

## Innovative Management of Resected Mandible by Modifying Occlusal Table

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### Abstract

Segmental resection is one of the reasons for deviation of the mandible. Patients undergoing hemimandibulectomy due to benign and malignant tumors lead to rotation of the mandible. This case report describes the prosthodontic rehabilitation of a hemimandibulectomy patient with an additional row of teeth in the maxillary complete denture.

**Keywords:** Hemimandibulectomy; Two rows of teeth; Prosthetic rehabilitation

### Introduction

Odontogenic tumors of epithelial origin commonly seen in the posterior mandible are often treated with surgical resection [1]. Patients undergoing hemimandibulectomy pose the most challenging maxillofacial endeavors to the prosthodontist. Disorientation of the mandible leads to psychological, aesthetic, and masticatory deformities. Cantor and Curtis classified hemimandibulectomy as follows [2]

Class 1: Mandibular resection involving alveolar defect along with preservation of mandibular continuity.

Class 2: Resection defects involve loss of mandibular continuity distal to the cuspid.

Class 3: Defect involves loss up to the mandibular midline region.

Class 4: Defect involves loss up to the midline region.

Class 5: Anterior bone graft surgical reconstruction.

Class 6: Resection of the anterior portion without reconstruction.

Unhelpful limiting factors like improper orientation of the resected mandible, leading to deviation of the mandible to the resected side and limiting coordination, facial asymmetry, muscular imbalance. It also leads to other problems such as phonetics, mastication, and mandibular movements [3].

Different treatment options are available for the prosthetic rehabilitations such as use of palatal ramp and guiding flange [4]. Rosenthal advocated use of anatomic teeth double rows on the undefective side. Different treatment approaches use two rows of anatomic teeth: one in an occlusal position and the other supporting the cheeks and other muscles [5-6]. Earlier artificial temporomandibular prosthesis is being used but now this technique is outdated [7]. Mandibular guidance therapy was also used where the rotation is major and few abutments were present, improving mastication, aesthetics, and phonetics. However, this therapy is only useful for those patients for whom the resection involves minimal bone loss and associated structures [8]. In this paper, prosthodontics' rehabilitation of a hemimandibulectomy patient with twin occlusal therapy on the unresected side was described.

### Case Report

A 68-year-old male patient reported to the department of

dentistry, Veer Chandra Singh Garhwali Government Medical College, Srinagar Garhwal, Uttarakhand, India with the chief complaint of having masticatory difficulty, poor esthetics, and phonetics. Extraoral examination reveals facial asymmetry with loss of muscle mass on the resected side. The patient gave a history of cigarette smoking since 25 years and was an alcohol abuser since 18 years. He was diagnosed with squamous cell carcinoma of the left buccal mucosa about 5 years back. Medical history revealed that he had undergone an extensive mandibular resection of the mandible about 5 years back (Figure 1). Periodontally compromised teeth, i.e., mandibular central and lateral incisor on the resected side were extracted. There was deviation of the mandible on the resected side (Figure 2). A PA mandible X-ray revealed resection of the mandible distal to the lateral incisor on the left side up to the condyle on the left side (Figure 3). Due to economic constraints, grafts and implant placement on the defect side was not possible; therefore, prosthetic rehabilitation of hemimandibulectomy with twin occlusion was planned.

Before any prosthetic treatment could begin, the patient was asked



Figure 1: Preoperative photograph.

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**Received** February 01, 2017; **Accepted** February 27, 2017; **Published** March 08, 2017

**Citation:** Sharma M, Kaira LS, Sharma R, Dabral E (2017) Innovative Management of Resected Mandible by Modifying Occlusal Table. *Pediatr Dent Care* 2: 129. doi: 10.4172/2573-444X.1000129

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Figure 2: PA view of maxilla showing hemimandibulectomy.



Figure 3: Resected mandible on left side.



Figure 4: Preliminary Impression.

to follow an exercise regime. It comprised of placing the right thumb inside the corner of the mouth on the left side and to stretch the cheek laterally for three sets of five stretches at least twice a day.

### Procedure

The primary impressions were made with alginate for the maxillary arch and mandibular arch on stock plastic tray (Figure 4). Special tray was constructed on maxillary arch. Custom trays were fabricated with care taken to block the present teeth in mandibular arch. Border moulding was done and final impression were made with zinc oxide eugenol paste in maxillary arch. In the mandibular arch after border moulding and final impression of mandibular arch with ZOE paste. Medium body was utilised to record resected tissue and then a plastic tray was used to record present teeth and definitive casts were obtained (Figure 5). Vertical dimension was assessed by closest speaking space method. Centric relation record was recorded. Twin occlusion using

anatomic teeth were arranged on the healthy mandibular side. Teeth were occlusally grinded for removing interferences in lateral direction (Figure 6). Try in was checked for esthetics, phonetics, lack of cuspal interference and occlusion. The dentures were processed and checked intraorally (Figures 7 and 8). Any interferences were corrected and patient was given instructions. Patient was heavily motivated and ask to make repetitive efforts so as to adapt to new dentures. Different exercises were suggested to the patient so that he can adapt the mandibular denture into centric occlusion. Patient was recalled after one week and patient expressed satisfaction in esthetics, phonetics and masticatory efficiency (Figures 9 and 10).

### Discussion



Figure 5: Mandibular fi.



Figure 6: Maxillary twin occlusion.



Figure 7: Final prosthesis.



Figure 8: Maxillary denture in pt mouth.



Figure 9: Happy patient.



Figure 10: Postoperative photograph.

There were several physical limitations seen in hemimandibulectomy edentulous patients like surgical skin grafts, deviated mandible, and unfavourable ridges. The present article explains successful management of hemimandibulectomy patient. Twin occlusal technique not only improves masticatory ability but also supports cheeks thereby improving aesthetics and phonetics [5-7]. This eliminates lateral stress that would destabilize mandibular denture. Implants also serve as another option in resected mandible but it is costly and technique sensitive [9]. The Guide Flange Prosthesis can be regarded as a training type of prosthesis. If the patient can successfully repeat the mediolateral position, the GFP can often be discontinued [10-13]. Another

technique by Rathee et al., described a simple method for fabrication of customized wire-made-guide flange removable prosthesis to aid in the reducing the mandibular deviation and enhances the masticatory efficiency. Low weight prosthesis with low-cost is conservative rehabilitation prosthesis for hemimandibulectomy patients [8,11].

## Conclusion

Patient motivation and education was the basic principle for successful rehabilitation of any prosthetic treatment. In this article author incorporates two rows of anatomic posterior teeth in maxillary denture to impart stability and broader occlusal table. Though surgical reconstructions by grafts and implants were not possible in every patient because of economic constraints, alternative prosthodontics rehabilitation has to be considered to restore aesthetics and mastication in hemimandibulectomy subjects.

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