

## Case Report

### Concomitant Presence of Mandibular Mucormycosis in a COVID Positive Patient: Report of A Rare Case

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#### ABSTRACT:

Reports of COVID-19 associated mucormycosis has exponentially increased in recent times, especially in patients with uncontrolled diabetes. It is reported to be associated with high mortality and morbidity rates and hence has emerged as a public health crisis. Covid-19 associated mucormycosis poses a diagnostic challenge for the Dentists as the clinical and radiological features are largely non-specific. The most common variant of mucormycosis in general is rhino-orbital and involvement of mandible is a rather uncommon presentation. Here we document a rare case of mucormycosis affecting the mandible with the concomitant presence of COVID19 infection in a diabetic patient.

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#### INTRODUCTION

Coronavirus Disease 2019 (COVID-19), during the second wave in the year 2021, had led to shocking anarchy in India, including alarmingly high incidence of mucormycosis in COVID 19 patients. Initially, corticosteroids were given in COVID-19 patients to lower the mortality rate, especially in critically unwell patients in intensive care units (ICU). The heavy doses of steroids, however led to increased susceptibility to the opportunistic fungal infections. Steroids basically lead to increased blood sugar levels and the acidic surroundings brought on due to this state promote the growth of the fungal Mucorales. <sup>1</sup>The outbreak of mucormycosis left heaps of human beings dead or disabled after facial during the COVID 19 outbreak.

Mucormycosis is the third most common angio-invasive mycotic infection, after candidiasis and aspergillosis. It occurs more frequently in immunocompromised people and is commonly caused by inhalation of airborne fungus spores, ingestion, or infection of damaged tissues. <sup>2</sup>Most common form of mucormycosis is rhino-cerebral, however

mucormycosis affecting mandible is a relatively uncommon. Here we report such a rare case of mucormycosis involving mandible with detailed clinical and radiographic diagnostic workup.

#### CASE PRESENTATION

A 47-year-old male patient reported to our Department with the complaint of pain in the lower left posterior region of the jaw for 10 days along with reduction in mouth opening.

Medical history of the patient revealed a recent diagnosis of type-2 diabetes mellitus (DM). History also revealed that the patient was diagnosed with COVID and was admitted to a hospital 25 days ago. The patient had accomplished both doses of Covishield vaccine. His HRCT score reported at that time was 10/25. One cycle of haemodialysis was done, and the patient had one episode of convulsion. Biochemical investigations revealed an elevated blood sugar level. His glycated haemoglobin (HbA1c) observed value post treatment was 11.6.

At the time of reporting to the Department, the patient appeared to be alert, oriented and afebrile.

Extraoral examination revealed a solitary diffuse swelling on the lower jaw which was extending from left parasymphysal area to the left angle of mandible causing facial asymmetry. It measured approximately 4 x 3 cm in size. The skin over the swelling appeared stretched and slightly erythematous. (Fig 1) On palpation, the swelling was soft in consistency, tender with no local rise in temperature. Left submandibular nodes were palpable and tender.

Intraoral examination revealed denuded mandibular alveolus with exposed necrotic bone, extending mesio-distally from the distal aspect of 42 to the distal aspect of 36 and supero-inferiorly from the alveolar crest to the buccal vestibular region. Teeth were missing in the associated region with the exfoliation sockets of 41,42,31,32,33,34,35 noted. (Fig 2)

On palpation, the affected area was rough in texture with mild tenderness. Grade III mobility was seen with respect to 36 and 37 and his overall periodontal status was poor.

Considering the medical history and clinical presentation, a tentative diagnosis of deep fungal infection viz. mucormycosis was made.

Computed Tomography of head and neck was made to analyze the extent of the lesion. Thickening on buccal side of left gingiva-buccal sulcus was also noted along with involvement of left buccal space (Fig 3 a). Enlargement of left lateral and medial pterygoid associated with coalescing hypodense lesions was noted. (Fig 3 b) Anterior portion of mylohyoid muscle showed well-defined hypodense lesions showing mild peripheral enhancement. (Fig 3c) Suppurative adenitis in left submandibular lymph nodes was observed. (Fig 3d)

Incisional biopsy was performed of necrotic tissue from the body of left mandible and was sent for histopathological examination. It showed a necrotic fibromuscular tissue with acute inflammatory exudate and numerous broad aseptate hyphae of fungus. (Fig 4) The final diagnosis of mucormycosis of the mandible was derived on the basis of fungal morphology as demonstrated by H & E staining.

