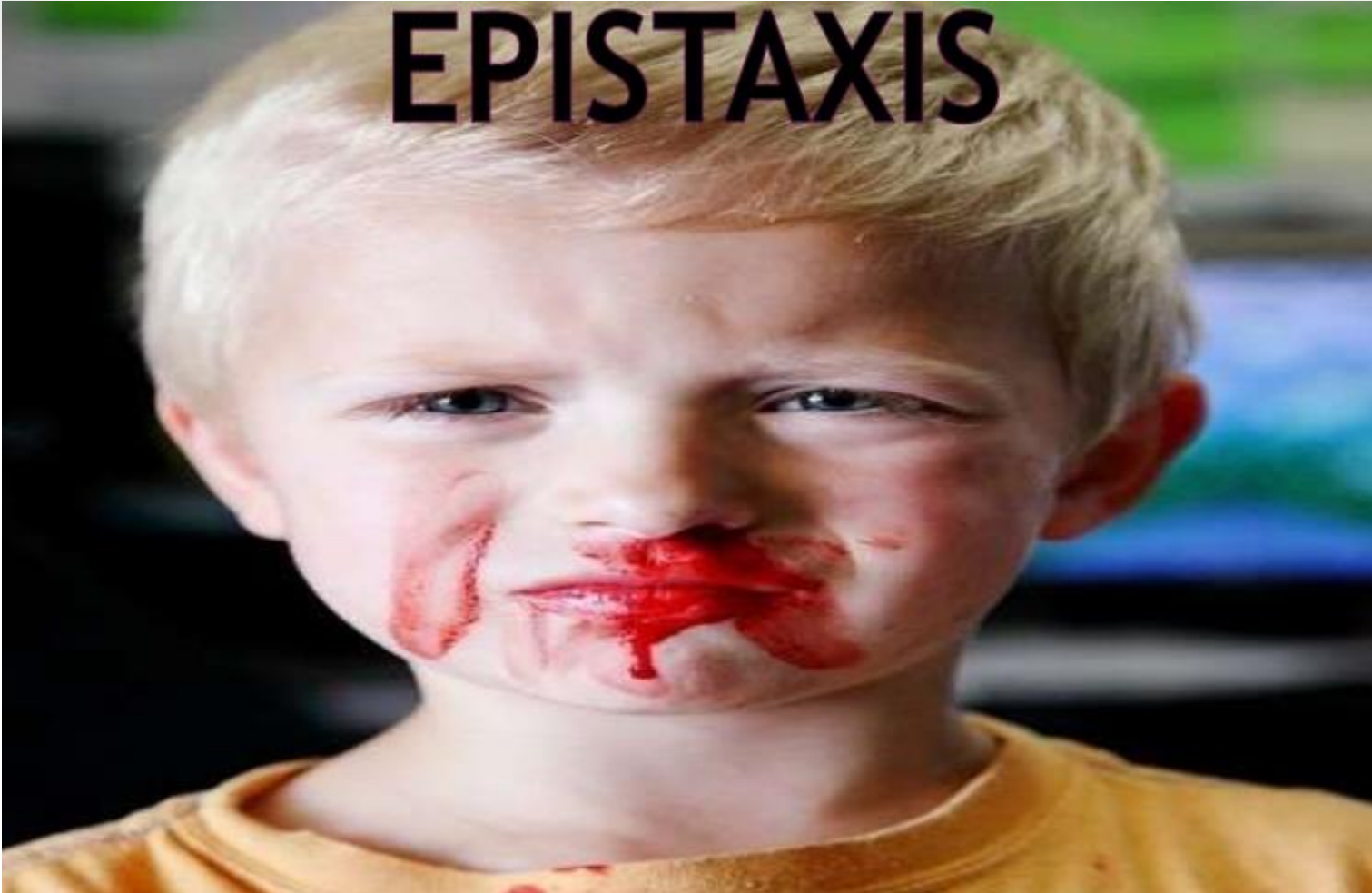


EPISTAXIS

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Epistaxis : is bleeding from nose , through Ant. Or Post.
Nares

Origin From a Greek term “epistazo” which means “to bleed from nose”

It Is a sign not a disease per se

Epistaxis

Introduction

Epistaxis is a common ENT emergency. The estimated lifetime incidence of epistaxis is approximately 60%.

