

Hollow Bulb Obturator- A Simplified Approach

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ABSTRACT:**Aim:**

Patients with maxillectomy presents a significant challenge for prosthetic rehabilitation. Patients with maxillofacial defects labour under handicaps that cannot be fully appreciated by normal people, and produce a feeling of insecurity. Ideally any anatomic defect should be surgically reconstructed, but sometimes not possible to restore the defects, especially when defect is large, then the prosthetic reconstruction must be employed. An interim obturator prosthesis is required for restoration of speech, deglutition and improvement in esthetics after maxillectomy. Interim obturators are fabricated on a post-operative cast and they are periodically readapted to adjust the tissue changes during healing period of the defect

Materials and Method

A 51-year old male patient reported to the department of Prosthodontics, Dr. R. Ahmed Dental College and Hospital, Kolkata, for rehabilitation of an acquired maxillary defect on left side. He was wearing a surgical obturator and now wants esthetic replacement. Patient complained of difficulty in eating and drinking, and during speech. For this patient, an interim obturator for first 6 months was planned followed by definitive obturator.

Conclusion

Patients with maxillectomy presents a significant challenge for prosthetic rehabilitation. Patients with maxillofacial defects labour under handicaps that cannot be fully appreciated by normal people, and produce a feeling of insecurity. Ideally, any anatomic defect should be surgically reconstructed, but sometimes not possible to restore the defects, especially when defect is large, then the prosthetic reconstruction must be employed. An interim obturator prosthesis is required for restoration of speech, deglutition and improvement in esthetics after maxillectomy. Interim obturators are fabricated on a post-operative cast and they are periodically readapted to adjust the tissue changes during healing period of the defect.

Keywords: Maxillofacial prosthesis, Hollow bulb obturator, Interim obturator.

INTRODUCTION

Maxillofacial prosthodontics is the branch of prosthodontics concerned with the restoration and / or replacement of the stomatognathic and craniofacial structures with a prosthesis that may or may not be removed on a regular or elective basis. Maxillofacial prosthesis is any prosthesis used to replace part or all of any stomatognathic and / or craniofacial structure.¹

Maxillofacial deformities can be - Congenital (cleft palate, cleft lip, facial cleft, missing ear) Acquired (accidents, surgery, pathology, radiations burns), Developmental (prognathism, retrognathism).^{2,3,4}

Obturator is a maxillofacial prosthesis used to close / maintain the integrity of oral and nasal compartments resulting from a congenital /

acquired / developmental disease process. Since the sixteenth century acquired surgical defects have been restored by prosthetic replacements constructed from a variety of materials and techniques.⁵ Surgical resection is an established and common method of treatment for maxillofacial cancer. Acquired surgical defects of hard and soft palate interfere with the speech pattern and mechanism of deglutition. Patients with maxillofacial defects labour under handicaps that cannot be fully appreciated by normal people. Ideally, any anatomic defect should be surgically reconstructed. Many times by reconstructive surgery alone it is not possible to restore the defects, especially when defect is large, then the prosthetic reconstruction must be employed .^{6,7}

The head and neck defects can be restored with the help of maxillofacial prosthetic rehabilitation to near-normal function and esthetics. The prosthetic rehabilitation for maxillectomy patients aims at separation of oral and nasal cavities to allow adequate deglutination and articulation, to restore mid facial contour and to provide acceptable results.^{7,8}

Prosthetic management can be divided into three phases :

1. Construction of a prosthesis pre-operatively and inserted at the time of operation.
2. Post-operatively modification of the prosthesis during the recovery period.
3. Construction of a definite prosthesis employing all the established principles of prosthodontics, when the healing is complete and prognosis is not questionable.⁷

Surgical obturator is the first prosthesis placed, which is inserted at the time of surgery and helps the patient in preventing oral contaminations. Interim obturators are fabricated on a postoperative cast so they are more accurate than immediate surgical obturator. The interim prosthesis is periodically readapted and if required it is relined to so as to adjust the tissues changes occurring during the healing period of the

defect. This improves patient function and comfort. Definitive obturator is started approximately 3 to 4 months after surgery when healing is complete. Custom tray is required for the definitive impression because proper extension and adequate contour of the tray is essential for successful impression.⁹⁻¹⁴ This article outlines the prosthodontic management of an acquired palatal defect in partially edentulous maxilla with an interim obturator.

