University of Baghdad
College of Medicine
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Title: Congenital Anomalies of Nose and Nasal Trauma

Grade: Fifth Year

Module: ENT

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Date: 21-9-2023

OBJECTIVES:
to through a light on:

1- congenital anomalies of the nose

2- nasal trauma

Congenital Anomalies of the Nose

1-Choanal atresia

2-Congenital nasal masses

1- Choanal atresia:

- **Incidence:** (1 per 5000-7000 live births).
- Affect females twice as often as males.
- Unilateral more than bilateral.

Aetiology:

Due to persistence of the primitive bucco-nasal membrane.

Types:

1- Bony .

2- Membranous .

3- Mixed, partly bony and partly membranous, which is the most common type (70%).

- **Degrees:**

1- Complete unilateral (most common).

2- Complete bilateral atresia.

3- Incomplete unilateral atresia.

4- Incomplete bilateral atresia.

Fig. 3.3a, b **Congenital atresia of one posterior choana.** This congenital deformity may not present until adult life. A ***total unilateral obstruction*** from birth may cause suprisingly little trouble to the patient. If, however, the symptoms are marked, the atresia can be treated surgically with removal of the bony obstruction.

Bilateral atresia presents with dyspnea soon after birth. Immediate surgical correction is required. A membranous atresia may be perforated and dilated using

Clinical features:

- It is more common in female than male in a ratio of 2:1.

A- Unilateral choanal atresia

1- Presents usually in later childhood or even adulthood.

2- Nasal obstruction (unilateral).

3- Excessive tenacious and glue-like nasal discharge (unilateral).

B- Bilateral choanal atresia

1- Almost always presents as respiratory emergency at birth.

2- as a result of nasal obstruction and the neonates are obligate nasal breathers during the first 3-5 months of life; the neonates will demonstrate cyclical change in oxygenation, becoming cyanosed during quiet periods (because the mouth is closed) and normal pink color return when the child cries.

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Choanal atresia may be *associated* with the so called CHARGE association:

C → colobomatous blindness.

H → heart disease.

A → atresia of choana.

R → retardation of growth.

G → genital hypoplasia in males.

E → ear deformities.

- **Diagnosis:**

1- Small flexible endoscope: cannot be passed through the nose to nasopharynx.

2- Small Plastic catheter: cannot be passed through the nose to nasopharynx.

3- Cotton wool held close to nostrils → no movement of the cotton.

5- CT scan: to see the thickness of bony atresia, choanal atresia is diagnosed if choanal orifice measures less than 0.34 cm or if the posterior vomer measures greater than 0.55 cm

Treatment:

- **Emergency treatment:** is needed in bilateral atresia to maintain airway by neonatal waters airway .
- **Definitive treatment:** is by surgical removal of the atretic plate by:

1- Trans-nasal approach (used when atresia is membranous or thin bony plate) under direct vision by using endoscope.

