

CASE REPORT

Restoring function and quality of life through early interim obturator therapy after left hemimaxillectomy

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ABSTRACT

Keywords: Maxillectomy, Maxillofacial prosthesis, Obturator, Spindle cell sarcoma

Background: Maxillectomy, whether total or partial, results in significant anatomical and functional disturbances, including oronasal communication, impaired mastication, speech difficulty, and esthetic disfigurement. These sequelae can severely affect a patient's nutritional status, social interaction, and psychological well-being. Rehabilitation following maxillectomy aims to restore oral function and improve quality of life through obturator prostheses that close the surgical defect. **Objective:** This case report aims to present the clinical management for hemi-maxillectomy Case Report : This report presents the case of a 76-year-old female, a housewife, who was referred to the Prosthodontic Clinic of RSKGMP Universitas Airlangga by an Oncology Surgeon for the fabrication of an obturator. The patient presented two weeks after hemi-maxillectomy surgery performed on. The patient complained of oronasal communication, hypernasal speech, and difficulties in mastication and swallowing postoperatively; she had no previous experience using any obturator prosthesis. An interim acrylic obturator was planned to restore oral-nasal separation, improve speech intelligibility and swallowing function, and support psychological adaptation during the healing phase. Clinical procedures included impression-taking of the maxillary defect, jaw relation recording, tooth arrangement, and fabrication of an acrylic obturator supported by the remaining teeth. Follow-up evaluations demonstrated marked improvement in speech resonance, masticatory efficiency, deglutition, and patient comfort, with gradual adaptation to the prosthesis. **Conclusion:** This case report highlights the importance of timely interim obturator rehabilitation in elderly post-hemi maxillectomy patients to restore function, improve quality of life, and reduce psychological distress.. (IJP 2025;6(2):116-119)

Introduction

Maxillary defects resulting from hemimaxillectomy represent one of the most challenging conditions in restorative dentistry and maxillofacial surgery. These defects often result from tumor resection, trauma, or congenital anomalies and lead to significant oronasal communications that compromise oral function and aesthetics. The loss of hard and soft palatal structures creates substantial difficulties in mastication, deglutition, and speech, profoundly affecting the patient's physical health and psychological well-being.^{1,2}

The immediate post-operative period following hemimaxillectomy demands urgent prosthodontic intervention to restore basic oral functions and facilitate wound healing. During this critical phase, the placement of an interim obturator becomes essential to seal the defect, prevent regurgitation of food and liquids, and reduce hypernasal speech. Interim prostheses serve as a bridge between surgery and definitive rehabilitation, allowing tissues to stabilize while providing the patient with functional restoration and social reintegration.^{2,4}

Interim obturators offer several clinical advantages in the early post-surgical management of hemimaxillectomy patients. These prostheses enable early oral feeding, improve patient comfort, facilitate speech clarity, and provide psychological reassurance through partial restoration of normal appearance. The prompt fabrication and insertion of interim obturators have been shown to significantly enhance patient adaptation and quality of life

during the healing phase.^{4,5}

The literature supports the use of interim obturators as a standard of care in maxillofacial rehabilitation following hemimaxillectomy. This case report presents the clinical management and outcomes of an interim obturator prosthesis for a hemimaxillary defect, demonstrating its role in functional and psychosocial rehabilitation. The case illustrates the importance of early prosthetic intervention and the clinical techniques required for successful interim obturator fabrication and adaptation.^{5,7}

The present case report documents the clinical features, diagnostic evaluation, and therapeutic management of a patient presenting with lateral dystonia treated with occlusal splint therapy, demonstrating the significant contribution of dental interventions in the holistic care of movement disorders affecting the stomatognathic system.

Case Report

Case Presentation

A 76-year-old female patient presented to the Prosthodontics Clinic at the Dental Hospital (RSKGMP), Universitas Airlangga, upon referral from an Oncology Surgery Specialist for fabrication of a maxillary obturator, two weeks after undergoing hemimaxillectomy. The surgical procedure was performed on May 4th, 2024, with a



Figure 1. The extraoral condition of the patient

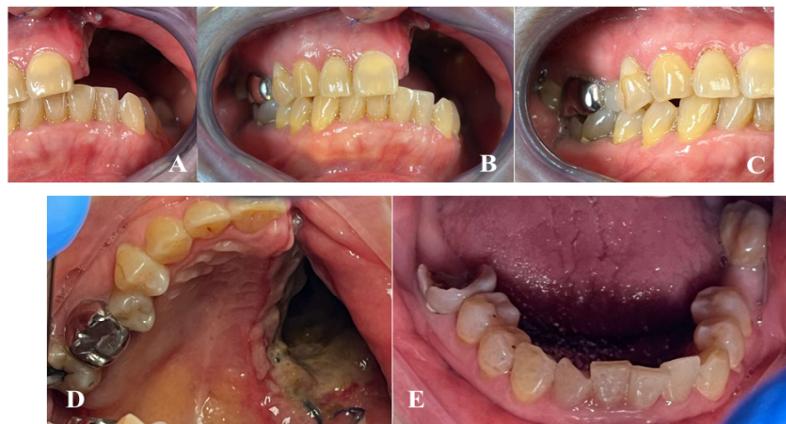


Figure 2. The intraoral condition of patient



Figure 3. Panoramic radiograph



Figure 4. Sterile gauze for stopper (left), Alginate applied in sterile gauze (center), Impression of maxillary (right)

