

Twin Occlusion Prosthesis in Hemi Mandibulectomy Patient - A Case Report

¹Dr. Chamarthi. Kundan Chakravarthy, Postgraduate Student, The Oxford Dental College, Bengaluru

²Dr. Pavitra K Ramanna, Professor, The Oxford Dental College, Bengaluru

³Dr. Ravi Kumar N, Professor, The Oxford Dental College, Bengaluru

⁴Dr. Vedashri Sakhare, Postgraduate Student, The Oxford Dental College Bengaluru

⁵Dr. T R Krishna Prasad, Postgraduate Student, The Oxford Dental College, Bengaluru

Corresponding Author: Dr. Chamarthi. Kundan Chakravarthy, Postgraduate Student, The Oxford Dental College, Bengaluru.

Citation of this Article: Dr. Chamarthi. Kundan Chakravarthy, Dr. Pavitra K Ramanna, Dr. Ravi Kumar N, Dr. Vedashri Sakhare, Dr. T R Krishna Prasad, “Twin Occlusion Prosthesis in Hemi Mandibulectomy Patient - A Case Report”, IJDSIR- August – 2025, Volume – 8, Issue – 4, P. No. 90 – 94.

Copyright: © 2025, Dr. Chamarthi. Kundan Chakravarthy, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution non-commercial License. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given, and the new creations are licensed under the identical terms.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

When the mandible discontinues, the remaining mandible deviates toward the side that was removed. A Hemi mandibulectomy patient can be rehabilitated in a variety of ways. The patient reported in this case study had an early squamous cell carcinoma of the left mandibular alveolus, underwent a class I Hemi mandibulectomy, and then reported to the prosthodontics department for rehabilitation of the defect because she had trouble chewing and was also self-conscious about her appearance. The method for Hemi mandibulectomy rehabilitation with complete dentures and twin occlusion is described in this case study.

Keywords: Hemi Mandibulectomy, Twin Occlusion, Mandibular Deviation

Introduction

One of the most difficult tasks a maxillofacial prosthodontist faces is the functional rehabilitation of a patient with a partially removed mandible. The equilibrium of mandibular movement and function is destroyed when the mandible is lost, which results in altered mandibular movement and a deviation of the remnant fragment towards the surgical side. The prognosis of treatment will be compromised since the mandible will deviate more to the resected side the more tissue is lost. Other dysfunctions seen include problems with mastication, swallowing, speech, mandibular motions, and even breathing, in addition to the mandible's deviation to the resected site.

Case Description

A 65-year-old female patient reported to the Department of Prosthodontics and Crown & Bridge with a chief complaint of missing teeth in her upper and lower arches since 3 years & complaints of difficulty in eating and poor appearance and wanted to replace teeth. A thorough medical and dental history was elicited from the patient. Medical history revealed that the patient had undergone mandibular hemi section surgery in her left jaw 4 years ago due to squamous cell carcinoma. The patient has not gone for any radiation therapy. Dental history revealed that she had lost her teeth due to weak periodontal health. An intra-oral examination found that maxillary ridges have inadequate sulcus depth on the affected site. The patient was rehabilitated with a conventional complete denture. On extraoral examination, it showed facial asymmetry in the lower third of the face, with an adequate mouth opening of 50 mm and a significant deviation of the mandible to the left side of the mouth opening.

Intraoral examination revealed completely edentulous maxillary and mandibular arches with a left mandibular defect from the premolar area. Maxillary arch has inadequate vestibular sulcus on left side. Both the ridges were smooth, round, well-keratinized mucosa. (Figure - 1)

The case was diagnosed as a Class I mandibular defect based on clinical and radiographic examination. (Figure - 2)



Figure 1 (A & B): A) intraoral view of maxilla B) intraoral view of mandible

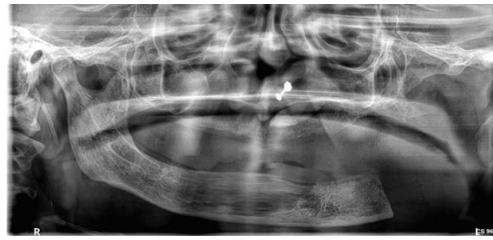


Figure 2: Orthopantomogram showing the mandibular resection on the left side

Preliminary impressions were made with irreversible hydrocolloid material (Algitex; DPI, Mumbai, India) and putty light body (Zhermack Elite HD+ Soft Putty and Light Body) using stock trays, and casts were poured with type II dental plaster. (Figure 3)



