DOI: 10.7860/JCDR/2026/84620.23943

Case Report

Ear,Nose and Throat Section

Nasal Cavernous Haemangioma Mimicking Mucormycosis: A Rare Case Scenario

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ABSTRACT

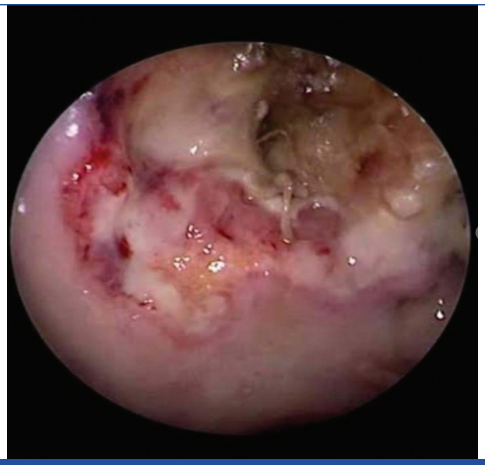
Haemangiomas are benign vascular tumours that arise from abnormal proliferation of the cells lining blood vessels, leading to localised growths filled with blood. Microscopically, haemangiomas are usually categorised into three types: capillary, cavernous, and mixed. While haemangiomas commonly occur in the head and neck region, their presence in the nasal cavity is quite rare. When nasal haemangiomas do occur, they are usually of the capillary type, found on the nasal septum, and most often seen in children and females. A 77-year-old male patient presented to Department of Otorhinolaryngology with complaints of right-sided obstruction and nasal discharge since one month. The initial endoscopic and radiological investigation were suggestive of mucormycosis. The patient underwent Functional Endoscopic Sinus Surgery (FESS) and the necrotic nasal mucosa was sent for histopathological examination which was suggestive of cavernous haemangioma. This case underscores the importance of considering vascular tumours like cavernous haemangioma in the differential diagnosis of nasal masses, and how imaging combined with histopathology is essential for accurate diagnosis and appropriate treatment.

Keywords: Histopathology, Nasal discharge, Nasal obstruction, Vascular tumours

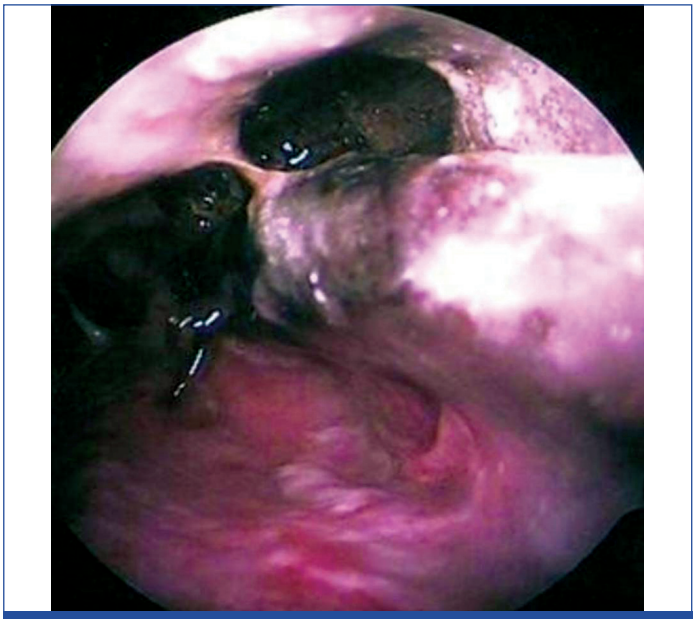
CASE REPORT

A 77-year-old male with a known history of poorly controlled diabetes mellitus and hypertension presented with complaints of right-sided nasal obstruction and facial pain which was localised to the right side since one month and described it as deep and dull in character. Patient also reported blood-tinged nasal discharge from the right nostril with complete loss of smell (anosmia) for 10 days, and diminished sensation within the nasal cavity. Patient had a history of loosening of a tooth on the upper right molar 40 days back. He denied any recent dental procedures, or upper respiratory infections.

