

## A case presentation of a rhinolith and ectopic teeth

Cemal Alper KEMALOĞLU<sup>1\*</sup>, [MD]  
Esabil YÜKSEL<sup>2</sup>, [MD]

1 Plastic surgery specialist at the Department of Plastic, Reconstructive and Aesthetic Surgery, Erciyes University, Kayseri, Turkey.

2 Plastic surgery specialist at the Department of Plastic, Reconstructive and Aesthetic Surgery, Private Dünyam Hospital, Kayseri, Turkey

\* Corresponding Author: Cemal Alper Kemaloglu, [MD]. Department of Plastic, Reconstructive and Aesthetic Surgery, Erciyes University, Faculty of Medicine Talas/KAYSERİ

e-mail: dralperkemaloglu@yahoo.com

Received 24 July 2015; accepted 26 October 2015;  
published online 24 December 2015

### ABSTRACT

Rhinoliths develop from ignored nasal foreign bodies that increase in size by time. Early diagnosis is essential to prevent foul-smelling breath and an inability to breathe properly. Teeth are defined as ectopic when they erupt in regions other than their natural positions. We present the case of an 18-year-old girl who complained of difficulty in breathing through the right nostril, foul-smelling breath and frequent headaches that had persisted for the last 10 years. Clinical examination and radiological findings revealed a rhinolith in the right meatus nasi inferior, septal deviation and ectopic teeth in the right maxillary sinus. Under general anesthesia, the rhinolith was removed and the septum deviation was corrected. At the patient's request nothing was done about the ectopic teeth. Herein we present our case with a rhinolith and ectopic teeth.

**Key words:** Rhinolith, ectopic teeth, nose

### Introduction

Rhinoliths are made of calcified material and induced by a foreign body [1]. They are usually suspected by history and diagnosed radiologically. They generally locate in the anterior part of the nasal cavity [2]. Rhinolith may develop due to trauma, nasal packaging material and surgical operations [3]. The symptoms such as; nasal discharge, facial pain, unilateral rhinitis, sinusitis, epistaxis, dacryocystitis, headache, anosmia, septal perforation and palatal perforation may occur when the rhinolith increases in size [4,5]. Rhinoliths can be detected at any age (6 months to 86 years) [5].

On the other hand, ectopic teeth, which, have erupted in the maxillary sinus are very rare [6]. The causes of tooth eruption in the maxillary sinus are unclear. Cleft palate, trauma, genetic, dense bone and crowding are believed to be responsible for ectopic teeth [6]. Ectopic teeth in the maxillary sinus are usually asymptomatic and generally identified by routine radiographic investigations.

This report presents a rhinolith case with ectopic teeth.

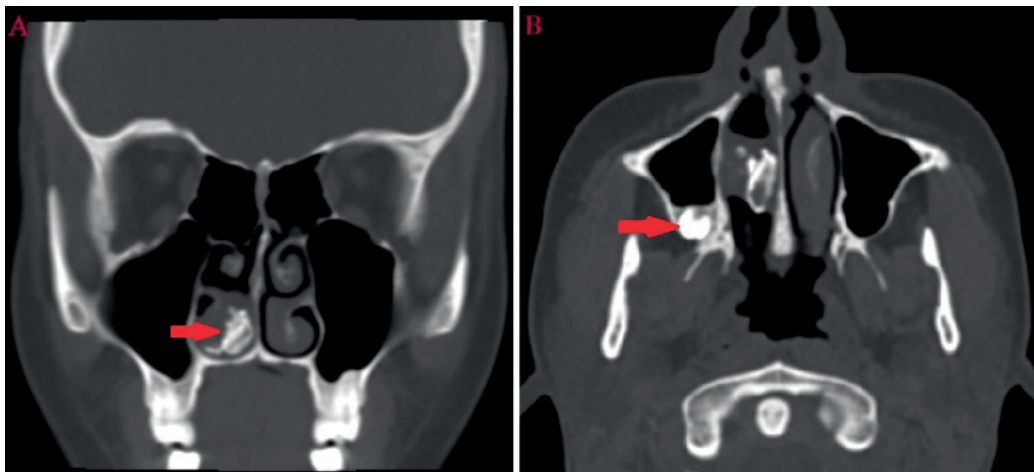
### Case Report

A 18-year-old female presented with complaints of foul-smelling breath, difficulty in breathing through

the right nostril, and frequent headaches for the last 10 years. There was a history of trauma as she had fallen from a wall during her childhood. Clinical examination showed a deviated nasal septum towards the right side at the anterior third of the nose. The middle third of the right nasal cavity appeared wide and a hard mass was observed on its floor; this was irregular in shape and was immobile with bleeding



**Figure 1.** Nasal endoscopy revealed a huge rhinolith located between the nasal septum and the inferior turbinate of the right nasal cavity.



