

Case Report



## Rehabilitation of Mucormycosis maxillary defect with an Obturator Prosthesis: A Case Report

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DOI: 10.48047/ecb/2023.12.si4.1479

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### ABSTRACT

Mucormycosis is an aggressive fungal disease caused by a saprophytic fungus can occur in individuals with certain predisposing factors, such as diabetes mellitus and pharmacologic immunosuppression. An astounding aspect of this disease is the speed at which it can spread to surrounding structures once it begins to germinate inside the human body. Oral cavity is one such area which can easily harbour fungi, bacteria and viruses due to rich blood supply and being an opportunistic infection, Mucormycosis that can easily involve maxilla, nasal cavity as well as paranasal sinuses leading to necrosis of the underlying bone and soft tissues leaving the affected individual with a large maxillary defect requiring dento-facial rehabilitation. In such patients, comprehensive knowledge, understanding, and skills in the treatment are required for prosthetic facial rehabilitation. This case report describes the management of maxillary defects with a custom-made speech aid prosthesis. To rehabilitate the patients with an overall goal to regain confidence and improve the patient's quality of life.

**Keywords** – Mucormycosis, Maxillary defect, Obturator, Maxillectomy, maxillofacial rehabilitation

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### INTRODUCTION

Maxilla is one of the facial bones, forming the roof of the oral cavity with a rich vascular supply. Necrosis of maxillary bone is rare and may occur due to infection, trauma, and rare metabolic disorders. Mucormycosis is one of the most common fungal infections, which affects the maxilla, especially in diabetes and immunocompromised patients. The surgical treatment results in partial maxillectomy, subtotal maxillectomy, or total maxillectomy is done. The defect may be in the form of a small opening resulting in communication from the oral cavity into the maxillary sinus, or it may include a portion of the hard and soft palate, alveolar ridge, and the floor of the nasal cavity which may cause several problems including speech, swallowing, and mastication difficulties [1]. The treatment of such defects is done prosthetically using obturators. Maxillofacial prosthodontics is the branch of prosthodontics concerned with the restoration and/or replacement of the stomatognathic and craniofacial structures with a prosthesis that may or may not be removed on a regular or elective basis.[2]

In this case report we describe the most practical convenient and cost-effective treatment modality of prosthodontic rehabilitation by a removable prosthesis.

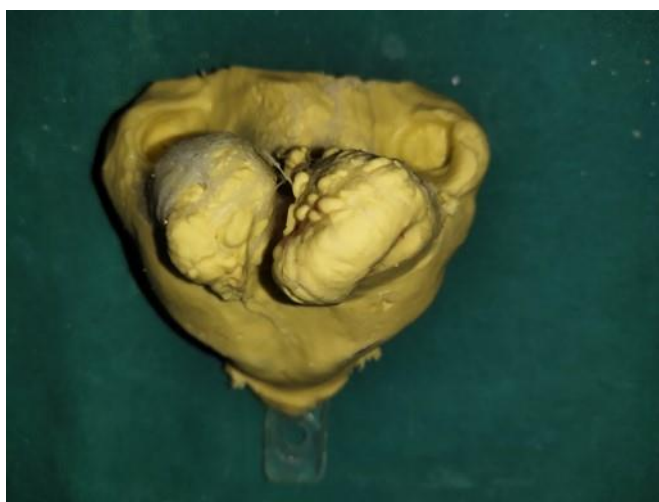
#### CASE REPORT

A 32-year-old patient reported to the Department of Prosthodontics, Subharti Dental College and Hospital, Meerut, for intraoral defects rehabilitation. He presented with a history of covid diagnosed with mucormycosis followed by maxillectomy. Intraoral examination revealed the resection site of the pre-maxillary region with oro-antra communication and bilaterally present second molars [Figure 1]. On examination, the patient was symptomatically better, symptoms were resolved, no discharge or fungal elements was seen on investigations.



[Figure 1]

Keeping the patient's socioeconomic condition in mind, it was planned to fabricate a removable hollow bulb obturator prosthesis made of heat cure polymethyl methacrylate resin. The preliminary impressions were followed after cleaning the necrotic tissue with the help of a sterilized surgical gauge and 5% betadine and recorded after blocking the defect with the help of a cotton gauge lubricated with petroleum jelly using a perforated stock tray with irreversible hydrocolloid alginate impression material [Figure 2]. Cast was poured in Plaster of Paris.



[Figure 2]

A custom tray 2mm short of the sulcus depth was fabricated using polymethyl methacrylate self-cure resin. To record the functional depth of the defect, border molding was done in an incremental manner using a low-fusing green stick compound. The patient was instructed to do neck movements including flexion and left and right turn, during border molding to attain proper seal [Figure 3]. Final impression was made with medium body elastomeric impression [Figure 4]. Type III dental stone was used for the fabrication of master cast.



