

A simple method of fabricating an interim obturator prosthesis by duplicating the existing teeth and palatal form

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An interim obturator prosthesis is required for the restoration of speech, deglutition, and improvement of esthetics after maxillectomy. This article describes a simple method for fabricating the interim obturator prosthesis by duplicating the patient's teeth and palate. The interim obturator prosthesis fabricated by duplication of the presurgical appearance and contour may be more acceptable to the patient. (J Prosthet Dent 2006;95:469-72.)

requently, the presence of oral cancer necessitates the surgical removal of all or part of the maxilla, leaving the patient with a defect that compromises the integrity and function of the oral cavity. The maxillofacial prosthodontist, as a member of the surgical team, is able to aid in the recovery and rehabilitation of the maxillectomy patient by fabricating and placing a surgical obturator. The immediate postoperative restoration of mastication, deglutition, and speech shortens recovery time in the hospital and expedites the patient's return to the community as a functioning member.

The traditional treatment sequence for a patient requiring a maxillectomy is the initial insertion of an immediate surgical obturator at the time of surgery or soon thereafter, an interim obturator used after initial healing until the tissues are stabilized (approximately 3 months), and a definitive obturator prepared after the tissues have stabilized, with few appreciable changes.^{1,2}

An interim obturator prosthesis is normally placed 7 to 10 days after surgery.¹⁻⁶ As healing progresses, an interim obturator prosthesis is fabricated and extended further into the defect, with subsequent additions to improve the seal and retention.⁵ Artificial replacement of the teeth and palate aids speech, mastication, esthetics, and morale.^{3,5} However, the prosthodontist should not rush to provide artificial teeth for the interim obturator prosthesis. The friability of tissue after radiation therapy, if it has been used, usually allows use of only the simplest type of prosthesis.⁵ Also, posterior teeth should not be added to an interim obturator prosthesis since they may impose excessive stress on the wound and delay the healing process.⁵

Interim obturator prostheses may be made using several methods, including a conventional method

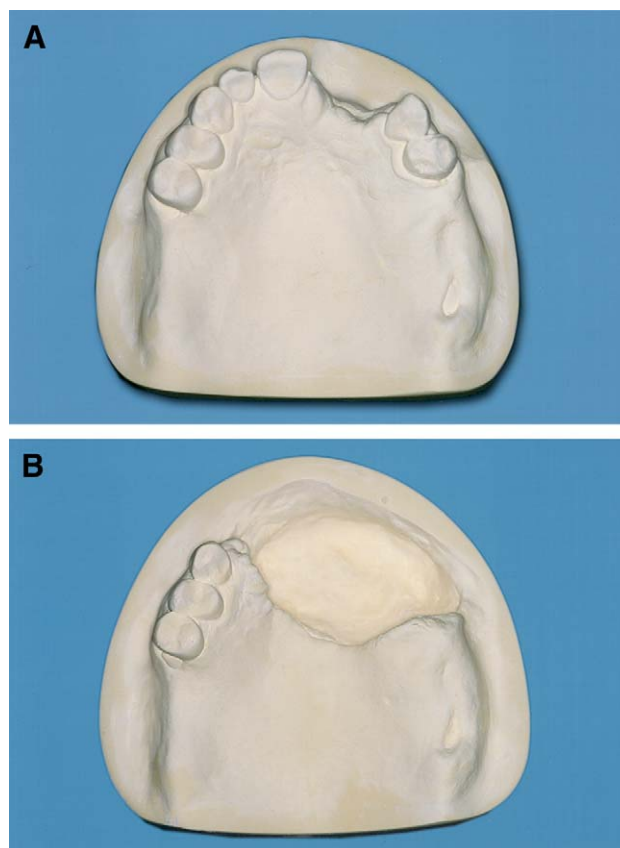


Fig. 1. A, Presurgical cast. B, Postsurgical cast.

