



# Rehabilitation of Mucoepidermoid Carcinoma Palatum with Hollow Bulb Obturator: A Case Report

Fahma Aldihyah Kunsputri<sup>1</sup>, Fransiscus Wihan Pradana<sup>2</sup>,  
Endang Wahyuningtyas<sup>2</sup>(✉), and Sri Budi Barunawati<sup>2</sup>

<sup>1</sup> Faculty of Dentistry, Resident Departement of Prosthodontics, Gadjah Mada University, Yogyakarta, Indonesia

<sup>2</sup> Faculty of Dentistry, Lecturer Department of Prosthodontics, Gadjah Mada University, Yogyakarta, Indonesia  
endang\_wtyas2014@ugm.ac.id

**Abstract.** Palatum is the most common intra oral localization of mucoepidermoid carcinoma (MEC). Maxillary defects due to hemi maxillectomy generate an open link between oral and nasal cavities causing difficulty in deglutition, speech, and an unaesthetic appearance. The objective of the case report is evaluating the post treatment of hemi maxillectomy with hollow bulb obturator. This article displays a case report of systematic approach for fabrication of surgical obturator, followed by definitive hollow bulb obturator. The result was satisfactory with acceptable in esthetic, functional, retention and stabilization. The hollow bulb obturator after hemi maxillectomy is able to enhance the function, phonetics and esthetics.

**Keywords:** Hemi maxillectomy · Hollow bulb obturator · Mucoepidermoid carcinoma · Oral malignancy

## 1 Introduction

Mucoepidermoid carcinoma (MEC) is an epithelial salivary gland neoplasm. It emerges about 5% in younger age less than 18 years with female predominance [1, 2]. The MEC that develop in minor salivary glands can be placed on the palate, retromolar area, floor of the mouth, buccal mucosa, lips, and tongue [3]. Rehabilitation of the patient with malignant tumor in maxilla requires a multidisciplinary approach incorporating surgical treatment, radio/chemotherapy, phonetic rehabilitation, physiotherapy, and prosthetic treatment [4, 5].

The most common treatment is surgical removal of the tumor that result in large defect in soft and hard palate causing oro-antral or oro-nasal communication [6, 7]. Hemi maxillectomy leads to loss of facial aesthetics, deglutition, speech, and also decreases the quality of life [3, 8]. Emotional stress and depression possibly occur in this condition due to the loss of tissue and underlying structures [9].

Obturator is a prosthetics appliance employed for reconstructing the hemi maxillectomy patient. The obturator should be light to provide favorable retention, support,

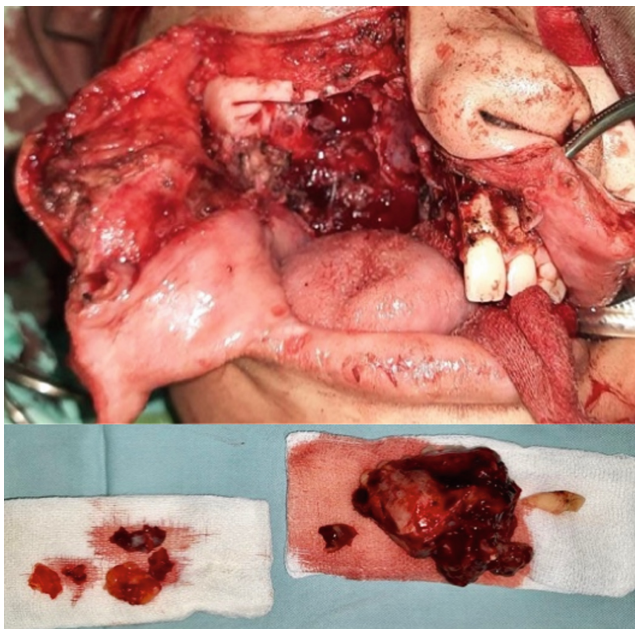
patient comfort and oral hygiene [10]. Hollow bulb obturator is able to diminish the weight of the prosthesis, thus, it is more efficient and the patient feels comfortable [11]. This case report elaborates rehabilitation of mucoepidermoid carcinoma palatum with hollow bulb obturator.

## 2 Case Report

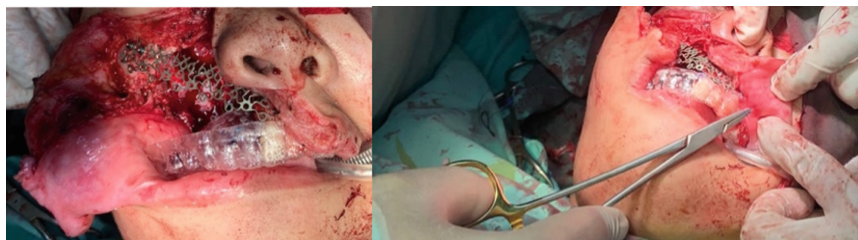
A 17-year-old girl visited the department of prosthodontics which is referred by department of oncology who was complaining about the swelling on palate for 6 months. The swelling initiated with small size, and grew over time. There is no history of trauma, extraction, bleeding from the nose, toothache, pain, altered taste, or sensation. There is no contributing medical history. Upon intraoral examination, a single dome measuring more than 5 cm is visible. The diagnosis of mucoepidermoid carcinoma is determined on the basis of the history and clinical examination. A perforated stock tray was employed to create the pre-operative impression, which was then filled with dental stone. A surgical obturator was automatically applied after the cast was sent to the surgeon to identify the resection area.

