

Rhinolithiasis misdiagnosed as intranasal osteoma: Diagnostic challenges in the telehealth era

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Abstract

Rhinolithiasis is a rare clinical presentation and may be a diagnostic challenge, often mimicking other intranasal pathologies and difficult to differentiate based on imaging alone. We present the case of a 50-year-old patient with rhinolithiasis who presented with chronic left nasal obstruction and unilateral cyclic pain with foul discharge. After review of her imaging, she was initially misdiagnosed with an intranasal osteoma via telehealth and scheduled for surgical resection. Her true pathology of rhinolithiasis was subsequently identified and treated during an in-person pre-operative clinic visit. In this case report, we review the key characteristic elements of rhinolithiasis presentation, and in doing so, we reveal the limitations inherent to telehealth evaluations, and the considerations needed to be taken into account by providers evaluating intranasal lesions. Specifically, in-person assessment with a detailed endoscopy is critical as part of the complete workup of nasal cavity lesions.

Keywords

Otolaryngology, radiology, rhinolith, telehealth, nasal osteoma

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Introduction

Rhinolithiasis is a rare clinical presentation and may prove to be a diagnostic challenge.¹ The exact etiology of rhinolithiasis is unclear, though, true to its etymology implying a “stone in the nose,” it is hypothesized to involve deposition of calcium carbonate, calcium phosphate, and magnesium phosphate around an exogenous or endogenous nidus within the nasal cavity.^{1–3} First reported in 1654, over 600 cases have been reported worldwide.⁴ While the literature currently contains only case reports and series, clear patterns arise when these studies are assessed collectively. Common presenting symptoms include nasal obstruction, unilateral rhinorrhea, purulent/foul nasal discharge, headache, facial pain, and halitosis, all chronic or non-acute in nature.^{1,5–7} Imaging frequently demonstrates septal deviation, mucosal thickening of the maxillary sinus, and lesion location between the inferior turbinate and the septum.^{1,8} Palatal and septal perforation are rare complications of rhinolithiasis.⁸

Despite characteristic imaging and presentation, these symptoms and findings frequently overlap with other intranasal pathologies, necessitating in-person assessment and endoscopic evaluation. Herein, we report the case of a 50-year old patient whose rhinolithiasis was initially

misdiagnosed as intranasal osteoma via telehealth, with the aim of creating awareness of the elements of presentation and imaging unique to rhinolithiasis, while highlighting the importance of in-person evaluation and endoscopy to assure diagnostic accuracy and appropriate treatment.

Case

A 50-year-old woman was initially evaluated via telehealth during the COVID-19 pandemic for many years of chronic nasal congestion and occasional foul smell, primarily affecting her left naris. She described intermittent “dirt”-like discharge from her left naris with preceding unilateral nasal obstruction and pain, occurring in cycles since early adulthood. She denied any nasal trauma or foreign body placement in her nose, and she had no history of prior

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sinonasal surgery. Despite prior treatment with steroid and antihistamine sprays, oral antihistamines, and subcutaneous immunotherapy, her symptoms persisted. Nasal saline rinses were similarly ineffective, and she had no additional symptoms suggestive of allergic rhinitis as a contributing etiology. Per her primary care provider's recommendation, she then underwent computed tomography (CT) imaging of the sinuses, which revealed a $1.14 \times 1.92 \times 2.94$ cm bright, high-density lesion filling the inferior aspect of the left nasal cavity effacing the left inferior turbinate (Figure 1). She did not undergo nasal endoscopy at this time, since she lived in a remote, rural area without access to any local



Figure 1. Non-contrast sinus computed tomography revealed a high-density lesion filling the inferior aspect of the left nasal cavity, appearing to be attached to the left inferior turbinate. Left septal deviation was also noted, along with mild left maxillary mucosal thickening, and the remaining sinuses were clear.

otolaryngology specialists, requiring referral to a tertiary otolaryngology practice.

Based on this imaging, upon referral and via telehealth assessment by our otolaryngology team, the patient was given the diagnosis of intranasal osteoma of the inferior turbinate, and she was planned for an endoscopic resection. At her in-person pre-operative appointment, her symptoms remained unchanged. Rigid nasal endoscopy, however, revealed a calcified concretion occupying the left nasal cavity with adjacent mucosal inflammation. With palpation, the mass was somewhat mobile and independent of the inferior turbinate. It was determined that the lesion was a large rhinolith (Figure 2). Under topical anesthetic in the clinic, the rhinolith was morcellated and removed in its entirety without complication. The patient was counseled to perform daily saline rinses along with intranasal steroid sprays (93 mcg fluticasone). At her follow-up appointment 1 month later, her nasal symptoms had completely resolved, and endoscopy demonstrated a well-healed nasal cavity. Gross pathology of the removed lesion confirmed the diagnosis of rhinolith with calculi, and without associated foreign body.

