

CASE REPORT

Periodontal Abscess—A Common Lesion with an Uncommon Presentation of Maxillary Mucormycosis: A Case Report

Shiphalika Sinha¹, Harsha Ponnaluri², Swati Setty³

ABSTRACT

Aim: To present a case of mucormycosis of the maxilla which mimics a periodontal abscess in its clinical presentation.

Background: As mankind continues to battle with the pandemic of coronavirus disease-2019 (COVID-19) which is still on the rise, the issue of post-COVID-19 complications has emerged as a significant problem majorly during the deadly second wave of the dreadful virus. The complications can be associated with a wide range of bacterial and fungal coinfections. One of the primary reasons attributed to the coinfections is the use of corticosteroids and other adjunctive therapies to arrest any possibility of cytokine storm syndrome that may occur in critically ill patients. One such deadly post-COVID-19 complication which is now being reported frequently is mucormycosis. It is an aggressive opportunistic fungal infection known to be associated with a poor prognosis if not diagnosed and treated on time.

Case description: A case of mucormycosis of the maxilla in a 52-year-old man who reported to our outpatient department with multiple abscesses on the labial and buccal aspects of maxillary gingiva accompanied with hyperglycemia secondary to uncontrolled diabetes with a history of a COVID-19 infection.

Conclusion: During this pandemic that we are dealing with, it becomes extremely important to keep a close watch on the post-COVID-19 complications in order to reduce any further discomfort to patients. Any COVID-19 recovered patient who visits a dental practitioner in the first 4–5 months post-recovery with unexplained pain in the teeth, mobile teeth, or multiple abscesses is suspected to have mucormycosis.

Clinical significance: Dentists, especially periodontists, are going to play a key role and be the first window in the early diagnosis of this disease.

Keywords: Mucormycosis, Oral manifestations, Periodontal abscesses, Periodontitis, SARS-CoV-2.

Journal of Oral Health and Community Dentistry (2022): 10.5005/jp-journals-10062-0127

BACKGROUND

While the world continues to battle with the pandemic of coronavirus disease-2019 (COVID-19), the issue of post-COVID-19 complications has emerged as a significant problem. Post-COVID-19 complications may be associated with a wide range of bacterial and fungal coinfections.¹ The main reason behind the coinfections is the use of corticosteroids and other adjunctive therapies to arrest any possibility of cytokine storm syndrome that may occur in critically ill patients.² One such deadly post-COVID-19 complication which is on the rise is mucormycosis. It is an aggressive opportunistic fungal infection known to be associated with a poor prognosis if not diagnosed and treated on time. Before COVID-19 pandemic, it was a rare fungal infection, caused by a group of molds called Mucormycetes.³

CASE DESCRIPTION

A 52-year-old male patient (Fig. 1) reported to our outpatient department (OPD) with a chief complaint of pain and swelling in the upper front teeth region for 2 months. On dwelling the history, the patient reported that he was apparently alright 2 months ago when he developed pain over the right middle third of the face, upper back tooth region, and right temporal region. The pain was continuous, pricking, and radiating in nature to the ears and temporal region. No aggravating or relieving factors were associated with the pain.

The patient gave a history of COVID-19 infection 5 months ago and was put on tablet Predace 4 (methylprednisolone 4 mg) and Covifor (remdesivir for injection 100 mg/vial). He was a known case of hypertension and type II diabetes mellitus for 10 years and was on

¹⁻³Department of Periodontics and Oral Implantology, SDM College of Dental Sciences and Hospital, Dharwad, Karnataka, India

Corresponding Author: Swati Setty, Department of Periodontics and Oral Implantology, SDM College of Dental Sciences and Hospital, Dharwad, Karnataka, India, Phone: +91 9845680773, e-mail: drssetty@gmail.com

How to cite this article: Sinha S, Ponnaluri H, Setty S. Periodontal Abscess—A Common Lesion with an Uncommon Presentation of Maxillary Mucormycosis: A Case Report. *J Oral Health Comm Dent* 2022;16(1):67–71.

