



Stones in the Forgotten Sinuses: A Case of Massive Sinonasal Rhinolithiasis in a 70-Year-Old Woman with Fibroma-Resembling Manifestations

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Abstract

Rhinolithiasis is a rare condition caused by progressive mineral deposition around retained secretions or foreign material within the nasal cavity. Diagnosis may be challenging because its clinical and radiological manifestations can resemble other chronic sinonasal diseases. We report a case of a 70-year-old woman who presented with progressive left-sided nasal obstruction, foul-smelling nasal discharge, headache, and mild epistaxis for six months. Computed tomography revealed a heterogeneous calcified mass involving the left maxillary sinus and nasal cavity, initially suspected as a sinonasal fibroma. Functional endoscopic sinus surgery was performed, and intraoperative findings demonstrated a large rhinolith occupying the maxillary sinus, middle meatus, and nasal cavity. Complete removal of the lesion resulted in symptom resolution and a favorable early postoperative recovery. This case highlights that massive sinonasal rhinolithiasis can mimic benign sinonasal tumors on imaging. Careful endoscopic evaluation and surgical exploration are essential for establishing the diagnosis and providing definitive treatment.

Keywords

Rhinolithiasis;

Maxillary sinus;

Endoscopic sinus surgery;

Differential diagnosis;

Elderly patient

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Introduction

Chronic unilateral sinonasal symptoms remain a diagnostic challenge in otorhinolaryngology. Chronic unilateral sinonasal symptoms remain a diagnostic challenge in otorhinolaryngology. Several conditions may present with similar clinical and radiological manifestations. These include inflammatory disorders such as chronic rhinosinusitis and fungal disease, foreign body-related conditions, odontogenic lesions, fibro-osseous abnormalities, and benign or malignant sinonasal

tumors. Because these entities often share overlapping symptoms, establishing an accurate diagnosis may be difficult, particularly in patients with longstanding unilateral complaints. Nasal obstruction, purulent rhinorrhea, foul odor, facial discomfort, headache, and epistaxis are often interpreted as chronic rhinosinusitis; however, unilateral symptoms accompanied by a calcified or hard intranasal mass should prompt clinicians to consider less common etiologies, including rhinolithiasis and calcified sinonasal neoplasms. Contemporary consensus recommendations emphasize that chronic rhinosinusitis and related unilateral sinonasal disorders require careful clinical evaluation, endoscopic assessment, and appropriate imaging to avoid delayed or incorrect diagnosis (Orlandi et al., 2021).

Rhinolithiasis is an uncommon condition characterized by progressive mineral deposition around an endogenous or exogenous nidus within the nasal cavity or sinonasal tract. Although frequently reported as isolated case reports, recent clinical series and reviews indicate that rhinolithiasis may remain undetected for long periods because the symptoms are usually nonspecific and slowly progressive (Mitchell et al., 2023; Seyhun et al., 2021). The nidus may consist of retained foreign material, inspissated secretion, blood clot, or iatrogenic material, which subsequently undergoes calcification in the setting of chronic inflammation and impaired mucociliary clearance (Abraham et al., 2022; Mitchell et al., 2023). Patients commonly present with unilateral nasal obstruction, purulent or foul-smelling discharge, cacosmia, epistaxis, headache, facial pain, or recurrent sinonasal infection, although asymptomatic or incidental cases have also been described (AlZabin et al., 2024; Heidarizadeh et al., 2024).

This uncommon mineralized sinonasal lesion is clinically important because it may mimic more common or serious sinonasal diseases. Computed tomography is useful for identifying calcification, determining lesion extent, assessing associated sinus involvement, and evaluating bony remodeling or erosion. Nevertheless, radiological overlap with other calcified nasal and paranasal lesions may complicate preoperative diagnosis. Recent radiological and clinical reports have emphasized that calcified sinonasal masses may include rhinolithiasis, fungal ball, osteoma, odontogenic lesions, ossifying fibroma, fibrous dysplasia, calcified polyps, and malignant tumors (Al Arfaj et al., 2022; Lo Casto et al., 2024). This diagnostic uncertainty becomes more pronounced when the lesion is large, heterogeneous, expansile, or associated with bony changes, because such features may suggest fibro-osseous or neoplastic pathology rather than a benign mineralized concretion.

