

CASE REPORT

Mucormycosis of the Maxilla: A Case Report

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Received on: 14 September 2024; Accepted on: 25 December 2024; Published on: 26 February 2025

ABSTRACT

Mucormycosis is a severe, potentially fatal invasive fungal infection that arises in immunocompromised persons, typically starting in the nasal passages and paranasal sinuses after inhaling fungal spores. It is triggered by fungi belonging to the Mucorales order and the Mucoraceae family. This infection frequently occurs in the rhinomaxillary area and individuals with weakened immune systems, like those with diabetes. Thus, early detection of this possibly fatal illness and timely intervention is crucial in lowering the death rate.

Keywords: Case report, Fungal, Maxilla, Mucormycosis, Palatal obturator.

Archives of CraniOrofacial Sciences (2024): 10.5005/acofs-11029-0010

INTRODUCTION

Mold infections pose a serious issue for public health globally. They are being more frequently reported in developing nations, with invasive mold infections (IMIs) becoming a significant issue due to the alarming increase in their occurrence, and the considerable illness and death rates linked to such diseases.¹⁻¹¹ Most of the emerging nations are found in tropical and subtropical regions and create a condition for the survival and development of molds.¹² The occurrence of mucormycosis has been documented across the globe over the last 20 years, yet the increase in developing nations has been extraordinary.^{1,5,11,13} Numerous groups of individuals diagnosed with mucormycosis have been reported from various nations, including India, China, Taiwan, Kuwait, and countries in Latin America. Even though it has been traditionally viewed as a community-acquired mycosis, specifically mucormycosis, is now acknowledged as a hospital-acquired infection. Infection too, and has been linked to several methods or instruments utilized in medical facilities, antifungal prevention, wound dressings or medicinal patches, intravenous catheters, and tongue blades.^{1,6,11,13} Mucormycosis, also known as phycomycosis or zygomyco-sis, is an uncommon opportunistic fungal infection caused by fungi from the Mucorales order and Mucoraceae family. This condition was first identified by Paultauf in 1885. Mucormycosis, previously known as Zygomyco-sis, is a severe, potentially fatal invasive fungal infection affecting individuals with compromised immune systems. In developing nations, this fungus frequently appears due to uncontrolled hyperglycemia being the primary reason, while in developed nations, it is primarily found in patients with hematologic cancers. We present a case of maxillary mucormycosis in a patient with COVID-19.

CASE DESCRIPTION

A 70-year-old male presented with pain, swelling in the left maxillary vestibule, and difficulty in chewing for 2–3 weeks. On intraoral examination bilateral mild diffuse inflammation in the entire maxillary vestibule and tooth-bearing area especially on the left side was palpable. The underlying bone was soft, fragile, and tender over the left canine fossa, maxillary sinus region, and hard palate. Segmental mobility of the entire left maxilla was palpable at Le Fort 1 Level. Blood investigations revealed mean

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How to cite this article: Bhargava A, Hassan SA, Dudhe S. Mucormycosis of the Maxilla: A Case Report. *Arch Craniofac Sci* 2024;7(2):37–39.

