

## Case Report

### A case report on mucormycosis, the fatal fungus

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#### ABSTRACT:

A potentially fatal invasive fungal infection, mucormycosis is brought on by a variety of fungi belonging to the Mucorales order. Poorly managed diabetes, hematological malignancies such as lymphoma and leukemia, and post-transplant patients are traditional risk factors for mucormycosis, with rhino-orbital-cerebral and pulmonary mucormycosis being common symptoms. The majority of mucormycosis cases in industrialized nations are seen in individuals who are highly immunocompromised, such as those who have had organ transplants, hematological malignancies, neutropenia, autoimmune illnesses, or other immune system abnormalities. In around 6–10% of occurrences, the participants had no underlying medical condition. In contrast, individuals with poorly controlled diabetes mellitus or immunocompetent subjects after trauma account for the majority of mucormycosis cases in poorer nations. Mucormycosis shows a clear tendency to enter blood arteries, which can result in tissue infarction, necrosis, and thrombosis.

**Keywords:** Mucormycosis, fungal infection, saprophytic fungus, diabetic mellitus.

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#### INTRODUCTION

A fungal disease known as mucormycosis is brought on by fibrous saprophytic fungus known as mucorales. *Rhizopus*, *Mucor*, and *Lichtheimia* are some of the most significant genera. They are pathogenic for someone who is already weak. The condition progresses seriously and has a significant death rate<sup>1</sup>. After aspergillosis and candidiasis, mucormycosis has become the third most prevalent invasive mycosis in patients undergoing allogeneic and hematopoietic stem cell transplantation, in order of significance. In the West, mucormycosis is still a risk for those with diabetes mellitus<sup>2</sup>.

#### CASE REPORT

A 40-year-old male patient came to our clinic with a chief complaint of diffuse mild pain on his midface for past 1 month. The patient was apparently asymptomatic 2 months back. The patient gave a history of no history dental extraction in the past 2 years. His medical history revealed that he had uncontrolled diabetes for 2 years with fasting blood sugar level, 164 mg/dl (normal 70–110 mg/dl) and

postprandial sugar level, 275 mg/dl (normal 70–140 mg/dl).

On extraoral examination, there was a mild facial asymmetry with a depressed facial contour seen over left side of the face. The skin over the midface was normal. On palpation, there was no tenderness with no local rise of temperature. The lymph nodes were not palpable. Eye movements were normal, and pupils were reactive. Paraesthesia over left side infraorbital region was noted. The facial expressions were normal (**figure 1**).

Intraoral examination revealed mild diffuse discoloration on the palatal mucosa on right side extending from palatal aspect of 13 to 16. On palpation, the affected area was rough in texture with mild tenderness. There was no pus discharge (**figure:2**).

CT revealed involvement of the maxillary sinus, Frontal sinus and ethmoid air cell involvement were further identified. There were observations of bone erosions on the paranasal sinus walls. Early involvement of the paranasal sinuses was seen on CT scans as mucosal thickening, typically without air or fluid levels. Identification of the invasive disease or

familiarity with the clinical context helped in the recognition of the condition as mucormycosis. On 3D CT images, there was evidence of bone loss / erosion on the left side of the maxilla extending upto orbit and zygoma. The CT scan revealed polypoidal thickening of the mucosa, as well as hyperdense foci and sinus wall erosions in the left maxillary, ethmoid, sphenoid, and frontal sinuses. A CT scan shows thickening of the nodules in the mucosa, with a lack of fluid and a

hyperdense material that causes the walls of the bone sinuses to erode(**figure:3**).

**Surgical Protocol followed:**The surgical protocol, intraoperative and postoperative pictures along with the postoperative treatment protocol are mentioned below (**figure :4,5**).

Reconstruction was not done as the patient was not willing for the same.



