Journal of Oral Rehabilitation 2005 **32**; 234–236

A hollow-bulb interim obturator for maxillary resection. A case report

B. RILO, J. L. DASILVA, I. FERROS, M. J. MORA & U. SANTANA *Prosthodontics Department, Faculty of Medicine and Odontology, Santiago de Compostela University, Spain*

SUMMARY The treatment of hemimaxillectomy patients include the construction of an interim obturator in the wound healing period. With the aim of simplifying this process, we describe construction of an obturator in a short single visit, in the dental chair with no need for impressions or for laboratory services. The obturator comprises: (i) the surgical obturator and (ii) a hollow light-cured resin bulb built onto the base, and providing a large surface for bonding of the soft reline material. The advantages of this approach are rapid construction and ease of ongoing adjustment during the healing process.

KEYWORDS: maxillofacial prostheses, interim prostheses, maxillary obturator, maxillary resection, hollow-bulb obturator, oronasal communication

Accepted for publication 11 June 2004

Introduction

Oral rehabilitation after hemimaxillectomy presents diverse clinical and technical problems. The usual treatment sequence includes placement of a surgical obturator during the intervention; then 5–10 days later this obturator is removed, and a removable interim obturator is constructed and placed for the duration of the wound healing period; finally, the definitive obturator is constructed and placed about 3–6 months post-surgery, when major changes in tissue conformation are no longer expected (1). The construction of the interim obturator, although necessary (2), is a source of pain and discomfort, during a period which is of course already very stressful for the patient. The clinician must not only cope with the patient's difficulties, but in technical terms must deal with mobile, non-cicatrized, bleeding tissues, with mucous secretions, and with jaw and mouth movements restricted by pain and swelling.

With the aim of simplifying this process, both for clinician and patient, various types of obturator have been proposed (3–9). The purpose of this article is to describe a new obturation procedure, in which an interim obturator is fabricated by building a hollow light-cured resin bulb onto the existing surgical obturator.

Methods

We describe construction of an obturator of this type for a 35-year-old male patient who had undergone left maxillary resection for tumour, retaining a band of mucosa in the soft palate. Dental casts had been obtained before surgery, and were mounted on a semiadjustable articulator. A surgical obturator was then constructed using PMMA acrylic resin* in view of the resection planned by the surgeon (Fig. 1). The interim obturator was constructed 2 weeks after surgery, in the dental chair and at a single visit, as follows.

The bulb was constructed using the Triad visible-light-cured (VLC) denture base resin system†. Specifically, the inner face of the methacrylate denture base (i.e. the surgical obturator) was brushed with monomer (Fig. 2), and using the VLC resin a hollow bulb was constructed in the central part of the base corresponding to the defect. In view of the thixotropic properties of

*Kerr Manufacturing Co., Romulus, MI, USA.
†Dentsply Int., York, PA, USA.

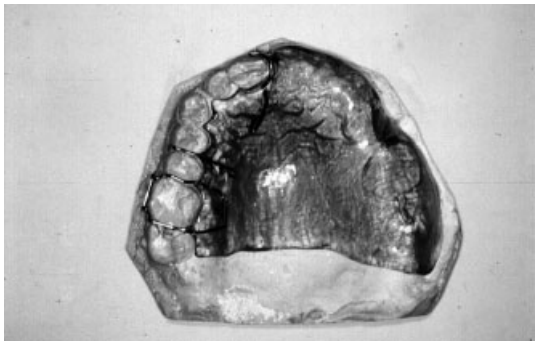

Fig. 1. Surgical obturator before the surgical resection.

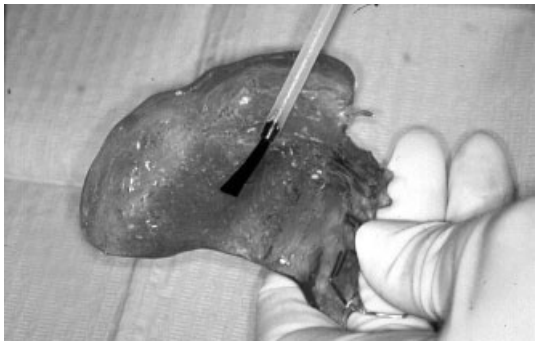

Fig. 2. Application of monomer in the obturator inner face.

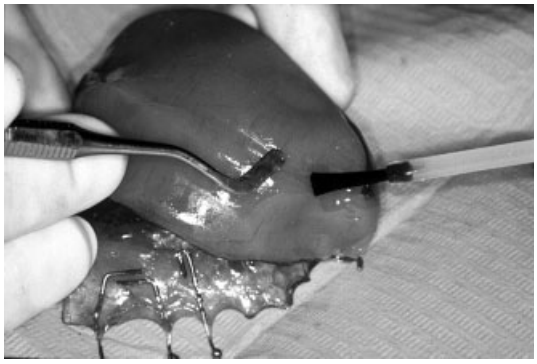

Fig. 3. VLC resin bulb construction.

