

# Rhinoliths

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## Abstract

Rhinoliths are mineralised foreign bodies in the nasal cavity and may be discovered during routine radiographic exam. The incidence of adult rhinolith is very low. Rhinoliths are generally single, exogenous or endogenous, unilateral, and asymptomatic. They can cause nasal obstruction, fetid odour and purulent discharge. Though infrequently observed, rhinoliths can be the source of bad smell from the nose and therefore a social concern for the patient. The CT Scan of paranasal sinuses is the radiological investigation of choice in this condition. We report four patients with rhinoliths presenting with diverse clinical findings.

**Keywords:** Computerized tomography, Foreign body, Rhinolith.

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## INTRODUCTION

Rhinoliths are calcareous concretions around calcinated intranasal foreign bodies within the nasal cavity. They are commonly seen in the anterior part of the nasal cavity. In such condition Computed tomographic scans are needed for differential diagnosis of pathologies in the nasal cavity and to detect any related complications. The appropriate timely management can lead to good prognosis in rhinoliths. They may be encountered accidentally during the course of a routine examination<sup>1</sup>. Rhinolithiasis is often an asymptomatic condition, which may remain undetected for many years<sup>2</sup> until the rhinoliths grow large enough to cause symptoms of nasal obstruction and discharge. The duration of the history may range from months to decades<sup>3</sup>. Rhinoliths usually present in the third decade of life and rarely occur in children with females more commonly affected than male<sup>3</sup>. They are mixture of 90% inorganic material

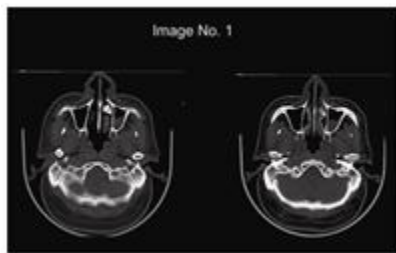
and 10% organic substances incorporated into the lesion from nasal secretions. They are classified into two types viz Exogenous and Endogenous. Exogenous rhinolith are more common, formed due to concretions around impacted foreign body. Endogenous rhinolith are uncommon and develop spontaneously with deposition of mineral around accumulated secretions. Dried blood clots, ectopic teeth, and bone fragments are examples of endogenous causes whereas exogenous causes can include fruit seeds, small stones, coins, plant material, beads, cotton wool. Trauma, surgical operations and dental work, nasal packaging material, and plugs of ointment may also promote the development of a rhinolith. A rhinolith may develop spontaneously, for example in the case of a long-standing chronic polypoid sinusitis with accumulation of secretions followed by mineral deposition. Conventional radiographs are important for the differentiation of the rhinolith from other lesions with similar aspect, such as odontoma, impacted tooth, foreign bodies and other calcifications. Nevertheless, computerized tomography provides better images to evaluate this condition and its relationship with adjacent structures.

## CASE REPORTS

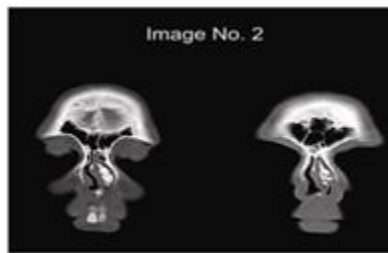
A 36-year-old female presented with left nasal blockage for last one year. The symptom became gradually worsened. It was associated with intermittent nasal discharge. There was no history of pain, epistaxis, trauma or foreign body insertion in the nose. Computed

tomography (CT) images showed a hyperdense oval shaped mass ranging 25 × 15 mm in size with a hypodense nucleus. The mass was situated in left middle and inferior turbinates extending anteriorly in the left nasal cavity. No evidence of sinus encroachment or osseous destructions was noticed [image no.1]. A 32-year old male presented to the ENT Department of our hospital, with a history of chronic nasal obstruction. The patient admitted frequent episodes of purulent rhinorrhea, epistaxis and headache. The axial/coronal CT scan of the nasal cavity, obtained to exclude bony destruction, revealed a large, dense, space-consuming lesion measuring between one and a maximum of three cm in diameter located in the inferior and middle meatus on the left, and presenting fairly well defined margins. [image no.2]. A 32 year old female presented with complains of prolonged runny nose with foul smell, and at times bloody nasal discharge for the last five years. There were no constitutional symptoms. There was no