A diagnostic nasal endoscopy was performed, which revealed black, hard crusts extensively lining the entire right nasal cavity- a finding immediately concerning for necrotic tissue. The nasal mucosa of the septum was visibly crusted, and on careful elevation of the mucoperichondrial flap, the underlying pathology became more apparent [Table/Fig-1]. The cartilaginous septum was exposed, indicating tissue loss, and black crusts were noted to be invading the bony part of the septum, suggesting deeper involvement. On further inspection, the middle turbinate was still identifiable, though its mucosa was coated with black necrotic crusting, raising alarms about possible devitalisation of the surrounding structures [Table/Fig-2].



[Table/Fig-1]: Necrotic tissue over the nasal mucosa.

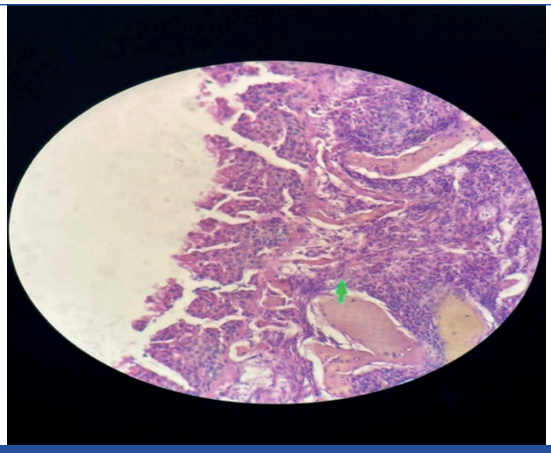


[Table/Fig-2]: Blackish necrotic crust over middle turbinate and lateral wall of nose.

The laboratory investigations revealed raised luekocyte count of 15000/microlitre, raised random blood sugar level of 200 mg/dL, Hba1c level of 7.5% revealing poorly controlled diabetes. Other blood reports including CRP, ESR were within normal limits.

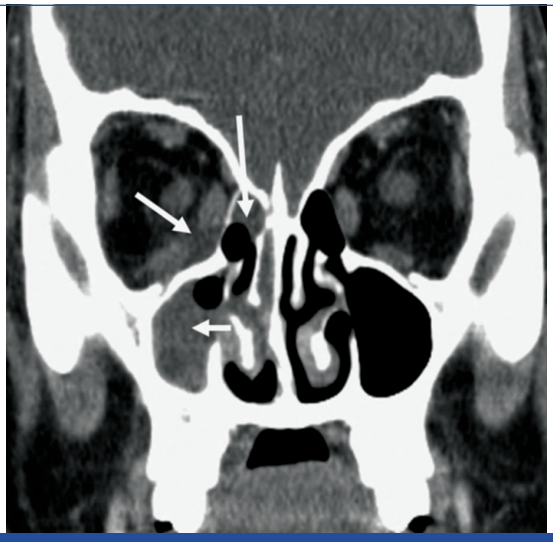
These findings, particularly of the uncontrolled diabetes and presenting symptoms, raised a high index of suspicion for an invasive fungal infection, possibly mucormycosis, warranting immediate intervention and further systemic evaluation. During diagnostic nasal endoscopy, necrotic tissue and crusts were removed from the nasal cavity through nasal lavage and sent for cytopathological examination which was suggestive of mucormycosis [Table/Fig-3].

Radiographic investigation included Contrast-enhanced Computed Tomography (CECT) which revealed right-sided maxillary, ethmoidal, and frontal sinuses heterogeneous opacification. Within the opacified sinuses, areas of differing attenuation were noted - appearing as sinus mucosal thickening with bone destruction. This



[Table/Fig-3]: Cytopathological examination showing hyphae of zygomycetes suggestive of mucormycosis. (20x Haematoxylin and Eosin Staining).

suggested the presence of inspissated fungal elements or necrotic debris [Table/Fig-4].



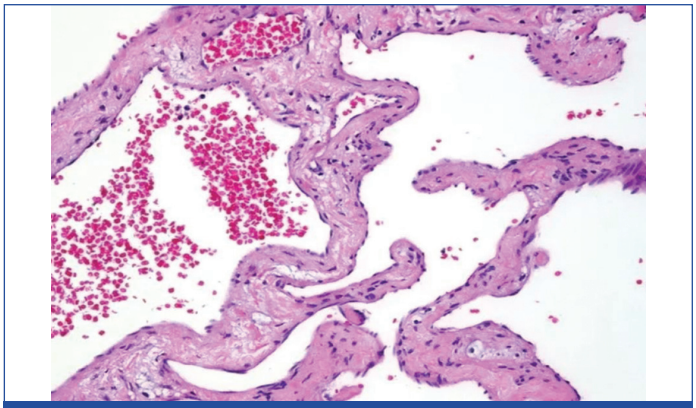
[Table/Fig-4]: Contrast enhanced Computed Tomography (CT) showing opacification over right maxillary sinus involving bone destruction.

