CASE REPORT

Prosthodontic management of an acquired oro antral defect

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Abstract
A 37 year old patient with mucoepidermoid carcinoma involving the maxilla and paranasal sinuses requiring surgery was referred to Dept. of Prosthodontics for planning out the treatment after surgical removal of the lesion. The standard protocol of surgical, interim, and definitive obturator treatment is usually anticipated. This article describes a technique for fabricating obturator used to close the surgical defect acquired during surgical excision of the lesion. The obturator was designed to engage the remaining natural teeth and tissue-bearing areas to optimize retention and stability. It also recreated a partition between the oral and nasal cavities thereby improving speech articulation and reducing nasal reflux.

Introduction
Treatment plan for patients with oral carcinomas consists of surgery, radiotherapy, chemotherapy, immunotherapy, and/or a
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Combination of these, depending on the size or spread of the disease. Rehabilitation of patients after surgical removal of oral carcinomas is quite difficult as the surgical excision of the anatomic structures may result in the loss of the palate, maxilla and associated structures, accompanied by difficulties with speech, deglutition, mastication, and respiration. Prosthodontic rehabilitation of maxillectomies is the preferred treatment over autogenous tissue reconstructions. Prosthodontic treatment for patients requiring partial maxillectomy or palatectomy may include the standard protocol of surgical, interim, and definitive obturator treatment. Obturators are used in order to close defects of the hard/soft palate that may affect speech production or cause nasal regurgitation during feeding.

Obturators fabricated with adequate extensions are often heavy and can affect retention. To decrease the weight of the prosthesis the obturator can be made hollow thereby optimizing the retention and stability. This allows the obturator to function comfortably during mastication, phonation, and deglutition. The classic technique for hollowing an obturator is to grind out the interior of the bulb after processing while monitoring the thickness of the walls. Once hollow, various procedures have been developed to fasten the lid to the superior border to convert it into a closed hollow obturator. The closed hollow obturator prosthesis can prevent fluid and food collection, reduce air space, and allow for maximum extension. This clinical report describes prosthodontic management of a patient with a surgical defect and an easy method of fabricating a closed hollow bulb obturator.

**Case report**

A 37 year old female patient reported to the Department of Periodontics for oral prophylaxis. She also complained about a red lesion on the right side of the hard palate (Figure 1) since 2 years.

![Figure 1. Red lesion of hard palate](image)

Routine periodontal diagnostic procedures were carried out and it was concluded that the lesion was not of periodontal origin. An incisional biopsy was done and the lesion was diagnosed as mucoepidermoid carcinoma. Patient was referred to Department of Oral Surgery for further management. It was decided to resect the tumor and to obturate the defect with an immediate obturator. Prior to surgery, impressions of the maxillary and mandibular arches were made and the casts obtained. The predicted excision was performed on the maxillary cast (Figure 2).
An immediate obturator was constructed with C-clasps on the right first premolar, right third molar and left first molar for retention. Segmental ostectomy was done under general anesthesia and immediate obturator inserted (Figure 3).

The patient was reviewed after 10 days and as the patient demonstrated good postoperative progress it was decided to replace the immediate obturator with an interim obturator. An alginate impression was made and an acrylic plate fabricated with retentive clasps on 14, 18 and 26. This interim obturator (Figure 4) didn’t extend fully into the oro-antral defect nor did it replace the missing teeth so as to facilitate proper healing.

Patient was periodically reviewed and after a period of three months it was decided to replace the interim obturator with a definitive prosthesis or permanent obturator as the wound healing was adequate (Figure 5).

Maxillary and mandibular alginate impressions were recorded and the casts were obtained. A perforated acrylic custom tray was fabricated on the maxillary cast. To
make the tray smaller so as to facilitate insertion, it was decided not to extend the tray fully into the labial and buccal sulcus in the dentulous area. It was tried in the patient’s mouth and adequate adjustments made. Appropriate amount of impression compound and green stick compound was softened in a hot water bath and mixed together to obtain a plastic mass. It was then secured on to the custom tray at the region of the defect. The tray was slowly inserted into the patient’s mouth to obtain the complete extension of the defect (Figure 6).

**Figure 6.** Extension of the defect

Once the extension into the defect was found to be satisfactory, the impression of the entire arch was recorded with poly vinyl siloxane elastomeric impression material (Figure 7).

**Figure 7.** Final impression

The impression was evaluated and then poured in dental stone to get the master cast (Figure 8).

**Figure 8.** Master cast

Extremely severe undercuts were blocked out with dental plaster. Temporary denture base was fabricated with shellac base plate with the shellac extending fully into the defect. Occlusal rim was made at the edentulous area and bite registered. It was then articulated. Suitable posterior teeth were selected, arranged and tried in the patient’s mouth. Esthetics and occlusion were evaluated. The trial denture base was then sealed onto the cast with modelling wax and retentive clasps prepared on 14, 18 and 26. A sheet of modelling wax was adapted onto the base plate at the region of defect and cut according to the diameter of the opening of the defect to form a lid. The removable prosthesis and the wax lid were acrylised separately (Figure 9).
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**Figure 9.** Obturator with the lid acrylised separately
The lid was then used to close the defect by securing it with self-cure acrylic resin thus making the obturator hollow. The finished obturator was inserted into the patient’s mouth (Fig 10) and necessary adjustments made especially in relation to occlusion.

**Figure 10.** Intra oral view of obturator
Patient was educated how to insert and remove the obturator (Figure 11).

**Figure 11.** Placement of obturator
Post insertion instructions were given and patient recalled for periodic review.

**Discussion**
Prosthodontic rehabilitation of patients who has undergone surgical removal of oral carcinoma is quite challenging. Obturator prosthesis is the most common choice of treatment due to the complexity of maxillary surgical reconstruction, the uncertainty of the functional outcome, and high rates of recurrence. The most common treatment option would be to close the defect with an obturator which recreates a partition between the oral and nasal cavities thereby improving speech articulation and reducing nasal reflux. Obturators fabricated with adequate extensions are often heavy and can affect retention. To decrease the weight of the prosthesis the obturator can be made hollow. This allows the obturator to function comfortably during mastication, phonation, and deglutition.

**References**


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