

Case Report

Bilateral concha bullosa with right sided extensive rhinolith: a case report

Sumit Prinja, Jailal Davessar, Gurbax Singh, Simmi Jindal*, Alisha Bali

Department of Otorhinolaryngology, Guru Gobind Singh Medical College and Hospital, Faridkot, Punjab, India

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*Correspondence:

Dr. Simmi Jindal,

E-mail: dr.simmijindal@gmail.com

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ABSTRACT

Anatomic variations of the paranasal sinuses can lead to various diseases per se. The paranasal sinus anatomy should be carefully examined prior to performing endoscopic sinus surgery in terms of both existent pathologies and anatomic variations. The anatomy of the paranasal sinuses and its variations have gained importance, along with advances in coronal paranasal sinus computed tomography and extensive use of endoscopic sinus surgery. Rhinolith is a mass resulting from calcification of an endogenous or exogenous nidus within the nasal cavity. It is an uncommon disease that may present asymptotically or cause symptoms like headache and nasal obstruction. A 24 year old woman was admitted in ENT department of GGS Medical College and Hospital, Faridkot with complaints of nasal obstruction, anosmia and headache persisting for 5 years. Right sided rhinolith was detected on anterior rhinoscopy. Bilateral concha bullosa with right sided rhinolith was reported on preoperative paranasal computed tomography scan. It is known that the paranasal sinuses have a number of anatomical variations. Sometimes severe anatomic variations predispose to rhinosinusitis. Herein we report a rare case, along with a review of the literature, to emphasize that severe anatomical variations should not be ignored.

Keywords: Concha bullosa, Rhinolith, Paranasal sinuses

INTRODUCTION

The importance of the paranasal sinus anatomy and its variations has been emphasized, along with the extensive use of coronal paranasal sinus computed tomography (CT) and endoscopic sinus surgery (ESS). The paranasal anatomy should be exposed in detail prior to ESS to develop treatment strategies during the operation and to prevent possible complications.

Concha bullosa is the pneumatization of the middle turbinate and is one of the anatomic variations of the paranasal region.^{1,2} Concha bullosa can be either unilateral or bilateral and generally occurs together with a septal deviation to the contralateral side.

Rhinolith is a mass resulting from calcification of an endogenous or exogenous nidus within the nasal

cavity.³ It usually occurs secondary to foreign body that lodged into nasal cavity. Rhinolith is usually found in the floor of nose, about halfway in between anterior and posterior portion of nares.

Etiology is not always detected, and it may be exogenous (such as grains, small stone fragments, plastic parts, seeds, insects, glass, wood and others), or endogenous, resulting from dry secretion, clots, cell lysis products, mucosa necrosis and tooth fragments, which operate as foreign body. Foreign bodies of high radiodensity are easily identified and localized using conventional radiography. However, computed tomography (CT) may be helpful in localizing foreign bodies of lower radiodensity and also helps in identifying the extent of the lesion and decision of surgical approach.⁴

Herein we present the case of a patient with bilateral middle concha bullosa with right sided extensive rhinolith.

CASE REPORT

A 24 year old woman was admitted to our institution with the complaints of nasal obstruction and headache of long duration. An anterior rhinoscopy revealed right sided rhinolith and left inferior turbinate hypertrophy. Anterior rhinoscopy revealed foul smelling pus discharge and narrowed nasal cavity. Rigid nasal endoscopy noted right sided rhinolith present in middle meatus (Figure 1 and 2). Her coronal paranasal sinus CT scan revealed a giant middle concha bullosa on bilateral sides with right sided extensive rhinolith in middle meatus (Figure 3 and 4). The patient underwent resection of the bilateral concha bullosa during ESS (Figure 5), and rhinolith was removed from right nasal cavity. The patient's complaints nasal obstruction and headache were completely relieved within a short time after surgery.



Figure 1: Right sided rhinolith with concha bullosa seen on preoperative nasal endoscopy.



Figure 2: Right sided rhinolith with concha bullosa seen during operative nasal endoscopy.

Histopathology examination of the right nasal mass showed fragments of non-viable tissue with areas of calcification suggestive of rhinolith (Figure 6).

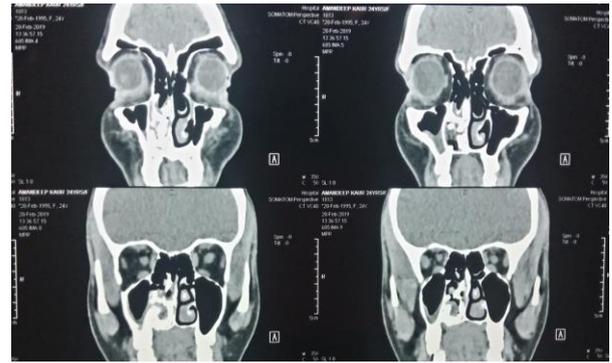


Figure 3: Right sided rhinolith with bilateral concha bullosa seen on CT scan.



Figure 4: Arrow demonstrate rhinolith present in middle meatus with bilateral concha bullosa seen on CT scan.



