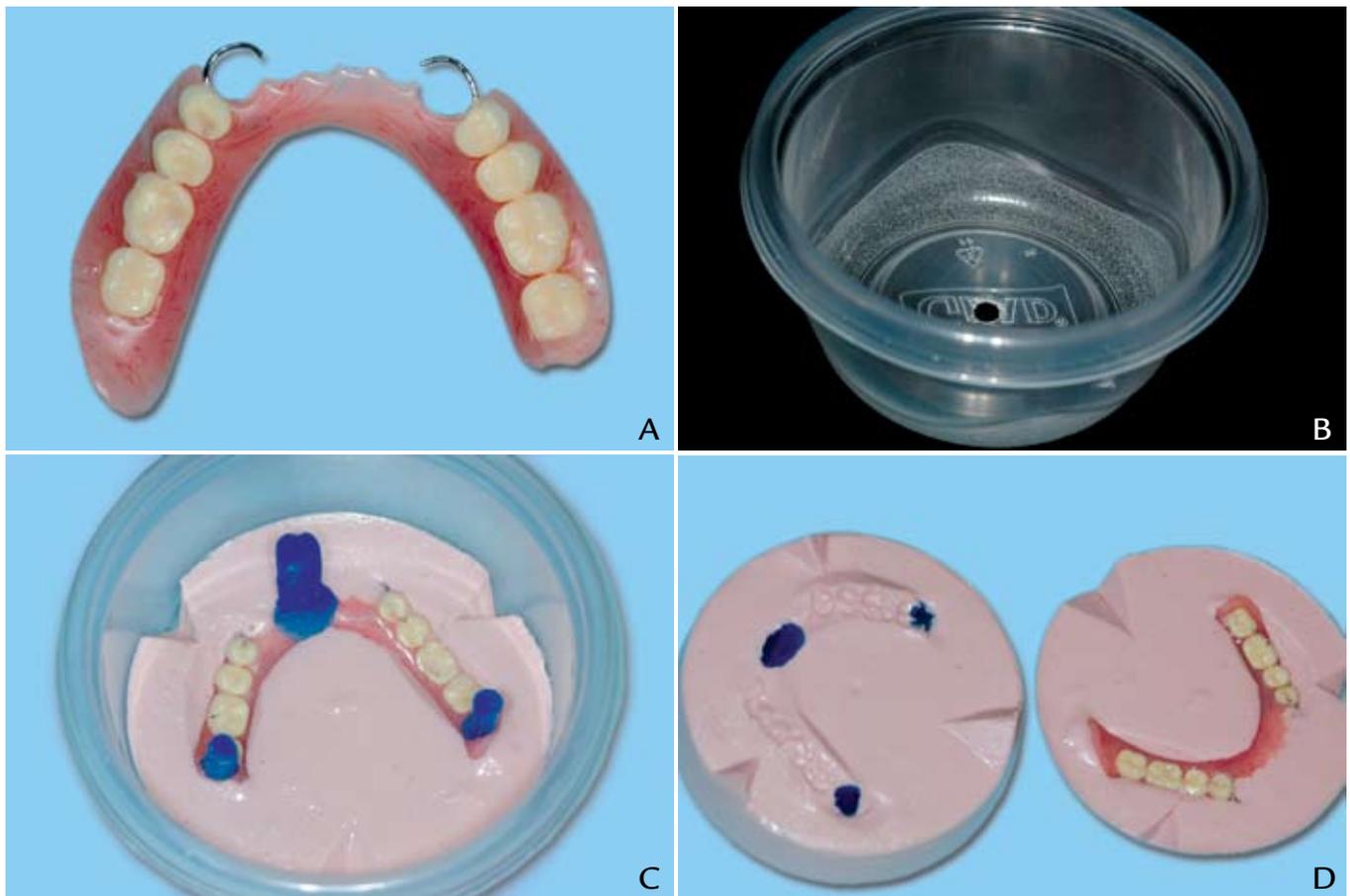
8. Gently separate the 2 halves of the hydrocolloid mold and retrieve the IRPD prosthesis and wax sprues from the mold (Fig. 1, D). Reassemble the mold sections by matching the indices, and return the mold to the container.

9. Mix clear autopolymerizing acrylic resin (Orthodontic resin; Dentsply Caulk), and pour the acrylic resin into the mold through the sprue channel in the middle. The other channels allow the air to escape when the acrylic flows into the mold. Place the mold containing acrylic resin in the pressure pot (Acridense V Pneumatic Curing Unit; GC America, Alsip, Ill) in 37.8°C water at 25 psi for at least 10 minutes.

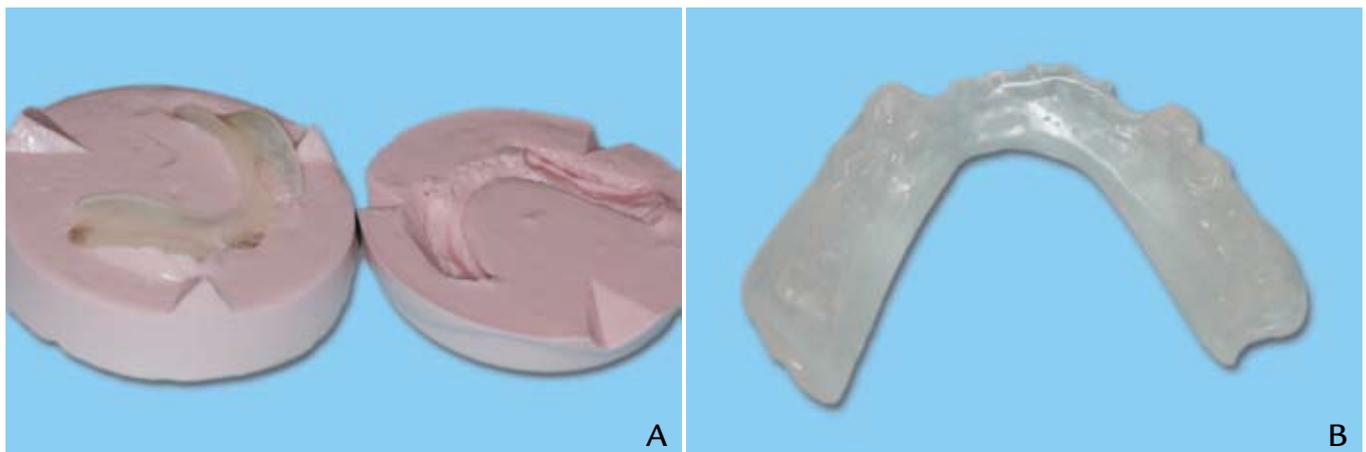
10. Remove the mold from the plastic container, separate the 2 halves of the mold (Fig. 2, A), and retrieve the duplicate denture. Remove the acrylic sprues, finish, and polish the denture (Fig. 2, B). Modify the duplicate denture as necessary to assist in surgical placement of the implants.

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1 A, Existing interim removable partial denture. B, Plastic container with small hole in bottom. C, IRPD prosthesis placed in irreversible hydrocolloid with wax sprues attached. Note indices made in hydrocolloid. D, Separated hydrocolloid molds showing corresponding indices and details of mating surfaces.



2 A, Separated hydrocolloid molds containing polymerized duplicate denture. B, Completed duplicate denture.

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