

Epistaxis: Controlling the Course



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Epistaxis is a common disorder; 60% of the population will experience at least one episode in their lifetime. Most are not serious, with 90% being anterior in location and < 10% seeking medical attention. Epistaxis in children and adolescents is usually anterior and minor in severity. The incidence of severe or posterior nasal bleeding is higher in patients > 50-years-of-age.

Anatomy

The confluence of the nasal mucosa blood supply occurs at Kiesselbach's plexus, or Little's area of the nasal septum and is where the vast majority of bleeding arises. This anterior area is easier to access for treatment and bleeds in a more self-limited fashion in contrast to posterior epistaxis, which arises from sphenopalatine branches near the nasopharynx. These are more difficult to access for tamponade and can bleed in larger amounts over many hours.

Etiology

Most episodes of epistaxis occur due to a combination of decreased humidity (e.g., winter months), local inflammation (nasal congestion, discharge, sneezing), bacterial colonization (*Staphylococcus aureus* produces fibrinolytic enzymes) and local trauma (e.g., digital).

Julia's case

Julia, 56, presents to the ED with 5 days of recurrent bilateral epistaxis. Currently, there is no bleeding but she has noted oropharyngeal blood and expectorated clots on past occasions.

Julia has a past history of admission for epistaxis and was given acetylsalicylic acid and an antihypertensive medication.

Examination

A physical examination reveals:

- Heart rate: 120 bpm
- BP: 110 mmHg systolic
- No obvious anterior intranasal bleeding
- Hemoglobin: 81 g/L
- Normal international normalized ratio, activated partial thromboplastin time, platelets and white blood count

30 minutes following the exam, Julia's epistaxis recurs.

How should Julia be treated? To find out, turn to page 71.

A complete list of causes appears in Table 1. Red flags that may indicate more severe posterior epistaxis or underlying major pathology include:

- bleeding that is refractory or bilateral,
- patients > 50-years-of-age,
- recurrent epistaxis or prolonged bleeding from minor wounds, easy bruising,
- a family history (tumours, coagulopathies), or

- delayed bleeding after maxillofacial trauma (post-traumatic aneurysms).

A rare but important cause of epistaxis is hereditary hemorrhagic telangiectasia (HHT). Epistaxis occurs in 93% of these patients, which consists of several episodes of epistaxis per month without treatment. These patients are also prone to GI, intracranial or other arteriovenous malformations.

Diagnosis

The initial evaluation includes attention to the airway, breathing and circulation. Direct pressure is placed distal to the bony elements (in the “sniffing”) or the 45° elevated position. Posterior pharyngeal clots should be expectorated and the pharynx examined for active bleeding. Hypovolemic shock should be stabilized with normal saline IV and blood products, a correction of coagulopathies and emergent hemostasis as for posterior epistaxis, followed by rapid admission, with referral or transfer to an ear, nose and throat (ENT) specialist.

History

History should search for symptoms of posterior bleeding such as:

- hematemesis,
- copious expectorated blood and bilateral bleeding,
- presyncope or syncope, as well as
- the duration, amount and previous history of epistaxis.

Medication, past medical history and family history may be positive for:

- easy bruising,
- blood dyscrasias,
- chronic diseases,

Table 1

Causes of epistaxis

Local causes

- Traumatic
 - Digital trauma
 - Antihistamine and steroid nasal sprays
 - Nasal fracture
 - Nasal procedures
 - Cocaine, snuff and heroin “sniffing”
 - Nasal oxygen or continuous positive airway pressure
 - Nasal foreign bodies
- Structural
 - Nasal septal deformity
 - Inflammatory disease
 - Granulomatous diseases
 - Environmental irritants
- Tumours/vascular malformations

Systemic causes

- Coagulation deficits
 - Anticoagulant drugs
 - Coagulopathies
 - Vitamin deficiency
 - Chronic diseases
 - Chronic alcohol abuse
 - Malnutrition
 - Leukemias and lymphomas
- Vascular disease
 - Arteriosclerosis
 - Collagen abnormalities
 - Hereditary hemorrhagic telangiectasia
- Cardiovascular-increased venous pressure
 - Congestive heart failure
 - Mitral valve stenosis
- Hypertension (unproven relationship)

- antiplatelet or antithrombotic agents,
- alcohol/substance abuse, or
- recent trauma or illness.

Physical examination

Physical examination should include the:

- external nose and skin (petechiae, purpura, telangiectasiae),

Table 2

Ear, nose and throat tray and equipment

- Cotton pledgets
- Antistaphylococcal ointment and lubricating gel
- Umbilical or C-clamps
- Nasal speculae
- Nasal bayonet forceps
- Lidocaine 2% spray
- Lidocaine 1% or 2% spray/1:100,000 epinephrine or 4% cocaine
- Silver nitrate applicators
- Preformed nasal tampon packs (short and long)
- Petrolatum-impregnated one-half inch gauze strips
- Posterior balloon packs
- 12-French foley catheters
- Head lamp or otoscope, ear, nose and throat chair/stretcher, suction, syringes and saline
- Consider having local haemostatic gauze, absorbable gelatin foam and fibrin glue available

- ear (effusions),
- palate,
- oral cavity and pharynx (palatal lesions, posterior bleeding) and
- neck (masses).