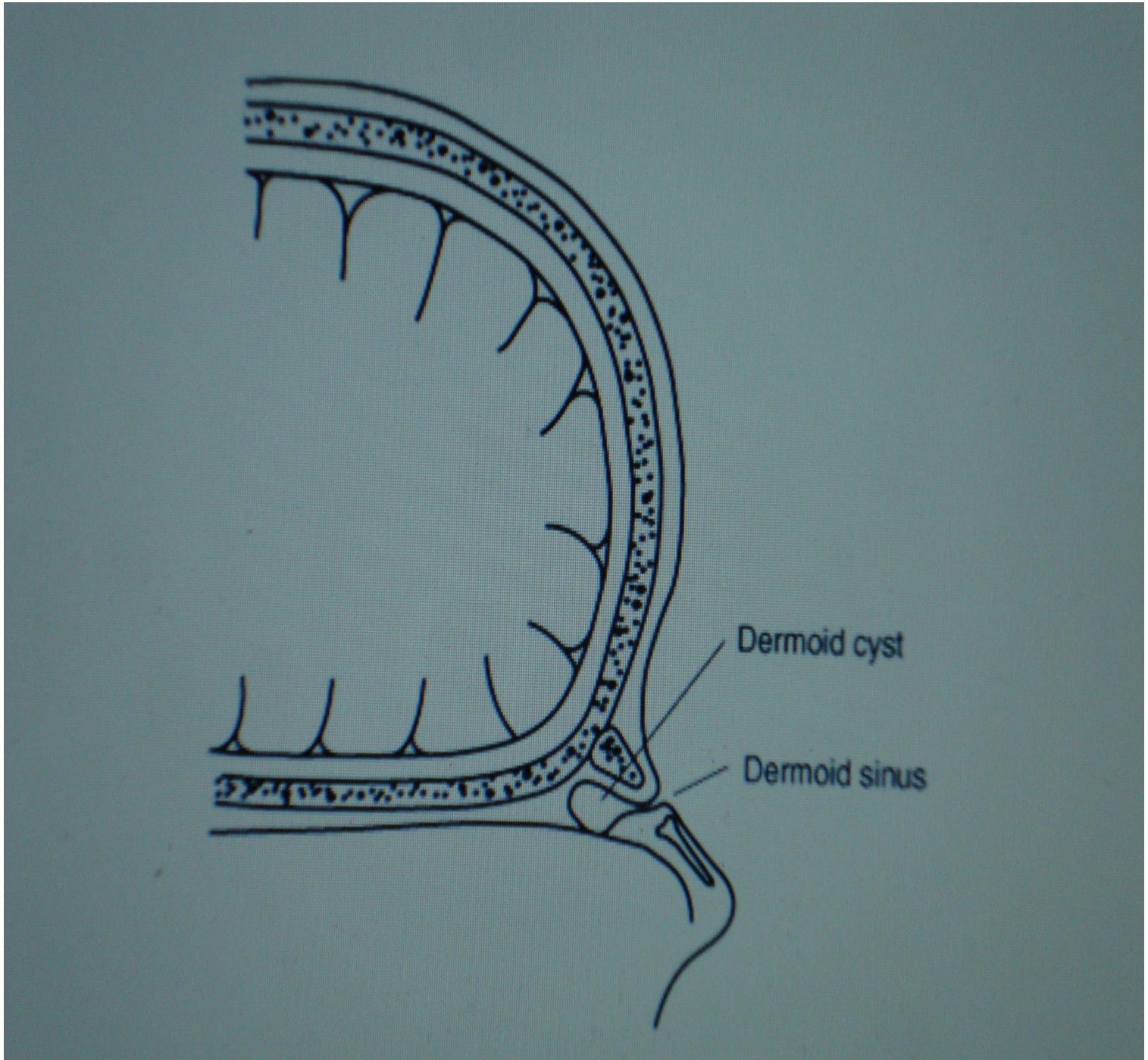
2- Trans-palatal approach (used when atresia is unilateral thick bone in older patients).

2- Congenital Nasal Masses:

Which include:

A- Nasal Dermoids: Dermoids are formed as a result of sequestration of epithelial elements during fusion of the median nasal process. They present as solid masses or cysts, occurring anywhere in the midline of the nose. They may also present as sinuses recognized by minute opening sometimes containing single hair.

Treatment is by surgical excision of both sinuses with hair.


Dermoid cyst
Dermoid sinus

B-Nasal Glioma:

- Usually diagnosed by or seen after birth. It could be extranasal (60%), presented as subcutaneous mass to one side of nasal bridge. Or intranasal (30%) causing nasal obstruction or in combination (Both extra and intra-nasal (10%)).
- *Treatment* is by surgical excision.

