



Maxillofacial Defect Resulting from Mucormycosis Rehabilitation with a Magnetic Retained Facial Prosthesis and an Obturator

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ABSTRACT

Fungal infections are ranging from simple to notorious nature, the treatment of such infections are usually antifungal drugs. The recurrence of its chronic type Mucor mycosis can cause devastating effects on patients. Intraoral defects created by such infections are extensive and causes potential morbidity. The restoration of maxillary defects is mostly by means of removable prosthesis. This report is focusing on restoration of such defects with an obturator retained by magnets. The extraoral extension was preliminarily restored with a polymer-based resin material.

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INTRODUCTION

Maxilla is a facial bone that has rich vascularity; thus, it is less likely to undergo necrosis. However, there are certain predisposing conditions that may lead to maxillary necrosis including mucormycosis, osteomyelitis, herpes zoster, long-term use of corticosteroids, radiation, trauma, etc.¹ Mucormycosis is an opportunistic fungal infection, invasive in nature, caused by fungi that belong to the order Mucorales of the class Phycomycetes.^{2,3} Mucormycosis is also known as zygomycosis or phycomycosis.⁴ These fungi are universally present and survive on decaying vegetation and organic material.⁵ Although people are exposed to these fungi in their daily routine, but it mainly infects those who are

immunocompromised and have a weakened immune system as in poorly controlled diabetes, blood dyscrasias, organ transplant, malnutrition and neutropenia.^{1,2,6} Despite that mucormycosis has a very low prevalence,³ it has a strong potential to cause midfacial, maxillary and orbital destruction and advancing to the cranium, ultimately resulting in a prominent facial defect, impaired vision, oroantral fistula and oronasal communication.⁶ Mucormycosis usually originates from nose by inhalation of the spores, invades the arteries and from nasal cavity spreads to the ethmoidal sinus and even to the cavernous sinus involving the orbit.⁷

Clinical appearance of mucormycosis varies with the site of entry of fungus and the organ systems that it invades. Rhinocerebral, stands out to be the most common involving Central nervous system, nose, paranasal sinuses and orbits. Mucormycosis also appears in cutaneous, gastrointestinal, pulmonary and disseminated forms.⁸

CASE REPORT

A 37-year-old female patient was referred to the department of Prosthodontics at Altamash Institute of Dental Medicine in November 2019, presenting with an extraoral and intraoral defect [Figure 1 and 2]. She gave a history of fungal infection that was acquired 3 years back with a recurrence after 8 months. No history of any predisposing factor was ruled out, so the cause of developing infection and recurrence remains unknown. Patient complained of facial deformity and disturbed speech after the surgery. Extra-oral examination showed a large and visible surgical defect under the left eye giving it a bulging appearance. This caused psychological trauma to the patient.

In this report, we present a case of a prosthetic rehabilitation of a patient with extensive intraoral and extraoral defect acquired due to the fungal infection “mucormycosi



Figure 1: Intraoral View



Figure 2: Extraoral View

She reported with an ill-fitting prosthesis made from some other laboratory, that she was wearing for past 1 year and was not satisfied with its instability. She wanted to get it replaced with a definitive prosthesis so a magnetic retained facial prosthesis and obturator was planned to be fabricated.

Treatment objectives were rehabilitation of the facial defect with silicone-based material and closure of the intraoral defect using a cast prosthesis to facilitate the speech and swallowing.

Prosthesis was made in two pieces. For intraoral prosthesis, after initial impression mouth preparation was done and a custom tray was fabricated for secondary impression. Denture base metal construction was done on the master cast followed by maxillomandibular relation, trial and finally the insertion.

For intraoral prosthesis, after initial impression mouth preparation was done and a custom tray was fabricated for secondary impression. Denture base metal construction was done on the master cast followed by maxillomandibular relation. After try-in prosthesis was processed in conventional manner. For the fabrication of facial prosthesis, facial moulage impression was made with the help of Alginate, whereas the defect was recorded with an (Figure 3). The impression was then poured in the dental stone (Figure 4). Molloplast B was

used for the fabrication of facial prosthesis. Final attachment was made through the magnets (Figure 5).



Figure 3: Moulage impression elastomeric impression material



Figure 4: Working cast

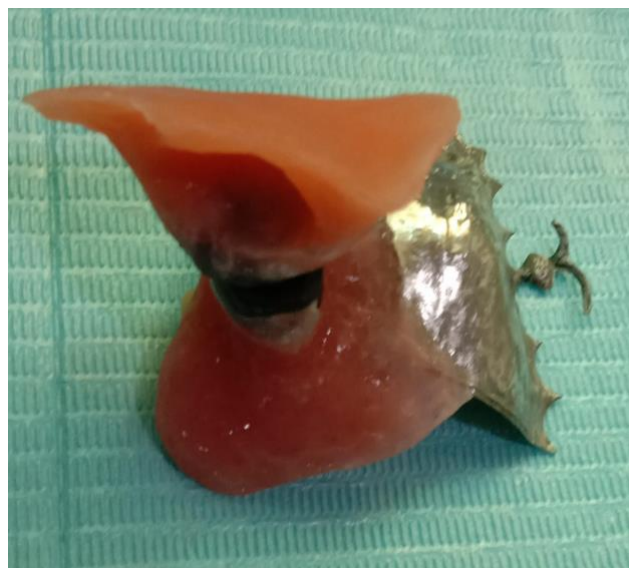


Figure 5: Magnetic retained facial prosthesis and Obturator

Adjustments were done on the insertion visit and colour of the acrylic was matched with the skin colour (Figure 6), however cosmetic contouring was needed. Patient was trained on how to wear the prosthesis was recalled for the first follow up after 1 week and then second follow up was done after 2 months.



Figure 6: Extra oral prosthesis in place

DISCUSSION

Mucormycosis is more common in the immunocompromised individuals, however literature suggests that healthy individuals can also be infected.⁹ This evidence supports the medical history of the presented case, where no underlying comorbidity was reported. Malignancies such as leukemia and lymphoma, organ transplant, renal failure, cirrhosis, malnutrition and burns are also considered as predisposing factors.¹ Facial cellulitis, periorbital edema and nasal inflammation and tissue necrosis are some of the early symptoms.⁸ Early treatment requires control and cure with the antifungals followed by surgical removal of the necrotic tissue. Hence it is important to evaluate the patient throughout the treatment and also post treatment,⁷ because poor medical and surgical intervention may result in cerebral spread, cavernous sinus thrombosis, septicemia and multiple organ failure.⁸ Hence a team of specialists that includes a maxillofacial surgeon, an ENT specialist, an ophthalmologist and a neurosurgeon is required for management of the affected patients.¹⁰ Biomaterials

such as polymethyl methacrylate, polyvinyl chloride, polyurethane and silicone have been widely used for prosthetic rehabilitation of facial defects; however, silicones have gained more popularity because of their biocompatibility, good physical properties and thermal stability.¹¹

CONCLUSION

Literature suggests that mucormycosis is an aggressive and rapidly progressive fungal disease that has a high mortality rate, mostly affecting immunocompromised patients. Prognosis is dependent and turns out to be favourable by early diagnosis, imaging, appropriate histopathological and microbiological examinations, surgical treatment and pharmacotherapy. The clinical case presented demonstrates the aesthetical and functional recovery of a patient with maxillofacial defect resulting from mucormycosis.

Authors Contribution

1. **MS:** planned and designed the present work
2. **BK:** responsible for realizing the work.
3. **SM:** collected the data.
4. **AM:** responsible for the data acquisition and analysis.

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Conflict of Interest

The authors report no conflict of interest

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