

Prosthetic Rehabilitation Following Partial Maxillectomy With Immediate Surgical Obturator: A Case Report

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Abstract

Prosthodontists in general face different problems during the construction of a pre and post-surgical obturator. This clinical report describes the comprehensive prosthodontic treatment of an elderly patient diagnosed with Squamous Cell Carcinoma of the maxilla. The treatment procedures included surgical removal of the tumor and placement of Immediate Surgical Obturator following resection. An immediate surgical obturator is necessary in maxillectomy procedures to minimize functional disabilities in speech, swallowing, and egress of food and liquid into the surgical defect.

Keywords: Maxillofacial Prosthesis, Immediate Surgical Obturator, Maxillectomy

Introduction

The most frequent malignant tumor of the oral cavity (97%) and the adjacent parts of the pharyngeal region and paranasal sinuses is the squamous cell carcinoma¹. It occurs in the oral cavity, in the maxilla as well as the mandible however it is more prevalent in the maxilla. Prognosis of maxillary tumors is poor as it goes undetected in the initial phase but eventually becomes invasive and aggressive.

Treatment modalities of a malignant tumor in the maxilla are varied according to many factors such as size, type, severity, etiology and location of the tumor. Treatment modalities include radiotherapy, chemotherapy, and surgical resection alone or in combination. Surgical removal of the affected area resulting in a large defect with

oro-nasal/antral communication is the most common modality of treatment².

The term maxillectomy is used to describe the partial or total removal of the maxilla in patients suffering from benign or malignant neoplasms. Maxillectomy defects can be categorized as Limited, Partial, Medial, Subtotal, Total, Radical, or Extended³.

The hard and soft palates are anatomical structures that have widely recognized roles in speech and deglutition. When these structures are removed, partially or completely, because of malignancies, a team approach is critical. A surgical approach alone without reconstruction or obturation of the surgical defect will result in air, liquid, and food escaping into the nasal apparatus, causing severe speech and swallowing

dysfunction with significant reduction in quality of life⁴.

The immediate postoperative restoration with an Immediate Surgical Obturator shortens recovery time in the hospital and speeds up patient's return to the community as a functioning member⁴. Soft tissues after surgery supported by immediate surgical obturator minimize scar contracture and disfigurement, providing with a positive effect on the patient's psychology. Replacement of the palate helps in maintaining speech, mastication and patient's morale. In this article, we present a case report describing the fabrication of an Immediate Surgical Obturator.

Case Report

A 73-year-old female patient reported to the Department of Prosthodontics and Crown and Bridge, Manipal College of Dental Sciences, Mangalore. She was referred from Wenlock Hospital, Mangalore after a diagnosis of squamous cell carcinoma of right maxilla. Surgical resection of the tumor was carried out with partial maxillectomy of inferior, middle and superior portions of the maxillary bone till the midline sparing the floor of the orbit superiorly followed by placement of immediate surgical obturator stabilized with sutures passed through holes made in the stent for a period of 2-3 weeks post-surgery. The surgery was carried out by the Department of ENT, Wenlock Hospital, Mangalore.

Procedure for Fabricating Immediate Surgical Obturator: The maxillary and mandibular impressions were made in

irreversible hydrocolloid impression material and casts were poured using die stone based with dental stone (Figure 1).

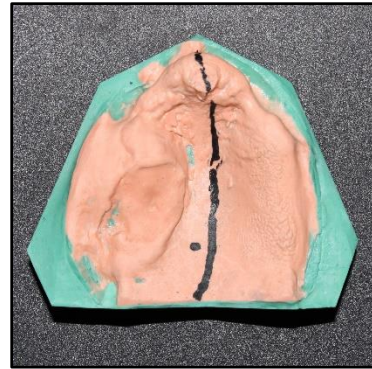


Fig. 1

Markings were taken by the surgeons regarding the potential extent of surgical resection. The tumor bulk present on the right side of hard palate and alveolus was reduced to the anatomical contour on the working cast (Figure 2).