without artificial teeth, making a matrix with irreversible hydrocolloid,² using a celluloid matrix,³ modifying a surgical obturator,⁴ using a denture duplicator,⁶ using a hook-loop system or orthodontic elastics,⁷ or using light-^{8,9} or heat-polymerized acrylic resin.¹⁰ This article describes a simple technique to make an interim obturator prosthesis more comfortable during the time required for postsurgical healing. The time saved and ease of the procedure, in addition to the use of duplicated artificial teeth, make this technique more economical than the flasking method using heat-polymerized acrylic resin. It is also less expensive than

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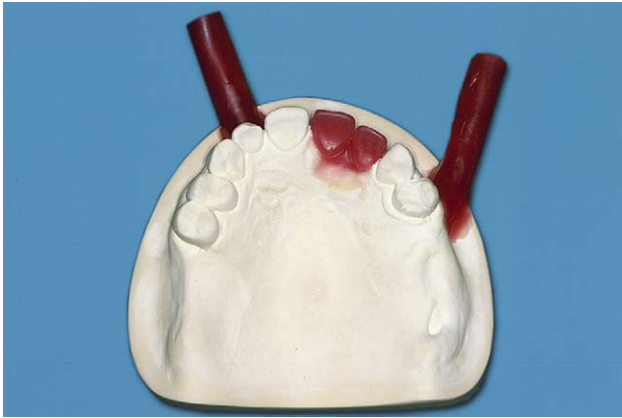


Fig. 2. Waxing of original anterior edentulous area.

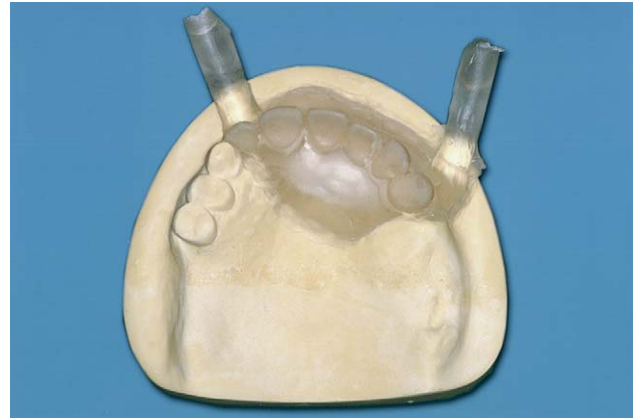


Fig. 3. Cast with acrylic resin duplicating missing teeth and missing portion of palate.

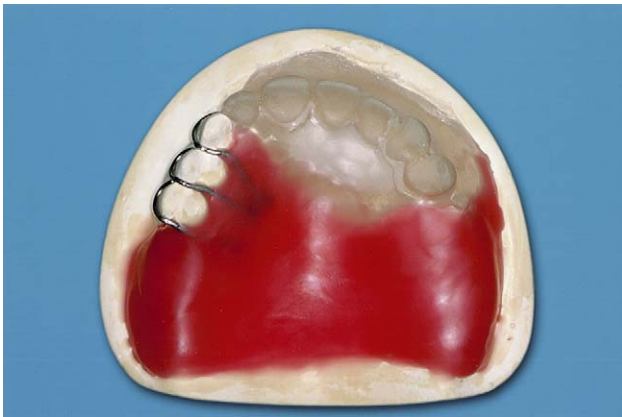


Fig. 4. Completed waxing of prosthesis.



Fig. 5. Cast after polymerization complete.

using light-polymerizing acrylic resin. The definitive result provides improved fit and a smoother surface than is achieved by other techniques, such as making a matrix with irreversible hydrocolloid, using a celluloid matrix, or modifying the surgical obturator and using a denture duplicator. The improved fit and smoother surface are due to the use of a precise matrix that is adapted on a postsurgical cast. Therefore, by duplicating the recently removed teeth and palate, the technique allows the patient an acceptable appearance and function.³

