



Unique Journal of Medical and Dental Sciences

Available online: www.ujconline.net

Case Report

A PROSTHETIC REHABILITATION OF HEMIMANDIBULECTOMY PATIENTS WITH TWIN OCCLUSION – A CASE REPORT

Romesh Soni¹, Rajul Vivek^{2*}

¹Assistant Professor, Faculty of Dental Sciences, Institute of Medical sciences, Banaras Hindu University, Varanasi, India

²PhD Research Scholar, Faculty of Dental Sciences, Institute of Medical sciences, Banaras Hindu University, Varanasi, India

Received: 20-07-2015; Revised: 18-08-2015; Accepted: 16-09-2015

*Corresponding Author: **Dr. Rajul Vivek**

PhD Research Scholar, Faculty of Dental Sciences, Institute of Medical sciences, Banaras Hindu University, Varanasi, India, 221005

ABSTRACT

Segmental resection of the mandible frequently marks in the deviation of mandible toward the defective side. The quantity 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. The management for such patients are surgical re-establishment of resected part, physiotherapy and prosthodontic intervention. Numerous prosthetic methods are employed to minimize deviation and improve masticatory efficiency which includes implant supported prosthesis, mandibular guide flange prosthesis, and palatal based guidance restoration. This case report presents a technique of restoring oral function for a hemimandibulectomy patient by twin occlusion prosthesis which provide a broader occlusal table and improved masticatory efficiency in an edentulous madibulectomy patient.

Keywords: Twin Occlusion, Prosthetic rehabilitation, Segmental Hemimandibulectomy, Palatal Guidance, Masticatory Efficiency.

INTRODUCTION

One of the most challenging and demanding maxillofacial action is the construction of functional, complete dentures for the edentulous 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^{1,2}. 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 functioning³. This type of dysfunction radically alters the prosthetic prognosis.

There are several unfavourable, physical limitations when rehabilitating completely edentulous patients with resected mandibles. This include 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. The treatment option for such patients should be directed towards dealing with dysfunctions like difficulty in swallowing, speech, mandibular movements, mastication and impaired esthetics. Various prosthetic treatments are available and depending upon the clinical situation appropriate option should be selected. Swoop⁴

proposed the use of a palatal ramp, Rosenthal suggested the use of two rows of maxillary posterior teeth on unresected side^{5,6}.

The situation can be more challenging if make a prosthesis in maxilla if severity of disease are more than some time surgical removal of some part of maxilla along with affected side mandible. The partially dentate maxillary defects are classified according to Aramany's classification and are treated successfully by taking support from the natural teeth^{7, 8}. Maximum number of remaining natural teeth or dental implants should be engaged in the obturator design to gain sufficient support, retention and stability for the prosthesis^{9, 10}.¹¹. Unfortunately, in many cases the little amount and poor quality of residual bone available after resection and radiotherapy along with economic constraints of patients preclude the use of dental implants. In these cases the prosthodontist has to resort to conventional physical methods to maximize the support, retention and stability¹². Surgical procedures to eradicate carcinomas of head and neck region usually leave behind large tissue defects and it becomes a challenging task for the maxillofacial prosthodontist to rehabilitate these patients to optimum function and esthetics.

It is reported in the literature that the oral cancer patients have managed with their disability by using their proprioceptive feedback to balance for deviation towards the resected side¹³.

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 received¹⁴.

The present case report describes a simple, economic and reliable procedure for the construction of obturator prosthesis on site of surgery and for deviation on the opposite site twin occlusion prosthesis was fabricated for maxillary arch to guide the mandible for achieving occlusal contact on opposite side.

CASE REPORT

A 58 year old male patient reported department of Prosthodontics, Faculty of dental sciences, IMS, B.H.U. Varanasi with the chief complaint of poor speech & nasal discharge of water while drinking since 1 year. His medical history revealed that he was diagnosed for squamous cell carcinoma on the left side of the mandible, for which he had undergone extensive resection of the entire mandible on left side with part of the anterior mandible on right side as well as some part of left side maxilla 2 years back (Fig.1). The patient's habit revealed that he was a tobacco chewer, 10–12 packets per day for 35 years. On detailed an extra oral examination showed facial asymmetry, and a convex profile. There was deviation of the mandible to the left side that is towards the surgical side, Intra oral examination showed that deviation of mandibular teeth of the left side and there is edentulous space on left side, so that we were not obtain proper occlusion between the teeth, because of this he has also a poor masticatory ability (Fig 2). Even on manually guiding the mandible it was not possible to achieve the occlusal contact of maxilla and mandibular teeth. It was severe shifting which cannot be corrected with mandibular guidance prosthesis so it was planned to make occlusion from acrylic just above the remaining mandibular teeth in maxillary prosthesis so, that he can chew to some extent.

the gauge deep into the defect. Surveying was done for the identification of location and depth of the undercuts and also undercuts of defect were blocked with wax. Final impression was made using poly vinyl siloxane impression material with putty relined technique (Addition Silicon, Aquasil, Dentsply). Impression was poured in type III dental stone (Kalabhai, D.P.I, India) & master cast obtained. Autopolymerising acrylic (D.P.I) base plate was made Maxillary denture base was incorporated with Adams clasp's to be fitted on 12, 15. Wax rim was made on tray Maxillomandibular relations were recorded with wax interocclusal records. The patient's tactile sense and sense of comfort was used to assess the vertical dimension of occlusion. The patient was advised to move his mandible as far as possible and then gently close his mandibular jaw into position to record a functional maxillomandibular relationship, repeated relation show there was always slight shift, then, an extra row of acrylic ramp was made on opposing maxillary record base. Try-in was done and the prosthesis was evaluated for phonetics and occlusion. The prosthesis was fabricated, finished and polished (Fig.3, 4).



