

Rhinolithiasis: an unusual cause of nasal obstruction*

Dimitrios Balatsouras¹, Panagiotis Eliopoulos², Antonis Kaberos¹,
Constantinos Economou¹

¹ Tzanion General Hospital of Piraeus, Piraeus, Greece

² General Hospital of Sparti, Sparti, Greece

SUMMARY

Rhinoliths are foreign bodies of the nose, which may be encountered during the course of a routine examination. If undetected for a long time, they may grow large enough to cause symptoms of nasal obstruction, mimicking sinusitis. We report four patients with rhinoliths presenting with diverse clinical findings. Removal was easy and uneventful in all cases.

Key words: rhinolith, nasal obstruction, foreign body, septal perforation.

INTRODUCTION

Rhinoliths are uncommon foreign bodies of the nose, which may be encountered accidentally during the course of a routine examination (Varley, 1964). Their formation is caused by in situ calcification of intranasal endogenous or exogenous foreign material (Davis and Wolff, 1985). Rhinoliths are usually found on the floor of the nasal cavity, about halfway between the anterior and posterior nares (Appleton et al., 1988).

Rhinolithiasis is often an asymptomatic condition, which may

remain undetected for many years (Carder and Hiel, 1966), until the rhinoliths grow large enough to cause symptoms of nasal obstruction and discharge, leading the unwary physician to the erroneous diagnosis of rhinitis or unresolved sinus infection (Flood, 1988).

Though many reports of cases with rhinoliths appear in the literature (Appleton et al., 1988), they remain an uncommon condition in routine clinical practice and may escape attention since they are frequently poorly visualized during rhinoscopy. It is therefore important for the practicing rhinologist to be aware of their existence and appearance, so that they are not misdiagnosed for tumors or other pathologic entities (Marano et al., 1970; Levine and Niego, 1972). Four cases are presented, none of which had a history of introducing a foreign body into the nose. All were discovered accidentally during routine clinical examination.

CASE REPORTS

Case 1.

A 21-year old female underwent a routine examination at the ENT Department of our hospital, in order to apply as a candidate for police service. The only symptoms of the young woman were cacosmia dating from childhood. A careful anterior rhinoscopy revealed a large rhinolith under the left inferior nasal turbinate. The patient was not aware of the mass and did not report any history of introducing a foreign body into the nose in the past. A Waters' sinus radiographic view (Figure 1) revealed an irregular calcified density in the left nasal cavity, whereas both maxillary antra appeared normal. The rhinolith was removed under local anesthesia, with the help of Luc's forceps, en masse through the anterior nares, without any difficulty (Figure 2). No bleeding occurred and the post-operative period was uneventful.



Figure 1. X-ray examination in case 1 revealed an irregular rounded calcified density in the left nasal cavity, whereas both maxillary antra appeared normal.

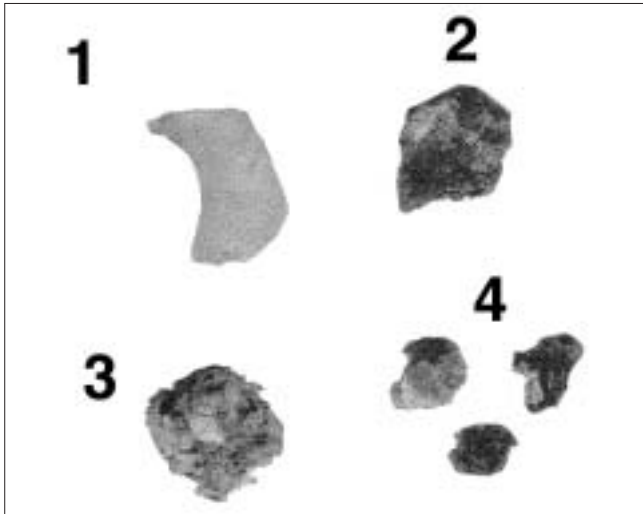


Figure 2. The rhinoliths after removal (rhinolith of Case 4 was removed in pieces).

Case 2.

