Management of squamous cell carcinoma of the maxillary sinus

Kanja Ramasanjeevaiah Jnanadev, HS Sheethal¹, HS Suraj², KB Rudresh³

Department of Prosthodontics, V. S. Dental College and Hospital, ¹Department of oral pathology, V.S.Dental College and Hospital, ²Department of anesthesiology, Kempegowda Institute of Medical Science, ³Department of oral surgery, V.S.Dental College and Hospital, Bengaluru, Karnataka, India

Abstract

Surgical management of malignant tumors disfigures and demoralizes individuals. Management of such patients requires concern humane approach, meticulous planning and judicious management of a case. It is the responsibility of a dentist to restore the lost function, speech and esthetics. This clinical case report signifies the role of the dentist starting from diagnosis, presurgical phase, surgical phase and postsurgical phase of a patient diagnosed with squamous cell carcinoma of the right maxilla.

Keywords: Presurgical phase, squamous cell carcinoma, surgical obturator

INTRODUCTION

Surgical excision of tumors involving the maxilla is the main indication for a maxillectomy. Squamous cell carcinoma is the most common malignancy requiring maxillectomy. A multidisciplinary team often consisting of otolaryngologists, oral surgeons, neurosurgeons, prosthodontists and oral pathologists is critical to obtain an accurate diagnosis, staging, surgical removal of the tumor, reconstruction of the resulting cosmetic defects and rehabilitation of the functional deficits.

Rehabilitation of a maxillary defect due to hemimaxillectomy is challenging. Restoring function, speech and esthetics is the important factor in the management of such patients. The common problem with the prosthetic treatment is in getting adequate retention, stability and support.[¹] To achieve these, the prosthodontist should take a leading role along with the surgeons in the presurgical phase itself. This article is a case report of squamous cell carcinoma of the maxillary right antrum along with its management.

CASE REPORT

A 73-year-old male patient presented with a complaint of pain and nasal discharge for the past 2 months. On examination, there was a diffuse mild swelling over the right maxillary area which was tender on palpation [Figure 1]. Maxillary right molars showed mobility. The computed tomography scan revealed a large mass filling the right maxillary sinus. Histopathological examination of incisional biopsy revealed a solid tumor mass showing dysplastic epithelial cells involving the underlying tissues. The dysplastic features seen were increased nuclear and cytoplasmic ratio, cellular pleomorphism, nuclear...
hyperchromatism and increased mitotic figures. In correlation with clinical and histopathological features, squamous cell carcinoma of the maxillary sinus was achieved. The patient was referred to the Department of Prosthodontics, V.S. Dental College and Hospital, before the surgery from ENT Department of KIMS Hospital, Bengaluru.

On examination, the maxillary arch had few missing teeth with Kennedy’s Class III condition. A primary impression was made and maxillary cast was poured. The case was discussed with an ENT surgeon and the cast was marked with the extent of the tumor and the teeth to be involved in resection [Figure 2]. In contemplated area of resection, teeth were removed from the presurgical stone cast to the level of the gingival line and the cast was smoothed.

Adams clasp was fabricated on the cast and surgical obturator made with clear acrylic [Figure 3]. The patient underwent surgery and the right premaxilla was resected [Figure 4]. Immediately after completion of the surgery, the surgical obturator was inserted in the patient’s mouth and clasps were adjusted to stabilize the obturator [Figure 5]. After a week, the patient was reviewed and the prosthesis was cleaned. Around 15–20 days after surgery, the surgical site was completely healed up and ready for interim obturator [Figure 6].

A primary impression was made with alginate, cast was poured and custom tray was fabricated with self-cure acrylic.

The lateral defect in the right maxilla was recorded using impression compound, and care was taken not to extend the material medially. Borders were recorded and final impression was made [Figure 7].

