

Rhinoliths: a Three Years Study

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Rhinoliths are also known as nasal calculi. They are calcareous deposits present inside the nasal cavity of uncertain pathology. They can be exogenous and endogenous. This is a retrospective case series study in which 9 patients with rhinoliths in three-year period were studied. Patients were seen in the ENT Outpatient Clinic in the Teaching Hospital as well as the private clinics, Mosul City/ Iraq. The study discusses the patients' demographics, the presentations, and the methods of management together with literature review

Introduction

The term rhinolith is derived from Greek (rhino–nose, lithos–stone). It is considered to be a rather rare condition, and an incidence of 1:10,000 otolaryngology patients. It was Bartholin who first gave the accurate description of this condition in 1654 [1,2].

Rhinoliths are also known as nasal calculi, they are calcareous deposits present inside the nasal cavity [3]. This condition is commonly diagnosed by history and anterior rhinoscopy [4].

The cause and pathogenesis of rhinolith is not fully understood. However, several predisposing factors have been proposed. It is necessary for the lodgement of a foreign body in the nasal cavity to cause suppurative on a background of acute and chronic inflammation. Precipitation of calcium and magnesium salts then occur around the foreign body. The precipitation and crystallization of salts is facilitated by obstruction of airflow. Rhinolith needs time to be formed which is suggested to be around 15 years [5,6].

Rhinoliths are of two types: exogenous and endogenous. Exogenous rhinolith occurs if concretions occur around an impacted foreign body. These calcareous deposits around intranasal foreign bodies are the most common variety of rhinolith [2]. Endogenous rhinolith occurs if concretions occur around blood clot / inspissated foreign body.

Patients commonly present with nasal obstruction, rhinorrhoea, epistaxis, and sinusitis. Other less common symptoms include facial pain and headache from resultant sinusitis [5]. As it gets bigger it compromises blood supply causing pressure necrosis then erosion and perforations of surrounding structures [7].

Though radiographical examinations can confirm the presence of a rhinolith, its specific composition and therefore its hardness and movability are difficult to assess. Rhinoscopy and, in some cases, flexible nasal endoscopy are therefore required [8,9].

In this study, cases of rhinoliths over a period of three years were collected and studied.

Patients and methods

It is a retrospective case series study in which collected data of patients with rhinoliths in three-year period were studied. Patients were seen in the ENT Outpatient Clinic in the Teaching Hospital as well as the private clinics of the authors, Mosul City/ Iraq, for the period from July/2009- June/ 2012.

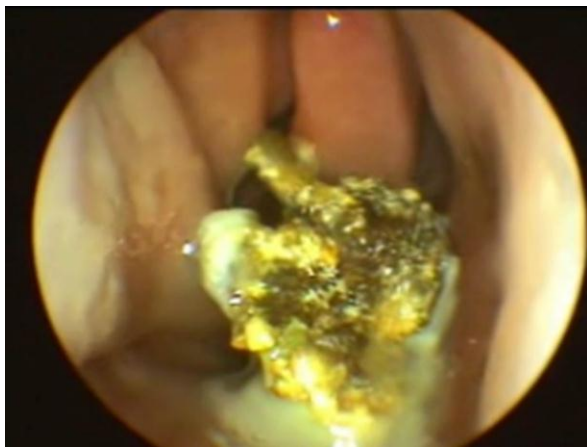
There were nine (9) patients with rhinoliths, with an age range from 7-32 years. There were 6 females and 3 males, with a female:male ratio of 2:1.

Patients presented mainly with symptoms of unilateral nasal discharge and obstruction. Epistaxis was also a presenting symptom in about half of patients. Nasal pain occurred less frequently. In 2

patients, the rhinoliths were discovered accidentally on routine ENT examination for other symptoms.

Full examination was done including nasal endoscopy under local anesthesia in adults and cooperative young patients (Fig.1). When the picture is suggestive of rhinolith, then an attempt is made to remove it in the clinic under local anesthesia except in young patients in whom removal was planned under general anesthesia.

Figure 1



Endoscopic view of a right sided rhinolith

When removal of the rhinolith in the clinic was done, bleeding was controlled with simple nasal pack if needed, otherwise general anesthesia was planned. Simple X-ray of the nose and paranasal sinuses were the sole investigation needed in those patients (Fig. 2).