Most episodes are minor in nature, self-limiting and do not require intervention.

Minor bleeding episodes occur more frequently in children and adolescents, whereas severe bleeds requiring intervention often occur in individuals older than 50 years.

Peaks incidence are seen in those less than 10 years of age and aged over 40 years

Why Nose?

- Situated in a vulnerable position as it protrudes on the face.
- Has a very rich blood supply.
- Supplied by both internal and external carotid system.
- Various anastomoses between arteries and veins.
- Vasculature runs just under the mucosa.
- Exposed to the drying effect of inspiratory current.



- Nose is richly supplied by both the external and internal carotid systems.

Superior part of the nose (**Internal carotid artery**):

- **Ophthalmic artery**
 - Anterior ethmoidal artery
 - Posterior ethmoidal artery

Inferior part of the nose (**External carotid artery**):

- **Maxillary artery**
 - Greater palatine artery
 - Sphenopalatine artery
- **Facial artery**
 - Superior labial artery → vestibule of the nose

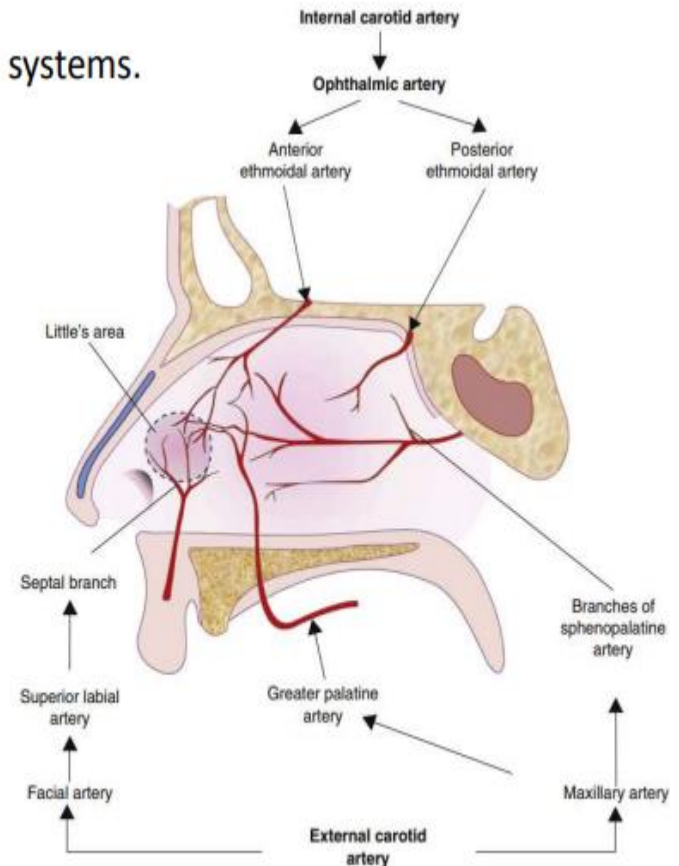
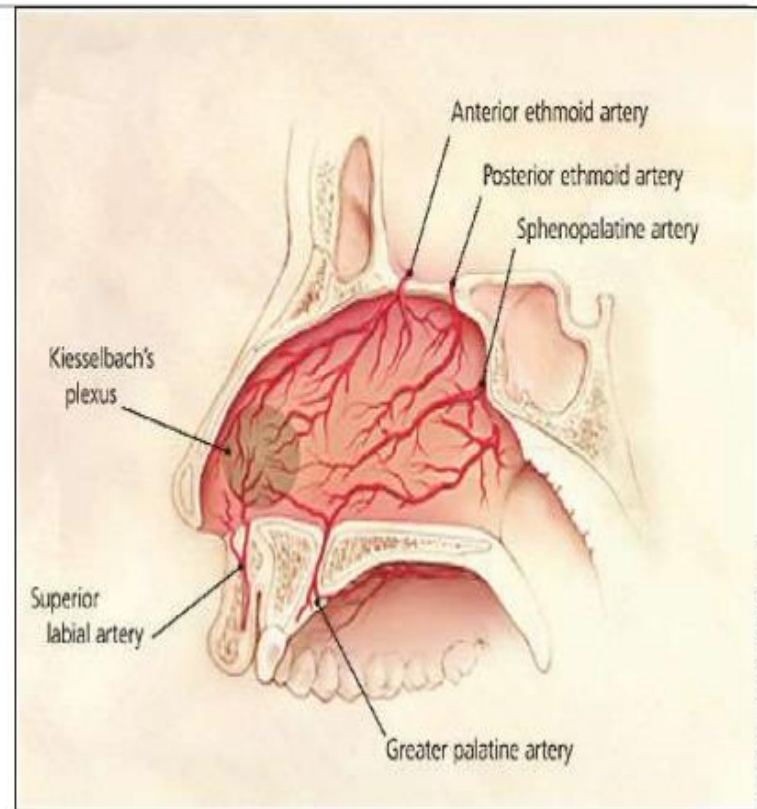