## DISCUSSION

The German pathologist Paltauf first mentioned the human ailment precipitated with the aid of, ability of the folks of mucorales in 1885 and named it "Mycosis mucorina"<sup>3</sup>

Mucormycosis, also known as Black fungus, Phycomycosis is caused by saprophyte fungus. It is a fatal opportunistic fungal infection which frequently occur in immunocompromised patients. Uncontrolled diabetes, malignancies like leukaemias and lymphomas, renal failure, organ transplant, prolonged corticosteroid therapy, immunosuppressive therapy, malnutrition, cirrhosis, burns and AIDS are all predisposing factors for Mucormycosis.<sup>4</sup>

There were several perspectives regarding the outbreak of mucormycosis in India, there were several perspectives. According to WHO statistics, about

15.3% of the world's diabetic population resides in India. It was reported that the patients with history of Diabetes mellitus, have increased susceptibility to mucormycosis post the recovery from Covid-19 infection. Our patient too had a poor glycaemic management which is one of the regular predisposing elements for Mucormycosis.<sup>5</sup>

Mucormycosis is categorised into two types; Superficial and Visceral. The superficial kind leads to infection of external ear, fingernails and skin. Visceral is further categorized into pulmonary, gastrointestinal, rhino cerebral or rhino-maxillary form.<sup>6</sup>

The infection more frequently develops in the maxillary sinus and lateral wall of the nose in the maxillo-facial region, then spreads rapidly via vascular invasion to the orbit, palate, maxillary alveolus, and eventually to the cavernous sinus and brain. In early stage of Mucormycosis, symptoms such as ptosis, proptosis, fever, headache swelling of cheek and facial paraesthesia, nasal discharge, necrotic turbinate is present. The oral manifestations consist of ulceration of palate, due to necrosis and invasion of palatal vessels. Ulcer can also be noted on gingivae, lip and alveolar bone. It additionally leads to denudation of underlying bone.<sup>7</sup>

Our patient presented with mucormycosis of mandible, which is a comparatively rare entity with only 23 cases reported worldwide in last 50 years.<sup>8</sup>

During COVID, a sudden surge in incidence of mucormycosis was noted, especially in the patients with history of Diabetes mellitus. Diabetes mellitus often alters the body's immune system's natural response to infections in several ways. Hyperglycaemia leads to fungal proliferation and decreases the chemotaxis as well as phagocytic regulation which lets in the innocuous organisms to cultivate in acid-rich environment.<sup>9</sup>

Warm and humid environment, oxygen, humidifiers and oxygen masks are all contributing factors to the spread of infection.<sup>10</sup>

In microscopic examination, the lesion denotes considerable broad aseptate fungal hyphae which exhibit branching at 90 degrees as seen in our case. Aspergillus is the histopathological differential diagnosis of Mucormycosis. Key distinction is that in aspergillosis, septate appears to be smaller in width and greater acute angle branching is seen.<sup>9</sup>

The management of Mucormycosis comprises of primary detection, rectification of the associated predisposing factors, surgical debridement of the affected tissue and prescribing the anti-fungal drugs; i.e., Amphotericin B. The supplementary remedy involves the utilization of itraconazole, Posaconazole, hyperbaric oxygen, and cytokine therapy.<sup>3</sup> Our patient was referred to Department of ENT for further management but was later lost to follow up as he shifted to his native place for treatment.

**LEGENDS FOR FIGURES**

Fig 1: Diffuse swelling on the left side involving lower border of the mandible

Fig 2: Intra-oral image showing avascular denuded area with empty sockets.

Fig 3: CT scan images

Fig 3a Thickening on buccal side of left gingiva-buccal sulcus

Fig 3b Enlargement of left lateral and medial pterygoid associated with coalescing hypodense lesions

Fig 3c Anterior portion of mylohyoid muscle showed well-defined hypodense lesions

