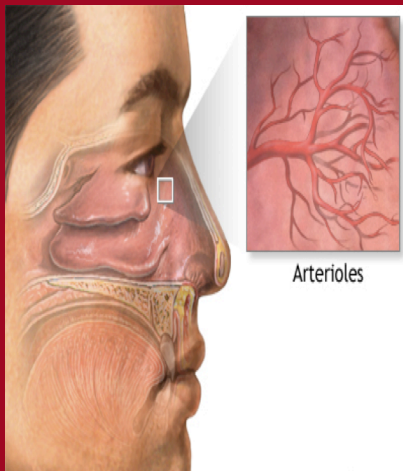


EM CASE OF THE WEEK

BROWARD HEALTH MEDICAL CENTER DEPARTMENT OF EMERGENCY MEDICINE



The nose is a very vascular area of the body that contains many arterioles (tiny blood vessels) that can bleed easily. Nosebleeds occur more frequently in the winter when heated indoor air can dry the membranes of the nose.

EM CASE OF THE MONTH

EM Case of the Month is a monthly “pop quiz” for ED staff. The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.



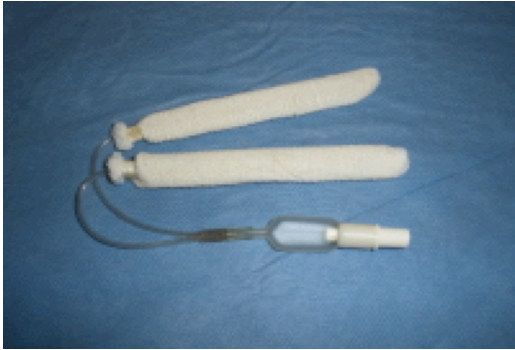
Epistaxis: Anterior vs. Posterior

A 90 year old female with medical history significant for a fall one month ago resulting in a surgically repaired fractured left hip, and a coagulopathy controlled with plavix, is brought to the ED via EMS S/P fall. Per patient she experienced no trauma to her head, abdomen, or upper extremities during her fall. Patient is spitting up a moderate amount of blood containing large clots with no blood coming from her nares. Per patient the blood is coming from her nose and it is common for her to get nosebleeds when she goes from an upright to supine position too quickly. Her vital signs are T 98.8, HR 125, RR 20, BP 97/70, O2 sat 73%. What is the most common location for a nosebleed?

- A. Anterior to the inferior turbinate
- B. Sphenopalatine arteries
- C. Superior labial arteries
- D. Kiesselbach’s Plexus arteries
- E. Greater Palatine arteries



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7.5 cm for anterior/posterior nasal packing

Take Home Points

- Simple instructions for initial treatment of minor epistaxis: apply firm digital pressure for 5-10 minutes – use an ice pack – deep, relaxed breathing.
- Drinking a healthy dose of cayenne pepper mixed with water has been a reliable herbal remedy for quick termination of epistaxis
- Anterior epistaxis is from Kesselbach's plexus whereas posterior epistaxis is more serious and has an arterial supply deeply posterior inside the nasal cavity. Posterior packing requires packing farther back in the nasal cavity to block the arterial supply.
- Posterior packing requires admission of patient because there is essentially a ball hanging directly over their airway.

Epistaxis

The correct answer is D. More than 90% of bleeds occur anteriorly and arise from Little's area, where the Kiesselbach plexus forms on the septum. The nose has a rich vascular supply, with substantial contributions from the internal and external carotid arteries. The external carotid artery supplies blood to the nose via the facial and internal maxillary arteries. The internal carotid artery contributes to nasal vascularity through the ophthalmic artery. Bleeding typically occurs when the mucosa is eroded and vessels become exposed and subsequently break. The Kiesselbach plexus is where vessels from both the internal carotid artery (anterior and posterior ethmoid arteries) and the external carotid artery (sphenopalatine and branches of the internal maxillary arteries) converge to form a capillary bed. These capillary or venous bleeds provide a constant ooze, rather than the profuse pumping of blood observed from an arterial origin. Anterior bleeding may also originate anterior to the inferior turbinate. Posterior bleeds arise further back in the nasal cavity, are usually more profuse, and arise from branches of the sphenopalatine artery in the posterior nasal cavity or nasopharynx. **As posterior epistaxis has an arterial origin, they pose a greater risk of airway compromise, aspiration of blood, and greater difficulty controlling bleeding.**

Discussion:

Causes of epistaxis can be divided into local causes (eg. trauma, mucosal irritation, septal abnormality, inflammatory diseases, tumors), systemic causes (eg. blood dyscrasias, arteriosclerosis, hereditary hemorrhagic telangiectasia), and idiopathic causes. Local trauma is the most common cause, followed by facial trauma, foreign bodies, nasal or sinus infections, and prolonged inhalation of dry air. Studies have shown increased nosebleeds in association with older age and colder weather. In patients with facial trauma or patients undergoing nasal surgery, bleeding can range from minor (due to mucosal laceration) to severe (due to transection of a major vessel).

