

Importance of Early Prosthodontic Intervention with Guidance Appliance In a Hemimandibulectomy Patient: A Case Report

Sonal Tholia

MDS (Prosthodontics and Crown and Bridge),
Government Dental Officer, Government of Rajasthan, Rajasthan, India.

ABSTRACT

No cancer is minor to the affected individual. Cancers of head and neck are considered as main cause of producing obvious disfigurement of face and severe dysfunction. Loss in anatomic integrity, mandibular deviation, loss of ability to control saliva, difficult deglutition, compromised speech, compromised interaction with society are post-surgical sequels. Mandibular rehabilitation becomes more demanding and challenging because of mandibular deviation. The severity and permanence of deviation depends upon number of factors such as extent of surgery, method of reconstruction and the time elapsed between reconstructive surgeries and starting of prosthodontic rehabilitation. An early prosthetic guidance intervention combined with a well-structured exercise regimen does not only reduce mandibular deviation but also improves masticatory performance and efficiency of a patient with hemimandibulectomy defect. So emphasis on early prosthetic guidance procedure must be given.

Key words: Hemimandibulectomy, Prosthodontic Rehabilitation, Palatal Ramp.

*Correspondence to:

Dr. Sonal Tholia,
Tholia House,
Jhunjhunu Road Chauraha,
Chirawa, Jhunjhunu, Rajasthan, India.

Article History:

Received: 06-11-2017, Revised: 28-11-2017, Accepted: 20-12-2017

Access this article online

Website: www.ijmrp.com	Quick Response code 
DOI: 10.21276/ijmrp.2018.4.1.064	

INTRODUCTION

No cancer is minor to the affected individual¹. Cancers of head and neck are considered as main cause of producing obvious disfigurement of face and severe dysfunction. The consequences of surgery to resect the defective part in order to treat the patient, is even worse than disease itself leaving the many patients incapacitated. Loss in anatomic integrity, mandibular deviation, loss of ability to control saliva, difficult deglutition, compromised speech, compromised interaction with society are additional post-surgical sequelae.

Rehabilitation of mandibular surgical defect is often more challenging and demanding than maxillary rehabilitation. Problems associated with situations where mandibular continuity is compromised, are more debilitating and treatment is more challenging than the defects of alveolar resection without loss of mandibular continuity.²

Surgical resection of the mandible due to presence of benign or malignant tumor results in loss in continuity of mandible which destroys the balance and symmetry of mandible which results in obvious disfigurement of face and makes mastication very difficult. Patients who undergo segmental or hemi-mandibulectomy suffer from mandibular deviation postoperatively due to loss of muscle action on the resected side. Loss of mandibular continuity causes deviation of remaining mandibular segment towards the defect and rotation of the mandibular occlusal plane inferiorly.

Although main goal of immediate mandibular reconstruction with myocutaneous flaps, free osseous graft or microvascular surgical techniques is reestablishment of presurgical anatomy and facial form but functional rehabilitation remains compromised due to specific factors³ such as absence of attachment of masticatory muscles on resected side, frontal plane rotation, altered maxillomandibular relationship, and decreased proprioception sense of occlusion. Restoration with surgical reconstruction alone does not result in successful rehabilitation.⁴

Hence importance of early prosthetic intervention after reconstruction procedure should be emphasized to every patient. A prosthodontic rehabilitation is required to meet the functional and esthetic requirements of such kind of patients. Often prosthetic rehabilitation is started after the healing period and acceptance of osseous graft. But till that time deviation in mandibular movement is at its maximum level as a result of scar contracture, leads to unacceptable maxillomandibular relationship and this causes the rehabilitation very difficult and almost impossible. The severity and permanence of deviation depends upon number of factors such as extent of surgery, method of reconstruction and the time elapsed between reconstructive surgery and starting of prosthodontic rehabilitation. So from a prosthodontic perspective during the initial healing period prosthodontic guidance procedure must be provided, in order to

ameliorate such disabilities and deformities due to mandibular deviation. This guidance therapy should be started after two weeks of surgery when postsurgical sequels have subsided.¹

There are number of treatment modalities to eliminate deviation including removable mandibular guide flange, palatal ramp, intermaxillary fixation. Guidance procedure should be combined with a well-structured exercise regimen for better result.¹ These treatment modalities have made it possible to reduce mandibular deviation and improving masticatory performance and efficiency of a patient with hemimandibulectomy defect.



Fig 1: Mandibular deviation after surgery.



Fig 2: Guidance appliance in mouth

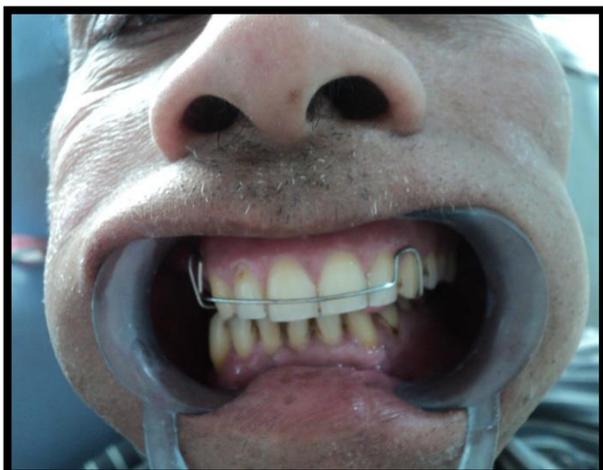


Fig 3: Deviation corrected after wearing the guidance appliance.