Figure 33.1 Blood supply of nasal septum.

Kiesselbach's plexus (Little's area)

- In anterior inferior part of nasal septum.
- Most common site for epistaxis.
- Mainly anterior epistaxis.
- Four arteries:
 1. Septal branch of sphenopalatine artery
 2. Anterior ethmoidal artery
 3. Septal branch of labial artery
 4. Greater palatine artery



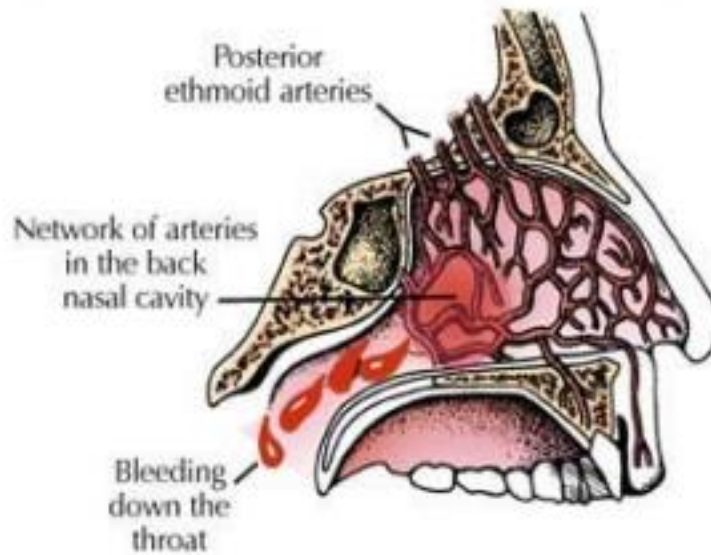
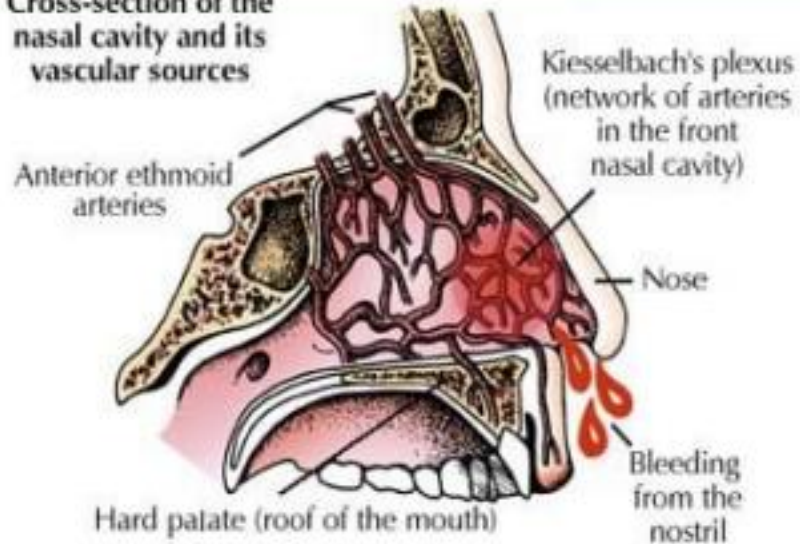
Woodruff's Plexus