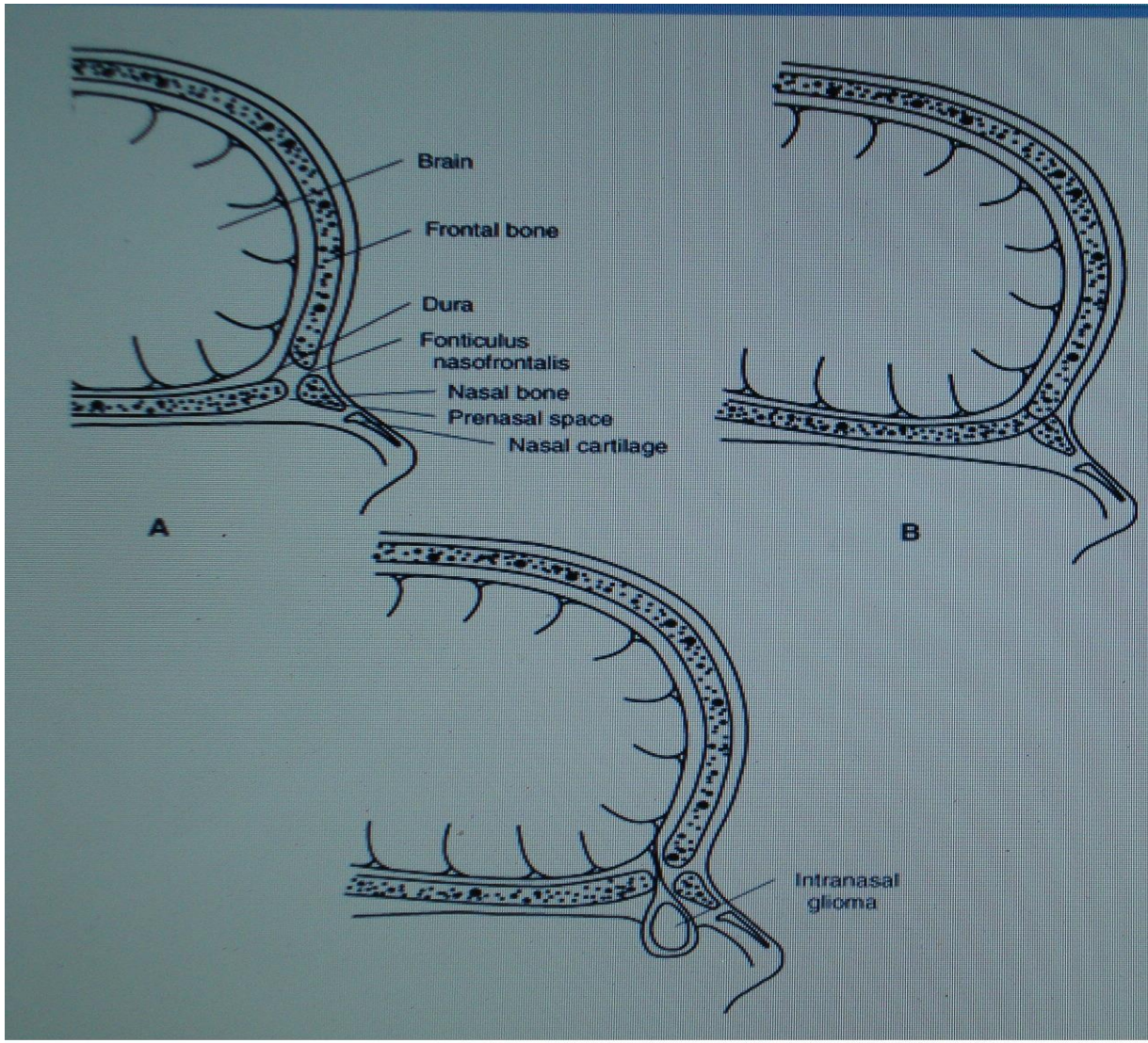