clinical diagnosis of malignant melanoma (differential diagnosis: sarcoma), and the histopathological examination established a final diagnosis of spindle cell sarcoma. The patient reported that her last dental treatment on the lower left posterior teeth had been carried out approximately 10 years prior to presentation.

She had no previous experience with obturator prostheses.

The patient was diagnosed with multiple concurrent dental and maxillofacial conditions. There is a post-hemimaxillectomy defect in the left maxillary region consistent with a Class I Aramany maxillary defect, reflecting unilateral loss of maxillary teeth and supporting structures. In addition, the patient presents with edentulous ridges in the mandibular right first molar (tooth 46) and mandibular left second molar (tooth 37/47) regions, a chronic apical periodontitis secondary to pulpal necrosis in tooth 46, and a horizontally angulated, Class III impacted mandibular left third molar (tooth 38).

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The radiographic evaluation revealed loss of maxillary bone and associated teeth in the left upper region, consistent with a post-surgical maxillary defect. Mandibular posterior edentulism was noted in the regions of teeth 36 and 47. Radiopaque findings were evident in teeth 17 and 37, representing existing restorative fillings, and a radiopaque crown restoration was observed on tooth 16. A radiolucent lesion was identified on the distal aspect of tooth 46, suggestive of proximal dental caries, while a radiopaque mass in the mandibular left third molar region confirmed an impacted tooth 38.

The clinical session began with patient identification, completion of clinical records, and obtaining informed consent. Functional impressions of the maxillary and mandibular arches were made using stock trays and an irreversible hydrocolloid impression material (alginate). In the maxillary defect area, the surgical site was first protected using sterile moistened gauze and povidone-iodine for asepsis, after which the impression material was injected into the defect using a syringe to accurately capture its morphology. The impressions were then poured with type III dental stone to obtain the working casts.

Based on the maxillary working cast, a record base and occlusion rim were fabricated, followed by jaw relation registration. Lip support, the occlusal plane, and the buccal corridor were evaluated clinically, and tooth shade was selected to match the adjacent natural teeth (A3, Vita Classical). The maxillary and mandibular working casts were mounted on an articulator according to the established maxillomandibular relationship,



Figure 5. The jaw relation registration (left), Maxillary bite rim (center), Tooth arranged with articulator (right)



Figure 6. The try-in in patient (left), Fabrication of hollow part (right)

and acrylic denture teeth were arranged in the edentulous area corresponding to the obturator prosthesis.

A clinical try-in of the arranged teeth on the obturator framework was performed to assess occlusion, aesthetics, phonetics, and prosthesis stability. After necessary adjustments, the final contouring was completed and the prosthesis was processed in heat-cured acrylic resin. A two-piece closed hollow obturator design was used, with the hollow portion created and then joined using self-cured acrylic resin. The internal acrylic of the hollow section was reduced to decrease the overall weight of the prosthesis to enhance comfort during use. Finishing and polishing were carried out until all surfaces were smooth and free of sharp edges.

At the insertion appointment, the obturator was placed intraorally and adjusted as required. The patient was instructed to wear the obturator continuously for 24 hours, including during speech, drinking, consumption of soft foods, and sleep. Detailed instructions were provided regarding insertion and removal techniques, as well as daily cleaning of the prosthesis. Because the patient resided in Malang and was medically compromised, routine in-person follow-up visits were minimized; instead, the operator maintained regular remote communication to monitor comfort and function. The patient was referred to an oral and maxillofacial surgeon in Malang for extraction of teeth 38 and 46 as indicated.

Within two months of obturator insertion, the patient passed away due to gastrointestinal complications related to her systemic condition. As a result, prosthetic rehabilitation could be completed only to the

stage of interim obturator fabrication, and a definitive obturator was not achieved.

Discussion

Clinical Challenges in Hemi-maxillectomy Rehabilitation

Post-hemi-maxillectomy rehabilitation represents one of the most challenging scenarios in maxillofacial prosthodontics due to the extensive nature of the surgical defect and the profound functional consequences for the patient. The resection of maxillary structures results in loss of hard and soft palatal tissues, creating significant oroantral/oro-nasal communications that fundamentally compromise the patient's ability to perform basic oral functions.⁶ These defects necessitate rigorous prosthodontic intervention to achieve adequate seal, retention, and stability while minimizing prosthetic weight and complexity.