**Figure 2.** (A) Coronal computerized tomography scan showing the rhinolith in the right nasal cavity and (B) axial computerized tomography scan showing both rhinolith in the right nasal cavity and ectopic teeth in the right maxillary sinus. Arrows indicate rhinolith (A), and ectopic teeth (B).

tendency (Figure 1). A wide, compact, space-consuming lesion was determined on the medial side of the inferior turbinate at the middle third of the nose by the axial/coronal computerized tomography (Figure 2). It was measured as 1x3 cm in diameter. There was no septal deviation where the rhinolith was located. There were ectopic teeth located in the right maxillary sinus but the patient had no symptoms related to them. A diagnosis of rhinolith and ectopic teeth was clinically and radiologically made and the patient was admitted for removal of the rhinolith and correction of the septal deviation but nothing was done about the ectopic teeth in the right maxillary sinus.

Under general anesthesia, 0 degree nasal rigid endoscope was used for inspection of the nasal cavities. In the middle of the meatus nasi inferior a rhinolith

was found between the middle of the septum and inferior turbinate. It was gently mobilized and removed by punch forceps. The specimen measured 3x1 cm and had an irregular shape and rough surface (Figure 3). After that, classic open rhinoplasty was started and the nasal flap was elevated. Bilateral mucoperiosteal flaps were dissected and the cartilaginous and bony septum was exposed. The fractured and the deviated septum, which was the result of trauma in childhood, was resected and an L strut was created (Figure 4). The remaining steps of the septoplasty procedure were then performed as usual and the nasal cavity was packed bilaterally. The patient was discharged within 24 hours. At the postoperative period the patient symptoms were completely relieved and an endoscopic examination of the right nasal cavity on the 7<sup>th</sup> postoperative day was completely normal.



**Figure 3.** The rhinolith after total endoscopic removal.



**Figure 4.** View after the rhinolith and the deviated septum were removed.

Histopathologic examination of the excised specimen revealed an endogenous rhinolith without any foreign body reaction.

## Discussion

In 1654, Bartholini reported the first case report of rhinolith. This was a calcified foreign body that had grown round a cherry stone [7]. Polson reported 495 cases which is the largest series ever recorded [7]. Nevertheless, reports of rhinolith still remain rare in the literature. Rhinoliths can develop in patients of all age groups, mainly in children and young adults. Rhinolith is believed to be formed by deposition of minerals around the intranasal exogenous or endogenous foreign body [8]. These minerals contain calcium, iron, magnesium, and phosphorus.

After the foreign body is located into the nasal cavity, patients are mostly asymptomatic for years, and as the size increases nasal obstruction occurs. It takes around 15 years to form a rhinolith. History and physical examination are necessary for diagnosis.

Patients generally present with rhinorrhea, nasal obstruction, epistaxis, and sinusitis. Facial pain and headache are the other less common symptoms. As its size gets bigger, it negatively affects the blood supply and cause pressure necrosis and perforations of the surrounding tissues [9].

Chemical analysis of the calcified deposits in the nasal cavity have been investigated

by various authors [10]. In general, rhinolith mainly consists inorganic material (%90), with the remaining part made up of organic ingredients (10%). The main mineralogical constituent of a rhinolith is formed by mineral whitlockite ( $\text{Ca}_3(\text{PO}_4)_2$ ) and the remaining part is formed by carbonated apatite (dahlite) and mineral apatite ( $\text{Ca}_5(\text{OH}, \text{F}, \text{Cl})(\text{PO}_4)_3$ ). Today, rhinoliths can be classified as exogenous and endogenous. The termed exogenous are used for the rhinoliths that have settled around foreign material presented into the nose, like cherry stones, stones, forgotten nasal swabs, etc. Endogenous rhinoliths develop in the nasal cavity around the body's own

material like, bone sequesters, ectopic teeth, inspissated mucus and dried blood clots [11]. Although rhinoliths generally occur unilaterally, Kharoubi presented a case that has rhinolithiasis bilaterally [12].

Teeth are infrequently located outside the alveolar arch. During odontogenesis, any abnormal tissue interaction may result in ectopic tooth development. Nasal septum, coronoid process, palate and the mandibular condyle are the place where the ectopic teeth may develop. Very rarely the tooth may be present in the maxillary sinus with or without any symptoms [13]. If the ectopic teeth are connected to the maxillary sinus, it may cause chronic sinusitis; otherwise, it rarely causes symptoms [14].

In the case described herein, there was a rhinolith in the right meatus nasi inferior and ectopic teeth in the right maxillary sinus. Since there was no foreign body found on the histopathologic examination, the etiology of the rhinolith was accepted to be of endogenous origin. The rhinolith did not cause septal deviation or perforation. The deviation at the anterior third of the septum and the etiology of the ectopic teeth might be due to the history of trauma that occurred during her childhood. The ectopic teeth caused no symptom. The rhinolith was removed endoscopically and the septal deviation was corrected by an open septoplasty. The ectopic teeth were left undisturbed at the patient's request. All symptoms like foul-smelling breath, nasal discharge and headache were completely relieved.

## Conclusion

Rhinolith should be considered by a typical history and clinical complaints. The diagnosis should be supported radiologically. All potential lesions capable of obstructing the nasal cavity must be taken account for the differential diagnosis such as chondroma, angiofibroma, chondrosarcoma and calcifying polyps. Removal of small rhinolith can be done under local anesthesia but larger ones require general anesthesia to avoid complications.

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