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Case Report Open Access

# Chronic Sinusitis Leads to Sinolith Formation in Maxillary Sinus – A Rare Case

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**Abstract**

Sinoliths are very rare calculi found particularly in frontal and ethmoid sinuses. Only three cases of true sinoliths have been reported. We present a case of sinolith in the maxillary sinus of a 20-year-old man who complained of nasal blockage, postnasal drip, headache, recurrent attacks of common cold and dry cough since childhood. Computed tomography shows B/L maxillary sinolith formation with sinusitis. This patient is operated with functional endoscopic sinus surgery along with B/Lcaldwel-luc to cure the disease.

**Keywords:** Sinolith; Antrolith; Maxillary sinus; Endoscopic sinus surgery

## Introduction

Maxillary antrolith is a mineralized mass found very rarely in the maxillary sinus formed by exogenous or endogenous origin [1,2]. These mineralized bodies have been variously described as rhinoliths, antral rhinoliths, antral stones, antral calculi, antroliths, sinoliths, maxillary sinus stones and antrorhinoliths. The maxillary sinus is covered by ciliated pseudostratified columnar epithelium which is required for secretion of mucous [3,4]. Its function depends on the ostium opening, cilia and secretion quality and blockage of that normal drainage causes sinusitis. Acute sinusitis when not treated could become chronic, when the recurrent episodes occur for more than 3 months. This longstanding chronic sinusitis leads to chronic inflammation associated with poor sinus drainage, deposition of salts and enzymatic activities of bacterial pathogens are needed for the formation of an antrolith [5]. The purpose of this article is to report, a case of maxillary sinus sinolith which is the complications of chronic maxillary sinusitis.

## Case Report

A 20-year-old male had chief complaints of nasal blockage, headache, recurrent attacks of common cold and cough with expectoration since childhood. There is no h/o trauma to face, no h/o any dental procedure, no h/o epistaxis, no h/o ear discharge. Patient is having this complaint since childhood. Patient took medication for same but did not improve symptomatically. On anterior rhinoscopy nasal mucosa was congested, mild deviated nasal septum to left, bilateral inferior turbinate's atrophied, secretions present in nose. We have done nasal endoscopy and anterior rhinoscopy findings confirmed and no polyp or growth seen. On oral cavity examination there was post nasal drip seen. Rest of the ENT examination was normal. Routine blood investigation was done which were normal. Nasal swab taken for culture sensitivity and according with iv antibiotics i.e. inj cifran started we have done CT pns(p+c) which shows b/l inferior turbinate atrophied and appears small in size, b/l mucosal thickening seen in both sinuses along with 'sinolith' formation. B/L ethamoidal and sphenoidal sinusitis septal spur on left side (Figures 1 and 2). We have operated this patient with functional endoscopic sinus surgery along with B/L cald-wel luc operation. The sinoliths were removed from maxillary sinus and after surgery patient got complete relief from his symptoms.

## Discussion

Maxillary antrolith is a mineralized mass found very rarely in the maxillary sinus formed by exogenous or endogenous origin. These

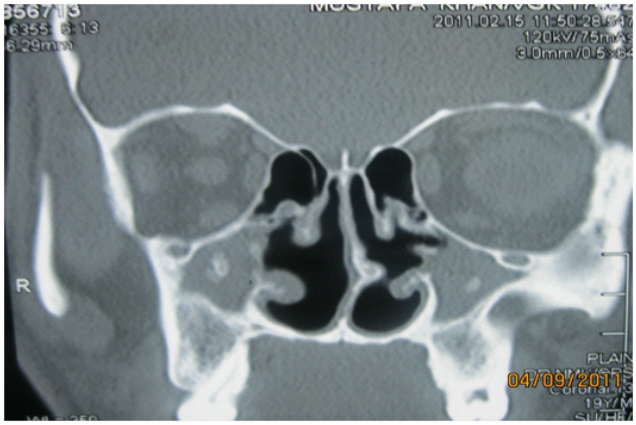


**Figure 1:** Coronal view shows sinolith located in B/L Maxillary Sinus.

mineralized bodies have been variously described as rhinoliths, Antral rhinoliths, antral stones, antral calculi, antroliths, sinoliths, maxillary sinus stones and Antrorhinoliths [3,4]. The term "maxillary antrolith" was introduced by Bowerman in 1969 to facilitate their classification and description of calculi found within the maxillary sinuses [5]. If the antrolith arises around body tissues, it is of endogenous origin which includes dried blood clots, pus, mucus secretions and fungi. If the antrolith originates outside the body, it is of exogenous origin which includes cotton, cellulose, paper, bead, button, vegetable/bean pieces [4]. However, any material in maxillary sinus causes deposition of salt and formation of stone. The maxillary sinus is covered by ciliated pseudostratified columnar epithelium which is required for secretion of mucous. Its function depends on the ostium opening, cilia and secretion quality and blockage of that normal drainage causes sinusitis. Acute sinusitis when not treated could become chronic, defined as recurrent episodes for more than 3 months. This long-standing chronic sinusitis leads to chronic inflammation associated