history of trauma, foreign body insertion or any systemic illness. The CT Scan showed a calcified lesion in left inferior turbinate [image no. 3]. A 44 year old female presented with repeated attacks of sinusitis. CT scan revealed an irregular hyperdense calcified lesion extending from left maxillary sinus through ostium into the nasal cavity destroying adjacent bones of maxillary sinus wall [image no. 4]. In 1900, MacIntyre gave the first radiological description of rhinolith<sup>4</sup>. The typical radiological features are mixed radiopaque radiolucent mass arranged in a concentric circle or in the form of lamellations<sup>5</sup>. The other radiological features such as coral-like mass, displacement, perforation, thinning, expansion and destruction of the nasal wall have also been listed. CT (Computerized tomography) appearance includes a homogenous, high-density periphery with central area of lower density.<sup>10</sup> CT also plays an important role in exact localization of the mass and in demonstration of any associated complications<sup>6</sup>.



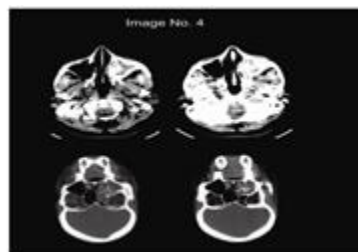
Case 1 Image



Case 2 Image



Case 3 Image



Case 4 Image

## DISCUSSION

Rhinolithiasis was first described by Bartholin in 1654. The rhinolith is a mineralized mass located inside the nasal cavity, resulting from total or partial calcification of an intranasal foreign body<sup>6</sup>. It is a rare pathologic condition, generally asymptomatic and unilateral, discovered accidentally during routine radiographic exam<sup>7,8</sup>. Rhinoliths are usually present in the third decade of life with females more commonly affected than males. They are most commonly seen on the inferior meatus or between the inferior turbinate and the nasal septum. The typical symptoms of rhinoliths include pain, unilateral nasal obstruction and epistaxis. Other symptoms include crusting, swelling of nose or face, anosmia, epiphora,

ozena and headache<sup>9</sup>. Complications consist of ipsilateral otitis media, bacterial or fungal sinusitis, septal perforation, palatal perforation, fistulous tract formation and recurrent dacryocystitis<sup>9,10</sup>. Pinto *et al*<sup>8</sup>. Reported that the rhinolith more frequently affects young women. Rhinoliths are thought to be formed by the gradual accretion of calcium and mineral salts around an intranasal nidus. As the size of rhinoliths increases very slowly and they are relatively inert, they are initially symptomless and cause minor symptoms<sup>2</sup>. If they become large enough, they cause symptoms of nasal obstruction or chronic nasal discharge. The pathogenesis of rhinolith is not clear. It has been speculated that a foreign body in the nose acts as a nidus and incites a chronic inflammatory

reaction with deposition of mineral salts and forms a rhinolith. The foreign body is expected to enter through the anterior nares, although some have been reported to have entered through the choana during vomiting or coughing. CT has been used to determine the size and location of rhinoliths, as well as to identify associated sinusitis and complications. This advanced imaging method presents high sensitivity and specificity for identifying calcifications and foreign bodies, and can be applied most effectively for the diagnosis of rhinoliths. In addition, the advantage of this exam is the non superimposition of adjacent structures, and calcifications in the head and neck can be differentiated from bone and normal cartilage.

## CONCLUSION

Although rhinoliths are rare, clinicians should be aware of the possibility of their incidents. The CT Scan of the paranasal sinuses is the radiological investigation of choice in rhinoliths.

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