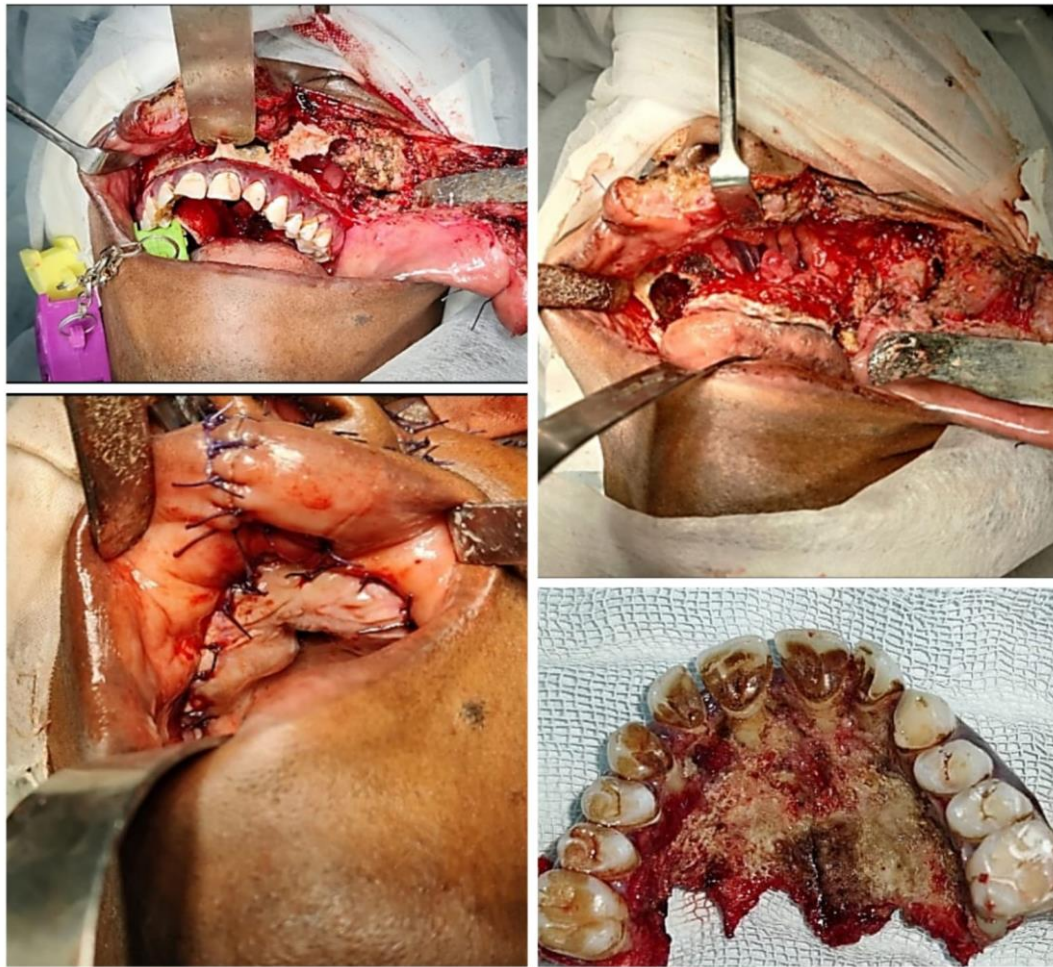
**FIGURE 1: FRONTAL PROFILE SHOWING MILD FACIAL ASYMMETRY IN LEFT SIDE OF FACE**



