

Rehabilitation of hemi-maxillectomy with a definite one piece hollow bulb obturator

ABSTRACT

Maxillary intraoral defects due to surgical resection create an open link between the oral and nasal cavities causing difficulty in deglutition, speech, and an unaesthetic appearance. Prosthetic intervention is required to restore the needs of speech, mastication as well as closing the oroantral communication. This article shows a case report of systematic approach for fabrication of immediate plate just after surgery, followed by interim feeding plate 2 weeks after surgery, and finally definitive one piece hollow bulb obturator 6 months after surgery.

Keywords: Definitive obturator, hemi-maxillectomy, hollow bulb closed lid, interim feeding-plate

INTRODUCTION

Oral cancer is one of the most common problems encountered which needs immediate attention. Treatment modalities vary on the size, site position, and location of the tumor. The most frequent treatment is surgical removal of the affected area which results in a large defect with oro-nasal/antral communication.^[1,2]

Hemimaxillectomy resulting in palatal defect may cause several problems including difficulties in speech, swallowing, and mastication. Change in facial appearance and loss of underlying tissues also results in emotional stress, social phobia, and psychological problems.^[3,4]

The palatal defect caused due to maxillectomy can be treated surgically using free micro-vascularized flaps or pedicled flaps. When there are large resections of the maxilla, the defect may be obturated with a dental or maxillofacial prosthesis. This is generally done in three phases.^[5,6] The first phase involves a surgical obturator which is given just after surgery.

The second phase is an interim obturator given 2–4 weeks after surgery and it to be worn by patient during healing phase until the fabrication of definitive prosthesis.

After a period of 3–6 months and after complete healing, the tissues are dimensionally more stable and hence definite obturator is given.

The present report describes a prosthodontic rehabilitation of a patient with squamous cell carcinoma (SCC) of the left side of maxilla.

CASE REPORT

A 62-year-old male was referred to the Department of Prosthodontics, SPPGIDMS from SGPGIMS Lucknow. The patient was diagnosed with SCC of the left side of the maxilla and was planned for hemimaxillectomy involving canine to the last molar of the left side (teeth numbers 23–28) [Figure 1].

A preoperative impression was made with irreversible hydrocolloid, and the cast obtained was marked for the area of resection according to surgeons guideline. A surgical

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obturator was fabricated and given to the patient immediately after surgery [Figure 2]. Home care instructions were given.

Proper position of the plate was ensured when the patient reported for the first follow-up 1 week after surgery. Regular follow-up was done every 2nd week to rule out any complications.

One month after surgery, the feeding plate was repeated, which was held in position with help of an Adams clasps on #16 and pin head clasp on #13 [Figure 3a and b].

Six months after surgery, the intraoral examination showed no fresh complications, a good intraoral healing, and decreased size of defect [Figure 4]. Two remaining teeth of the left side 21 and 22 showed periapical pathology, and root canal treatment was done in both. Impressions were made using irreversible hydrocolloid material to obtain the diagnostic casts.

The maxillary cast was surveyed, the undercuts were observed, and the necessary mouth preparations were done. For the design of the framework, the tripod design was selected. For this design, the rest seats were prepared on the right first and second molars, first premolar, and on the canine. Precision attachment (Peci-Vertex) [Figure 5a and b] was planned on the left lateral incisor and casting of crowns for central and lateral incisor was done with vertex attachment.

Porcelain-fused-to-metal crown was fabricated on central and lateral incisor. The final impression was made using impression compound (for impression of defect) and alginate. This was poured with dental stone type III to produce the working cast, which was then duplicated to produce the refractory cast, on which the wax up of the framework was performed.

The hollow bulb was fabricated using heat cure acrylic. The framework was casted using cobalt–chromium alloy. This was tried in the patient’s mouth to evaluate the fit with the underlining structures [Figure 6]. Bite rim blocks were constructed on the framework. Centric jaw relation record was obtained, and the casts were mounted. Acrylic denture teeth were arranged and try-in was done to check occlusion and esthetics [Figure 7]. Trial of the hollow bulb was also done. A single-piece obturator was processed with closed lid hollow bulb and cast partial. The nylon sleeve for the preci-vertex attachment on #22 was picked up using self-cure acrylic resin. The denture was inserted [Figure 8a-c]. The patient was trained regarding seating and insertion, and



