

Prosthodontic Management of Mandibulectomy Patient: A Case Report

Dental Science

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ABSTRACT

Prosthodontic rehabilitation of patients with acquired mandibular defect represents a difficult challenge for both the reconstructive surgeon and prosthodontist. Rehabilitation is an essential part of cancer care and should be considered from the time of diagnosis. Surgical resection often creates large defects. With continued evolution in the rehabilitation techniques, the prognosis for these patients has greatly improved. This article represents rehabilitation of a hemimandibulectomy patient who had undergone resection without reconstruction. The aim of this article is concentrated on improvement of retention, stability, esthetic and phonetic function of the patient so that she could live a normal productive life.

KEYWORDS:

Hemimandibulectomy, Mandibulectomy, Cast partial denture, Maxillofacial rehabilitation.

Introduction

CASE REPORT:

A 15 years old female Hindu patient came to the hospital with the chief complaint of restoration of missing teeth in lower front region. Patient had given a history of tumor and hemimandibulectomy in lower anterior region. She had no history of systemic disease.

Extra-oral examination, demonstrated that the lower lip was unsupported with the deepening of the mentolabial sulcus. Thus facial aesthetic was compromised. Mandibular deviation was absent. Patient was having normal mandibular movement pattern. (Fig.1,2)

On intra-oral examination, in maxilla from central incisors to second molars on both the sides teeth were present and in mandible first premolar to second molar on left and second premolar to second molar on right side teeth were present, mandibular anteriors along with right first premolar teeth were missing. (Fig.3)

Patient had partially edentulous arch in mandibular anterior region because of hemimandibulectomy was done in this region.

Treatment plan

Treatment plan for this patient was provisional RPD with extended flanges was given. After healing a definitive cast partial denture was delivered. (Fig.6)

Clinical Procedure:

A provisional removable partial denture with extended flanges in mandible was made by conventional manner for 8 months time of healing period. For that preliminary impressions were made with irreversible hydrocolloid (Tropicalgin Alginate, Zhermack) using stock trays. Casts were poured with type III dental stone. A provisional removable partial denture was fabricated with heat cure acrylic resin (DPI).

A definitive cast partial denture was given after healing. For that maxillary and mandibular preliminary impressions were made with irreversible hydrocolloid (Tropicalgin Alginate, Zhermack) using stock trays. Casts were poured with type III dental stone. The mandibular primary cast was surveyed and occlusal rest was planned on distal aspect of 36,46 and mesial aspect of 34,45. Rest seat preparation was planned intra orally on planned teeth.

On mandibular primary cast special tray was made and one step putty wash impression technique was made. (Aquasil soft putty Dentsply, Aquasil light body, Dentsply) (Fig.4)

The cast was poured in type-IV dental stone. Wax-pattern was attached (Fig.5) and framework was fabricated and tried in patient's mouth. Maxillomandibular relation was recorded and artificial teeth were selected. After that acrylisation was done and denture insertion was carried out. (Fig.6) Post insertion instructions were given and she was motivated for frequent follow up visits.



Fig.1 Pre-operative profile view



Fig.2 Post-operative profile view



Fig.3 Pre-operative intra-oral view (Mandible)



Fig.4 Final impression



Fig.5 Wax-pattern was attached



Fig.6 Cast partial denture insertion

DISCUSSION:

The reasons for segmented resected mandible are multifactorial with several collateral problems which alter prosthetic prognosis. (1,2,3,4,5,6) However, the four significant factors that affect the amount of prosthetic rehabilitation include the site and extent of surgery, the effect of radiation, presence or absence of teeth and psychological impact.

Muscles of mastication generate complex mandibular movements useful in speech, swallowing, mastication. Loss of portion of mandible along with muscles of mastication has the potential to disrupt these functions and the cast partial denture restores the form and shape of the missing structures such as alveolar bone with teeth and gives the necessary labial support to the lower lip. (6)

Many patients need the additional support of a maxillary inclined plane prosthesis to assist muscle retraining as prosthesis as training or guiding device. That device helps residual mandibular muscles for

acceptable occlusion of remaining natural teeth to artificial teeth.(7) In this case patient had anterior mandibular acquired defect. Patient with anterior mandibular acquired defect have posterior teeth and extensive edentulous area anteriorly creating a Kennedy class IV situation. These type of patients are having normal mandibular movement pattern, so additional support from guiding device does not required. Design must consider movement of anterior segment of prosthesis. Distal rest on first molars of both the sides provide indirect retention.

Conventional RPD enhances aesthetic and provide lip support leading to improved articulation of speech and salivary control. In small defects mastication is restored. In larger defects mastication is compromised because of length and movement of anterior edentulous span hence RPD serves mainly for lip support as well as aesthetics. In this case conventional RPD was given until healing was completed as a provisional denture to enhance speech, aesthetics and lip support but retention and stability were compromised. A definitive prosthesis carried out to fulfill of lip support, phonetics as well as retention and stability with the help of neutral zone technique.

The rehabilitation of anterior mandibular region is difficult due to the curvature of the mandible. The realignment of mandible fragments in dentate patient is achieved by remaining dentition. (8)

Properly designed retainers reduce the stresses transmitted to the abutment teeth while retaining the prosthesis in place. It is essential that basic principles of clasp design such as passive placement, retention, stabilization, encirclement, support and movement be followed. (9)

The lingual bar acted as the major connector to unite the retentive units and provide resistance to dislodging forces. There may be several major connector designs that will satisfy the chief requirements for a major connector. The dentist should select the one which will least interfere with speaking, mastication, swallowing and normal rest. Pressure indicating paste, as well as response from the patient, can locate regions of soft tissue impingement. The pressure marks must be relieved by adjusting the acrylic resin trimming. (10)

Conclusion:

Fabrication of cast partial denture for hemimandibulectomy patient is a valuable treatment option to restore the function of speech, mastication and esthetics. This treatment plan is simple, economical yet satisfactory.

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