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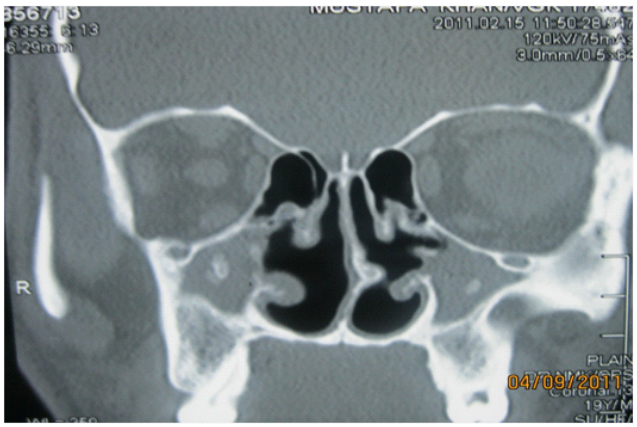


**Figure 2:** Axial view shows Sinolith in both Maxillary Sinuses.

with poor sinus drainage, deposition of salts and enzymatic activities of bacterial pathogens are needed for the formation of an antrolith [6]. The pathogenesis of the stone formation is long-standing infection; poor sinus aeration and drainage seem to be the most important predisposing factors. The majority of patients with maxillary antroliths in the literature have symptoms or clinical signs that may include pain, nasal stuffiness and obstruction, epistaxis, foul intraoral discharge, postnasal drip, tenderness over the involved sinus and, oro-antral fistula foul-smelling discharge, facial pain, sinusitis [3,7,8]. However, few cases of asymptomatic antroliths discovered incidentally on routine radiographic examination have been reported [9,10].

The radiographic features of antroliths vary in size, density, and outline. Their consistency varies from homogenous or heterogenous density, and sometimes showing alternating laminations of radiolucent and radiopaque material. The outline may be rugged or smooth, and the shape may be round, oval or irregular. They are occasionally accompanied by antral mucosal swelling, fluid, and polyps [7]. The radiological diagnosis of antrolith has been made by using plain films of the paranasal sinuses, dental periapical films and panoramic X-rays, computed tomography and magnetic resonance imaging [9]. CT is very helpful in revealing a sinolith, determining the type of calcification considering fungal or nonfungal origin of the sinolith and localizing it precisely in relation to surrounding tissues, specifically the medial orbital lamina and skull base bones [6].

Antroliths usually show concentric rings like those seen in stones found in other parts of the body. Chemical analyses show that these calculi contain various amounts of calcium phosphate, calcium carbonate, calcium oxalate, albuminous material, magnesium phosphate, organic matter and water. The consistency varies from hard and friable to soft, porous, or crumbly. Stones are frequently covered with granulation tissue with a rich blood supply. Colour varies from black to gray, brown or white [5,11]. Surgical removal of the stone is usually performed together with appropriate treatment of the coexisting sinus disease. In the literature, most of extractions from the outer approach have been reported [6,12]. However, an endoscopic approach is satisfactory for the treatment of ethmoid sinoliths and maxillary sinus antroliths [6]. If the stone is well visible, movable and no additional treatment of the sinus disease is needed, just a simple extraction using local anaesthesia can be performed. But in our case we have done FESS surgery along with B/L cald wel luc surgery to remove the sinolith.

## Conclusion

Sinoliths in the maxillary sinus is still a very rare entity. The diagnosis is easy, by means of rhinoendoscopy and CT scanning; however, treatment depends on any coexisting sinus disease by FESS surgery to improve sinus drainage. Stone can be removed by an endoscopic approach using either local or general anaesthesia. If the sinolith are unable to remove from endoscopic approach do cald wel-luc its gold standard method. We believe the very first reported case of sinolith formation is due to chronic sinusitis.

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