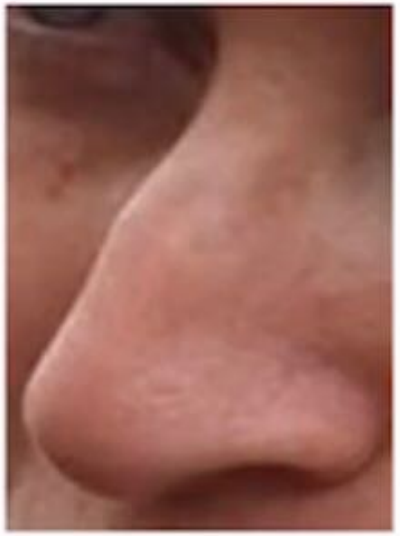


NOSE III&IV

Prof Fatma Alanazy

Nose III

Objectives of the lecture

- Acute & chronic sinusitis(causes, clinical & management)
- Fungal sinusitis (in brief)
- Complication -sinusitis (classification, management & with special attention to **orbital complications,**
- Investigation & general treatment)
- Radiology illustration

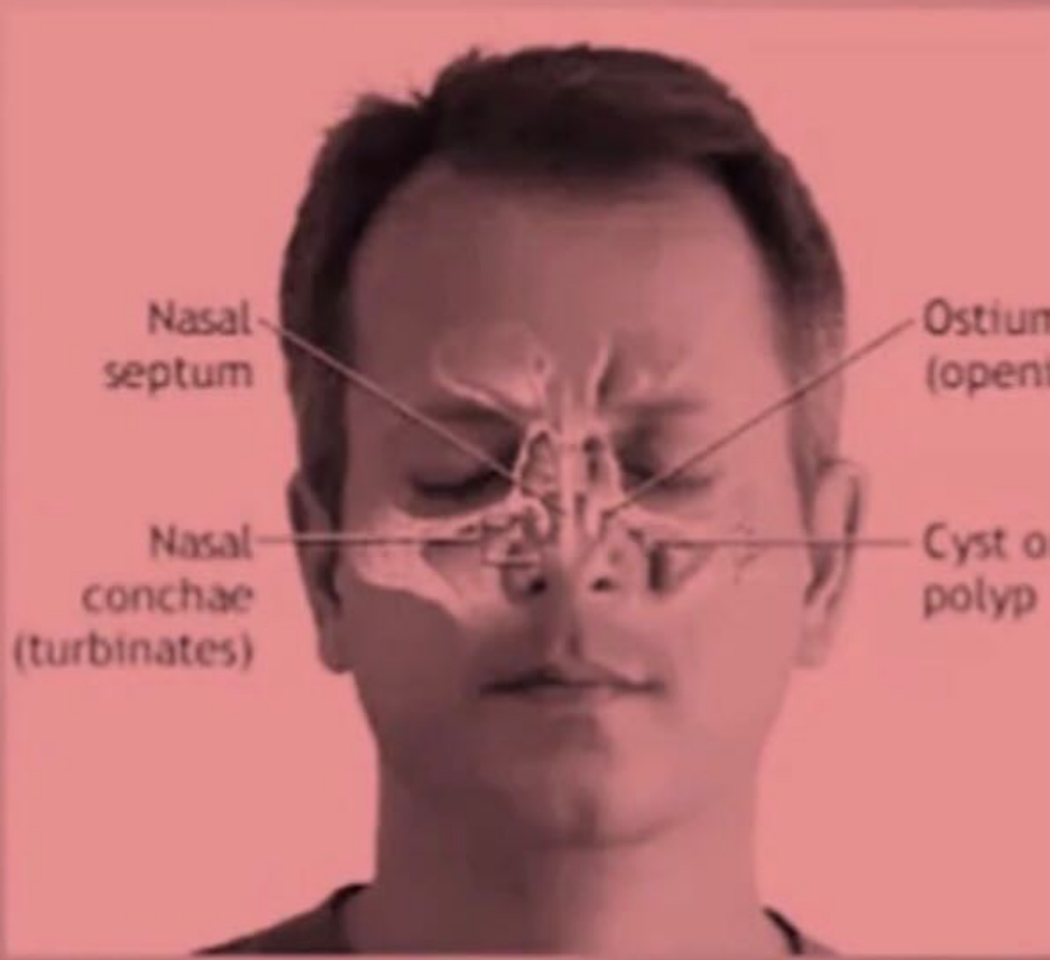
Different types of Sinusitis

Acute sinusitis: A sudden onset of cold-like symptoms such as runny, stuffy nose and facial pain that does not go away after 10 to 14 days. Acute sinusitis typically lasts 4 weeks or less.

Subacute sinusitis: An inflammation lasting 4 to 8 weeks.

Chronic sinusitis: A condition characterized by sinus inflammation symptoms lasting 8 weeks or longer.

Recurrent sinusitis: Several attacks within a year.



Sign and symptoms

-**ACUTE SINUSITIS**

-fever and cough (usually in children)
-**nasal obstruction**
-**purulent nasal discharge** (anterior or posterior)
-**facial pain and tenderness**
-reduced sense of smell
-**headache** (worse or leaning forwards)
-dental pain
-fatigue
-hoarseness (pharyngitis)
-halitosis
-clicking in ears
-cough

- **Clinical exam**

- anterior rhinoscopy

-nasal endoscopy

- **Microbiology**

-an endoscopic guided culture can be performed

RX

Antibiotics:

First line: amoxil, clarithromycin or azithromycin.

Second line: Amoxi-clav, flouroquinolone.

Supportive:

Intranasal corticosteroids (nasonex)

Analgesia (non- narcotic)

sinus irrigation

decongestant (local and systemic)

hydration

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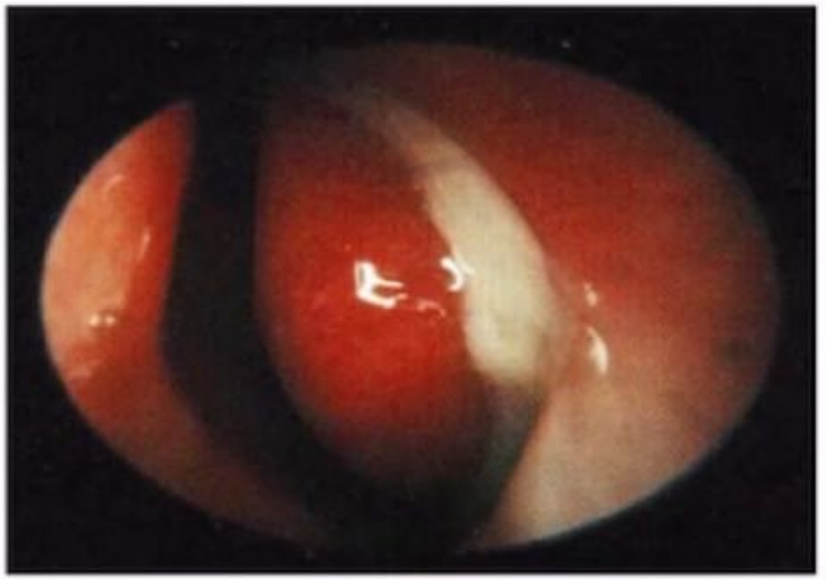


Treatment options

-Most patients improve **spontaneously** or after a course of **conservative** management.

-Patients with **no response**, or who develop **recurrent** symptoms should be consider for more aggressive **medical management** such as

*antihistamines

*prolonged course of antibiotics

*decongestants

*nasal steroids or vasoconstrictors

-**Surgery** is reserved for patients who **fail 3 to 5 months** of medical management or have complications

Chronic sinusitis: General

- One of the most common disease with direct impact on the QOL of the patient.
- Persistent inflammation of the nose and paranasal cavities that lasts more than 12 weeks.

Chronic sinusitis: Aetiology

- Obstruction: tumors, trauma, tubes, anatomical, etc
- Allergy and atopy (asthma, ASA sensitivity, allergic rhinitis)
- Defects in ciliary clearance (PCD) and quality of mucus (CF)
- Hormonal (puberty and pregnancy)
- Irritant (smoking, pollutant, acid reflux)
- Immune deficiency
- Systemic (Wegener, Churg-Strauss syndrome, sarcoidoisis)
- Dental

Chronic Sinusitis: Types

- Chronic Rhinosinusitis (CRS)
  - With nasal polyposis: CRSwNP
  - Without nasal polyposis: CRSwoNP
- Allergic fungal Sinusitis

Chronic Sinusitis: Clinical PODS

- Pain/Pressure: facial (frontal, periorbital, cheek, dental).
- Obstruction: unilateral vs. bilateral, complete vs. partial.
- Discharge: anterior vs. posterior, thick vs. thin, clear vs. muco-purulent
- Smell: anosmia vs. hyposmia,

Chronic Sinusitis: Physical exam

- Facial tenderness
- Mucosal oedema, erythema, purulent discharge, polyps
- Causative issues: septal deviation hypertrophied inferior turbinates
- Dental exam for tenderness and dental hygiene
- Orbital, cranial nerves examination

IMAGING

Clinical indications for diagnostic imaging.

- **Not indicated** in acute, uncomplicated rhinosinusitis or to confirm the resolution of the infection.

- The goal of sinus imaging is to visualize the sinus to determine if there is an underlying anatomical disorder contributing to the persistence or recurrence of symptom.

Plain (x-ray) sinus films

-**Rarely indicated.**

-Plain films don't differentiate the etiology (infectious vs. non infectious).

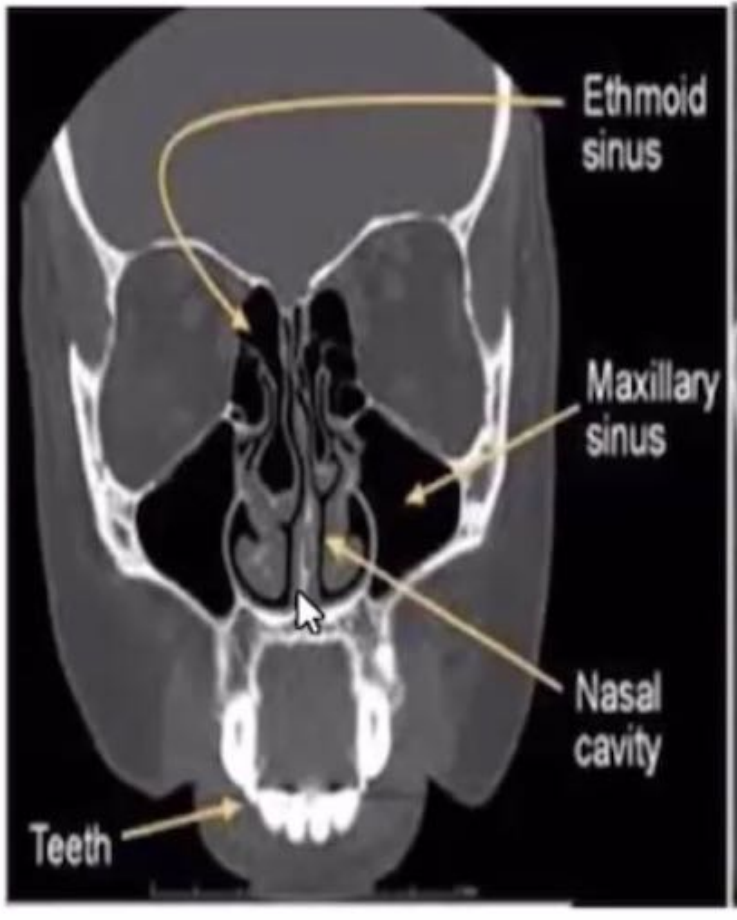
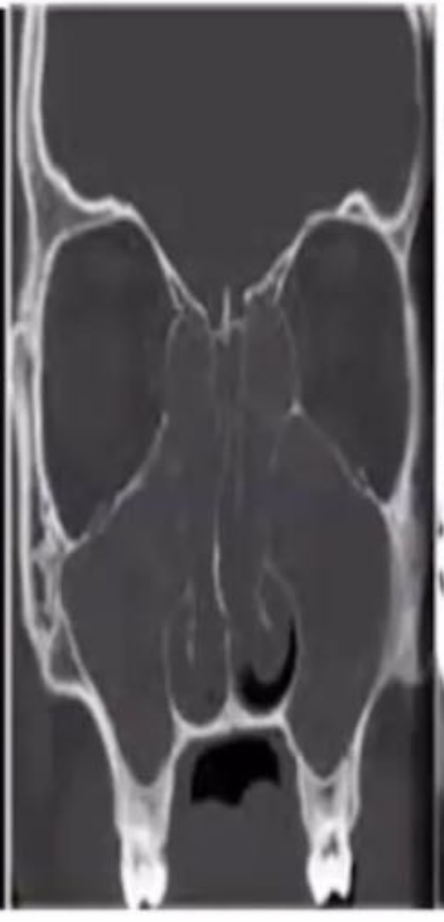
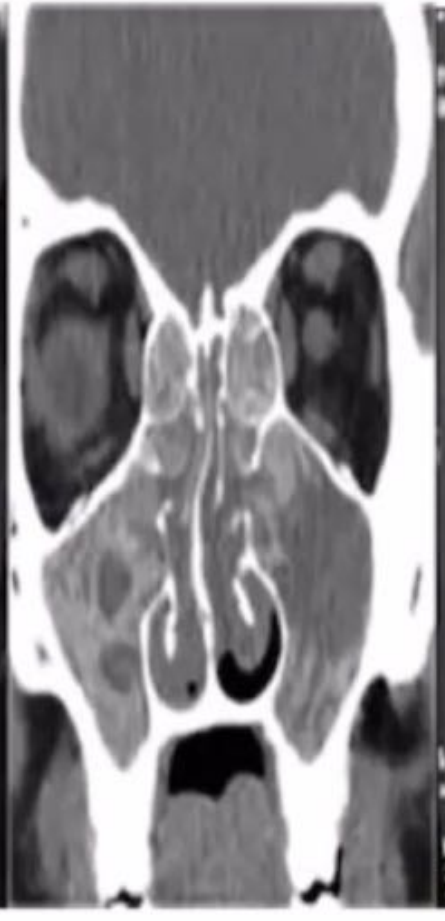
-Correlate poorly with clinical events

