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Case Report

A giant staghorn rhinolith: a case report

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ABSTRACT

Rhinolith is a stony mass which is found in the nasal cavity. It is a relatively rare condition, and it takes a long period of time to develop. The pathogenesis of rhinolith formation remains unclear but several theories have been proposed. Although a rhinolith may develop spontaneously, it is usually formed by deposition of salts from body fluids over an object. Wide scope of symptoms appears; from asymptomatic to septal or palatal perforation. Endoscopic assessment and CT scan are the corner stone for the diagnosis of rhinolith. Many differential diagnoses should be kept in mind during assessment for rhinolith. Rhinolith can be removed easily in the clinic, but sometimes it requires general anaesthesia in certain circumstances. Many therapeutic procedures are found but endoscopic removal remains the main standard. Post-operatively the patient may need silastic splints or packs. Post-operative complications, which are rare nowadays, depend on the method used for removal of the rhinolith.

Keywords: Rhinolith, Staghorn stone, Giant

INTRODUCTION

Rhinolith in British English; a calculus or stone formed in the nose.[1] It comes from Greek roots; Rhino; nose, and Lith; stone Rhinoliths and antroliths are calcified sinonasal masses usually found in the nasal cavity or maxillary sinus, although rare locations for rhinolith has been described in the literature such as concha bullosa, that are often thought to arise from encrustation of either an exogenous (e. g. foreign body or dental material) or endogenous (e. g. tooth or sequestrum) nidus.[2,3]

Rhinolith is a relatively rare condition and is caused by gradual deposition and coating of different salts of calcium and magnesium from body fluids over an object inside the nasal cavity.

Since it is an insidious and slow process symptoms gradually develop over period of months and years.[4]

Trauma, surgical operations and dental work, nasal packing material, and plugs of ointment may also promote the development of a rhinolith. In addition, vomit may enter the nose via the choana and remain there forming a foreign body. Finally, a rhinolith may develop spontaneously, for example in the case of a long-standing chronic polypoid sinusitis with accumulation of secretions followed by mineral deposition.[5]

Some cases are asymptomatic and can be found incidentally.[2] Other symptoms may include unilateral nasal discharge which may be bloody or foul smell, nasal obstruction, intermittent epistaxis, facial pain, anosmia, and there has been reported cases of palatal perforation and septal perforation.[5]

Diagnosis can be made by medical history, clinical examination specifically endoscopic assessment and imaging, especially CT, can give detailed information.

CASE REPORT

A 44-year-old otherwise healthy man presented to our ENT clinic with right nasal discomfort for about 3 years. He reported intermittent symptoms of right nasal discharge, sometimes bloody stained and foul smell, right nasal obstruction, right facial pain and heaviness. His symptoms, especially right nasal obstruction and right facial pain started to increase in severity in the last 3-4 months.

The patient story started 3 years back when he was grinding old dry food stuff to make fodder to his sheep using manual tools, when a small solid objects jumped and entered his nose. At the moment he experienced severe discomfort and profuse rhinorrhoea.

At the same day he consulted an ENT specialist who removed a small foreign body that the patient believed it was a piece of chicken bone. Some medications were prescribed. The patient remained suffering right nasal discomfort for that he consulted many times and medications were prescribed to what has been diagnosed as rhinitis.

During endoscopic examination at our clinic, we found large elongated mass extending from the beginning of right nostril occupying the floor of right nasal cavity back to the nasopharynx, branching up to the inferior and middle meatus, (Figures 1). Palpation of the mass using Jobson probe revealed a stony hard consistency and cracking sensation.

X ray of the nose and paranasal sinuses (Figure 2) showed radio-opaque mass occupying the right nasal cavity with mixed radio-opaque and radiolucent densities seen in the nasopharynx. CT scan of nose and paranasal sinuses (Figure 3) showed well-defined lobulated densely calcified mass measured about 31×30×15 mm was seen within and slightly expanding the right nasal cavity, between the nasal septum and right inferior turbinate causing resorption of right inferior turbinate and right nasal cavity obstruction, this mass showed mild extension to right postnasal space. There was no bony destruction noted, and the paranasal sinuses were all clear.