- Woodruff described a plexus of prominent blood vessels lying just inferior to the posterior end of the inferior turbinate
- Many authors describe Woodruff's plexus as a frequent source of so-called 'posterior' epistaxis despite the absence of any numerical evidence to support this.

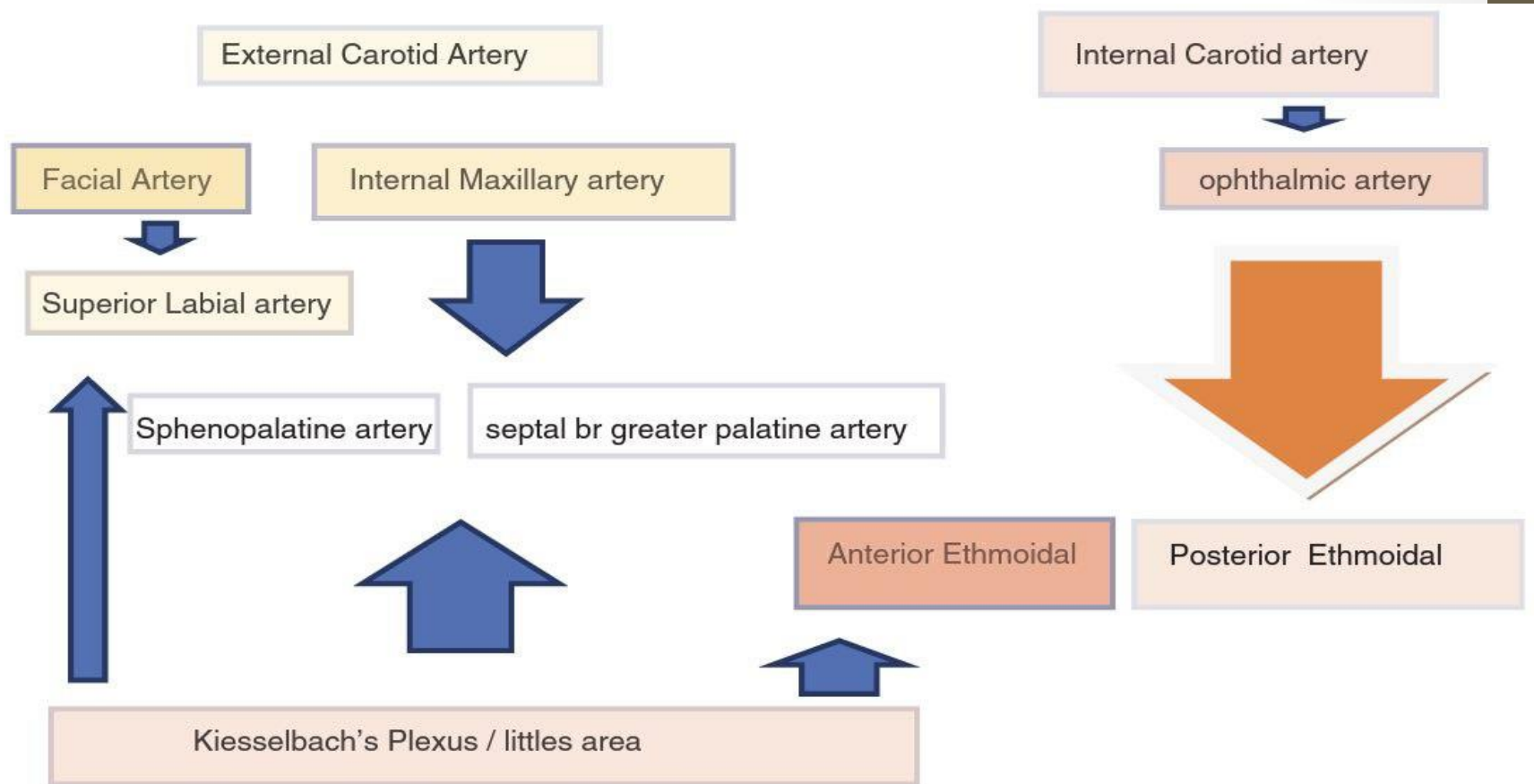
Retrocolumellar Veins

- Retrocolumellar vein running 2 mm behind and parallel to the columella. This vein is in a particularly superficial area and is a common cause of venous epistaxis in children.

Cross-section of the nasal cavity and its vascular sources



For management of epistaxis, it is imperative to learn about the vascular supply to the nose. Blood supply to the nose



Woodruffs Plexus

Mainly a venous plexus situated at the posterior and inferior end of the inferior turbinate

Classification of Epistaxis

- **Primary:** no proven causal factor
- **Secondary:** proven causal factor
- **Childhood:** <16 years
- **Adult:** >16 years
- **Anterior:** bleeding anterior to piriform aperture
- **Posterior:** bleeding point posterior to piriform aperture

Causes of Epistaxis:

Despite multiple causes for epistaxis, literature shows that in 85% of cases are found (idiopathic=spontaneous). no causes

Local causes

Trauma

- Nose picking
- Foreign body
- Nasal oxygen and continuous positive airway pressure
- Nasal fracture

Inflammatory/infectious

- Common cold, viral rhinosinusitis
- Allergic rhinosinusitis
- Bacterial rhinosinusitis
- Granulomatous diseases
- Wegener granulomatosis
- Sarcoid
- Tuberculosis

Primary neoplasm

- Haemangioma of the septum, turbinates
- Haemangiopericytoma (glomangiopericytoma)
 - Nasal papilloma
- Pyogenic granuloma
- Angiofibroma