-Over 80% of children with persistent respiratory symptoms have abnormal findings on plain films.

-There is poor correlation between x-ray and C.T. scan findings.

C.T. scan indications

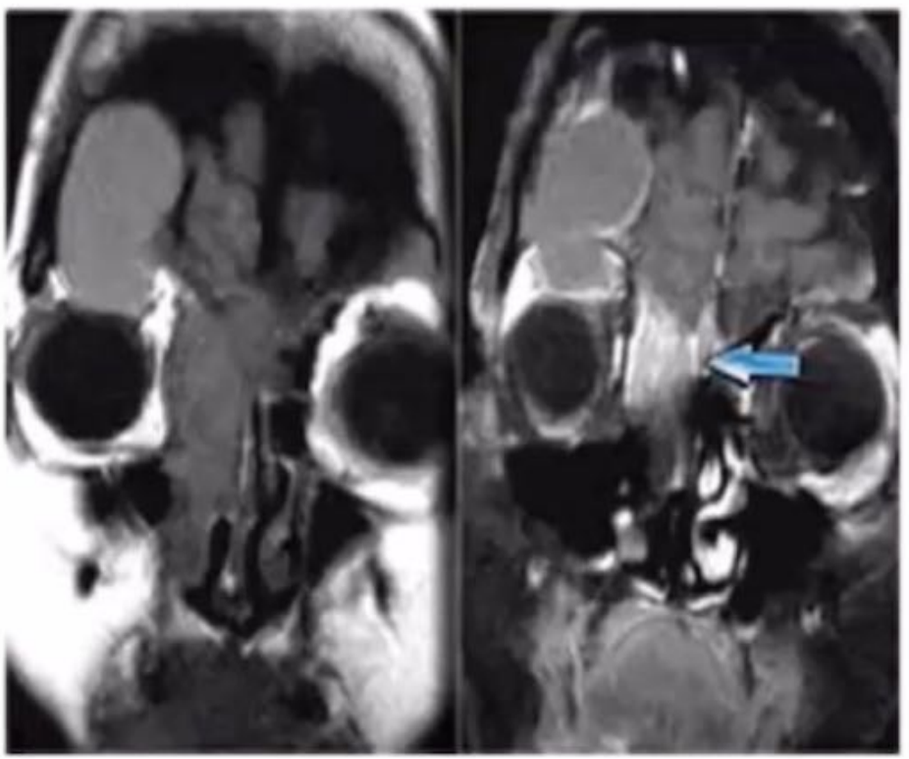
- Recurrent or chronic sinus disease **when surgery is being considered.**
- **Complicated rhinosinusitis** with signs of extension beyond the bony sinus.
- Bony changes of chronic inflammation from osteitis.
- Recurrent or persistent **mucoceles.**
- **Large polyps** on physical exam.
- Sinus **tumors**/malignancy.

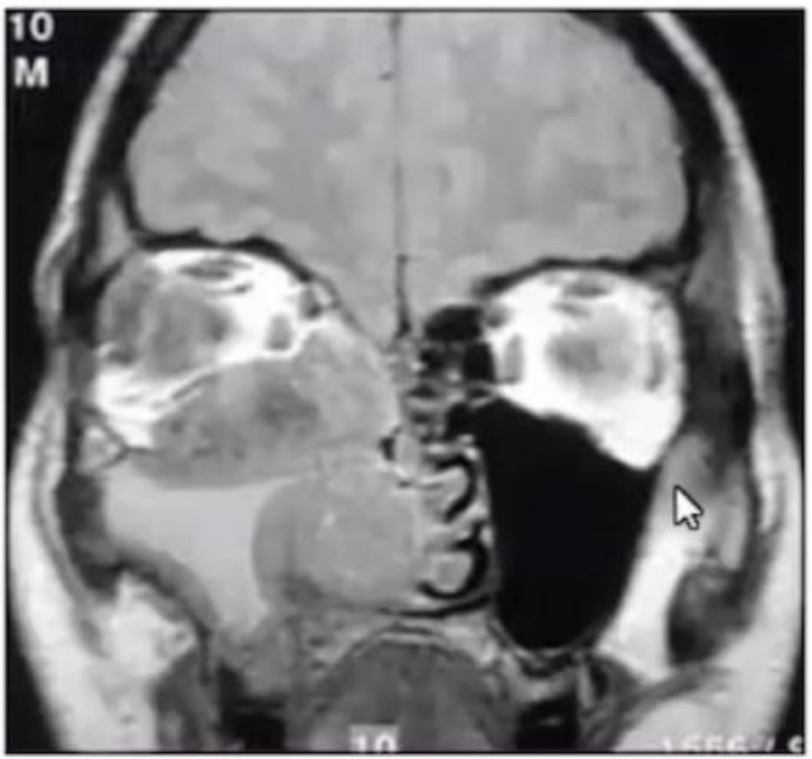

Ethmoid sinus
Maxillary sinus
Nasal cavity
Teeth




MRI OF THE SINUSES

-to evaluate suspected **intracranial or orbital involvement** of complicated of rhinosinusitis.

-mapping of sinonasal **neoplasms.**

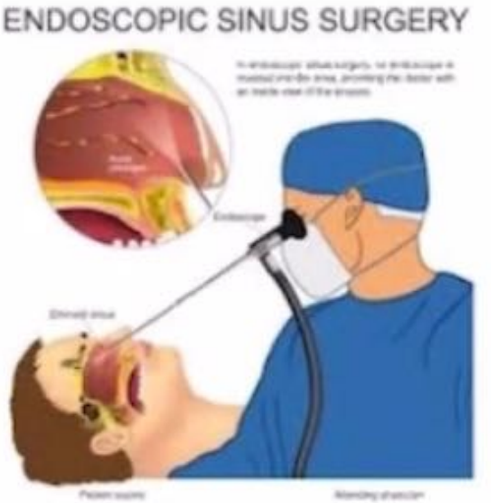




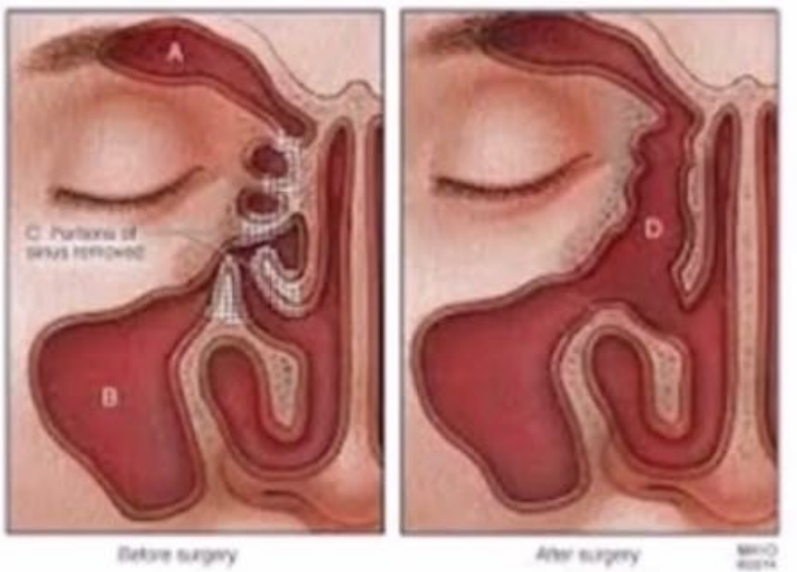
Chronic Sinusitis: treatment

- Local treatment:
  - Intra-nasal corticosteroid sprays: mainstay Rx
  - Sinus rinses: important
- Systemic treatment:
  - Po Steroids: short term (5-15 days, different regimens)
  - Po ATB:
    - First line: amoxil, clarithromycin or azithromycin.
    - Second line: Amoxi-clav, flouroquinolone.
- Surgical (FESS)
  - Functional Endoscopic Sinus Surgery

FESS



- Functional endoscopic sinus surgery
- Computer Aided surgery (navigator)



COMPLICATIONS OF Rhino SINUSITIS

Table 5. Complications of Acute Sinusitis

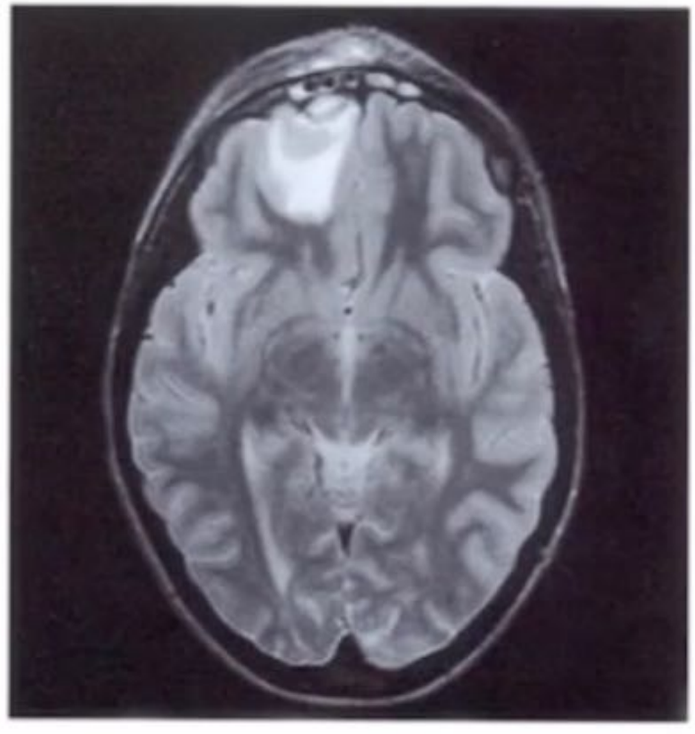
Bony	Orbital
Osteomyelitis	Cavernous sinus thrombosis
Pott's puffy tumor	Inflammatory edema and erythema (preseptal cellulitis)
Intracranial	Orbital abscess
Cavernous sinus thrombosis	Orbital cellulitis
Epidural abscess	Subperiosteal abscess
Intracranial abscess	
Meningitis	
Subdural abscess	
Superior sagittal sinus thrombosis	

Information from references 7 and 9.

1- Intracranial complications

-the **frontal** ,**ethmoid** and **sphenoid** sinuses are separated from the intracranial cavity by a layer of bone

-if infection spread it may cause meningitis or brain abscess.