CASE PRESENTATION

A 45 yr patient reported to prosthodontic department after hemimandibulectomy surgery for a squamous cell carcinoma on right side of mandible. Reconstruction with myocutaneous flap. Patient came with complain of difficulty in chewing due to absence of occlusion and deviation. (Figure 1). On examination it was found that deviation was severe and patient was unable to manipulate his jaw by himself but manual manipulation can produce the desired result .Initially patient is kept on a exercise programme and when desired mouth opening is obtained guidance therapy with guidance appliance is started. As the deviation was severe palatal ramp as a guiding apparatus was provided (Figure 2). Result after wearing the apparatus. (Figure 3) A regular follow up at the interval of two months for next one year was planned. The patient was satisfied with the overall performance of the prosthesis and was able to masticate without any significant deviation. This minor guidance effort has profound potential to improve the prospect of rehabilitation and the patient's quality of life. While delay in guidance therapy has adverse impact on functional outcome of a definitive prosthesis even if it is implant supported.

DISCUSSION

Following a segmental mandibular resection resulting in a discontinuity defect, masticatory function is compromised because of muscular imbalance that results from unilateral muscle removal, altered maxilla-mandibular relationship and decreased tooth to tooth contacts. Although immediate mandibular reconstruction aims to restore facial symmetry, arch alignment and stable occlusion, masticatory function often remains compromised.⁵ During the initial healing period, early prosthodontic intervention by mandibular guide flange and maxillary stabilization prosthesis serve the purpose of reducing the mandibular deviation, preventing extrusion of the maxillary teeth and improving masticatory efficiency. Any delays in the initiation of mandibular guidance appliance therapy, due to problems such as extensive tissue loss, radiation therapy, radical neck dissection, flap necrosis and other postsurgical morbidities may result in an inability to achieve normal maxillamandibular relationship.⁶ Maxillo-mandibular fixation, as suggested by Aramany and Myers⁷, was used extensively to prevent mandibular deviation. However, according to Beumer et al⁸ it is feasible only in patients with resections confined to the mandible and with little associated soft tissue loss. The mandibular guidance prosthesis is, therefore, favored to achieve desired maxillo-mandibular relationship. The guide flange can be fabricated in cast metal or acrylic resin. If the mandible can be manipulated into an acceptable maxillamandibular relationship but the patient lacks the motor control to bring the mandible into occlusion, a cast mandibular resection restoration as suggested by Robinson and Rubright is appropriate.⁹ If some resistance is encountered in positioning of the mandible, then a guidance ramp of acrylic resin is suggested.⁸ The cast metal flange, however, is not as cost effective as an acrylic flange and the fabrication and corrections when required are difficult. The acrylic resin guide flange was the treatment chosen in the present case due to economic constraints of the patient and the ease of fabrication and modification provided by the acrylic resin. The prosthesis was fabricated in clear autopolymerizing acrylic resin and the retentive clasp arms in both

maxillary and mandibular prosthesis were kept as posterior as possible to be unobtrusive and esthetic. A well-organized mandibular exercise program should support any mandibular guidance therapy. McCasland suggested that patients use straight opening and closing exercise to train the neuromuscular system to avoid deviation of the mandible.¹⁰ The exercise as suggested by Beumer et al⁸ was suggested to the patient. In this procedure, following maximum opening, the patient manipulates the mandible by grasping the chin and moving the mandible away from the surgical side. These movements tend to loosen scar contracture, reduce trismus and improve maxilla-mandibular relationships.

CONCLUSION

A mandibular guide flange prosthesis is an important adjunct for achieving this goal. A well fabricated prosthesis and an appropriate mandibular exercise regimen can go a long way in restoring the patient's physiological and psychological well-being.

REFERENCES

1. Beumer J III, Curtis TA, Marunick MT (1996) Maxillofacial rehabilitation: prosthodontic and surgical consideration. Ishiyaku Euro America Inc, St. Louis
2. Taylor TD. Diagnostic considerations for prosthodontic rehabilitation of the mandibulectomy patient. In: Taylor TD, editor. Clinical maxillofacial prosthetics. Chicago; Quintessence.
3. Curtis DA, Plesh O, Miller AJ, Curtis TA, Sharma A, Schweitzer R, Hilsinger RL, Schour L, Singer M. A comparison of masticatory function in patients with or without reconstruction of the mandible. Head Neck 1997;19.
4. Komisar A. The functional result of mandibular reconstruction. Laryngoscope. 1990; 100(4):364-74.

5. Olson ML, Shedd DP. Disability and rehabilitation in head and neck cancer patients after treatment. Head Neck Surg 1978; 1:52-58.
6. Ufuk H, Sadullah U, Ahyar G. Mandibular guidance prosthesis following resection procedures: Three case reports. Eur J Prosthodont Restor Dent 1992; 1:69-72.
7. Aramany MA, Myers EN. Intermaxillary fixation following mandibular resection. J Prosthet Dent 1977; 37:437-444.
8. Beumer III J, Marunick MT, Esposito SJ. Maxillofacial rehabilitation. 3rd ed., 2011, Quintessence. Page 87-89, 118- 120.
9. Robinson JE, Rubright WC. Use of a guide plane for maintaining the residual fragment in partial or hemimandibulectomy. J Prosthet Dent 1964; 14:992-999.
10. Keys SM, McCasland JP. Techniques and results of a comprehensive dental care program in head and neck cancer patients. Int J Radiat Oncol Biol Phys 1976; 1:859-865

Source of Support: Nil. **Conflict of Interest:** None Declared.

Copyright: © the author(s) and publisher. IJMRP is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882. This is an open access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article as: Sonal Tholia. Importance of Early Prosthodontic Intervention with Guidance Appliance In a Hemimandibulectomy Patient: A Case Report. Int J Med Res Prof. 2018 Jan; 4(1):310-12. DOI:10.21276/ijmrp.2018.4.1.064