

# Nosebleed (Epistaxis)

## Introduction

The classification of nosebleeds is as anterior or posterior, depending upon the source of bleeding. The blood supply to the nose is derived from branches of the internal (anterior and posterior ethmoid arteries) and external carotid arteries (sphenopalatine and branches of the internal maxillary arteries). Bleeding usually occurs when the mucosa is eroded and vessels become exposed and subsequently break.

- **Anterior haemorrhage** - the source of bleeding is visible in about 95% of cases - usually from the nasal septum, particularly Little's area which is where Kiesselbach's plexus forms (an anastomotic network of vessels on the anterior portion of the nasal septum) <sup>[1]</sup>.
- **Posterior haemorrhage** - this emanates from deeper structures of the nose and occurs more commonly in older individuals. Nosebleeds from this area are usually more profuse and have a greater risk of airway compromise.

## Epidemiology

Epistaxis is extremely common. The majority of people will have had at least one nosebleed, usually as a result of trauma, in the course of their lifetime. The actual incidence of epistaxis in children is unknown, as only a small number will seek medical attention compared to nosebleeds in adults.

It has peaks of incidence at age 2-10 and 50-80 years. Both sexes are equally affected. Children with [migraines](#) actually have a higher incidence of recurrent epistaxis than children without migraines.

# Aetiology

Epistaxis is usually benign, self-limiting and spontaneous. The majority of nosebleeds are caused by simple trauma. Although most incidents are not life-threatening, they can cause significant parental concern when they occur in children.

Occasionally a nosebleed indicates a more serious underlying disease. Often no cause is found.

Causes include:

- [Trauma to the nose](#) (the most common cause) - especially nose picking! Insertion of foreign bodies and excessive nose blowing may also be seen as trauma. The latter is likely to occur with a cold when the nasal mucosa is congested. Sinusitis causes nasal congestion.
- Disorders of platelet function - [thrombocytopenia](#) and other causes of abnormal platelets, including splenomegaly and leukaemia. [Waldenström's macroglobulinaemia](#) may present with nosebleeds. Idiopathic thrombocytopenic purpura (ITP) can occur in children and young adults.
- Drugs - aspirin and anticoagulants.
- Disorders of platelets are more likely to be a problem than clotting factor deficiency.
- Abnormalities of blood vessels in the elderly arteriosclerotic vessels prolong bleeding. [Hereditary haemorrhagic telangiectasia \(Osler-Rendu-Weber syndrome\)](#) causes recurrent epistaxis from nasal telangiectasias.
- Malignancy of the nose may present with bleeding - juvenile angiofibroma is a highly vascular benign tumour that typically presents in adolescent males.
- Cocaine use - if the septum looks sloughed or atrophic ask about use of cocaine. The drug is usually taken by inhalation and it has a very strong vasoconstrictive effect that can lead to complete obliteration of the nasal septum.
- Other conditions - [granulomatosis with polyangiitis](#) and [pyogenic granuloma](#) - can present as an epistaxis.

Although hypertension is common when patients present with acute bleeding, the incidence of undiagnosed hypertension found on follow-up is no higher than would be expected in the general population. A systematic review found that six out of nine studies agree that arterial pressure is higher at the time of epistaxis, as compared to the control group or to the general population<sup>[2]</sup>. The presence of high arterial blood pressure during the actual episode of nasal bleeding cannot establish a causative relationship with epistaxis (because of confounding stress and possible white coat phenomenon) but may lead to initial diagnosis of an already installed arterial hypertension. It is, however, known that patients with established hypertension are at higher risk of epistaxis and appear to have more severe episodes<sup>[3]</sup>.