Bone erosion was observed involving the right middle turbinate, suggestive of necrosis. There was also involvement of the adjacent bony nasal septum and the medial wall of the right maxillary sinus. Mild extension of the disease into the right nasopharynx was noted.

Patient was taken for FESS under General Anaesthesia (GA). An uncinectomy was performed, followed by widening of the right maxillary sinus ostium, which revealed extensive necrotic tissue which was removed and sent for histopathological examination. A microdebrider was used to debride all necrotic material and suction out discharge. The posterior and anterior ethmoidal sinus ostia were widened, both showing significant necrotic and granulation tissue, which were thoroughly cleared. The right frontal sinus ostium was also widened, and similar pathology was addressed. A right middle turbinectomy was also performed due to complete necrosis. The necrotic tissue was found extending into the nasopharynx up to the torus tubaris and was debrided. Remnant areas were irrigated with normal saline and diluted betadine solution.

Postoperative histopathological examination using PAS and gram stain was done showing dilated blood vessels which was suggestive of cavernous haemangioma of nasal cavity [Table/Fig-5].

Following FESS, the patient demonstrated significant symptomatic improvement, including enhanced nasal airflow, reduced nasal obstruction, and restoration of olfactory function. The integrated surgical approach, supplemented with postoperative medical therapy, minimised the risk of recurrence. The regimen included a one-week course of antibiotics, two weeks of oral antifungal therapy,



[Table/Fig-5]: Dilated blood vessels suggestive of cavernous haemangioma (20X PAS staining).

and two weeks of alkaline nasal irrigation. The patient was followed up after seven days showing significant improvement and relief in the clinical symptoms. The patient was also advised to undergo regular endoscopic follow-ups for six months which were essential for monitoring postoperative healing and for the early identification of recurrence, enabling timely intervention if required.

DISCUSSION

Haemangiomas are benign vascular tumours composed of proliferating blood vessels lined by endothelial cells. Although they are the most common soft tissue tumours in the head and neck region, their occurrence within the nasal cavity and Paranasal Sinuses (PNS) is rare [1]. Various classification systems for haemangiomas have been proposed in the medical literature, but the most commonly accepted method is based on their histological (tissue-based) characteristics [1]. Based on the size of the blood vessels seen under a microscope, haemangiomas are classified into three types: capillary, cavernous, and mixed. Cavernous haemangiomas are made up of large blood-filled spaces lined with endothelial cells [1,2].

The most frequently encountered haemangioma in the nasal cavity is the capillary hemangioma. It is made up of tiny, capillary-like blood vessels and most often develops in the nasal septum or nasal vestibule. This type is particularly common in children [2,3]. Within the nasal cavity and PNS, haemangiomas have been reported to arise from various sites, including the inferior turbinate, vomer, perpendicular plate of the ethmoid, the ethmoid bone itself, and the maxillary sinus [4-7]. Although haemangiomas are benign in nature, they have a tendency to infiltrate surrounding tissues and may recur following surgical excision [8]. When diagnosing a nasal haemangioma, it is important to consider other possible conditions that can appear similar. These include benign tumours like inverted papilloma and glomangioma, as well as more serious conditions such as olfactory neuroblastoma, lymphoma, haemangiopericytoma, haemangioendothelioma, and arteriovenous fistulas. Other possibilities are lymphangioma, melanoma, adenocarcinoma, squamous cell carcinoma, and cancers that have spread from other parts of the body- such as renal cell carcinoma [9] which has been ruled out. Accurate preoperative assessment, including imaging to determine the extent of the lesion, is crucial. Blood-tinged nasal discharge can result from a variety of benign or malignant lesions, as well as inflammatory conditions, and a definitive diagnosis requires histological examination of the surgical specimen. While a preoperative biopsy can help confirm the diagnosis, it can be challenging due to the risk of significant bleeding [9]. Other alternative can be cytopathological examination which was done in this case.

