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An Alternative Procedure for Fabricating a Hollow Interim Obturator for a Partial Maxillectomy Patient

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Abstract

A technique is described for fabricating an interim obturator for a partial maxillectomy patient. This technique enables the immediate and easy chairside fabrication of a lightweight hollow-type interim obturator when a preoperative cast is not available. After a master cast is formed, two duplicate casts are made from the master cast. One portion of the obturator is fabricated on a duplicate cast with a corrected defect, and the other portion of the prosthetic base is made on the second duplicate cast with a corrected alveolar ridge. These two portions are connected and adjusted in the patient's oral cavity. This technique is beneficial because it helps patients maintain good esthetics and their ability to speak, swallow, and chew just after surgery.

Interim obturators are frequently required to maintain maxillectomy patients' oral functions just after surgery, including a reasonable level of speech, swallowing, esthetics, and mastication. In general, obturators have been fabricated using the preoperative casts[1-4] made before surgery, although they fit poorly because of substantial, rapid changes in the defect following surgery. However, if a patient with a palatal defect presents immediately after surgery, this conventional method is not possible. A hollow-type obturator prosthesis is recommended for partial maxillectomy patients due to its significantly lighter weight. Wu and Schaaf[5] reported that the weight reduction of hollow-type obturator prostheses ranged from 6.55 to 33.06%, depending on the size of the defect. Methods for fabricating a hollow-type obturator using a double-investment procedure[6] or sealing the lid with autopolymerizing acrylic resin[7] have been reported.

In the present article, a step-by-step technique is described for an improved procedure to fabricate lightweight, hollow-type interim obturators for patients with palatal defects when preoperative casts are not available.

Technique

1. At the first visit, make a preliminary impression of the postoperative maxilla (Fig 1) with alginate (Aroma Fine DF III, GC Corp, Tokyo, Japan) and a stock tray that is as wide as possible. Then prepare a master cast (Fig 2A).
2. Make two duplicate casts from the master cast using the same impression material.
3. Scrape away and form a simulated smooth palatal defect on one duplicate cast by comparing it with the original defect (Fig 2B).
4. Form the obturator and prosthetic base on the corrected duplicate cast using a 1.00-mm-thick thermoplastic sheet (Erkodur, Erkodent Erick Kopp GmbH, Pfalzgrafenweiler, Germany) with a vacuum-forming machine (Erkopress 2002, Erkodent Erick Kopp GmbH) (Fig 3A). Keep the bulb portion that will serve as the obturator and cut the remnant away.
5. Alter the second duplicate cast by adding plaster to make a simulated alveolar arch similar to the arch of the other side (Fig 2C).
6. Form the other portion of the prosthetic base in the same way on the second corrected duplicate cast (Fig 3B).
7. Connect these two portions at the intaglio surface using autopolymerizing resin (Unifast III, GC Corp) and complete the hollow-type obturator (Fig 3C).
8. Arrange the anterior denture teeth (Real Crown Anterior Teeth, Shofu Inc, Kyoto, Japan) for esthetics by securing them with the same autopolymerizing resin.

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Figure 1 Left side palatal defect.

9. Insert the interim obturator into the patient's mouth and alter it using dual-hardened soft reline material (FDR, Kamemizu Chemical Ind Co Ltd, Osaka, Japan) (Figs 4 and 5). Careful attention must be paid to directly fabricating and adjusting the obturator using this material several times during the period of wound healing to fit the defect as it changes over time.

Figure 4 Adjusted obturator.

Figure 5 Seated obturator.

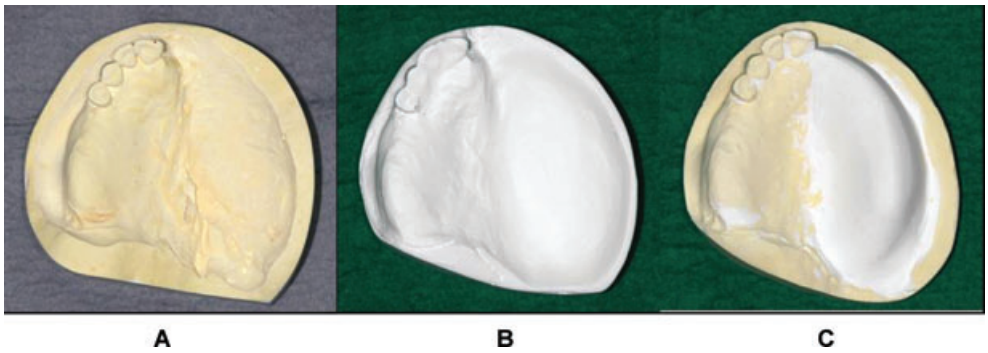

Figure 2 (A) Master cast from a postoperative preliminary impression. (B) First corrected duplicated cast with a recontoured palatal defect. (C) Second corrected duplicate cast with a simulated alveolar ridge.

