

CASE REPORT

Prosthetic Rehabilitation of an Edentulous Patient following Hemimaxillectomy: A Case Report

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ABSTRACT

Majority of the maxillectomy patients lead a poor quality of life due to problems such as oronasal or oroantral communication which causes difficulty in speech and swallowing. An obturator prosthesis is a ray of hope for such patients, giving them an opportunity to live their life close to normal. Most of the times, these obturators have a huge bulb which compromises retention and comfort due to the weight; therefore, to overcome these difficulties, hollow bulb obturators have been introduced. Variety of techniques and materials has been documented to fabricate hollow bulb obturators. The present report describes the fabrication of a maxillary hollow obturator using the lost salt technique. The aim of restoring maxillofacial defects is to fabricate a prosthesis which meets the esthetic and functional needs of the patient; the technique used was single step, easy, cost-effective, and comfortable for the patient.

Keywords: Edentulous, Hollow bulb, Maxillectomy, Obturator

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INTRODUCTION

Intraoral defects can be classified into acquired or congenital. The most commonly seen defects are in the maxilla, involving the antrum and nasopharynx.^[1] Acquired defects are most frequently seen due to oral squamous cell carcinoma and are generally treated with conventional surgical excision. The resultant surgical defect often includes part of the hard and soft palates, which results in an oroantral communication.^[2,3]

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The choice of rehabilitation depends on the site, size, etiology, severity, age, and the patient's wishes. However, age, general medical condition of the patient, radiation therapy, anatomic complexity, possibility of recurrence, appearance of the area to be rehabilitated, complexity of the surgical procedure, and the patient's refusal to undergo further surgery may contraindicate surgical reconstruction.^[4] The glossary of prosthodontic terms^[5] 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." The traditional treatment sequence for a patient requiring a maxillectomy is the initial insertion of an immediate surgical obturator at the time of surgery, or soon thereafter, an interim obturator used after initial healing until the tissues are stabilized (approximately 3 months),^[6] and a definitive obturator prepared after the tissues have stabilized, with few appreciable changes.

Several methods have been described for open and closed hollow bulb obturator fabrication. Both of these types of obturators are lightweight prostheses that can be easily tolerated by the patient.^[7] To obtain a lightweight, closed hollow bulb obturator prosthesis, various materials and methods have been advocated.^[2,4,8-10] This case report describes a completely edentulous patient with an acquired maxillary defect managed with an interim obturator followed by a hollow definitive obturator using lost salt technique after the completion of the healing period.

CASE REPORT

A 57-year-old male patient was referred to the Department of Prosthodontics from the Department of Onco Surgery, MS Ramaiah Medical College. The patient had no significant medical history and was a tobacco chewer for 20 years. He was diagnosed with oral squamous cell carcinoma of the left maxilla involving the antrum on left side. Surgical excision and post-operative radiotherapy (for 3 months) were planned along with prosthodontic rehabilitation. The patient was given an interim obturator until complete healing occurred.

The interim obturator was fabricated of heat cure acrylic resin (Trevalon, Dentsply).

Once healing was completed, the patient reported back for the fabrication of the definitive obturator. On

examination, the patient presented with a maxillary defect which extended into the antrum on the left side [Figure 1]. The patient had completely edentulous upper and lower arches. The patient was given treatment option of implants after complete healing but did not opt for it due to financial constraints; therefore, a maxillary complete denture along with hollow obturator and mandibular complete denture were planned. A primary impression was made with alginate (Dental products of India [DPI] Algitek Alginate Powder) by modifying the tray with admix of impression compound (Y-Dent Impression Compound, MDM corporation) and greenstick (DPI Pinnacle Tracing Sticks). After which a spaced special tray was fabricated after which border molding was performed with greenstick compound and final impression was made using regular body elastomeric material (Reprosil-Regular body, Dentsply). The master cast was obtained and occlusal rims were fabricated with modeling wax (Hindustan-modeling wax No. 2, Hortonworks Data Platform products). Subsequently, jaw relation was recorded using nick and notch method. Following this, teeth set trial was carried out. The

master cast was then invested for acrylicization. After dewaxing, a layer of heat cure resin was adapted onto the area of defect on the master cast and layer of salt was added [Figure 2] onto which another layer of heat-cured acrylic was packed and flaked. Curing was carried out at 75° for 1.5 h and 100° for 30 min (short cycle). After obtaining the prosthesis, the salt was sucked out using a syringe. Floating test was carried out to check for the reduced weight of the denture [Figure 3]. The denture was finished, polished, and inserted in the patient's mouth. The patient was satisfied with the esthetics and comfort of the denture [Figure 4].

DISCUSSION

Restoring oromaxillary defects with the help of an obturator are the most appropriate treatment option for these patients.^[1] Oromaxillary defects can cause problems such as oronasal communication leading to influx of oral and nasal fluids and changes in the voice causing abnormalities in resonance leading to difficulty in speaking and deglutition.^[2,3] These defects also alter facial esthetics to a large extent reducing the confidence



Figure 1: Intraoral view of lesion post-surgery



Figure 3: Floating test after making denture hollow



Figure 2: Heat-cured acrylic pressed into defect and salt placed over it



Figure 4: Post-treatment photograph

of the patient. Hence, rehabilitating these patients is of utmost importance.^[3]

Achieving retention in a large obturator prosthesis can be tricky, especially if it is solid and heavy bulb rather than hollow and light. The major issues that can be encountered are difficulty in impression making and obtaining the correct path of insertion.^[12] There are variety of techniques explored by various authors to counter these problems. Hollow bulb obturators have been used to lighten the weight of the prosthesis; these bulbs are fabricated using materials such as plaster index,^[4,8] salt,^[2] and acrylic.^[9,10] Cobalt-samarium magnets have been used for the retention in huge defects, especially having an extraoral component.^[3,13] Osseointegrated implants in the remaining residual ridge can also be used as a means for retention after maxillectomy.^[14]

This case report describes the rehabilitation of an edentulous hemimaxillectomy patient with a definitive lightweight hollow obturator using the lost salt technique. The advantages of a hollow obturator include reduced weight of the prosthesis, minimal pressure on tissues around the defect, and ease of speech and swallowing.^[6] In addition, it increases the resonance of speech and therefore improves clarity while speaking.^[15] Although numerous techniques have been mentioned in literature, this procedure is a single step, easy, and quick technique which results in an esthetic, comfortable, and cost-effective prosthesis. It is also beneficial to the patient as it is easy to maintain hygiene and easy to use. This prosthesis can be recommended to patients who need an economical option to treat their existing defect or to patients who are not willing to undergo extensive surgery to reconstruct their defects.^[2]

CONCLUSION

Rehabilitating patients with hemimaxillectomy defects is a difficult task but can be achieved with knowledge and skill of the specialist. The aim of restoring maxillofacial defects is to fabricate a prosthesis which meets the esthetic and functional needs of the patient along with being economical and easy to fabricate. This prosthesis fabricated using the lost salt technique not only improved function but also provided better comfort for the patient.

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