

# Rhinolithiasis and value of nasal endoscopy: A Case Report

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## Abstract

Rhinolith is an uncommon nasal mass in children and adolescents. We report a 8 years old boy with a long history of foul smelling right nasal discharge, progressive nasal obstruction and recurrent epistaxis, which were clinically suspected as being due to the presence of a long standing foreign body. The rhinolith of right nasal cavity was diagnosed on rigid endoscopic examination. Rhinolith was removed by using 00 rigid nasal endoscope. This article includes a brief review of the literature.

## INTRODUCTION

Rhinoliths are calcareous concretions around calcinated intranasal foreign bodies within the nasal cavity<sup>1</sup>. They are usually found in the anterior part of the nasal cavity and are usually diagnosed on history and anterior rhinoscopy<sup>2</sup>. In such a condition, radiological evaluation is only needed for differential diagnosis and to detect any related complications. Radiology may be useful in a posteriorly situated mass which may cause diagnosis difficulties<sup>3,4</sup>. However, endoscopic examination can provide immense help in such situation<sup>2,5</sup>. We present a rare case of posteriorly situated rhinolith in a child that was diagnosed and treated with the help of rigid nasal endoscope.

## CASE REPORT

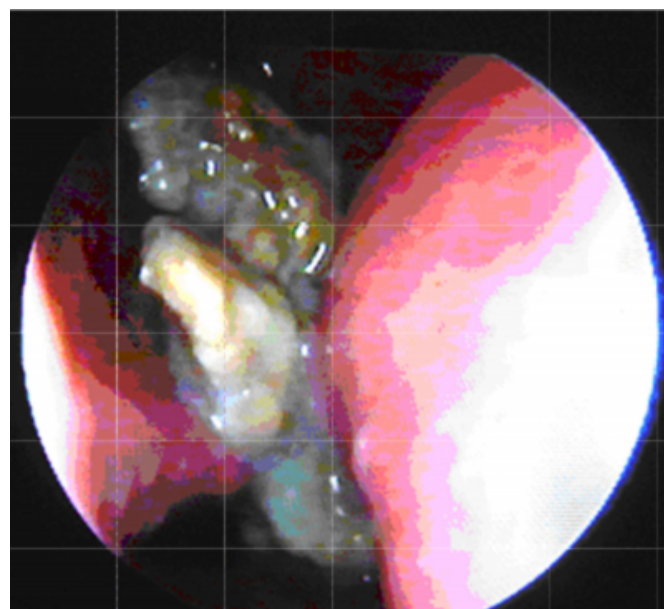
A 8 years old boy was evaluated for a 3 years history of right nasal obstruction, foul-smelling purulent nasal discharge, intermittent nasal bleeding and posterior nasal drip. The patient did not give any history of putting a foreign object inside the nose. There was no history of prior nasal trauma or nasal surgery. Anterior rhinoscopy right nostril revealed hyperaemic nasal mucosa, purulent nasal discharge and suspicious mass in the posterior part of the nasal cavity. The probing revealed hard stony mass with gritty sensation. The posterior rhinoscopy showed purulent discharge trickling along the lower part of the eustachian tube opening. The initial clinical suspicion was the presence of long standing foreign body in right nasal cavity.

After proper decongestion and anaesthetizing the nasal cavity with oxymetazoline and 2% Xylocain, the nasal

cavity was evaluated with 0° rigid nasal endoscope. The endoscopic examination of the nasal cavity showed an irregular hard object extending from the roof to the floor of the posterior part of the right nasal cavity (Fig. 1).

