

Use of a Single Piece Post Surgical Hollow Bulb Obturator for the Prosthodontic Rehabilitation of a Hemimaxillectomy Patient

Monjula Das¹, Silpi Jalan², Kadambari Bharali³

1- Reader, Department of Prosthodontics, Regional Dental College, Guwahati, Assam., India. 2- Lecturer, Department of Prosthodontics, Regional Dental College, Guwahati, Assam, India. 3- P.G. Student, Department of Prosthodontics, Regional Dental College, Guwahati, Assam, India.

Correspondence to:

Dr. Monjula Das, Reader, Department of Prosthodontics, Regional Dental College, Guwahati, Assam.

Contact Us : editor@ijdmr.com

Submit Manuscript : submissions@ijdmr.com

www.ijdmr.com

ABSTRACT

Obturator is derived from the Latin verb, obturare, which means "to close" or "to shut off". This definition provides an appropriate description of the objective of obturation. Post- Surgical hemimaxillectomy defects predispose the patient to hypernasal speech, fluid leakage into the nasal cavity, impaired masticatory function, and in some patients various degrees of cosmetic deformity. This case report describes the fabrication of an hollow bulb obturator for a patient who has undergone wide excision and partial alveolar resection sequel of management of pleomorphic adenoma of the palate.

KEYWORDS: Wide Excision, Pleomorphic Adenoma, Hollow Bulb

INTRODUCTION

An obturator is designed for patients after maxillectomy as a part of management of neoplasms of antral and /or ethmoidal sinuses.¹ It is defined as prosthesis used to close a congenital or an acquired opening in the palate.²

When the defect is large, restoration of speech, mastication, deglutition, and esthetics are important concerns.³ Light weight, cleanliness and simplicity are important considerations in the fabrication of a prosthesis to obturate the defect after a maxillary resection. Since the weight of an obturator is often the most common reason to dislodge a denture, it should be as light as possible.⁴

Reduction in weight of the obturator is attained by hollowing the prosthesis. A light weight hollow obturator optimises retention and stability as well as patient comfort. Hollow obturators can be either open or closed. A closed obturator is found to prevent percolation of fluid and reduce air space in the defect. There are numerous controversies regarding the fabrication of open and closed hollow obturators. This case report describes the use of addition silicone during processing in the fabrication of an hollow obturator and thereby enhancing the retention and speech.

CASE REPORT

A 38 year old patient named Kujarat Ali reported with a chief complaint of mass in the oral cavity since 2 months

which was diagnosed as Pleomorphic adenoma of the hard palate. Wide excision and partial alveolar resection was carried out under general anaesthesia (Fig 1).



Figure:1 Intra Oral View of the Defect

One week after surgery a primary impression of the maxillary arch with the defect was made (Fig 2). At first the defect was blocked/stuffed using gauze soaked in betadine solution. Then, primary impression was recorded using hydrocolloid impression material (Zelgan plus - Dentsply) loaded over a stock tray. The impression was poured with dental stone (type III) (Kalstone).

Special trays were fabricated on these casts using acrylic resin (DPI cold cure) and secondary impressions were

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made. Putty and light viscosity vinyl polysiloxane impression material (3M ESPE, Express, U.S.A.) was used for secondary impression. Since the defect was planned for a post-surgical obturator, the defect was at first stuffed/blocked using gauge soaked in betadine solution. Then, secondary impression was recorded using light body impression material (3 M ESPE) loaded over a special tray (Fig 3). Secondary Cast was poured with die stone (Kalrock).



Figure 2: Primary Impression



Figure 3: Secondary Impression

The undercut present in the defect area of the secondary cast was blocked with Plaster of Paris (Kaldent). Retentive wire bendings in the form of c-clasps were done with 21 number round wire to provide for retention in the 1st premolar, 2nd premolar and 1st molar region. Wax up was done after blocking all undercuts with modeling wax (whaledent). Following wax-up, flasking was done with plaster of paris (kaldent) in a properly fitted flask. Flasking was followed by dewaxing. After dewaxing, to fabricate a hollow obturator an initial mix of heat cure acrylic resin (Trevlon) is placed only on the defect area of about 2-4 mm thickness. Over this putty vinyl polysiloxane impression material (3M ESPE) was manipulated and adapted with gentle pressure and contoured to the shape of palate. Now the remaining part

of the post-surgical obturator was packed following the routine procedure (Fig 4). After deflasking, a hole was drilled on the bulb surface and the putty was teased out to make the obturator hollow (Fig 5). The hole is then resealed using acrylic resin (DPI-cold cure) (Fig 6). The post-surgical obturator was trimmed, polished and fit and insertion done (Fig 7).



Figure: 4 Packing

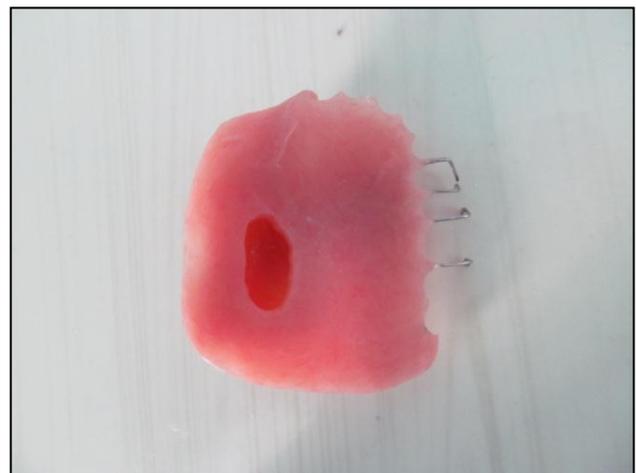


Figure :5 Putty Teased out



Figure: 6 Self Cure Acrylic Lid



Figure:7 Insertion of the prosthesis

During post-surgical obturator fit-in, care should be taken that there are no rough borders that can traumatise the tissues and patient should be trained adequately for easy insertion and removal of the prosthesis.

DISCUSSION

Rehabilitation of patients who have undergone eradication of neoplasm of the maxillae requires restoration of mastication, speech and deglutition. Ability to reduce the weight of the prosthesis by hollowing the obturator is found to be beneficial. Several techniques have been advocated in the fabrication of hollow obturators. There even exist controversies regarding closed and open hollow obturators. The closed obturator is found to prevent percolation of fluid and decrease air space in the defect, 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.

The material used in the fabrication of obturators should be biocompatible, impermeable, smooth and easily made. Numerous studies have been put forth in the literature for the fabrication of hollow obturator using variety of materials. Hollow obturators are made with acrylic resin in either open or closed configuration.⁵⁻⁸ However silicone either solely or in combination with other materials has also been used for this purpose.⁹ Controlling the thickness of hollow obturator walls is important to provide adequate strength and weight of the prosthesis. Materials such as ice and sugar have been used in the defect portion during processing and then removed through holes after processing.^{10,11}

This case report describes the fabrication of a post-surgical single-piece hollow bulb obturator using vinyl polysiloxane material to fill the defect. The added advantage of this technique is that since the materials hardens on setting, the contours are maintained whereas

use of sugar tents to distort the shape as a result of the pressure applied during packing.

CONCLUSION

The concept of rehabilitation of patients with large defects of the maxilla with hollow bulb obturators provides a means of enhancing the retention, mastication, deglutition, speech and esthetics in the post-operative period. A prosthesis so designed provides a functional solution to the compromised state of the patient

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