2- Orbital complications

-the **frontal** ,**maxillary, ethmoid** and **sphenoid** sinuses sit immediately above, below, between and behind the eyes respectively infection of any of the sinuses may spread to the orbit causing complications from **mild inflammation** of the eyelid to abscess with possible **blindness.**

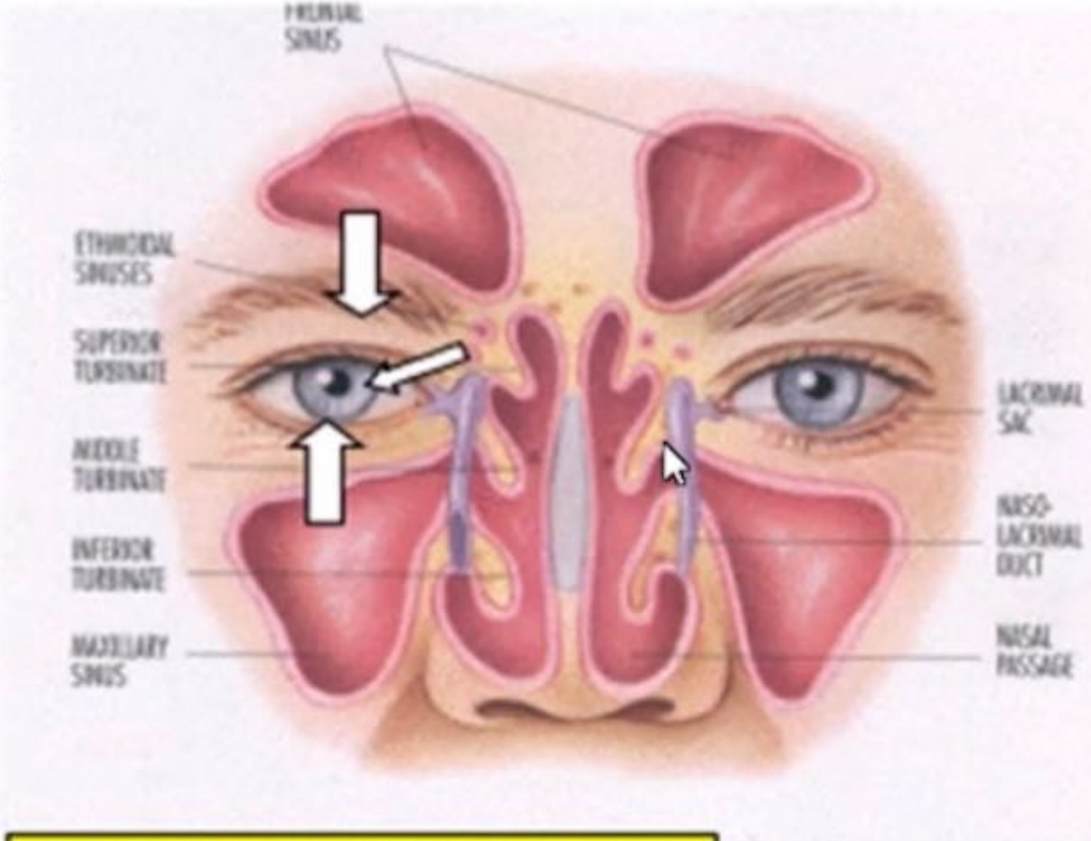
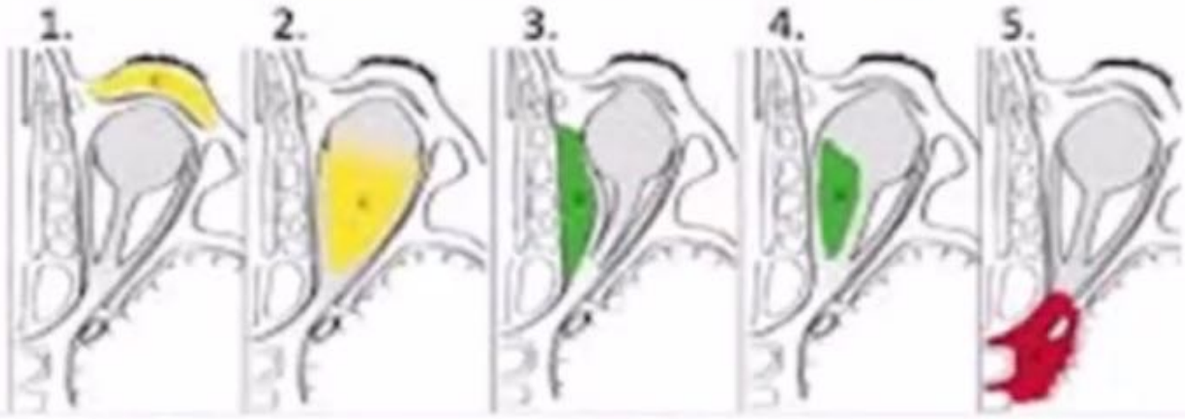


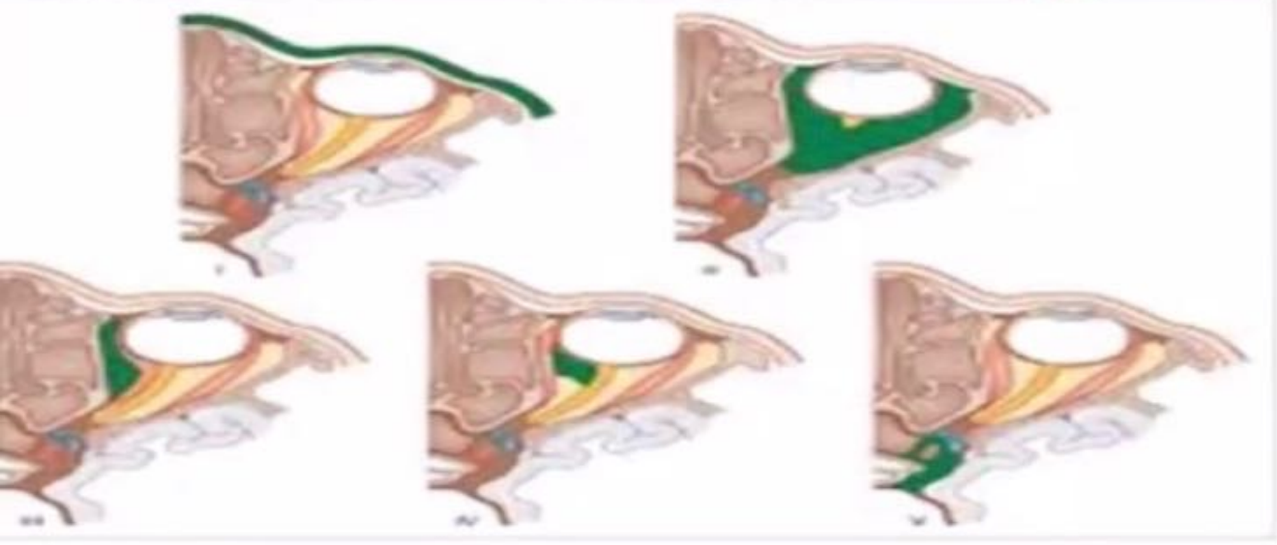
Figure 2: Intraorbital spread of sinusitis

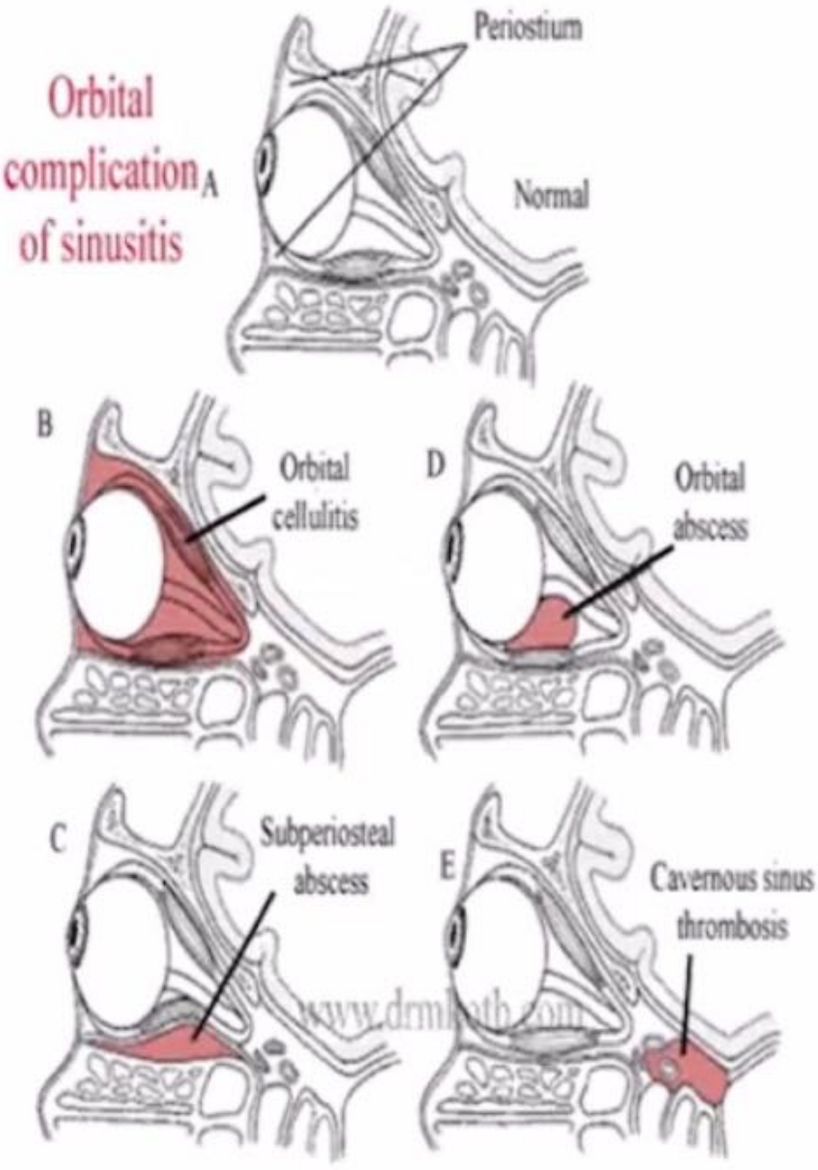
Orbital complications

Orbital Complications of Sinusitis

1. Periorbital (Pre-Septal) cellulitis (c)
2. Orbital (Post-septal) cellulitis (c)
3. Subperiosteal Abscess (a)
4. Orbital Abscess (a)
5. Cavernous Sinus Thrombophlebitis (t)





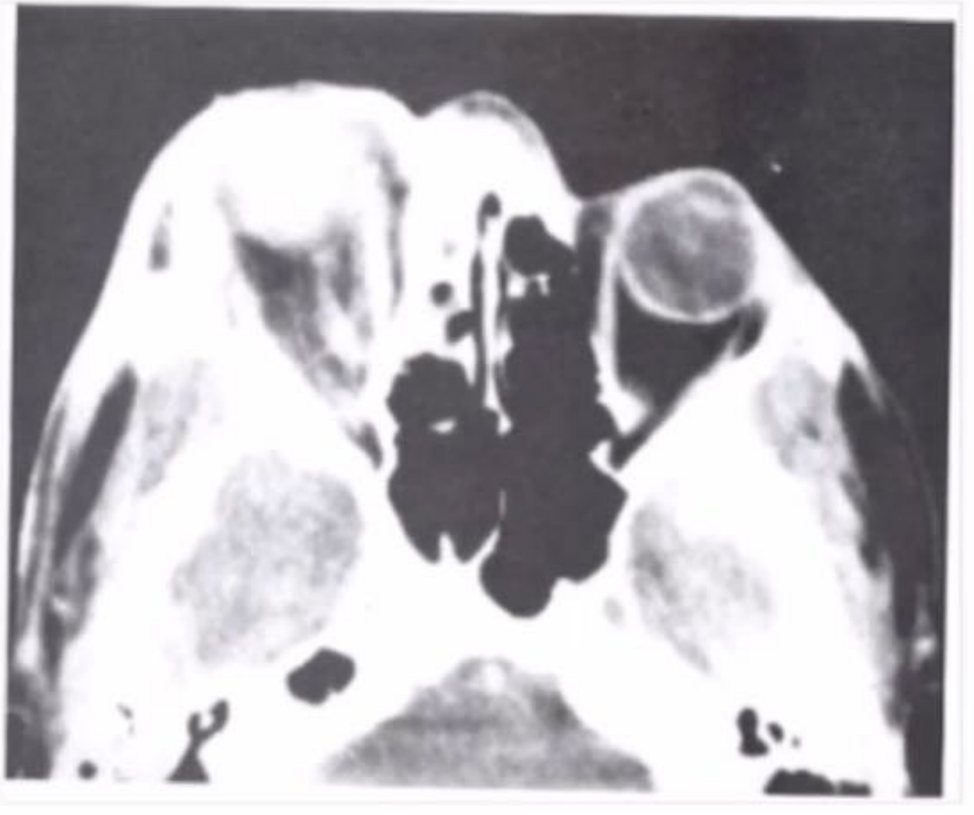


Complications

- **Stage I**
  - periorbital inflammatory edema
  - obstruction of venous channels
  - no vision loss
  - no EOM limitation