Source of support: Nil

Conflict of interest: None

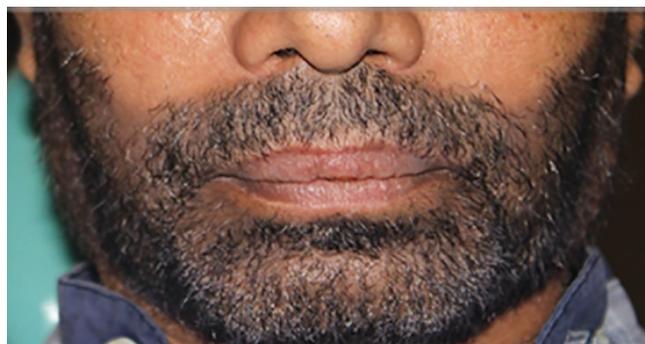


Fig. 1: Frontal view of the face

tablet Amcard 1-0-0 (Amlong 5 mg and atenolol 50 mg) and irregular treatment with different oral hypoglycemics. Blood sugar monitoring was infrequent. Habit history of tobacco chewing, 10 times since 25 years which he discontinued 1 month prior to reporting to our OPD.

On extraoral examination, mild facial asymmetry was noted on the right middle third of the face, diffuse swelling noted on the right middle third of the face extending from the right ala of the nose to the right infraorbital rim and tragus and inferiorly up to the lower border of the mandible. Tenderness was present in the right medial canthus in the frontotemporal region. Bilateral submandibular lymph nodes were tender on palpation.

Intraoral examination revealed generalized gingival inflammation, bleeding on probing with 18, 17, 16, 15, 14, 13, 12, 11, 21, 22, and 23, pocket with 17, 15, 14, and 13, ulcers on attached gingiva with 13, 12, 11, 21, 22, and 23, periodontal abscesses with 17, 15, 11, 22, and 23, sinus opening with 14, missing 16, crowding with lower anteriors, attrition with lower anteriors, palatal abscess with 13, grade III mobility with 14, 13, 12, 11, and 21, grade II mobility with 17, and grade I mobility with 11 (Figs 2 to 5).

Hematological examination revealed a low hemoglobin level of 9.5 g%, HbA1C level of 8.8 depicting poorly controlled blood sugar levels, and a random blood sugar level of 282 mg/dL.

The patient was subjected to various radiographic examinations. Orthopantomogram revealed loss of trabecular pattern from the distal aspect of 11 to the distal aspect of 24 (Fig. 6). Computed tomography (CT) images revealed erosion of the alveolar process of the maxilla on the right side crossing midline and extending up to the alveolar surface of 23. Circumferential mucosal thickening was noted involving the right maxillary sinus, and mucosal thickening was noted in the left maxillary sinus (Figs 7 to 10).

Histopathological examinations were carried out wherein potassium hydroxide staining was positive for fungal elements



Fig. 4: Intraoral maxillary occlusal view



Fig. 5: Intraoral mandibular occlusal view



Fig. 2: Intraoral right lateral view



Fig. 3: Intraoral left lateral view



Fig. 6: Panoramic view

and bone biopsy revealed fibrocollagenous tissues with various inflammatory components. Figures 11 and 12 show fungal elements with typical broad, aseptate hyphae, and therefore, histopathologically, they were diagnosed as mucormycosis.

After confirmation with CT scans, the patient was admitted into our hospital and was administered two doses of liposomal amphotericin B 50 mg injection intravenously on an alternate-day basis under constant monitoring of vitals. After availing fitness for being subjected to general anesthesia, the patient was taken up for surgery. Debridement and extraction of teeth from 24 to 18 followed by primary closure under general anesthesia was done (Figs 13 and 14).



Fig. 7: Preoperative CT scan coronal section



Fig. 10: 3D model of the skull preoperative left lateral view



Fig. 8: Preoperative CT scan axial section

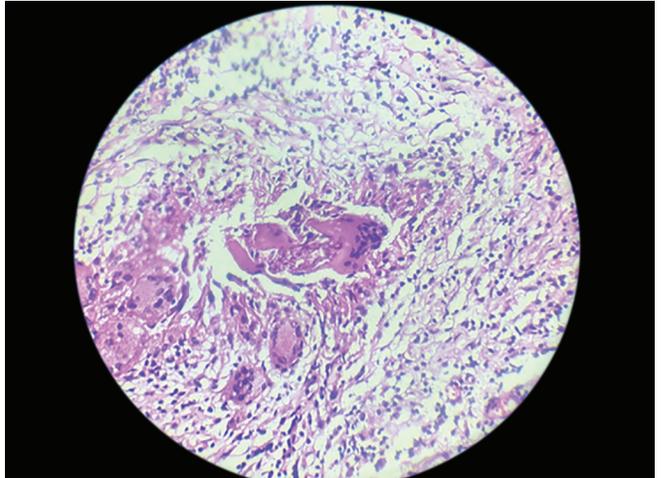


Fig. 11: Bone biopsy reveals fibrocollagenous tissue with various inflammatory components