From the above findings the diagnosis of right huge staghorn rhinolith was made. Under general anesthetic, oro-tracheal intubation and local nasal decongestant using 1:10000 adrenaline-soaked patties the stone was fragmented and removed completely.

The procedure was performed using 4-mm/0-degree rigid nasal endoscope. It was impossible to remove the stone piecemeal neither through the nose nor through the postnasal space, by pushing it backwards, because of its large size, the presence of granulation tissue, its branching pattern and the mildly deviated septum to the right side (Figure 4).

The fragments were removed completely from the nose as well as from the postnasal space (Figure 5). The nasal cavity and postnasal space were washed profusely using copious amount of normal saline. At the end of surgery the postnasal space was examined for any stone piece and it was free.

Right nasal silastic splint was left for 10 days to prevent synaechia formation. Right nasal merocel pack was left for 24 hours. Post-operatively saline and steroid douching was prescribed, as well as antibiotics, for ten days.

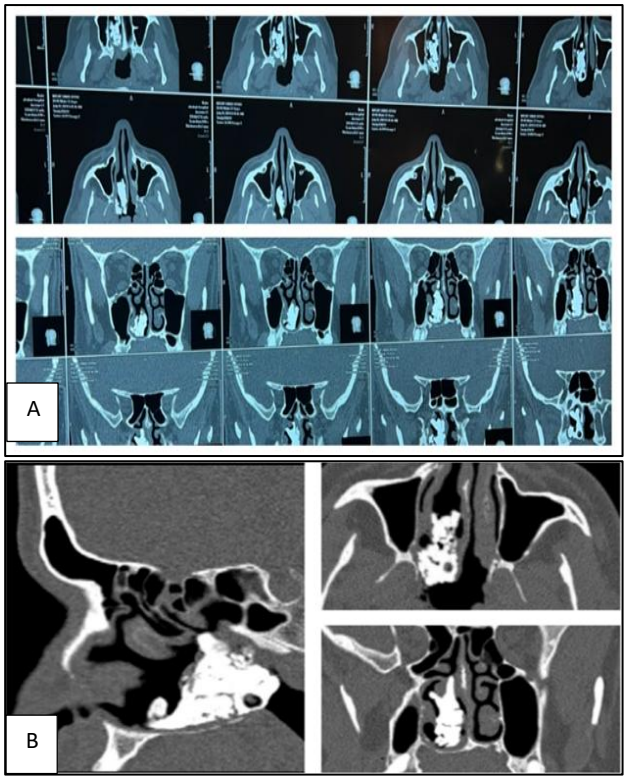
The patient passed uneventful post-operative period.

After ten days, during the follow up visit the silastic splint was removed, the patient re-examined, he was symptom free, no nasal obstruction and the mucosa was healed.

The patient was followed up 6 weeks later, he was completely normal (Figures 6).

Figure 1: Large elongated mass extending from the beginning of right nostril occupying the floor of right nasal cavity back to the nasopharynx, branching up to the inferior and middle meatus.

Figure 2: X ray of the nose and paranasal sinuses showed radio-opaque mass occupying right nasal cavity.



Figures 3 (A and B): CT scan of nose and paranasal sinuses: showed well-defined lobulated densely calcified mass measured about 31×30×15 mm seen within and slightly expanding right nasal cavity, between nasal septum and right inferior turbinate, this mass showed mild extension to right postnasal space.

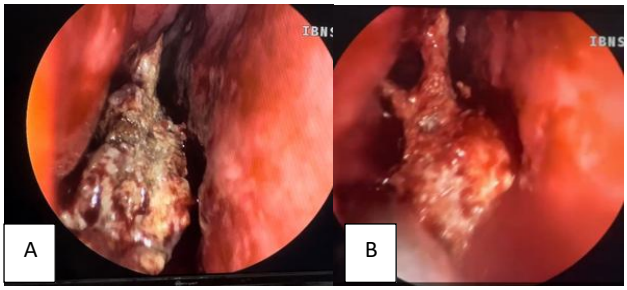


Figure 4 (A and B): Large staghorn stone impossible to be removed piecemeal.