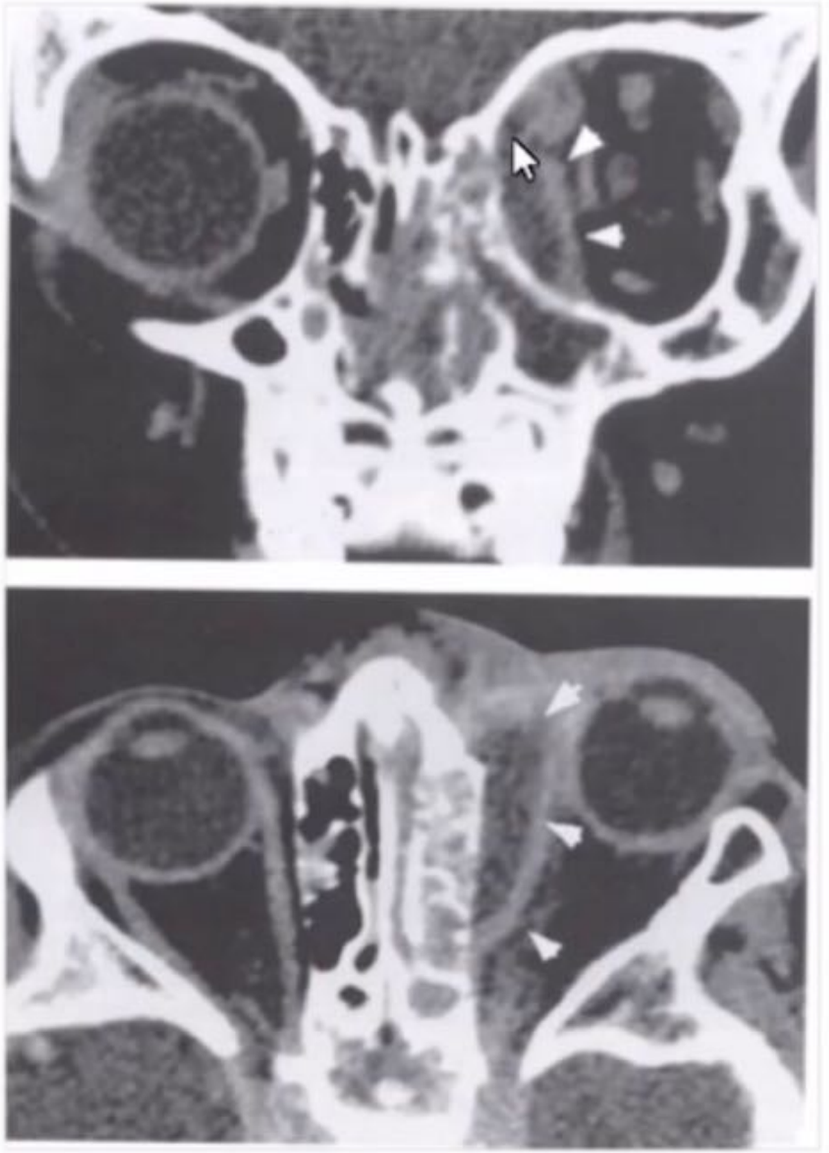
Complications

- **Stage II**
  - orbital cellulitis with edema, chemosis, proptosis, pain
  - no abscess
  - opthalmoplegia may occur due to edema or spasm
  - no visual loss



Complications

- **Stage III**
  - subperiosteal abscess
  - globe displaced laterally or downward
  - orbital cellulitis present with decreased EOM
  - vision decreased



Complications

- **Stage IV**
  - orbital abscess
  - severe proptosis and chemosis
  - usually no globe displacement
  - opthalmoplegia present
  - visual loss (13%) due to ischemia or neuritis

Complications

- **Stage V**
  - cavernous sinus thrombosis
  - progressive symptoms
  - proptosis and fixation
  - CN II, IV, VI
  - meningitis
  - high mortality

Nose IV

Objectives of the lecture

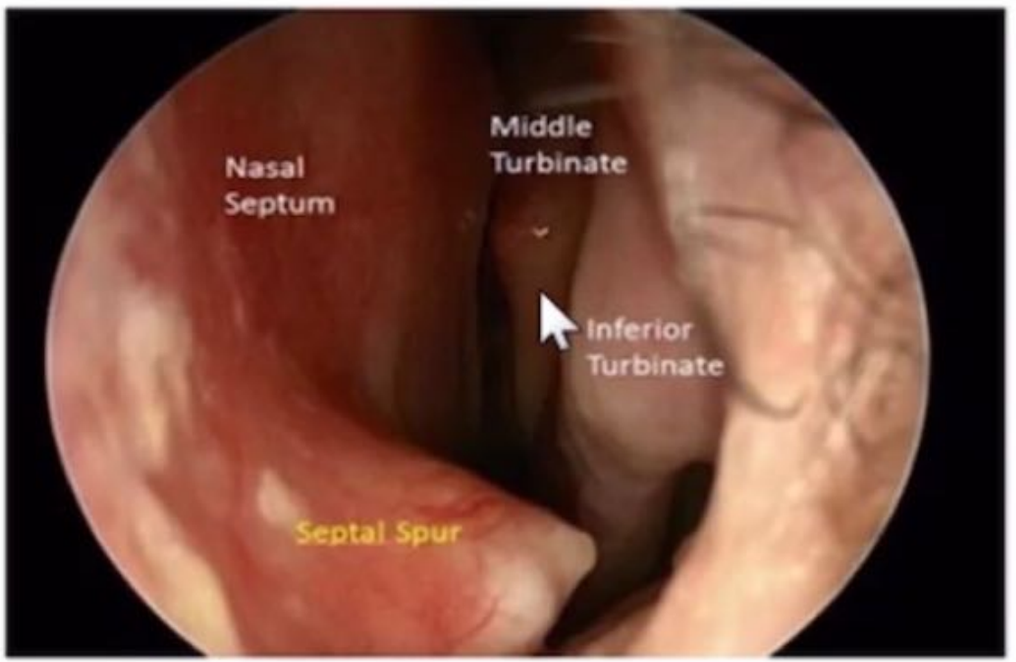
- *Diseases-nasal septum (DNS)*
- *Epistaxis (causes, clinical & mngt)*
- *Turbinate hypertrophy*
- *Nasal operations(FESS, septoplasty, turbinate surgery) in short.*

Diseases of the nasal septum

1. **Deviated nasal septum**
2. **Septal hematoma and abscess**
3. **Perforated septum**