- Carcinoma and other nasal malignancies

Structural

- Septal deformity, spurs
- Septal perforation

Drugs

- Topical nasal steroids
- Cocaine abuse occupational substances

Environmental irritants

- Smoke
- Chemicals
- Pollution
- Altitude

Postoperative/iatrogenic

- Nasal surgery
- Nasal crustations

SYSTEMIC CAUSES

❖ Cardiovascular (Heart failure)

❖ Coagulopathies:

- Inherited coagulopathies, haemophilia A & B, Christmas disease.
- Splenomegaly
- Thrombocytopenia , Platelet disorders
- Haematological malignancy like leukemia
- Liver diseases(cirrhosis ,failure.)
- Renal failure(uremia).
- Chronic alcohol abuse
- Vitamin K,C deficiency
- AIDS

Systemic causes

❖ Vascular Abnormalities:

- Sclerotic vessels-elderly—hypertension.
- Hereditary haemorrhagic telangiectasia (Osler-Weber-Rendu syndrome): von Willebrand's disease
- Arteriovenous malformation
- Neoplasm
- Aneurysms

❖ Hypertension:

- Controversial topic and is often misunderstood as a cause of epistaxis .
- Hypertension is rarely a direct cause of epistaxis
- Epistaxis is however more common in hypertensive patients this is postulated to be caused from long standing hypertension causing vascular fragility of the blood vessels.
- Epistaxis in patients presenting to ED, will generally have an associated anxiety that will increase blood pressure.

- **Pathophysiology** ;
- Nosebleeds are due to the rupture of a blood vessel within the richly perfused nasal mucosa.
Rupture may be *spontaneous or initiated by trauma*.
- An increase in blood pressure (e.g. due to general hypertension) tends to increase the duration of spontaneous epistaxis.

Anticoagulant medication and disorders of blood – clotting can promote and prolong bleeding.

