

Prosthetic Rehabilitation of the Dentate Hemi-Maxillectomy Patient from an Immediate Surgical to a Delayed Surgical Obturator- A Case Report

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Abstract

Background: Prosthetic management of patients with oral cancer begins before the surgical phase. Maxillary defects pose unique surgical and prosthetic challenges and rehabilitation of the patient with such defect require a multidisciplinary approach. Restoration of the missing structures immediately after surgery reduces recovery time and allows patient to return to community as a functioning member. The most practiced surgical obturators are resin prosthetic bases without incorporation of the teeth.

Case Report: A 47-year-old man presented to the Department of prosthodontics for fabrication of a surgical obturator. The patient was diagnosed as having squamous cell carcinoma of hard palate and had been

scheduled for left total maxillectomy. The planned surgery with regards to amount of excision was discussed with the surgical team and planned for immediate surgical obturator, which was inserted on the day of surgery. A week after a surgery, delayed surgical obturator was fabricated to improve the fit of the prosthesis.

Conclusion: Maxillary defects resulting from resection involving the maxillae pose unique surgical and prosthetic rehabilitation challenges. This report describes the treatment sequence of a patient with SCC of hard palate (left). The obturator prosthesis improved the ability to feed and swallow to reasonable level. Intelligible speech was achievable with the prostheses. This had a positive psychological effect on the patients,

thereby enhancing their self-esteem after prosthetic rehabilitation.

Keywords: Squamous cell carcinoma, Surgical obturator, Delayed surgical obturator.

Introduction

Head and neck cancer is the 5th most common cancer by incidence and the 6th most common cause of death. The most prevalent type of cancer is oral cancer. Advances in the management of oral malignancy resulted in significant improvements in survival rate^{1, 2, 3}. This has resulted in a large number of patients with extensive post-surgical defects and disfigurement.

The aesthetic, functional, and psychological results of oral cancer treatment may combine to produce devastating effects which affect the patient's quality of life (QOL)⁴. The boom in cancer care is not simply on survival but on rehabilitation, which aims to improve multiple impairments and QOL.

The successful maxillectomy requires complete removal of disease and maximal preservation of appearance and function, necessitating careful preoperative planning and coordination by the surgeon and prosthodontist^{5, 6}.

Prosthetic management of patients with oral cancer begins before the surgical phase. Restoration of the missing structures immediately after surgery shortens recovery time and allows the patient to return to the community as a functioning member^{7, 8}.

The primary objective of an immediate surgical obturator is to restore and maintain oral functions at reasonable levels during the initial postoperative period⁹.

The most practiced surgical obturators are resin prosthetic bases without incorporation of the teeth.

This case report depicts the step-by-step procedure for the fabrication of immediate and delayed surgical obturators.

Case report

A 47-year-old male patient was referred from the Department of Surgical Oncology to the Department of Prosthodontics HKES's S Nijalingappa Institute of Dental Science and Research, Kalaburagi, prior to surgery for fabrication of surgical obturator. The patient was diagnosed with SCC of left hard palate and had been scheduled for partial-maxillectomy (Figure 1).

A discussion was done with surgical team regarding the amount of excision to be planned for the case following which an outline was marked on the cast and immediate surgical obturator was fabricated, which was inserted on the day of surgery. A week after a surgery, delayed surgical obturator was fabricated to improve the fit of the prosthesis.



Figure 1: Pre-operative intraoral images

A pre-surgical impression of the maxillary and mandibular arch is made with irreversible hydrocolloid and cast was retrieved (Figure 2, 3). An anticipated line of resection is drawn with a marking pencil on the cast following discussion with oncosurgeons (Figure 4).

The maxillary cast was altered to obtain normal anatomical contours. Teeth to be included in the resection were removed from the working cast, and

alveolar height was slightly reduced. The labial and occlusal portions of the residual alveolar ridge were trimmed, particularly in the anterior region, to reduce the tension on the skin and lip closure (Figure 5). The occlusal portion of the alveolar ridge was reduced to avoid contact with opposing dentition during the immediate postsurgical period.

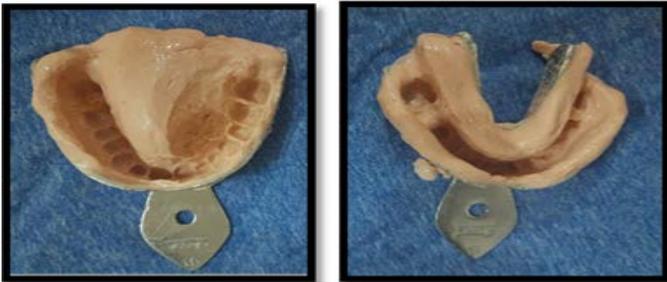


Figure 2: Pre-surgical impression of the maxillary and mandibular arch.



Figure 3: Working cast



Figure 4. Margins of proposed surgical resection outlined on pre-surgical maxillary cast.



Figure 5:Teeth removed and anterior labial portion of alveolus trimmed.

After the cast was altered, the wire retainers were adapted and the prosthesis was waxed, invested, and processed in acrylic resin and finished and polished in the customary manner. Immediate Surgical Obturator was immersed in disinfectant prior to surgery.

