

## CASE REPORT

# Prosthetic Rehabilitation of a Patient with Limited Mouth Opening following Partial Maxillectomy and Lateral Rhinotomy for Sinonasal Adenocarcinoma: A Clinical Report

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## ABSTRACT

Adenocarcinomas of various types comprise 10 to 20% of all primary malignant neoplasms of the nasal cavity and paranasal sinuses. They are thought to originate from seromucous glands of the nasal cavity and paranasal sinuses as well as the surface epithelium. Long-term prognosis is poor and patients usually die due to local spread with no metastasis. This clinical report describes a method for prosthetic rehabilitation of a patient with sinonasal adenocarcinoma of maxilla following partial maxillectomy and lateral rhinotomy.

**Keywords:** Obturator prosthesis, Sinonasal adenocarcinoma, Maxillectomy, Prosthodontic rehabilitation.

**How to cite this article:** Shah SA, Naqash TA, Zargar NM. Prosthetic Rehabilitation of a Patient with Limited Mouth Opening following Partial Maxillectomy and Lateral Rhinotomy for Sinonasal Adenocarcinoma: A Clinical Report. *J Orofac Res* 2013;3(2):121-124.

**Source of support:** Nil

**Conflict of interest:** None declared

## 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 to 5% of malignant neoplasms of the oral cavity; two thirds of the lesions which involve these areas are squamous cell carcinomas.<sup>1</sup> Most of these carcinomas are diagnosed late, when they invade the underlying bone.

Treatment options include surgery, radiation therapy and chemotherapy.<sup>2</sup> 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.<sup>3</sup> However, most of these methods result in unwanted or incapacitating defects requiring immediate short- or long-term management and rehabilitation procedures.

## CASE REPORT

A 48-year-old man was surgically operated for the sinonasal adenocarcinoma of left nasal cavity infiltrating maxilla. He was referred to the Department of Prosthodontics,

Government Dental College Srinagar, India (Fig. 1). Medical and dental history revealed surgical resection of left posterior maxilla and corresponding alveolar bone 4 months ago. Intraoral examination revealed well healed surgical defect in the maxillary left buccal vestibule creating an oroantral communication (Fig. 2). All the right maxillary teeth and complete mandibular dentition were examined clinically as well as radiographically 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



Fig. 1: Preoperative view of patient



Fig. 2: Intraoral view of defect

compromised) clinical situation' according to the prosthodontic diagnostic index (PDI) described by McGarry et al.<sup>4</sup> Various modalities of prosthetic reconstruction were discussed with the patient and the patient indicated a desire for an economical solution. Hence, complete heat-polymerizing resin prosthesis was planned over cast partial denture and the expectations of this prosthesis were explained to the patient.

### PROCEDURE

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, after repeated softening of wax and insertion of tray (Fig. 3). The impression of the maxillary arch along with the defect (Fig. 4) and mandibular arch was obtained. The impression was poured with type III dental stone. Undercuts were blocked using modeling wax. Final impression was made using putty and light body elastomeric impression material.



Fig. 3: Modified stock metal tray



Fig. 4: Impression

Wax occlusal rim was made and bite registration was done. Teeth arrangement was done in accordance to the existing occlusion. Retentive clasps were given as described by Aramany. After teeth arrangement the waxed up obturator was tried in the patient's mouth. Occlusal contacts and fit was verified. Flasking of waxed prosthesis was done and the wax was eliminated. The defect was lined with approximately 2 mm thick layer of heat-cure resin. The center of the defect was then filled with table salt to fill the concavity created by the pervious step, and then another layer of heat-cure resin was placed to within approximately 2 mm on the top. Mold was packed with heat-curing acrylic resin in the usual manner. Processing of acrylic resin was done according to manufacturer's specifications. After deflasking the prosthesis, Dentsply T&F round no. 8 bur was used to drill a hole in the superior surface of the obturator to pour out the salt. Autopolymerizing acrylic resin was used to seal the hole made by the bur. Lost salt technique was used because it is simple, quick and cost-effective method.<sup>5</sup> Finish of restoration was done in the customary manner (Fig. 5). The obturator was then inserted intraorally (Figs 6 and 7); fit of the obturator was verified and occlusion was checked. The patient was instructed on home care and prosthesis maintenance. 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 postinsertion adjustment 3 days after the insertion. At the first postinsertion 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.

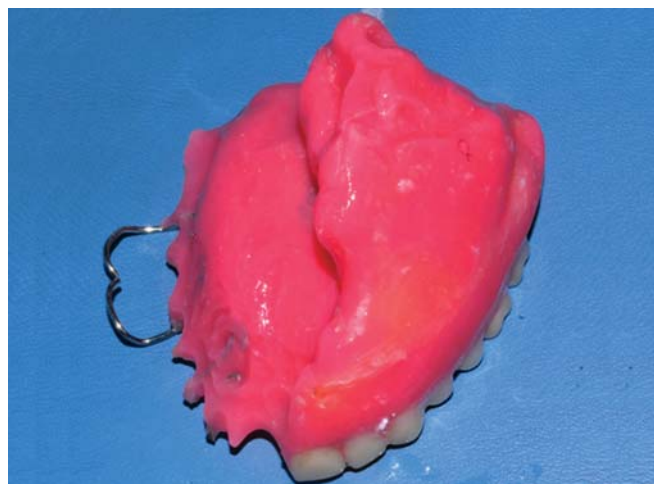


Fig. 5: Extraoral view of prosthesis



Fig. 6: Intraoral view of prosthesis



Fig. 7: Prosthesis *in situ*

## DISCUSSION

The term maxillectomy refers to partial or total removal of maxilla in a patient suffering from benign or malignant neoplasm.<sup>6</sup> The resultant surgical defect often includes part of hard and soft palate, which results in an oroantral and/or oronasal communication.<sup>3</sup>

Rehabilitation can be accomplished either surgically (free flap transfer) or prosthetically (obturator).<sup>2,6</sup> 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.<sup>7-9</sup> The prosthesis recreates a partition between oro- and nasopharynx and facilitates improvement in mastication, deglutition and speech intelligibility.<sup>7,10,11</sup>

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. Visible light-polymerized resin 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.

## CONCLUSION

Malignant tumors of the upper gum and hard palate account for 1 to 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 esthetically pleasing smile.

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