Fig. 9: 3D model of the skull preoperative right lateral view

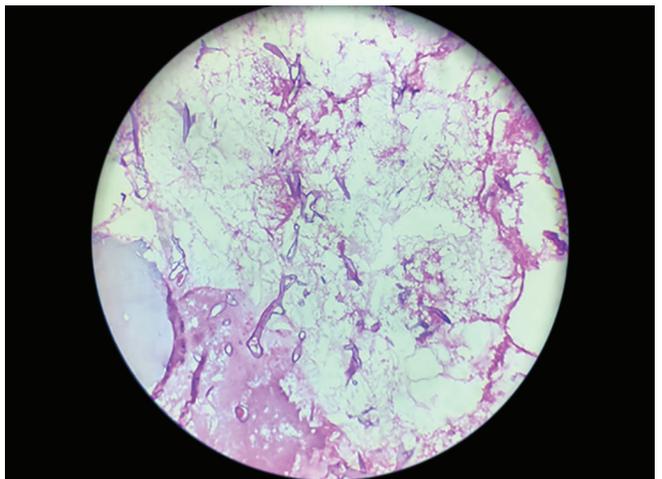


Fig. 12: Bone biopsy reveals fungal elements with typical broad, aseptate hyphae

Postoperatively, intravenous injection of liposomal amphotericin B 50 mg two doses was administered along with antibiotics and analgesics. Follow-up pictures after 1 week of surgery showed uneventful healing (Fig. 15).

A postoperative CT scan here was taken at 3 months which showed hypodensity of the maxilla on the frontal aspect and on the right side indicating the hemimaxillectomy that was done as a part of the surgical procedure and no further changes were seen (Figs 16 to 18). The patient is under regular follow-up.



