Rhinoliths presenting during Routine Radiography: Two Cases

S.K.J. Pitt and P.G.J. Rout

Abstract: Rhinoliths are calcified masses found within the nasal cavity. They are an uncommon finding and usually present to ENT surgeons. This article presents two cases where rhinoliths have been recognized in the dental setting, and discusses their management and treatment.

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Clinical Relevance: Rhinoliths may present as an incidental finding upon routine radiography. It is therefore useful for general dental practitioners to be aware of their existence and management.

Rhinoliths are calcified masses found within the nasal cavity, usually occurring unilaterally, occasionally bilaterally or in multiples. Similar masses may also occur within the maxillary sinus (antroliths). Rhinoliths were first identified by Bartholin in 1654.[1,2] Since then just over 600 cases have been reported. Most cases present to ENT surgeons, with an approximate occurrence of 1 in 10 000 otolaryngic outpatients.[3] However, they could also present to the general dental practitioner, causing diagnostic difficulties. This article discusses two such cases.

FEATURES

Radiographically, rhinoliths usually appear as dense radio-opacities in the anterior maxillary region. Their precise localization using radiographs can be difficult, and may necessitate the use of computed tomography (CT).[4,5]

Rhinoliths form by complete or partial encrustation of intranasal foreign bodies.[1,5,6] They consist chiefly of layers of calcium carbonate and calcium phosphate surrounding a central nidus (see below).[1] Organic matter and water are also found, these being derived from nasal and lacrimal secretions.[2,7]

The nucleus for calcification may be endogenous or exogenous in origin,[1–3,7] although exogenous nuclei – beads, buttons, tissue paper, peas, etc. – are more common.[1,3,5,8] Most of these are introduced into the anterior nares by children and often 'forgotten about', but they may also enter the nasal cavity posteriorly via the nasopharynx, during the acts of sneezing, coughing or vomiting.[2,8] Examples of endogenous sources are debris, displaced teeth, fragments of bone, blood clots and mucus.[1–3,7]

Rhinoliths are more common in adults than children.

Small rhinoliths are usually asymptomatic; however, they tend to increase in size over a number of years and may then present with nasal symptoms such as nasal obstruction, foul-smelling unilateral discharge, epistaxis or pain.[4,5,7,9,10] Erosion of the surrounding structures may occasionally occur. Perforation of the hard palate and nasal septum has been reported.[7,9,11]

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CASE 1

A 13-year-old adolescent boy was referred for the management of a traumatized upper left central incisor. The patient complained of some discomfort in the palate in the region of the unerupted upper right canine, and routine radiographs to locate the position of this tooth were obtained. These revealed the upper right canine to be palatally positioned, but also showed an irregularly fusiform-shaped radio-opacity in the left inferior meatus. The radio-opacity on the initial radiograph (Figure 1) appeared to resemble the crown of a maxillary canine, although the upper left canine was present in the erupted dentition. This lesion was of uniform density and approximately 15 mm x 8 mm x 15 mm.

A dental panoramic tomogram (Figure 2) showed the radio-opacity to lie in the inferior meatus.

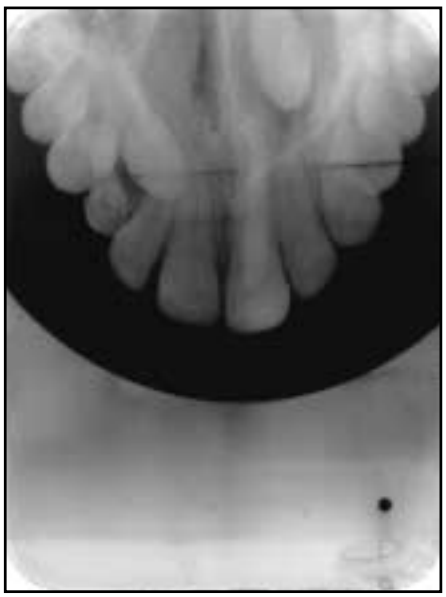

***Figure 1.** Fusiform radio-opacity overlying the left nasal fossa, resembling an unerupted maxillary canine.*

Figure 2. *Irregularly shaped radio-opacity lying in the left inferior meatus.*

Diagnosis and Treatment

A provisional diagnosis of a rhinolith or calcified neoplasm was made. The lesion could not be visualized via the anterior nares on casual inspection. Upon further questioning, it was revealed that the patient had behavioural problems and a history of inserting foreign material, for example paper, into his nostrils when younger. Left-sided nasal obstruction was also reported by the boy when suffering from upper respiratory infections.

An orthodontic opinion was gained and the options discussed regarding the upper right canine. The patient was not in favour of any orthodontic treatment and so the decision was made to extract 3| at the same time as investigating the suspected rhinolith. The patient was referred to a maxillofacial surgeon regarding this treatment.

At the time of surgery the nose was thoroughly investigated and a calcified foreign body was removed via the left anterior nares.

Histological diagnosis of the foreign material proved difficult as the nidus appeared to resemble 'Blu-tack'.

Healing was uneventful and the patient reported an improvement in his nasal airway following surgery.

CASE 2

A 29-year-old man was referred by his general dental practitioner for advice about his chronic adult periodontitis. He specifically complained of recurrent swelling in the |123 region. The patient also reported a discharge of pus from the left nostril, which he believed to be associated with his periodontal condition.

Examination

Examination gave BPE scores of :

3	4	3
3	2	1

Radiographs revealed 50% bone loss associated with the mesial aspect of /1. Bone loss was also noted related to 76|67.

As an incidental finding on the panoramic radiograph (Figure 3), an irregularly shaped radio-opacity was noticed in the left inferior meatus: a lateral radiograph (Figure 4) confirmed its anterior location. On further examination, the rhinolith could be seen via a nasal speculum. The patient denied any history of inserting foreign bodies into his nose.