Figure 3 (A-B): A) preliminary impressions of maxillary & mandibular arch

B) maxillary & mandibular cast poured with dental plaster

On the maxillary and mandibular casts, a custom tray was fabricated with acrylic resin tray material (MP SAI ENTERPROSE PVT. LTD.), and border molding was performed. Final impressions were made with light body impression material (Zhermack Elite HD+ Light Body). Beading and boxing of the maxillary and mandibular arch were done. A master cast of the maxillary and mandibular arch was fabricated using dental stone (gold stone, type III, Asian chemicals). Denture bases were fabricated (self-cure acrylic resin, DPI, India), and wax occlusal rims were made (modeling wax, Hindustan Dental Products, Hyderabad). (Figure 4)



Figure 4 (A-C): A) Maxillary & mandibular mastercast; B) self-cure denture base C) occlusal rims

Maxillomandibular relationship established and recorded. Followed by mounted on a mean value articulator. After articulation, two sets of nonanatomic teeth (Premadent, New Delhi, India) were selected. Two rows of teeth were arranged in the posterior region of the edentulous maxilla on the unaffected side. The first row of teeth was arranged as per the contour of the patient's ridge, and the other set was arranged palatal to the first row on the unaffected side of the maxillary arch on which the mandibular teeth would occlude. (Figures 5,6,7)



Figure 5 (A-B): A) Maxillomandibular relationship



Figure 6: Articulator, Frontal view



Figure 7: Teeth arrangement of maxillary and mandibular arch

The arrangement was verified while trying for esthetics, phonetics, and occlusion. The processed dentures were evaluated intraorally for occlusal adjustments and border overextension. (Figures 8, 9)



Figure 8: Try in



Figure 9: Intraoral view showing the occlusion with the final denture

Following post-insertion, the patient was instructed not to chew on the side of the deformity. He was told to practice opening and closing his mouth in order to enhance his neuromuscular coordination. The patient was monitored at one-day, one-week, one-month, and three-month intervals. Over time, the patient's

mastication and phonetics improved, and by three months, he was both functionally and psychologically satisfied with his denture, despite his initial difficulties. (Figure 10)



Figure 10 (A-B): A) Pre-operative treatment; B) Post operative treatment

Discussion

Swallowing, speech, mandibular movements, mastication, control of saliva, respiration, and psychic functioning are adversely affected by radical mandibular surgery². The classifications are based on the amount of the mandible that has been resected or restored and are specific to edentulous patients. The categories are as follows:

Class I- radical alveolectomy with preservation of mandibular continuity.

Class II- lateral resection of the mandible distal to the cuspid.

Class III- lateral resection of the mandible to the midline.

Class IV- lateral bone graft surgical reconstruction.

Class V- anterior bone graft surgical reconstruction; and

Class VI- resection of the anterior portion of the mandible without reconstructive surgery to unite the lateral fragments.

Swoop proposed the use of a Palatal Ramp,³ and Rosenthal suggested the use of twin occlusion.^{4,5} Various other authors too followed Rosenthal by modifying palatal ramp and utilizing multiple maxillary teeth in the form of twin rows on the untreated side.^{6,7} Mathew and

Thomas delivered a Guiding Flange Prosthesis to a Hemimandibulectomy patient.⁸ Sharma et al. rehabilitated a hemimandibulectomy patient who was partially edentulous with twin occlusion prosthesis.⁹ Ruby et al. fabricated maxillary and mandibular acrylic complete denture using dynamic functional impression technique and using neutral zone to rehabilitate an edentulous hemimandibulectomy patient.¹⁰ Resected mandible along with tissue loss causes rotation of the mandibular plane on the defect side. On the unresected side of the mandible, however, an acrylic complete denture with two rows of teeth on the maxillary denture was provided because the patient was unable to have additional operation due to budgetary limitations. The buccal row of teeth supported the cheeks, while the palatal row of teeth intercusped with the mandibular teeth to enhance mastication. Because acrylic is aesthetically pleasing, lightweight, affordable, and simple to build and repair, it was selected as the preferred material for the entire dentures.

