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Epistaxis

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* *Drug doses are a guide only, always check second source and follow local practice guidelines*

Take Home Points:

- Epistaxis is usually benign and self-limited, resulting from minor digital trauma and dry air
- Most nosebleeds occur in the anterior part of the nasal cavity along the septum
- Posterior nosebleeds can be life threatening. These occur out of the direct view and reach of the clinician.
- Clues to posterior bleeding include an older patient with a history of vascular disease and bleeding from both nares and down the back of the throat
- Primary survey
 - o Patients with massive hemorrhage or those in shock should be resuscitated and treated in the resuscitation area of the ED where airway and other critical interventions can occur readily.
- For all other patients, treatment can occur in a stepwise approach:
 - 1 Pinch the nose
 - 2 Clean out the nares
 - 3 Analgesia / sedation
 - 4 Find the bleeding site
 - 5 Anterior packing
 - 6 Posterior packing
- Nosebleeding may occur in the setting of a bleeding disorder or in the anticoagulated patient. In some cases, the management may include laboratory testing and reversal of anticoagulation

Introduction

Epistaxis, or nosebleed, is among the commonest presentations to the emergency department. Although epistaxis occurs in the majority of people at some point during their lives, most are minor and self-limited. Those patients who arrive to the ED represent a specific subset of nosebleeds – ones that won't stop. These patients may be quite anxious and fearful. In some cases there are underlying reasons why the bleeding won't stop. Fortunately, we have a wealth of tools, tips, and procedures to stop the bleeding.

Background

Epistaxis is typically classified as anterior or posterior, and that refers to the source of the bleed. Three arteries that supply blood to the face come together in a watershed region, which is the plexus of the terminal branches of the internal and external carotid arteries. Arterial bleeds mainly come from branches of the **sphenopalatine** and **descending palatine** arteries, which are branches of the external carotid.

Anterior epistaxis is by far the most common, accounting for over 90% of all nosebleeds, and it is usually unilateral. The source is a bleed from Kiesselbach's plexus, also known as Little's area, which is in the anterior portion of the nares along the septum. It's the area that if you're going to pick your nose, it's right where your finger naturally goes. And in fact, most nosebleeds are caused by dry air and "digital manipulation" (nose picking!).

Posterior epistaxis is more serious – even life-threatening. It accounts for 5-10% of epistaxis cases and occur in the same watershed region between the major facial arteries but in the posterior nasal cavity where they are less accessible and beyond the view of the clinician using a nasal speculum. Because the bleeding is so posterior in the back of the nasal cavity, bleeding may come through both nares. Posterior nosebleeds tend to occur in older patients with a history of vascular disease and hypertension.

There is no magical dividing line anterior and posterior bleeds. We simply divide them this way because the anterior ones can either be seen anteriorly or stop with anterior packing, and the posterior ones cannot be seen anteriorly and require posterior packing [Gifford]. They can be either arterial or venous.

History

Key elements on history include:

- Is there a history of bleeding disorders or therapeutic anticoagulation?
 - Hemophilia, von Willebrand's, platelet disorders
 - End stage liver and kidney disease
 - Anticoagulation with heparin, warfarin, novel anticoagulant agents
 - Hereditary hemorrhagic telangiectasia (Osler Weber Rendu syndrome)
- How much bleeding and for how long?
- What have they tried to stop bleeding before arriving in ED?
- Is this a recurrent problem or first time bleeder?
- Are there other risk factors for bleeding?
 - Intranasal steroids
 - patients on nasal corticosteroids should be advised on proper use. They should angle the spray laterally, away from the septum [Gifford]
 - Cocaine use, other inhaled drugs of abuse
 - Consider possibility of nasal neoplasm (higher risk in Asian patients)

Examination

- You often have to stop or slow the bleeding before you can get a thorough exam
- Essential equipment:
 - Nasal speculum
 - Light source
 - Bayonet forceps
 - Suction
- Place the patient in the "sniffing position", not hyperextending their neck backwards.
- Insert the nasal speculum to opens the nares in the superior/inferior orientation, not laterally (this makes sense, because you don't want to traumatize the septum any further!)
- Look for an anterior site of bleeding along the septum
 - This may appear as active bleeding, a clot or a "nipple" sign where bleeding recently occurred
- Check for polyps and masses – these will need evaluation by ENT
 - Nasal polyps are benign but can bleed
 - Nasopharyngeal carcinoma

