

The occasional management of epistaxis

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INTRODUCTION

Epistaxis, or nasal bleeding, is the most common otolaryngologic emergency, reported to occur in up to 60% of the general population.[1,2] Although the presentation of epistaxis can be quite distressing to the patient and physician, only 10% of adult patients with epistaxis require definitive medical attention.[3] In rare cases, however, massive nasal bleeding can be fatal.[4]

ANATOMY

Knowledge of nasal anatomy is essential in the detection of the bleed location and subsequent hemostasis. Although nasal circulation is complex (Fig. 1), epistaxis is usually described as either anterior or posterior. This distinction provides a useful basis for management.[2]

ANTERIOR BLEEDS

Anterior bleeds are by far the most common.[5] Up to 80% occur within the clinically obvious vascular watershed area of the nasal septum known as the Kiesselbach plexus.[6] Anterior nosebleeds often result from mucosal trauma or irritation such as the following:[5]

- nose picking (most common)
- facial trauma secondary to motor vehicle collision or other blunt facial impact
- mucosal hyperemia secondary to allergic or viral rhinitis
- presence of a foreign body (if bleed is accompanied by purulent discharge)
- chronic excoriation secondary to chronic intranasal drug use

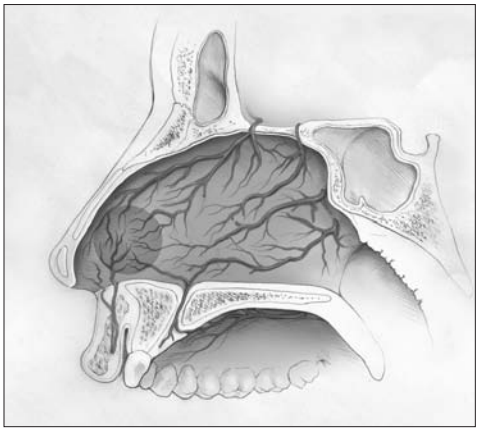


Fig. 1. Cross section of normal nasal circulation. © 2004 Christy Krames with permission.

POSTERIOR BLEEDS

Posterior epistaxis can result in significant hemorrhage[5] and generally arises from the posterior nasal cavity via branches of the sphenopalatine arteries.[7] Posterior epistaxis occasionally may be asymptomatic or may present insidiously as nausea, hematemesis, anemia, hemoptysis or melena.[2]

RISK FACTORS

Risk factors that increase the incidence of anterior and posterior epistaxis include the following:

- anticoagulation[8]
- hereditary hemorrhagic telangiectasia or Olser–Weber–Rendu disease (most common presenting symptom of this disease)[9]
- blood dyscrasias, particularly platelet disorders, von Willebrand disease and hemophilia[5]
- aneurysms of the head and neck vasculature secondary to prior regional surgery[6]

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- nasal neoplasms
- chronic alcohol abuse[10]
- intranasal steroid use[11]

The associations regarding use of acetylsalicylic acid and hypertension as risk factors for epistaxis are uncertain.[2,12]

EQUIPMENT

An epistaxis tray can be created using common supplies and a few specialized instruments:[2]

- nasal decongestant spray
- local anesthetic
- silver nitrate cautery sticks
- suction cautery (if available)
- bayonet forceps
- nasal speculum
- lubricating jelly
- bacitracin, mupirocin or other antistaphylococcal ointment[13]
- Frazier suction tip or suction tube connecter (which works nicely as a suction tip in this situation)[14]
- posterior double balloon system or 14-F Foley catheter and syringe for balloon inflation
- packing materials including Merocel packs (Medtronic Inc.), Gelfoam (Pfizer, Inc.) and Xeroform (Kendall Healthcare; nonadherent gauze impregnated with petroleum jelly and 3% tribromophenate)
- emesis basin

MANAGEMENT

Step 1: evaluation and stabilization

- Initial management should focus on the cardiovascular stability of the patient. Massive epistaxis may necessitate airway intervention and fluid resuscitation before hemostasis is attempted. Normal appearance, vital signs and respiratory function are evidence that you can safely attend to the epistaxis.[5]
- Consider intravenous access. Difficult cases may require anxiolytic and/or analgesic medications.[2]
- Epistaxis can be a very messy situation. Always remember universal precautions and the "3 Gs": gloves, gown and goggles.[15]
- Take a quick but comprehensive history (Box 1).[14]
- The patient should be in a well-lit room, seated upright, looking directly ahead and attempting the sniffing position. This allows for optimal view of the nasopharynx.[5]
- Clots may be cleared via suction or by asking the patient to *gently* blow his or her nose.[5]
- Attempt to visualize the bleed. The Kiesselbach plexus should be examined first since most bleeds originate here.[5]

