

Rehabilitation of a partially dentate patient with closed hollow bulb obturator: A case report

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ABSTRACT

The palatal defects are usually created due to palatal clefts or surgical removal of tumors or trauma. Patients with this defect are confronted with problems in speech, deglutition, mastication and appearance. The fear of food and drink entering the oronasal and/or oroantral cavities are prevented by the obturator prosthesis. This article is a description of a clinical case that was treated successfully by using a closed hollow bulb obturator.

Key words: Hollow bulb obturator, maxillary resection, palatal defect

INTRODUCTION

The most common of all the intraoral defects are in the maxilla, which open into maxillary antrum and nasopharynx. These palatal defects result from either congenital malformations or acquired defects. The common etiologies for acquired defects are ablative surgery for orofacial neoplasms and other abnormal growths and traumas.^[1] The resultant maxillary and/or soft-palate defects create oronasal and/or oroantral communication with consequent difficulties in eating, speaking and breathing.^[2] Prosthetic rehabilitation with an obturator prosthesis is a predictable intervention to recreate an anatomic barrier between the cavities and to restore the functional capabilities of speech and deglutition.^[3] This case report describes the clinical and laboratory procedures involved in the rehabilitation of a patient with palatal defect, using a closed hollow bulb obturator.

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CASE REPORT

A 52-year-old male patient reported to the Department of Prosthodontics for replacement of his maxillary teeth. He had complaints of hypernasality of voice, regurgitation of food in the nasal cavity, and difficulty in eating. 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. So the patient 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 and nasal regions. His intra-oral examination revealed partially edentulous maxillary and mandibular arches. 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. Roof of the nasal cavity was visible through the defect. Our treatment objective was to provide prosthesis to obturate the defect to improve speech, deglutition and mastication, to restore facial contour and to replace the lost teeth. As the remaining tissues were not capable of providing favorable support, designing a light and easy to wear prosthesis became essential. Therefore, maxillary and mandibular interim partial dentures with maxillary closed hollow bulb obturator were planned for the patient. The interim prosthesis was fabricated as the patient was considered for the surgical correction of defect followed by implant placement.

PROCEDURE

Maxillary and mandibular primary impressions were made using alginate impression material [Figure 1]. Undercuts in the maxillary defect area were blocked using wet gauze. Primary cast obtained was used for fabricating custom tray for final impression using autopolymerizing acrylic resin (DPI cold cure; Dental Products of India, Mumbai, India). 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 medium body addition silicone elastomer (3M ESPE Express STD, Germany) and a pick up impression was made to record the dentulous region as well [Figure 2]. A mastercast was procured out of it [Figure 3]. On this cast, denture base and wax rims were prepared to record jaw relations, followed by try in of wax-up dentures [Figure 4]. The obturator was fabricated lining the defect but without the lid. The denture was retrieved, and finished [Figure 5].

The next step was to create a closed hollow bulb. The denture part lining the defect was filled with salt [Figure 6] and a lid was fabricated and attached with self cure acrylic.

Then 2 holes were drilled into the lid so that water was injected in one hole and all the salt was washed out through another [Figure 7]. This was carried out until all the salt was washed out and dried. The apertures were sealed off with autopolymerizing acrylic resin and finished to a smooth surface [Figure 8]. A hollow closed bulb obturator prosthesis was inserted, which was stable because of extension into the defect and hollow [Figure 9]. The patient followed the post-insertion instructions and over the days learned to speak with lesser nasal twang and swallow with more comfort.

DISCUSSION

Prosthetic rehabilitation is the treatment of choice for patients with large defects of maxillary complex following the surgical resection of tumors. Surgical correction is also a possibility in a few conditions.

In dentate patients, primary retention, support, and stability of an obturator depends on the number and distribution of remaining teeth.^[4] The remaining teeth serve as abutments

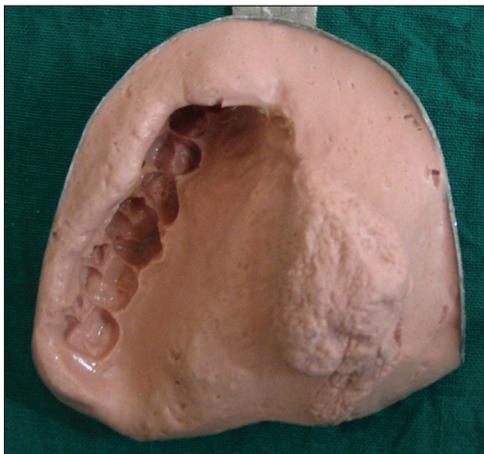


Figure 1. Primary impression



Figure 2. Dual impression



Figure 3. Master cast



Figure 4. Waxed prosthesis after trial



Figure 5. Obturator before closing the bulb



Figure 6. Bulb filled with salt



Figure 7. Lid fabricated

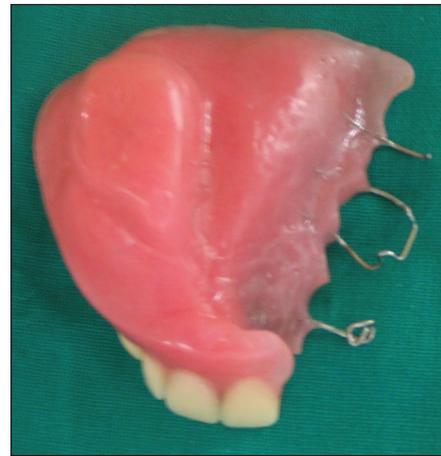


Figure 8. Closed hollow bulb obturator



Figure 9. Insertion of finished prosthesis

for the obturator and are subjected to constant, nonaxial and cantilever forces.^[5] The weight of an obturator can be significantly reduced by hollowing out the bulb.^[6-8] Open hollow obturators tend to accumulate nasal secretions leading to odor and added weight.^[9] There are three phases in the obturation of palatal defects. The first is the surgical obturator phase for restoring oral function immediately post-surgery. Interim obturation is the second phase of prosthetic rehabilitation with the objective to provide a comfortable and functional prosthesis, until the healing is completed.

It is usually fabricated 2-6 weeks post-surgically. Definitive obturator fabrication is usually undertaken 3-6 months after surgery.^[1,4,10]

CONCLUSION

The closed hollow bulb obturator prosthesis rehabilitated the patient of his mastication and improved speech. Choice of making closed hollow bulb improved the comfort by significantly reducing the weight of the prosthesis. The interim obturator was well tolerated and prepared the patient for a definitive obturator even if surgical correction was not a possibility in the future. The patient was completely satisfied with the function and esthetic qualities of the closed hollow bulb obturator prosthesis. The goal of improving the quality of life was achieved.

The fabrication method adopted was simpler and accurate despite using only acrylic material, ultimately resulting in a light prosthesis. The same technique can be used for fabrication of obturator prosthesis in partially as well as completely edentulous patients.

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