Chapter 17: Foreign bodies in the nose

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Foreign bodies in the nose do not feature largely in otolaryngological literature, yet on occasions they may pose a considerable challenge to both the diagnosis and surgical skills of the otolaryngologist.

**Aetiology**

**Mode of entry**

Foreign bodies may enter the nose by several different means including:

1. the anterior naris (accounting for the vast majority);

2. the posterior naris, during vomiting, coughing, and regurgitation, or in patients with palatal incompetence - when the foreign body will consist of stomach, oesophageal or mouth contents, and occasionally a roundworm (ascaris);

3. penetrating wounds and nasal surgery;

4. a palatal perforation as in cleft palate or following a gumma of the hard palate or surgery of the palate for malignant disease;

5. sequestration of bone *in situ* after trauma (which may be operative), and syphilis;

6. calcification *in situ* of inspissated mucopus or of exogenous foreign material, leading to the formation of a rhinolith.

**Incidence**

Children constitute the large majority of patients with foreign bodies in the nose. The foreign body will be any small object encountered by the child, and it will usually be introduced through the anterior naris. Children with cleft palate will also have food from the mouth entering the nose, and occasionally other foreign material which the child is exploring with the mouth. Children of low socio-economic groups living in tropical climates may also be the victims of myiasis (disease due to maggots, larvae and flies), particularly if they already suffer from debilitating disease.

Adults and older children with foreign bodies in the nose are usually mentally disturbed; but they may also be the victims of penetrating injuries caused by bullets or shrapnel, or of operations on the nose, in which swabs, particles of tissue or instruments may be left behind.
Site of the foreign body

If it has been inserted by the patient it is more commonly in the right nasal cavity, since right-handedness predominates in the general population. The foreign body may be in any part of the nasal fossa.

Types of foreign body

Foreign bodies in the nose may be animate or inanimate (vegetable, mineral, arising from surgery, sequestra, or rhinoliths).

Animate

Maggots, screw worms and their larvae, and black carpet beetles may all infest the nose (myiasis) in tropical climates, and occasionally a roundworm (ascaris) may be coughed or regurgitated through the posterior naris.

Inanimate

Vegetable foreign bodies are commonly peas, beans, dried pulses, nuts, paper and pieces of pencils. Mineral matter may be parts from metal and plastic toys, washers, nuts, nails, screws, buttons, sponge, studs, plasticine, pebbles, beads and cotton wool, to name but a few. Arising from surgery, pieces of polyps, bone, cartilage, swabs, instruments, or packs may be left behind. Sequestra occur in syphilis and neoplasm, and after trauma. Rhinoliths occur in situ (see above and below).

Pathology

Some foreign bodies are inert and may remain in the nose for years without mucosal changes. Many however lead to inflammation and infection of the mucous membrane, which in turn leads to fetid mucopurulent discharge and epistaxis, these symptoms being unilateral, except with animate infestations. Ultimately granulation tissue is formed, and there may be ulceration of the mucosa, and occasionally necrosis of bone or cartilage.

These changes impact the foreign body, which may not be visible on either anterior or posterior rhinoscopy because of surrounding oedema, granulations and discharge. This is particularly so with vegetable foreign bodies which not only absorb water from the tissues and swell, but also evoke a very brisk inflammatory reaction. Occasionally the inflammatory reaction is sufficient to produce toxaemia.

Maggots and screw worms attack both nasal cavities and may give rise to a severe inflammatory reaction. During maturation, larvae burrow into the tissues. The mature larva of the screw worm has rings around its body, giving the appearance of a screw. If untreated they may attack nasal bone and cartilage and also involve the sinuses, orbits, adjoining skin, meninges, and brain (Gupta and Nema, 1970). Ascaris produces less inflammation but gives the patient a feeling of irritation and movement in the nose.

Sharp foreign bodies may occasionally penetrate the sinuses and give rise to sinusitis.
If a foreign body is buried in granulations or firmly impacted, it may act as a nucleus for concretion, that is it receives a coating of calcium, magnesium phosphate and carbonate and becomes a rhinolith. Occasionally this process may occur round an area of inspissated mucopus, or even a blood clot. Rhinoliths usually form near the floor of the nose and are radiopaque.

**Symptoms and signs**

*Mineral and vegetable foreign bodies*

These generally give rise to a unilateral fetid discharge, usually mucopurulent and sometimes blood-stained. There is frequently unilateral nasal obstruction, and there may be pain, epistaxis, and sneezing. A few foreign bodies are inert and cause either no symptoms, or unilateral nasal obstruction if sufficiently large.

Examination of the nose shows reddened congested mucosa, mucopus and sometimes granulations, ulceration and necrosis. The foreign body may or may not be visible, depending on its size and nature, and on the degree of surrounding oedema.

*Animate foreign bodies*

The symptoms are often bilateral, and nasal obstruction, headaches and serosanguineous fetid discharge may occur within a few days of infestation. In the larval stage pyrexia may occur. The patient has a constant feeling of formication in the nose. In poor communities the patients adapt surprisingly well to the condition, and instead of being driven to despair, have to be persuaded to seek treatment, on the grounds that complications may occur.

Examination shows marked swelling of the mucosa, which is fragile and bleeds easily. In heavy infestations there is an appearance of constant motion, which on closer inspection is seen to be due to masses of worms, which are firmly attached and difficult to remove. In long-standing infestation they may be destruction of bone and cartilage.

Due to secondary infection and bone destruction complications are not rare, and patients may present with orbital infection or meningitis. In the rare case of ascaris in the nose, the worm is large (15-25 cm) and easy to remove. There is minimal mucosal reaction.

