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Restoration of Quality of Life In Hemi-Mandibulectomy Patient- A Case Report

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Abstract

Background: Malignancy is more common in the mandibular posterior region and it requires surgical intervention and followed prosthetic rehabilitation in immediate action to restore mastication, aesthetics, and quality of life.

Case Report: A 53-year-old male patient had a history he underwent surgical resection and was advised for rehabilitation of the defect. Both intra-oral and extraoral examination were carried out, followed by an Impression and tentative jaw relation. Followed by articulation performed. Wire components were fabricated using 21-gauge wire and adapted in the cast followed by acrylic resin was used to hold the wire component. The prosthesis was trimmed and polished and inserted into the patient's mouth occlusion was verified and postoperative instruction was given, the patient was informed regarding review evaluation after 3 weeks.

Conclusion: Following a mandibulectomy and postsurgical reconstruction of the defect, a guide flange is given as an interim prosthesis that allows the patient to do everyday activities like chewing and retain aesthetics by preventing the jaw from deviating to the affected side.

Keywords: Guide flange, Hemi-mandibulectomy, Rehabilitation, Quality of life

Introduction

Surgical resection is an effective therapy for one of the most prevalent cancers in the mandibular posterior region, depending on the clinical circumstances.[1] In most cases, a partial mandibular resection that retains mandibular continuity remains less debilitating than one that compromises it.[2] To prevent further progression of the disease and ensure the quality of life of the patients, partial resection of the mandible is advised. Therefore, rehabilitation of defects is carried out based on the clinical condition after resection and healing. When performing functional movements, the mandible may deviate toward the affected side. The occlusal plane got rotated inferiorly, saliva drooling, significant aesthetic changes, and cause serious difficulties in chewing, phonetics, and swallowing when the mandible continuity is compromised.[3]

Mandibular reconstruction needs to be implemented immediately to achieve proper arch integrity and occlusion.[4] The occlusion deviation is caused by unilateral muscle tension, condyle resection, and fibrosis. Depending on the clinical condition, various options are available to rehabilitate hemi-mandibulectomy.

Guide flange prosthesis is usually advised for patients who can position their lower jaw in an ideal mediolateral position but cannot maintain this position consistently and without restriction for adequate mastication. [5] To restore the patients' oral functionality and quality of life, surgical reconstructive procedures for rehabilitation of defect preferred choice was removable partial dentures or the use of Osseo-integrated implant-retained fixed and removable prostheses.[5] This case report gives brief insight regarding a patient who underwent a hemi mandibulectomy and early prosthodontic intervention and steps in fabrication of guide flange prosthesis.

CASE REPORT

A 53-year-old male patient reported to the department of prosthodontics, SRM Dental College, Chennai, India, to replace a missing tooth and prosthetic rehabilitation of the left side mandibular arch and the history reveals a history of carcinoma of the tongue which invade the mandible on the left side. Based on the clinical condition the patient was advised to go for a hemi-mandibulectomy. Hemi-mandibulectomy resection was performed on the left side before 6 months back. After post-surgical operative care, evaluation was done to check soft tissue healing and the patient was immediately advised for rehabilitation. On extra oral examination mouth opening was limited (10-12mm), facial asymmetry was noted, and on examination mandible deviation was evident towards the affected side and it was observed during movements. (Figure.1)

Figure.1 Mandibular deviation before prosthesis

A partially edentulous mandibular arch was noted in relation to 37,36,34,35,33,32,31,41,42 and the occlusion was unstable, the patient had difficulty with mastication and speech, and the patient had an aesthetic concern also and the patient to be treated for the same. The patient was categorized as class 3 according to Cantor and Curtis Classification. [6] After obtaining the informed consent the treatment was started to correct the mandibular deviation was corrected with removable guide flange prosthesis and inserted into the mandible and the patient was advised to wear the prosthesis after 3 weeks.

STEP-BY-STEP PROCEDURE

1. Dentulous perforated trays were selected according to arch form followed by Impression was made as single-stage using addition silicone putty and light body using (Hydrorise putty, Zhermack Dental, Badia Polesine (RO), Italy.) and the cast was poured with type 3 gypsum product (Dental stone, Asian chemicals, Rajkot, India).

2. Cast was retrieved from the impression carefully (Figure.2) followed by tentative jaw bite registration was done using alu wax(Maarc Dental, Vasai, Maharashtra, India) both casts were articulated in a mean value articulator (Jabbar, Aligarh, Uttar Pradesh, India) using type 2 gypsum product (alpha plaster, Shruthi products, Gujarat, India.