Resection was planned for a left total maxillectomy. A bony cut was made lateral to the proposed medial resection of the bony palate and tumor was removed (figure 6, 7). Immediate Surgical Obturator verified during surgery. After the prosthesis was secured, the defect was packed with gauze and the cheek flap was closed (figure 8, 9). In this case retention was obtained by wiring the prosthesis to existing teeth.



Figure 6: Planned bony cut for left total maxillectomy



Figure 7: Resected tumor.

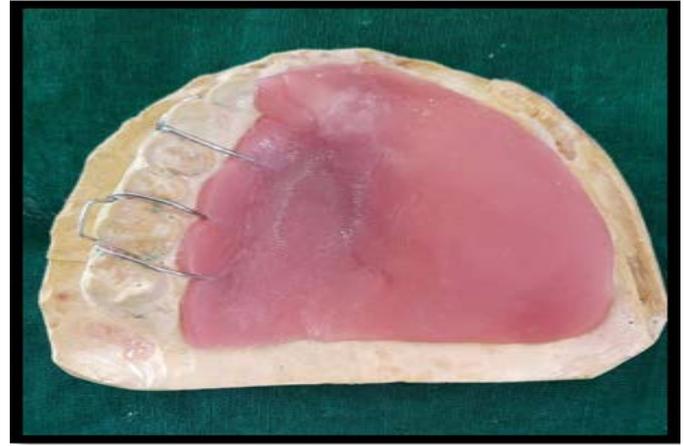


Figure 10: Delayed surgical obturator on cast.



Figure 8: Immediate surgical obturator verified during surgery



Figure 11: Insertion of delayed surgical obturator.

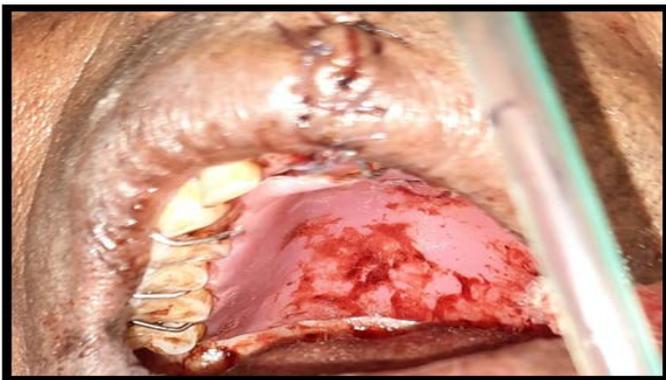


Figure 9: Insertion of immediate surgical obturator.

One week later when the packing was removed from the defect, delayed surgical obturator was fabricated to improve the retention of the prosthesis. A 19-gauge stainless steel wire was used to fabricate retentive clasps which engages Mesio Buccal and distobuccal undercuts of canine and 1st molar of the retained maxillary arch. An acrylic base plate was fabricated on the cast using auto polymerising acrylic resin. Try in of the obturator was done after examination of oral cavity and defects. Necessary adjustments were made and delayed surgical obturator was delivered (figure 10, 11).

Patient follow-up was done after 3 months (figure 12).



Figure 12: Follow-up after 3 months.

Discussion

The basic objective of prosthetic rehabilitation of a maxillectomy defect, at any stage, is to create a barrier between the oral cavity from the nasal cavity and paranasal sinuses. The surgical obturators restore and maintain function to an acceptable level during the initial healing phase. An immediate surgical obturator provides a scaffold for the dressing, lessens the initial feeling of loss, as the defect is not noticeable with the tongue, obviates the need of a nasogastric tube, prevents the impairment of speech and swallowing to some extent, and above all provides psychological support to the patient¹¹.

Several authors support the use of surgical obturators^{1,4,8,9}. However, some surgeons do not recommend the placement of an immediate surgical obturator due to increased anesthetic and surgical time required for fabrication and adjustment, and also retention of the prosthesis can be difficult¹¹.

Park and Kwon¹⁰ suggested the use of delayed surgical obturators as an alternative to immediate surgical obturator during the initial healing phase after

maxillectomy, without increasing the patient's discomfort.

The delayed surgical obturator, like the immediate surgical obturator, will provide psychological, physiologic, and hygienic benefits to the patient^{1,8,9}.

An early rehabilitation both with an immediate or a delayed surgical obturator will prevent the collapse of soft tissues and help to overcome psychological and esthetic problems. However, there can be certain difficulties if a delayed surgical obturator is planned with impression making due to facial incisions, and also due to incomplete healing. Retention of the prosthesis can also be compromised as the full extension into the defect is not suggested because it may interfere with healing, a limited oral opening, and the weight of the prosthesis¹. It might not be possible to swallow and attain ideal speech at this stage, but the adequate extension can provide sufficient contact with tissues to allow acceptable speech and swallowing. Another limitation of delayed obturator was the lack of esthetics during the early rehabilitative phase.

Conclusion

Prosthetic treatment should always start in the preoperative phase to render the best possible postoperative rehabilitation to the patient.

The maxillary immediate surgical obturator prosthesis has become an integral part of the maxillectomy procedure.

There have been improvements in technique and materials, but the objectives of immediate surgical obturation have remained essentially the same.

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