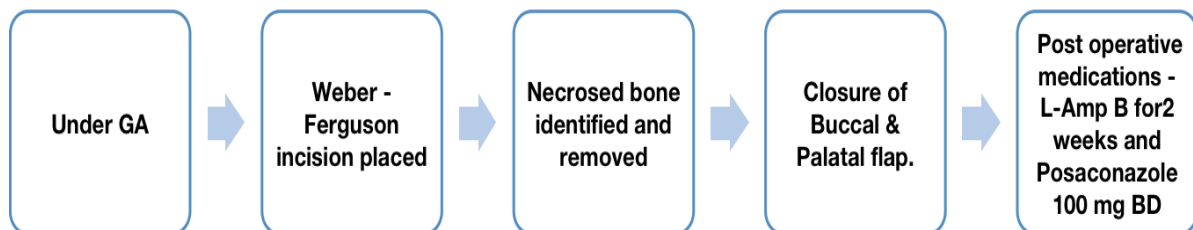
**FIGURE 2: SHOWING INTRA ORAL PICTURE OF PATIENT REVEALING MILD DISCOLORATION ON RIGHT SIDE**



**FIGURE 3: SHOWING 3D RECONSTRUCTED CT IMAGES OF PATIENT WHICH SHOWS BONY EROSIONS ON LEFT SIDE OF MAXILLA INVOLVING ALVEOLUS, INFRA ORBITAL RIM, ANTEROLATERAL WALL OF MAXILLA EXTENDING TILL FRONTOZYGOMATIC SUTURE**



**FIGURE 4: SHOWING INTRAOPERATIVE PICTURES AND EXCISED LESION SHOWING ENTIRE MAXILLARY ARCH**



**FIGURE 5: SHOWING SURGERY PROTOCOL FOLLOWED:**

### DISCUSSION

Mucormycosis(MCR) has a tendency to infiltrate blood arteries, which can result in tissue infarction and thrombosis. With disseminated illness, the mortality rate linked to invasive MCR can surpass 90%. Mucormycosis is categorized into six types: (1) pulmonary; (2) gastrointestinal or renal; (3) cutaneous; (4) diffused; or (6) rare (focal) locations. rhino-orbital mucormycosis(ROM)<sup>3</sup>.ROM is an ophthalmologist-diagnosed angioinvasive fungal infection that affects the orbits and sinuses. When it comes to patients with poorly managed diabetes mellitus or other immunosuppressive conditions, clinicians should be highly suspicious about ROM. One potential risk factor for ROM is corticosteroid medication, which may have contributed to the recent COVID-19

epidemic<sup>4</sup>.When diabetic patients with poorly regulated blood glucose experience ulcers on the head and neck skin, along with rhinitis, headache, orbital inflammation, and eyelid edema, there is a strong reason to suspect a Mucor infection<sup>5</sup>.Mucor can infiltrate blood vessels at the sites of infection because of its unique attraction for and invasiveness towards blood vessels. A fibrin response is set off when fungal hyphae infiltrate blood arteries. This might result in the creation of a thrombus or aneurysm, which can cause tissue ischemia and infarction. Black necrotic scars, characteristic of nasal-cerebral mucormycosis, will result from infarction in the nasal cavity, oral cavity, and visage. A vicious cycle is created when vascular blockage prevents antifungal drugs from penetrating the body, which encourages the growth of



mucor. According to earlier research, an increase in free iron in the host's blood determines a diabetic patient's susceptibility to mucormycosis<sup>6,7</sup>.

The effectiveness of treatment depends on the timely diagnosis of infection and the administration of amphotericin B, a lipid formulation, as an antifungal medication. Stepdown and salvage therapy should make use of posaconazole and isavuconazole. Whenever feasible, surgical debridement should be undertaken immediately as it is essential for tissue diagnosis and treatment. Treatment response depends on reversing the underlying infection risk factor in addition to surgery and antifungal therapy<sup>8</sup>.

### CONCLUSION

A variety of conditions, including uncontrolled diabetes, renal failure, organ transplants, long-term corticosteroid and immunosuppressive therapy, cirrhosis, burns, and AIDS-related malignancies like lymphomas and leukemias, can cause patients to develop mucormycosis, an aggressive fulminant invasive fungal infection. Minor dental treatments like tooth extractions can cause it in a diabetic patient. More efforts ought to be put into the early detection of this illness and the patient's timely treatment.

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