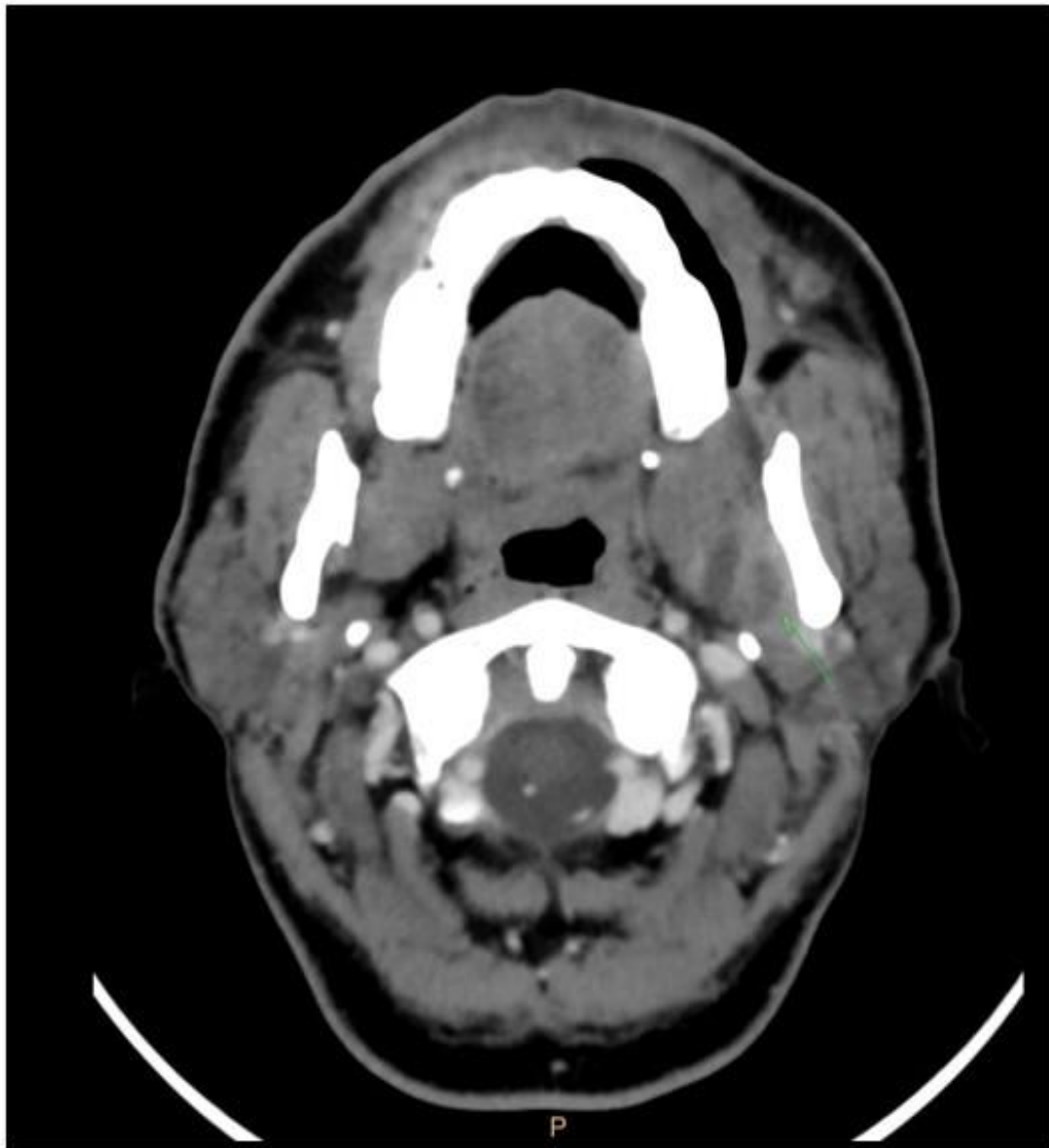
Fig 3d Suppurative adenitis in left submandibular lymph node