Figure 5: Right sided concha bullosa excised endoscopically.



Figure 6: Specimen of rhinolith.

DISCUSSION

Axial and coronal paranasal sinus CT imaging, in addition to endoscopic examination, are of great importance, both for identifying the pathology and for defining regional anatomy and variations prior to the surgery. The ethmoid bone is undoubtedly one of the most complex anatomic structures, and the cells are generally referred to as the anterior and posterior ethmoidal cells according to the site of drainage. However, the anterior and posterior ethmoidal cells also may show a number of variations. The anterior and posterior ethmoidal cells are considered responsible for the pneumatization of the middle concha in approximately 55% and 45% of concha bullosa cases, respectively.^{1,2}

Bolger et al classified pneumatization of concha bullosa into three groups. They referred to pneumatization localized to the vertical lamella of the middle concha as “lamellar concha bullosa,” pneumatization localized to the inferior (or bulbous) pair of the concha as “bulbous concha bullosa,” and extensive pneumatization to both the vertical lamella and the bulbous part of the of the concha as “extensive concha bullosa.”² The degree of pneumatization is directly proportional to the severity of symptoms. Whereas the lamellar and bulbous types are usually asymptomatic, extensive bulbous concha manifests symptoms.²

Scribano et al reported large ethmoidal bullae in 5.4% of the cases.⁵ Concha bullosa is the most common paranasal anatomic variation that causes nasal obstruction and sinusitis. Its prevalence ranges from 8% to 60%.^{1,2,5} Asymptomatic concha bullosa does not require surgical intervention; however, medical treatment is based on antibiotics, antihistamines and nasal sprays containing topical steroids. Topical decongestants can be given to provide short-term symptomatic relief. The definitive treatment of concha bullosa is surgical.

Although asymptomatic concha bullosa does not require treatment, concha bullosa cases that cause obstruction of the ostiomeatal complex and disease in the paranasal sinuses and those that cause only airway obstruction are treated by performing ESS. Resection of the lateral lamella of the middle concha is an effective procedure and the most commonly used surgical technique.⁶

Bhatt advocated a more conservative approach in concha surgery and recommended submucoperiosteal resection.⁷ In our case report, the lateral segments of both bulbous conchae were excised endoscopically. Postoperatively, it was observed that her nasal obstruction complaint had been completely relieved. Concha bullosa may not only progress asymptotically but also present with symptoms such as nasal obstruction, headache and hyposmia by means of completely filling the nasal cavity. Such a large concha bullosa may impair ventilation and

drainage of the ostiomeatal complex and thus lead to sinus pathologies.

Various studies in the literature have shown that the obstruction of the ostiomeatal complex due to concha bullosa also plays a role as a predisposing factor in sinusitis development.⁸⁻¹⁰

Rhinolithiasis was first described by Bartholin in 1654.⁴ Etiology is not always detected. The most common cause of rhinolith is retained foreign bodies. Foreign bodies normally access the site anteriorly, but they may occasionally reach into the nasal cavity through the choana by cough or vomiting.⁴

The presence of foreign bodies cause local inflammatory reaction, leading to deposits of carbonate and calcium phosphate, magnesium, iron and aluminum, in addition to organic substances such as glutamic acid and glycine, leading to slow and progressive increase in size.^{11,12}

It is often asymptomatic. Patient will seek medical treatment when they start to have symptoms of progressive unilateral nasal obstruction, foul smelly nasal discharge, headache or recurrent epistaxis. If undetected for many years rhinoliths may grow large enough to cause nasal obstruction and distortion or destruction of surrounding structures.^{13,14}

Diagnosis is usually based on history of foreign body introduction into the nose, physical examination and complementary tests. Simple X-ray and paranasal sinuses CT scan support the diagnosis through the presence of calcified tumor in the nasal fossa, in addition to supporting the planning of surgical approach.

The differential diagnosis should include calcified polyps, odontomes, granulomas, granulomatous diseases, sequestration following local osteomyelitis, osteomas, calcified odontogenic cysts, chondrosarcoma, osteosarcoma and sinonasal malignancy.¹⁵

Treatment consists of removal of rhinolith and the surgical approach chosen depends on location and size of the rhinolith and presence of complications, but most of them can be removed endoscopically. External approaches may be necessary in cases of giant rhinoliths, and endoscopes are extremely helpful in both approaches. Postoperative extensive nasal douching is really important to prevent further complications.

CONCLUSION

Anatomic variations of the paranasal sinuses are very common. The paranasal sinus anatomy should be examined carefully prior to ESS in terms of existent pathologies and anatomic variations. Nasal diagnostic endoscopy and paranasal CT are of great value in diagnosis.

Rhinolithiasis is an uncommon disease that may be left undiagnosed for many years and presented with complications. The diagnosis is made by clinical history and physical examination, and it should be considered in cases of unilateral nasal obstruction with foul smelly nasal discharge.

Treatment of bilateral concha bullosa with right sided extensive rhinolith is surgical.

Therefore, we think that the present case is a valuable contribution to the literature as a variation that should be considered in the decision to perform ESS.

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