Twin Occlusion Prosthesis: A Ray of Hope

Chetna Tikmani[1], Richa Bansal[1], Tapan Kumar Giri[2], Sugata Mukherjee[3], Rashmi Sharma[1]

[1]Post Graduate Student, Department of Prosthodontics and Crown & Bridge, Dr. R. Ahmed Dental College & Hospital, Kolkata, India; [2]Principal, Dr. R. Ahmed Dental College & Hospital, Kolkata; Dean, WBUHS; [3]Professor, Department of Prosthodontics and Crown & Bridge, Dr. R. Ahmed Dental College & Hospital, Kolkata.

Address for Correspondence:
Dr. Chetna Tikmani, Post Graduate Student, Department of Prosthodontics and Crown & Bridge, Dr. R. Ahmed Dental College & Hospital, Kolkata, India.

ABSTRACT:

Rehabilitating patients with surgical defects in the mandible is extremely difficult to rehabilitate prosthodontically . The unilateral loss of mandibular continuity results in mandibular deviation towards the defect side with lack of occlusion. In edentulous patients, it is difficult to retrain mandibular movement and many a times they never achieve proper maxillomandibular relationships, for optimum appearance and mastication. Rehabilitation of oral function in these patients is necessary to maintain the overall general health which can be either treated with surgical restoration of the resected part, physiotherapy or prosthodontic intervention. This article describes a case of prosthodontic management of a hemimandibulectomy patient who is completely edentulous with atypical arrangement of maxillary teeth on the unresected side to maximally occlude with the deviated mandible.

Keywords: Dual Occlusion, Paired teeth, Twin Occlusion.

INTRODUCTION

It is always exacting to prosthetically manage the surgical defects in patients with mandibular resection.The sudden change in pateint's perspective towards life affects the future outcome of any prosthetic rehabilitation. Surgical resection of the mandible due to presence of benign or malignant tumor is the most common cause of mandibular deviation. The loss of mandibular continuity after surgical treatment leads to altered muscle function and deviation of residual fragment towards the surgical side, difficulty in swallowing, mastication, speech, and mandibular movements.

There are multifactorial causes for the deviation which includes

- The amount of hard and soft tissue involvement,
- The loss of motor and sensory innervations,
- The type of wound healing and
- Radiation therapy

The amount of tissue loss directly affects the degree of deviation of the mandible to the resected side, thus affecting the prognosis of the prosthetic rehabilitation to a larger extent[1,2]. Following surgical resection, the remaining mandibular segment often is retruded and deviated towards the surgical side at the vertical dimension of rest. During opening, deviation increases leading to angular path of opening and closing.

The prognosis for prosthetic rehabilitation also depends upon the amount of scar tissue formation that occurs over a period of time in cases where the surgical reconstruction is not done after resection of the mandible.

Factors that compromises the ability of the patient to function with complete dentures are

1.When only half to one third of the mandible is left ,the factors like retention , stability, and support gets compromised.

2.The deviation of the mandible causes abnormal relationship of the jaws.

3. The lateral forces exerted because of the angular path of closure ,tends to dislodge the denture.

4. Impairment of sensory and motor function, impairs the patient's ability to control the prosthesis during function.

Therefore , this article describes the prosthetic rehabilitation of a hemi-mandibulectomy patient with palatal ramp guided twin occlusion prosthesis.

CASE REPORT

A Male patient aged 68years reported to Department of Prosthodontics and Crown and Bridge at Dr. R.Ahmed Dental College and Hospital, with a chief complaint of pain near the right auricle and difficulty in chewing. He had a history of smoking bidis 10 per day for many years. He underwent mandibular resection on the left side 4 months ago as he was diagnosed with low grade mucoepidermoid carcinoma. His dental history revealed that he got all his extracted 2 months before the surgery.

The extra oral examination showed that patient has asymmetrical face and a convex profile. There was a significant deviation of mandible towards the operated site.

Intra oralexamination revealed that patient is completely edentulous.

On palpation & evaluation of ortho-pantomogram it was found that mandibular ridge is present till midline. This case represented typical class 3Cantor and Curtis classification.

CLINICAL PROCEDURE

Preliminary impressions were made with irreversible hydrocolloid material using stock trays . The impressions were poured with type III dental stone to obtain a primary cast.(Figure 1) A conventional custom tray was fabricated on the maxillary cast with self-cure acrylic resin (DPI – RR, India)

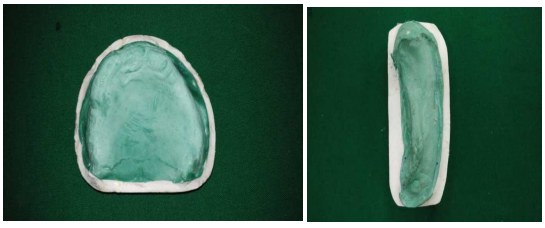

Figure 1

The tray was border molded with modeling plastic (DPI Tracing stick. Dental products of India, Mumbai, India). (Figure 2)

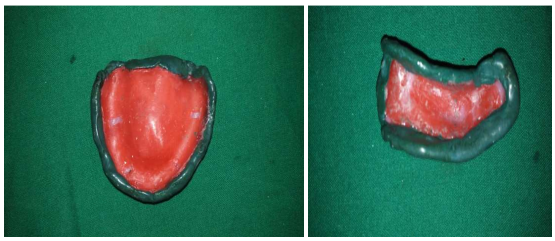

Figure 2

Final impression was made with zinc oxide eugenol impression paste (DPI, Mumbai, India). (Figure 3)

Figure 3

A master cast was obtained after pouring the impression with type III dental stone.