Laboratory

- There is no need for routine ordering of coagulation studies for epistaxis unless there is reason to suspect they would be abnormal (on anticoagulation, liver disease, bleeding disorder) [Awan]
- Obtain coagulation tests as appropriate if patient is on anticoagulation
 - PT/INR for those on coumadin
- Obtain a CBC in severe bleeds or if you want to check platelets
- Type and screen if patient may need transfusion

Stepwise Approach To Epistaxis

- The history and physical examination occur simultaneously with the primary survey and treatment
- Until the bleeding is stopped, it may be necessary to go back and repeat the steps from the beginning

1. Primary Survey

- Is this a stable patient sitting there pinching their nose or a patient in shock, jeopardizing their airway, needing immediate resuscitation?
- The vast majority of these patients are stable and can be treated in the ENT room/area of the ED
- Put the sickest patients in the resuscitation area of the ED, not the ENT room!

- Be prepared for orotracheal intubation with full airway equipment and good working suction

2. Pinch the nose

- Have patient blow nose, and then pinch the ala for 15 minutes without peeking or checking
- This is the soft part of the nose that the patient (or an assistant) is pinching, NOT the hard nasal bone
- If it stops you can observe for 30 mins for rebleed and plan to discharge

3. Clean out the nares

- Some patients are unable to forcefully blow their own nose – in this case cleaning the nares with suction becomes more important
- This step may need to occur simultaneously with analgesia and sedation

4. Analgesia / sedation

- The mainstay of analgesia in epistaxis is topical anesthetic agents such as lidocaine

- Analgesic agents are typically combined with topical vasoconstrictive agents such as oxymetazoline
- These agents may be applied by means of a soaked gauze or pledgets inserted into the nasopharynx
- It takes several minutes for the agents to act - the patient can pinch the nose with the soaked gauze while the clinician prepares for the exam
- Cocaine has both anesthetic and vasoconstrictive properties and may be used as a single agent
- This step frequently stops or at least slows the bleeding as the vasoconstrictor acts to decrease blood flow to the mucosa
- Some patients may require systemic agents such as benzodiazepines or opiates - care should be exercised when these agents are used and proper monitoring is essential
- Topical hemostatics, such as tranexamic acid (TXA) can also be used during this step to aid in bleeding control
 - TXA in liquid form may be instilled into soaked pledgets or gauze
 - They left the TXA soaked pledget in place until the bleeding stopped

5. Find the bleeding site

- Take a look using a good light and the nasal speculum and look for a source of bleeding
- Cautery of the bleeding site can be performed with silver nitrate (chemical cautery) or electrical cautery
- Ironically, this won't work well on active bleeding
- One side only if attempted, not to both sides of the septum, which will increase the risk of a septal perforation as a delayed complication
- Circle from the outside inward - not from the center outward
- If the bleeding has stopped with the first several steps and no bleeding site is identified, the application of antibacterial ointments such as bacitracin are effective at preventing recurrence

6. Anterior packing

- In cases where a bleeding site cannot be identified and bleeding cannot be controlled the next step in management is anterior packing
- Before packing make sure the nasopharynx is well anesthetized
- Manual packing may be performed with a ribbon of gauze - this is time consuming and has been largely supplanted by the use of specially designed products
- There are several options and many proprietary products available to perform nasal packing
 - Nasal tampons
 - Expanding sponges and gels

- Some products involve the inflation of a balloon, others expand after wetting with saline
- Many of these products incorporate topical hemostatics
- Some products (e.g. expanding foams) may auto-degrade and absorb over the next few days, making removal (which is often painful and can re-injure mucosa) unnecessary

- Regardless of which you use, remember, the anatomy is such that you are aiming straight back when you pack the anterior nasal space, not upward. You are aiming to insert the packing under the inferior nasal turbinate
- If bleeding is not controlled with unilateral anterior nasal packing, the other side may need to be packed as well
 - This provides a counter pressure and can help tamponade the bleeding on the affected side
- If bilateral anterior packing fails, a posterior bleed is likely