Figure.2 Diagnostic cast

3. After articulation flange wire components were fabricated as a buccal half and lingual half using a 21-gauge wire(0.7mm)(Konark, stainless steel wire, India) buccal half of the component was adapted in maxillary arch buccal aspect and lingual half was adapted in the lower arch lingual side after proper adaptation of the components in the cast this wire component will act as substructure followed by guide prosthesis was fabricated with chemically activated polymethylmethacrylate (DPI cold cure, Mumbai, India) using the sprinkle-on method after polymerization of PMMA finishing and polishing was done using various grades of grid paper(3M Dental products, Bangalore, India), acrylic trimming burs (Shofu Dental Corp, San Marcos, CA, USA) and pumice used (Maarc dental, Vasai, Maharashtra, India)for final polishing. (Figure.3)

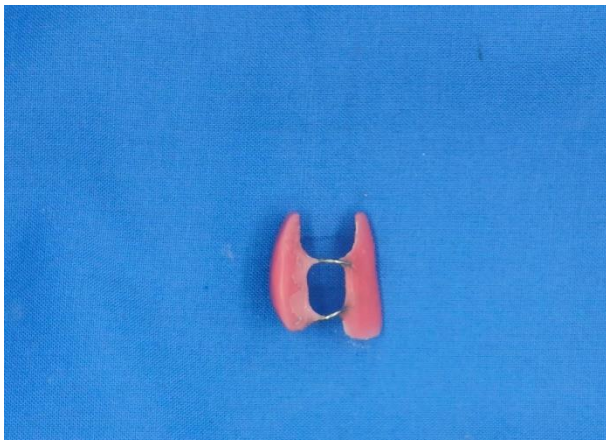

Figure.3 Guide flange prosthesis

4.Prosthesis was inserted into the patient's mouth followed by retention, stability, and occlusion was verified (Figure.4) postoperative care was given, and the patient was informed about the review, after 3-week the occlusion was stable and reduction deviation was noted and the patient was informed regarding further prosthetic rehabilitation procedure.

Figure 4. Post-operative after 3 weeks of guide flange prosthesis

DISCUSSION

Most individuals develop malignancy. With 1% of people identified with oral premalignant diseases. In India, 20% of people show an incidence of oral malignancy.[9] Diverse surgical methods, like marginal, segmental, hemi, subtotal, or total mandibulectomy, can be based on the dimensions and site of the mandibular malignancy. When continuity is lost, the occlusal plane rotates inferiorly and the mandibular segment deviates toward the defect. [2]

To maintain aesthetics, the retentive wire components were placed distal to the mandibular canine, and the guiding flange was made of acrylic resin. To avoid dislodging forces in the anterior lingual sulcus, the flange was restricted to premolars and a first molar. Additionally, the lingual flange extension deep within the lingual sulcus and on all three teeth's lingual surfaces contributes to the prosthesis' increased stability. [5]

The maxillary arch buccal aspect was approached vertically by an extension from the mandibular lingual half of the prosthesis. This extension maintains the mandible in a mediolateral position and it prevents lateral mobility followed by maintaining the stable occlusion. [8] In 1990 investigation involving 32 articles evaluated the outcome of various mandibular reconstructive methods and concluded that just 4% of the 782 patients evaluated showed functional outcomes. Throughout the past decade, significant improvements in microvascular surgical methods have made it possible to reliably restore soft tissue and bone orofacial defects.[9]

Garrett et al compared Current surgical reconstructive methods, whether they are implant-supported or conventional, to restore patients' oral functions and quality of life to what existed before to segmental mandibulectomy with rapid fibula free-flap restoration. They found that only 35% (16/46) of the patients who were selected completed treatment with implant-supported prostheses, while 72% (33/46) were capable and willing to complete treatment with conventional prostheses.[10] Implants are the one treatment for the reconstruction of defects. Early prosthodontic intervention with a maxillary stabilizing prosthesis and a mandibular guide flange reduces mandibular deviation throughout the healing phase.[11]

The guiding flange serves as a training prosthesis while a definitive prosthesis is designed and fabricated. Evaluate the patient he/she can replicate the mediolateral position. And make the patient for ease of removal and maintenance of prosthesis. To increase retention, bend the occlusal cross-over wire components with a universal orthodontic plier to bring the buccal and lingual vestibular flanges closer together.

CONCLUSION

Following a mandibulectomy and postsurgical reconstruction of the defect, a guide flange is given as an interim prosthesis that allows the patient to do everyday activities like chewing and

retain aesthetics by preventing the jaw from deviating to the affected side. In certain circumstances, the patient may be required to use the prosthesis indefinitely for reasons such as a poor prognosis or financial limitations that restrict the patient from undergoing the expensive treatment.

Ethical approval

Institutional Review Board approval is not required.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflict of interest: No

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