DEVIATED NASAL SEPTUM

DEVIATED NASAL SEPTUM



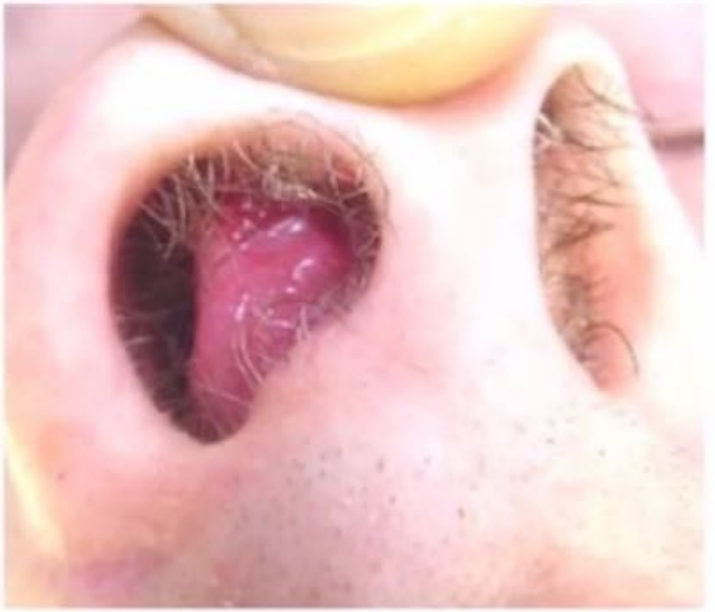
Etiology

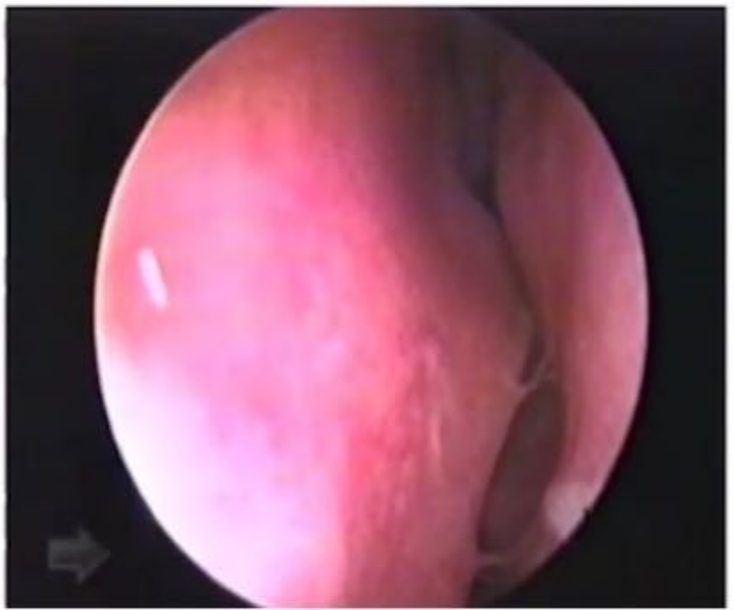
- Trauma
- Maldevelopment

Symptoms

- Nasal obstruction
- External deformity
- Crusting, epistaxis

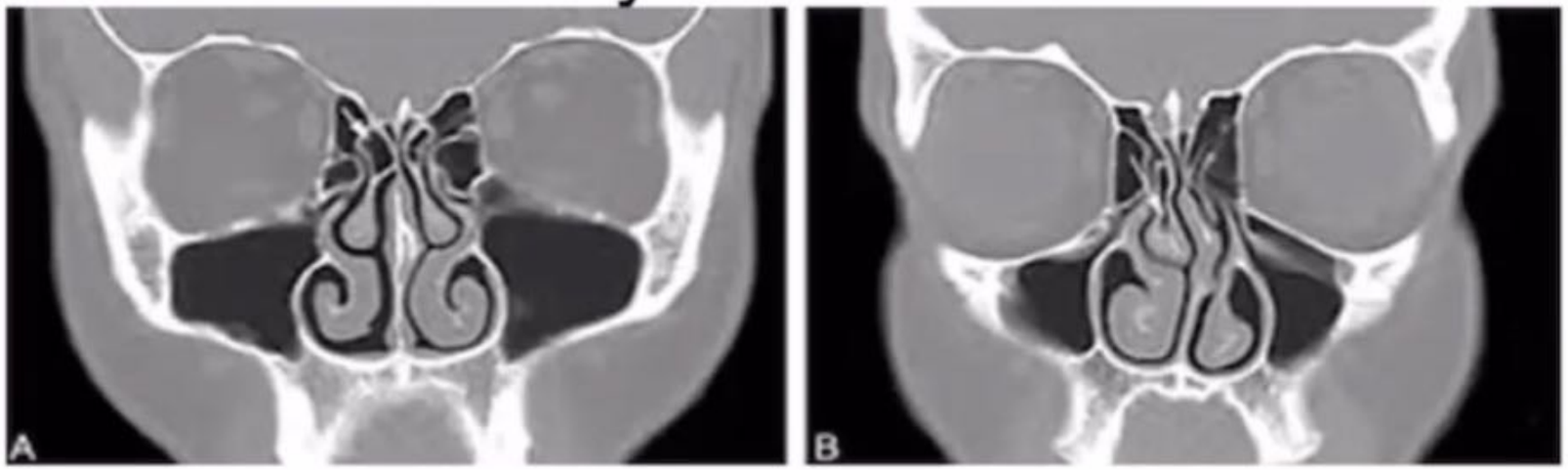
Examination

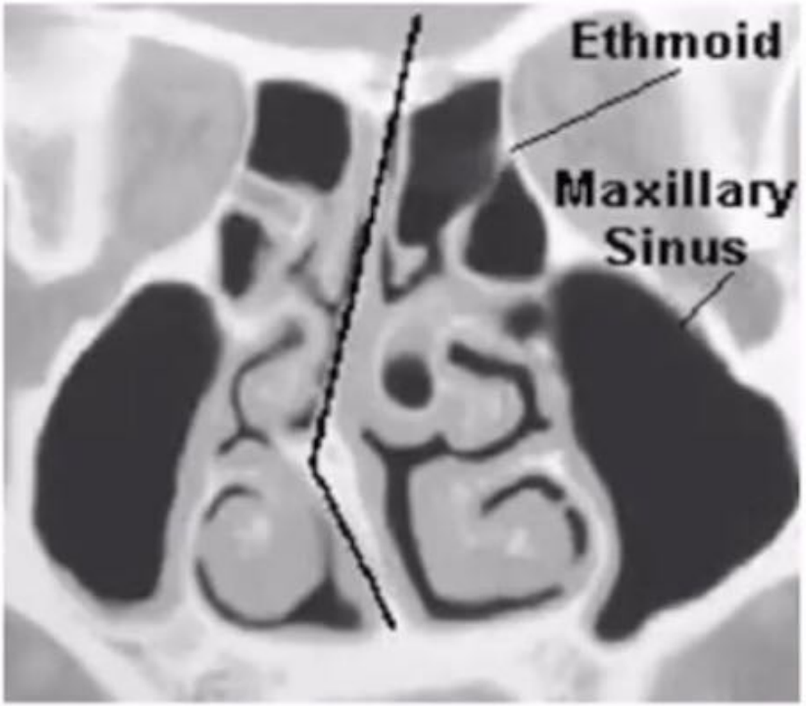




Radiology

- Unnecessary in most cases

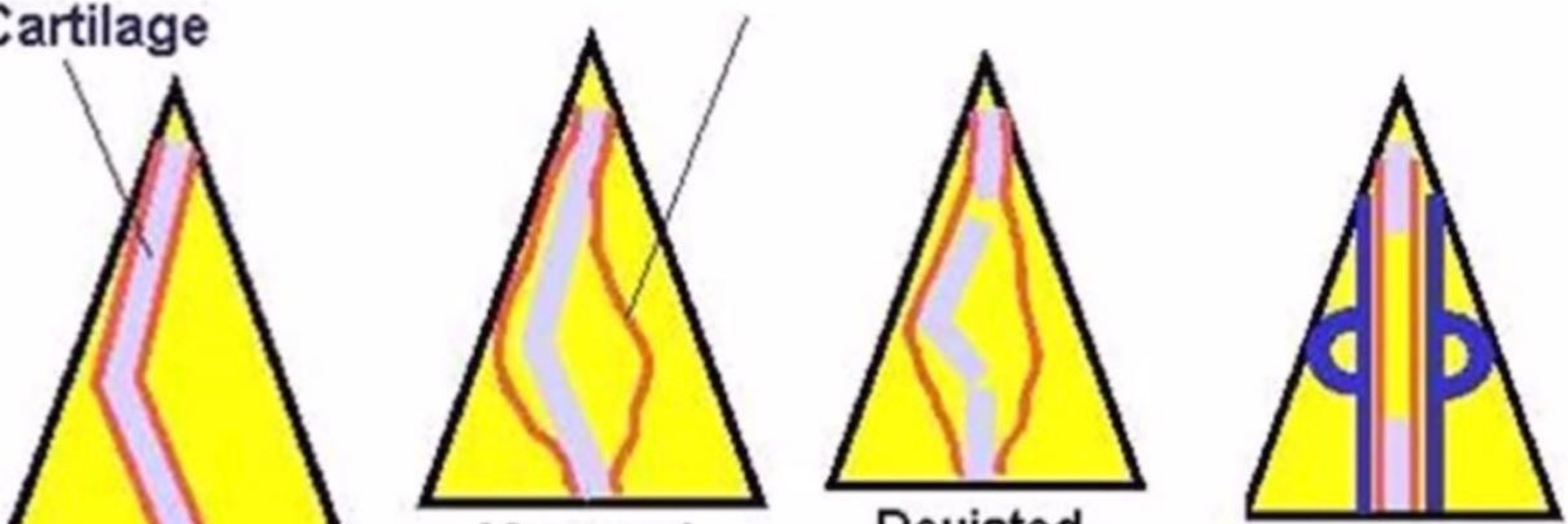




Treatment

- No treatment
- Septoplasty

Septoplasty



Septal Deviation

Mucosal lining and perichondrium are separated from cartilage

Deviated portion of cartilage removed

Lining replaced & splints (blue) inserted

Complications of Septoplasty

- Septal hematoma & abscess

Complications of Septoplasty

- Septal hematoma & abscess
- Septal perforation
- Nasal deformity

Complications of Septoplasty

- Septal hematoma & abscess
- Septal perforation
- Nasal deformity
- Synechia (adhesion)

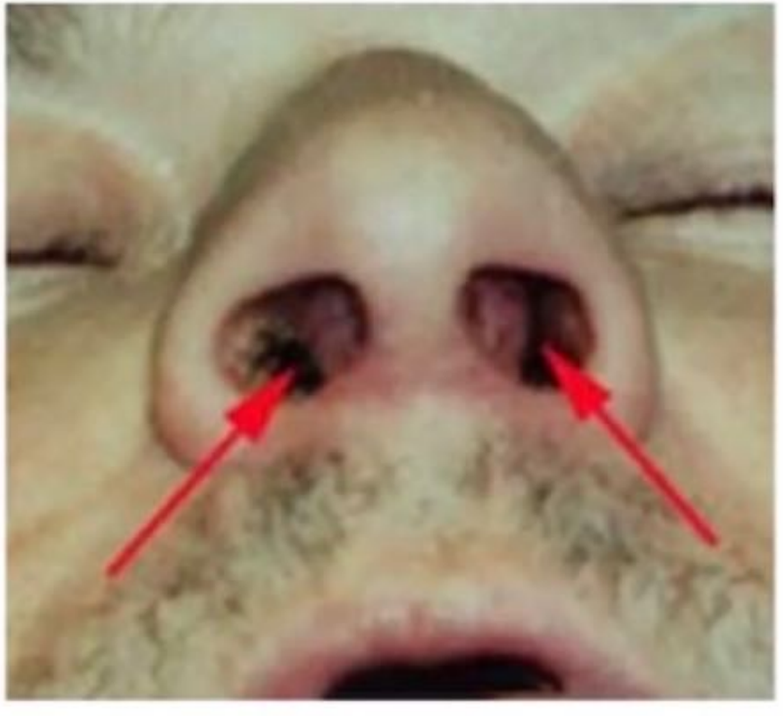
HEMATOMA OF THE SEPTUM

Dhingra: Diseases of Ear Nose and Throat, 5th Edition

Etiology

- Direct trauma
- Operative trauma
- Blood dyscrasias

Clinical Features



Complications

- Cartilage necrosis
- Septal abscess
- Permanent thickening of the septum

Treatment

- Incision and drainage
- Systemic antibiotics

PERFORATION OF SEPTUM

Clinical features

- Asymptomatic
- Crusting
- Epistaxis
- Whistling

Etiology

- Trauma
- Infections
- Drugs

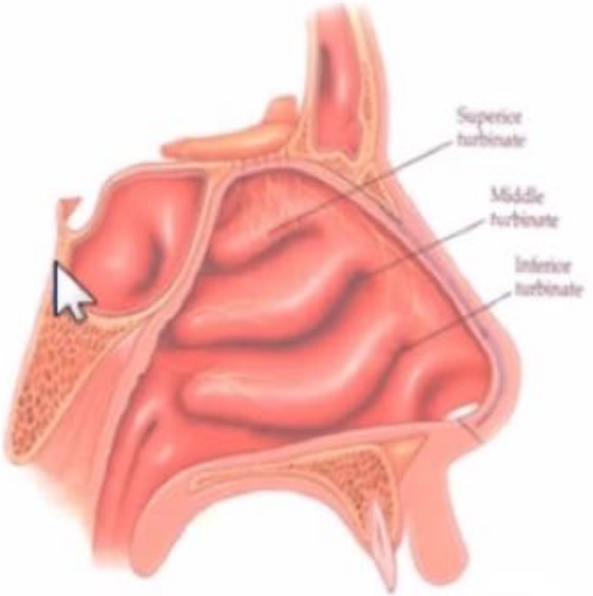
Treatment

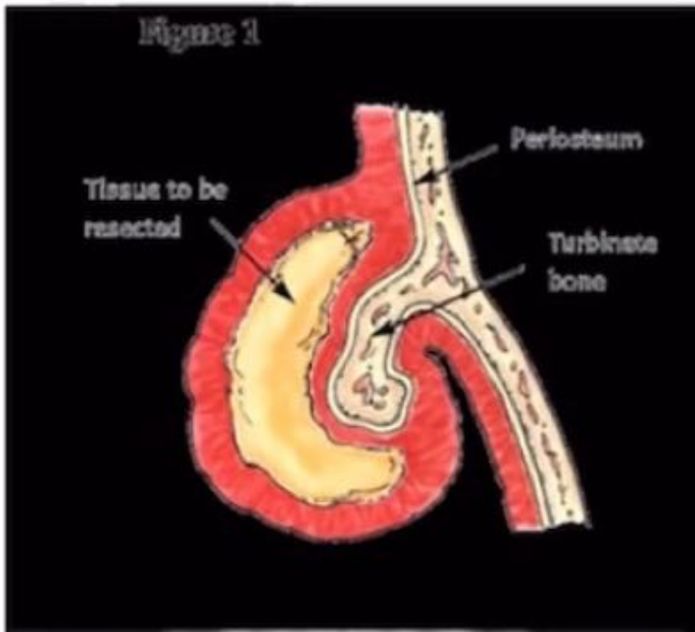
- No treatment
- Nasal wash
- Surgical closure

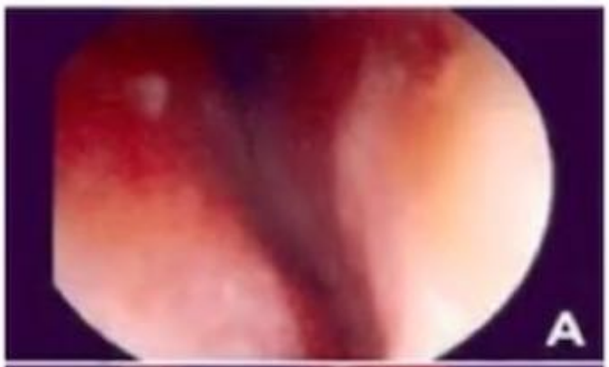
Turbinate Hypertrophy

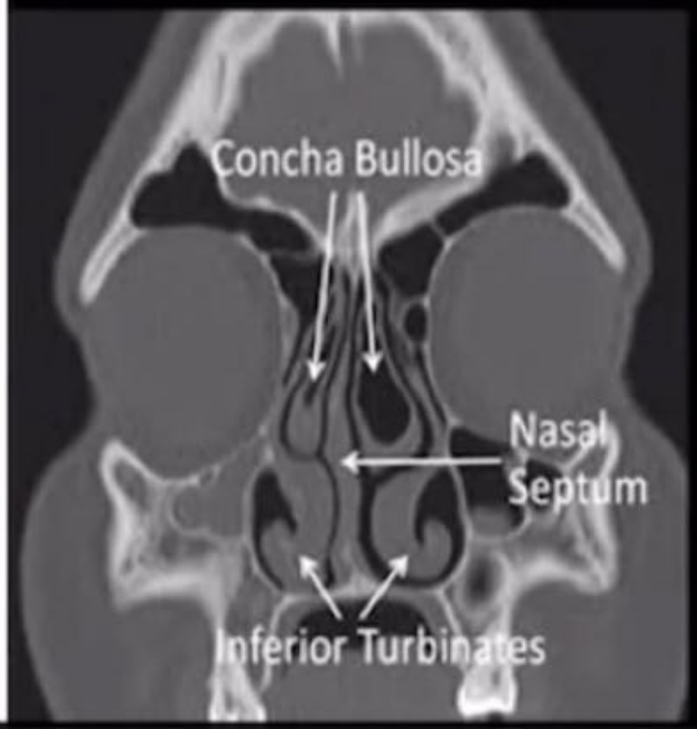
-Chronic rhinitis leading to turbinate hypertrophy