7. Posterior packing

- Clues that epistaxis may be posterior:
 - Bleeding from both nares
 - No visualized bleeding anteriorly
 - Blood in the posterior pharynx and ongoing bleeding despite adequate bilateral anterior packing
- Posterior packing requires that the anterior packing in place must first be removed
- Consideration must be given to systemic analgesia at this point and in some cases it may even be necessary to secure the airway with orotracheal intubation
- Purpose specific products exist that combine anterior and posterior tamponade devices but a Foley catheter may also be used as a posterior balloon
 - Insert the catheter, inflate a single posterior balloon with 5-10 cc of air, then gently retract
 - As the inflated balloon is gently retracted, the cessation of bleeding can often be visualized by inspecting the back of the throat
 - The posterior balloon is then secured with mild traction using a variety of techniques
 - Care should be taken to avoid excessive pressure on the nasal ala - pressure necrosis can occur over time
 - Bilateral anterior nasal packing is then placed
- ENT consultation is necessary at this point for further management
 - Surgical arterial ligation or embolization via interventional radiologic techniques are usually the next step in inpatient management
 - Close monitoring with advanced airway equipment readily available at bedside are essential

Special Circumstances The Anticoagulated/Coagulopathic Patient

- Warfarin
 - Supratherapeutic
 - In cases of severe bleeding (e.g. posterior pack) – vitamin K, PCC or FFP to reverse are indicated
 - If INR is 5-9 but bleeding stops with anterior pack – consider holding coumadin and/or low dose vitamin K (e.g. 1 mg)
 - Therapeutic
 - Treat like anyone else
- Novel oral anticoagulants (NOACS)
 - NOACs are challenging because lab testing to determine the levels of anticoagulation cannot readily be obtained in the ED setting – the value of standard coagulation tests is questionable
 - For serious/uncontrolled bleeding, the use of prothrombin complex concentrate (PCC) should be considered for reversal
- Aspirin
 - May slightly increase the risk of epistaxis but this is probably minimal and does not typically lead to more severe bleeding
- End stage organ failure
 - Fresh frozen plasma (FFP) 15-20 mL/kg and vitamin K (10 mg IV) are indicated in severe bleeding in liver failure patients
 - DDAVP is indicated in severe bleeding in end-stage renal failure patients

Epistaxis In Major Facial Trauma

- Epistaxis resulting from major facial trauma is typically posterior and may be life-threatening.
- Although inserting a posterior pack in these patients carries a small risk of entering the brain through a fractured skull base, it may be necessary in exsanguinating hemorrhage

Hypertension In Epistaxis

- Chronic hypertension may be a risk factor for epistaxis
- Patients who are acutely hypertensive should be treated similarly to others, with analgesia and sedation as the primary means of treating elevated BP
- Use of antihypertensive medications (e.g. an IV beta blocker) in the setting of severe hemorrhage and impending shock may be dangerous and should be avoided

Epistaxis In Kids

- Epistaxis in children is typically anterior.
- Consider the possibility of a foreign body, especially if there is foul-smelling discharge as well as bleeding.