- **Spontaneous epistaxis** is more common in the elderly as the nasal mucosa (lining) becomes dry and thin and blood pressure tends to be higher. The elderly are also more prone to prolonged nose bleeds as their blood vessels are less able to constrict and control the bleeding.

Sites

The vast majority of nose bleeds occur in the anterior (front) part of the nose from the nasal septum. This area is richly endowed with blood vessels (Kiesselbach's plexus). This region is also known as Little's area.

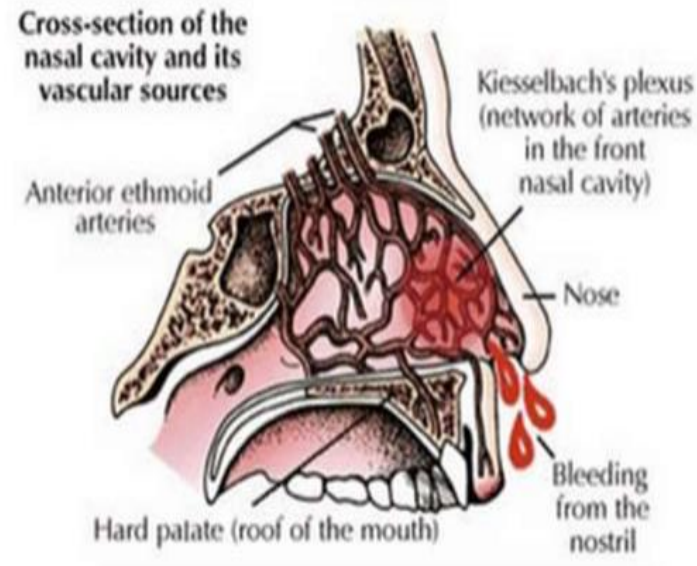
And from retrocollumellar vein.

posterior bleeding is usually due to bleeding from *Woodruff's plexus*, a venous plexus situated in the posterior part of inferior meatus. *From sphenopalatine* or *posterior ethmoid arteries*. Posterior bleeds are often prolonged and difficult to control. They can be associated with bleeding from both nostrils and with a greater flow of blood into the mouth.

Anterior Epistaxis

❖ Blood flow out from front nose with patient in sitting position.

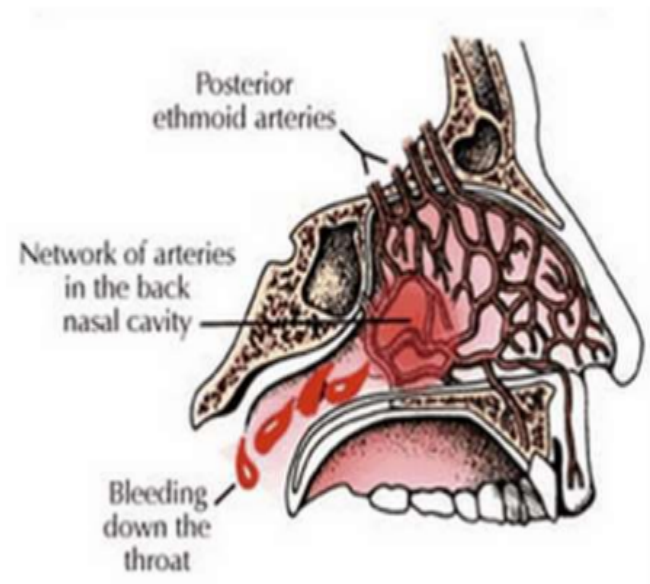
- **Incidence:** More common.
- **Site:** Mostly from Little's area or anterior part of lateral wall.
- **Age:** Mostly occurs in children or young adults.
- **Cause:** Mostly trauma.
- **Bleeding:** Usually mild, can be easily controlled by local pressure or anterior pack.



Posterior Epistaxis

❖ Blood flow back into the throat.