- common in both children and adult
- Infectious or non-infectious
- Allergic or non-allergic









Medical Management

- Antihistamines
- Decongestants
- Topical nasal steroids/nasal saline/sinus rinses
- Antibiotics if sinusitis
- Immunotherapy if allergic

Surgical Options

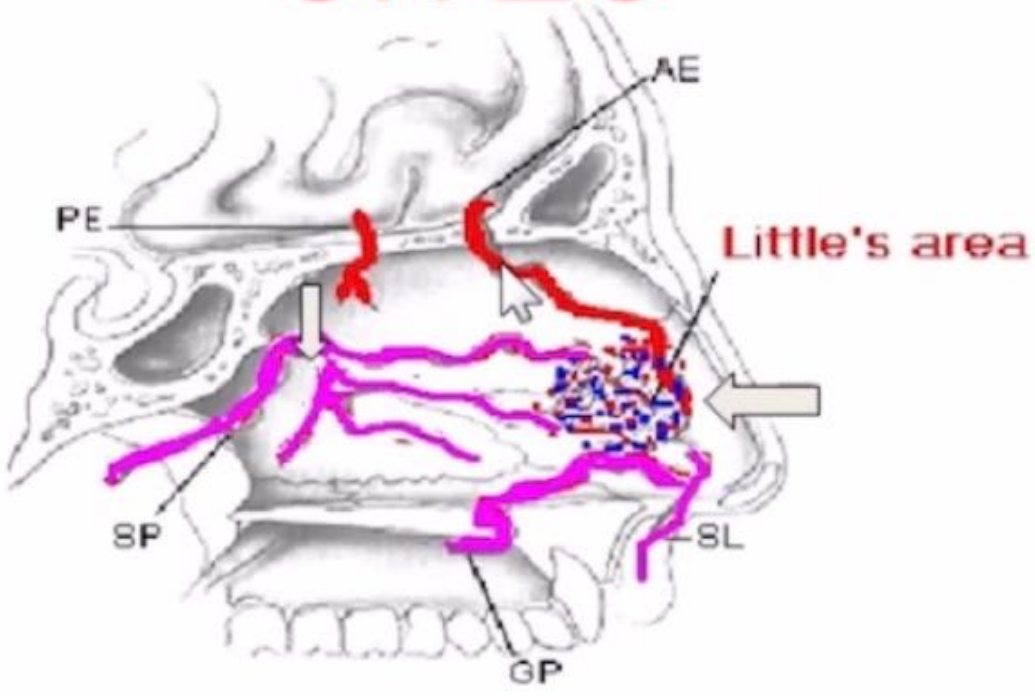
- Cold-steel turbinectomy/turbinoplasty
- Lateralization/outfracture of inferior turbinate
- Diathermy (electrocautery)
- Laser
- Cryosurgery
- Powered Microdebrider
- Radiofrequency Ablation
- Coblation

EPISTAXIS

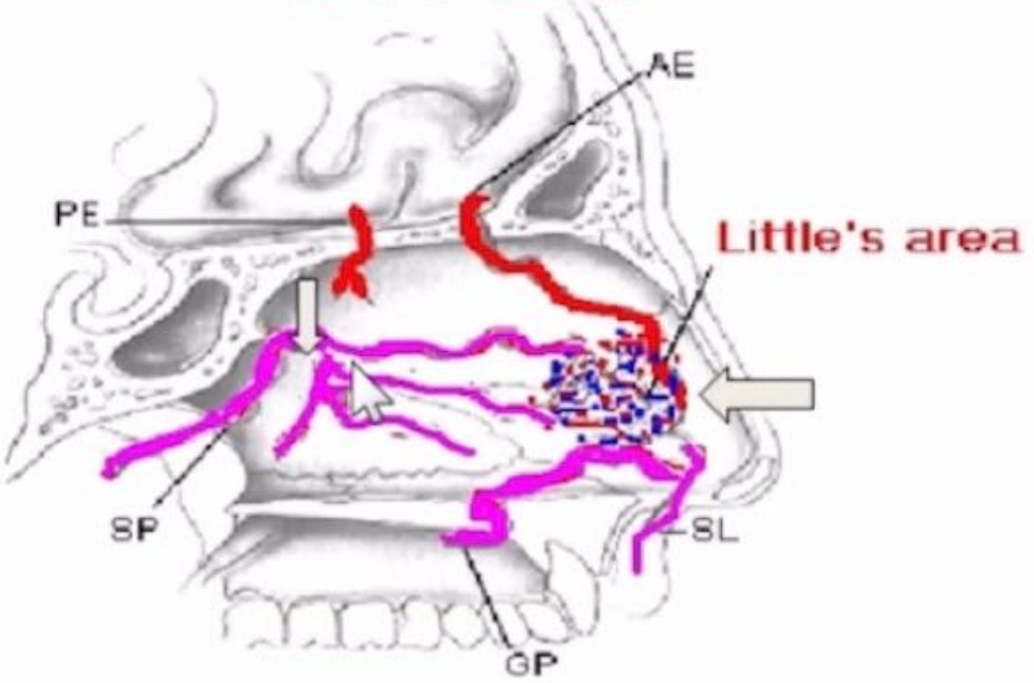
Why bleeding from the nose ?

- Vascular organ secondary to incredible heating/humidification requirements
- Vasculature runs just under mucosa
- Arterial to venous anastamoses
- ICA and ECA blood flow

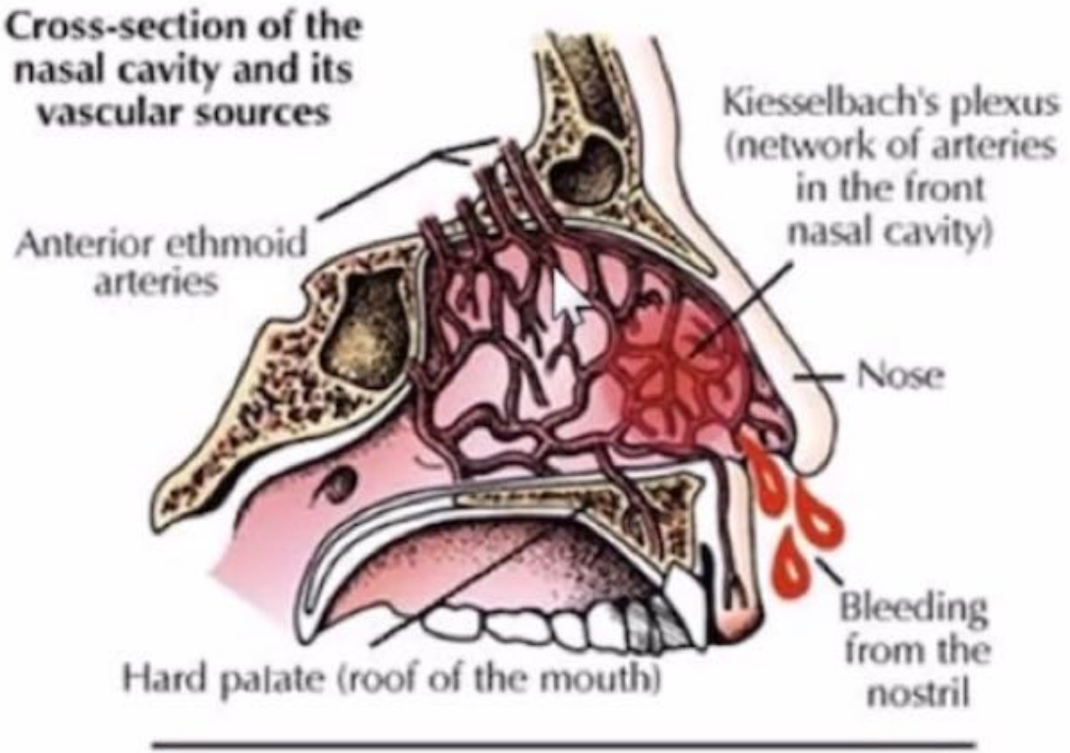
SITES



SITES

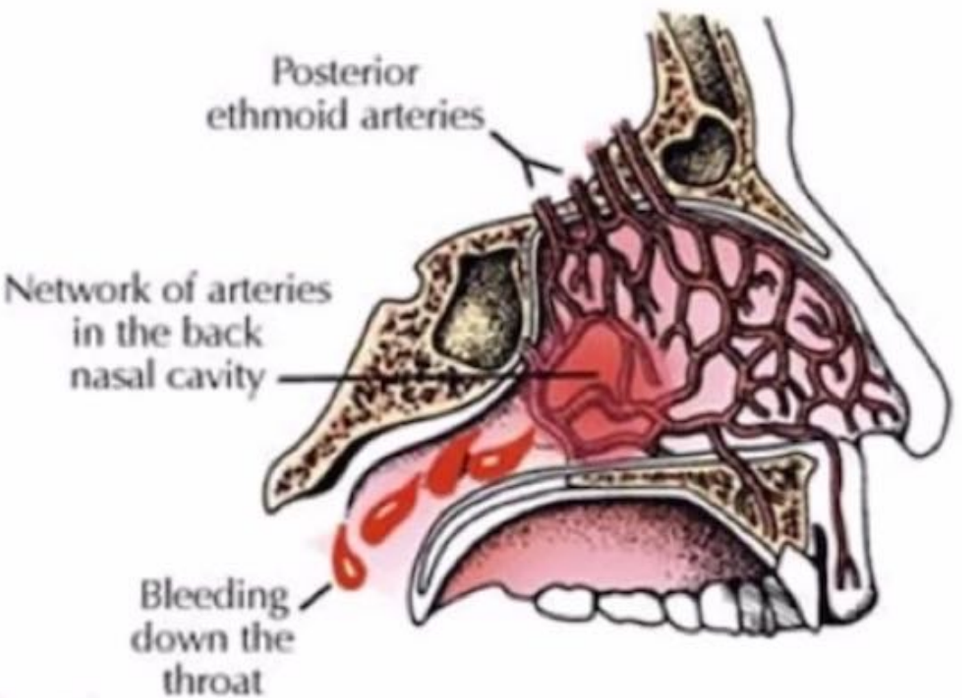


- **Anterior** (Little's area)
- **Posterior** (vicinity of sphenopalatine foramen)



Kesselbach's Plexus/Little's Area:

1. Anterior Ethmoid (Opth)
2. Superior Labial A (Facial)
3. Sphenopalatine A (IMAX)
4. Greater Palatine (IMAX)



Woodruff's Plexus:

-Sphenopalatine A (IMAX)

LOCAL CAUSES

- Acute trauma
- Chronic trauma
- Deviated septum
- Inflammation of the nose and sinuses
- Tumors
- Idiopathic

SYSTEMIC CAUSES

- Coagulation and bleeding diseases
- Atherosclerosis
- Familial hemorrhagic telangiectasia

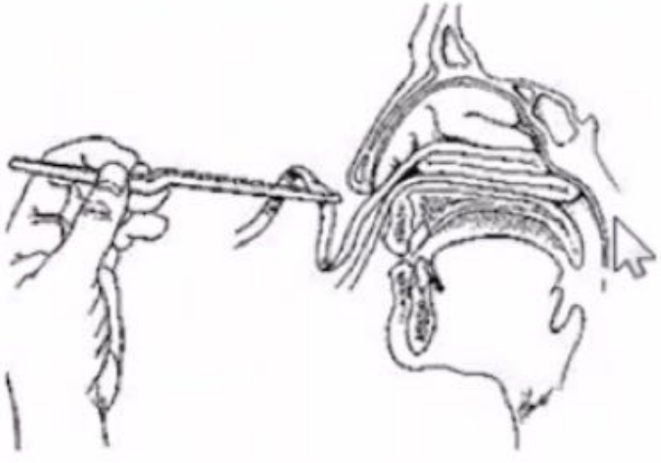
MANAGEMENT

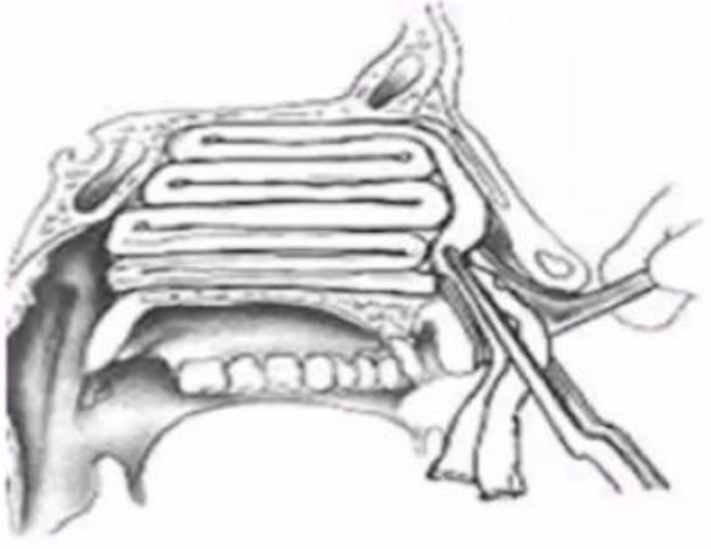
- General measures
- Stop the bleeding
- Prevent further bleeding

