A Case Report

# Rehabilitation of Maxillary Surgical Defect with Conventional Interim Obturator: A Case Report

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## Abstract

The structures of the hard and soft palates play an important role in speech and swallowing. When these structures are damaged or removed due to illness or injury, it can lead to disability or impairment. These defects can be present at birth or develop later in life. They often involve large openings in the palate and surrounding structures. To restore proper chewing, speech, and appearance, obturators are used to seal these defects. During the post-surgical phase, interim obturators may be recommended to promote healing and serve as a temporary prosthesis for patients with intraoral surgical defects. This article presents case reports describing the fabrication of an interim obturator using conventional techniques.

**Keywords:** Maxillary defects, mucormycosis, obturators, conventional, prosthodontic rehabilitation.

## Introduction

Despite the decrease in COVID-19 cases, the risk of secondary infections like mucormycosis remains high. The growth of Mucorales fungus in COVID-19 patients is solely attributed to creating an ideal environment brought about by the increased levels of glucose, iron, and PH. [1] Mucormycosis is more prevalent in individuals with weakened immune systems such as diabetes, cancer, immunosuppressive drugs, or receiving corticosteroid treatment. The aggressive and sometimes fatal fungus disease, mucormycosis, is caused by mold fungus. [2] Fungus spores are the main source of contamination, and the disease can spread directly into orbital and cerebral tissues or through blood vessels. [3] Those with severe oral mucormycosis, which often affects the paranasal sinuses, may experience palatal necrosis and/or ulceration. [4] In advanced cases, aggressive surgical extirpation may be necessary, including radical resection involving partial or complete maxillectomy or mandibulectomy. It's unfortunate that many surgical procedures can be quite time-consuming and often leave behind significant flaws. These imperfections not only affect a patient's emotional well-being but also their physical function and appearance. It's important to continue striving for more efficient and effective procedures to minimize these negative outcomes. These issues necessitate quick surgical or prosthetic rehabilitation. nevertheless, surgical repair is frequently contraindicated in cases of significant abnormalities or individuals at high risk. The benefit of the prosthesis is rapid, reversible, and medically simple rehabilitation. When rehabilitating a patient's congenital or acquired abnormalities, it is important to ensure that the result meets high standards for functionality, durability, and beauty. The goal is to improve not only the patient's physical health but also their mental and emotional well-being. By doing so, we can help patients achieve the best possible outcome and improve their quality of life. [5] This case presentation discusses the prosthetic rehabilitation of maxillary defects through the use of an obturator.

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## Case report

A 72-year-old male reported difficulty in swallowing food and speech due to a palatal defect for the past 2 months. The patient was COVID-19 positive, six months back, the patient had pain and palatal ulceration with mild extraoral facial and orbital swelling. After clinical and laboratory examination, the patientwas diagnosed with post-COVID Rhinocerebral Mucormycosis. The patient underwent an inferior maxillectomy (removal of the hard palate, teeth, and lower part of the maxilla). On extraoral examination, the patient had peri-orbital swelling and apraxia of left eyelids, mid-face collapse, inadequate upper-lip support, retrognathic profile, and senile appearance due to complete loss of teeth except maxillary left central and lateral incisor and maxillary ridge (Fig.1A). On intraoral examination, the patient had a completely edentulous except maxillary arch (except maxillary left central and lateral incisor) with complete loss of the alveolar region and a dentulous mandibular arch (Fig.1B-C). The defect extended from the premaxillary region to maxillary tuberosity and had a 6x7 cmdepth in the nasal cavity and 5x6 cm width in the oral cavity. There was visibility of the nasal septum, inferior conchae, and some exposed bone. There was also communication between oral and nasal cavities and restricted mouth opening. The defect was unhealed completely, thus, on consultation with the oral surgeon, an interim obturator prosthesis was planned.