- **Incidence:** Less common.
- **Site:** Mostly from posterosuperior part of nasal cavity; often difficult to localize the bleeding point.
- **Age:** After 40 years of age.
- **Cause:** Spontaneous; often due to hypertension or arteriosclerosis.
- **Bleeding:** severe, requires hospitalization; postnasal pack often required.



The differences between anterior and posterior epistaxis

	Anterior	Posterior
Incidence and site	More common Mostly from the little's area or anterior part of lateral wall.	Less common Mostly from posterior part of nasal cavity.
Age	Mostly occurs in children and young adults.	Occurs after 40 years of age.
Cause	Mostly trauma or by nasal mucosal dryness.	Spontaneous; often due to hypertension or arteriosclerosis.
Bleeding	Usually mild and can be controlled by local pressure or anterior pack.	Bleeding is severe and requires hospitalisation; postnasal pack often required.

Management

Theoretical ideal requires identification of the bleeding point and direct control of the bleeding.

RESUSCITATION

- First aid by pinching the ala nasi is supported by the frequency with which the anterior part of the septum is the source of bleeding.
- History and examination will help in assessing the amount of blood lost. In all but the most minor of bleeds, intravenous access is established and baseline blood estimations are taken.
- A detailed history should be taken, looking for predisposing factors. Routine coagulation studies in the absence of a positive history are not indicated.¹⁴



DIRECT OR INDIRECT THERAPIES

Treatment may be divided into direct (bleeding point-specific therapies) or indirect treatments which do not require identification of the bleeding point.

Direct management

- only one in five cases.
- Anterior epistaxis is usually very straightforward to identify and treat and at present over 90 percent of cases are controlled with silver nitrate cautery.

Endoscopic control

- Failure to locate the bleeding point on initial examination is an indication for examination with a rod lens endoscope .
- Endoscopy identifies the source of posterior epistaxis in over 80 percent of cases.⁹
- insulated hot wire cautery or modern single fibre bipolar electrodes.
- Monopolar diathermy should not be used in the nasal cavity as there have been reports of blindness due to current propagation.⁴⁵

Indirect therapies

- Failure to find (often the result of failure to look for) the bleeding point is an indication for use of one of numerous traditionally favoured indirect strategies.

Nasal packing

- can be anteriorly or posteriorly placed.
- Ribbon gauze impregnated with petroleum jelly or bismuth iodoform paraffin paste (BIPP) is inserted the entire length of the nasal cavity in an attempt to tamponade the bleeding. Once inserted, the packs are left *in situ* for between 24 and 72 hours.⁴⁶
- Complications of packing include sinusitis, septal perforation, alar necrosis, hypoxia and myocardial infarction.
- Modern variations on anterior packing include special tampons (merocel and Kaltostat) and balloon catheters (Brighton or Epistat). Balloons and tampons are favoured by nonspecialists as first-line therapy.
- There is no evidence of greater efficacy for packs, balloons or tampons.

Hot water irrigation

- Irrigation of the nasal cavity with water at 50°C has been proposed as an alternative to packing.
- The exact mechanism of action of this treatment is unclear but may, paradoxically, involve reflex vasodilatation and reduction in nasal lumen dimensions.

Systemic medical therapy

- Tranexamic acid and epsilon aminocaproic acid are systemic inhibitors of fibrinolysis.
- Tranexamic acid has been shown to reduce the severity and risk of rebleeding in epistaxis at a dose of 1.5 g three times a day.
- Preexisting thromboembolic disease is a contraindication.
- At present antifibrinolytics are best reserved as adjuvant therapy in recurrent or refractory cases.

SURGICAL MANAGEMENT

Endoscopic diathermy of the bleeding point under anaesthetic may control the bleeding. Surgical management for continued epistaxis consists of:

- posterior packing;
- ligation techniques;
- septal surgery techniques;
- embolization techniques.