A 23-year old female was referred to the ENT Outpatient Clinic of our hospital, because of complaints of a hoarse voice. A routine clinical examination including anterior rhinoscopy revealed a previously unsuspected mass on the floor of the nose, halfway between the anterior nares and the nasal choana. On further questioning the patient admitted that she had suffered from minor symptoms of nasal obstruction in the past, as well as frequent episodes of pharyngitis. A Caldwell radiographic view of the sinuses revealed clear sinuses, with no indication of inflammation, whereas the rhinolith appeared as a dense irregular mass. Removal was easy through the anterior nares and no further complications were noted (Figure 2).

Case 3.

A 33-year old male presented to the ENT Department of our hospital, with a history of chronic nasal obstruction. The patient admitted frequent episodes of purulent rhinorrhea, epistaxis and headache. On clinical examination the left nasal cavity appeared completely obstructed because of the presence of a hard, blackish, irregular mass, under the left inferior nasal turbinate. The mass was surrounded by foul-smelling pus. This foul cacostmia had been noted by both the patient and his relatives. X-ray examination revealed a calcified, radio-opaque shadow on the left side of the nose, accompanied by opacity of both maxillary antra. The rhinolith was easily removed en masse, through the anterior nares, under local anesthesia, with the help of Luc's forceps (Figure 2). Specimens of granulations around the mass were removed and biopsied revealing chronic granulation tissue. The patient reported immediate relief of his symptoms, with no recurrence during the next years.

Case 4.

A 22-year old female was referred to the ENT Department of our hospital with symptoms of chronic sinusitis. Anterior rhinoscopy revealed a large rhinolith under the left inferior nasal turbinate, to which it was tightly bound. The nasal mucosa of the left nasal cavity appeared to be chronically inflamed and the whole cavity was full of foul-smelling mucopurulent discharge. Both inferior nasal turbinates were hypertrophied and the nasal septum appeared deviated to the right. Radiographically the presence of a large calcified mass occupying the middle of the left nasal cavity was shown, as well as opacity of the left maxillary antrum. The object was removed anteriorly, under local anesthesia, in three pieces, since it was too big for en masse removal (Figure 2). Minor bleeding occurred for approximately 10 minutes after surgery, but no further complications ensued afterwards. The patient reported immediate improvement and has not had recurrence of nasal congestion or sinusitis during the next ten months.

DISCUSSION

Rhinoliths are not common and like other rare conditions have attracted the attention of the international literature. There have been more than 650 cases of rhinoliths reported in the literature since 1654, 495 of which were reviewed by Polson in 1943 (Appleton et al., 1988). In the reported cases, females outnumber males and patient ages range from 6 months (Abdel-Latif et al., 1979; Rasinger et al., 1985) to 86 years (Wickham and Barton, 1988). Though children constitute the large majority of patients with different types of foreign bodies in the nose, rhinoliths occur in patients of every age and most frequently in young adults (Hunt et al., 1966; Flood, 1988).

Rhinoliths are thought to be formed by the gradual accretion of calcium and mineral salts around an intranasal nidus, which may be either endogenous or exogenous in origin. Exogenous calculi appear to be more common and these are usually beads, buttons, erasers, fruit seeds, wood fragments, sand, pieces of paper, fragments of bone and retained nasal packing. It seems that these had been introduced many years before, probably during childhood and after having being chemically infected, are subsequently incrustated with calcified tissue (Chaker et al., 1978). Endogenous calculi include dried nasal secretions, blood clots, epithelial debris, sequestra and misplaced teeth (Harbin and Weber, 1979).

As the size of rhinoliths increases very slowly and they are relatively inert, they are initially symptomless and cause minor symptoms (Carder and Hiel, 1966). If they become large enough, they cause symptoms of nasal obstruction or chronic nasal discharge. Occasionally patients may complain of symptoms associated with local tissue distortion or destruction such as facial pain, swelling or epistaxis. These symptoms often raise the suspicion of a malignancy (Price et al., 1981).

Rhinoliths may be found incidentally either on X-ray films,

most often distinguished by a characteristic annular appearance (Allen and Liston, 1979), or on routine intranasal inspection as our cases illustrate. Differential diagnosis should include calcified polyps, odontomas, granulomatous diseases, sequestration following local osteomyelitis, osteomas, calcified odontogenous cysts, chondrosarcomas, osteosarcomas and other rare tumors (Flood, 1988; Royal and Gardner, 1998).

