

Prosthetic Rehabilitation of Maxillectomy Patient: A Case Report

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ABSTRACT

Preservation of what remains is the primary goal of prosthetic rehabilitation. Continuous stress on the remaining tissues from a large, heavy obturator hampers the health of the tissues, compromise the function of the prosthesis, and affect patient comfort. There are various techniques to reduce the weight of an obturator by hollowing of the obturator. This article basically presents a case report to explain the hollowing of the obturator using double cure technique to optimize the weight and thickness of the prosthesis.

KEYWORDS: Obturator, Hollow Bulb

INTRODUCTION

Maxillary defects either acquired or congenital are sealed with the help of Obturator prosthesis and depending on the extent of the defect, this type of prosthesis may vary in size and shape.^{1,2} The glossary of prosthodontic terms defines an obturator 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”.³ The conventional treatment sequel for a patient requiring maxillectomy is the initial insertion of an immediate surgical obturator at the time of surgery, soon after the initial healing until the tissues are stabilized (approximately for 3 months) an interim obturator is fabricated, and only once the tissue is completely healed a definitive obturator is provided.^{4,5} Interim obturator prosthesis is normally placed 7–10 days after surgery.^{4,5,6,7,8} Artificial replacement of the teeth and palate aids in speech, mastication, esthetics, and uplifts the morale of the patient.⁸

Over the centuries, people have used innovative ideas and have adapted the available materials and methods for use in prosthetic restoration. Ambrose Pare´ who, around 1530, had made the earliest attempt to construct an obturator which was button-shaped and made of metal and sponge. However, Pare´ may not have been the first to perform these procedures, but he is one of the first to write about, describe, and illustrate them.⁹ In 1978, the late Dr.Mohammed Aramany presented the first published system of classification for postsurgical maxillary defects. Based on the relationship of the defect to the remaining teeth and the frequency of occurrence of the defect in a small patient population that he observed over 6 year period at Regional Center for Maxillofacial Rehabilitation in the Pittsburg Eye and Ear Hospital, he divided the defects into 6 categories.¹⁰

Maxillary obturator can either be hollow or solid. Hollow bulb obturators are light-weight prosthesis that can be

easily tolerated by the patient.^{1,11,12} Hollow bulb obturator can either be open or closed, there are several techniques for fabrication of close and open hollow bulb obturator. However, open hollow bulb obturators often collect mucous discharge, food, and fluids and requires special attention regarding its need for cleaning or a vent placement to eliminate accumulation in the hollow bulb.¹³ Closed hollow bulb obturators, on the other hand, do not pool moisture, while still extending adequately into the defect.¹⁴ To obtain a closed hollow bulb obturator various materials have been proposed. Some of these materials include light-cured resin^{15,16} auto polymerizing acrylic resin, and silicone rubber.

This clinical report describes a method for prosthetic rehabilitation of a patient with squamous cell carcinoma of the palate following partial maxillectomy with a closed hollow interim obturator.

CASE REPORT

A 48-year-old man was referred to the prosthetic department in Regional Dental College, Guwahati, requesting a obturator prosthesis. He had a history of squamous cell carcinoma of the left maxilla, which invaded the maxillary sinus on the left side. The tumor was resected in 2010 by subtotal maxillectomy. (Fig. 1)

On intraoral examination, the maxillary arch was partially edentulous, with a well-healed defect of the maxilla (Armany Class IV maxillary defect), the defect extended superiorly to the floor of the maxillary sinus and anteroposteriorly from 1st premolar to 2nd molar on the left arch of the patient, the teeth present were from 2nd premolar to 3rd molar on the right side of the patient. The patient complained of difficulty in chewing, nasal regurgitation, and hypernasality.

With the remaining natural teeth on the non-resected side

How to cite this article:

Sangma SK, Jalan S. Prosthetic Rehabilitation of Maxillectomy Patient- A Case Report. *Int J Oral Health Med Res* 2015;2(2):47-50.



Fig 1

a one piece hollow bulb obturator was fabricated to restore the speech, deglutition, esthetics and masticatory function.

PROCEDURE:

1. Maxillary and mandibular diagnostic impressions were made with irreversible hydrocolloid impression material (Zelgan plus- Dentsply), and casts were poured with dental stone (Type-III).(Fig 2)
2. Special trays were fabricated on these casts using self cure acrylic resin (DPI cold cure). (Fig3)
3. Border moulding of the defect was done done with green stick compound (Dentsply India).



Fig 2



Fig 3

4. Putty viscosity polyvinylsiloxane impression material (3M ESPE, Express, U.S.A.) was used in increments to record the extension of the defect.(Fig 4)
5. Then, light viscosity polyvinylsiloxane impression material (3M ESPE, Express, U.S.A.) was used for

making the wash impression and a pick up impression was made, the master cast was obtained.(Fig 5 &6)

6. For closed hollow bulb double layer thickness modeling wax was adapted to the defect area of the cast and a plaster index was made, dewaxing and packing was done with heat cure acrylic resin (DPI) to obtain the bulb portion.

7. A lid was also prepared with heat cure acrylic resin, and the lid was attached to the bulb with autopolymerized acrylic resin.

8. The Base plate and occlusal rims were fabricated on the casts over the closed hollow bulb, Jaw relations was done and casts were articulated on 3 point articulator. (Fig 7)

9. The two parts of the obturator were attached together with autopolymerized acrylic resin.

10. Denture was processed after try-in of the waxed up dentures. (Fig 8,9,10,11)



Fig 4



Fig 5



Fig 6



Fig 7



Fig 8



Fig 9

DISCUSSION

Maxillofacial pathologies such as cysts and tumors often involve surgical resection of a substantial part of the jaws and teeth for the management of the patient. Prosthodontic rehabilitation of such patients is critical to



Fig 10



Fig 11

effectively restore the form and function. Patient should be motivated and educated about the type of prosthesis along with its limitations at the very beginning of the treatment^{17, 18}. Though close hollow bulb obturator is considered more hygienic than the open one. However it is also found that fluids can be absorbed through the porosities in the acrylic resin seal and in such situations, patients are unable to clean the inner surface of the closed system. This unhygienic situation harbours the growth of microorganisms.¹⁹ However hollow bulb obturator has its own advantages which makes its more common as a treatment option for maxillofacial rehabilitation.

This case report describes a simple technique for the fabrication of a closed hollow bulb obturator using a plaster index in which the bulb is first fabricated followed by the fabrication of the remaining portion of the obturator.

CONCLUSION

Living with any form of maxillofacial defect causes a lot of psychological trauma to the patients due to impaired esthetics and functions. Hence, we as prosthodontists must try to restore the lost form and function of the oral and its surrounding structures that will enable the patients to gain his comfort, function and confidence.

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Source of Support: Nil
Conflict of Interest: Nil