## Figure 1

Figure 1: Endoscopic picture of rhinolith present in the right nasal cavity

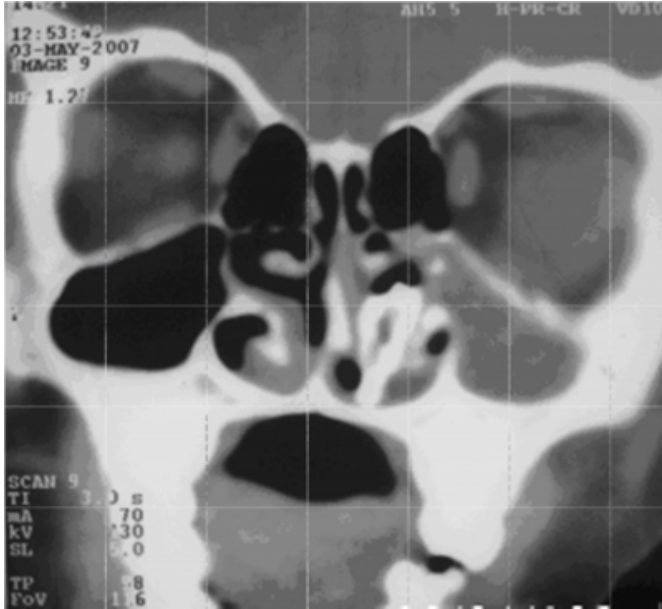


The object was situated lateral to the nasal septum and medial to the inferior and middle turbinate, displacing the middle turbinate laterally. The object also encircled the free end of middle and the inferior turbinate. The surrounding mucosa was hyperaemic, and edematous. The plain CT scan of paranasal sinus and nose showed a homogenous well-

defined calcified object with central translucency at the floor of nasal cavity without any bony erosion (Fig. 2).

**Figure 2**

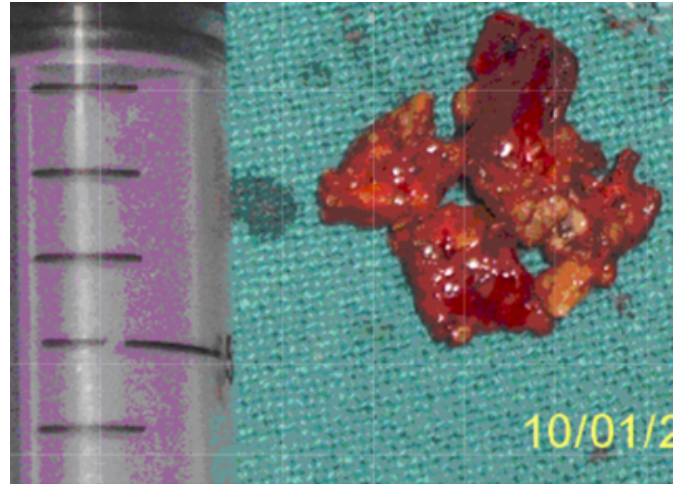
Figure 2: Coronal CT scan of nose and paranasal sinuses showing a rhinolith in right nasal cavity and collection of fluid in right maxillary antrum.



Based on above findings, clinical diagnosis of rhinolith of the right side of nasal cavity was made and the case was taken for the surgery under general anaesthesia. With the help of 0° rigid nasal endoscope, the mass was visualized and a blunt dissector was passed all around the object for the purpose to freeing it from the surrounding mucosa. It was pushed in to the nasopharynx and was taken out through oral cavity (Fig 3).

**Figure 3**

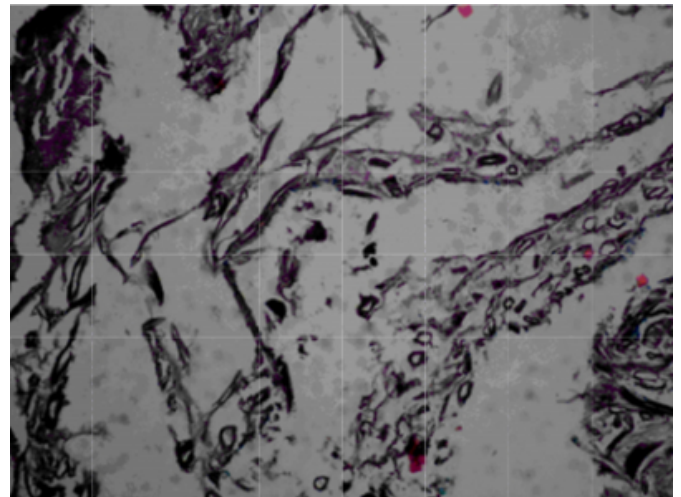
Figure 3: Specimen of rhinolith after endoscopic assisted removal.



Uncinectomy, middle meatus antrostomy and anterior ethmoidectomy was done to clear the maxillary sinus. The specimen was sent for pathological study. The histopathological report revealed calcium crystals over degenerated materials suggestive of rhinolith (Fig: 4).

**Figure 4**

Figure 4: Microscopic picture of the rhinolith showing calcium crystals and degenerated material (H & E, X40).