Source of support: Nil

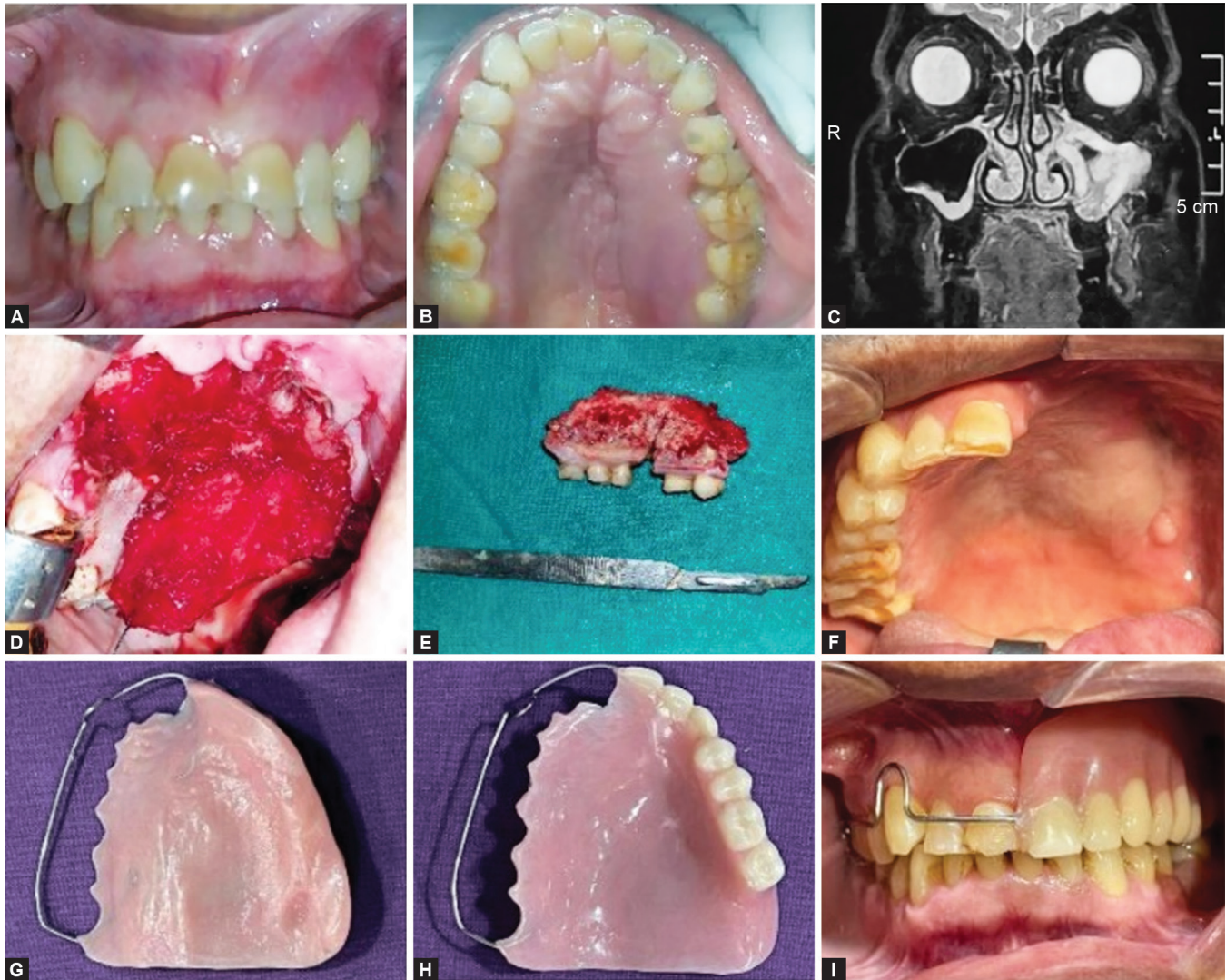
Conflict of interest: None

Patient consent statement: The author(s) have obtained written informed consent from the patient for publication of the case report details and related images.

blood glucose of 169.4 mg/dL, HbA1c of 7.70%, and a C-reactive protein level of 54.2 IU/dL. On histopathological examination, fungal hyphae were seen, Diffuse moderate concentric T1 hypointense & T2 hyperintense mucosal thickening involving bilateral maxillary sinuses s/o sinusitis was reported on magnetic resonance imaging (MRI). On computed tomography (CT) scan examination, Abnormal soft tissue inflammatory changes involving the pre-maxillary region, pre-antral, infraorbital regions, left sphenopalatine fossa, infratemporal fossa, and masticator spaces, retromolar region, soft palate, superior alveolar process on the left side was reported. The patient underwent Left Infrastructure Maxillectomy + Left Palatectomy and other surgeries. Oral feeding was started after 10 days. Healing was uneventful with complete soft tissue healing over the junction of the left maxillary buccal vestibular flap and the lateral margins of the left palatal flap and at the hard and soft palatal midline. After a period of 4 months, the resultant defect was rehabilitated with a removable partial denture. No speech deficits could be elicited (Fig. 1).