## History<sup>[1]</sup>

- Determine if blood is running out of the nose and one nostril (usually anterior) or if blood is running into the throat or from both nostrils (usually posterior).
- Ask about trauma (including nose picking).
- Note family or past history of clotting disorders or hypertension.
- Note whether there has been previous nasal surgery.
- Discuss medication - especially clopidogrel, warfarin, aspirin.
- Enquire about any facial pain or otalgia - these may be presenting signs of a nasopharyngeal tumour
- In young male patients ask about nasal obstruction, headache, rhinorrhoea and anosmia - signs of juvenile nasopharyngeal angiofibroma.

## Investigations

- These are unnecessary in most (mild) cases but recurrent or severe cases require at least FBC, coagulation studies and blood typing.
- Quite marked anaemia can result but a haematological malignancy may also be revealed.

- Any suspicion of malignancy of the nose or other abnormality should require referral to an ENT surgeon. CT scanning and/or nasopharyngoscopy are the investigations of choice.

## Management

### Initial assessment – first aid

- Resuscitate the patient (if necessary) – remember the ABCD(E) of resuscitation.
- Ask the patient to sit upright, leaning slightly forward, and to squeeze the bottom part of the nose (NOT the bridge of the nose) for 10–20 minutes to try to stop the bleeding. The patient should breathe through the mouth and spit out any blood/saliva into a bowl. An ice pack on the bridge of the nose may help.
- Monitor the patient's pulse and blood pressure.
- If bleeding has stopped after this time (as it does in most cases) proceed to inspect the nose, using a nasal speculum; consider cautery.
- If the history is of severe and prolonged bleeding, obtain expert help – and watch carefully for signs of hypovolaemia.

### Cautery

- Nasal cautery is a common treatment of epistaxis. A caustic agent such as silver nitrate (chemical cautery) or an electrically charged wire such as platinum (electrocautery) is used to stop bleeding in the nasal mucous membrane.
- Chemical cautery of the visible blood vessels on the anterior part of the nasal septum is the most popular treatment method for idiopathic recurrent nosebleeds.
- Carefully examine the nasal cavity, looking for any bleeding points, which can usually be seen on the anterior septum – either an oozing point or a visible clot. Note whether there is any pus, suggesting local bacterial infection.

- Blowing the nose decreases the effects of local fibrinolysis and removes clots, permitting a clearer examination. Applying a vasoconstrictor before examination may reduce haemorrhage and help locate the bleeding site. A topical local anaesthetic reduces pain from examination and nasal packing.
- Apply a silver nitrate cautery stick for ten seconds or so, working from the edge and moving radially - never both sides of the septum at the same session.
- 75% silver nitrate has been shown to be more effective than 95% silver nitrate at two weeks following application<sup>[4]</sup>.
- Topical application with 0.5% neomycin + 0.1% chlorhexidine cream or with Vaseline® petroleum jelly are alternative topical treatments<sup>[4]</sup>.
- If bleeding continues, packing may be considered.
- A topical application of injectable form of tranexamic acid has been shown to be better than anterior nasal packing in the initial treatment of idiopathic anterior epistaxis<sup>[5]</sup>.
- It may be necessary to ligate the sphenopalatine artery endoscopically, or occasionally the internal maxillary artery and ethmoid arteries, or perform endovascular embolisation of the internal maxillary artery, when packing fails to control a life-threatening haemorrhage<sup>[6]</sup>. Ligation of the external carotid artery is a last resort.

### **Complications of packing**

These include:

- Anosmia.
- Pack falling out and continued bleeding.
- Breathing difficulties and aspiration of clots.
- Posterior migration of the pack, causing airway obstruction and asphyxia.
- Perforation of the nasal septum or pressure necrosis of cartilage.

- Nasal packs are usually left for two or three days and the patient should see an ENT specialist. The blood is an excellent culture medium for bacteria and so broad-spectrum antibiotics like amoxicillin are usually given.

## Prognosis

Mortality is rare. It is usually associated with hypovolaemia secondary to severe bleeding or in patients with comorbidities. Most episodes of epistaxis resolve spontaneously, normally without treatment.

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## Further reading

- [Epistaxis \(nosebleeds\)](#); NICE CKS, August 2020 (UK access only)

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