Risk factors for epistaxis include allergic rhinitis, chronic sinusitis, hypertension, hematologic malignancy, coagulopathy, or hereditary hemorrhagic telangiectasia . *(cont'd next page)*

For a list of educational lectures, grand rounds, workshops, and didactics please visit

<http://www.BrowardER.com>

and click on the "Conference" link. All are welcome to attend !

When topical nasal antihistamines, NSAIDs, and corticosteroids are applied directly to the nasal septum instead of the lateral walls, they may cause epistaxis. Granulomatous diseases such as sarcoidosis, Wegeners, TB, syphilis, and rhinoscleroma lead to friable mucosa and can cause recurrent epistaxis. Intranasal rhabdomyosarcoma is a rare tumor that begins in the nasal, orbital, or sinus area in children. Juvenile nasal angiofibroma in adolescent males can present as severe nasal bleeding. Alcoholism is associated with coagulopathy and epistaxis. Hereditary hemorrhagic telangiectasia or Osler-Weber-Rendu, is autosomal dominant and causes formation of telangiectasias and arteriovenous malformations in vessels ranging from capillaries to arteries. The Kiesselbach plexus is part of the trigeminovascular system and has been implicated in migraines.

Hypertension. Hypertension is often mistakenly blamed for epistaxis. Epistaxis is more common in hypertensive patients but is **rarely a direct cause of epistaxis**. The age distribution for epistaxis is bimodal with peaks in young children ages 2-10 then in patients 50-80. Prevalence of epistaxis is higher in males (58%) than females (42%). Patients who have undergone nasal packing have increased morbidity. Posterior packing can potentially cause airway compromise and respiratory depression. Posterior bleeds can present as hematemesis or melena. Medications which predispose to epistaxis and make treatment more difficult include NSAIDs, ticlopidine, and dipyridamole. When evaluating a patient with epistaxis, be sure to have sufficient illumination, adequate suction, and packing materials ready. Blowing the nose decreases the effects of local fibrinolysis and removes clots, permitting a better examination. A topical vasoconstrictor (0.05% oxymetazoline) can be applied as well as a topical anesthetic (4% aqueous lidocaine). If an anterior source cannot be visualized, if the hemorrhage is from both nares, or if constant dripping of blood is seen in the posterior pharynx, the bleeding may be posterior. A posterior bleed can present looking like hematemesis or hemoptysis.

Treatment. The first treatment for epistaxis is to have patient blow their nose and apply pressure and ice pack, each for 5-10 minutes. Suction needs to be available. If bleeding does not discontinue find the source of the bleeding by looking first up into the nares then if cannot visualize, back into the oropharynx to see if blood is dripping from nasal cavity. If a bleeding point is easily identified a silver nitrate stick can be rolled over the mucosa. Only one side of the septum should be cauterized with silver nitrate at a time. If anterior epistaxis is strongly suspected the Rapid Rhino 5.5 cm epistaxis balloon can be used to pack one or both nasal cavities. To pack for an anterior/posterior bilateral 7.5 cm epistaxis balloons are required. To use the epistaxis balloons first soak it in water for 30 seconds then insert it along the nasal cavity until the full length of the tampon is contained in the nasal cavity. You should then inflate it slowly using an air-filled syringe. A posterior pack involves inserting a balloon through the naris, into the cavity, inflating it with 4-5 mL sterile water, and then gently pulling it forward to fit snugly in the posterior choana. Posterior packing requires admission as there is a water balloon hanging directly over their airway and there is potential airway compromise. After 5 minutes of the packing been in place, clear the oropharynx of all blood using suction and manual removal of blood clots with tongs. Do this in order to ensure the blood was indeed coming from the posterior nose and not up from the throat and also to ensure the bleeding has subsided with the packing. If the bleeding has not stopped from the packing ENT needs to be consulted in order to do a nasal embolization under anesthesia.

► **Foley for posterior pack.** If a posterior packing kit is not available a foley catheter can be used. Place a 12-16 French catheter with a 30 mL balloon into the nose until the tip is visible in the posterior pharynx. Then slowly inflate the balloon with 15 mL water, pull it anteriorly slowly until it is firmly against the posterior choanae, then secure in place with an umbilical clamp.

This week's case was written by Rachel Chamberlain. Rachel is a 4th year medical student from NOVA Southeastern University. Rachel did her EM Rotation at BHMC in January 2015.