DISCUSSION

Mucormycosis encompasses a range of infections triggered by Zygomycetes, a fungus characterized by its branching, ribbon-like



Figs 1A to I: (A) Preoperative intraoral view; (B) Preoperative intraoral palatal view; (C) Preoperative MRI PNS with contrast; (D) Intraoperative intraoral view; (E) Excised specimen; (F) Intraoral view after 3 months of Postoperative follow-up; (G) Removable partial denture intaglio surface; (H) Removable partial denture occlusal surface; (I) Removable partial denture *in-situ*

hyphae, and sexual reproduction through zygospore formation. These pathogens are commonly found in fruits, soil, and feces, and can also be obtained from the mouths, nasal passages, and throats of healthy individuals with no illness. Mucorales is a subgroup within Zygomycetes that is recognized for causing a particular kind of clinical infection. Generally, these fungi are non-pathogenic; they become harmful only in hosts with severely compromised immune systems. In the maxillofacial region, mucosal ulcers or sites from dental extractions may serve as entry points for mucormycosis, particularly when the immune system of the host is weakened.¹⁴ Mucormycosis infection occurs due to asexual reproduction of spores. The small spores become airborne and land on the mucous membranes of the mouth and nose in humans. In most immune-capable individuals, the phagocytic response will limit these spores. If this response fails, germination will take place and hyphae will develop. Because polymorphonuclear leukocytes are not as effective at removing hyphae, infections become established in immunocompromised individuals. It advances further as the hyphae start to infiltrate arteries, spreading within the walls

and lumens of the vessels, leading to thrombosis, ischemia, and infarction accompanied by dry gangrene in the affected tissues. Hematogenous spread to different organs can occur (including the lungs, brain, etc.) and results in sepsis.¹⁵ Mucormycosis in the oral cavity may arise from two distinct sources. One source is through the respiratory system (through the nose), while the other involves direct contamination of the wound, leading to the spread to other organs as a frequent complication. Clinical symptoms may appear throughout the oral cavity, including the mandible, particularly when the infection results from direct contamination of a wound. A key difference between maxillary and mandibular infections is the potential for cavernous sinus thrombosis, a serious complication associated with maxillary infections.¹⁶ Computed tomography/Magnetic resonance imaging served as the gold standard for assessing the disease's extent and assisted in planning the scope of surgical debridement. In the present case report, we determined the bony involvement and progression of the disease into soft tissue via Contrast-enhanced CT/MRI of the paranasal sinuses, orbits, and brain. Extensive surgical removal changes

facial appearance, leads to psychological and social challenges, and hinders functions like chewing, swallowing, and speaking. Nonetheless, a properly crafted obturator prosthesis improves chewing efficiency, and speech clarity, and reduces psychological distress. The management of prosthetic defects has a significant impact on the patient's functionality. Options for prosthetics vary from basic removable devices to sophisticated zygomatic hybrid implant prostheses. It is recommended to start rehabilitation once there has been a full recovery from the infection.

CONCLUSION

Mucormycosis is a severe and rapidly progressing invasive fungal infection that can arise in individuals with various underlying conditions, including uncontrolled diabetes, kidney failure, organ transplantation, extended use of corticosteroids and immunosuppressants, cirrhosis, burns, and malignancies associated with AIDS, like lymphomas and leukemias. Managing ROCM necessitates a collaborative approach involving multiple disciplines. The present clinical report focuses on the key etiological factors, clinical warning signs of the disease, and extensive radiological presentation of the disease along with comprehensive medical, surgical, and functional prosthetic management strategies utilized by our team in addressing this aggressive condition.

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