Diagnosis and Treatment

A provisional diagnosis of a rhinolith or an osteoma was made. The patient was referred to an ENT surgeon, who confirmed the diagnosis of rhinolith and removed the lesion under general anaesthesia via the anterior nares.

The nidus was not identifiable under histological examination, and therefore it was concluded that this may represent one of the rarer endogenous nuclei.

Healing, following the removal of the rhinolith, was uneventful.

CONCLUSION

In both of the cases described, the rhinoliths were seen initially on routine dental radiography. Such findings are often incidental and it is therefore important for general dental practitioners to be aware of their existence and management.

Conditions that may resemble rhinoliths are those which appear radio-opaque:

- osteomas;
- calcified polyps;

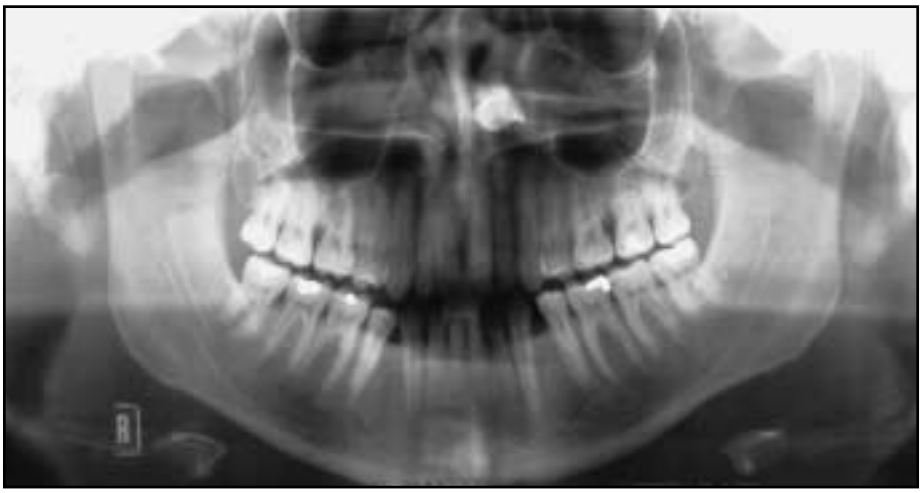

Figure 3. *Irregularly shaped, dense radio-opacity lying in the left inferior meatus.*

Figure 4. *Lateral view demonstrating the anterior location of the foreign body.*

- radio-opaque foreign bodies.

In the case of a suspected rhinolith, the clinical examination should include enquiry about the placement of foreign bodies into the nasal passage. The object may have been placed several years before presentation as it takes time for deposition of sufficient mineralization to show radiographically. In addition, examination of the anterior nares should be performed with the aid of a speculum, to visualize the condition. Rhinoliths may be removed via the anterior nares or, in cases of large rhinoliths, through the postnasal space.[3]

The management of these lesions may ultimately lie with the ENT and maxillofacial surgeons, but it is of great importance that the general dental practitioner is aware of their existence as it is to them that rhinoliths may initially present.

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ABSTRACTS

DAMAGE TO ADJACENT TEETH?

Iatrogenic Damage to Approximal Surfaces in Contact with Class II Restorations. V.A.F. Medeiros, R.P. Seddon. *Journal of Dentistry* 2000; **28:** 103-110.

Evidence regarding the iatrogenic damage of teeth adjacent to the tooth being restored is largely anecdotal, and there have been few published studies. In this research, patients were examined who had received a new class II restoration involving a previously unrestored contact. Elastic separators were placed post-operatively, which created a space of 0.3 to 1.00 mm within a few days. This space was cleaned of plaque and debris, and an elastomeric impression taken of the contact area. These were examined under a binocular microscope.

It was found that over half of the unrestored tooth surfaces had been iatrogenically damaged during cavity preparation of the adjacent tooth. Briefly, the results showed extensive damage to be present in 17% of these, with vertical grooves present in 26% and indentations and scratches in 12%. Damage was more frequently seen in maxillary teeth (61%) than mandibular (25%), and in permanent teeth (64%) than deciduous (23%). Of particular significance was the discovery that qualified dentists produced more iatrogenic damage (64%) than undergraduate students (23%). Although there is no evidence that such damage may lead to a carious lesion, the chance of misdiagnosis on a subsequent radiograph is distinctly possible, and practitioners are warned to be more vigilant in this difficult area.

ARE YOUR DENTAL INSTRUMENTS REALLY CLEAN?

Cleaning Dental Instruments: Measuring the Effectiveness of an Instrument Washer/Disinfector. C.H. Miller, C.M. Tan, M.A. Beiswanger, D.J. Gaines, J.C. Setcos and C.J. Palenik. *American Journal of Dentistry* 2000; **13:** 39-43.

There is considerable evidence that used dental instruments exhibit adherent blood, saliva, tooth debris and dental materials, all of which may be baked on during sterilization and may shield harmful micro-organisms from the sterilizing agents. There is also evidence that mechanical cleaning rather than hand-washing provides a safer way to process contaminated dental instruments.

These workers artificially contaminated dental instruments with blood and test bacteria. Some of these were allowed to dry for six hours before cleaning, and some remained wet. The instruments were then processed through an instrument washer using the integral instrument baskets.

The results on over 1000 instruments showed that the vast majority were clean at the end of the cycle. No blood was detected on any instruments, and the few remaining test bacteria were adhered to known tenacious surfaces, such as haemostats. The bacteria would then have been destroyed by conventional sterilization.

It is recommended that dental practices consider mechanical instrument washers as an alternative to ultrasonic cleaners.

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