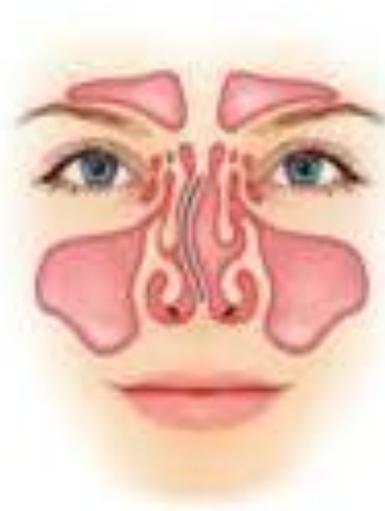


Diseases of the Ear, Nose and Throat



DISEASES OF THE NASAL SEPTUM, EPISTAXIS, TURBINATE HYPERTROPHY

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Source: slides of the doctor and the recording

Important Notes in red

Copied slides in black

Doctors words in blue

Our notes in green

Titles and subtitles in this color

Highlight possible MCQs mentioned or pointed by the doctor

Causes of epistaxis

Nose blood supply

History, examination, and investigations

Management

Blood loss management

avoidance

Causes Of Epistaxis**Local Causes:**

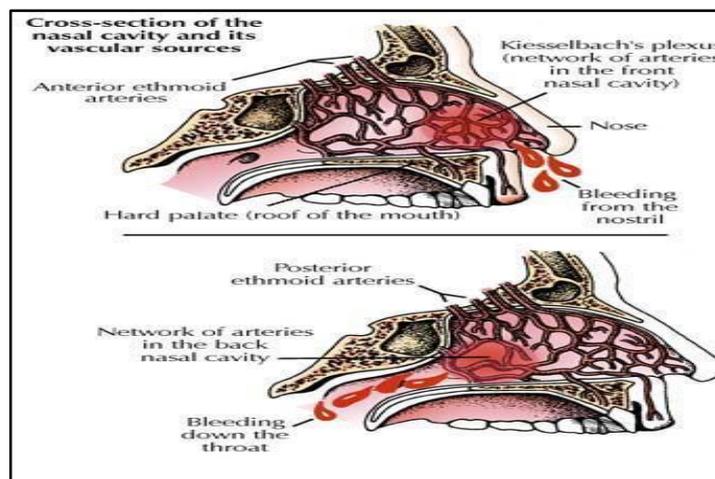
External	Trauma	nose picking foreign body forceful nose blowing
	Infection	Chronic Rhinitis
	Irritant \ Allergy	Chemical Irritant (Nasal Spray) , allergic rhinitis
Internal	Septum	Deviated or Perforated
	Mucosa	Drying due to low humidity especially in summer
	Vascular	Vascular malformation
	Mass	Polyp of the septum or lateral nasal wall (inverted papilloma) Neoplasm of the nose or sinus Nasopharageal Angiofibroma or Nasopharyngeal Carcinoma , so when adult male presented with epistaxis examine the nasopharynx to exclude carcinoma

Systemic

CVS	Systemic Arterial Hypertension
Endocrine	Pregnancy Pheochromocytoma
Hematological	Hereditary Hemorrhagic Telangiectasia (common, runs in families) Thrombocytopenia Idiopathic Thrombocytopenic Purpura (ITP) Leukemia Hemophilia Anticoagulants (ASA , NSAIDs)
GI	Hepatic Disease

Blood Supply:

- Internal and External Carotid Arteries
- Many Arterial and Venous Anastomosis
- Kiesselbach's Plexuses (Little Area) in the Anterior
- Woodruff's Plexuses In Posterior Septum

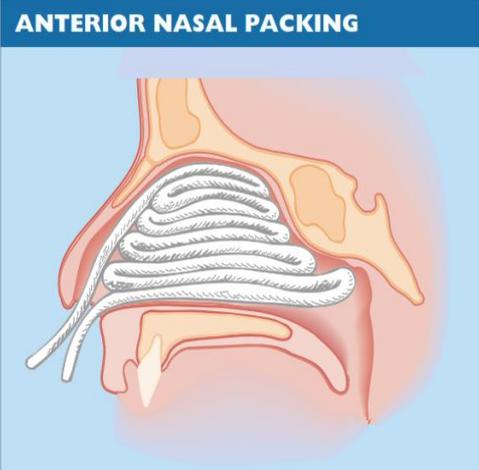
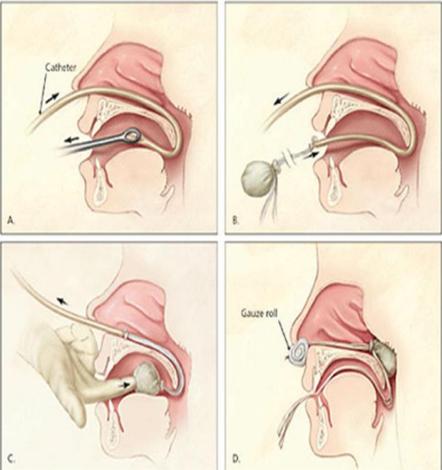


