Stomatologic Prosthesis In Management Of Maxillary Resection For Carcinoma Of Maxillary Antrum : A Case Report

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Abstract

Malignant tumours of nasal cavity and para nasal sinuses have a low incidence rate. Management of maxillary malignancies and/or surrounding structures necessitates the removal of partial or total maxilla, leaving the patient with a defect that compromises the function and integrity of the oral cavity. Stomatologic rehabilitation via palatal obturator is preferred in patients with poor prognosis or weak conditions to obtain the necessary gnathological, anatomical and functional harmony. This case report describes the clinical case of subtotal maxillectomy due to carcinoma of maxillary sinus, which was rehabilitated with obturator in unique combination to provide retention, stability and support to the prosthesis.

Introduction

Malignant tumors of sino-nasal tract constitute less than 1% of all malignancies in the body and about 3% of head and neck cancer [1]. Patient with carcinoma of maxillary sinus usually presents with pain and swelling in the maxilla. The affected teeth may become loose, with ulceration and bleeding of gingiva. Most of these carcinomas are diagnosed at an advanced stage, when the malignancy has invaded the underlying bone [2]. Treatment of malignant neoplasm of hard palate involves surgical resection followed by rehabilitation with prosthesis.

The rehabilitation of patient with carcinoma of maxillary sinus involving underlying maxilla requires coordination of interdisciplinary medical team which includes prosthodontist, maxillofacial surgeon, cancer specialist, specialist nurse, dietician and speech therapist.

Defect is repaired using microvascularized flap or leaving a breach in the affected area, which heals within a week on which stomatologic prosthesis that may be mobile (palatal obturators) or permanent (osseo-integrated implants) can be fabricated. Palatal obturators may be used alone or in combination, integrating plastic reconstructive surgery [3]. One of the main problems with an obturator maxillary prosthesis is its weight. The larger the defect, the heavier the prosthesis will be. In extensive cases, the defects over a certain size, the force of gravity prevails over the capacity of retention of the substructures.

This article reports the management of a patient with maxillary resection, rehabilitated with a stomatological obturator in combination with soft tissue mask on contralateral side for retention of the prosthesis.

Case Report(s)

A 42-year-old man reported to the dental clinic with chief complaint of pain in upper right back teeth region since 3 weeks. Pain was dull continuous in nature. There was no significant aggravating or relieving factor. On examination there was no clinically detectable carious tooth, no swelling seen intraorally or extraorally or no sinus tract was present. There was no history of seizures, vertigo or epistaxis, no nasal discharge present and the lesion was grossly intact (Illustration 1).

Patient was diagnosed having carcinoma of maxillary sinus by intra oral biopsy. Treatment was planned with the team of surgeons, prosthodontist and speech therapist. Tumour was surgically resected with involved underlying maxillary bone (Illustration 2). A prefabricated surgical obturator was inserted in the hemimaxillectomy defect (class 2a) in the operation theatre. Post insertion was done after 24 hrs at bed side.

3 weeks after maxillary resection, wound had started reepithelizing. At this stage interim prosthesis was given. The palatal prosthesis given at this stage was without teeth as mucous membrane was very fragile and subjected to ulceration. The interim obturator was given to prevent occlusal loading in the region of resection during the early stage of healing. This delay of adding the teeth reduced the chances of irritation that could affect the surgical healing site. Radiotherapy was continued simultaneously during the
After six weeks wound was almost healed. No flabby tissue was present. Impression was made with putty and master cast was poured. A hollow obturator with teeth was fabricated. Palatal prosthesis was fabricated in combination with buccal pad for retentive purpose that could counteract the cantilever leverage enhance the retention and stability of the obturator.

Prosthesis was inserted into patient’s mouth with an adequate peripheral seal. Occlusal balancing was done followed by post insertion follow-up (Illustrations 3-5).

**Discussion**

The anatomy of maxilla with the surrounding structures complicates the pathology to either of them. Malignant tumors of the nasal cavity and paranasal sinuses are rare, comprising less than 1% of all malignancies. Two thirds of the lesions involving this area are squamous cell carcinomas [4]. Most of these carcinomas are diagnosed in advanced stage, when they invade the underlying bone.

A maxillary-palatal defect may have serious consequences as far it concerns the relationship between form and function: inability to chew and swallow, disorders in phonation and important psychological implications [5].

In cases where resection is the treatment for neoplasm, bone grafting is not recommended because the blood supply to the graft area is compromised. Hence, in these patients, obturators are the favoured method for filling the defect. Management of the patient, with surgical resection of affected structure takes place in three basic stages: the pre-surgery stage, when the stomatologist gathers gnathological, anatomical and functional information. Second phase is immediate post-operative period to permit the stomatologist to set up temporary prostheses. Since the extent of the surgical defect epithelializes in approximately one year after surgery and the oral cavity of the patient may possibly undergo chemo-radiotherapy, several palatal obturators may be required post-surgery. In third phase - Late post-operative period, after 12 months, when clinical recovery is complete and there are no recurrences of the disease, the positioning of a definitive obturator is planned.

Fabrication of obturator prosthesis depends on the application of basic prosthodontic principles that are used in the treatment of patients without maxillary defects. Some principles must be modified because of the defect and the character and position of the remaining structures. The defect, in conjunction with the remaining structures, must be used to provide support, retention, and stability of obturator prosthesis. The retentive design is critical in the sub-total maxillectomy patient who has lost extensive supportive and retentive structures in resection procedure. Brown and Desjardins have suggested extending the lateral wall of the bulb higher geometrically and using extracoronal and intracoronal direct retainers for engaging the remaining teeth to maximize support, retention, and stability. Engagement of soft tissue undercuts, including the scar band at the skin graft-mucosal junction, may also play a significant role, particularly in edentulous patients [6].

Wide surgical resections for the control of malignancies frequently result in a small number of remaining, unilaterally clustered teeth. In dentate patients, primary retention, support, and stability of an obturator depend on the number and distribution of remaining teeth [7]. These remaining teeth serve as abutments for the obturator and are subjected to constant, nonaxial, cantilever forces. In these patients, chewing function is confined to the nonsurgical side due to the lack of support on the surgical defect side. Retentive clasps with buccal pad on the dentulous side provide cross arch stabilization to the prosthesis. With resection of the hard tissue, the weight of the obturator is balanced bilaterally by providing acrylic resin mask on the contralateral side of the defect.

**Conclusion**

Acceptable prosthetic care for the patient with the acquired maxillary defect should include cautious prosthesis design combined with routine maintenance care to provide comfort, function, cosmetics, and minimal change to the compromised remaining structures.

**References**

Illustrations

Illustration 1

pre operative intra oral view

Illustration 2

surgical resection of the defect area
Illustration 3

obturator prosthesis

Illustration 4

stomatologic prosthesis with acrylic resin mask
Illustration 5

post operative intra oral view
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