Laboratory investigations

Laboratory studies are not always indicated, but are useful if there is a suspicion of a coagulopathy or major underlying pathology, or bleeding, if is recurrent, severe or chronic. Minimum investigation in such cases includes



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complete blood count (CBC), INR and activated partial thromboplastin time (APTT), blood group and screen. Other investigations are directed toward suspected causes such as uremia, liver failure, or coagulopathies. Consultation is helpful.

Imaging studies

Imaging studies are generally not indicated, unless there is a suspicion of a tumour, HHT or if recommended by an ENT specialist.

Sixty per cent of the population will experience at least one episode of epistaxis in their lifetime.

Treatment continuum

Definitive care should proceed in concert with the intranasal exam, since the process can result in further bleeding. The treatment spectrum proceeds from less invasive and more conservative methods to more invasive and higher risk methods. Every ED should have an ENT cart or kit with equipment to deal with both anterior and posterior epistaxis (Table 2).

Patients should be seated in an upright position in an ENT-type chair or stretcher. All clots should be evacuated from the nasopharynx after local anesthesia with lidocaine 2% spray, using a nasal speculum and bayonet forceps or suction. Nasal blowing is an alternative but may restart bleeding. A headlamp or otoscope can be used to visualize the anterior nasal passage.

Topical anesthesia with soaked cottonoids can be applied with 1% or 2% lidocaine viscous spray/1:100,000 epinephrine or 4% cocaine to assist with pain control and hemostasis. Occasionally, light procedural sedation or an ENT referral for examination under anesthesia may become necessary, particularly in children or with patients experiencing severe pain.

Medical management

Medical management involves patient education regarding exacerbating factors and nasal hydration using a saline or antistaphylococcal gel or ointment. A simple home treatment plan involves gentle pinching below the nasal alar plates in the “sniffing” position and using cotton pledgets or swabs soaked in an OTC decongestant spray. Recurrent bleeding should be evaluated by a physician.

The incidence of severe or posterior nasal bleeding is higher in patients > 50-years-of-age.

Anterior cautery

Anterior cautery is usually accomplished with silver nitrate applicators after local anesthesia and is useful for minor bleeding only, as the bleeding point must be visualized. Cautery should occur proximally to the vessel flow and not just directly to the site. Nasal hydration and avoidance of minor trauma and nose blowing and sneezing is important. Bilateral and

Julia's case cont'd...

Treatment

Julia undergoes:

- group and crossmatch,
- hemodynamic monitoring,
- mild procedural sedation with attention to pain control and good local anesthesia.

A posterior pack with a Foley catheter and anterior bilateral pack (to control the septum) is placed (Figure 1). She is admitted to hospital with telemetry and experiences no further bleeding.

recurrent cautery should be avoided since there is a risk of septal perforation.

Anterior packing

Anterior packing is useful in patients with more persistent or severe anterior epistaxis. Several different methods can be used and physicians should become comfortable with two or three products. The safest and easiest methods are preformed with nasal tampons (e.g., polyvinyl acetate) or a petrolatum-impregnated gauze packing strip. Packing should involve:

- good local anesthesia,
- minimal distortion of the nasal alae to avoid ischemia,
- an antistaphylococcal antibiotic ointment,
- observation for persistent, pharyngeal or contralateral bleeding and
- discharge on oral antistaphylococcal antibiotics (since there is a remote risk of Toxic shock syndrome).

Patients should be re-evaluated and packing removed in two to five days. The bleeding site should be inspected and further medical management instructions given.




Figure 1. Posterior pack.

Posterior packing

Posterior packing is used when there is posterior epistaxis or a failure of other methods of care. Two commonly used procedures are the dual balloon posterior pack and the use of a 12-French foley catheter with a 30 cc balloon filled with 8 ml to 10 ml of saline (an umbilical or C-clamp placed with gauze padding to protect the nasal cartilage is placed with tension to hold the Foley bulb in place). An anterior pack is then placed by inflating the anterior balloon or with a gauze or tampon-type anterior pack (Foley method). The nasal septum and soft tissues should not be unduly displaced, to avoid tissue ischemia. Hospital admission is required due to the increased risk of hypoxemia and airway obstruction, cardiac arrhythmia, ulcerations and septal or palate ischemia (especially if packing is bilateral) for antibiotic prophylaxis of Toxic shock syndrome or sinusitis and for pain control. Packs can also migrate anteriorly with a loss of hemostasis.

Re-evaluation should be at the time of packing removal with examination and instructions on further medical management. Areas at risk can be treated further with a hemostatic “sandwich” of absorbable gelatin foam cut to about one-quarter to one half inch wide, surrounded by a layer of absorbable hemostatic gauze.

Patients with HHT are best treated conservatively and without cautery, since more aggressive measures can exacerbate bleeding. One useful measure, if the bleeding site can be localized, is to use a fibrin glue. All patients with difficult-to-control bleeding should be referred to ENT. 

Resources

1. Massick D, Tobin E: Epistaxis. In Cummings: *Otolaryngology: Head and Neck Surgery*. Fourth Edition. Mosby, Inc. St. Louis, Missouri, 2005.
2. Bernius M: Pediatric ear, nose, and throat emergencies. *Pediatr Clin North Am* 2006; 53(2):195-214.
3. <http://www.hemophiliaemergencycare.com/> (A good reference site for hemophilia care).
4. Riviello R, Otolaryngologic Procedures. In: Roberts J: *Clinical Procedures in Emergency Medicine*. Fourth Edition. Saunders, St. Louis, Missouri, 2004.