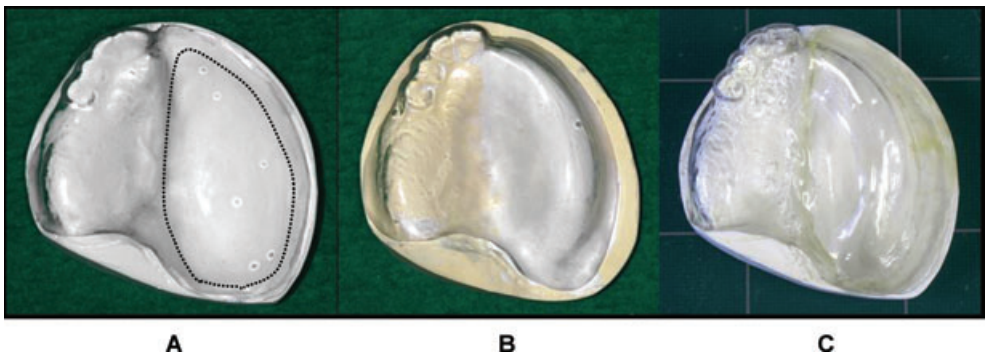

Figure 3 (A) Portion of the obturator on the first corrected duplicate cast before cutting. The dotted outline indicates the cut edges of the used portion. (B) Portion of the prosthetic base on the second corrected duplicate cast. (C) Completed interim obturator.

10. Adjust for pressure spots using a silicone disclosing medium (Fit-Checker II, GC Corp) and reline with the same reline material as necessary for a year until a definitive obturator is fabricated.

Discussion

Interim obturators have important physical and psychological effects and contribute to improving the quality of life of maxillectomy patients.[8] While it is difficult to make an ideal impression just after surgery, the present technique using the preliminary impression is invaluable even though it is not perfect. The rationale/advantage for making the prosthetic base and bulb portions from two separate casts is that this technique easily provides a way of fabricating an interim hollow-type obturator without preoperative casts. It is beneficial when a patient with a palatal defect presents after surgery and is a time-saving procedure, although it does require two appointments. Since the prosthetic base is made of thermoplastic, the obturator is still comparatively light, even after adding dual-hardened soft reline material. The clear thermoplastic also allows the pressure areas to be observed.

One of the disadvantages of this interim obturator is that an increase in vertical dimension occurs from seating it, because it covers the occlusal surfaces of the remaining teeth. However, maxillectomy patients seem more interested in improving their speech and swallowing functions just after surgery than in improved mastication. Therefore, this treatment may contribute not only to function but also to the psychosocial adaptation of patients. Although masticatory disturbance remains to a greater or lesser degree, it is a satisfactory treatment option. When the patient has severe postoperative trismus, this method is not an option. After the wound is sufficiently healed and the patient is ready, a definitive prosthesis should be placed.

Summary

The proposed procedure enables the time-saving fabrication of interim obturators when preoperative casts are not available for patients with palatal defects.

References

1. Carl W: Preoperative and immediate postoperative obturators. J Prosthet Dent 1976;36:298-305
2. Har-El G, Bhaya M: Intraoperative fabrication of palatal prosthesis for maxillary resection. Arch Otolaryngol Head Neck Surg 2001;127:834-836
3. Haraguchi M, Mukohyama H, Taniguchi H: A simple method of fabricating an interim obturator prosthesis by duplicating the existing teeth and palatal form. J Prosthet Dent 2006;95:469-472
4. Rilo B, Dasilva JL, Ferros I, et al: A hollow-bulb interim obturator for maxillary resection. A case report. J Oral Rehabil 2005;32:234-236
5. Wu YL, Schaaf NG: Comparison of weight reduction in different designs of solid and hollow obturator prostheses. J Prosthet Dent 1989;62:214-217
6. Schneider A: Method of fabricating a hollow obturator. J Prosthet Dent 1978;40:351
7. Habib BH, Driscoll CF: Fabrication of a closed hollow obturator. J Prosthet Dent 2004;91:383-385
8. Kornblith AB, Zlotolow IM, Gooen J, et al: Quality of life of maxillectomy patients using an obturator prosthesis. Head Neck 1996;18:323-334

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