

# Closed Hollow Obturator - An Elixir to the Cancer Patients

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## Abstract

Rehabilitation of what is remaining is the foremost consideration for a prosthodontist during the preservation of the oral structures. A large, heavy obturator usually leads to the transmission of a high degree of stresses to the oral tissues of the patient causing discomfort and jeopardizing its health and function. This article describes a case report of a hemimaxillectomy patient, successfully rehabilitated by a closed hollow obturator prostheses. Since the defect was large, proper support is provided by complete palatal coverage and occlusal rests, the retention and the stability of the obturator were enhanced by making the ridge portion hollow. It improves the biomechanical engineering principles to the design concept of the prostheses and prevents the overtaxing of the remaining supporting tissues.

**Keywords:** Cast partial denture, Hollow obturator, Partial maxillectomy

## INTRODUCTION

Maxillary defects can be either acquired or congenital. The treatment for both differs due to the abrupt alteration in the physiologic process with which the maxilla is involved.<sup>1</sup> Persons with maxillary defects present themselves with many problems with hypernasal speech, fluid leakage into the nasal cavity and impaired masticatory function and most importantly the deteriorated intellectual confidence.<sup>2</sup> To tackle the resulting inconvenience to the patient, an obturator is fabricated. The latin word “obturate” means “to stop-up” was used by ambroise pare to coin the term “obturator.”<sup>1</sup>

The term obturator is defined as a maxillofacial prosthesis used to close a congenital or acquired tissue opening, primarily of the hard palate and/or contiguous alveolar/soft tissue structures – GPT8.<sup>3</sup>

In a closed hollow obturator, adequate extensions are obtained within the prostheses, along with a reduction

in the overall weight of the obturator. Thus, making it primarily tolerable for the patient by preventing fluid and food accumulation, and secondly, reducing air space. This case report presents an alternative method to enhance the retention and stability of the obturator by making the ridge portion hollow.<sup>4</sup>

## CASE REPORT

A 30-year-old male patient reported to the Department of Prosthodontics, Manubhai Patel Dental College, Vadodara. The patient had a chief complaint of a communication between oral and nasal cavity with missing teeth in upper right region (Figure 1a and b). Deglutition and intelligible speech were almost impossible. An obvious nasal twang was observed in the speech of the patient. He had a history of central giant cell granuloma in first quadrant region. Partial maxillectomy was done before 6 months. On detailed examination, it was found that the defect came under Aramany's class II arch. The remaining dentition was intact without any restorations. Oral hygiene was satisfactory.

A preliminary alginate impression was made using the perforated stock tray (Figure 1c and d). The dual impression procedure was planned to record both the defect region and the dentulous portion of the arch. The special tray was fabricated corresponding to the region

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of the defect. The defect area was recorded using the low fusing impression compound (Figure 1e). The secondary impression of the corresponding region was made using addition silicone impression material (Figure 1f). Then, the alginate impression was made to record the dentulous portion of the arch.

The Fabrication of the Closed Hollow Obturator was done in the Following Steps

1. Mouth preparations were done following the principles of Aramany's class II obturator design and the master cast obtained duplicated (Figure 2a). The wax pattern was fabricated (Figure 2b), and sprues attached (Figure 2c), followed by investing and casting. The partial denture framework was finished and polished and located on the working cast (Figure 2d). Metal trial of the cast partial denture was done in the patient (Figure 2e)
2. The maxilla-mandibular jaw relation was recorded using occlusal rims on the cast partial denture base and transferred to the articulator for the arrangement of artificial teeth
3. Try in was accomplished in the conventional a manner
4. Two split denture flasks with interchangeable counters were used for the fabrication of the obturator. The waxed up maxillary trial denture was dewaxed in flask 1 (base 1 and counter 1) (Figure 3a)
5. After the dewaxing stage, the counter portion of the flask 1 was removed and a 2 sheet thickness wax was adapted on the dewaxed teeth, it was placed with base 2 portion of the flask 2 (Figure 3b). Proper seating of both portions of the flasks (base 2 and counter 1) were confirmed. The base 2 and counter 1 were separated, and the wax was adapted on base 2. Base 2 was seated on counter 1, dewaxed, packed and processed to obtain the acrylic shim, which was trimmed and adjusted on counter 1.
6. A wax sheet was adapted over the acrylic shim (Figure 3c). The wax lid was dewaxed in a flask and packed to obtain the acrylic lid (Figure 3d), which was then adjusted and sealed to the shim. The shim with the lid was adapted and adjusted to counter 1, packed and processed with base 1. The obturator was finished and polished (Figure 3e and f).

The post insertion results showed an improvement in speech, mastication, swallowing and aesthetics (Figure 3g and h). The patient was satisfied with prosthesis in the recall checkups (Figure 3i).