Fig. 13: Reflection of full-thickness flap

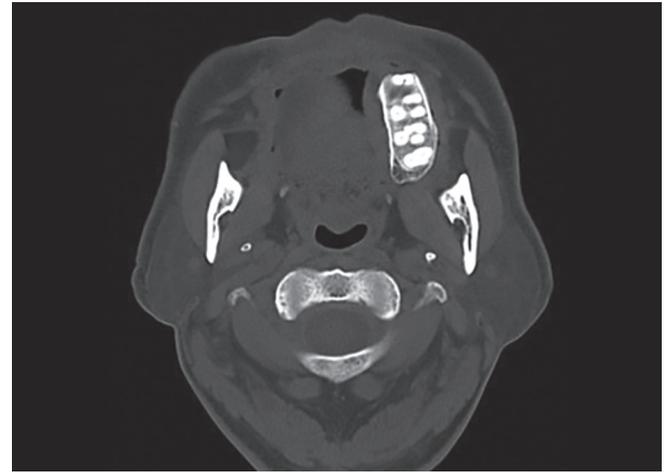


Fig. 16: Postoperative CT scan axial view after 3 months

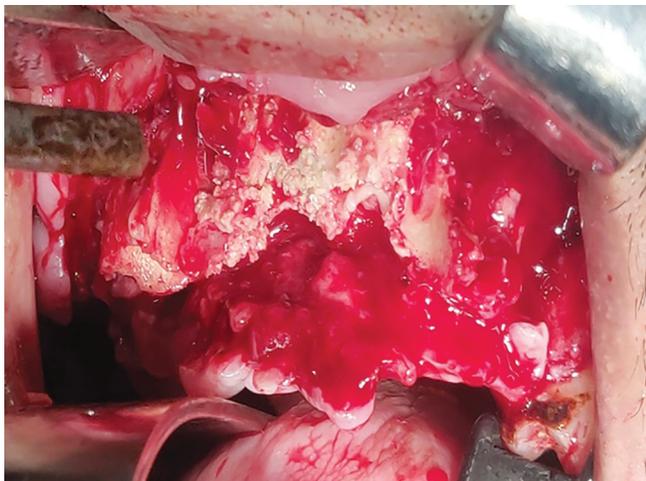


Fig. 14: Debridement and extraction of teeth from 24 to 18



Fig. 17: Postoperative CT scan coronal view after 3 months

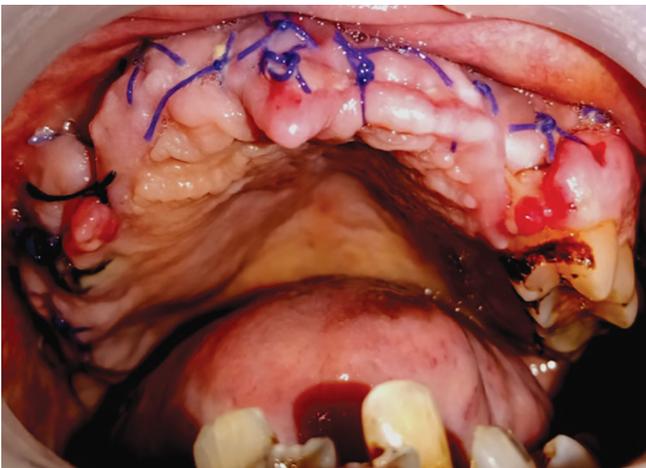


Fig. 15: Postoperative 1 week healing



Fig. 18: Postoperative 3D model of the skull after 3 months

DISCUSSION

The deadly SARS-CoV-2 has already taken a toll on more than 4.5 million lives worldwide and the number of deaths is still on the rise.⁴ COVID-19 is found to be associated with a wide range of symptoms ranging from mild flu to serious presentations like severe acute respiratory distress syndrome.⁵ The disease is also found to be associated with a plethora of bacterial and fungal infections secondary to the infection. Mucormycosis is one such opportunistic fungal infection that has debilitated many patients post recovery from COVID-19 caused by species belonging to the genera: *Rhizopus*, *Lichtheimia*, and *Mucor* of the order *Mucorales*.⁶ These fungi are found to be commonly present on decayed plants and soil and have an angioinvasive nature when it affects the human body which spreads aggressively.⁷ Mucormycosis manifestation is classified into the following six forms: (1) rhinocerebral, (2) pulmonary, (3) cutaneous, (4) gastrointestinal, (5) disseminated, and (6) uncommon presentations based on its anatomical location.⁸ Mucormycosis presents as sinusitis—nasal blockage or congestion and nasal discharge (blackish/bloody)—local pain in the cheekbone, unilateral facial pain, numbness or swelling, blackish discoloration over the bridge of the nose/palate, toothache, loosening of teeth, or jaw involvement.⁹ Uncontrolled diabetes mellitus is often associated with mucormycosis of the paranasal sinuses and is considered a risk factor when associated with the COVID-19 infection. Usually, intraorbital margins are involved and in severe cases, intracranial involvement is seen. Inadvertent use of steroids and broad-spectrum antibiotics used during the management of COVID-19 can exacerbate the fungal infection. The diagnosis of our case along with possible etiologies like uncontrolled diabetes mellitus and administration of steroids and other immunomodulatory drugs due to COVID-19 was in concordance with various other studies.^{10–12} The exact incidence of mucormycosis in India is unknown due to the lack of population-based studies. The estimated prevalence of mucormycosis is around 70 times higher in India than that in global data.¹³ The predisposing factors for mucormycosis are corticosteroid therapy, comorbidities—organ or bone marrow transplantation/hematological malignancy—prolonged intensive care unit stay, increased serum levels of available iron, or deferoxamine therapy in patients receiving hemodialysis—patients requiring iron chelation therapy.¹⁴ Association of diabetes and mucormycosis is likely observed due to impaired neutrophil function—chemotaxis, transmembrane migration, reduced superoxide production, reduced binding of transferrin to iron in acidotic conditions, increased glucose regulatory protein of 78 mediating invasion and damage of human endothelial cells by *Rhizopus oryzae*, platelets—through structural and functional modifications of the platelet—membrane properties, and alterations of nitric oxide metabolism.⁸ COVID-19 patients could be at high risk for mucormycosis for various reasons like lymphopenia, high dose and early initiation of steroids, uncontrolled diabetes, high levels of IL-6 and ferritin, tocilizumab, and other immunomodulators, neutropenia, and prolonged use of broad-spectrum antibiotics which were in correlation with our case.