TECHNIQUE

1. Prepare the final casts before and after maxillectomy (presurgical and postsurgical casts) (Fig. 1).
2. Wax anterior teeth on presurgical cast if an anterior edentulous area exists (Fig. 2).
3. On the presurgical cast, attach 2 wax sprues (Paraffin Wax; GC Corp, Tokyo, Japan), approximately 7 mm in diameter, to the palatal portion planned for surgical resection. With silicone putty (Exafine; GC Corp), make a matrix of the teeth and palatal portion planned for surgical resection on the presurgical cast.
4. Create prosthetic teeth by incrementally adding tooth-colored autopolymerizing acrylic resin (Unifast II; GC Corp) into the matrix. Soak the postsurgical cast in water for 10 minutes to displace any air from the cast and reduce porosity in the acrylic resin. Dry the surface of the cast and paint a separating medium (Aislar; Heraeus Kulzer GmbH & Co, KG, Hanau, Germany) on the cast.
5. Return the matrix to the postsurgical cast using the remaining teeth and palate as reference for positioning the matrix, and seal the margin of the matrix with cyanoacrylate (Aron Alpha A "Sankyo"; Toagosei Co, Ltd, Tokyo, Japan) and wax (New Sticky Wax; GC Corp).
6. Pour a liquid mix of clear autopolymerizing acrylic resin (Palapress vario; Heraeus Kulzer GmbH & Co, KG) at a powder-to-liquid ratio of 10 g to 7 mL through a sprue to join this resin with the

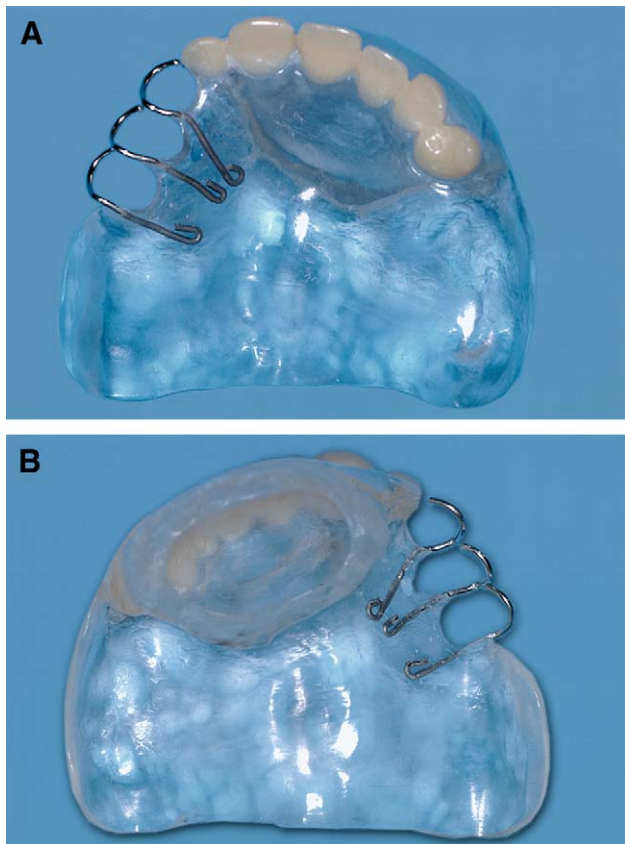


Fig. 6. Completed interim obturator prosthesis. **A**, Occlusal surface view. **B**, Intaglio surface view.

replacement teeth. Use clear acrylic resin to allow observation of the surgical margins and pressure areas upon placement of the prosthesis.

7. Place the cast with resin in a pressure pot (Shofu Inc, Kyoto, Japan) with water. Heat the water gradually from room temperature to 45°C, at 2-bar pressure for 30 minutes, to harden and reduce porosity of the acrylic resin.
8. Remove the matrix from the cast (Fig. 3), and evaluate the teeth and palatal portion duplicated in acrylic resin.
9. Adapt Co-Cr wire (Sun-Cobalt Clasp-Wire; Dentsply-Sankin, Tochigi, Japan) clasps to the teeth on the postsurgical cast to retain and stabilize the prosthesis.
10. Complete the waxing of the prosthesis with a 2-mm-thick layer of paraffin wax (Paraffin Wax; GC Corp) (Fig. 4) and attach 2 sprues (Paraffin Wax; GC Corp), approximately 7 mm in diameter, on ends of the waxing surface on the remaining palatal section to join with the previously poured acrylic resin.
11. Make a matrix of the postsurgical cast waxing with silicone putty (Exafine; GC Corp).