Conclusion

A very good option for those in need of sophisticated dental rehabilitation is the twin occlusion prosthesis. This prosthesis aids in improving speech, creating a more natural bite, and increasing general comfort by regaining both function and appearance. Its bilateral occlusion-focused design offers better load distribution and increased stability during mastication. However, to guarantee that the prosthesis fits well and satisfies the patient's unique needs, meticulous planning and accurate manufacture are essential. Even though the twin occlusion prosthesis has significant benefits in terms of both functional and aesthetic results, continued patient care, observation, and possible modifications are necessary to ensure peak performance. In the end, when used appropriately, the twin occlusion prosthesis greatly

improves the quality of life for patients in need of prolonged dental rehabilitation.

References

1. Maxillofacial rehabilitation, In: Beumer J, Curtis T, Firtell DSt. Louis: Mosby; 1979. p. 90–169.
2. Cantor R, Curtis TA. Prosthetic management of edentulous mandibulectomy patients. part 1. Anatomic, physiologic and psychologic consideration. *J Prosthet Dent* 1971;25(4):446–457.
3. Swoope CC. Prosthetic management of resected edentulous mandible. *J Prosthet Dent* 1969;21(2):197–202.
4. Rosenthal LE. The edentulous patient with jaw defects. *Dent Clin N Am* 1994; 8:773–779.
5. Sureja R, Naveen YG, Sethuraman R, et al. Twin occlusion prosthesis: a ray of hope for hemimandibulectomy patient—a case report. *Eur J Dent Ther Res* 2014; 3:231–233.
6. Marathe AS, Kshirsagar PS. A systematic approach in rehabilitation of hemimandibulectomy: a case report. *J Indian Prosthodont Soc* 2016;16(2):208–212.
7. Sahu SK, Motwani BK, Dani A. Prosthetic rehabilitation of edentulous hemimandibulectomy patient: a clinical report. *Clin Case Rep* 2017;5(11):1739–1742.
8. Mathew A, Thomas S. Management of a hemimandibulectomy defect with a definitive guiding flange prosthesis. *Pushpagiri Med J* 2012; 3: 132–134.
9. Sharma R, Sharma A, Verma BP, et al. Twin-occlusion prosthesis: A glimmer of hope for hemimandibulectomy patient. *Indian J Dent Sci* 2019; 11:61–64.
10. Ruby KM, Choudhary H. Prosthetic management of hemimandibulectomy patient – a case report. *JMSCR* 2018;06(07):158–162.
11. Beumer J3rd, Curtis TA, Marunick MT. *Maxillofacial Rehabilitation: Prosthodontic and Surgical Consideration*. St. Louis: Ishiyaku Euro America; 1996. pp. 184–188.
12. Taylor TD. Diagnostic considerations for prosthodontic rehabilitation of the mandibulectomy patient. In: Taylor TD. *Clinical Maxillofacial Prosthetics*. Chicago: Quintessence Publishing; 2000. pp. 155–170.
13. Beumer J3rd, Marunick MT, Esposito SJ. *Maxillofacial Rehabilitation*. Chicago: Quintessence; 2011. pp. 87–89. (118-20).
14. Goyal P, Manvi S, Arya S. Prosthodontic management of hemimandibulectomy patient: implants, a better solution. *J Dent Implant* 2016; 6: 37–40.
15. Coutinho CA, Hegde D, Vijayalakshmi CR, Iyer R, Priya A. Twin-occlusion prosthesis in a class III hemimandibulectomy patient. *International Journal of Prosthodontics and Restorative Dentistry*. 2020; 10(1):35-8.
16. Agarwal S, Praveen G, Agarwal SK, Sharma S. Twin occlusion: A solution to rehabilitate hemimandibulectomy patient—A case report. *The Journal of Indian Prosthodontic Society*. 2011 Dec; 11:254-7.