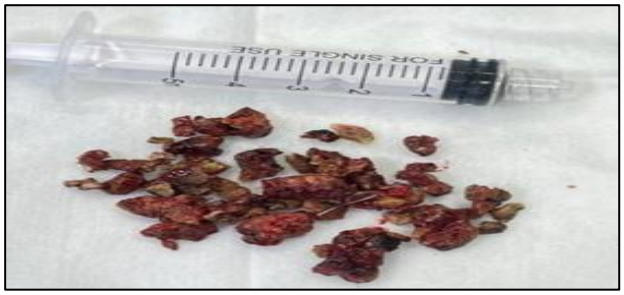


Figure 5: Fragments of the stone at the end of surgery.

Figure 6: The patient was followed up 6 weeks later, he was completely normal.

DISCUSSION

Rhinolithiasis is a rare condition; it was first described by Bartholin in 1654.[6] The incidence of rhinolith is uncommon, constituting only 1 in 10,000 otolaryngology outpatients. It is more commonly seen in children with intellectual disabilities, but can occur across all age groups.[4,6]

The pathogenesis of rhinolith formation remains unclear. Several theories have been proposed, including impaction of foreign bodies, acute and chronic inflammation, demineralization of salts, and mechanical obstruction by mucus and pus. Acute and chronic inflammation of the nasal or mucosal lining may increase nasal discharge with high amounts of calcium, magnesium, iron, carbonate, aluminum, glutamic acid and glycine. Over time, these substances may eventually form a large stone-like mass.[7]

Rhinolith formation takes from a few months to several years.[8] While a history of foreign body in the nose can indicate diagnosis alone, patients sometimes do not seek medical care or are misdiagnosed with rhinosinusitis and treated unsuccessfully for considerable periods of time.[4]

Rhinolithiasis may be asymptomatic and found incidentally during routine ENT examination, sinonasal CT scan, or dental radiographic films.[9] Sinonasal CT is the best diagnostic method for rhinolith.[10]

Differential diagnosis includes inflammatory conditions like sinusitis and neoplastic conditions such as osteoma, ossifying fibroma, odontoma, and other malignancies.[6]

Therapeutic management involves endoscopic or external open extraction of the rhinolith.[10] Smaller rhinoliths can be removed in clinic followed by anterior nasal packing if needed.[11]

General anesthesia with orotracheal intubation is necessary for children, giant rhinoliths, those enclosed posteriorly in the nasal fossae, or with associated lesions like sinusitis and polyps.[10]

The endoscopic approach provides a clear view using rigid optics and a camera and decreasing complication risks. The mass can be removed piecemeal or after fragmentation into smaller pieces.[6]

External surgical removal via Caldwell-Luc approach or lateral rhinotomy incision is indicated for giant rhinoliths associated with giant turbino-septal malformations, or with massive granulomatous reactions including the rhinolith, or when endoscopes are unavailable.[11,12] Lithotripsy has been reported but is not a therapeutic standard.[12]

If significant raw areas appear on the medial and lateral nasal walls, silastic splint placement for a few days is highly recommended to prevent adhesions and synechiae. Unless bleeding is minimal, anterior nasal packing is usually required for 24-48 hours. The patient typically makes a full recovery with symptom resolution afterwards.[13]

CONCLUSION

The rhinolithiasis is uncommon entity. The most common presenting symptom is a long-term unilateral purulent nasal discharge and unilateral nasal obstruction. The diagnosis can be confirmed by nasal endoscopic examination and sinonasal CT scan imaging. Therapeutic management requires extraction either externally or by endoscopic approach under local or general anesthesia.

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