Fibro-osseous lesions, particularly ossifying fibroma, are important differential diagnoses because they may appear as well-defined, expansile, mixed-density sinonasal masses with calcified components. Although ossifying fibroma is uncommon in the nasal cavity and paranasal sinuses, recent reports demonstrate that it can involve the ethmoid, sphenoid, nasal cavity, and other sinonasal regions, creating diagnostic ambiguity with other calcified lesions (Al Arfaj et al., 2022; Azab, 2024). Similarly, giant or longstanding rhinoliths may produce mass effect, chronic mucosal inflammation, secondary sinus obstruction, or bony remodeling, leading them to appear benign on imaging (Abraham et al., 2022; Disher et al., 2025). Therefore, accurate diagnosis requires integration of history, nasal endoscopy, CT findings, intraoperative features, and, when necessary, pathological assessment.

The present case is clinically noteworthy because it describes massive sinonasal rhinolithiasis in a 70-year-old woman with manifestations resembling sinonasal fibroma. This presentation is unusual because rhinolithiasis is most often described as an intranasal concretion. In contrast, extensive involvement of the maxillary sinus, middle meatus, and nasal cavity with tumor-like radiological appearance is less frequently emphasized in recent literature. Similar diagnostic pitfalls have been reported in cases of giant or atypically located rhinoliths, including lesions mistaken for osteoma, chronic rhinosinusitis, fungal disease, or other calcified masses (Ben Ammar & Tbini, 2025; Oulghoul et al., 2025). However, reports focusing on elderly patients with massive sinonasal involvement and fibroma-resembling features remain limited.

This case highlights the importance of including rhinolithiasis in the differential diagnosis of unilateral calcified sinonasal masses. This consideration remains relevant even when imaging suggests a benign tumor-like lesion. The case is educational because it illustrates how delayed presentation, chronic unilateral symptoms, extensive calcification, and maxillary sinus extension may obscure the diagnosis. For clinicians, the practical lesson is that careful endoscopic evaluation and appropriate surgical exploration may prevent misclassification and support definitive treatment. This case report describes massive sinonasal rhinolithiasis in a 70-year-old woman with fibroma-like manifestations, emphasizing its diagnostic pitfalls, clinicoradiological differentiation, and relevance to the evaluation of unilateral calcified sinonasal masses.

Materials and Methods

This manuscript was prepared using a descriptive single-case study design and reports one clinical case of massive sinonasal rhinolithiasis in a 70-year-old woman with fibroma-resembling clinical and radiological manifestations. The structure of the report was developed with reference to contemporary case-reporting principles, which emphasize transparent description of the patient presentation, diagnostic assessment, therapeutic intervention, follow-up, and clinical relevance (Sohrabi et al., 2023). Because the case involved operative management, the reporting approach also considered recent surgical case-report guidance regarding chronology, operative findings, postoperative course, and outcome documentation (Kerwan et al., 2025).

The case was identified in an otorhinolaryngology outpatient setting at the authors' hospital, following referral from another hospital for further diagnostic evaluation and management. Clinical information was obtained from history taking, physical examination, nasoendoscopic evaluation, sinonasal computed tomography, medical records, intraoperative observation, postoperative treatment records, and follow-up assessment. The inclusion of multiple clinical data sources was intended to support completeness and reproducibility of case reporting, as recommended in structured clinical reporting frameworks (Mathew et al., 2023). The clinical sequence was presented chronologically because clear temporal organization improves interpretability in descriptive clinical reports (Rashid et al., 2024).

The collected data included the patient's presenting symptoms, previous antibiotic therapy, radiological impression, endoscopic findings, operative findings during functional endoscopic sinus surgery, postoperative management, and clinical outcome on the eighth postoperative day. All diagnostic and therapeutic procedures were performed as part of routine clinical care. The operative findings were described based on direct clinical observation, including the location, extension, macroscopic appearance, and completeness of removal of the calcified sinonasal mass. Follow-up data were obtained from postoperative clinical evaluation and nasoendoscopic reassessment, consistent with the recommendation that, when available, outcome and follow-up information should be reported in clinical case reports (Sohrabi et al., 2023).

No statistical analysis was performed because this manuscript reports a single patient. The clinical data were analyzed narratively to describe the diagnostic process, management approach, and postoperative outcome. The patient's identity was anonymized by removing direct personal identifiers, including name, address, hospital registration number, and other details that could reveal her identity. Protection of privacy and confidentiality is consistent with contemporary ethical standards for medical publications involving patient information (World Medical Association, 2025). Particular care was taken to ensure that clinical images and descriptive details were presented only to the extent necessary for scientific and educational reporting, given the recognized risk of patient identifiability in published medical images (Marshall et al., 2024).