Step 2: direct pressure

- Ask the patient to apply direct pressure by pinching the lower part of the nose (not the bridge) for 10 to 15 minutes.[14]
- The patient should be mouth breathing and leaning forward.
- Encourage the patient to spit out posterior pharyngeal blood into a basin. This will reduce the risk of vomiting from swallowed blood and of aspiration.[5]
- An ice pack over the dorsum of the nose may assist with hemostasis by constricting the blood vessels and thereby stopping the bleeding. Applying an ice pack to the back of the neck activates the mammalian dive reflex, thereby causing peripheral vasoconstriction.[13]
- Consider spraying the nasal cavity with decongestant spray, reapplying nasal pressure and waiting a few minutes.[5,14]
- An alternate method is to insert cotton pledgets, soaked with an anesthetic–vasoconstrictor solution, into the nasal cavity to anesthetize and shrink nasal mucosa. Soak pledgets in 4% topical cocaine solution or a solution of 4% lidocaine and topical epinephrine (1:10 000) and place them into the nasal cavity. Leave them in place for 10–15 minutes.[16]
- Most anterior nosebleeds stop with the above procedures. If this does not occur, it is time to proceed to cauterizing the bleeding points.[13]

Step 3: cautery

- Electrical or chemical cautery can be used if an anterior source is identified. Chemical cautery is

Box 1. Factors to consider when taking the history of the patient with epistaxis

- Which side is bleeding?
- Amount of blood loss
- Is it recurrent?
- Is it in the pharynx?
- Recent trauma?
- Symptoms of hypovolemia?
- Medical history and current medication (e.g., acetylsalicylic acid, warfarin)

usually accomplished with silver nitrate sticks; this procedure will be described below.[5]
- Reinspect the nasal cavity and suction out any blood or clots to attempt to revisualize the bleeding sites.[14]
- Adequate illumination is important. If a headlamp is not available, an otoscope can be used.[14]
- Once the bleeding site has been identified, the silver nitrate applicator tip is applied to a small area surrounding the bleeding site starting proximally and moving centrally in a radial fashion. Use the nasal speculum, and brace your cauterizing hand. Ask your patient to remain still and explain why.[5,14]
- Silver nitrate cauterizes everything it touches. Do not touch the facial skin, nasal alae or other nasal mucosa. In addition, silver nitrate may not work if bleeding is active.[14]
- Apply cautery for no more than 10 to 20 seconds at each site. Overzealous cautery can lead to ulceration and perforation.[5]
- To avoid the increased risk of tissue necrosis, never cauterize both sides of the septum during the same session.[5]
- If there is no more active bleeding, the patient may be discharged with printed instructions, provided there are no other medical problems.[14]

Step 4A: anterior packing

If bleeding continues, consider nasal packing.

Merocel packing

- Coat tampon with lubricating jelly, antibiotic ointment or a water-based cream (possibly decreases the risk of toxic shock syndrome).[5]
- Insert the device directly along the floor of the nasal cavity (Fig. 2). The device can be re-expanded with 10 to 20 mL of saline. A 22-gauge angiocatheter on a saline syringe can be used to apply a small amount of saline posteriorly first to speed diffusion.[5,14]
- Ensure that the tampon is inserted completely.
- Tape the strings to each cheek and apply a nasal bolster.

Xeroform or ribbon gauze packing

- Pick up the gauze with the forceps about 10–15 cm from the tip.
- Pack the nasal cavity starting from the floor of the nose upward.
- Continue to move upward by layering the gauze until you reach the cavity roof. Pack the cavity tightly.
- Both ends of the ribbon gauze should protrude from the nostril. You don't want one end dangling down the nasopharynx and causing the patient to gag, or worse, eliciting laryngospasm.
- Secure the gauze. Apply a nasal bolster to control dripping and secretions.[14]

Continued bleeding

If bleeding persists despite the initial packing, the contralateral naris may be packed next, providing a counterforce to promote tamponade. If this manoeuvre still does not produce hemostasis, the odds of a posterior source increase greatly, since nasal packing in anterior bleeding has about a 90%–95% success rate.[17,18]