[Figure 3]

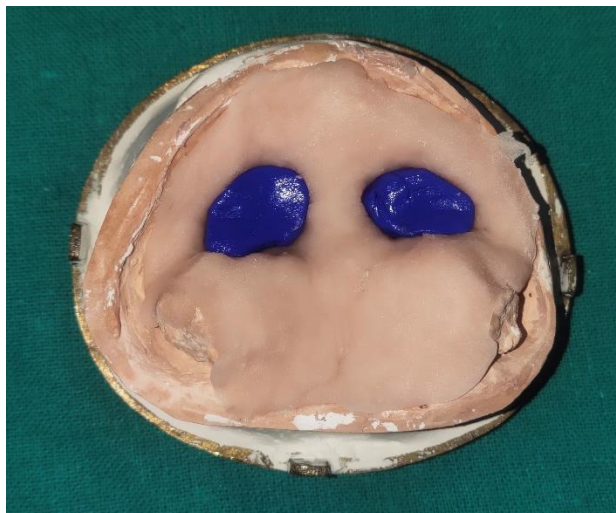


[Figure 4]

All the undesirable undercuts were blocked and a temporary denture base record was made on master cast using auto-polymerizing resin and the occlusion rim was fabricated. Jaw relation record at the correct vertical dimension and horizontal relation was made and transferred to the articulator.

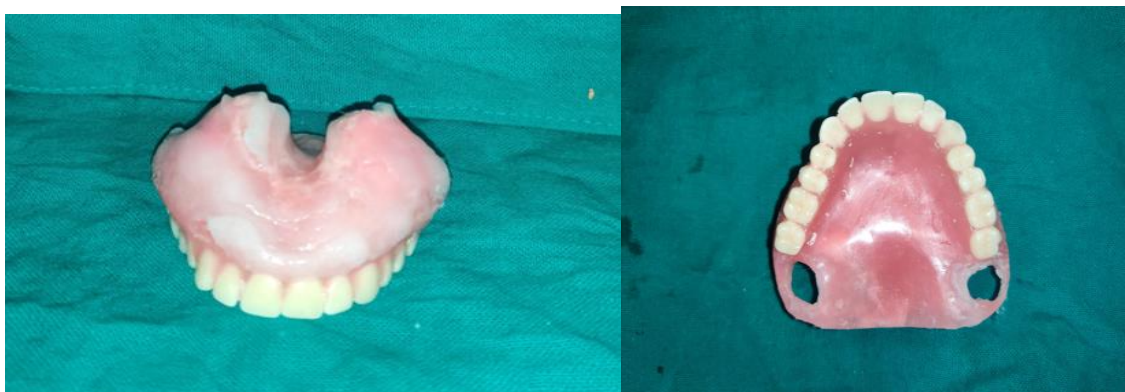
Teeth arrangement was completed and wax try-in was done, the patient's approval for esthetics was taken.

The obturator was flaked and processed using heat cure polymethylmethacrylate resin and putty to order to make it hollow [Figure 5].



[Figure 5]

The finished and polished final prosthesis was inserted and checked for peripheral seal. The pressure areas were relieved using pressure-indicating paste and soft tissue liner was used to get adequate retention from the undercut tissues [Figure 6].



[Figure 6]

Denture was inserted [Figure 7] and the patient was taught the placement and removal of an obturator. Post-insertion instructions were given to the patient in using the obturator and recalled for regular postinsertion visits.



[Figure 7]

## **DISCUSSION**

Oroantral communications can be a source of discomfort because of food and fluids entering the sinus cavities, thereby predisposing patients to sinusitis and middle ear infections. Treatment of such defects should primarily include surgical closure if not prosthetic acrylic resin extensions of the denture. When deciding on the design of the body for the obturation process after maxilla resection, the characteristics such as oral hygiene, the size of the defect and the need for conservatism should be evaluated [3]. The important considerations for the fabrication of an obturator are the size of the defect, the weight of the obturator, the comfort of the patient and the force of the obturator on the teeth should be considered [4]. The role of prosthodontists is paramount in maxillary defects after surgical procedures. The use of obturator for rehabilitation ways back to the sixteenth century from the use of pebbles then to sponge and wax. Later Fuchard gave two models of obturator the one with hose wings and the other as butterfly wings to the latest on implant-supported obturators.[5]

The case above discussed definitive obturator. A definitive obturator is contraindicated until the recovery of the surgical site takes place and dimensional stability is achieved. A hollow bulb obturator is fabricated for the patient. The weight of the obturator has been significantly reduced due to hollowing out the bulb contributing to the lightness of the obturator. The remaining teeth served as an abutment for primary retention, support and stability of the obturator. As a result, prosthetic rehabilitation is often used to attain excellent aesthetic result for defects and can eliminate the need for multiple surgical procedures. Thus prosthodontics rehabilitation of patients with maxillary defects is an easy and economical method of management. Some author also suggest that there is an improvement in psychological behaviour of the patient after wearing obturator prosthesis.[6]

In the present case the material used for the fabrication of prosthesis was acrylic. However, few other materials like PEEK can also be used for the fabrication of prosthesis as they are more aesthetic in appearance.[7]

## **CONCLUSION**

Patients suffering from such defect have a lot of psychological trauma due to impaired functions and esthetics. Definitive prosthodontics treatment alleviates such anatomical and functional discrepancies. The obturator satisfies the functional and psychological needs of the patient and is an effective treatment modality.

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