Written informed consent was obtained from the patient for publication of this case report and accompanying clinical images. All identifying information was removed to ensure patient

confidentiality. Ethical approval requirements were met in accordance with institutional policy and journal regulations. Recent evidence indicates that informed consent and ethics committee statements are inconsistently reported in case reports and case series, supporting the importance of explicitly documenting consent status in the manuscript (Valesic et al., 2025). The ethical approval requirement for single-patient case reports may vary across institutions and journals. When a case report is fully anonymized, based on routine care, and does not involve experimental intervention or additional research procedures, formal ethical approval may not be required under some institutional policies; nevertheless, the final determination should follow the relevant ethics committee and journal requirements (Tran et al., 2024).

Results and Discussions

A 70-year-old woman presented to the hospital's otorhinolaryngology outpatient clinic after referral from the first hospital. Her main complaint was progressive left-sided nasal obstruction for six months, accompanied by a disturbing foul odor. The patient also reported thick yellowish nasal discharge from the left nostril. During the first five months, she did not seek medical treatment because she considered the symptoms to be mild. In the last month, she developed left frontal headache and mild epistaxis, described as a few drops of blood when expelling nasal discharge.

At the first hospital, the patient received amoxicillin-clavulanate 625 mg twice daily for 14 days, without clinical improvement. Sinonasal computed tomography (Figure 1) showed a heterogeneous hyperdense mass involving the left middle meatus, left maxillary sinus, and left nasal cavity, with minimal bony erosion. Based on these radiological findings, the lesion was initially interpreted as a suspected left sinonasal fibroma.

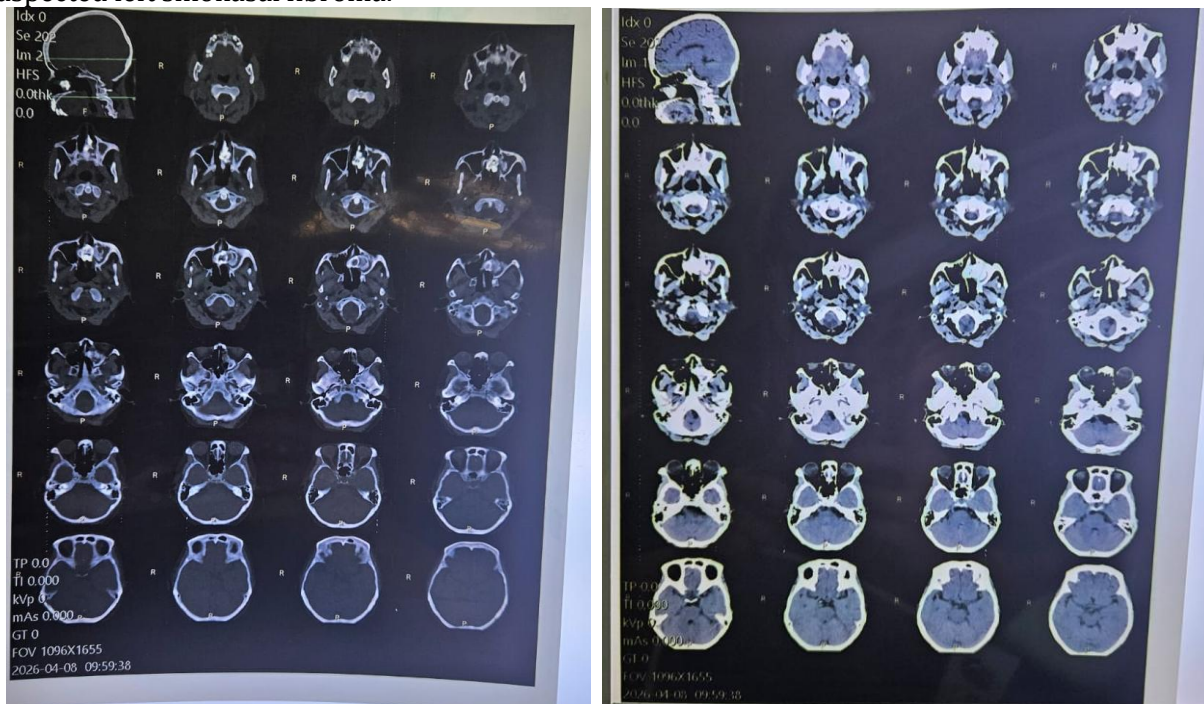


Figure 1. Computed tomography scan

Upon evaluation at the hospital, nasoendoscopy revealed a hard, grayish-white mass with an irregular surface, almost completely obstructing the left middle meatus (Figure 2). The surrounding mucosa appeared hyperemic and edematous. No excessive granulation tissue or active bleeding was

observed. The patient was subsequently scheduled for functional endoscopic sinus surgery under general anesthesia.

