Prosthodontic rehabilitation of hemimandibulectomy patient: A case report

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Abstract

Prosthodontic rehabilitation of patients with acquired mandibular defects is a great challenge. With continued improvement in the surgical resection and reconstruction techniques, the prognosis for these patients has greatly improved. This article highlights rehabilitation of a hemimandibulectomy patient who had undergone resection without reconstruction. The primary goal of treatment was to improve esthetics and phonetics function of the patient so that he could live a normal productive life.

Key words: *Hemimandibulectomy, mandibulectomy, maxillofacial rehabilitation, mandibular defect, altered cast*

Introduction

Restoration of esthetics in a patient with gross craniofacial defects is valuable and dramatic service provided by a Maxillofacial Prosthodontist. Patients with gross developmental or acquired defects are often depressed and may even exhibit marked anti-social behavior [1]. Restoration of esthetics and/or function, remarkably improves the patient's attitude and motivation to lead a normal productive life. The primary objective in such a case is to fabricate a prosthesis which will restore the defect, improve esthetics, function and uplift morale of the patient, thereby contributing to his physical and mental well being.

Prosthodontic management of patients with mandibulectomy defects can enhance appearance, function and speech. The unilateral loss of mandibular continuity due to surgery or trauma results in mandibular deviation toward the side of the defect. The techniques described to reduce mandibular deviation by retraining the patient's neuromuscular system include exercise programs, removable partial denture prosthesis for dentulous patients and complete denture prosthesis for edentulous patients together with modification in the occlusal scheme to compensate for deviation [2].

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Case report:

A 65 year old male, reported to the department of prosthodontics with chief complaints of missing teeth which he wanted replaced. Past dental history revealed that he was diagnosed as a case of squamous cell carcinoma over the left mandible, for which he had undergone extensive resection of the whole left mandible together with part of the anterior mandible on the right side, 6 years previously. Reconstruction had been done with a pectoralis major myocutaneous flap and was followed by postoperative radiotherapy for six months. The patient's habit revealed that he was a tobacco chewer, (10–15 packets per day) for the last 40 years.

Figure 1: Preoperative frontal view

An extraoral examination showed asymmetrical face and a convex profile (Fig. 1&2). There was deviation of the mandible towards the resected side. Post surgery, since the patient was using mandibular guidance appliance,

Figure 2: Preoperative profile I view

deviation of the mandible was minimal. Evaluation of ortho-pantomogram (Fig. 3) and intraoral examination (Fig 4) revealed absence of the mandible medial to the right canine involving the entire mandible on the left side. This particular case failed to fulfill criteria of Cantor and Curtis classification [3].

Figure 3: Orthopantomogram (OPG)

Figure 4: Intraoral extent of resection

Clinical Procedure

Preliminary impressions were made with irreversible hydrocolloid (Imprint, DPI) using stock trays. Casts were poured with type III dental stone. A provisional removable partial denture was fabricated with heat cure acrylic resin (Trevalon Hi, Dentsply) (Fig. 5). Patient's phonetics improved with the provision of the removable prosthesis, but he was more concerned with the retention and stability of the prosthesis and fullness of the cheeks on the resected side, which was not fulfilled by the provisional removable prosthesis. A definitive prosthesis

Figure 5: Provisional RPD

cast partial denture was carried out. The primary cast was surveyed and embrasure clasp was planned between 44, 45 and 46, 47. Occlusal rest was planned on mesial aspect of 45, 47 and distal aspect of 44, 46. Rest seat preparation was done on the planned teeth [4]. One step putty wash impression technique was used to record the prepared teeth (Aquasil soft putty Dentsply, Aquasil light body Dentsply, (Fig 6) [5]. The cast was poured in type IV dental stone. Frame work was fabricated and tried in the patient's mouth. Custom tray was attached to the

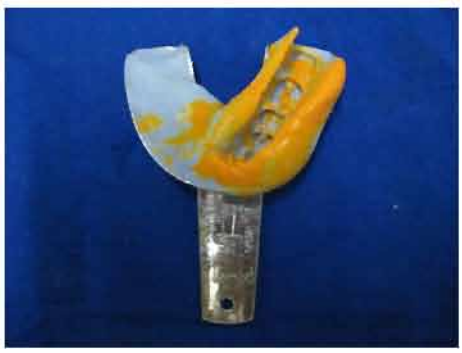

Figure 6: Final impression

framework on the side of the resection [8]. After border molding with low fusing impression compound, final impression was made using medium body addition silicon impression material (Fig 7). An altered cast was fabricated [4]. Jaw relation was recorded and try in was

Figure 7: Altered cast

done. After acrylisation, denture insertion was carried out (Fig 8). Post insertion instructions were given to the patient and he was motivated for frequent follow up visits. Significant improvement in esthetics (Fig 9) and phonetics was noticed.

Figure 8: Final Prosthesis

Figure 9: Post operative

Discussion:

Mandible is a single bone that creates peripheral boundaries for the floor of the oral cavity. Muscles of mastication are bilaterally attached to the mandible to generate a variety of complex mandibular movements useful in speech, swallowing, mastication and respiration. Mandible and muscles of mastication also give form to the lower third of the face. Disruption of the mandible has the potential to disrupt any of these functions. Form and function are the prime consideration while rehabilitating mandibulectomy patient [6].

In patients where reconstruction is not carried out after resection of the mandible, scar tissue formation occurring over a period of time stiffens the tissues and worsens the prognosis of prosthetic rehabilitation, thereby leading to compromised treatment planning [7].

A universal prosthodontic axiom for the edentulous discontinuous mandibulectomy patients is that prosthesis should not extend onto mobile tissues that are unsupported by bone. An exception can be made for the partially dentate patient. For patients with implant prostheses, anterior teeth can be cantilevered to support the lower lip [6].

In this case, cast partial denture was fabricated to rehabilitate the patient. The basic principle of the altered cast technique is to provide a physiologic basing to the denture base, but in this case, there was no bony foundation available for the physiologic basing. The altered cast technique was used to provide fullness over the lower one third of the face and to harmonize the tongue movements with the prosthesis.

Conclusion

Fabrication of cast partial denture using altered cast technique is a valuable treatment option in rehabilitation of patients who have under gone hemimandibulectomy.

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