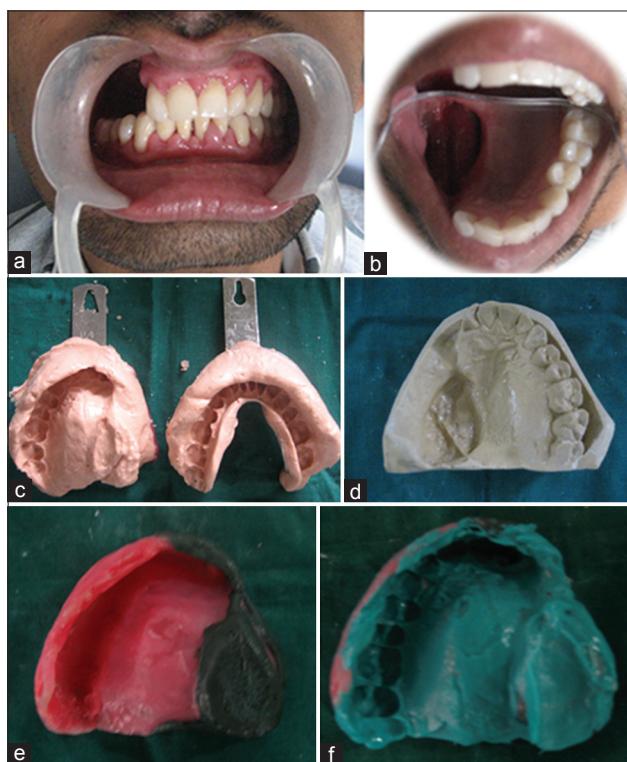
## DISCUSSION

The maxillary defects results in a communication between oral and nasal cavities causing impeded swallowing, nasal

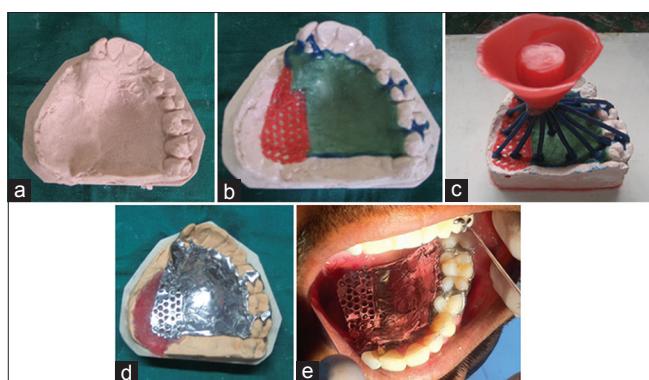
reflux, unintelligible speech, and unesthetic appearance. All these difficulties affect the patient psychologically.<sup>5</sup>

This particular case belongs to Aramany's class II arch. Since the defect was large, the retention and the stability of the obturator were enhanced by making the ridge portion hollow, improving the biomechanical engineering principles of the obturator design.<sup>5,6</sup>

Retainer is a very crucial component of an obturator prostheses, designed to reduce the stress transmitted to the abutment teeth. Stabilization and indirect retention



**Figure 1:** (a) Extraoral surgical defect, (b) Intraoperative surgical defect, (c) Primary alginate impression, (d) Primary cast, (e) Border molding, (f) Secondary impression



**Figure 2:** (a) Refractory cast, (b) Wax pattern, (c) Sprue attached, (d) Cast partial framework, (e) Metal trial



**Figure 3:** (a) Base 1 compartment of flask 1 (b) Dewaxing done (c) Wax sheet adapted on the defect portion (d) Wax lid adapted on the acrylic shim (e) Obturator prostheses (f) Obturator prostheses (g) Obturator insertion (h) Obturator insertion (i) Happy patient

components must be positioned effectively to retard the movement of the defect extension portion away from its terminal position.<sup>7,8</sup>

Weight of the obturator was markedly reduced which helped in achieving retention. It helped in the acceptance of the obturator, as it decreases the self-consciousness of the patient for wearing the denture as well as in swallowing by decreasing pressure in the surrounding tissues.<sup>1</sup>

Thus, it imparts a positive psychological effect on the patient's personality, the physical development and well-being of the patient is protected, his social moral and intellectual confidence is improved,<sup>9</sup> and neutralizes the initial feelings of loss that occur when patient realize the extent of their surgical defect.<sup>10</sup>

## CONCLUSION

The challenge in rehabilitating a hemimaxillectomy patient is to obtain adequate retention, stability and support. A closed hollow obturator allows for the fabrication of a lightweight prosthesis, along with adequate extensions within the prostheses, making it tolerable for the patient. The closed hollow obturator helps to achieve the primary

objective of restoring the functions of mastication, speech and aesthetics.

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