CONCLUSION

It is important to recognize this infection at an early stage to potentially reduce soft and hard tissue necrosis. Since dental

professionals, especially periodontists, are the first ones who identify the signs and symptoms and diagnose this condition and will have a vital role in the future, we must alert all our colleagues of this mutilating and life-threatening infection.

CLINICAL SIGNIFICANCE

Dentists, especially periodontists, are going to play a key role and be the first window in the early diagnosis of this disease.

ACKNOWLEDGMENT

Authors would like to thank the timely help and efforts of Dr Anil Desai and the team from the Department of Oral and Maxillofacial Surgery of SDM College of Dental Sciences and Hospital and Dr Megha Patwardhan for her patience and support.

ORCID

Shiphalika Sinha  <https://orcid.org/0000-0002-5216-6905>

Harsha Ponnaluri  <https://orcid.org/0000-0002-6902-1761>

REFERENCES

1. Arastehfar A, Carvalho A, van de Veerdonk FL, et al. COVID-19 associated pulmonary aspergillosis (CAPA)-from immunology to treatment. *J Fungi (Basel)* 2020;6(2):91. DOI: 10.3390/jof6020091.
2. Kolilekas L, Loverdos K, Giannakaki S, et al. Can steroids reverse the severe COVID-19 induced “cytokine storm”? *J Med Virol* 2020;92(11):2866–2869. DOI: 10.1002/jmv.26165.
3. Tran D, Schmit B. An aggressive case of mucormycosis. *Cureus* 2020;12(8):e9610. DOI: 10.7759/cureus.9610.
4. World Health Organisation. Coronavirus (COVID-19) dashboard. 2021.
5. Maveddat A, Mallah H, Rao S, et al. Severe acute respiratory distress syndrome secondary to coronavirus 2 (SARS-CoV-2). *Int J Occup Environ Med* 2020;11(4):157–178. DOI: 10.34172/ijoem.2020.2202.
6. Binder U, Maurer E, Lass-Flörl C. Mucormycosis—from the pathogens to the disease. *Clin Microbiol Infect* 2014;20(Suppl 6):60–66. DOI: 10.1111/1469-0691.12566.
7. Mititelu R, Bourassa-Blanchette S, Sharma K, et al. Angioinvasive mucormycosis and paradoxical stroke: a case report. *JMM Case Rep* 2016;3(4):e005048. DOI: 10.1099/jmmcr.0.005048.
8. Petrikos G, Skiada A, Lortholary O, et al. Epidemiology and clinical manifestations of mucormycosis. *Clin Infect Dis* 2012;54(Suppl 1):S23–S34. DOI: 10.1093/cid/cir866.
9. Global guideline for the diagnosis and management of mucormycosis: an initiative of the European Confederation of Medical Mycology in cooperation with the Mycoses Study Group Education and Research Consortium. *Lancet Infect Dis* 2019;19(12):e405–e421. DOI: 10.1016/S1473-3099(19)30312-3.
10. Mehta S, Pandey A. Rhino-orbital mucormycosis associated with COVID-19. *Cureus* 2020;12(9):e10726. DOI: 10.7759/cureus.10726.
11. Maini A, Tomar G, Khanna D, et al. Sino-orbital mucormycosis in a COVID-19 patient: a case report. *Int J Surg Case Rep* 2021;82:105957. DOI: 10.1016/j.ijscr.2021.105957.
12. Garg D, Muthu V, Sehgal IS, et al. Coronavirus disease (Covid-19) associated mucormycosis (CAM): case report and systematic review of literature. *Mycopathologia* 2021;186(2):289–298. DOI: 10.1007/s11046-021-00528-2.
13. Prakash H, Chakrabarti A. Epidemiology of mucormycosis in India. *Microorganisms* 2021;9(3):523. DOI: 10.3390/microorganisms9030523.
14. Evidence based advisory in the time of COVID-19. *ICMR*; 2021.