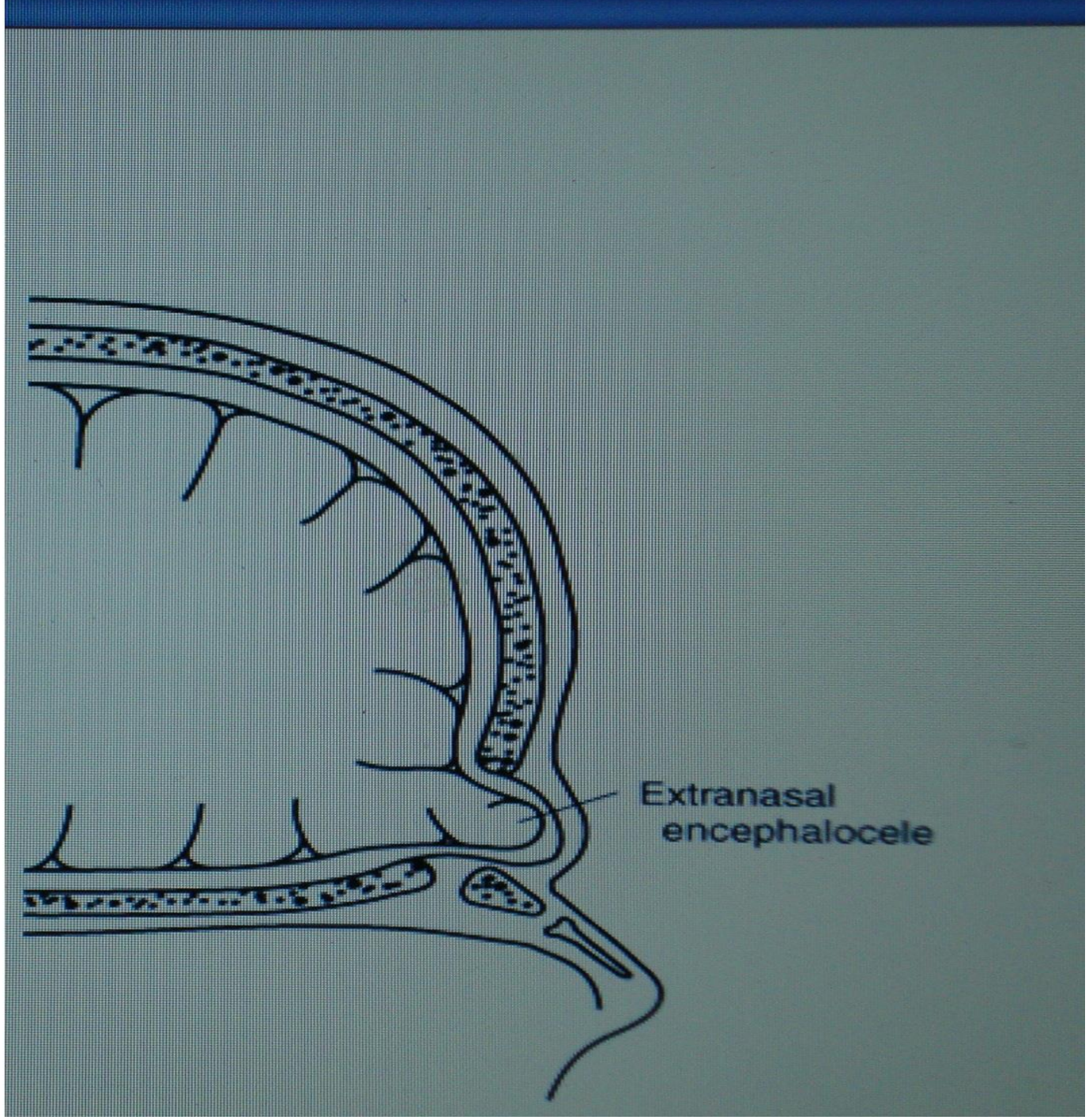