History	Examination
<ul style="list-style-type: none"> • Previous bleeding episodes • Nasal trauma • Family history • Hypertension –current medication and its control • Hepatic disease • Medical condition, DM, CAD • Use of anticoagulant 	<ul style="list-style-type: none"> • Measure the blood pressure and take the vital signs The 1st change will be increase in the heart rate, BP drops after 25% blood volume loss. • Apply direct pressure to external nose to decrease bleeding • Use vasoconstricting spray mixed with Tetracaine in a 1:1 ratio for topical anesthesia • identify the bleeding source

Assessing Blood Loss	Blood Loss Management
1. Clinical Assessment	1. Blood Loss Control
2. Laboratory Assessment The blood loss assessment in acute phase is by hematocrit level.	2. Blood Loss Replacement if a lot of blood is lost

Types of Nose 3Bleed

TYPE	ANTERIOR	POSTERIOR
AGE	Young population	Older population
PATHOPHYSIOLOGY	Nasal mucosa dryness. Most of the times recurrent	Hypertension Systemic disease Nasal septum deviation
PATTERN	Alternating (but generally less severe)	Significant bleeding in the posterior pharynx
CONTROL	Conservative management	Challenging to control
TREATMENT	<ul style="list-style-type: none"> • Localized digital pressure on the tip of the nose for minimum of 5-10 minutes perhaps up to 20 minutes • Silver nitrate cautery • Topical coagulant : collagen absorbable hemostat or other topical coagulant 	<ul style="list-style-type: none"> • IV pain medication and antiemetics • Topical anesthetic and vasoconstrictive spray for improved visualization and patient comfort • Balloon type epistaxis device (easiest) we don't like to use it because it may damage and cause mucosal laceration. • Folly catheter or posterior packs
Treatment For Refractory Cases	Anterior nasal packing use : <ul style="list-style-type: none"> • Expandable sponge packing or gauze packing Criteria: <ul style="list-style-type: none"> • Many shapes and sizes • Impregnated with antibacterial agents 	

Type Of Packing	Anterior Packing	Posterior Packing
Image	 <p>ANTERIOR NASAL PACKING</p>	
Packing Duration	Actual duration will vary according to the patient's particular need At least 24-48 Hours (until there is no bleeding)	At least 48 -72 hours (until there is no bleeding)
Specific Consideration		If balloon is used , advised tapering deflation of the balloons (most successful when volume is documented)
General Consideration	<ul style="list-style-type: none"> • Best to place the patient on P.O. Antibiotic to decrease risk of sinusitis and toxic shock syndrome • Advice patient to avoid straining, bending forward or removing packing early. • Most patients are treated as outpatients. • Some of the packing is absorbable while other types are not (we use absorbable types in hemophilic patients) • Strongly consider admission in case of : <ol style="list-style-type: none"> 1. Posterior packing, as SAO₂ should be monitored. keep patient in ICU • admission in case of : <ol style="list-style-type: none"> 1. Patient has: severe HTN, CAD, significant anemia, and give them supplemental oxygen via humidified face tent. 	

Other treatment for Refractory Epistaxis:

- Greater Palatine Foramen Block
- Septoplasty
- Endoscopic Cauterization
- Selective Embolization by interventional radiologist
- Intraoral Maxillary Artery Ligation
- Anterior and Posterior Ethmoid Artery Ligation
- External Carotid Artery Ligation

Preventive Measures

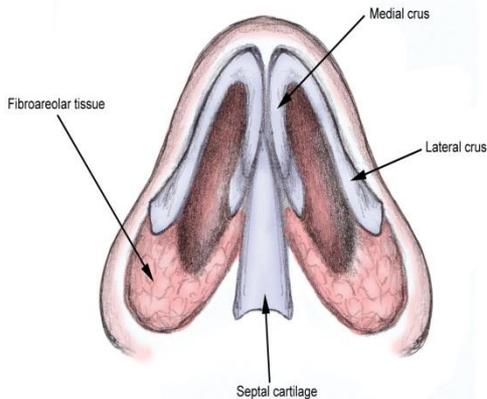
- Keep allergic rhinitis under control
- Use saline spray frequently to clean and moisture the nose
- Avoid forceful nose blowing
- Avoid digital manipulation of the nose with fingers or other object
- Use saline based gel intranasal for mucosal dryness
- Consider using a humidifier in the bedroom.
- Keep vasoconstricting spray at home to use **only during epistaxis.**