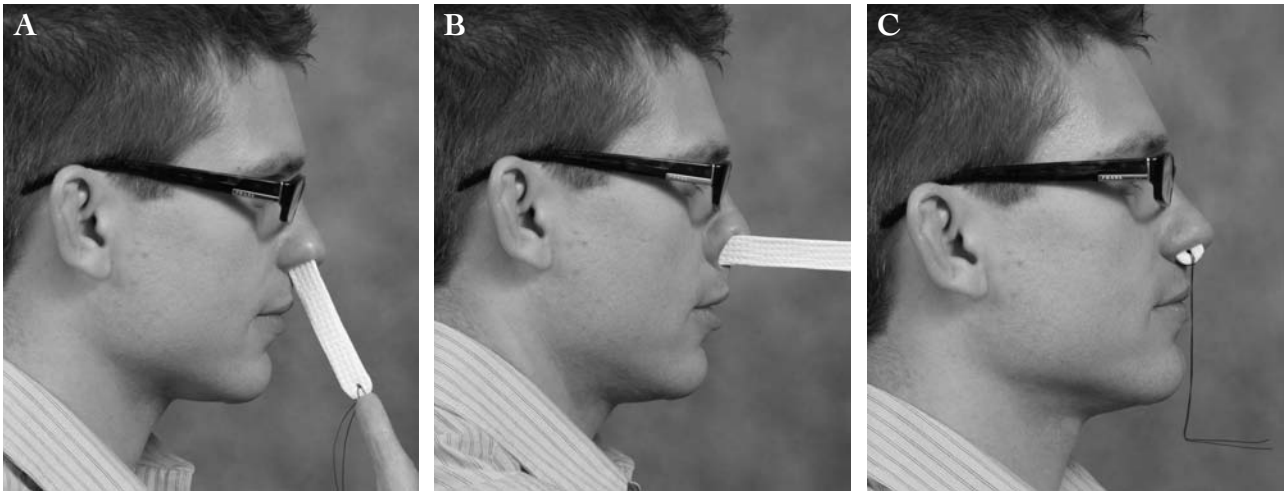


Fig. 2. Initial insertion angle of the Merocel pack (A). Advance the Merocel pack horizontally (B). Make certain that the pack is advanced fully into the nose (C).

Step 4B: posterior packing

- Continued hemorrhage despite an anterior pack may be due to a posterior bleed.
- Many postnasal packs are available commercially; however, the most commonly used is a Foley catheter.
- Before proceeding with the posterior packing, remove the anterior pack and re-examine the nasal cavity.
- Suction as required.[5]

Foley catheter

- Cut the tip of a 14-F Foley to minimize irritation of the posterior structures.
- Using a pair of forceps, advance the catheter along the floor of the nose until it is visible in the mouth. Partially fill the balloon with sterile saline (5–7 mL), and retract the catheter, and the cotton pack, until it is well opposed to the posterior nasopharynx.
- Fill the balloon completely (another 5 mL).
- Pain or distention of the soft palate suggests overfilling.
- At this point, consider repacking the anterior nose. Many practitioners will still pack the anterior nose at this point because without perfect opposition, some blood will pool anteriorly and exit the naris. Additionally, some epistaxis episodes involve both anterior and posterior sources, especially in the setting of a coagulopathy or hereditary hemorrhagic telangiectasia.
- Clamp the catheter in place with an umbilical clamp or a small c-clamp, as from a nasogastric tube.
- Ensure that the catheter is not pressing on the nose as alar necrosis may occur. This can be prevented by applying gauze around the nostril.[5]

Specialized balloon systems

- There are many balloon systems available. Most are effective for managing posterior bleeding.
- If you are using a double-balloon device, pass it into the affected nostril until it reaches the nasopharynx.
- Inflate the posterior balloon with 7 to 10 mL of saline, and carefully withdraw the catheter extending out of the nostril so that the balloon seats in the posterior nasal cavity to tamponade the bleeding source.
- Next, inflate the anterior balloon with roughly 15 to 30 mL of saline in the anterior nasal cavity to prevent retrograde travel of the posterior balloon and subsequent airway obstruction.
- An umbilical clamp can be placed across the stalk of the balloon adjacent to the nostril to further prevent dislodgement; the clamp should be padded to prevent pressure necrosis of the nasal skin.
- Balloon packs generally are left in place for 48–72 hours. As with anterior packing, tissue necrosis can occur if a posterior pack is inserted improperly or balloons are overinflated.[2]

Persistent bleeding despite anterior and posterior packing

- Patients with anterior or posterior bleeding that continues despite packing and balloon procedures should be referred to an otolaryngologist.[2,5]
- Endoscopy can be used to locate the site of bleeding and perform direct cauterization.

Step 5: Consider antibiotics for prophylaxis of toxic shock syndrome

- The incidence of toxic shock syndrome with nasal packing is estimated at about 16 per 100 000 postoperative packings, but the incidence in primary nasal packing is not established.[5]
- It is unclear whether oral antibiotics are required for the prophylaxis of toxic shock syndrome. However, if antibiotics are prescribed, an antibiotic with staphylococcal coverage should be selected, such as amoxicillin clavulanate or a second-generation cephalosporin.[13,19]

INVESTIGATIONS

It is recommended that coagulation screening should be carried out only if firm indications are found in the history and physical examination of patients presenting to the emergency department with epistaxis. Coagulation screening of all patients who present with epistaxis is of little value and leads to longer stays in the emergency department. Coagulation studies are justified in patients receiving anticoagulant treatment and in those with known coagulopathy or chronic liver disease.[20]

SUMMARY

Epistaxis is a common clinical condition. It is important for clinicians to develop an approach to diagnosis and management, and it is important to distinguish between anterior and posterior bleeds. The

stepwise approach we have highlighted identifies the necessary equipment vital for timely and effective management. Clinicians are advised to prevent complications by using appropriate equipment, prescribing prophylactic antibiotics when needed, and, when bleeding continues despite packing and balloon procedures, referring patients to an otolaryngologist.

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