Significance of Interim Obturator Placement

The placement of an interim obturator approximately one week following surgical resection provides critical early support and protection during the most vulnerable stage of tissue healing.⁷ During this phase, tissues remain mobile, non-cicatrized, and actively bleeding, making them susceptible to irritation and further trauma. The interim obturator serves to minimize tissue manipulation, reduce bleeding, protect healing tissues, and support the psychological well-being of the patient by enabling early functional restoration. In the present case, the interim obturator was inserted one-week post-hemi-maxillectomy and was intended to serve the patient until optimal tissue healing was achieved, typically occurring over a period of 2-6 months.

Design Considerations: Closed Hollow Bulb Obturator

For patients with extensive maxillary defects following hemi-maxillectomy, achieving adequate prosthetic rigidity while maintaining clinical acceptability requires careful design considerations regarding retention, stability, and prosthetic weight. The closed hollow bulb obturator design was selected for this case due to its multiple advantages over the open hollow bulb design.^{6,7} The closed hollow bulb configuration prevents retention of fluids and food debris, facilitates oral hygiene maintenance, and allows for easy prosthesis cleaning—advantages that are critical for patient compliance and long-term success.⁸ Additionally, the closed hollow design can extend superiorly into the defect area, minimizing air spaces and mucous accumulation, thereby reducing overall prosthetic weight by approximately 30-35%,^{8,9} which significantly decreases stress on supporting tissues and improves patient comfort and tolerance.

Fabrication Technique: Two-Piece Method

In this case, the interim obturator was fabricated using the two-piece technique, where the

hollow bulb portion and the palatal base portion were constructed separately and subsequently united using self-cured acrylic resin.¹⁰ This technique offers several distinct advantages over the single-piece (one-piece) technique: the obturator can be fabricated with reduced overall weight, the acrylic wall thickness of the hollow portion remains uniform, and the prosthesis is more convenient and comfortable for the patient to wear.⁸ The two-piece technique also allows for greater flexibility in fabrication, easier clinical adjustment, and simplified maintenance during the post-insertion phase.

Retention and Stability Mechanisms

Prosthetic retention in hemi-maxillectomy patients is derived from remaining dentition and residual palatal tissues. In this case, retention was achieved through wrought wire clasps placed on the remaining maxillary anterior teeth (teeth 11, 14, and 16), specifically utilizing half-Jackson clasp design on these abutment teeth. The prosthetic base was extended to the maxillary tuberosity region to maximize functional support, retention, and overall prosthetic stability. Maximum palatal coverage of the remaining palate ensures optimal distribution of functional loading and improved prosthesis support, which are essential considerations in extensive maxillary defects.^{7,11}

Post-Insertion Clinical Course and Treatment Interruption

Following successful insertion of the interim obturator one week post-operatively, the patient was scheduled for adjunctive radiotherapy two weeks after prosthesis insertion. During the first radiotherapy session, the patient reported satisfactory function and wore the prosthesis comfortably without significant complaints. However, following the second course of radiotherapy several weeks later, the patient developed severe oral mucositis that severely compromised nutritional intake and prevented continued use of the obturator prosthesis. This complication progressively deteriorated the patient's general health status and resulted in digestive complications.¹² Unfortunately, the patient's condition deteriorated further, and he expired approximately two months after interim obturator insertion, preventing continuation of prosthodontic rehabilitation to the definitive obturator phase.

Clinical Implications and Limitations

This case illustrates several critical clinical considerations in managing hemi-maxillectomy patients with concurrent malignancy. The development of severe oral mucositis following radiotherapy, despite successful initial prosthodontic rehabilitation, represents a common and often unpredictable complication that can interrupt prosthodontic treatment even when clinical protocols are meticulously followed.¹³ While the interim obturator provided significant functional and psychological benefits during the early post-operative period, advanced cancer with adjunctive radiotherapy presents substantial limitations to long-term prosthodontic

rehabilitation success.¹⁴

The case underscores the importance of early maxillofacial prosthodontic intervention while also highlighting the multifactorial nature of long-term rehabilitation outcomes in cancer patients. Although definitive obturator therapy could not be achieved in this case due to medical complications, the interim prosthesis provided the patient with critical functional restoration and improved quality of life during a challenging post-operative period.

Conclusion

This case demonstrates that even in medically compromised post hemi-maxillectomy patients, an interim two-piece closed hollow obturator can provide meaningful functional and psychosocial benefits within a limited timeframe. The prosthesis effectively re-established separation between the oral and nasal cavities, improved speech and swallowing, and offered acceptable aesthetics and comfort.

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