The Nasal Septum:

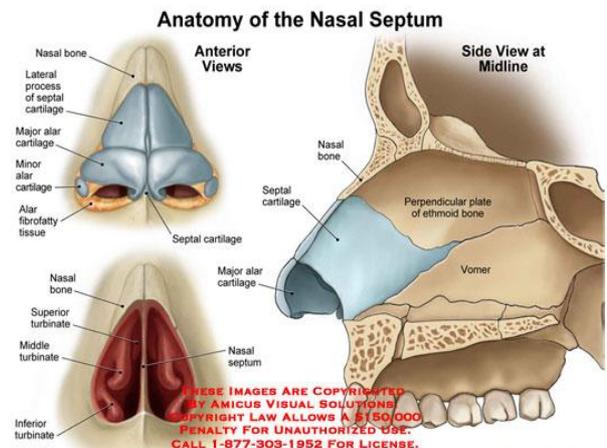
- Cartilaginous Vault
- Bony Vault
- The Membranous Septum(Mobile Septum)

Cartilaginous Septum

- 1- Septal (Quadrilateral) Cartilage
- 2- The Vomeronasal Cartilage (small one)
- 3- Medial Crura Of The Alar (Lower lateral) Cartilages (anterior part)

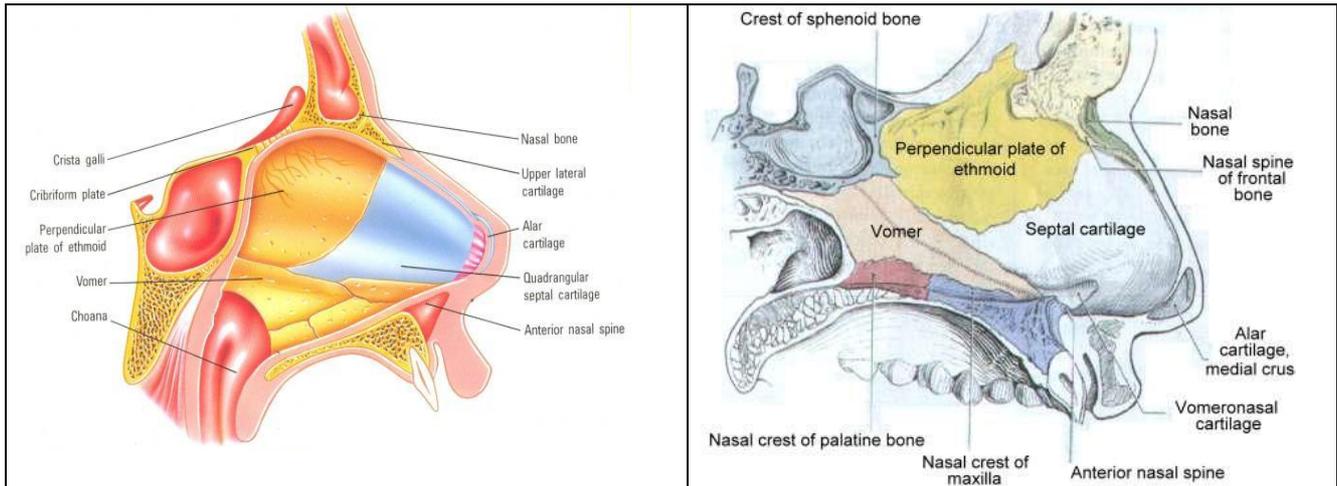


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Bony Vault

- 1- The Vomer
- 2- The Perpendicular Plate of The Ethmoid



The Vomer

- Develops from connective tissue membrane on each side of the septal cartilage
- For the opposing lamellae of the vomer to fuse the intervening cartilage must be absorbed completely by mid adulthood.