Discussion

While the exact prevalence of rhinolithiasis is undetermined, its relative rarity as a diagnosis yet potential mimic of other intranasal pathologies warrants specific characterization and review.⁴ This case is illustrative of potential limitations of telehealth evaluations, particularly of sinonasal lesions with a broad differential on imaging. Studies of the implementation of telehealth within otolaryngology have demonstrated perceived sacrifices in accuracy and efficacy of practice.⁹ While telehealth evaluations are increasingly adapted across medical subspecialties in the wake of the COVID-19 pandemic, there may be potential pitfalls in diagnostic accuracy. In cases of nasal cavity

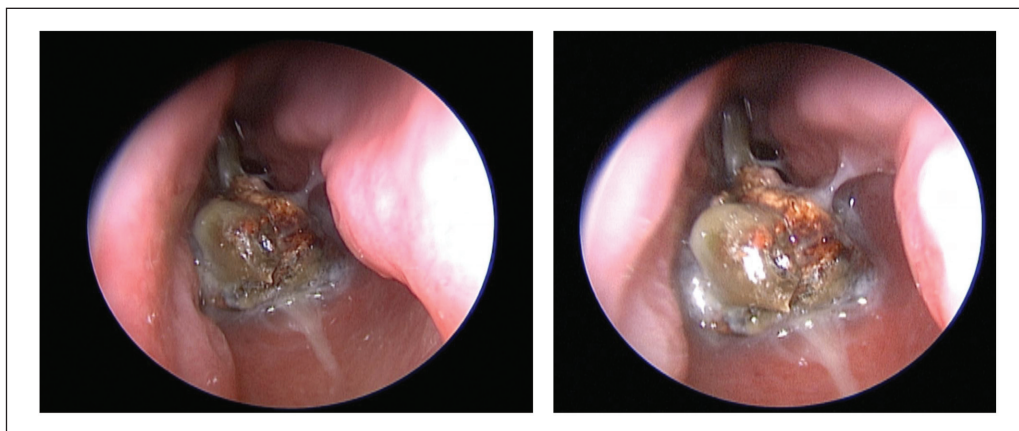


Figure 2. A large rhinolith sitting on the floor of the left nasal cavity, somewhat mobile yet unable to be removed without morcellation.

lesions, in-person assessment by an otolaryngologist with a detailed endoscopy, since nasal endoscopy evaluations are available only through otolaryngology assessment, is critical as part of the complete workup, as seen in this patient's case. Additionally, the patient's diagnosis and treatment may have been delayed secondary to the patient living in a remote, rural area without access to local otolaryngology specialists, who would have been able to perform nasal endoscopy. Multiple factors are known to influence patient difficulty obtaining access to rhinology care, including low socioeconomic status.¹⁰

The patient's presenting symptoms of chronic cyclic nasal obstruction, unilateral purulent and foul rhinorrhea, headache, and facial pain are all characteristic of rhinolithiasis.^{1,5-7} Yet, these symptoms could easily have been representative of another intranasal pathology as well and must be assessed in the context of imaging and endoscopic findings. Additionally, as in our patient's case, rhinolithiasis can arise from mineral deposition around an endogenous nidus, and therefore not be associated with foreign body.^{1,3} A patient without a history of intranasal foreign body should thereby not have a diagnosis of rhinolithiasis excluded from consideration.

CT imaging for this case demonstrated a calcified intranasal lesion filling the inferior aspect of the left nasal cavity, adjacent to the inferior turbinate. The differential diagnosis for calcified intranasal lesions should include intranasal osteoma, rhinolith, calcified foreign body, ectopic tooth, ossifying fibroma, and aspergillois. Osteomas are more likely to occur in the frontal, ethmoid, maxillary, or sphenoid sinuses, and only rarely present intranasally or associated with a turbinate,¹¹ contrasting with rhinoliths, which most commonly present between the inferior turbinate and the septum,^{1,8} as seen in this case. Foreign bodies are less likely to present in adulthood, though may serve as a nidus for rhinolith formation.⁸ Aspergillomas may occur in immunocompetent hosts, though they most commonly occur in the maxillary sinus with associated sinus opacification, and may be associated with previous endodontic treatment or radiotherapy.¹² Sinonasal ossifying fibromas appear as a soft tissue density surrounded by a clear boundary with intact bone wall on imaging.¹³ Rhinolith, unique from each of these discussed pathologies, is most commonly seen between the inferior turbinate and the septum, as seen in this patient's case, with imaging showing radiopaque calcifications and central radiolucency if surrounding an organic nidus.^{1,8}

While CT imaging is important, definitive diagnosis requires endoscopic examination and may be aided with palpation, as demonstrated in this case. Endoscopy typically demonstrates a solid, mineralized mass of the nasal cavity that can be somewhat mobile. Definitive management is removal of the rhinolith, accomplished under local or general anesthesia, as performed in this case.

Conclusions

Rhinolithiasis can mimic multiple other intranasal pathologies, particularly on imaging studies. Though uncommon on presentation, rhinoliths are an important diagnostic consideration warranting specific workup and management, particularly an endoscopic assessment of appearance and mobility. This case also demonstrates potential limitations of telehealth evaluation for sinonasal lesions, and the importance of detailed in-person endoscopy.

Declaration of conflicting interests

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