Figure.1 Intra Oral view



Figure.2 Intra oral view Check for Occlusion

Diagnostic impressions are made using irreversible hydrocolloid (Alginate, Zelgan Dentsply, India) after putting



Figure 3: Final Obturator



4: Obturator with Palatal Acrylic ramp

The prosthesis insertion was done and patient was trained to close mandible in such a way that appropriate occlusal contact can be obtained between the second ramp in maxillary prosthesis and mandibular natural teeth on right side and obturator fitted without harming surrounding mucosa (Fig.5, 6). Oral hygiene instructions were given to the patient to ensure longevity of remaining natural teeth and the prosthesis.



Figure 5: Placed Obturator



Figure 6: Final Prosthesis with Palatal Acrylic Ramp

DISCUSSION

Every year, lacks of people need removable prosthesis, in any form like complete denture, removable partial denture or any other maxillofacial prosthesis like obturator e.g. The comfort and esthetics are the most important features, how these people adapt or react to these prosthesis a maxillary obturator with twin occlusion prosthesis was fabricated for a patient with hemimandibulectomy defect.

Financial constraints of the patients limited our treatment options and precluded the selection of cast partial framework or treatment with dental implants so a simple acrylic obturator was planned for the patient. Usually the material of choice for such impressions is an elastomer because of its elasticity and hydrophobic nature which is of benefit in most post-radiation, xerostomic maxillectomy patients. Zinc oxide-Eugenol is generally avoided because of its inability to be retrieved from sharp undercuts, rigid nature and absorption of moisture during setting. But author's preference for recording the palate and the defect surface was ZnO-Eugenol because in this particular case, the defect was neither narrow / constricted nor had sharp undercuts. Infact, defect was wide open with little tissue undercuts and a fairly straight path of insertion and removal.

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 had occurred and guidance prosthesis was not possible^{4, 15}. Twin occlusion was provided because the patient could not occlude on the natural teeth. The palatal ramp occluded with the remaining natural mandibular teeth and the buccal row of natural teeth supported the cheeks. This technique enabled the patient to masticate appropriately, to lead a healthy, good quality of life. It also helped patient to deal with the physical and psychological disabilities. Osseo integrated dental implants provide a treatment modality that may adequately rehabilitate oral functions of these patients so that they can lead a healthy life. However this is an expensive modality which may be not being acceptable to all strata of patients.

CONCLUSION

For good prognosis, sufficient retention of the prosthesis is a prerequisite. Simultaneously, the prosthesis should be comfortable to the supporting and surrounding tissues, which have undergone surgery. Moreover, these tissues exposed to oral environment are not used to it. Definitive prosthodontic treatment is one of the final therapies which are instituted and it attempts to alleviate any anatomical and functional deficiencies. The prosthodontist plays a significant role in the 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.

Thorough knowledge and skills, coupled with a better understanding of the needs of the patients enable the successful rehabilitation of such patients

REFERENCES

1. Beumer J III, Curtis TA, Marunick MT, Maxillofacial rehabilitation: prosthodontic and surgical consideration. Ishiyaku Euro America, St. Louis, 1996; 184-188.
2. Beumer J, Curtis T, Firtell D editors. Maxillofacial rehabilitation. St. Louis: Mosby; 1979. p. 90-169.
3. Swoope CC. Prosthetic management of resected edentulous mandible. J Prosthet Dent 1969; 21:197-202.
4. Scaaf .Oral construction for edentulous patients after partial mandibulectomies. J Prosthet Dent 1976; 36:292-7.
5. Rosenthal LE. The edentulous patient with jaw defects. D Clin N Am 1994; 8:773-9
6. Aramany MA. Basic principles of obturator design for partially edentulous patients. Part I: classification. J Prosthet Dent. 1978; 40: 554-7.
7. Dable R. A hollow bulb obturator for maxillary resection in a completely edentulous patient. J Clin Diagn Res. 2011; 5: 157-62.
8. Taira Y, Yanamoto S, Kawasaki G, Yamada S, Atsuta M. A detachable silicone obturator fitted after bilateral maxillectomy: a case report. Int Chin J Dent. 2007; 7: 75-7.
9. Block MS, Baughman DG. Reconstruction of severe anterior maxillary defects using distraction osteogenesis, bone grafts and implants. J Oral Maxillofac Surg. 2005; 63: 291-7.
10. Oh WS, Roumanas E. Dental implant-assisted prosthetic rehabilitation of a patient with a bilateral maxillectomy defect secondary to mucormycosis. J Prosthet Dent. 2006; 96: 88-95.
11. Shaker KT. A simplified technique for construction of an interim obturator for a bilateral total maxillectomy defect. Int J Prosthodont. 2000; 13: 166-8.
12. Adisman IK. Prosthesis serviceability for acquired jaw defects. Dent Clin North Am, 1990; 34:265-84.
13. Schneider RL, Taylor TO. Mandibular resection guidance prosthesis: A literature review. J Prosthet Dent 1986; 55:84-6.
14. Cantor R, Curtis TA. Prosthetic management of edentulous mandibulectomy patients: Part II, Clinical procedures. J Prosthet Dent, 1971; 25:546-55.
15. Ravi sureja, Naveen YG, Rajesh Sethuraman, Paranjay Prajapati, Jayatilal R Patel. Twin occlusion prosthesis: a ray of hope for hemimandibulectomy patient- a case report. European journal of dental therapy and research 2014; 3:231-33

Source of support: Nil, Conflict of interest: None Declared