Fig. 3.5 **Nasal glioma.** This curious polypoid swelling ***presents in the noses of children or babies.*** A biopsy confirms the nasal glioma, which is usually an isolated entity attached to the septum. A CT scan is needed to exclude the possibility of an intracranial attachment, but this is rare. This is a benign lesion.

C- Nasal Meningo-encephaloceles.

- There are local herniation of glial tissue & meninges through a defect in the skull. They contain CSF so injury to them may cause CSF rhinorrhoea & meningitis.
- They are connected to intracranial cavity, so they increase in size during crying. It may present as a cystic mass over the root of the nose or intranasal mass. CT scan is necessary to show the exact size of the bony defect.
- *Treatment* is by surgical excision.


Extranasal
encephalocele

Nasal Trauma

Fractures of the nose

Septal Haematoma

Fractures of the nose:

Classification:

Type 1:

- Due to frontal or fronto-lateral blow. There is vertical fracture of the nasal septum (Chevallet fracture which runs from the maxillary spine to the nasal bones).
- The thin distal portion of the nasal bone is depressed or displaced. Chevallet fracture occurs in severe variant of type 1.

Type 2:

- Due to lateral trauma, there is (Jarjaway fracture) which is C shaped fracture of the perpendicular plate of ethmoid and the quadrilateral cartilage. The nasal bones are displaced laterally but no gross depression. Also there is fracture of the frontal process of maxilla.

Type 3:

- Due to high velocity trauma, there is involvement of the orbito-ethmoidal complex. There is gross depression, the perpendicular plate of ethmoid rotate backward which result in forward directed nostrils (pig-like appearance).

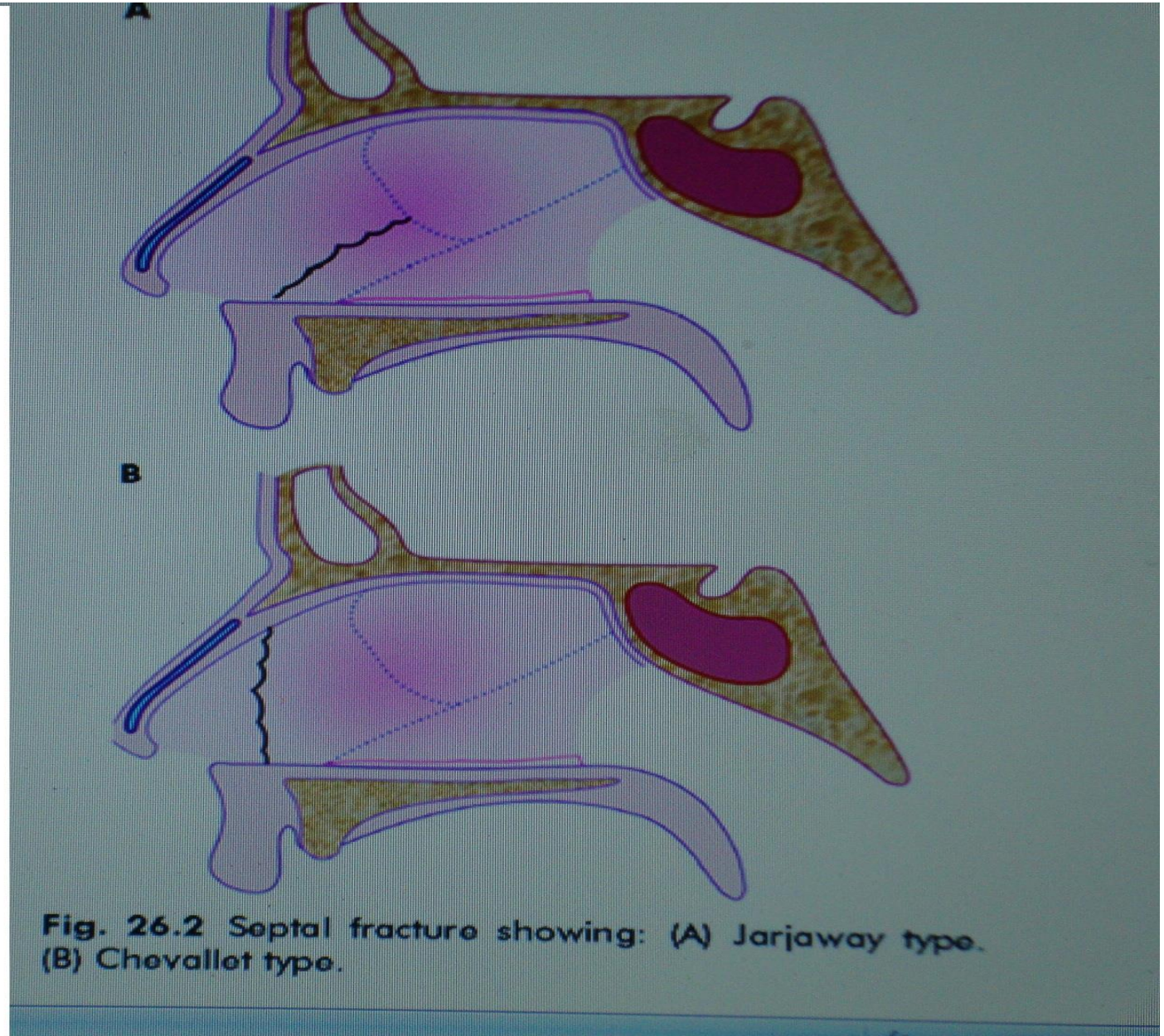


Fig. 26.2 Septal fracture showing: (A) Jarjaway type. (B) Chevallet type.

