

Modified Occlusal Table - An Aid to Enhance Function of Hemimandibulectomy Patient: A Case Report

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ABSTRACT

Completely edentulous patients who have undergone hemimandibulectomy suffer severe anatomic and functional loss. Functions like mastication, speech and deglutition are severely compromised. The mandibular deviation towards the resected side leads to inefficient mastication. In order to alleviate the difficulties encountered by the patient, construction of a modified occlusal table into conventional complete denture has been described in this article. This simple modification enables the patient to articulate teeth on a broader surface area. The inclines of the cusps also help in mandibular guidance. Thus, prosthetic rehabilitation of hemimandibulectomy patients with two rows of teeth on the unresected side serves to restore function and aesthetics providing them with an added psychological comfort.

Keywords: Completely edentulous, Mandibular deviation, Rehabilitation, Two rows of teeth

CASE REPORT

A 50-year-old female patient reported to the Department of Prosthodontics in College of Dental Sciences, Davangere, Karnataka with a chief complaint of difficulty in chewing due to missing teeth from past seven months. Patient revealed a habit of chewing tobacco (quid), six times per day for 20 years. She was diagnosed with squamous cell carcinoma of left buccal mucosa and buccal vestibule extending from canine region upto the angle of ramus [Table/Fig-1a,b]. All teeth were extracted due to compromised periodontal condition. She had undergone segmental resective surgery of the left side of mandible followed by reconstruction with a pectoralis major myocutaneous flap and received postoperative radiotherapy (21 cycles) for six months.

Following the respective surgery, the extra oral examination of the patient showed an asymmetrical face with convex profile, ovoid

shape and deviation of mandible to the left side [Table/Fig-2a,b].

Intraoral examination revealed firm and resilient tissue on the right side of the mandible [Table/Fig-3a,b]. Partial labial vestibule and entire buccal vestibule on the defected side were obliterated. On palpation, the hard tissue was present only till the incisor region (1cm from midline). Distolingual sulcus was adequate for extension of lingual flange of the prosthesis. Maxillary arch was completely edentulous, with high well-rounded ridge and firm, resilient overlying mucosa [Table/Fig-3c]. Mouth opening was 22 mm. An OPG of the patient was done to analyse the bone morphology closely [Table/Fig-4].

Diagnostic impressions of maxillary and mandibular arches were made using impression compound and elastomeric impression materials respectively and casts were poured in dental stone



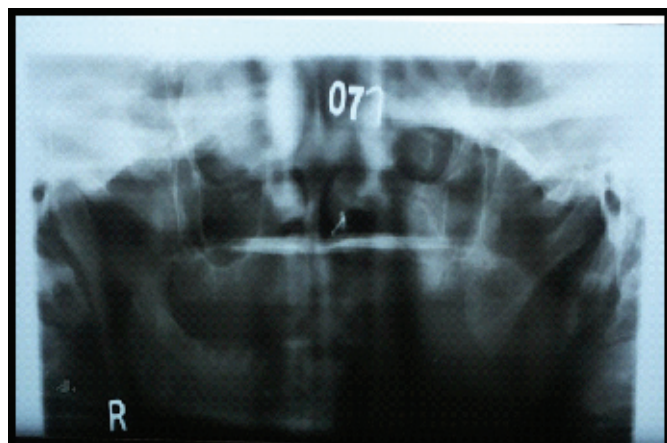
[Table/Fig-1a,b]: Preoperative extraoral and intraoral view
(a) Extraoral view (b) Intraoral view



[Table/Fig-2a,b]: Postoperative extra-oral view (a) Frontal view (b) Lateral view



[Table/Fig-3a-c]: Postoperative intraoral view (a) Mandibular arch (frontal view) (b) mandibular arch (occlusal view) (c) Maxillary arch (occlusal view)

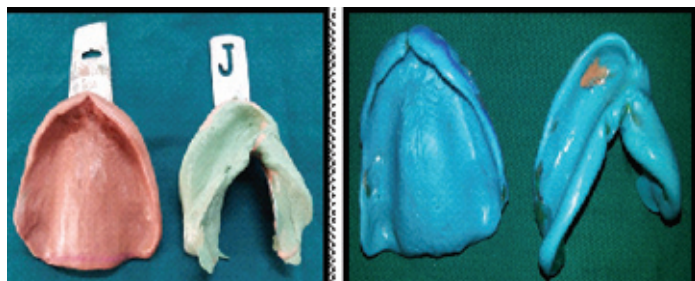


[Table/Fig-4]: Postoperative Radiographic view (OPG)

