CASE REPORT

Prosthodontic Rehabilitation of a Completely Edentulous Hemimandibulectomised Patient

Sumanth Kori.S

Abstract

Prosthodontic rehabilitation in completely edentulous patient who has undergone hemi mandibulectomy is extremely difficult due to deviation of mandible and an angular path of closure. This makes it difficult to achieve a proper occlusion. An occlusal ramp helps in guiding the mandible into proper occlusion and there by helps in obtaining stability for the denture.

Key words:  Occlusal ramp,  Hemi mandibulectomy.


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Introduction

Rehabilitation of hemi-mandibulectomised patient requires intensive post-surgical training before rehabilitation with dentures. But completely edentulous individuals cannot be trained easily and hence prosthesis had to be modified so that the patient can be trained while using the prosthesis. Disabilities resulting from hemi mandibulectomy include impaired speech, difficulty in swallowing, deviation of the mandible during functional movements, poor control of salivary secretions and severe cosmetic disfigurement.(1)

After the diagnosis of a malignant tumor has been made, the patient should be seen immediately by the rehabilitation team. The Prosthodontist should discuss the proposed surgical resection and plan for rehabilitation with the surgeon. Following surgical resection, the remaining mandibular segment often retruded and deviated towards the surgical side at the vertical dimension of rest. Upon opening the mouth, deviation increases leading to an angular path of opening and closing.

Loss of proprioceptive sense of occlusion leads to uncoordinated, less precise movement of the mandible. The absence of the attachment of the masticatory muscles on the surgical side results in a significant rotation of the mandible upon forceful closure. Since the deviation is more in edentulous state, support is less and difficult to rehabilitate the patient.(2)

Case report

A completely edentulous patient aged 62 years, who had undergone hemimandibulectomy, wanted prosthesis to improve her chewing. The maxillary and mandibular impressions were made with impression compound using metal stock trays. Casts were prepared in plaster of Paris. Spacers were provided and custom trays were prepared using auto polymerizing acrylic resin (Fig.1). The borders of the custom trays were made 2 mm short of the sulcus. Border molding was done using putty consistency addition silicon and the final impression was made with regular body addition type poly vinyl siloxane impression material (Fig 2). The impressions were beaded and boxed. Casts were made with dental stone and wax occlusal rims were prepared.

Vertical dimension was recorded by manipulating the mandible and the maxillo-mandibular relationship was obtained. The record was articulated and teeth
arrangement was made using non-cusped teeth as the mandible closes in an angular path. The maxillary teeth were arranged according to the wax rims and smile line. The mandibular posterior teeth were also arranged according to the contours of the wax rims.

The dentures were processed using heat activated denture base resin. After deflasking the dentures, an occlusal guidance ramp was prepared on the right side of the maxillary denture with auto polymerizing acrylic resin. The guidance ramp was prepared from first premolar to second molar higher than the plan of occlusion. The dentures were finished and polished and placed in the patient's mouth.

On closing the mouth, the mandibular teeth first contacted the guide plane and were then guided into occlusion with the help of guidance ramp. This helped in increasing the chewing efficiency of the patient and provided proper occlusal relationship. Guide plane was adjusted in recall visits until a proper occlusal relationship was obtained.

Discussion

Hemimandibulectomised patients pose a challenge for the Prosthodontist in rehabilitation. In case of dentulous patients, the remaining natural teeth provide support for the prosthesis and helps in guiding the mandible into occlusion. Many techniques have been described in the literature. A cast metal restoration can be made and an acceptable maxilla mandibular relationship is obtained. (2) Another technique which combines crowns with a maxillary prosthesis to guide the mandible into occlusion can be used in dentulous patients. (3)

Due to the lack of support from the surrounding structures, rehabilitation is difficult in an edentulous patient causing occlusal disharmony. This makes it difficult for the patient to attain normal functions like closure of mandible and also chewing. The patient requires training with dentures and the dentures have to be modified so that patient can use the prosthesis without much difficulty. These patients are best treated by using uncomplicated appliances. One such appliance is by fabricating a conventional denture with a ramp provided on the maxillary denture using acrylic resin which severs as a training device for returning the mandible to a functional position. (4) Another technique suggests the arrangement of posterior teeth with flat occlusal surfaces to allow for lateral freedom of mandibular movements. (5) Preparation of occlusal guidance ramp on the palatal surface of the maxillary denture using acrylic resin has been suggested. The ramp is prepared 2 mm higher to the plane of occlusion, so that the mandible is guided into an acceptable occlusion. This material can be periodically adjusted and an improved occlusal relationship obtained. (1)

This clinical report illustrates the prosthetic management of a patient who had undergone hemi mandibulectomy and was completely edentulous. A simple and uncomplicated appliance was used in this patient. Occlusal guidance ramp was prepared from the first premolar to second molar on the maxillary denture. The
guidance ramp was prepared higher to the plane of occlusion as suggested in one of the above mentioned techniques. Flat occlusal surfaces of the posterior teeth helped in obtaining freedom of mandibular movements. Adjustment for occlusion was done to eliminate premature contacts in recall visits. An acceptable and improved occlusal relationship was thus established.

**Authors Affiliation:** Dr. Sumanth K.S, Professor, Department of Prosthodontics, A.C.P.M Dental College and Hospital, Sakri Road, Dhule, Maharashtra State, India.

**Acknowledgement:** Department of Prosthodontics, A.C.P.M Dental College and Hospital, Sakri Road, Dhule, Maharashtra State, India.

**References**

**Address for correspondence**
Dr. Sumanth K.S
Professor, Department of Prosthodontics A.C.P.M Dental College and Hospital, Sakri Road, Dhule, Maharashtra State, India.

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