Fig 4: Histopathological image showing aseptate hyphae present

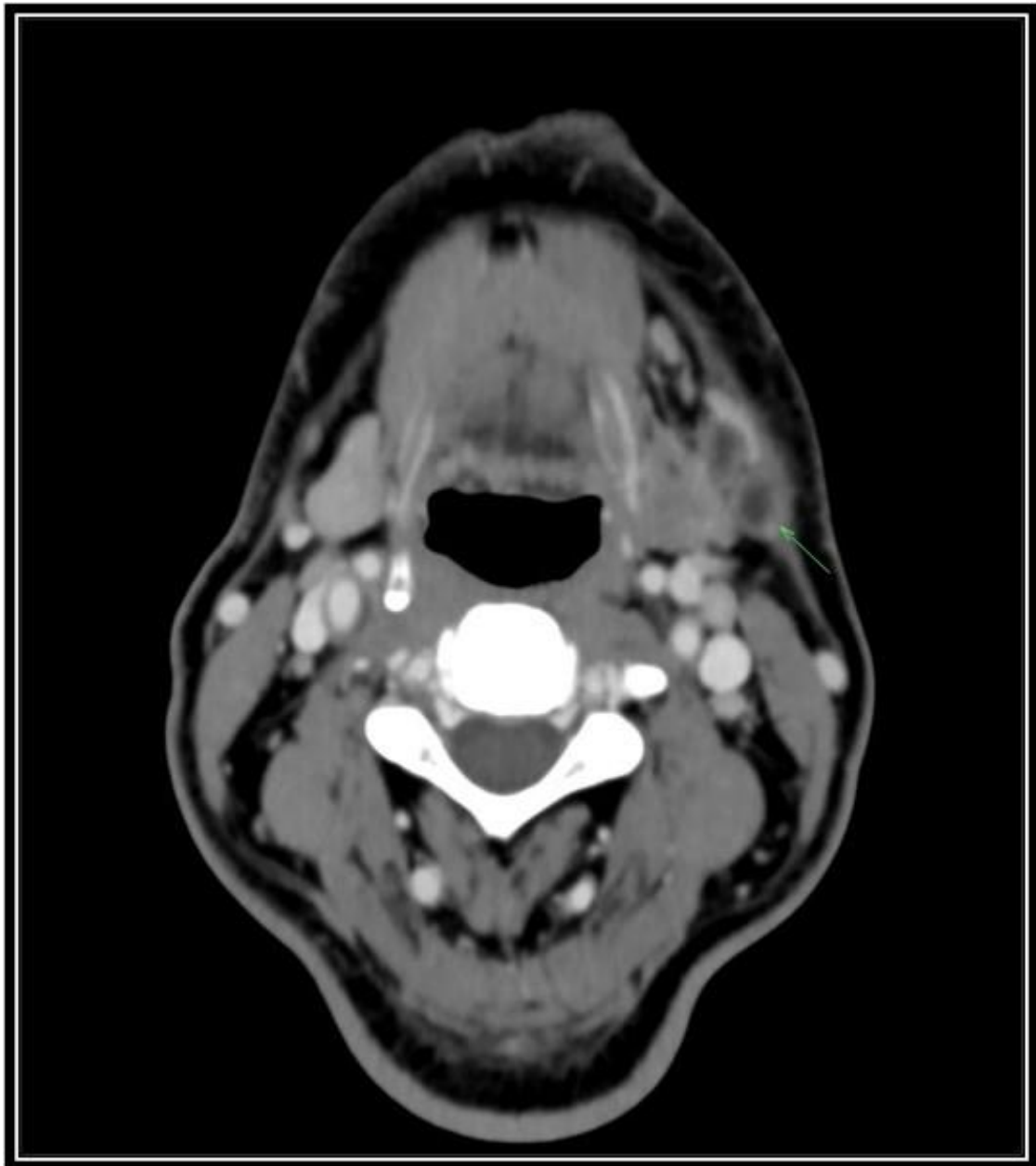


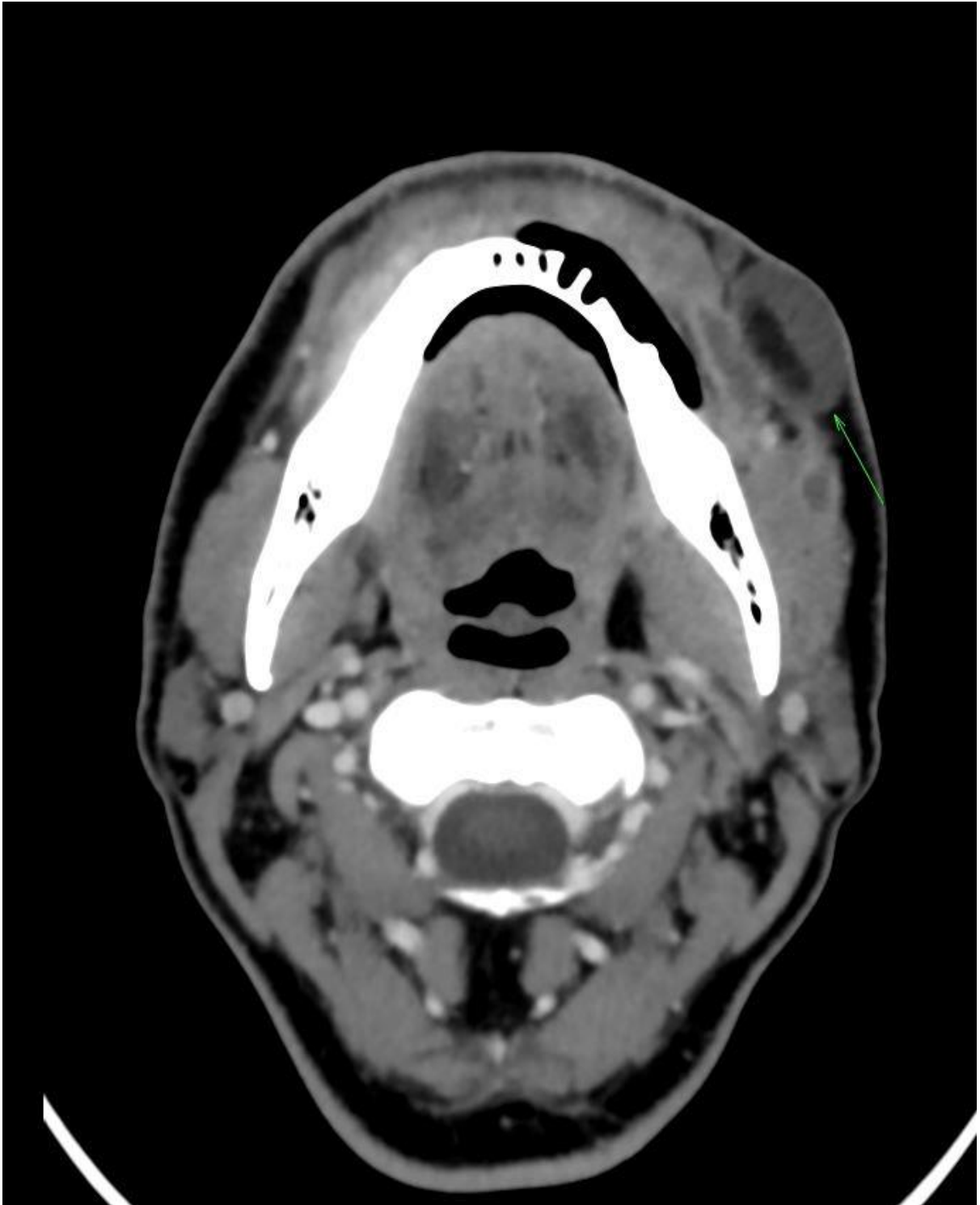