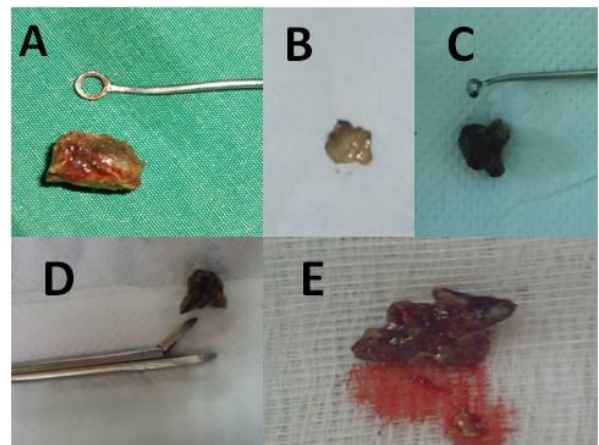
Figure 2



Plain X-ray of patients with rhinoliths(the arrows)

Under general anesthesia, removal of the rhinolith was done with the aid of rigid, 0 degree, 4 mm endoscope, and a 2.7 endoscope was needed in pediatric cases. Figure 3 shows photos of some rhinoliths removed.

Figure 3



Varieties of rhinoliths removed from the patients

Packs, when inserted, were removed several hours later when bleeding had stopped and broad spectrum antibiotics were prescribed for one week, together with local vasoconstrictor nasal spray. Patients were seen one week later, when a second look was done.

No complication was reported in this series, either from the rhinolith itself or from its removal.

Results

There were 9 patients who were seen for the period from July/ 2009- June/ 2012. The age range was (from 7-35) years, with a mean of 22 years. There were 6 (66.5%) females and 3(33.5%) males, with a female to male ratio of 2:1. The rhinoliths were all unilateral with the right side affected in 6 patients (66.5%), the left side in 3 patients (33.5%). The main presenting symptom was unilateral discharge in 7 patients (77.7%); the second presenting symptom was nasal block which was present in 6 patients (66.5%). Recurrent unilateral epistaxis was present in 5 patients (56%). Two patients reported nasal pain and discomfort. In 2 patients (22%), the condition was discovered accidentally on routine ENT checks.

The condition was managed in the clinic and under local anesthesia in 4 patients (44%), while general anesthesia was needed in 5 patients (56%) who were either young or uncooperative adults. One female adult patient was mentally retarded and was managed under general anesthesia. The demographics of patients and their presentation are shown in Table1.

Table 1 Demographic data of patients

Patients no.	Age (years)	Sex	Side	Presentation	Method of management
1	35	Female	Left	Accidental	L.A.
2	23	Male	Right	Nasal obstruction + Unilateral discharge	L.A.
3	7	Male	Right	Unilateral discharge & epistaxis	G.A.
4	22	Male	Right	Unilateral block, discharge& epistaxis	G.A.
5	25	Female	Left	Unilateral block, discharge& epistaxis	G.A.
6	20	Female	Right	Nasal block, pain, epistaxis & discharge	L.A.
7	25	Female	Left	Mental retardation Epistaxis, discharge	G.A.
8	32	Female	Right	Accidental	L.A.
9	8	Female	Right	Nasal block & discharge	G.A.

L.A: local anesthesia, G.A: general anesthesia

Discussion

Rhinoliths, although rare, had been proposed to occur in adults and elderly individuals, and are usually irregular brownish / grey colored masses present in the anterior portion of the nasal cavity [3,4].

In our series, the authors reported 9 cases in 3 years period with an average of 3 cases per year and an approximate incidence of 1: 6,000 ENT patients. This calculation was based on the number of patients seen by the authors collectively, and this observation is more than what is mentioned in the literature that the incidence is 1:10000 ENT patients [1,2]. This observation agrees with Nandagopal in 1955, who estimated an incidence of five cases out of a total outpatient attendance of 30,000 in a year [10].

In our series females were affected more than males, with a ratio of 2:1, and this agrees with several published reports [5,6,7,9,11].

The usual range of age for diagnosis is between 8 to 25 years old, and this agrees with the range in our series which was from 7- 35 years [12,13].

Another study estimated that although rhinoliths can occur at any age, they are more common in children and young adults [14]

Although small sized rhinoliths are usually asymptomatic, larger ones may cause unilateral nasal discharge, nasal pain, nasal obstruction, foul smelling breath, epistaxis, pain, nasal or facial swelling, sinusitis and anosmia or remain asymptomatic. In our series the main presenting symptoms were: unilateral nasal discharge (77.7%), unilateral block (66.5%), epistaxis (56%), and pain (22%) in this

sequence. In 2 patients they were asymptomatic. While erosions of the septum, maxillary sinus, and perforations have also been cited in literature [2,16], no case of such sequel was reported in our series.

