

Prosthetic Management of Hemimandibulectomy Patient - A Case Report

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Abstract: Segmental resection of the mandible commonly results in the deviation of mandible towards the defective side. The amount of deviation depends on the amount of hard and soft tissue involvement, method of surgical site closure, degree of impaired tongue function, number of remaining teeth and the extent of loss of sensory and motor innervations. Prosthodontic treatment along with physical therapy may be useful in reducing mandibular deviation and improving masticatory efficiency. This clinical report describes the use of a cue-sill prosthesis to rehabilitate a hemimandibulectomy case for improved masticatory efficiency and esthetics.

Keywords: Cue-sill, Hemimandibulectomy, Rehabilitation.

I. Introduction

One of the most challenging and demanding maxillofacial endeavours is the construction of functional dentures for a patient who has undergone a mandibular resection. Segmental resection of the mandible results in physiological and esthetic problems, the most significant difficulty encountered is mandibular deviation towards the defective side. There are multifactorial causes for the deviation including the extent of osseous and soft tissue involvement, the loss of sensory and motor innervations, the type of wound closure and certain additional forms of treatment that the patient might have received.

The greater the loss of tissues, greater will be the deviation of the mandible to the resected side, thus compromising the prognosis of the prosthetic rehabilitation to a greater extent

Apart from deviation, other dysfunctions such as difficulty in swallowing, speech, mandibular movements, mastication, respiration and psychic functioning are seen. This type of dysfunction radically alters the prosthetic prognosis. The degree of impairment depends not only on the extent and type of surgery, but also on specific vulnerability of each function. There are several unfavourable, physical limitations when rehabilitating completely edentulous patients with resected mandibles. This includes resected skin grafts, scar tissue and deviation of the resected mandibles, limited coordinative ability, resorbed ridges and limited posterior throat form due to obliteration by the grafts. One of the basic objectives in rehabilitation is to retrain the muscles for mandibular denture control and repeated occlusal approximation.

II. Classification

Cantor & Curtis² provided a hemimandibulectomy classification for edentulous patient that can also be applied in partially edentulous arches.

Class I: Mandibular resection involving alveolar defect with preservation of mandibular continuity.

Class II: Resection defects involve loss of mandibular continuity distal to the canine area.

Class III: Resection defect involves loss up to the mandibular midline region.

Class IV: Resection defect involves the lateral aspect of the mandible, but are augmented to maintain pseudoarticulation of bone and soft tissues in the region of the ascending ramus.

Class V: Resection defect involves the symphysis and parasymphysis region only, augmented to preserve bilateral temporomandibular articulations.

Class VI: Similar to class V, except that the mandibular continuity is not restored.

This article describes the use of a cue-sill prosthesis in a patient who had undergone partial mandibulectomy.

III. Case Report

A 40 year old male patient reported to the Department of Prosthodontics in School of Dental Sciences, Sharda University, Greater Noida, with a chief complaint of asymmetry of the mandible, drooling of saliva and difficulty in chewing and speaking since 6 months. The medical history revealed that he was diagnosed for squamous cell carcinoma on the right side of the mandible, for which he had undergone extensive resection of the mandible on right side 2 years back. Then patient was on chemotherapy for one year. The patient's habit

revealed that he was a tobacco chewer, 5 packets per day for 15 years. An extra oral examination showed asymmetrical face, a convex profile and deviation of the mandible on opening and closing. According to the existing conditions a cue-sill prosthesis was planned.

3.1. Procedure

Preliminary impressions were made with irreversible hydrocolloid using stock metal trays. Casts were prepared and custom trays were fabricated. (Fig 1)



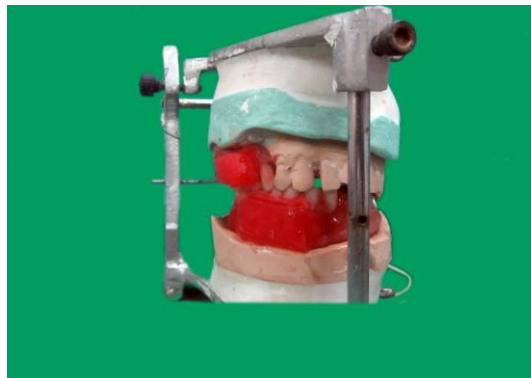
(Fig 1)

The tray was border-molded with modeling plastic (DPI Tracing stick. Dental products of India, Mumbai, India). Final impression was made with light-body vinyl polysiloxane (Aquasil, Dentsply, Milford, DE). (Fig 2)



(Fig 2)

This impression material was chosen to produce minimal tissue displacement. Impression was poured with type III dental stone to obtain a master cast. Record base was fabricated and wax occlusal rim was made. Maxillomandibular relation was recorded with waxinterocclusal record. A wax set-up was tried in the mouth and was checked for esthetics, phonetics, occlusal vertical dimension and occlusion . (Fig 3)



(Fig 3)

The denture was fabricated, finish and polished . (Fig 4)



(Fig 4)

Freedom of movement and lack of cuspal intercuspation was checked before denture insertion. The dentures were evaluated intraorally and the mandible was manipulated to the static centric position area . Any interference in normal movements was corrected. The dentures were removed, polished and then inserted. The patient was given post insertion instructions and was motivated to make efforts to learn to adapt to the new dentures. Simple exercises were suggested to the patient such as repeated opening and closing of mandible. This helped the patient to learn to manipulate the lower denture into the proper position. Initially, retention of the dentures, especially the lower one was inadequate but this improved with constant use. Within a week, the patient expressed satisfaction in mastication and phonetics.

IV. Discussion

This article highlights functional rehabilitation of hemimandibulectomy patient who has undergone resection without reconstruction. Literature review advocates fabrication of guide flange or palatal ramp prosthesis for such patients to prevent deviation of the mandible and to improve masticatory function and aesthetics. Since a considerable period of time had elapsed after the surgical procedure, scar tissue formation has occurred and guidance prosthesis was not possible. Thus a cue-sil prosthesis was the best choice to rehabilitate the patient.

V. Summary

A hemimandibulectomy can have many debilitating consequences, such as disturbed occlusion, a disoriented masticatory cycle, facial disfigurement, distorted speech, and salivation problems. If prosthetic treatment begins sometime following surgery and the cicatricial tissue has already consolidated, a guidance prosthesis to guide the mandible into a functional occlusion is an option. Thus a cue-sil prosthesis was the best choice to rehabilitate the patient.

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