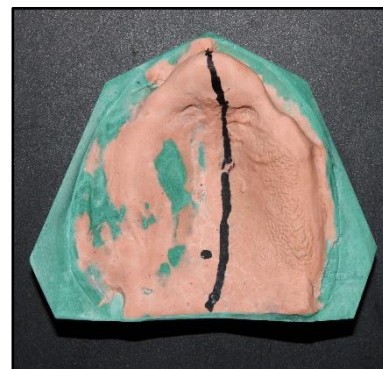


Fig. 2

The removal of this tumor bulk was representative of the surgical resection to be carried out. After smoothening the trimmed portions on the working cast, a layer of separating medium was applied. The immediate surgical obturator was fabricated directly on the working cast using clear auto-polymerizing acrylic resin using a

pressure pot. The obturator was adapted onto the hard palate and the alveolus, extending 1-2 mm short of the sulcus depth. It extended from the affected side onto the contralateral side which would later help in the stabilization of the obturator as it would gain some retention from the intact tissue surfaces. Once the auto-polymerizing acrylic resin was cured, it was removed from the cast and the edges were trimmed and polished thoroughly (Figure 3).



Fig. 3

Any remaining sharp points on the edges or the intaglio surface were removed and polished well. After polishing,

3 holes were placed on each side of the obturator, corresponding to incisor, canine and molar region (Figure 4). These holes



Fig. 4

would help in passing the sutures through the obturator and attaching it to the adjoining buccal mucosa and thus, aid in the stabilization of the surgical obturator post-surgery. The obturator was finished and polished according to conventional protocol. Prior to the surgery, the obturator was sterilized in activated glutaraldehyde solution. During the surgery (Figure 5).

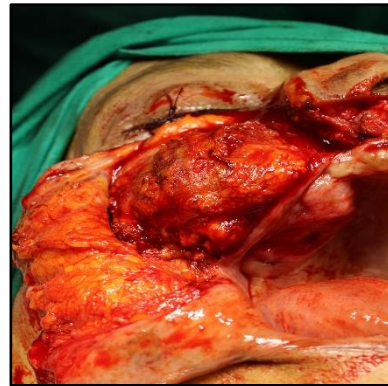


Fig. 5

Surgical resection of the tumor was done on the right maxillary bone and affected adjoining tissues were also resected (Figure 6).



Fig. 6

The floor of orbit remained intact superiorly. On completing the surgical resection, the obturator was tried in the patient's mouth and checked for proper fit. Upon satisfactory

fit of the obturator, sutures were passed through the holes provided and attached to the adjoining buccal mucosa for stabilization of the obturator (Figure 7).



Fig. 7

The patient was instructed to wear the obturator for a period of 2-3 weeks and recalled after the aforementioned period for fabrication of interim obturator and subsequently a permanent definitive obturator prosthesis after 6 months.

Discussion

Squamous cell carcinoma of the maxilla and the paranasal sinus is quite rare compared with other localizations in the oral cavity. The main problem of squamous cell carcinoma of the maxilla and the paranasal sinuses is that it is very often asymptomatic for a long time due to an invasive growth into the maxillary sinus or the retro-maxillary region.

The infiltrative nature and pattern of squamous cell carcinoma in the maxilla makes it difficult to remove completely, which poses a challenge for rehabilitation with definitive advanced prosthetic options immediately after resection, as there are high

recurrence rates. In developing countries, the economic factor plays an important role which should be considered during treatment decision¹⁻².

Rehabilitation of acquired prosthetic defects with obturators are categorized in 3 types- surgical obturator, interim obturator and definitive obturator. Immediate surgical obturator has definitive advantages which include - (1) providing immediate closure between the oral and nasal cavity following resection of tumor, (2) suture holes provided in the obturator aid in retention and enhanced bracing effect, decreasing its movement in the horizontal plane, (3) it acts as a stable base for packing of a surgical dressing, and (4) cost effective. However, it poses certain disadvantages such as - (1) Since it is merely a plate and doesn't contain teeth, the masticatory efficiency of the patient is decreased, (2) Compromised esthetics, (3) Use of sutures to stabilize the obturator hampers the oral hygiene maintenance during the initial healing phase acting as a potential nidus for infection.

Conclusion

In conclusion, this case necessitated the surgical removal of right maxilla followed by insertion of an immediate surgical obturator for surgical closure of the resection site which would help in the maintenance of speech, swallowing, breathing and deglutition during the initial healing phase. It would also support the soft tissues after surgery and minimize scar contracture and disfigurement and thus may have a positive effect on the patient's psychology.

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