CASE REPORT

A 51-year old male patient reported to the department of Prosthodontics, Dr. R. Ahmed Dental College and Hospital, Kolkata, for rehabilitation of an acquired maxillary defect on left side. He was wearing a surgical obturator and now wants esthetic replacement. The patient's medical history revealed that he was diagnosed with carcinoma for which he underwent surgery. Intra-oral examination revealed a defect in labial sulcus, on left side and missing 11,12,13,14,21,22,23,24,25,26,27. **(Figure 1)** Mandibular arch presented full complement of teeth. Mandibular movements were within normal range. Tongue position and function was normal. Patient complained of difficulty in eating and drinking, and during speech. For this patient, an interim obturator for first 6 months was planned followed by definitive obturator.



Figure 1: Intra-oral defect

Procedure for interim obturator

1. The defect was sprayed with 10% lignocaine hydrochloride to reduce the sensitivity of the involved tissue.

2. Petroleum jelly gauze was used to block the undercut region of nasal portion defect
3. Primary impression of the maxillary arch including the defect and lower arches were made using irreversible hydrocolloid and poured with type III dental stone to make primary cast.
4. Undercuts were blocked and custom tray was fabricated with autopolymerising resin.
5. Border moulding was done with greenstick to record the mucosal junction and then final impression was made with impression material. All the conventional prosthodontic protocols of boxing and pouring the impression were applied with gypsum material die stone to get a definitive cast. (Figure 2)



Figure 2: Definitive cast

6. Wrought wire clasp was made on 15 and 18 for better retention and baseplate was constructed on it after blocking the undercuts.
7. Bite registration was done on wax occlusal rims following which teeth arrangement was done according to the existing occlusion. (Figure 3)



Figure 3: Teeth arrangement

8. After complete wax finishing, the obturator was tried in the patient's mouth.

Processing of hollow bulb obturator



Figure 4: Flasking

1. Flasking and dewaxing procedures were completed in usual manner. (Figure 4)
2. Heat cure acrylic resin dough was taken and the defect area was lined with with 2mm thick layer. Center of the defect was filled with table salt to fill the concavity and then another layer of heat cure resin was placed over it. The mould was packed in usual manner.
3. Processing was done according to the manufacturer's instruction.
4. Obturator was retrieved after deflasking and a hole was made on the superior surface of the bulb of the obturator. Salt was then flushed out.
5. The hole was sealed with autopolymerising resin and the prosthesis was finished and polished. (Figure 5)
6. Adjustment was made according to the defect (Figure 6). Any sore points that can irritate the mucosa were relieved and the prosthesis was delivered to the patient. (Figure 7 & 8)



Figure 5: Finished denture



Figure 6: Denture after adjustment



Figure 7 and 8: Pre-operative view and Post-operative view

DISCUSSION

Maxillofacial prosthetics is the art and science that deals with the anatomical, functional and cosmetic reconstruction using inert substitute. Prosthetic rehabilitation of an acquired palatal defect is a challenging procedure that requires multidisciplinary expertise to achieve acceptable functional speech and swallowing outcomes¹⁵. Patient education is first and most important step in rehabilitation. It is important to familiarize the patient with the functional and cosmetic expectations and limitations of the maxillofacial prosthesis.⁷

In dentate patients remaining teeth play an important role in primary retention, support, and stability of an obturator. In addition to this soft tissue undercuts and scar band also play a significant role. Retention is achieved from remaining teeth or ridge, and lateral part of the defect.⁸ Use of implants in maxillofacial prosthodontics is a new advancement in this field. They improve retention of prosthesis without the help of other appliance. They are usually made of titanium. However cost,

health of the patient and bone qualities are some of the factors which limits the use of implants.⁷

Wide surgical resections for the control of malignancy frequently result in small number of remaining, unilaterally clustered teeth hence are subjected to constant, non-axial, cantilever forces. The weight of the obturator can be significantly reduced by hollowing out the bulb. It helps to aid speech resonance, to lighten the weight on the unsupported side and providing comfort to the patient. Both open and closed obturator allow for the fabrication of a light prosthesis that is readily tolerated by the patient.^{9,16,17}

Open hollow obturators require frequent cleaning or placement of a vent to eliminate the collection of moisture in the hollow section. Closed obturators have the advantage of eliminating the pooling the moisture while extending superiorly into the defect and reducing air space.¹⁶

Depending on the nature of defect, movement of the obturator causes discomfort for the patient. So adjustments of these pressure sores are done at post insertion and at follow-up visits.

CONCLUSION

Prosthodontist should be ready to accept the daily challenges for prosthetic rehabilitation. A simplified step by step technique for fabrication of a one piece hollow obturator for maxillectomy patients has been described. The prosthesis should be easily constructed, light weighted, easily cleansable. The hollow bulb obturator given to the patient rehabilitated his function by improving masticatory efficiency and phonetics by adding resonance to the voice. It acted as a morale booster for the patient.

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