Case Report

Prosthetic Rehabilitation of a Patient with Limited Mouth Opening Consequent to Partial Maxillectomy: A Clinical Report

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ABSTRACT
Squamous cell carcinoma of maxillary alveolar process and palate accounts for 1-5% of all the neoplasm’s of the oral cavity. This clinical report describes a method for prosthetic rehabilitation of a patient with squamous cell carcinoma of maxilla following partial maxillectomy and orbital exenteration with a prosthetic obturator.

Keywords: Oral cavity, Obturator prosthesis, Squamous cell carcinoma, Maxillectomy, Hard and Soft palate, Prosthodontic rehabilitation.

INTRODUCTION
A considerable number of people each year acquire oral defects as a result of malignant disease, trauma and congenital deformity. Malignant tumors of the upper gum and hard palate account for 1-5% of malignant neoplasms of the oral cavity; two thirds of the lesions which involve these areas are squamous cell carcinomas. (1) Most of these carcinomas are diagnosed late, when they invade the underlying bone.

Treatment options include surgery, radiation therapy, and chemotherapy. (2) In recent years, newer treatment options such as cryotherapy, immunotherapy, cytotoxic treatment, photodynamic treatment, and hypothermal treatment have been used in conjunction with conventional treatment methods for head and neck cancers. (3) However, most of these methods result in unwanted or incapacitating defects requiring immediate short- or long-term management and rehabilitation procedures.

The term maxillectomy refers to partial or total removal of maxilla in a patient suffering from benign or malignant neoplasm. (4) The resultant surgical defect often includes part of hard and soft palate, which results in an oro-antral and/or oro-nasal communication. (3) Rehabilitation can be accomplished either surgically (free flap transfer) or prosthetically (obturator). (5) The choice of rehabilitation depends upon the site, size, etiology, severity, age, and the patient's wishes. However, age, general medical condition of the patient, radiation therapy, anatomic complexity, possibility of recurrence, appearance of the area to be rehabilitated, complexity of the surgical procedure, and the patient's refusal to undergo further surgery may contraindicate surgical reconstruction.

Maxillary obturator prosthesis is more frequent treatment modality than surgical
reconstruction due to ease of fabrication and maintenance. (6-9) The prosthesis recreates a partition between oro and naso-pharynx and facilitates improvement in mastication, deglutition and speech intelligibility. (6,10)

The traditional treatment sequence for a patient requiring a maxillectomy is the initial insertion of an immediate surgical obturator at the time of surgery or soon thereafter, an interim obturator used after initial healing until the tissues are stabilized (approximately 3 months), and a definitive obturator prepared after the tissues have stabilized, with few appreciable changes. (11)

Many different materials have been used for the fabrication of the obturator. Silicone rubber, although advantageous in certain clinical situations, is porous in nature and has poor long-term durability, requiring replacement on a routine basis. (12) Visible light-polymerized resin (13) has also been used; however, maximal strength and long-term durability of these obturators have not been assessed. Heat-processed acrylic resin has been proven to be one of the most durable, tissue-compatible materials to date for the fabrication of this prosthesis. (14)

CASE REPORT

A 60 year old man was surgically operated for the squamous cell carcinoma of a right maxilla infiltrating right orbital wall and right nasal cavity in SKIMS Soura, Srinagar (Figure 1). He was referred to the Department of Prosthodontics, Government Dental College Srinagar, India. Medical and dental history revealed surgical resection of the anterior and right posterior maxilla and corresponding alveolar bone and inferior wall of orbit due to T3N2M0 squamous cell carcinoma 4 months ago. Intraoral examination revealed well healed surgical defect in the maxillary right buccal vestibule creating an oro-antral communication (Figure 2). All the three anterior left maxillary teeth and complete mandibular dentition were examined clinically as well as radio graphically (panoramic) and found to be caries-free with no significant gingival/periodontal problems. Masticatory, phonetics and esthetics of the patient were severely affected due to missing maxillary structures. The patient was diagnostically classified as ‘Class IV (severely compromised) clinical situation’ according to the Prosthodontic Diagnostic Index (PDI) described by McGarry et al. (15) Various modalities of prosthetic reconstruction were discussed with the patient and the patient indicated a desire for an economical solution. Hence, heat-polymerizing resin prosthesis was planned, and the expectations of this prosthesis were explained to the patient.

**Treatment**

Impression making was difficult as there was limited mouth opening and the tissues on the operated side were taught and lacked normal flexibility. There was difficulty in inserting the tray. The stock metal tray was modified with modeling wax for support of the impression material (Figure 2). After repeated softening of
wax and insertion of tray impression of the defect was obtained (Figure 3). The removal of the tray along with impression of whole defect area was challenging and technique sensitive. The impression was poured in Type III dental stone (Figure 4). Undercuts were blocked using modeling wax (Figure 5). After fabrication of temporary denture base and occlusal rim, Maxillomandibular jaw relations (Figure 7) were obtained. The wax prosthesis was verified at the trial insertion appointment (Figure 8). The wax prosthesis was processed and the wax was eliminated (Figure 9). Mold was prepared and packed using heat-polymerizing resin. The prosthesis was fabricated with bulb of obturator being hollow and inserted into the defect and the patient was instructed on home care and prosthesis maintenance (Figures 9-12). To sanitize the wound, the patient was instructed to gently remove any exudates with a wet cotton tip soaked with a 5% Betadine solution and to clean the intaglio (impression) surface of the prosthesis once a day. The patient was scheduled for the first post-insertion adjustment 3 days after the insertion. At the first post-insertion appointment, the surgical wound was observed to ensure health of the tissues, to relieve the prosthesis for pressure areas on the tissues, to compensate for processing changes, and to emphasize hygiene and home care. The patient was placed on a 3-month recall for evaluation and observation of any recurrence.
Figure 7 Maxillomandibular relationship

Figure 8 Trial insertion

Figure 9 Processing of obturator prosthesis.

Figure 10 Extra oral view of prosthesis

Figure 11 Intra oral view of prosthesis
CONCLUSION
Malignant tumors of the upper gum and hard palate account for 1-5% of malignant neoplasms of the oral cavity; two thirds of the lesions which involve these areas are squamous cell carcinomas. This clinical report describes a method for prosthetic rehabilitation of a patient with squamous cell carcinoma of the maxilla following partial maxillectomy with an obturator. Rehabilitation restored the separation between the oral and nasal cavities, enabled the patient to swallow, maintained or provided mastication, supported the soft facial tissues, re-established speech and restored an aesthetically pleasing smile.

REFERENCES


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