Master cast made using dental stone shows clearly the extent and depth of the defect. Adams clasp were done on
premolar and molars on the left side and interim obturator was fabricated using heat-cure resin [Figure 8]. Finally, the interim obturator was adjusted in the patient’s mouth with all teeth arranged in occlusion [Figure 9].

**DISCUSSION**

There are three types of prosthesis for a patient undergoing maxillectomy-like surgical obturator which is given at the time of surgery, transitional obturator 15–20 days after surgery and definitive obturator given 3–4 months after surgery.[2,3]

The primary goal of obturator is to close the maxillectomy defect and separation of the oral cavity from the sinonasal cavity. A pressure-resistant seal of the obturator against the mucosal lining restores speech and swallowing functions. A successful prosthetic design for functional restoration of the maxillectomy defect utilizes the remaining palate and dentition to maximize the support, stability and retention of an obturator. An unfavorable situation for prosthetic rehabilitation occurs when the size of a defect is so large that it overwhelms the remaining structures that stabilize the prosthesis over the defect.

The success of the prosthesis depends on the size and configuration of the defect and the number of teeth that remain postsurgically.[4] It is axiomatic that the prognosis improves with the availability of teeth to assist removable prosthesis. It is essential that the basic prosthodontic principles be followed.[5]

Hence, from the beginning of the treatment starting from diagnosis itself, the prosthodontist should try to save as many teeth as possible during surgery by coordinating with the surgeon.

The surgical obturator placed during surgery provides a matrix for surgical packing, reduces oral contamination, enables the patient to speak more effectively and lessens the psychological impact of the surgery.
After healing takes place, the surgical obturator should be replaced by a transitional obturator and the prosthesis should extend completely into the defect. Since the lateral portion of the obturator exhibits the greatest degree of movement, retention can be improved by appropriate obturator tissue contact superior laterally.[6]

Three to four months after surgery, the definitive prosthesis may be constructed. The timing varies depending on the size of the defect, the prognosis of healing and the prognosis for tumor control. For dentulous patients, it depends on the size and configuration of the defect and the number of teeth that remains postsurgically.

Many newer materials such as silicone obturators and implant-supported prosthesis can be utilized for prosthetic rehabilitation of intraoral defects, but heat-cured acrylic obturators are still treatment of choice because of several advantages. Heat-processed acrylic resins are routinely used for making obturators. Acrylic resin is easily available, easy to stain and color, has good strength to be fabricated with feather margin and has good life of about 2 years.[5,7]

CONCLUSION

The present article reports the management of a case which was followed up by the time the diagnosis of the tumor was made through the presurgical, surgical and postsurgical complete rehabilitation of the case by an obturator. The successful rehabilitation of the case by the coordinated efforts of the multidisciplinary team minimizes the deleterious consequences of the trauma of being diagnosed and treated for a malignant tumor.

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.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Desjardins RP. Obturator prosthesis design for acquired maxillary defects. J Prosthet Dent 1978;39:424-35.
2. Beumer J 3rd, Curtis TA, Firtell DN. Maxillofacial Rehabilitation. Prostodontic and Surgical Considerations. St. Louis, Toronto, London: The C.V. Mosby Co.; 1979. p. 188-243.
3. Wiens JP. Acquired maxillofacial defects from motor vehicle accidents: Statistics and prosthodontic considerations. J Prosthet Dent 1990;63:172-81.
4. Wang RR. Sectional prosthesis for total maxillectomy patients: A clinical report. J Prosthet Dent 1997;78:241-4.
5. Rahn AO, Boucher LJ. Maxillofacial Prosthesis, Principles and Concepts. Philadelphia: W.B. Saunders Co.; 1970. p. 89-95, 217.
6. Brown KE. Peripheral consideration in improving obturator retention. J Prosthet Dent 1968;20:176-81.
7. Chalian VA, Drane JB, Standish SM. Maxillofacial Prosthetics: Multidisciplinary Practice. Baltimore: The Williams and Wilkins Co.; 1971. p. 133-48.