The Perpendicular Plate of the Ethmoid (Mesoethmoid)

- The ossified upper to midline portion of the primitive nasal capsule
- Ossification completely by 17th year age (due to this in case of a nasal surgery we wait until after the age 17 (after the growth of the nose become mature)
- Replacement of the cartilaginous septum with thin bone
- At the nasal roof it articulate with cribriform plate and extend at Crista Gallia

Cribriform Plate

- Fibrous structure until it become ossified in the third year
- Firm union between the lateral and medial Ethmoidal elements.

Also The Nasal Septum Composed Of :

The Membranous Septum (Mobile Septum)

- Anterior to the end of the septal cartilage
- It is formed by skin and subcutaneous tissue of the nasal columella

Septal Articulating Points (fixing points)

- Nasal spine of the frontal bone
- Rostrum of the sphenoid
- Crests of the nasal , maxillary , and palate bone

Inequality of Growth

- Buckle laterally, creating the posterior **septal spur** (excessive bony projection)
- Even in the normal, fully matured septum, elevation and ridge like **protuberance** interrupt the smooth surface.



Septal Spur

Most times the septum doesn't grow equally on both sides.

When there is a nasal spur on examination there will be only convex part in one side of the nose, whereas in the deviation there is concavity in one side and the other side will be convex.

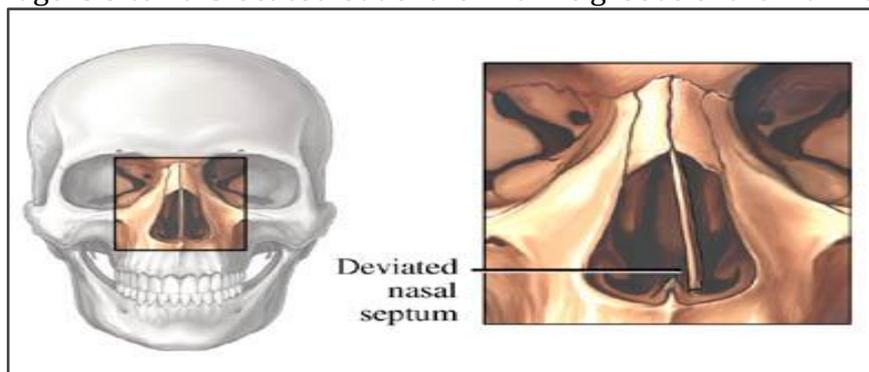
A spur can occur if a nose is roomy (big) and it wants to narrow it to create turbulence.

There is a difference between dislocation and deviation: dislocation means it is out of its place and is usually anteriorly.

Most of the time septum deviated anteriorly.

Septal Positions

- Septum **bows** entirely into one nasal cavity
- Double bucking occurs with an **s-shaped** deformity affecting both cavities
- The septal cartilage is often **dislocated** out of the midline groove of the maxillary crest.



Asymmetry of the Nasal Septum

- Approximately 80% of humans have some deformity of the nasal septum.
- Any or all parts of the septum except for **the posterior free border at the choanae**, where it is always midline.
- A common area of the deflection is along the **articulation** between the vomer and the perpendicular plate of the ethmoid, especially when these two bones are separated for considerable distance by the sphenoidal process of the septal cartilage.

Septal Deviations:

- **Types:** traumatic and congenital
- **Common defect:** spur, crest, dislocation of the quadrangular septal cartilage, buckling
- **Signs and symptoms:** **unilateral nasal obstruction** (may be bilateral), hyposmia, **epistaxis**, recurrent sinusitis.
- **Diagnosis:** Anterior Rhinoscopy, or endoscopy.
- **Spurs:** Ridge like deflections and spurs may occur there, even if the rest of the septum is straight.
- **Surgical Management Of Septal Deviation:**
 - **Submucosal Resection:** Obstructing cartilaginous and bony portion of the nasal septum is removed.
 - **Septoplasty:** Removal of the deviated cartilaginous and bony septum with reinsertion after remodeling and repositioning (preserves support system, less risk for perforation).

Septoplasty

Indications:

- Nasal Obstruction (Deviated Nasal Septum)
- Epistaxis
- Chronic Sinusitis (when the septum is obstructing)
- Access for transeptal sphenoidectomy,
- headache from the impacted spur
- septal neoplasia (rare)

Complications:

- Bleeding, perforation, saddle nose deformity, cribriform plate fracture (**CSF leak**), septal hematoma, anosmia, septal abscess.