Posterior nasal packs

- Posterior packing can be carried out under local anaesthetic, but general anaesthesia is preferable.
- An easier and perhaps kinder alternative is to insert a Foley urethral catheter (size 12 or 14) along the floor of the nasal cavity until the nasopharynx is reached. The Foley catheter is inflated with up to 15 mL of water, pulled forward to engage in the posterior choana and anterior packing is then inserted.
- Posterior packing causes considerable pain and may cause hypoxia secondary to soft palate oedema. Sinusitis and middle ear effusions are common.
- More serious complications include necrosis of the septum and columella.

Ligation techniques

- Ligation is reserved for intractable bleeding where the source cannot be located or controlled by the techniques described above.
- Ligation should be performed as close as possible to the likely bleeding point; thus, the hierarchy of ligation is:
 - sphenopalatine artery;
 - internal maxillary artery;
 - external carotid artery;
 - anterior/posterior ethmoidal artery.

Endonasal sphenopalatine artery ligation

- Under general or local anaesthetic, an incision is made approximately 8 mm anterior to and under cover of the posterior end of the middle turbinate. The incision is carried down to the bone and a mucosal flap is elevated posteriorly until the fibroneurovascular sleeve arising from the sphenopalatine foramen is identified.
- The foramen can be difficult to identify, but its location is signalled by the crista ethmoidalis.²⁰ Once the main vessel is identified, it can be ligated using haemostatic clips and divided or coagulated using bipolar diathermy .

Internal maxillary artery ligation

- The artery is exposed transantrally via anterior (sublabial) or combined anterior and medial (endoscopic) techniques.
- an antrostomy is formed taking care to preserve the infraorbital nerve. The mucosa of the posterior wall of the antrum is then elevated and a window is made through it into the pterygopalatine fossa. The branches of the internal maxillary artery are identified pulsating within the fat of the fossa and are carefully dissected out prior to clipping with haemostatic clips.
- An endoscopic variation on this technique uses a middle meatus antrostomy, as an instrument port with a 4-mm endoscope is inserted through a small canine fossa antrostomy.
- Complications include sinusitis, damage to the infraorbital nerve, oroantral fistula, dental damage and anaesthesia and rarely ophthalmoplegia and blindness. [**]

External carotid artery ligation

- This procedure can be carried out under local or general anaesthetic using either a skin crease incision or a longitudinal incision parallel with the anterior border of the sternomastoid.
- The carotid bifurcation is identified and the external carotid confirmed, double-checked for arterial branches and then ligated in continuity.

Anterior/posterior ethmoidal artery ligation

- Best reserved as an adjuvant to one of the procedures described above or in cases of confirmed ethmoidal bleeding (e.g. ethmoidal fracture, iatrogenic tear).
- The arteries are approached by a medial canthal incision which is carried down to the bone of the anterior lacrimal crest. Periosteal elevators are then used to elevate and laterally retract the bulbar fascia. The anterior ethmoidal artery is seen as a fibroneurovascular mesentry running from the bulbar fascia into the anterior ethmoidal foramen.

Septal surgery

- When epistaxis originates behind a prominent septal deviation or vomeropalatine spur, septoplasty or submucosal resection (SMR) may be required to access the bleeding point.
- Some authors have advocated septal surgery as a primary treatment for failed packing.
- The rationale is that by elevating the mucoperichondrial flap for septoplasty or SMR, the blood supply to the septum is interrupted and haemostasis secured.

Embolization

- Embolization under angiographic guidance
- Under local anaesthetic, transfemoral Seldinger angiography is used to identify the bleeding points and display the nasal circulation.
- It is essential to exclude arteriovenous malformations, aneurysms and fistulae prior to embolization.
- Once the bleeding vessel is identified, a fine catheter is passed into the internal maxillary circulation and particles (polyvinyl alcohol, tungsten or steel microcoils) are used to embolize the vessels.
- The ipsilateral facial artery is also embolized in order to prevent recirculation.

BEST CLINICAL PRACTICE

First line _____ direct therapy (bipolar/cautery endoscopic if required)



Second line* _____ indirect therapy (anterior packing) (* non-specialist)



Third line _____ Surgical therapy (endoscopic SPA ligation)



Fourth line _____ Embolization