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Case Report

# PROSTHETIC MANAGEMENT OF HEMIMANDIBULECTOMY PATIENT WITH MAXILLARY PALATAL RAMP AND MANDIBULAR GUIDING FLANGE PROSTHESIS: A CASE REPORT

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## ABSTRACT

Benign, malignant neoplasm and osteoradionecrosis are commom causes for surgical resection of mandible. Depending on the lesion the resection can be total or segmental. Deviation of remaining mandibular segment toward the resected side occurs primarily because of the loss of tissue involved in the surgical resection due to loss of mandibular continuity. The success of hemimandibulectomy patient depends upon treatment plan, type of prosthesis, patient co-operation and the nature and extent of the surgical defect. If the mandibular guidance therapy is initiated early in the course of treatment; the patient's definitive occlusal relationship is more successful. This case report describes prosthodontic management of a patient who has undergone a reconstructed hemi-mandibulectomy with masseter muscle flap followed by mandibular guide flange prosthesis and maxillary palatal ramp.

**Key words:** Hemimandibulectomy, Mandibular Guiding Flange, Maxillary Palatal Ramp.

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## INTRODUCTION

The most common site of head and neck squamous cell carcinoma is the oral cavity, a disease which results in significant morbidity and mortality worldwide. Although the primary modality of treatment for patients with oral cavity cancer is surgical resection, many patients present with advanced disease and are thus treated using a multi-disciplinary approach [1]. The most common cause of the mandibular deviation is the surgical resection of the mandible due to presence of benign or malignant tumor. Various surgical treatment modalities like marginal, segmental, hemi, subtotal, or total mandibulectomy can be performed depending upon the location and extent of the tumor in the mandible. An extensive period of time for completion of healing and acceptance of the osseous graft before considering the definitive prosthesis should be given by clinicians [2]. This case report describes early prosthodontic management of a patient who has undergone a reconstructed hemi-mandibulectomy with masseter muscle flap followed by mandibular guide flange prosthesis and maxillary palatal ramp. The prosthesis helps patient moving the mandible normally towards nonaffected side without deviation during functions like speech and mastication.

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## CASE REPORT

A 70 year old male patient reported to the Department of Prosthodontics and Crown and Bridge with deviated mandible for functional and esthetic recovery.

The patient gave a history of a large swelling on the left side for 2 years which was later diagnosed as Squamous cell carcinoma. This was followed by a surgical procedure which involved segmental resection of the left mandible with reconstruction with masseter muscle flap. The defect was Class II according to Cantor and Curtis classification. On extraoral examination, there was severe deviation of the mandible toward left side (Figure 1).

There was deviated mouth opening and disturbed profile with facial asymmetry. Mouth opening was found to be reduced to 25 mm, and mandibular deviation of 18–20 mm toward left side was found on opening of jaw. Past dental history revealed extraction of periodontally weakened maxillary teeth from 25 to 27. Intraoral examination revealed maxillary kennedy's class II partially edentulous arch with missing teeth from 25 to 27 and on palpation, the absence of mandibular ridge from left canine region posteriorly with missing teeth 34 to 37.

A training appliance with a palatal ramp followed by mandibular guiding flange prosthesis was planned for this patient.

- The Upper and lower irreversible hydrocolloids impressions were made and poured.
- Interocclusal record was made with modelling wax by asking the patient to move the mandible away from resected site as far as possible and manually guiding the mandible to centric occlusion.
- This record was transferred to a mean value articulator. A maxillary training appliance retained with circumferential clasp on first premolar and adams clasp on first molar with 21-gauge orthodontic wire and a platal ramp on right side was constructed with autopolymerizing acrylic resin. (Figure 3).
- Mandibular guide flange prosthesis was constructed with circumferential clasp on first premolar and adams clasp on first molar with 21-gauge orthodontic wire and mandibular guiding flange was constructed. (Figure 4).