(Goldstone, Asian Chemicals, India) [Table/Fig-5a]. Undercuts were blocked and custom trays were fabricated using full spacer design. The tray was border-molded with modeling plastic (DPI Tracing stick, Dental products of India, Mumbai, India). Final impressions were made with elastomeric impression material (Aquasil, Dentsply) using mucostatic impression technique and master casts were obtained [Table/Fig-5b]. Maxillary and mandibular lip fullness and lip support was assessed using palpation and visual method. Niswonger's phonetics method was used to assess the vertical dimension. Vertical dimension at rest and occlusion was 50 mm and 47 mm respectively. The midline and canine lines were marked on the occlusal rims and the patient was guided to move her mandible to the unresected side, such that the lines coincided. Centric relation was recorded with vinyl polysiloxane bite registration material (Imprint Bite, 3M ESPE, Germany). Maxillary master cast was articulated using a Hanau facebow (Springbow, Teledyne) on a semi adjustable articulator (Hanau Articulator Model Wide-Vue). Two rows of anatomic maxillary posterior teeth were arranged on the unaffected side. First row of teeth was arranged as per the contour of the ridge and the other set was arranged palatal to the first row on which the mandibular teeth will occlude [1] [Table/Fig-6]. Trial dentures were checked for aesthetics, phonetics, occlusal vertical dimension and occlusion. The dentures were fabricated, finished and polished. Premature contacts were eliminated and the dentures were inserted in patient's mouth [Table/Fig-7-9].

DISCUSSION

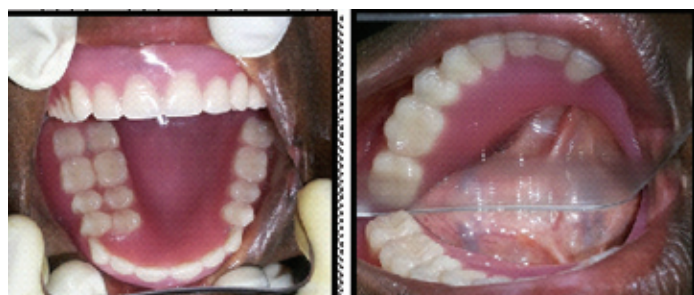
Management of patients with acquired defect of mandible is a challenge related to both control of the primary disease and rehabilitation [2]. One of the most challenging and demanding maxillofacial endeavors is the construction of functional, complete dentures for the edentulous patient who has undergone a mandibular resection [1]. The consequences of mandibulectomy are related to



[Table/Fig-5a,b]: (a) Primary impressions of maxillary and mandibular arch; (b) final impressions of maxillary and mandibular arch



[Table/Fig-6]: Trying of the wax set-up



[Table/Fig-7]: Occlusal view of the final denture



[Table/Fig-8]: Lateral view of the final denture



[Table/Fig-9]: Dentures inserted

mastication, speech and deglutition due to anatomical compromise resulting from tumour resection [3]. Resection of the mandible due to presence of benign or malignant tumour is the most common cause of the mandibular deviation [4]. One of the primary goals of prosthodontic treatment is the restoration of acceptable occlusal function [5].

Rehabilitation is difficult in an edentulous patient. Sharry has described the difficulties encountered as 1) limited coverage and retention; 2) limited movement of the mandible; and 3) grossly impaired relations of the mandible to maxillae [6]. Concurrently, the loss of sensory proprioception of occlusion causes the mandible to slip into unco-ordinated and imprecise movement. Loss of muscles at the site of surgery causes the mandible to rotate on forceful closure. This makes it difficult for the patient to attain normal functions like closure of mandible and mastication [5]. Following the operation, the remaining portion of the mandible is pulled medially by the medial and lateral pterygoid muscles. In this deviated position, maxillomandibular relations cannot be recorded with any degree of accuracy, and a satisfactory, occlusion is difficult to obtain. Edentulous patients can be trained to return the fragment to a functional relationship [7].

A treatment option available for the treatment of edentulous patients to achieve optimal function is a palatal ramp on the maxillary denture as described by Swoope [7]. Rosenthal has described a technique employing a second row of maxillary posterior teeth on the untreated side of the maxillary denture [7].

This clinical report aims to focus on prosthetic rehabilitation of hemimandibulectomy patient who has undergone resection without reconstruction. According to the prosthetic classification for mandibular defect by Cantor and Curtis (1971) this case belongs to Class II (Resection defects involve loss of mandibular continuity distal to the canine area) [8]. According to the technique described by Rosenthal, a second row of maxillary posterior teeth was arranged on the untreated side of the maxillary denture [7]. A Monson curve was incorporated which helped to orient the mandibular segment by deflecting it outward [6]. This facilitated the teeth to slide over one another, down the incline formed by the second row of teeth,

and into a functional occlusal position. Mastication is confined exclusively to the non-defect side. Three months following denture insertion, the patient was recalled. It was observed that the two rows of teeth definitely improved mastication and reduced the deviation of the mandible to a certain extent.

CONCLUSION

Proper education and motivation to use a maxillofacial prosthesis with broad occlusal table incorporated in the maxillary arch on the unaffected side helps to position the residual fragment into the correct sagittal relationship. It enhances the stability of the dentures and improves the masticatory ability. The changes brought about in appearance along with functional and psychological benefits on the well-being of the patient have an enormous impact on his/her personal life and are rewarding for the maxillofacial prosthodontist who is providing this care.

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