On anterior rhinoscopy or nasal endoscopy, rhinoliths were found in floor of the nose, about halfway between the anterior and posterior portion of the nares [12]

Rhinoliths can be diagnosed by careful inspection after cleaning the nostril and by probing; a grating sensation clinches the diagnosis. When the nidus or nucleus is radio opaque a radiograph will help [16-18]. In our series plain radiographs were needed in 2 patients to show the radio-opaque shadow in the nose to prove the diagnosis before removal under general anesthesia. MacIntyre was the first to describe rhinolith radiographically in 1900, and rhinoliths may present with variable opacities depending on the nature of the origin [19].

Treatment of choice is endoscopic surgical removal which was done in our series where endoscope was implemented either totally in patients under general anesthesia, or at least to check both pre and post removal in the clinic under local anesthesia [8,20]. Usage of local antibiotics and occasionally systemic ones after removal could improve their recovery.

In our series there were 2 pediatric cases, a 7 years and an eight years old, thus pediatric cases should be assessed for the presence of rhinolith when features of foreign body in the nose are present [3,5,13,15,20].

Conclusion

Rhinoliths are uncommon unilateral calcified intranasal masses with uncertain pathology. The presentation is mainly unilateral nasal discharge, block and epistaxis, and they can be accidentally diagnosed. They have female predilection, and pediatric age can be affected. Removal is better done by endoscopic guidance.

References

1. Turan A, Gozu A Cleft lip/nose deformity and rhinolith. *PlasReconstr Surgery* 2004; 113:079-80.
2. Mustafa A, Nishori S. Rhinolith caused from undetected foreign body: a case report," *Kosova Journal of Surgery* 2008; 2:32-35.
3. Royal SA Gardner RE. Rhinolithiasis an unusual paediatric nasal mass. *PaediatrRadiol* 1998; 28:54-55.
4. Aksungur EH, Binokay FB. A rhinolith which is mimicking a nasal benign tumor. *Eur. JRadiol* 1999; 31:53-5.
5. Ezsias A, Sugar AW. Rhinolith: an unusual case and an update. *Ann. Otol. Rhinol. Laryngol* 1997; 106:135-8.
6. Nass duce M, Talas DU, Ozer C, Yildiz A, Apaydin FD, Ozgur A. Antrolithiasis: a retrospective study. *J. Laryngol. Otol* 2003; 117:637-40.
7. Sinha V Rane A Razdan. Rhinolith. *Surgical Journal of North India* 1995; 11:81-82.
8. Stoney P, Bingham B, Okuda I, Hawke M. Diagnosis of rhinoliths with rigid endoscopy. *J Otolaryngol* 1991; 20: 6.
9. Appleton SS, Kimbrough RE, Engstrom HIM. Rhinolithiasis: a review. *Oral Surg Oral Med Oral Pathol* 1988; 65:693-698.
10. Nandagopal, T. Rhinolith. *Indian Journal of Otolaryngology* 1955; 7:4161.
11. Balatsouras D, Eliopoulos P, Kaberos A, Economou C. Rhinolithiasis: an unusual cause of nasal obstruction. *Rhinology* 2002; 40:162-4.
12. Appleton SS, Kimbrough RE, Engstrom HI. Rhinolithiasis: A review. *Oral surg Oral med Oral Pathol* 1988; 65:693-8.
13. Munoz A, Pedrosa I, Villafruela M. "Eraseroma" as a cause of rhinolith: CT and MRI in a child. *Neuroradiology* 1997; 39:824-6.
14. Dib GC, Tangerina RP, Abreu CE, Santos RP, Gregorio LC. Rhinolithiasis as a cause of oronasal fistula. *Rev Bras Otorhinolaryngol (Eng Ed)*. 2005; 71:101-103.
15. Burbuk PK, Garstecka A, Betlelewski. Nasal foreign body in an adult. *Eur Arch Otorhinolaryngol*. 2005; 262:517-8.
16. Pitt SK, Rout PG. Rhinoliths presenting during routine radiography: Two cases. *Dent Update*. 2000; 27:505-7.
17. Singh, P. Rhinolith. *Indian Journal of Otolaryngology* 1969; 21: 288.
18. Lumba S. P. Rhinolithiasis, *Indian Journal of Otolaryngology* 1973; 25:3135.
19. Patil, M.K, Guledgud, V, Malleshi SN. Rhinolith. *Indian Journal of Dental Research* 2009; 20:114-116.
20. Hadi U, Ghossaini S, Zaytoun G. Rhinolithiasis: A forgotten entity. *Otolaryngol Head Neck Surg* 2002; 126:48-52.