

## Case Report

### Rehabilitation of Patient with Hemimaxillectomy Defect Using a Closed Hollow Bulb Obturator: A Case Report

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#### ABSTRACT:

The maxillary defects are usually created by palatal clefts or surgical removal of tumours or trauma as malignancies are common in the oral region and are treated usually through surgical intervention. Surgical intervention creates anatomical defects creating communication between oral and nasal cavity and patients are confronted with problems in speech, deglutition, mastication and appearance. To overcome these problems obturators are fabricated with light weight to enhance retention. This article is a description of a clinical case that was treated successfully by using a closed hollow bulb obturator.

**Keywords:** Hollow bulb obturator, maxillary resection, palatal defect

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#### INTRODUCTION

The intraoral defects are most commonly found in the maxilla which leads to the formation of an opening between the oral cavity and the antrum and/or the nasopharynx. These intraoral defects can either be congenital malformations or acquired defects which can be due to ablative surgery for orofacial neoplasms, abnormal growths and traumas.<sup>1,5</sup> Maxillectomy defects create problems in speech, mastication, swallowing and also cause impaired facial esthetics. So in these cases the primary objective of prosthodontists should be to preserve and restore the function of speech and swallowing which can be achieved by obturator prosthesis which not only fits into and closes the defect within the oral cavity but also restores the functional capabilities of speech, oral food intake and deglutition.<sup>2,4</sup> The larger the defect, greater the loss of the mucogingival support as it depends on the remaining hard and soft tissues and to reduce the weight of prosthesis, hollow bulb obturators are fabricated as they significantly reduces prosthesis weight from 6.55% to 33.06% depending on the size of the defect.<sup>6</sup> This case report

describes the clinical and laboratory procedures involved in the rehabilitation of a patient with hemimaxillectomy defect, using a closed hollow bulb obturator.

#### CASE REPORT

A 45-year-old male patient came to the Department of Prosthodontics for replacement of his maxillary teeth and complaints of hypernasality of voice and difficulty in eating. Past dental history revealed that the patient had undergone maxillary resection 6 weeks back for carcinoma. The patient had been wearing a surgical obturator since then, which had become loose and was without the teeth and therefore he needed a partial denture to restore his lost teeth and an obturator to overcome the defect and facilitate mastication and speech. Extraoral examination revealed collapsed right maxillary region. His intra-oral examination revealed partially edentulous maxillary arch. The palatal defect was a classic maxillary resection defect where the hard palate, alveolar ridge and dentition till a tooth past the midline were removed on the right side. Our treatment

objective was to provide prosthesis to obturate the defect not only to improve speech, deglutition and mastication but also to restore facial contour and to replace the lost teeth. But the remaining tissues were not capable of providing favourable support and retention so the designing of the prosthesis must be light and easy to wear. Therefore, maxillary closed hollow bulb obturator was planned for the patient.

### PROCEDURE

Maxillary and mandibular primary impressions were made using alginate impression material [Figure 3]. Undercuts in the maxillary defect area were blocked using wet gauze. Primary cast obtained was used for fabricating custom tray for final impression. Border molding was done to record the soft tissue

surrounding the defect using low fusing impression compound. Details of the defect area were recorded using light body condensation silicone and a pick up impression was made to record the dentulous region as well [Figure 3&4]. A master cast was poured on which denture base and wax rims were prepared to record jaw relations, followed by try in of wax-up dentures [Figure 5-10]. The obturator was fabricated and the denture was retrieved, and finished to a smooth surface [Figure 13&14]. A hollow closed bulb obturator prosthesis was inserted, which was stable because of extension into the defect and hollow [Figure 15]. The patient followed the post insertion instructions and over the days learned to speak with lesser nasal twang and swallow with more comfort.



Figure 1: Preoperative view



Figure 2: Intraoral view



Figure 3: Alginate impression



Figure 4: Final impression



Figure 5: Master cast



Figure 6: Spacer adaptation



Figure 7: Wax adapted to create hollow



Figure 8: Occlusal rims fabrication



Figure 9: Jaw relation recorded



Figure 10: Try in done



Figure 11: Packing of prosthesis for dewaxing



Figure 12: Processing of the prosthesis



Figure 13: Final prosthesis



Figure 14: Closed hollow bulb obturator



Figure 15: Closed hollow bulb obturator in mouth

## DISCUSSION

The choice of treatment for the maxillectomy patients following the surgical resection of tumours are mainly rehabilitated by obturators which not only closes the defect but also separates the oral cavity from the sinonasal cavities.<sup>2</sup> There are three phases in the obturation of palatal defects. The first is the surgical obturator phase for restoring oral function immediately postsurgery. Secondly interim obturation to provide a comfortable and functional prosthesis, until the healing is completed and thirdly, definitive obturator which is fabricated 3-6 months after surgery.<sup>4,5</sup> The primary retention, support, and stability of an obturator depends on the number and distribution of remaining teeth in dentate patients as they serve as abutments for the obturator and are subjected to constant, nonaxial and cantilever forces. So, maxillary obturator prosthesis is the most accepted treatment modality than surgical reconstruction due to ease of fabrication and maintenance.<sup>7</sup> The weight of an obturator can be significantly reduced by hollowing out the bulb.<sup>6</sup> Bulb extension is required to improve speech after providing resonance. They can be solid, open hollow and closed hollow. Hollow bulb provides advantages such as reduction in weight, increased retention, and making prosthesis comfortable<sup>8</sup> whereas closed hollow bulb obturators provide the advantage of preventing fluid and food accumulation, reducing airway space, and allow for maximum extension.<sup>9</sup>

## CONCLUSION

In the presented case report the patient was rehabilitated with the closed hollow bulb obturator prosthesis which not only improved his mastication and speech but also significantly reduced the weight of the prosthesis. The patient was completely satisfied with the qualities of the closed hollow bulb obturator prosthesis. The main goal of this obturator was to improve the quality of life of the patient which was attained. Simple and accurate method was adopted for the fabrication of the prosthesis ultimately resulting in a light prosthesis and the same technique can be used for fabrication of obturator prosthesis in partially as well as completely edentulous patients.

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