PROSTHETIC REHABILITATION OF RESECTED MANDIBLE USING PALATAL GUIDE FLANGE

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ABSTRACT
Surgical resection of mandible leads to deviation of mandible towards the resected side thereby compromising proper contact of maxillary and mandibular teeth. Thus a prosthetic rehabilitation of such a defect is mandatory to ensure proper intercuspation. This paper presents a case report enlightening the importance and procedure involved in providing prosthesis to restrict mandibular deviation using a palatal flange to guide the mandible into proper intercuspation.

KEYWORDS: Palatal Guide Flange, Deviated Mandible, Ossifying Fibroma, Mandibular Resection.

INTRODUCTION - Oral neoplastic lesions like Ameloblastoma, Squamous cell carcinoma, Ossifying fibroma etc. usually require surgical treatment involving the excision of the lesion along with the surrounding soft tissue and hard tissue. As a general rule, a resection that compromises mandibular continuity is far more debilitating than a resection that does not affect the mandibular continuity.¹ Discontinuity defect of mandible results in deviation of the mandible towards the defect and causes rotation of the mandibular occlusal plane inferiorly. Surgery involving a segmental mandibulectomy, compromises the masticatory function due to muscular imbalance resulting from unilateral removal of muscle, altered maxillomandibular relationship, and reduced tooth-to-tooth contacts. Although immediate mandibular reconstruction does help to restore symmetry of face, arch alignment, and proper occlusion, masticatory function often remains compromised.², ³ Based on the nature of resection, Cantor and Curtis (1971) devised a prosthetic classification that is as follows:⁴

Class I - Radical alveolectomy with preservation of mandibular continuity
Class II - Lateral resection of the mandible distal to the cuspid
Class III - Lateral resection of the mandible and maxilla
Class IV - Lateral bone graft surgical reconstruction
Class V - Anterior bone graft surgical reconstruction
Class VI - Resection of the anterior portion of the mandible without...
reconstructive surgery to unite the lateral fragments.

The process of Prosthetic rehabilitation is one of the most challenging but most important phases following surgery. As mentioned above, surgical resection involves loss of soft tissue and associated function. The greater the loss of tissues, greater is the deviation of the mandible towards the resected side, thereby compromising the prognosis of the prosthetic rehabilitation. Apart from deviation, patients also suffer from difficulty in swallowing, disorientation in masticatory cycle, respiration, distorted speech, saliva control, movements of mandible, and psychological balance. All these dysfunctions alter the prognosis of the prosthesis. The extent of deviation depends on the location and extension of the resection, the amount of soft tissue and innervations involvement and the presence of remaining natural teeth.

A mandibular guidance prosthesis can be defined as a maxillofacial prosthesis used to maintain a functional position for the jaws (maxillae and mandible), improve speech and deglutition following trauma and surgery to the mandible or/and adjacent structures.

**CASE REPORT**

A 48 year old female patient was referred to the Department Of Prosthodontics, Rama Dental College, Kanpur for prosthetic rehabilitation after undergoing Segmental Hemi-Mandibulectomy (Figure 1) for the treatment of ossifying fibroma in right mandibular region. She complained of difficulty in chewing food. On clinical examination, it was observed that her mandible was deviated towards the resected side with lack of proper contact between the maxillary and mandibular teeth.

Since the patient suffered severe deviation, it was decided to fabricate a palatal based guidance prosthesis as a training device for the patient to help her train to close in proper occlusion. Thus a guide flange prosthesis fabrication was done.

Diagnostic impressions were made with irreversible hydrocolloid material using stock trays and these impressions were then poured with dental stone to obtain Diagnostic casts. (Figure 2)

The patient was asked to move her mandible as far possible to the untreated side and then, gently lower her jaw into position to record the maxillomandibular relationship. At this relation, an interocclusal bite with wax was made. (Figure 3)

Using the bite, mounting of the casts was done on an articulator. (Figure 4)

At this correct bite,a guide flange prosthesis with a palatal flange of adequate size and shape was made palatal to the teeth opposing the nonresected portion of mandible. (Figure 5) This palatal flange directs mandibular teeth into intercuspal position on closing and the patient can achieve consistent closure to proper intercuspal position. The size and shape of the palatal flange was determined by the degree of deviation of the mandible.

**DISCUSSION**

The primary aim of restorative therapy is to restore the form and function. Cancer care therapy considers rehabilitation as the most important phase and it emphasizes that it must be considered from the time of diagnosis.

Guide Flange Prosthesis is basically a Training Device also called as “The Training Flange”. It must be provided either immediately after surgery as an
intermaxillary fixation or within a period of 7–10 following the resection as removable device in order to restore the mandibular function.\textsuperscript{7,9}

In this case report, a palatal flange is used to guide the patient’s mandible into proper intercuspation. The guide flange basically provides a mechanical system which prevents the mandible from turning towards the resected side. The presence of teeth in both the arches is important for effective guidance and reprogramming of mandibular movements as it enables the patient to have a proprioceptive sense and hence makes it easier for the patient to achieve the functional position after the insertion of prosthesis.\textsuperscript{10} A combination of exercise therapy along with prosthetic management can serve to provide early and effective results. Guidance prosthesis provided in this case serves as a training device until the patient learns to guide the mandible into proper occlusion following which a definitive prosthesis can be provided to the patient.

A follow up of four weeks showed that the patient was able to guide the mandible into proper intercuspation and she was able to chew food.

The success of mandibular guidance therapy depends upon various factors like the nature and extent of the surgical defect, patience and cooperation of patient and time of initiation of guidance therapy. The literature shows different types of cast metal guidance prostheses to manage the defects of mandibular deviation \textsuperscript{6,9} But these appliances have certain disadvantages of being technique sensitive, having complex designs, expensive, time consuming etc. The acrylic guide flange prosthesis as presented in this report is comparatively simple in design and construction; easy to fabricate, lesser number of appointments needed and also cost effective.\textsuperscript{1}

\begin{figure}
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\includegraphics[width=0.4\textwidth]{figure1.png}
\caption{Occlusion after undergoing Segmental Hemi-mandibulectomy}
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\begin{figure}
\centering
\includegraphics[width=0.4\textwidth]{figure2.png}
\caption{Diagnostics Casts}
\end{figure}
REFERENCES