Minimum bleeding was noticed during entire procedure that was controlled by anterior nasal packing with merocel. The adequate antibiotic, nasal decongestant and anti-inflammatory was given to the patient for seven days. The symptoms cleared after surgery and no complication was noted postoperatively.

**DISCUSSION**

Rhinoliths are grey-to brown coloured, foul-smelling, rough-

surfaced, friable structures often situated in the anterior half of the nasal cavity on its floor<sup>2</sup>. The other locations reported are in the maxillary and frontal sinuses<sup>1</sup>. Bertholin gave the first documented description in 1654<sup>2</sup>. Rhinoliths are usually presented in the third decades of life and rarely occur in children with females more commonly affected than male<sup>4</sup>.

The pathogenesis of rhinolith is not clear. It has been speculated that a foreign body incites a chronic inflammatory reaction, with the deposition of mineral salts. The foreign body acts as a nidus that causes obstruction of nasal secretions, acute and chronic inflammation, deposition of minerals and enzymatic activities of bacterial pathogens<sup>2,3</sup>. Most foreign bodies are exogenous, such as beads, buttons, pieces of paper, cherry pits, stones, sand, fruits, peas, parasites, wood or glass and they usually enters through anterior nares. Rare endogenous agents causing true rhinolith include clotted blood, bacteria, leukocytes, bone fragments and teeth<sup>6</sup>.

Axmann carried out the first chemical analysis of rhinolith in 1829<sup>2</sup>. Since then, several techniques have been used for mineralogical analysis such as Electron-ray microprobe, X-ray diffractometry and infrared-spectroscopy. The predominant material (up to 90%) is inorganic. Calcium phosphate, calcium carbonate and magnesium phosphate, as well as other rare substances, have been described. The organic components may derive from nasal secretions and lacrimal fluid<sup>1,2</sup>.

The typical symptoms of rhinolith are unilateral nasal obstruction, foul smelling purulent nasal discharge and epistaxis. Other symptoms include crusting, swelling of nose or face, anosmia, epiphora and headache<sup>6</sup>. At rhinoscopy, a mass or nodule with well- or ill-defined borders with a hard gritty sensation on probing is often found<sup>5</sup>.

In 1900, MacIntyre gave the first radiological description of rhinolith<sup>4</sup>. The typical radiological features are radio-opacity with central translucency. On CT scan, it appears as a homogenous, high-density lesion with smooth mineralization. The central portion of the lesion, which may contain organic material, may be of somewhat lower density, or a foreign-body nidus may be evidence. CT cannot differentiate a rhinolith from any other calcified mass, but can detect the related complications of rhinoliths<sup>3,4</sup>.

Rigid endoscopy has an immense role in establishing a diagnosis, and in evaluating the posterior extent of a

rhinolith without providing any risk of radiation exposure. It is a cost-effective diagnostic as well as therapeutic method. The endoscopic nasal surgery provide an opportunity to manipulate and removal of the entire mass under direct visual control, and at the same time is helpful in managing any complications of rhinolith<sup>1,3,5</sup>.

The most important differential diagnosis include haemangioma, osteoma, calcified polyps, enchondroma, dermoid, chondrosarcoma, osteosarcoma, syphilis and tuberculosis. The complications reported are sinusitis, septal perforation, palatal perforation, recurrent otitis media, and recurrent dacryocystitis<sup>1,4,6</sup>. Our patient developed ipsilateral maxillary sinusitis that was treated with uncinctomy, middle meatus antrostomy and anterior ethmoidectomy.

In most cases, rhinolith of nasal cavity can be removed through the nostrils. Only in rare cases are extended surgical approaches, e.g. alar release or lateral rhinotomy, necessary for complete removal of the stone. A rhinolith that cannot be removed surgically could be disintegrated using a lithotripsy<sup>3</sup>. The extended use of the nasal endoscope began a new horizon in the diagnosis and management of rhinolith. The diagnosis is straightforward on examination with a rigid endoscope. Endoscopically controlled surgery can also provide immense help in complete and uneventful removal of the rhinolith and in dealing with complications such as sinusitis. It is cost-effective and more accurate method for diagnosis and treatment<sup>2,5</sup>. Our case is typical with respect to the age and sex of the patient, the location, diagnostic and therapeutic approach.

## CORRESPONDENCE TO

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