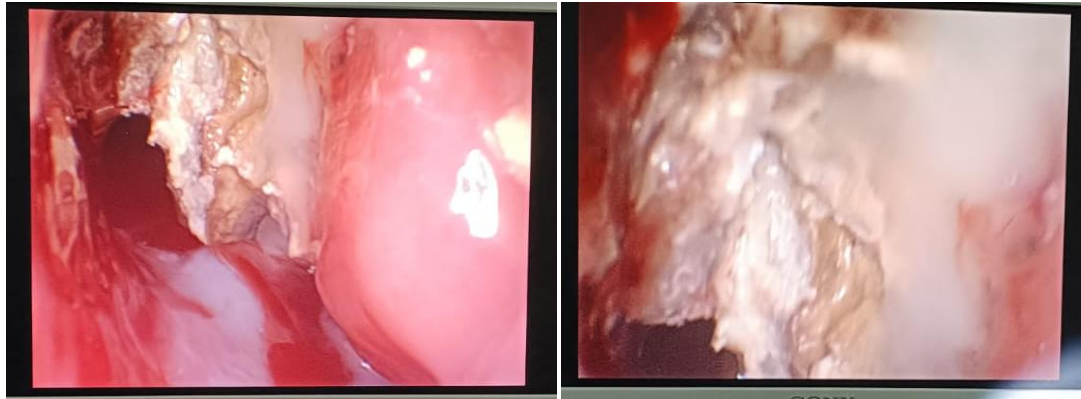


Figure 2. *Preoperative nasoendoscopic finding*

Surgery was initiated by fragmenting the mass using a microdebrider and curette. After evacuation of the anterior portion of the mass, a large, irregular, brownish-black concretion was identified within the left maxillary sinus, extending into the middle meatus and left nasal cavity. The mass was fragmented and completely removed through an enlarged accessory ostium. No polyp or soft-tissue tumor was found intraoperatively. At the end of the procedure, the sinus cavity appeared clean, with minimal bleeding (Figure 3). The extracted specimen consisted of multiple stone-like concretions measuring approximately $3 \times 2 \times 1.5$ cm. The largest fragment measured approximately 1.5 cm (Figure 4).



Figure 3. *Postoperative endoscopic finding*



Figure 4. *Surgical specimen*

The patient was observed for one night after surgery and received ceftriaxone 1 g intravenously twice daily, dexamethasone 5 mg intravenously three times daily, and ketorolac 30 mg intravenously three times daily. No postoperative complications were observed. She was discharged with oral azithromycin 500 mg once daily for seven days.

On the eighth postoperative day (Figure 5), follow-up nasoendoscopy showed good epithelialization of the left maxillary sinus cavity, absence of secretion, and a patent ostium. The patient reported complete resolution of nasal obstruction and foul odor, with no residual headache.