The titanium mesh was placed from the midline to the zygomatic bone because there is no remaining bone after the maxilla was resected to remove the mass, and a surgical closure study was conducted utilizing the remaining soft tissue (Fig. 1).

The defect was large and the available tissue were not sufficient to close the defect. The surgical obturator was inserted immediately after resection of the maxilla and secured in position with suturing and the retention of remaining natural teeth (Fig. 2).



**Fig. 1.** The resection of maxilla and the mass



**Fig. 2.** The titanium mesh and surgical obturator were placed

The patient returned for a review one week after surgery to rule out any complications and ensure that the obturator was in the right position. During the intraoral examination, it was discovered that the right side's hemi maxillectomy defect extended from the midline to the soft palate (Fig. 3). While the remaining teeth and gingiva showed normal limits, a sizable hollow remained with oro-nasal communication. Poor oral health was evident. (Fig. 3). The patient might not have been able to clean the obturator because it was sutured with the gingiva, which may have contributed to their poor oral hygiene. The defect was categorized as an Aramany class I defect. The suture was removed after two weeks, and the calculus was removed by scaling (Fig. 4). The obturator was removed and replaced for the patient, who was also demonstrated how to maintain good oral hygiene. Nystatin was used to treat the fungal infection. Another appointment was arranged for two weeks later.

After two weeks, the clinical intra and extraoral examination revealed a good initial healing at the defect site (Fig. 5). The extra-oral suture was removed. The usual steps in fabricating the conventional acrylic obturator were administered by performing impression with hydrocolloid irreversible material and cast with dental stone. The retention for this obturator was obtained from the remaining teeth with wrought wire clasps on teeth 23, 24, 25, 26.

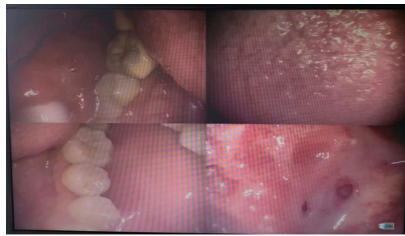
In the next visit, the base plate was evaluated in the patient's mouth to assess the fit with underlining structures. The bite rim was generated to record the maxilla mandibular relation of the patient (Fig. 6). The centric jaw relation record was acquired, and the cast were mounted on non-adjustable articulator. Acrylic artificial denture was arranged and examined in the next visit.

The acrylic artificial teeth were tested, and the occlusion, aesthetic appearance, and support for the underlining tissue were all evaluated as satisfactory. The hollow bulb prosthesis was then finished, polished, and processed (Fig. 7).

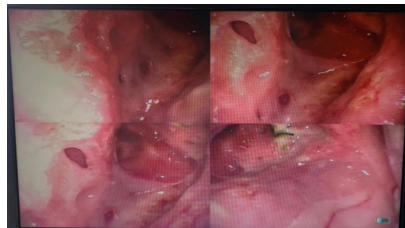
At insertion, the hollow bulb was adjusted and soft liner was applied as the patient is still under the radiotherapy (Fig. 8). The traumatic occlusion was checked with articulating paper. The post-insertion instructions were provided to the patient in the care and utilization of the obturator. The dry mouth gel was prescribed to prevent the xerostomia (Fig. 9).



**Fig. 3.** The defect after one week surgery



**Fig. 4.** Calculus and candidiasis are presented



**Fig. 5.** The oral hygiene and initial healing were good on the defect area

### 3 Discussion

It is challenging for prosthodontist to rehabilitate the edentulous patient with an acquired maxillary defect. In the absence of teeth, engagement of the soft tissue undercuts, incorporating the lateral scar band at the skin graft-mucosal junction, play a pivotal role in the retention of the denture [12].

Reconstruction of the hemi maxillectomy with an obturator possesses a number of benefits. In addition to replacing the missing soft and hard tissues, it creates a barrier between the nasal and oral cavities and allows the patient to speak, swallow, and masticate relatively normally. Other benefits incorporate the ability to remove the obturator from the patient's mouth, which allows for clear vision and early detection of any recurrent tumors. Additionally, it advances facial appearance by supporting the tissues of the face [12–14].