CONTROL THE BLEEDING

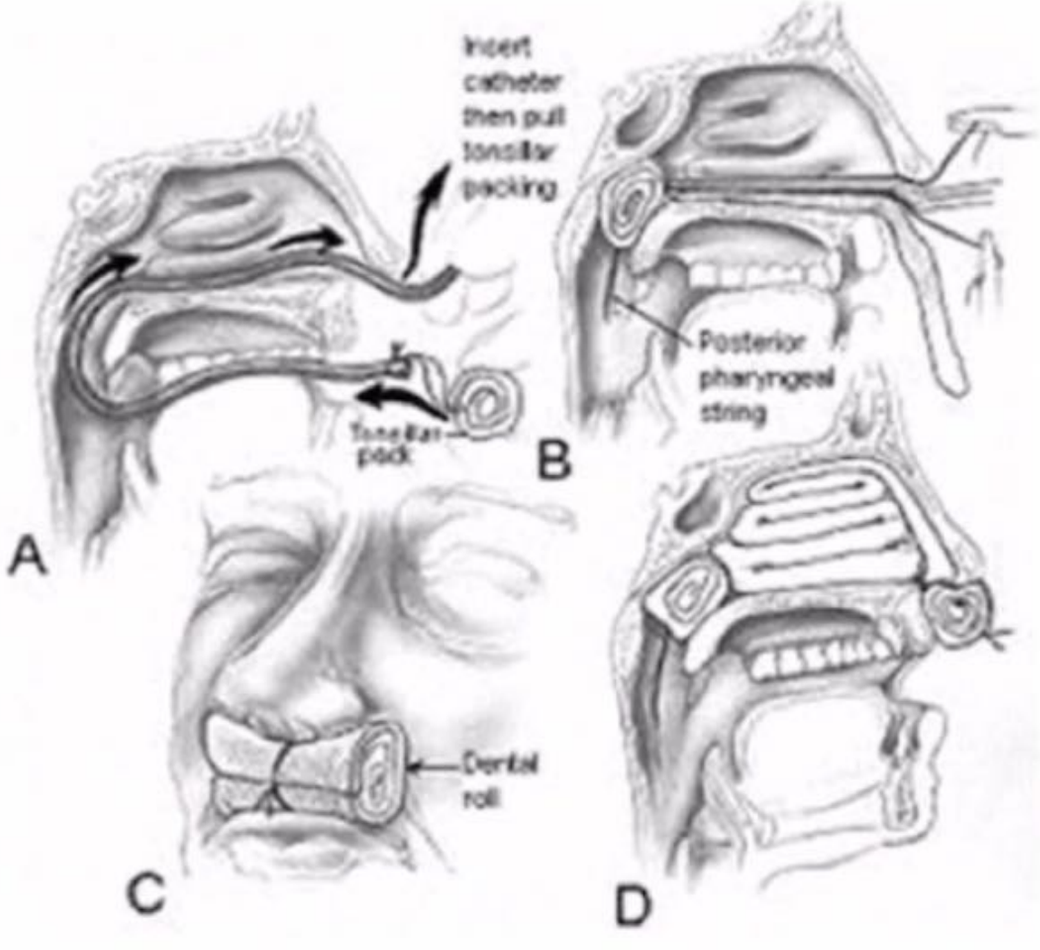
- Digital pressure
- Cautery
- Anterior nasal packing
- Postnasal pack
- Arterial ligation
  - Maxillary, Ethmoids, External carotid
- Arterial embolization