Several complications have been occasionally described such as septal deviation (Deyasi, 1968), septal perforation (Flood, 1988; Kharoubi, 1999), bony destruction and expansion of the calculus to involve the maxillary sinus (Eliachar and Schalit, 1970; Davis and Wolff, 1985), oroantral and oronasal fistula (Gill and Lal, 1977; Wickham and Barton, 1988). A single case of meningitis has also been described (Polson, 1943).

In most cases removal of the rhinoliths is easy, through the anterior nares, either en masse or in pieces (Schwartz, 1979; Celikkanat et al., 1997). If they are bulky, they may be displaced posteriorly into the nasopharynx and removed transorally (Marano et al., 1970). Extremely large and impacted calculi however may require a Caldwell-Luc approach (Dutta, 1973) or on rare occasions, a lateral rhinotomy incision (Perrone, 1969). In our patients removal through the anterior nares was easily performed, but in one case the rhinolith was divided into pieces due to its size that prevented en masse removal.

In conclusion, although rhinoliths are quite uncommon, it is quite probable that an otolaryngologist will occasionally be confronted with such cases during his practice. Since clinical and radiological findings may be similar to other benign or malignant nasal lesions, knowledge of this clinical entity and a high degree of suspicion are necessary in order to accurately diagnose and treat this condition.

REFERENCES

1. Appleton SS, Kimbrough RE, Engstrom HIM (1988) Rhinolithiasis: a review. *Oral Surg* 65: 693-698.
2. Carder HM, Hiel JJ (1966) Asymptomatic rhinolith: a brief review of the literature and case report. *Laryngoscope* 76: 524-530.
3. Celikkanat S, Turgut S, Ozcan I, Balyan FR, Ozdem C (1997) Rhinolithiasis. *Rhinology* 35:39-40.
4. Davis O, Wolff A (1985) Rhinolithiasis and maxillary antrolithiasis. *Ear, Nose and Throat J* 64: 421-426.
5. Deyasi S (1968) Rhinolith. *J Laryngol Otol* 82: 481-484.
6. Dutta A (1973) Rhinolith. *J Oral Surg* 31: 876-877.
7. Eliachar I, Schalit M (1970) Rhinolithiasis: report of eight cases. *Arch Otolaryngol* 91: 88-90.
8. Flood TR (1988) Rhinolith: an unusual cause of palatal perforation. *Br J Oral Maxillofacial Surg* 26: 486-490.
9. Gill RS, Lal M (1977) Perforation of the hard palate by a rhinolith and its repair. *J Laryngol Otol* 91: 85-89.
10. Harbin W, Weber AL (1979) Rhinoliths. *Ann Otol* 88: 578-579.
11. Kharoubi S (1999) Bilateral rhinolithiasis by transseptal permeation: a case report. *Ann Otolaryngol Chir Cervicofac* 116: 39-42.
12. Levine B, Niego R. (1972) An unusual rhinolith. *Oral Surg Oral Med Oral Pathol* 34: 163-164.
13. Marano PD, Smart EA, Kolodny SC (1970) Rhinolith simulating osseous lesion: report of case. *J Oral Surg* 28: 615-616.
14. Perrone JA (1968) An unusual rhinolith. *Laryngoscope* 78: 279-280.
15. Polson CJ (1943) On rhinoliths. *J Laryngol Otol* 58: 79-116.
16. Royal SA, Gardner RE (1998) Rhinolithiasis: an unusual pediatric nasal mass. *Pediatr Radiol* 28: 54-55.
17. Schwartz HC (1979) Rhinolithiasis: a disorder not to be approached transorally. *J Am Dent Assoc* 98: 228.
18. Varley EWB (1964) Rhinolith: an incidental finding. *Br J Oral Surg* 2: 40-43.
19. Wickham MH, Barton RPE (1988) Nasal regurgitation as the presenting symptom of rhinolithiasis. *J Laryngol Otol* 102: 59-61.

Dimitris G. Balatsouras
23 Achaion St.
Agia Paraskevi
15343 Athens
Greece

Tel: + 301-600-4683
E-mail: dbalats@hotmail.com