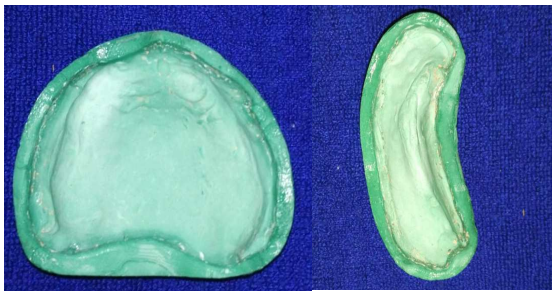

Figure 4

Using face bow (Hanau USA) the maxillary master cast was mounted on a semi adjustable articulator (Hanau wide vue, USA).

The Jaw relations were recorded, patient's tactile sense was used to assess the vertical dimension of occlusion. Patient was instructed to close the mandible towards the unresected side as far as possible to record a functional maxillomandibular relationship.(Figure 5)

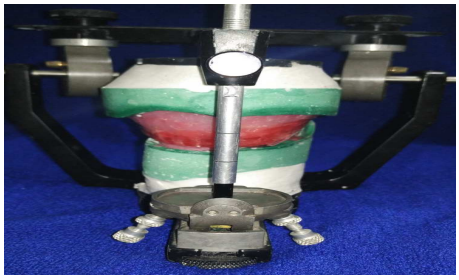

Figure 5

After the cast were articulated, two sets of semi anatomic teeth were selected . Two rows of teeth were arranged for the posterior region of edentulous maxilla on unaffected side, first as per the ridge contour and second, palatal to it toocclude with mandibular teeth.[6,7,8] (Figure 6)

Figure 6

The teeth arrangement was verified during try in and denture was finished and polished in conventional manner.(Figure 7)

Figure 7

The dentures were intraorally evaluated. The mandible was manipulated to the static centric position area .Any interference in normal movements were corrected. The dentures were then repolished and inserted back in the patient's mouth.(Figure 8)

Figure 8

Post-insertion instructions were given to the patient and was motivated to learn to function with the new dentures. Self regulation exercises were explained to the patient such as repeated closing and opening of the mandible. This helped the patient in manipulating the lower denture into the proper position. In the beginning , retention of the lower dentures was a problem but it improved with the constant use. After a week follow up, the patient expressed satisfaction with the new modified complete denture.

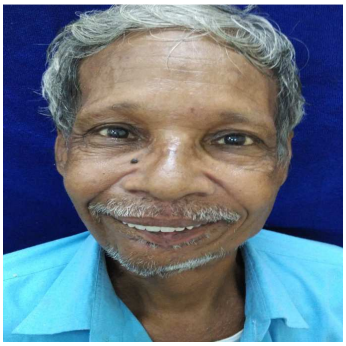

Figure 9

DISCUSSION

This article highlights functional rehabilitation of hemimandibulectomy patient who has undergone mandibular resection without reconstruction. Fabrication of palatal ramp or guide flange prosthesis was advocated for such patients to prevent deviation of mandible[5]. Since the patient didn't undergo reconstruction of the operated side and also because of the maxillary edentulousness, guide flange prosthesis was not possible. Hence we fabricated a conventional maxillary complete denture with palatal ramp guided twin occlusion prosthesis. Two rows of teeth in the maxillary denture were arranged on the unresected side . The buccal row of teeth supported the cheeks while the palatal row of teeth occluded with the remaining mandibular teeth. After the prosthesis was delivered , the patient could occlude the lower teeth properly due to twin maxillary occlusal table. A 6 months follow up reported an increased patient satisfaction in terms of masticatory efficiency and was happy with the treatment.

CONCLUSION

Prosthodontic rehabilitation of the hemi-mandibulectomy patient is extremely challenging to dentist. The basic design principles in complete denture fabrication

should be modified for treating hemi-mandibulectomy patients. A broad occlusal table on the maxillary denture on the unaffected side helps the patient to position the remaining mandibular fragment into the correct sagittal relationship, thus enhancing the stability of the dentures and improving the masticatory efficiency. The main idea behind the treatment of hemi-mandibulectomy patient is that, the importance should not be given on what is lost in the removal of disease, but rather taking complete advantage of the remaining structures.

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