Anterior nasal packing

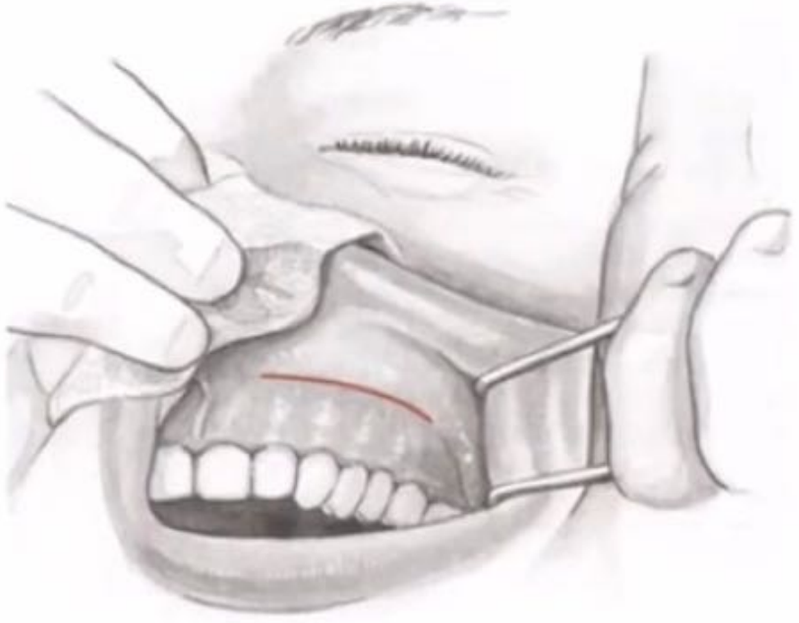


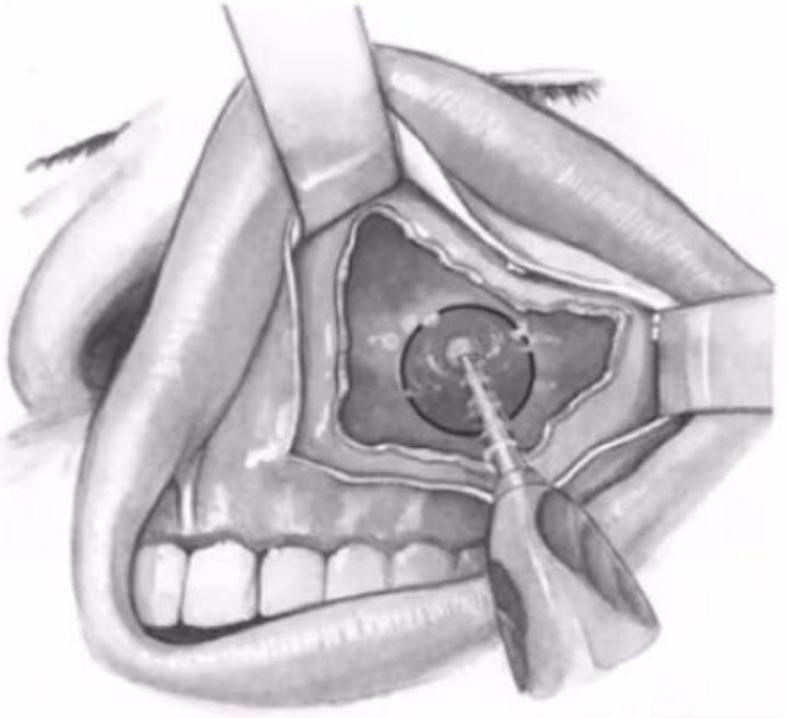


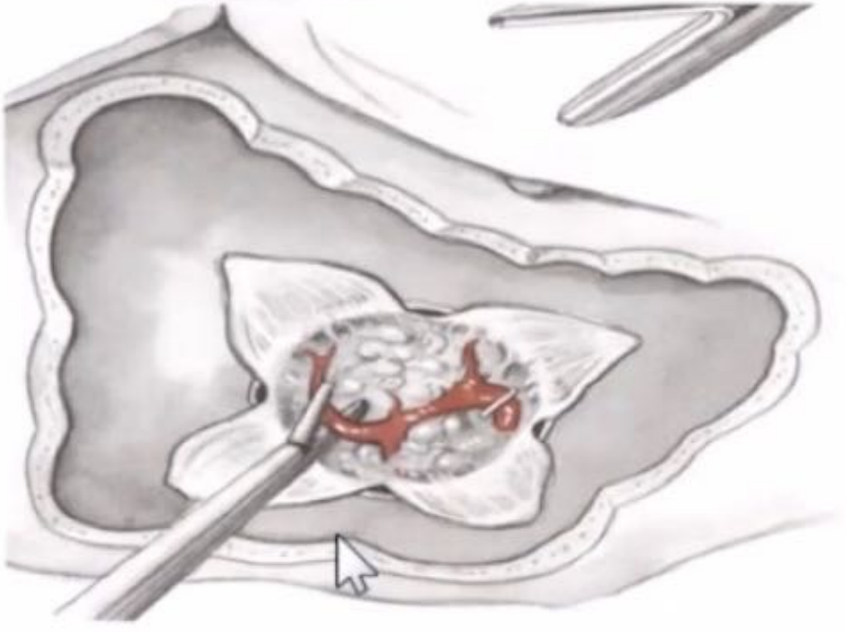
Postnasal packing



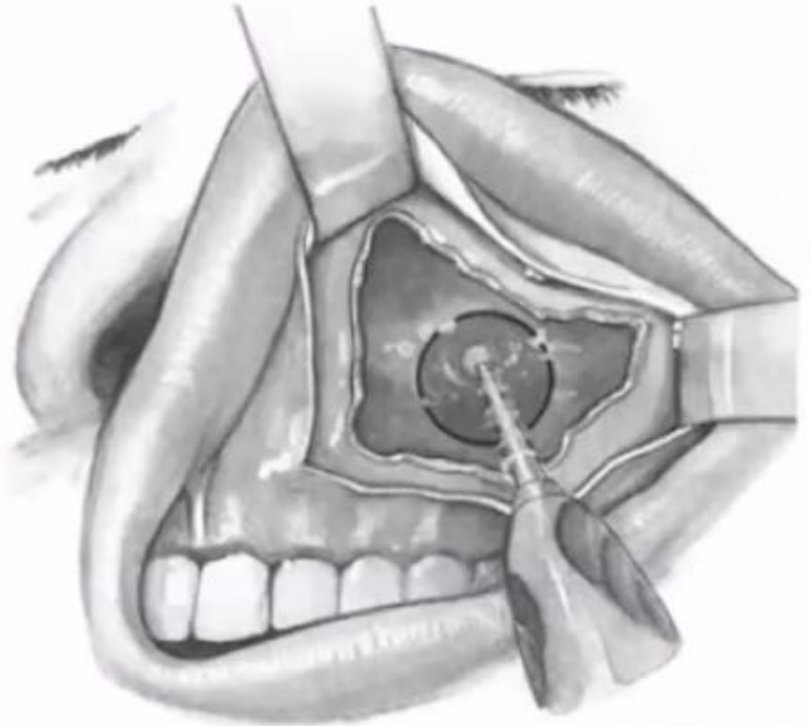
Arterial ligation

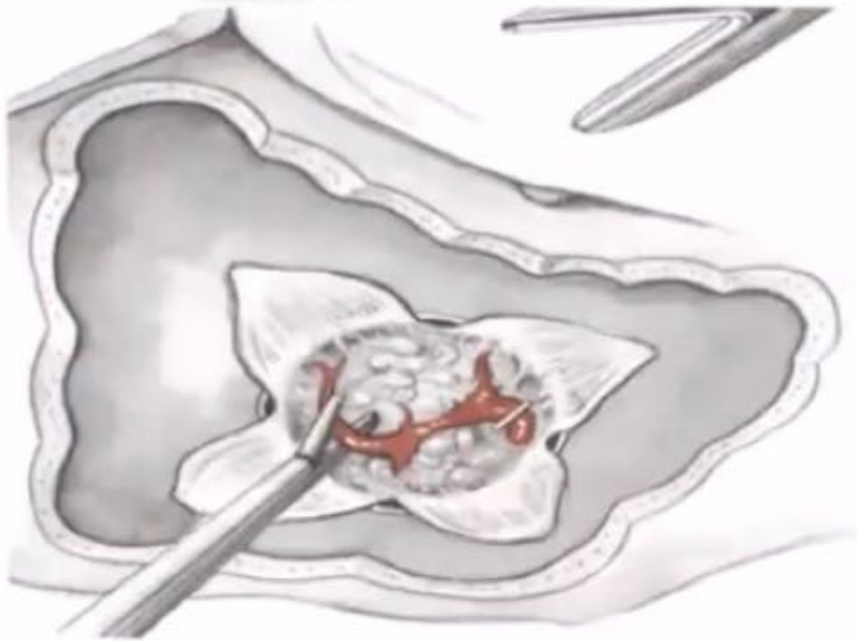




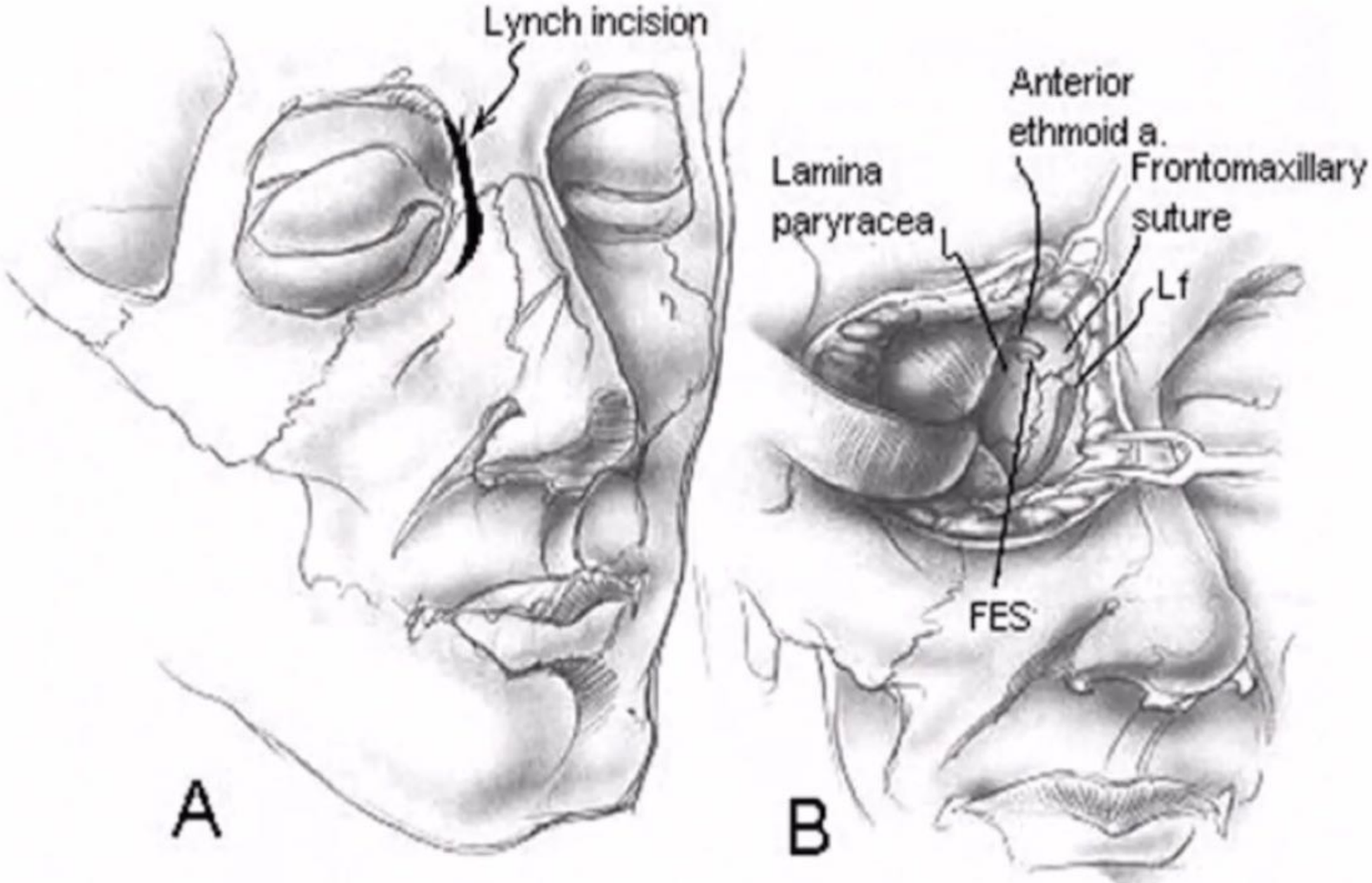


Arterial ligation

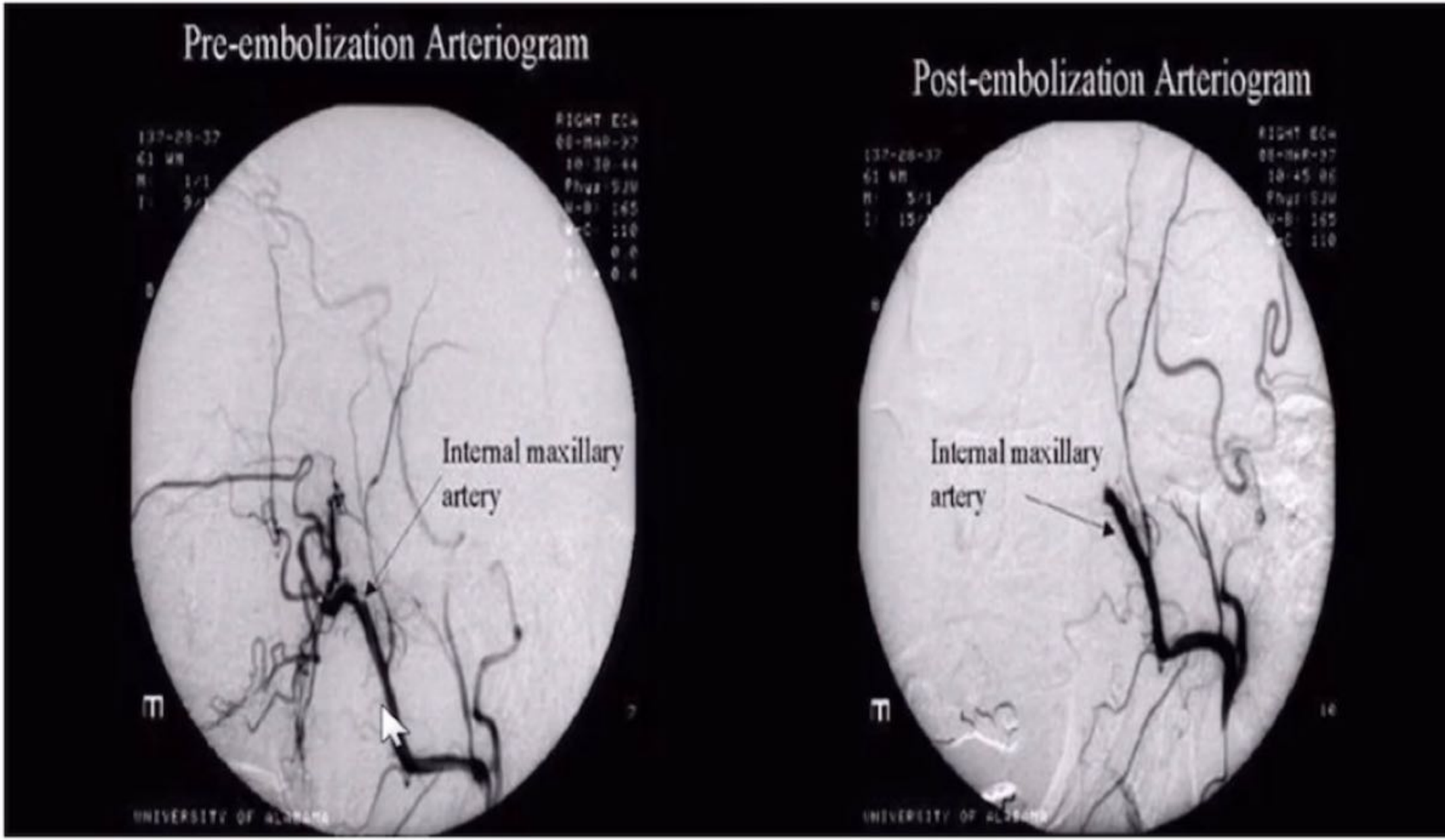




Arterial ligation



Arterial embolization



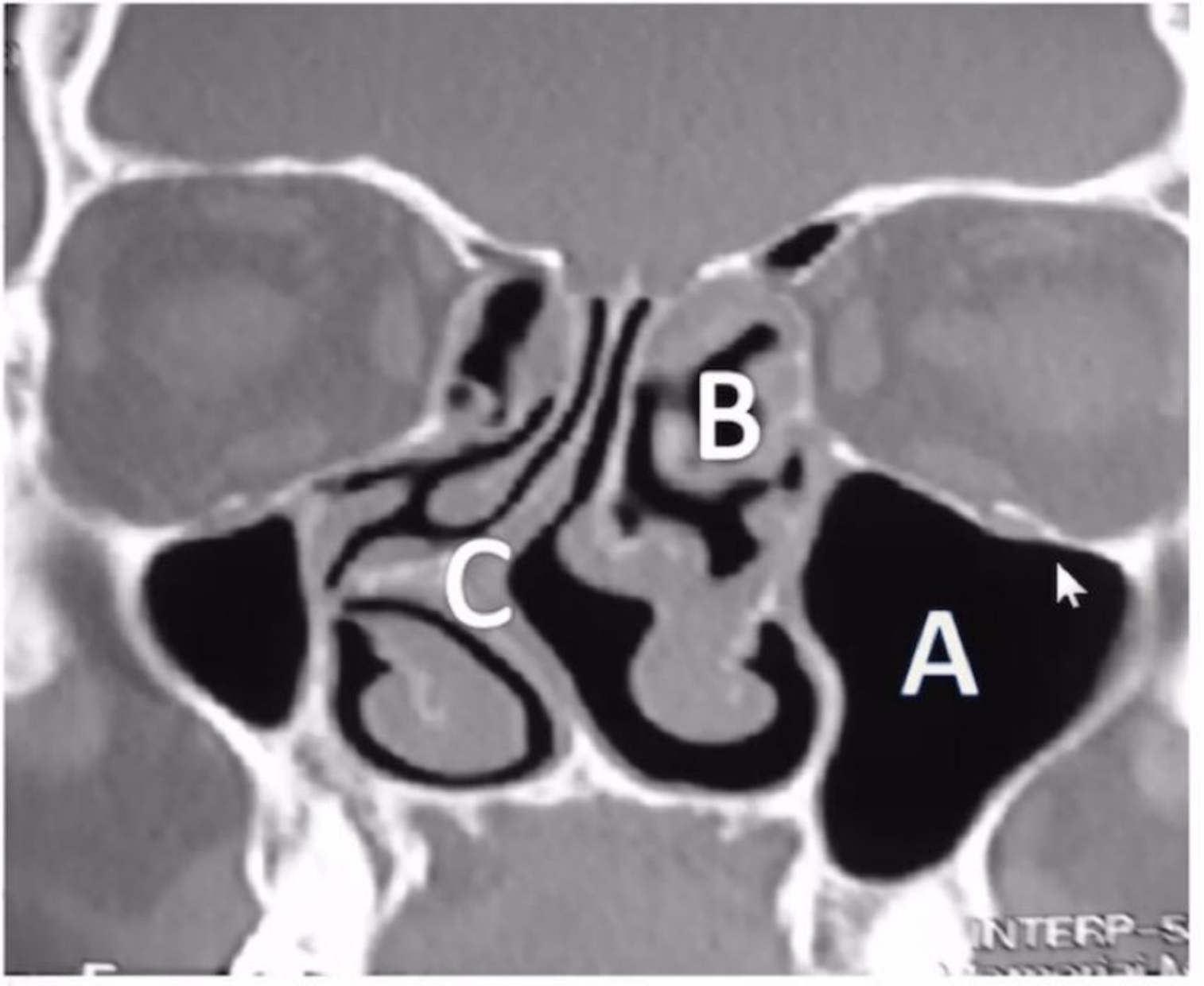
What do you think?

25 years old man post RTA with fever and nasal obstruction.

What is your diagnosis?

What is your management?

What is this radiological study? What is A,B and C?



This is a CT scan of a new-borne who presented with respiratory distress.

A- what is your diagnosis?

B- what is the management?