**Fig. 6.** The centric jaw relations with wax rims



**Fig. 7.** Try-in acrylic artificial teeth

The definitive obturator should be constructed when the defect is completely recovered and the dimension is stable. It may be obtained from 3 to 6 months after surgery [12, 13]. In addition to the development of good muscular control, the quality of retention of the prosthesis is influenced by the following variables: the size of the surgical cavity, the availability of tissue undercut around the cavity, and indirect and direct retention provided by any remaining teeth [9]. The hollow bulb obturator has a number of benefits, including increased comfort and efficiency due to its lighter weight, improved physiological function that prevents stress on the teeth and supporting tissues, decreased self-consciousness when wearing a prosthesis, less pressure on the surrounding tissues, assistance with deglutition, and lack of excessive muscle atrophy and physiological changes [9]. Heat cured acrylic is one of the strongest materials that still popular because it is efficiency and effectiveness and biocompatibility for fabricating closed hollow bulb obturator [4].

Limited mouth opening is a prevailing condition after surgery due to the scars and effect of the radiotherapy [14]. Radiotherapy causes disfunction of the glandular salivary that can lead to hyposalivation and xerostomia. This condition escalates the risk of oral infection like candidiasis, gingivitis, sialadenitis, and the risk of caries [15]. Topical agent like dry mouth gel can be administered to prevent the xerostomia [16].





**Fig. 8.** The closed hollow bulb obturator



**Fig. 9.** Insertion

## 4 Conclusions

A proper diagnosis and well-designed treatment plan will result in pleasant outcomes. After a hemi maxillectomy, rehabilitation with a closed hollow bulb obturator can enhance the function, phonetics, and aesthetics.

## References

1. Mathew, A, L., Joseph B, B., Sarojini, D, M., Premkumar, P., Nair, S, S. Mucoepidermoid carcinoma of palate – a rare entity. *Clinics and Practice* 2017;7: 1009.
2. Luna, M, A., Batsakis J, G., El-Naggar, A, K. Salivary gland tumors in children. *Ann Otol Rhinol Laryngol* 1991;100:869–71.

3. Neville, B. W., Damm, D., Allen, C. M., Bouquot, J. E. Salivary gland pathology. *Oral and Maxillofacial Pathol* 2009;495–7.
4. Alhaji, M. N., Ismail, I. A., Khalifa N. Maxillary obturator prosthesis for a hemimaxillectomy patient: A clinical case report. *The Saudi Journal for Dental Research* 2016;7:153–159.
5. Curtis T, A. Treatment planning for intraoral maxillofacial prosthetics for cancer patients. *J Prosthet Dent* 1967;18:70–6.
6. Niakan, S., Karimi-Afshar, M. Partial removable prosthesis in a patient with unilateral maxillectomy: A case report. *J Oral Health Oral Epidemiol* 2019;8(3): 161–6.
7. Vojvodic, D., Kranjcic, J. A two-step (altered cast) impression technique in the prosthetic rehabilitation of a patient after a maxillectomy: A clinical report. *J Prosthet Dent* 2013; 110(3): 228–31.
8. Chigurupati, R., Aloor, N., Salas, R., Schmidt, B. L. Quality of life after maxillectomy and prosthetic obturator rehabilitation. *J Oral Maxil Surg* 2013;71:1471–8.
9. Tibra, A., Harsha, S. S., Vineela, G., Babu, M. S. Maxillofacial prosthesis with an edge: a case report. *IOSR-JDMS* 2018;6(3): 75–78.
10. Pravin, K., Gajanan, P., Smita, P. P. A hollow definitive obturator fabrication technique for management of partial maxillectomy. *J AdvProsthodont.* 2012;4: 248–53.
11. Lang B, R., Bruce, R. A. Presurgical maxillectomy prosthesis. *J Prosthet Dent* 1967;17:613–9.
12. Beumer III, J., Marunickbeuk, M. T., Garrett, N., Rohner, D., Reintsema, H., Abemayor, E., et al. Rehabilitation of maxillary defects. In: Beumer III J, Marunick MT, Esposito SJ, editors. *Maxillofacial rehabilitation: prosthodontic and surgical management of cancer-related, acquired, and congenital defects of the head and neck*. 3rd ed. Chandler Drive: Quintessence; 2011. p. 155–210.
13. Keyf, F. Obturator prostheses for hemimaxillectomy patients. *J Oral Rehabil* 2001;28:821–9.
14. Deogade, S. C. A Novel Technique of Impression Procedure in a Hemimaxillectomy Patient with Microstomia. *Case Reports in Dentistry*. 2012; 2012: 1–5.
15. Porter, S. R., Fedele, S., Habbab, K. M. Xerostomia in head and neck malignancy. *Oral Oncology*. 2010;46(6): 460–463.
16. Villa, A., Connell, C. L., Abati, S. Diagnosis and management of xerostomia and hyposalivation. *Therapeutics and Clinical Risk Management*. 2014;11: 45–51.

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