12. Remove the matrix, dewax, soak the cast in water for 10 minutes, dry the surface, paint a separating medium (Aislar; Heraeus Kulzer GmbH & Co, KG), return the matrix to the dewaxed cast, and seal the margin of the matrix with cyanoacrylate (Aron Alpha A "Sankyo"; Toagosei Co, Ltd) and wax (New Sticky Wax; GC Corp).
13. Pour a liquid mix of clear autopolymerizing acrylic resin (Palapress vario; Heraeus Kulzer GmbH & Co, KG) at a powder-to-liquid ratio of 10 g to 7 mL through a sprue on the remaining palatal section to join it with the previously poured acrylic resin (Fig. 5).
14. Place the cast and resin in a pressure pot (Shofu Inc) with water. Heat the water gradually from room temperature to 45°C, at 2-bar pressure for 30 minutes, for final polymerization.
15. Carefully remove the prosthesis from the cast. Trim the excess acrylic resin with carbide burs (Laboratory Carbide Bur; GC Corp) and polish the prosthesis with finishing burs (Big Point; Inoue Attachment Co, Ltd, Tokyo, Japan) and waterproof abrasive paper (Waterproof Abrasive Paper Sheet, Fuji Star; Sankyo Rikagaku Co, Ltd, Saitama, Japan) conventionally (Fig. 6).^{9,10}

SUMMARY

Duplication of the presurgical contours of the teeth and palatal tissue in an interim obturator prosthesis may facilitate speech and deglutition and also improve esthetics. This technique permits the immediate replacement of preoperative anterior teeth and maxillary palatal form. Thus, this method facilitates the prosthetic rehabilitation of patients undergoing partial maxillectomy in an expeditious and nontraumatic manner.

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**Noteworthy Abstracts
of the
Current Literature****Clinical effectiveness of contemporary adhesives: A systematic review of current clinical trials**

Peumans M, Kanumilli P, De Munck J, Van Landuyt K, Lambrechts P, Van Meerbeek B. *Dent Mater* 2005 Sep;21:864-81.

Objectives: The purpose of this paper was to review current literature on the clinical effectiveness of contemporary adhesives when used to restore cervical non-carious class-V lesions. Restoration retention in function of time was recorded in order to find out if adhesives with a simplified application procedure are as clinically effective as conventional three-step adhesives.

Data Sources: Literature published from January 1998 up to May 2004 was reviewed for university-centred clinical trials that tested the clinical effectiveness of adhesives in non-carious class-V lesions. Restoration-retention rates per adhesive reported in peer-reviewed papers as well as IADR-AADR abstracts and ConsEuro abstracts were included and depicted as a function of time in graphs for each of the five adhesive classes (three- and two-step etch-and-rinse adhesives, two- and one-step self-etch adhesives, and glass ionomers). The guidelines for dentin and enamel adhesive materials advanced by the American Dental Association were used as a reference. Per class, the annual failure rate (%) was calculated. Kruskal-Wallis analysis and Dwass-Steel-Chritchlow-Fligner pairwise comparisons were used to determine statistical differences between the annual failure percentages of the five adhesive categories.

Results: Comparison of retention of class-V adhesive restorations as a measure to determine clinical bonding effectiveness of adhesives revealed that glass ionomers most effectively and durably bond to tooth tissue. Three-step etch-and-rinse adhesives and two-step self-etch adhesives showed a clinically reliable and predictably good clinical performance. The clinical effectiveness of two-step etch-and-rinse adhesives was less favourable, while an inefficient clinical performance was noted for the one-step self-etch adhesives.

Significance: Although there is a tendency toward adhesives with simplified application procedures, simplification so far appears to induce loss of effectiveness. Clinical performance can be correlated with, and predicted by, appropriate types of laboratory study.—*Reprinted with permission of The Academy of Dental Materials.*