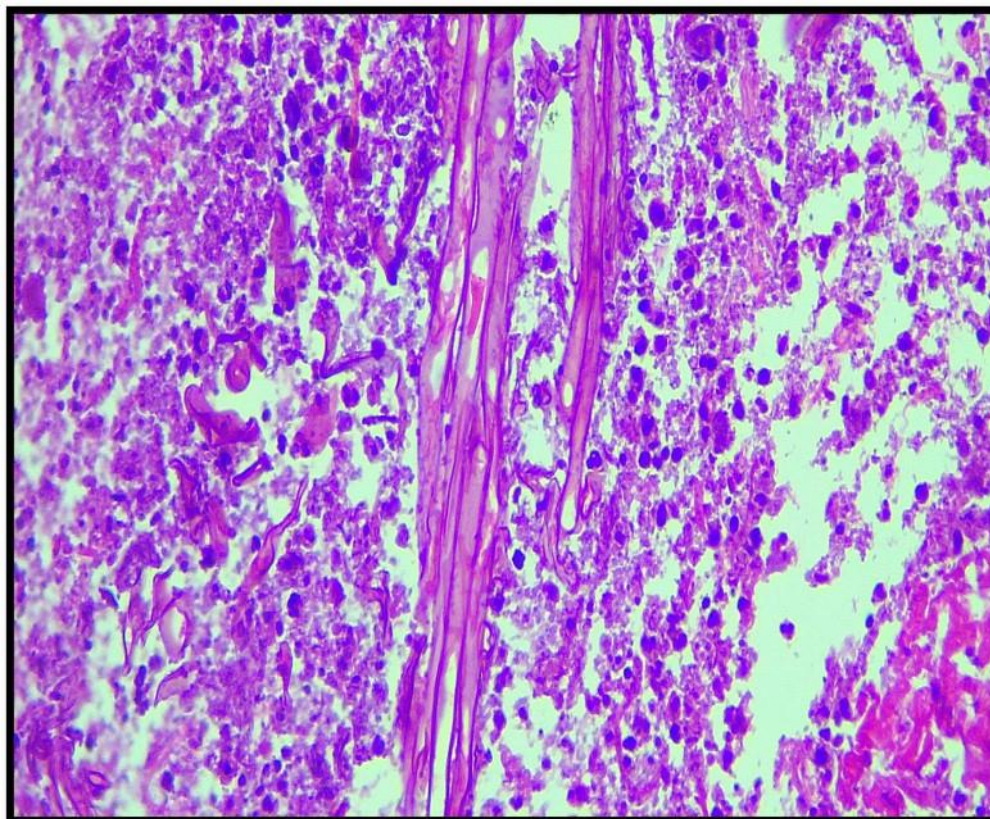












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