**Figure 1-Extraoral image showing deviation of mandible towards left side**

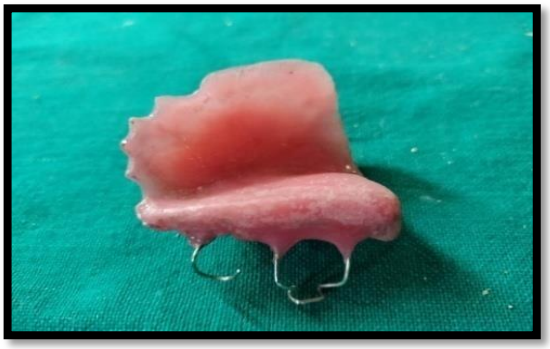
**Figure-2-Intraoral image showing deviation of mandible towards left side**

**Figure 3-Maxillary palatal prosthesis**

**Figure 4-Mandibular guiding Flange prosthesis**

**Figure 5-Maxillary palatal prosthesis (a) Lateral view(b)Occlusal view**

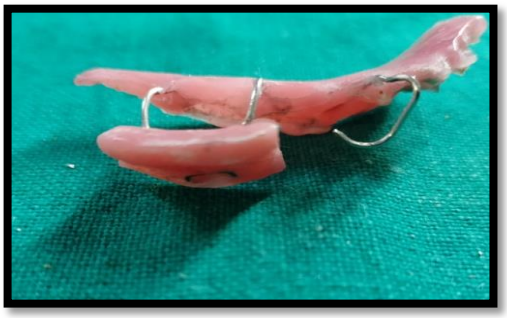
**(a)**



**(b)**

**Figure 6- Mandibular Guiding Flange prosthesis-(a) Lateral view (b)Occlusal view**

**(a)**



**(b)**

**Figure 7- Maxillary palatal prosthesis in patients mouth**

**Figure 8-Mandibular guiding flange in patients mouth**

**Figure 9-Corrected occlusion in patient's mouth**

The Guiding Flange Prosthesis and the Maxillary Palatal Ramp Prosthesis were finished and polished in usual manner. The GFP was tried in patient's mouth and the initial stability and retention was checked. The final inclination of the guide-flange was adjusted by selectively trimming the teeth-contacting surface or adding the auto-polymerizing acrylic resin. The smooth gliding flange surface was developed intraorally to guide the mandible in

a definite closing point (rather than the area) in occlusion. The buccal surface indentations of the opposing maxillary teeth which were guiding the mandible in a final definite closing point during mastication should be preserved. The prosthesis was delivered and post-insertion instructions were given.

## DISCUSSION

There are multifactorial reasons for segmental resection of mandible with several collateral problems which alter prosthetic prognosis. The four significant factors that affect the amount of prosthetic rehabilitation include the effect of radiation, presence or absence of teeth and psychological impact the site and extent of surgery [3-6]. To provide an acceptable maxillo-mandibular relationship of the remaining portion of the mandible the basic objective in rehabilitation is retraining the remaining mandibular muscles [7]. The mandibular guidance therapy should be initiated at an early stage for more successful definitive occlusal relationship. Any delay in the initiation of mandibular guidance appliance therapy, due to reasons such as extensive tissue loss, radiation therapy, radical neck dissection, flap necrosis, and other postsurgical morbidities may result in an inability to achieve normal maxilla–mandibular relationship [8]. Different techniques are given by various literature for managing the deviation that include cast metal guidance prosthesis which is more technique sensitive, time consuming, expensive and require more number of patient visits. Acrylic GF prosthesis is comparatively simple in design, cost effective, less patient visit and more importantly the ease of adjustability.[9] A mechanical system was provided by mandibular guiding flange prosthesis which prevented the mandible from turning towards the resected side. Prosthetic management combined with an exercise program, which can be started 2 weeks after surgery for better results. For effective guidance and reprogramming of mandibular movements the presence of teeth in both the arches is important. For proper examination, planning and execution the timing of the maxillofacial prosthodontist's initial contact with these patients before surgery is very important for so that the training prosthesis can be inserted at the time of surgery or shortly later to prevent muscle imbalance from pulling the mandible to an eccentric position and decrease the effect of pull from the contraction of the cicatricial tissue [10].

## CONCLUSION

For better prosthodontic treatment outcome,a multidisciplinary team approach before, during and after surgery is important along with early guidance therapy, individualized physiotherapy and patient cooperation. The present article describes the fabrication of a maxillary palatal ramp prosthesis and mandibular guiding flange prosthesis to guide the segmented mandible into its most acceptable functional position after long-term scarring and mandibular deviation to the affected side.

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