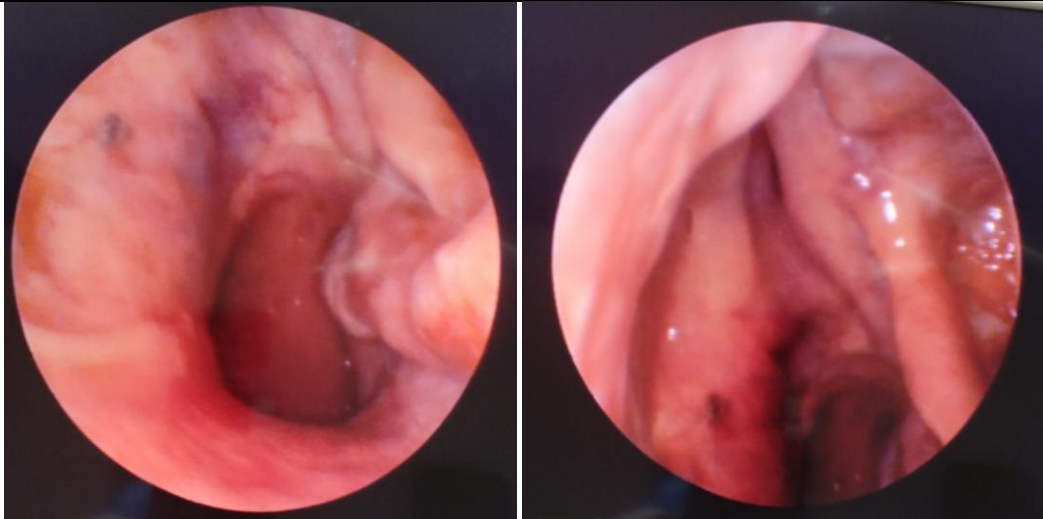


Figure 5. *Endoscopic finding on the eighth postoperative day*

This case is notable because it presents massive rhinolithiasis in an elderly patient with a six-month clinical history, which was initially diagnosed as sinonasal fibroma based on computed tomography. Pathophysiologically, rhinolithiasis develops through progressive mineral deposition around an endogenous or exogenous nidus, which may consist of a blood clot, mucus, foreign material, or chronically inspissated secretion (Kipiki et al., 2025; Nguyen et al., 2023). In this patient, no obvious foreign body was identified during surgery; therefore, the initial nidus was most likely retained thick secretion that gradually mineralized as a result of chronic stasis and inflammation.

Computed tomography typically shows rhinolithiasis as a hyperdense calcified mass. In the present case, however, the lesion resembled a fibroma because of its heterogeneous density and associated mass effect. This finding emphasizes that benign sinonasal lesions, including fibroma, hemangioma, ossifying fibroma, and other fibro-osseous lesions, may also present with calcified radiological features, making biopsy or diagnostic excision necessary in selected cases (Almusallam et al., 2025). Similar diagnostic pitfalls have been reported when rhinolithiasis mimicked intranasal osteoma or fungal mucin on imaging, indicating that radiological appearance alone may be insufficient for definitive diagnosis in atypical cases (Alrayes et al., 2023; Kiessling et al., 2023). The patient's symptoms, including unilateral nasal obstruction, purulent discharge, foul odor, headache, and mild epistaxis, were consistent with commonly reported clinical manifestations of rhinolithiasis (Alabdulaal et al., 2025; Kipiki et al., 2025; Nguyen et al., 2023).

The management of massive rhinolithiasis is endoscopic excision. A minimally invasive functional transnasal approach is particularly advantageous in elderly patients because it is associated with low morbidity, short hospitalization, and absence of major complications when complete removal is achieved. In this case, functional endoscopic sinus surgery enabled complete evacuation of the concretion and adequate sinus drainage. This approach is consistent with recent evidence indicating that rigid nasal endoscopy and endoscopic sinonasal surgery are central to the diagnosis and treatment of rhinolithiasis, including large or impacted lesions (Kedous et al., 2025; Nguyen et al., 2023). Surgical success is determined by complete evacuation of the concretion and adequate drainage of the involved sinus.

Postoperative antibiotic therapy was administered because the sinonasal mucosa showed chronic inflammatory changes. Oral azithromycin was administered postoperatively at the treating physician's discretion. Dexamethasone was administered postoperatively to reduce mucosal edema and prevent synechiae. On the eighth postoperative day, endoscopic evaluation showed a clean

maxillary sinus cavity, good epithelialization, and a patent ostium, supporting a favorable early outcome after definitive endoscopic management.

Overall, this case emphasizes that massive sinonasal rhinolithiasis may closely resemble sinonasal fibroma on radiological examination. In elderly patients with chronic unilateral nasal obstruction, foul-smelling discharge, and a calcified sinonasal mass, rhinolithiasis should remain an important differential diagnosis. Careful endoscopic assessment and timely surgical exploration are essential to establish the diagnosis and provide definitive treatment. A limitation of this report is that it describes a single patient with relatively short postoperative follow-up; therefore, long-term outcomes could not be assessed.

Conclusion

This case demonstrates that extensive sinonasal rhinolithiasis involving the maxillary sinus and nasal cavity may closely mimic a benign fibro-osseous lesion on radiographic examination, leading to diagnostic uncertainty. In the present patient, chronic unilateral nasal obstruction, foul-smelling discharge, and a calcified mass initially suspected to represent a sinonasal fibroma were ultimately found to be a large rhinolith during endoscopic surgery.

The case highlights the importance of including rhinolithiasis in the differential diagnosis of unilateral calcified sinonasal lesions, particularly in elderly patients with longstanding symptoms. Careful correlation of clinical findings, nasal endoscopy, and imaging studies is essential to avoid misdiagnosis and guide appropriate surgical management. Favorable early postoperative outcomes were achieved following complete endoscopic removal; however, continued follow-up remains important to monitor long-term recovery and detect potential recurrence.

This report contributes to the growing literature on atypical and tumor-mimicking presentations of rhinolithiasis. It underscores the diagnostic value of endoscopic evaluation in patients presenting with unilateral calcified sinonasal masses.

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