

CASE REPORT

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# A Simplified Technique for Fabricating a Hollow Interim Obturator for a Partial Maxillectomy Patient

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**ABSTRACT:**

Radical cancer surgery of the maxilla creates extensive loss of hard and soft tissues. The resulting intraoral tissue deficiencies cause speech impediments, restrict mastication, and impair deglutition. Many retentive features generally incorporated in conventional maxillary dentures are sacrificed in the surgical endeavor to eradicate the disease. Seemingly hopeless postsurgical conditions can be resolved by a clinical approach which looks upon such situations not as areas of devastation but, rather, as conditions which can be treated successfully by application of sound prosthodontic principles and clinical skill.

*Key words: Hollow, obturator, ridge resorption*

**INTRODUCTION:**

The surgical excision of tumors involving the maxilla and adjacent tissues usually results in an anatomic and functional loss that should be restored as quickly and completely as possible. The vital physiologic functions of speech, mastication, and deglutition can and should be restored with a prosthesis immediately following surgery. Prosthetic planning and rehabilitation, therefore, should be an integral part of the patient's treatment plan.<sup>1</sup>

Obturator replacing resected hard and soft palates may be classified and defined as follows: ( 1) a surgical obturator is an immediate prosthesis fabricated preoperatively and inserted at the time of surgery; (2) a treatment obturator is the interim appliance that the patient wears during the convalescent or healing period(temporary prosthesis and has to be revised periodically as the defect heals);<sup>2</sup>and (3) a definitive prosthesis after sufficient healing takes place(3-4 months post surgically, depending on the case).<sup>3,4</sup>

The primary objective of an interim obturator is to make the patient functional, by promoting closure or separation between the oral and surgical (actually nasal) chambers. According to Cordell<sup>2</sup>, this is accomplished by creating, wherever possible, broad contacts between the prosthesis and soft tissues surrounding it. On the medial side of the defect, the prosthesis can contact tissue superiorly only to the juncture of the oral and nasal mucosa. It must remain clear of positive contact with the nasal septum or nasal mucosa. On the lateral wall, however, a broad contact is possible and desirable, to prevent the leakage of oral fluids over the prosthesis and out of the nostril. This wide contact also provides for increased mechanical retention of the prosthesis.

**CASE REPORT:**

A 20 year old male patient reported to the Department of Prosthodontics, Kamineni Institute of Dental Sciences, with a unilateral swelling on the right side of the face. On intra oral examination, a diffuse firm swelling on the right side of the palate extending from the midline to the buccal sulcus and involving the first quadrant was noticed. The patient was referred from the Department of Oral and

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Maxillofacial Surgery after being diagnosed as having Mono Ostotic Fibrous Dysplasia of the right maxilla. Diagnostic impressions were made and a surgical stent was fabricated to keep the dressing in place immediately following surgery and the surgical borders were marked on the cast for reference. A surgical resection of the tumor was executed and the patient was referred back for prosthetic rehabilitation with an interim obturator until healing of the tissues occurred.

### **PROCEDURE:**

The impressions of both the maxillary and mandibular arches were recorded with alginate. In the maxilla to record the defect, initially the undercuts were blocked with gauze soaked in saline. Following this, a thick mix of alginate was injected into the defect. Simultaneously alginate was loaded onto the maxillary impression tray and placed in the mouth. After sufficient setting, the impression was withdrawn with a snap. It included the maxillary arch along with the defect portion. (Fig 1). Master cast was obtained from the impressions. (Fig 2). A trial denture base with only anterior teeth arranged and with clasps on 21 and 26 was fabricated and checked for esthetics and retention. (Fig 3)

### **Fabrication of hollow open bulb obturator:**

Initially the defective portion in the master cast was completely blocked out with plaster. Before complete setting 2-3mm of plaster was scraped out from the borders of the defect upto a depth of 4mm, to create space for the hollow bulb portion. (Fig 4). Now this space created in the defect was waxed up. (Fig 5). Over this the trial denture base was placed and sealed. Additionally a buccal ramp was designed on the right side along the posterior ridge to provide cheek support and to improve facial disfigurement. (Fig 6). This was followed by flasking, dewaxing and packing procedures. As conventional flasks could not be used because of the large size of the defect, indigenous flasking was accomplished in high grade PVC pipes.

The denture was then retrieved, trimmed, finished, polished and inserted into the patient's mouth. Pressure indicating paste was applied on the walls of the hollow bulb to check for any pressure

areas. Interferences on the anterior teeth and buccal flange were checked in centric and eccentric movements and corrected wherever necessary.

The prosthesis was then thoroughly polished and inserted into the patient's mouth. (Fig8). Post insertion instructions were given and the patient was kept on soft diet. Recall visits were scheduled after 24 hours, 1 week and every one month to check for the tissue healing. A definitive prosthesis was planned after complete healing of the tissues.

### **DISCUSSION:**

Interim obturators have important physical and psychological effects and contribute to improving the quality of life of maxillectomy patients.<sup>5,6</sup> A hollow open bulb interim obturator was fabricated for the patient mentioned in this case report. After surgical resection, the defect was categorized under Armany's class I condition<sup>7,8,9</sup>. (The resection in this group is performed along the midline of maxilla and the teeth are maintained on one side of the arch). A hollow bulb design was chosen in order to reduce the bulk of the prosthesis which in turn made it light weight and improved the patients acceptance. Wu and Schaaf<sup>10</sup> reported that the weight reduction of hollow-type obturator prostheses ranged from 6.55 to 33.06%, depending on the size of the defect. The bulb of the prosthesis was kept open to accommodate the collection of mucous secretions. Additionally anterior teeth and buccal ramp was designed to improve the esthetics.

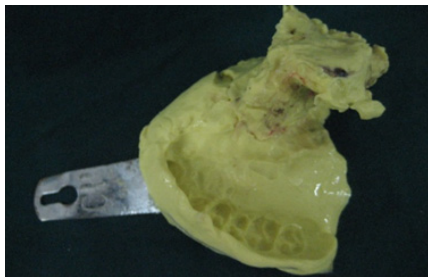
### **CONCLUSION:**

The present prosthesis apart from obturating the oro-nasal communication to prevent regurgitation of fluids and nasal speech, has also counteracted the facial disfigurement at this immediate post-surgical condition and enhanced the esthetic appeal and patient satisfaction. (Fig 9,10)

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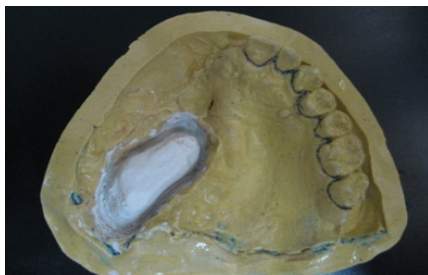
**Fig 1** - Alginate impression



**Fig 2** - Master cast



**Fig 3** - Trail denture



**Fig 4** - Defect portion blocked with plaster and borders scraped



**Fig 5** -Bulb portion waxed up



**Fig 6** - Buccal ramp



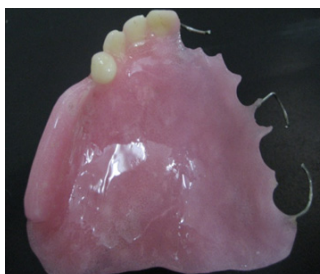
**Fig 7** - Dewaxed segments



**Fig 9** -Pre operative view



**Fig 10**- Post operative view



**Fig 8** -Hollow open bulb obturator

