CASE REPORT

Large rhinolith causing nasal obstruction

Onur Dincer Kose,¹ Taha Emre Kose,² Mehmet Ali Erdem,¹
Abdulkadir Burak Cankaya¹

¹Department of Oral and Maxillofacial Surgery, Istanbul University, Health Sciences Institute, Istanbul, Turkey
²Department of Oral and Maxillofacial Radiology, Istanbul University, Health Sciences Institute, Istanbul, Turkey

Correspondence to
Dr Abdulkadir Burak Cankaya,
burakcankaya@yahoo.com

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SUMMARY

Rhinoliths are calcified masses located in the nasal cavity and may cause symptoms such as nasal obstruction, fetid odour and facial pain. They are usually diagnosed incidentally on radiographic examinations or depending on the symptoms. In this paper we report a 27-year-old Caucasian woman with a calcified mass in the right nasal cavity causing nasal obstruction, anosmia and facial pain. The calcified mass was removed by endonasal approach.

BACKGROUND

A patient who refers to a dental clinic and who also has symptoms in the maxillofacial region should be examined with caution. Besides dental problems on routine panoramic radiography evaluation, surrounding structures including anatomic structures such as the temporomandibular joint, musculature of maxillofacial region, maxillary sinuses and nasal cavity should also be investigated. All the patient's symptoms must be considered seriously.

Rhinolith is a rare entity that can cause symptoms in the maxillofacial region such as facial pain, headache, nasal obstruction, fetid odour, discharge and epistaxis. Some cases are asymptomatic and were found by routine radiographic examination.¹ The aim of the present paper is to report a large rhinolith that was diagnosed after identifying the patient's symptoms and through routine radiographic imaging.

CASE PRESENTATION

A 27-year-old otherwise healthy Caucasian woman was referred to Istanbul University, Faculty of Dentistry, Oral and Maxillofacial Radiology Department, for dental symptoms. The patient also had long-standing nasal obstruction, anosmia and facial pain. She had a history of trauma when she was a child.

INVESTIGATIONS

The patient's panoramic radiography revealed impacted upper left canine and a calcified mass at the right maxillary sinus area.

The patient's cone beam CT (CBCT) images showed a well-defined, irregular calcified mass behind the inferior nasal conchae. The radiopaque mass was located above the palatal bone and floor of the right nasal cavity and was thought to contain air. Initial diagnosis was rhinolith (figures 1–4).

TREATMENT

An operation was planned under general anaesthesia. The calcified mass was removed using an

Figure 1 Radiopaque mass in relation to the inferior nasal conchae at right nasal cavity, which is thought to contain air.

endonasal approach. In the same operation, the patient's upper left canine was extracted surgically. Antibiotics, an analgesic and a decongestant were prescribed.

OUTCOME AND FOLLOW-UP

Nasal packings were removed on postoperative day 1. Intraoral sutures were removed on postoperative day 7. Healing was uneventful. Macroscopy of the mass was a blackish, rough foreign body (figure 5). Microscopic analysis of the mass revealed an amorphous inorganic precipitate; examining the decalcified section confirmed it to be a rhinolith.

Figure 2 Calcified nodular mass located above the palatal bone and below the inferior nasal conchae, at nasal cavity floor, thought to contain air at its central.

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Figure 3 Epithelial thickening seen around the calcified mass at right nasal cavity.

DISCUSSION

The term 'rhinolith' arises from the Greek words 'rhina' and 'lithos', meaning nose and stone.¹ Bartholin first described a rhinolith in 1654.² Axmann made the first chemical analysis of it in 1829.³ It is a rare case and incidence is 1:10 000 in ear-nose-throat outpatients.⁴

The possible aetiology of rhinolith is in situ calcification of intranasal endogenous or exogenous foreign material.⁵ If a rhinolith occurs around a body mass such as a tooth, clotted blood, dried pus, desquamated epithelium, sequestra bone fragments or leucocytes, it is termed as endogenous, and if it occurs around a foreign object such as a stone, cotton, bead, parasites, sand or fruits, it is termed as exogenous.²⁻⁶ Although the exact pathogenesis is unknown, it is thought that calcification occurs by deposition of siderite, ferrihydrite or mineral salts such as calcium carbonate, calcium phosphate and magnesium phosphate around the nidus. Chronic inflammation, the presence of bacteria and obstruction of nasal secretions are thought to be the predisposition factors.³ Its growth pattern is slow and it is thought that formation of a rhinolith takes approximately 15 years.²⁻⁶ Despite our patient's history of trauma to the nose, we cannot be sure about the exact aetiology of our case. We thought that the radiolucent centre of the mass might be the result of an organic nidus.

Rhinoliths are diagnosed in the third decade of life and mostly seen in females. They are rarely seen in children. In this present case, the patient was in her third decade and female, which are consistent with the literature.³

Figure 4 Three-dimensional cone beam CT viewing of the radiopaque entity.

Figure 5 Macroscopic viewing of the calcified mass.

Generally, rhinoliths are found in the anterior nasal cavity floor and unilaterally as presented in our case.²⁻³ Coughing, sneezing or vomiting can cause the nidus to come antegrade or retrograde to the nares.⁶ Rhinoliths are mostly asymptomatic. When symptomatic, rhinoliths manifest in unilateral nasal obstruction, fetid odour, facial pain, discharge, foul-smelling breath, nasal and facial swelling, anosmia and epistaxis.¹⁻³⁻⁶ By reason of direct stimulation, referred pain or mucosal contacts, rhinolith can cause facial pain, as in our patient.⁷ Rhinosinusitis, erosion of the nasal septum and the medial wall of the maxillary sinus, perforations of the palate, intracranial extension, middle otitis and dacryocystitis are complications of rhinoliths.¹⁻⁶ If a rhinolith enlarges because of pressure necrosis, erosion and perforation may be seen in peripheral structures.² Igoumenakis *et al*¹ reported an oroantral fistula associated with rhinolithiasis. Because of the long-standing mucosal irritation, a nasal polyp can be seen around rhinoliths.⁶⁻⁸

Rhinoliths may be diagnosed incidentally by routine radiographs.¹ Nasal endoscopy is the main diagnostic method and plain posteroanterior radiographs, panoramic radiography and CBCT are supportive methods.¹⁻³ Macintyre presented a radiographic image of a rhinolith in 1900.¹ The widespread radiographic image shows that there is a central radiolucency if an organic nidus is present, and surrounding radiopacity.³ Differential diagnoses must be made with haemangioma, enchondroma, ossifying fibromas, calcifying angiofibroma, nasal gliomas, septal desmoid tumours, osteomas, odontomas, calcified nasal polyps, malignant tumours, syphilis and calcified tuberculomas as considerations.¹⁻⁶ Exact diagnosis can be made after histopathological examination.

The treatment of a rhinolith is through removal of the mass. Various approaches are acceptable, depending on the location and size of the mass. Endoscopy, an endonasal approach, Le Fort I osteotomy, piriform aperture osteotomy, piecemeal removal and lithotripsy are some methods for operation.¹ We preferred an endonasal approach for removal of the mass in order to reduce the morbidity.

Learning points

- ▶ Although it is rare, rhinoliths may cause facial pain and anosmia.
- ▶ Whenever a calcified mass is seen in the nasal cavity, a rhinolith must be kept in mind as a possibility.
- ▶ Trauma history should be questioned in rhinolith cases as it seems a possible aetiological factor.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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