*Rhinoliths*

As they increase in size slowly and are relatively inert, rhinoliths are initially symptomless, and later cause nasal obstruction if they become large enough. They may be discovered when a cause is sought for an unresolved sinus infection.

Examination of the nasal cavity shows a brown or greyish irregular mass, usually near the floor of the nose, which feels stony hard and gritty on probing. X-rays will reveal the extent of the rhinolith, which may attain a very large size, and may occasionally extend into the antrum.
Diagnosis

The diagnosis of animate foreign bodies is usually all too apparent on inspection.

With inanimate foreign bodies, the suspicion usually arises because of a unilateral purulent nasal discharge, and in children this must be regarded as due to a foreign body until proved otherwise. Frequently the foreign body will be seen on anterior rhinoscopy (and sometimes on posterior rhinoscopy), but on occasions the mucosal oedema or granulations will hide it. If such unilateral changes are seen but no foreign body, in cooperative older children and adults, the nose should be sprayed with a vasoconstrictor to shrink the mucosa and the fossa re-examined. Sometimes a foreign body will then be seen. If not, the nose should be X-rayed as many foreign bodies are radiopaque. In younger or very apprehensive children it may be necessary for the search to be carried out under a general anaesthetic, and this procedure is described below.

Other conditions to be excluded are neoplasm (by biopsy of granulations), unilateral sinusitis (by X-ray), syphilis (by serology), diphtheria (by nasal swab), and unilateral choanal atresia (by passing a catheter through the nasal fossa or by X-ray after instilling a contrast medium).

Management

Animate foreign bodies

Infestations with maggots and screw worms are treated by instilling a 25% chloroform solution into the nasal cavities. This is repeated two or three times a week for about 6 weeks until all larvae are killed. After each treatment the patient blows his nose to clear the dead worms and larvae. Sometimes treatment is given under general anaesthesis (with a cuffed endotracheal tube and throat pack), when repeated irrigation followed by suction can be carried out.

Ascaris is managed by removal of the worm with forceps, followed by treatment of the general condition with piperazine and magnesium sulphate purges to clear dead worms from the bowel.

Inanimate foreign bodies (except rhinoliths)

If the foreign body is easily seen, and the patient is a cooperative child or an adult, it is usually possible to remove the object through the anterior naris, either with no anaesthetic, or after spraying with a local anaesthetic solution such as lignocaine.

However, it cannot be too strongly emphasized that unskilled attempts to remove the foreign body in the accident and emergency department, by personnel without appropriate training, may result in disaster: the foreign body may be displaced backwards and may even reach the nasopharynx with risk of inhalation; marked epistaxis may occur; and a docile child may become terrified and require a general anaesthetic and admission to hospital which might have been avoided.
The patient is placed in the usual upright position for routine otolaryngological examination, and the nasal fossa illuminated with a head mirror or fibrelight headlight. It is important that the light source should be very bright. The following instruments should be available: nasal speculum, curved hook, Jobson Horne probe, selection of angled crocodile forceps, angled nasal dressing forceps of various sizes, nasal sucker and source of suction. A jar to receive specimens to send to the pathology department should also be prepared.

The nasal speculum is inserted with the left hand, and with the right hand the curved hook is passed beyond the object and the tip rotated to rest just posterior to the object. The object is then gently drawn forwards and removed completely, or brought almost to the nasal vestibule and then removed with forceps. The above technique should be used whenever there is a risk of displacing the object backwards into the nasopharynx, as with spherical objects such as beads. Rough semi-impacted objects such as bits of paper and sponge, and objects placed very near the vestibule, can be removed directly with forceps.

A general anaesthetic will be required in the following circumstances:

1. if the patient is uncooperative or very apprehensive;

2. if there is likely to be troublesome bleeding, for instance if the foreign body is firmly embedded in granulation tissue;

3. if the foreign body is posteriorly placed with a risk of pushing it back into the nasopharynx;

4. if a foreign body is strongly suspected but cannot be found, and more extensive examination of the nose is required, with the opportunity to deal with whatever is found. It must be emphasized that there is no need for haste on these occasions. The foreign body may have been in the nose for a considerable period and it is important to wait for ideal facilities, especially an experienced anaesthetist. Unskilled manipulation in adverse conditions can lead to inhalation of the foreign body or of blood.

The patient is anaesthetized and a cuffed oral endotracheal tube and a pharyngeal pack are inserted. With the patient in the usual position for nasal surgery, the nose is examined using a nasal speculum, headlight, and suction to remove secretions. To minimize bleeding, the affected nasal fossa is then sprayed with 1 mL of a mixture of 5% cocaine and 1/1000 adrenaline (50% of each), in consultation with the anaesthetist. After waiting for this to take effect, the nose is then re-examined, and the foreign body is gently withdrawn.

If the object is wedged posteriorly and cannot be brought out through the anterior naris, it is occasionally necessary to push the foreign body backwards into the nasopharynx. Before doing so the patient is placed in the tonsil position, a Boyle Davis gag is inserted, and the palate gently retracted with a soft catheter passed through the unaffected side of the nose and out through the mouth. An assistant holds the catheter while the surgeon pushes back the foreign body, at the same time watching the nasopharynx with a small laryngeal mirror. The foreign body cannot fall into the larynx because of the patient's position and the cuffed tube, and can readily be picked out of the nasopharynx with curved forceps.
Rhinoliths

These present a different problem as they are impacted and often large. It may be necessary to break up the rhinolith within the nasal fossa with forceps, and then to remove it piecemeal. This procedure should be carried out under a general anaesthetic. Rarely a rhinolith is so large that it can only be removed through a lateral rhinotomy approach. Occasionally one may even extend into the antrum, in which case a Caldwell-Luc approach is required.