Disposition & Follow Up Plan

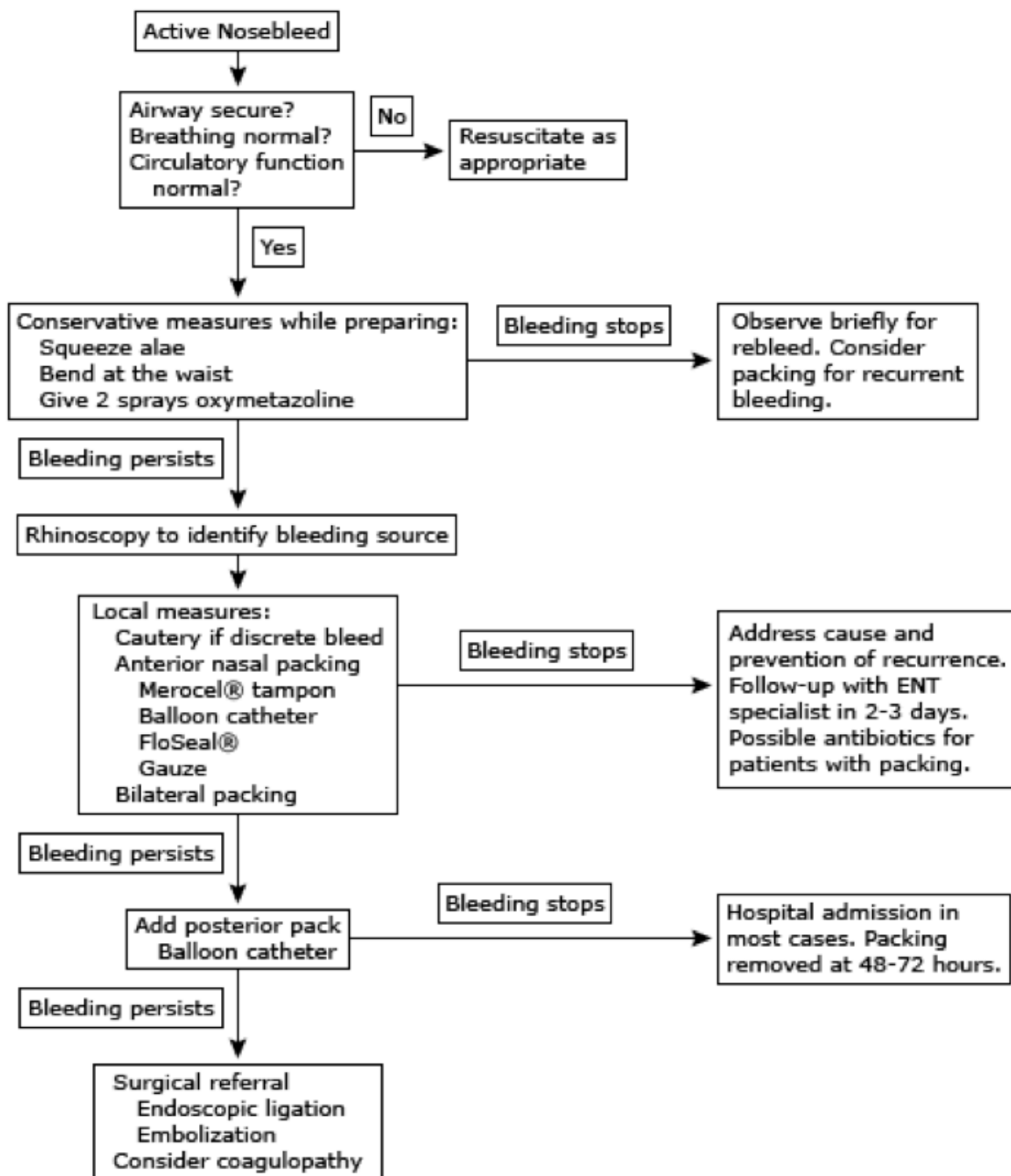
- Once the bleeding has been controlled, observe for at least 30 minutes for rebleeding
- Most patients can be safely discharged home
- Anterior packing
 - If discharged with anterior nasal packing, return in 2 days for removal and recheck
 - Applying topical bacitracin in the packing or a short course of oral antibiotics to prevent toxic shock syndrome (similar to a retained tampon in the vagina) are appropriate
 - Older patients and those with co-morbidities may require admission for observation
 - Removal of packing may be done in the ED or office setting: if a balloon device was used, deflate and leave deflated for 10 minutes to assess for rebleed before removing the device Re-examine after the packing is removed for masses or polyps
- Posterior packing
 - Admit to a monitored setting due to the risk of airway complications

Return Precautions

- What to do if they have another nosebleed:
 - Blow nose, pinch, and hold for at least 15 minutes without checking
 - Primary care follow up
 - Some patients with recurrent epistaxis may need further work-up (e.g. hematologic, endoscopy with ENT)
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Recommended management of a supratherapeutic INR

INR	Bleeding present	Recommended action*
>Ther to 5.0	No	Lower warfarin dose, or Omit a dose and resume warfarin at a lower dose when INR is in therapeutic range, or No dose reduction needed if INR is minimally supratherapeutic
>5.0 to 9.0	No	Omit the next one to two doses of warfarin, monitor INR more frequently, and resume treatment at a lower dose when INR is in therapeutic range, or Omit a dose and administer 1 to 2.5 mg oral vitamin K1 [§]
>9.0	No	Hold warfarin and administer 2.5 to 5 mg oral vitamin K1. Monitor INR more frequently and administer more vitamin K1 as needed. Resume warfarin at a lower dose when INR is in therapeutic range.
Any	Serious or life-threatening	Hold warfarin and administer 10 mg vitamin K by slow IV infusion; supplement with four-factor prothrombin complex concentrate (4-factor PCC) or fresh frozen plasma, depending on clinical urgency. Monitor and repeat as needed.





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