Zygomycetes are a type of fungus that have ribbon-like, branching filaments and reproduce by forming zygospores. They can cause a group of infections known as mucormycosis [10]. The main risk factors for developing mucormycosis include serious blood cancers, long-lasting and severe low white blood cell counts, poorly controlled

diabetes (especially with or without diabetic ketoacidosis), excess iron in the body, major injuries, long-term use of corticosteroids, use of illegal i.v. drugs, premature birth in newborns, and severe malnutrition [11]. When the infection spreads through the nose and PNS, it can lead to a palatal ulcer that eventually breaks down the tissue. In most cases, the affected area turns black due to tissue necrosis [10].

In rhinocerebral mucormycosis, the infected nasal lining may look normal at first. Over time, it can become red and possibly swollen, then take on a purplish colour. As the infection worsens and blood vessels get blocked, the tissue starts to die, leading to the formation of a black, dead patch (eschar) on the nose or palate which leads us to the clinical diagnosis of mucormycosis [10]. In maxillary mucormycosis, CT scans often show signs like separation of the sinus walls, thickened sinus lining, and cloudiness (opacification) in the PNS, but usually without any fluid build-up [11]. However, a cavernous haemangioma presenting as sinus thickening and bone erosion has not been reported in literature as yet. McDonogh M et al., warned that if a diabetic patient in ketoacidosis shows both clinical and radiographic signs of sinus infection, mucormycosis should be strongly suspected until it's ruled out - because these imaging findings can easily be mistaken for regular sinusitis [12].

On CT, sinonasal cavernous haemangiomas typically present as well-circumscribed soft tissue density masses with heterogeneous enhancement following intravenous contrast administration. Non-enhancing regions within the lesion often refer to areas of intralesional necrosis or haemorrhage. CECT is particularly valuable in delineating the anatomical location and extent of the lesion. While the adjacent bony structures are generally preserved, chronic mass effect from the lesion may result in smooth remodeling of the surrounding bone [13,14]. Less commonly, cavernous haemangiomas may cause erosion or destruction of adjacent bone structures, which can complicate differentiation from malignant neoplasms on imaging [15]. Thimmaiah AH et al., discussed similar case of cavernous haemangioma of nasal meatus mimicking a antrochoanal polyp [16]. Similarly, Panbude SN et al., reported a case of cavernous haemangioma arising from the mucosa of the middle nasal meatus, mimicking an inverted papilloma based on the imaging features [9].

There are several ways to manage haemangiomas, but the most effective method is usually tumour excision along with a small margin of healthy tissue around it. During surgery, the feeder blood vessel of the tumour are either tied off or cauterised to prevent bleeding and reduce the risk of recurrence [3]. Alternative treatments for haemangiomas include cryotherapy, steroid injections, sclerotherapy, and removal with a YAG laser. The effectiveness of these methods can vary from case to case [3]. The choice of surgical approach depends on the tumour's precise location. Common techniques include midfacial degloving, lateral rhinotomy, transpalatal and transantral approaches, as well as the Le Fort I osteotomy. Each method is selected based on the best access to the tumour while minimising damage to surrounding structures [3]. The transnasal endoscopic approach is often considered the preferred method for treating haemangiomas located in the nasal cavity and PNS. It offers a minimally invasive option with good visibility and access to the affected area [3,17].

CONCLUSION(S)

Nasal cavernous haemangioma is a rare benign neoplasm that can be misdiagnosed as locally aggressive mucormycosis, particularly in uncontrolled diabetic patients who present with facial pain and nasal discharge. A thorough understanding of the clinicopathological profile of this tumour is essential to differentiate it from more aggressive conditions. Histopathological examination remains the gold standard for definitive diagnosis. The CT is a valuable diagnostic tool for assessing the local extension of the tumour and for guiding the selection of the most appropriate surgical approach. Endoscopic sinus surgery, either alone or in combination with external approaches, has been shown to be an effective and successful surgical strategy for the management of nasal cavernous haemangiomas.

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PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Sep 28, 2025
- Manual Googling: Apr 01, 2025
- iThenticate Software: Apr 03, 2025 (5%)

ETYMOLOGY: Author Origin

EMENDATIONS: 7

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Sep 27, 2025**
Date of Peer Review: **Jan 28, 2026**
Date of Acceptance: **Apr 06, 2026**
Date of Publishing: **Jul 01, 2026**