Figure 1: Preoperative intraoral view



Figure 2: Resected left maxilla

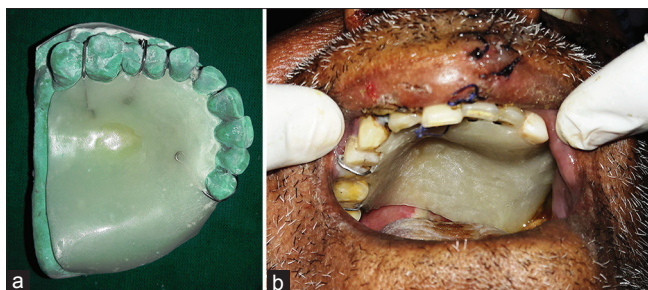


Figure 3: (a) Surgical obturator on cast. (b) Surgical obturator in mouth

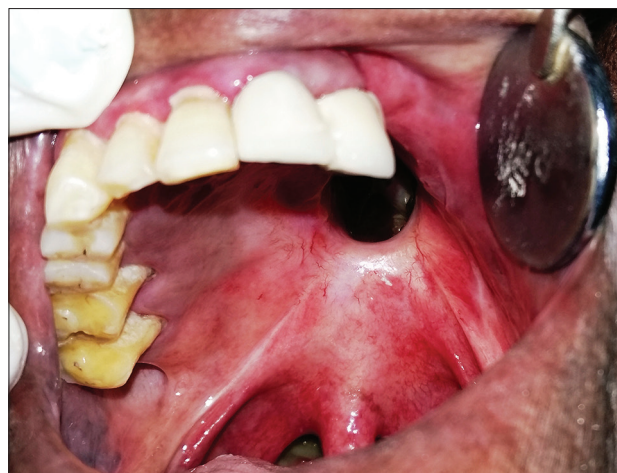


Figure 4: Intraoral view after 6 months of surgery

postinsertion instructions were given to the patient for the care and use of the obturator. Follow-up appointments were scheduled. After regular post-insertion visits, the patient reported satisfaction with esthetics and function.

DISCUSSION

Oral SCC represents 90%–95% of all malignant neoplasms of the oral cavity. It is highly related with alcohol and tobacco consumption. It occurs in severe well established intra-oral sites, including the floor of the mouth, tongue, gingiva, lips, and buccal mucosa. It might also be present in tooth-bearing areas of either the maxilla or the mandible.

The intraoral examination of the present case showed Aramany class II maxillary defect on the right maxilla, and the remaining anterior teeth on the defect side were #21 and #22.

A definitive obturator restores the function of mastication speech and esthetics and also serves as barrier between the oral and nasal cavity.

Care should be taken during the fabrication of definitive obturator to check the site for fresh complications, and only when the size of the defect is dimensionally stable, the definitive prosthesis should be given.

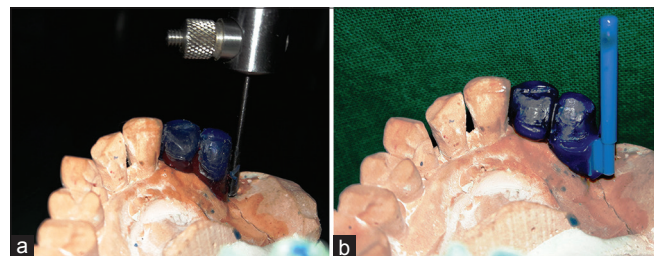


Figure 5: (a) Milling of wax pattern for placing preci-vertex attachment. (b) Preci-vertex attached to wax pattern

In the present case, the treatment was done in three phases; however, only a feeding plate was given as interim treatment procedure.

For the definitive obturator, the anterior teeth were used for retention, so a tripod design was chosen in the present case.^[7,8] Choice of preci vertex attachment on the #22 was in consideration of esthetics and optimum retention. Wu and Schaaf^[9] demonstrated that hollowing the obturator for partial maxillectomy patients significantly decreased the weight of the obturator from 33.06% to 6.55% depending on the size of the defect.

CONCLUSIONS

Maxillary defects caused by hemimaxillectomy can be very well rehabilitated by the use of removable partial denture and hollow obturator. Speech and swallowing are restored, and mastication is accomplished with the residual maxillary



Figure 6: Try-in of cast partial denture framework



Figure 7: Try-in after teeth arrangement

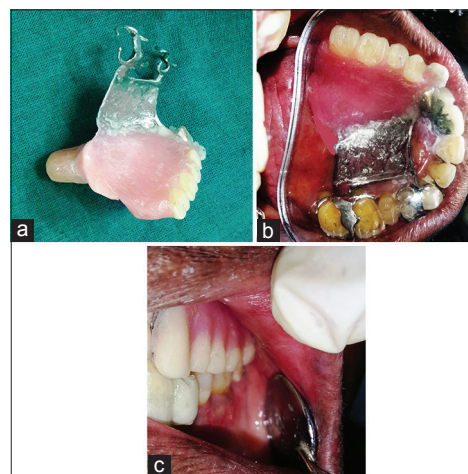


Figure 8: (a) Fabricated definitive obturator. (b) Intraoral view of definite obturator in place. (c) Lateral view

dentition. A close interaction between surgeon and dental practitioners can allow stepwise treatment and successful rehabilitation of maxillary defect. The above-presented case portrays such a situation with an optimum rehabilitation posthemimaxillectomy.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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