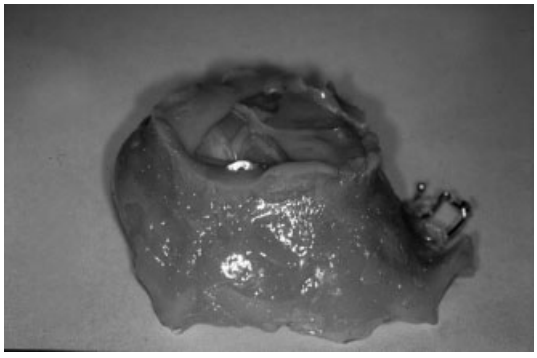

Fig. 4. Hollow-bulb interim obturator finished with the relining material.

this material and its rapid light curing (20 s with a hand-held light source, Model C 7916)[‡]; it is relatively easy to construct a dome-shaped structure (Fig. 3).

Ease of insertion and removal was tested in the mouth, aiming for 3–4 mm separation between the bulb and the borders of the defect. Inadequate or excessive separation can be resolved by removal or addition of resin.

Once the bulb was judged of adequate size and shape, close adaptation to the denture base was ensured by removal or addition of resin as required. The bulb was then covered with Triad Air Barrier Coating to exclude air from the surface layer, and definitively hardened in a light-curing unit (Triad 2000)[†] for 10 min, in accordance with the manufacturer's instructions.

Relining was done with Ufi Gel C, an A-silicone based soft relining material[§]. The bulb was brushed with the bonding agent (Ufi Gel C Adhesive), and the reline material was applied to a thickness of 3–4 mm. The bulb was inserted into the defect, and the reline was left to adapt to the mucosa for a few seconds; the patient was then instructed to make functional movements (chewing and swallowing) for 1 min. This procedure was repeated with addition of reline material until a good seal was achieved (Fig. 4).

Excess reline material was trimmed with scissors, and the edges were sealed by application first of bonding agent then of varnish (Ufi Gel C Glazing) to the reline surface and to the line of union between reline and denture base.

Discussion

Interim obturators of this type favour rapid recovery of speech and swallowing, and their construction is less stressful to the patient than many alternative procedures. However, in view of the continuously changing tissue conformation, regular modification and adjustment (i.e. addition/removal of bulb resin and/or reline)

[‡]Coltene Whaledent Inc., Mahway, NJ, USA
[†]Dentsply Int., York, PA, USA.
[§]Voco, Cuxhaven, Germany.

is required over the 3–6 months following surgery. In the present case, we saw the patient every 7–10 days.

The procedure has a number of advantages: (i) there is no need to obtain impressions, (ii) weight is low because the bulb is hollow (10) and (iii) the bulb is covered with a soft reline that does not damage tissues and that favours both a good seal and good retention.

Significant disadvantages of this approach are as follows. First, inadequate sealing of the union between the bulb and the denture base may allow passage of fluids into the hollow cavity, where they will decompose and produce bad odour; careful attention must therefore be paid to sealing. Secondly, soft reline materials do not maintain optimal properties for long periods of time, but in the present context this is not likely to be a major problem, because regular adjustment of the obturator is required in any case. Thirdly, the soft reline material bonds rather poorly to the VLC resin; however, this problem is less significant using our procedure than if the bulb were constructed entirely of reline material, as in this case the ratio of reline material weight to surface of adhesion would be much higher.

The approach described here allows construction of the interim obturator in a short single visit, in the dental chair, with no need for impressions or for laboratory services. The covering of the bulb with soft reline means that when placed it expands into the undercuts of the defect, thus improving retention; and of course soft relines are less damaging to healing soft tissues than hard relines.

References

1. Beumer J, Curtis T, Marunick M. Maxillofacial rehabilitation: prosthodontic and surgical considerations. St Louis: Ishiyaku EuroAmerica, Inc.; 1996:240–285.
2. Lapointe HJ, Lampe HB, Taylor M. Comparison of maxillectomy patients with immediate versus delayed obturator prosthesis placement. J Otolaryngol. 1996;25:308–312.
3. Lang BR, Bruce RA. Presurgical maxillectomy prosthesis. J Prosthet Dent. 1967;17:613–619.
4. Tanaka Y, Gold HO, Pruzansky S. A simplified technique for fabricating a lightweight obturator. J Prosthet Dent. 1977;38:638–642.
5. Frame RT, King GE. A surgical interim prosthesis. J Prosthet Dent. 1981;45:108–110.
6. Cunningham R. A laboratory technique for the production of immediate surgical appliances and ''one stage'' obturators for the hemi-axillectomy patient. Br J Oral and Maxillofac Surg. 1990;28:59–61.
7. Dabreo EL. A light-cured interim obturator prosthesis. A clinical report. J Prosthet Dent. 1990;63:371–373.
8. Bair FM, Hunter NR. The hollow box maxillary obturator. Br Dent J. 1998;184:484–487.
9. Shaker KT. A simplified technique for construction of an interim obturator for a bilateral total maxillectomy defect. Int J Prosthodont. 2000;13:166–168.
10. Wu YL, Schaaf NG. Comparison of weight reduction in different designs of solid and hollow obturator prostheses. J Prosthet Dent. 1989;62:214–217.

Correspondence: B. Rilo, Prosthodontics Department, Faculty of Medicine and Odontology, 15705 Santiago de Compostela University, Spain.
E-mail: protesis@usc.es