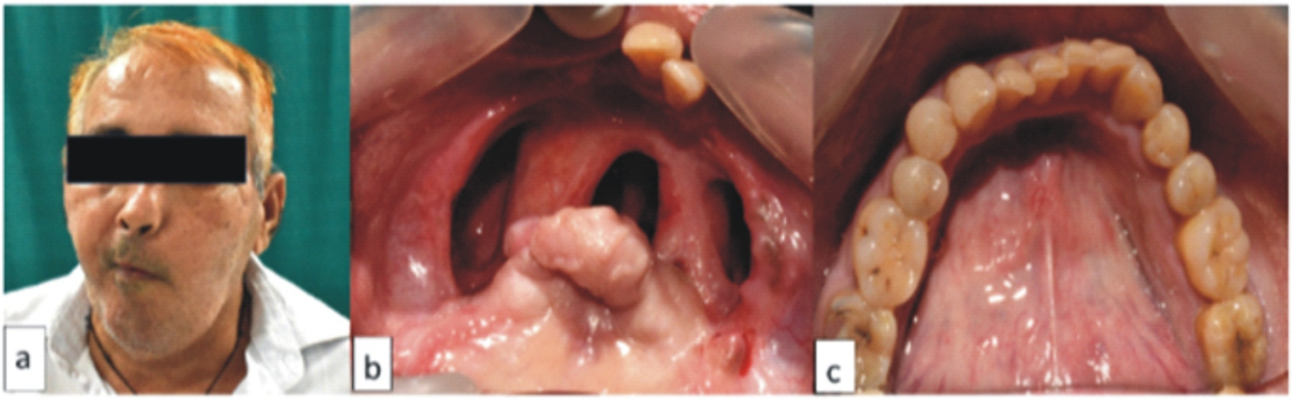


**Figure.1.** 1a. Frontal view, 1b. Intraoral Maxilla, 1c. Intraoral Mandible

## Procedure

The primary impression was made using irreversible hydrocolloid material (Algitex DPI, India) after blocking the palatal defect area using a gauze piece tied by dental floss (Fig 2a). The impression was poured using dental stone (type III gypsum material) and the master cast (Fig. 2b) was obtained. The clasp was made using 19-gauge stainless steel wire (Fig. 2c) to retain and stabilize the prosthesis. Modeling wax of 2 mm thickness was adapted (Fig. 2d) around the defect area to provide equal thickness around the interim obturator prosthesis. conventional dewaxing was carried out Heat cure acrylic (DPI heat cure; Dental Product of India) resin was mixed in the dough stage and placed into the defect area, Then, conventional curing was carried out. The prosthesis was retrieved and finishing and polishing of the obturator was done (Fig. 2e).

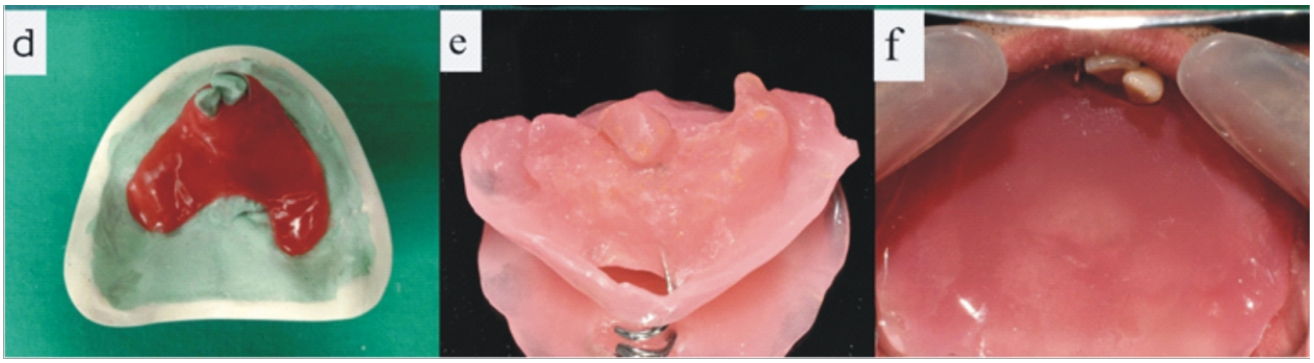


**Figure. 2.** 2a. Alginate impression 2b. Master cast 2c. C-Clasp 2d. Wax adaptation 2e. Final prosthesis 2f. Postoperative rehabilitation

## Discussion

After undergoing surgical treatment for mucormycosis, it's vital to prioritize early prosthetic rehabilitation to restore oral function and facial esthetics as much as possible. To facilitate quick recovery of speech and swallowing, interim obturators are an excellent option that is less stressful for patients than other procedures. However, it's worth noting that since tissue conformation changes continuously, it's essential to make regular adjustments and modifications to the obturators over the three to six months following surgery.[6] It can be challenging for maxillofacial prosthodontists to effectively close off a unilateral or bilateral maxillectomy defect. To ensure that the surgical obturator prosthesis has adequate retention and function, a multidisciplinary treatment approach is necessary. Various factors, such as the size and shape of the defect, the placement of remaining soft and hard tissues, and the weight of the prosthesis, all play important roles in determining the retention and stability of the prosthesis. [7] For patients who have undergone maxillectomy, several options are available for rehabilitation, including removable and fixed implant-supported prostheses. While zygomatic and pterygoid implants are preferred due to their improved function and aesthetic appearance, they do come with some limitations such as increased cost, a complex procedure, longer procedure time, and difficulties in maintaining the prosthesis. Additionally, since many maxillectomy patients are older and weakened, a second surgery immediately after the resection should be avoided. The removable obturator offers an alternative treatment option that provides adequate obturation of the defect area and easy maintenance of the prosthesis.[8]

It's important to use an interim obturator or temporary after-surgical treatment of mucormycosis. This device is made from a post-surgical impression cast and has a false palate and ridge without teeth. The bulb part of the obturator extends into the defect and provides a hermetic seal, which is essential for optimal restoration of oral function and facial esthetics. [9] In these cases, the interim obturator stimulated the functional anatomy of the maxillary sinus and added resonance to the speech.[10]

## Conclusion

It's important to prioritize early prosthetic rehabilitation after surgical treatment of mucormycosis to achieve the best possible restoration of oral function and facial esthetics.Dealing with a maxillectomy defect is a challenging task for any maxillofacial prosthodontist out there. To ensure that the surgical obturator prosthesis can provide sufficient retention and function, it's important to take a multidisciplinary approach to the treatment process. This way, all aspects of the patient's condition can be considered and accounted for in the treatment plan.

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