Surgical correction of nasal valve deformities

- 1- Widening The Valve Apex :
 - Spreader Graft
 - Osteotomies
- 2- Widening The Valve Angle
 - Flaring Suture
 - Suspension Sutures
 - Butterfly Graft
- 3- Stiffening The Lateral Curvature
 - Alar Batten Graft
 - Lateral Crural J-Flap

Synechia:

adhesion between septum and lateral nasal wall, because there are 2 raw surface areas between the turbinate and the septum sometimes if there are 2 raw surface areas we need to put a sheath to prevent their adhesion

Causes

Manifestation

Treatment: remove the synechia and put a sheath in there.

Septal Perforation:

Cause:

- Septoplasties (most common cause >50%)
- Infections
- Tertiary Syphilis
- Trauma (nose picking)
- Granulomatous
- Vasculitis
- Cocaine Abuse
- Corticosteroid Nasal Spray

Manifestation:

- Obstruction sensation from turbulent flow , may be asymptomatic
- Crusting
- Epistaxis
- Whistling (if small size)

All these symptoms are not found in the posterior perforation

Diagnosis:

- Anterior rhinoscopy
- Biopsy of granulation tissue or abnormal mucosa

Treatment:

- 1- Saline irrigation , emollients
- 2- Consider sliding or rotating mucoperichondrial flaps with or without a fascial graft; contraindicated for large perforation (approximately >2cm of vertical height) cocaine abusers, malignancy, granulomatous or vascular diseases
- 3- Silastic button

Saddle Nasal Deformity:

Cause

Manifestation

Treatment: rhinoplasty

Septal Hematoma:

- **Pathophysiology:** Hemorrhage (usually from trauma) which collects beneath mucoperichondrium and mucoperiosteum resulting in elevation of the mucosa off the cartilaginous septum (loss of vascular supply).

Symptoms and signs:

- Unilateral obstruction (it may be bilateral)
- Septal swelling

Complications:

- Septal perforation.
- Cavernous sinus thrombosis.
- Saddle nose deformity.



- **Abscess formation.**

Treatment:

- Immediate evacuation of the trauma. (both sides)
- Nasal packing
- Antibiotic prophylaxis

emergencies nasal obstruction

DIAGNOSIS	EMERGENCY	COMPLICATIONS
-Septal Hematoma	Elevation of mucosal periconderum with cartilage of a saddle nose deformity devascularization .	Septal cartilage necrosis development
-Septal Abscess	Intracranial extension of the infection..	Septal cartilage necrosis , development of saddle nose deformity,cavernous sinus thrombosis and intracranial infection ..
-Mucormycosis FATAL	Tissue destruction	Extension to the brain or orbit

Functional Endoscopic Sinus Surgery:

- Medialization of the middle turbinate
- Excise uncinat process
- Anterior then posterior ethmoidectomy
- Sphenoidectomy
- Frontal recess sinusectomy
- Create maxillary antrostomy

Indications for endoscopic sinus surgery:

Sinusitis	Para nasal sinus	Nose	Ophtha
<ul style="list-style-type: none"> Chronic sinusitis, complicated sinusitis, Recurrent acute sinusitis Failed medical management of acute sinusitis Obstructive nasal polyposis Sinus mucoceles Fungal sinusitis 	<ul style="list-style-type: none"> Transsphenoidal hypophysectomy CSF leak repair 	<ul style="list-style-type: none"> Remove foreign bodies Tumore excision Chonal atresia repair Control epistaxis, Seproplasty, Turbinectomy 	<ul style="list-style-type: none"> Orbital decompression, Dacryocystorhinotomy, Orbital nerve decompression, Grave's ophthalmolgy

Surgical treatment guide:

- Complete extirpation of all the diseases
- Permanent drainage and ventilation of the affected sinuses
- Postoperative access to previously diseased areas

Extended FESS:

- CT guided FESS
- Power instrument
- Min FESS

Post operative care:

- sinus packing
- oral antibiotic for a minimum of 2 weeks
- aggressive nasal hygiene to prevent adhesions (saline irrigation)
- nasal steroids
- nasal debridement at 1, 3, and 6 weeks

Excellent results:

- 71% normal at one year
- Meta analysis 89% success with high recurrence
- with 0.6% complications

FESS orbital complications:

- blindness
 - indirect injury (retrobulbar hematoma)
 - direct injury to the optic nerve
- orbital fat penetration
 - increase risk of retrobulbar hematoma
 - treatment: recognize orbital fat (orbital fat floats), avoid further trauma, may complicate FESS, avoid tight packing
 - observe for vision changes, proptosis, or restricted ocular gaze.

Turbinate hypertrophy

Causes: infection, compensation, dysfunctional, allergies

Manifestations: nasal obstruction, mouth breathing, cause manifestations