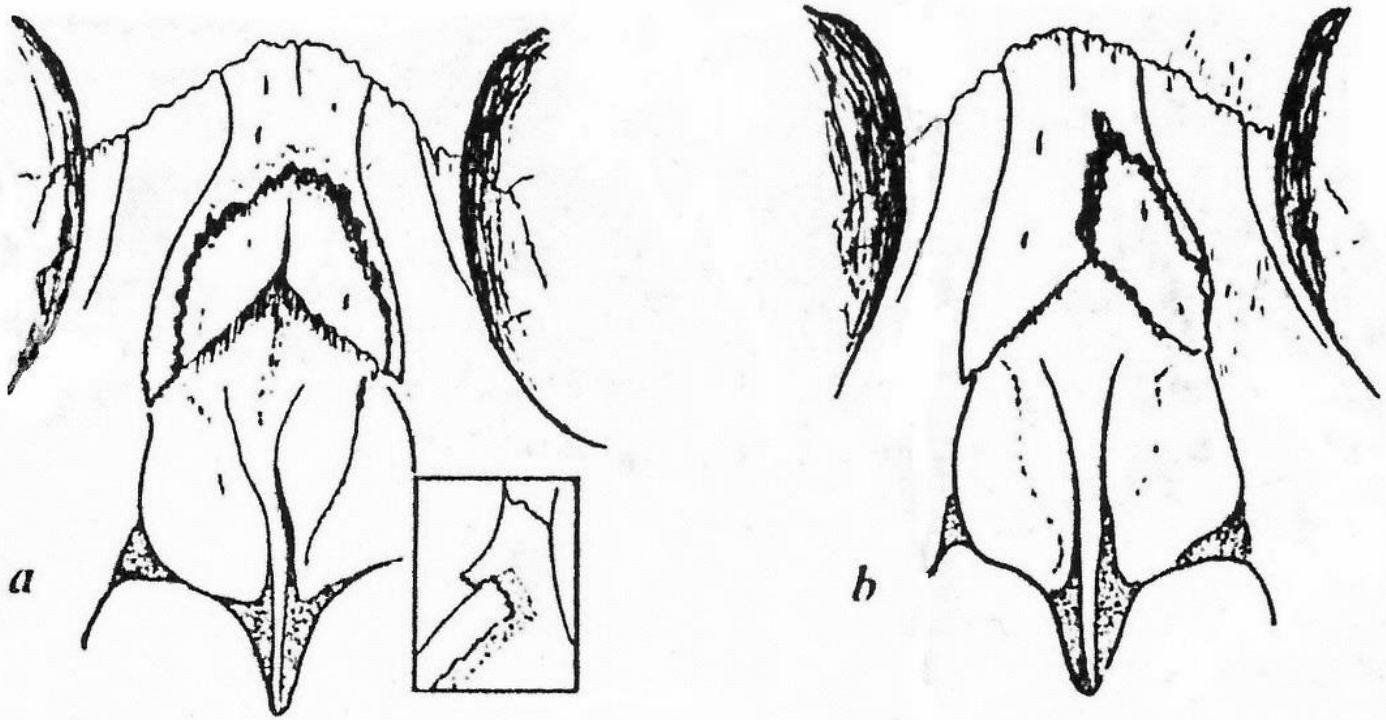


Fig. 1.3.3. Fractures of nasal bones.
a, Central segment fracture. The segment is displaced posteriorly (inset), with splaying of the other nasal bones and fracture of the underlying bony septum. The septal fracture must be reduced or resected at the time of repair, otherwise the deviated septum pulls the nasal bones laterally.
b, Unilateral fracture.

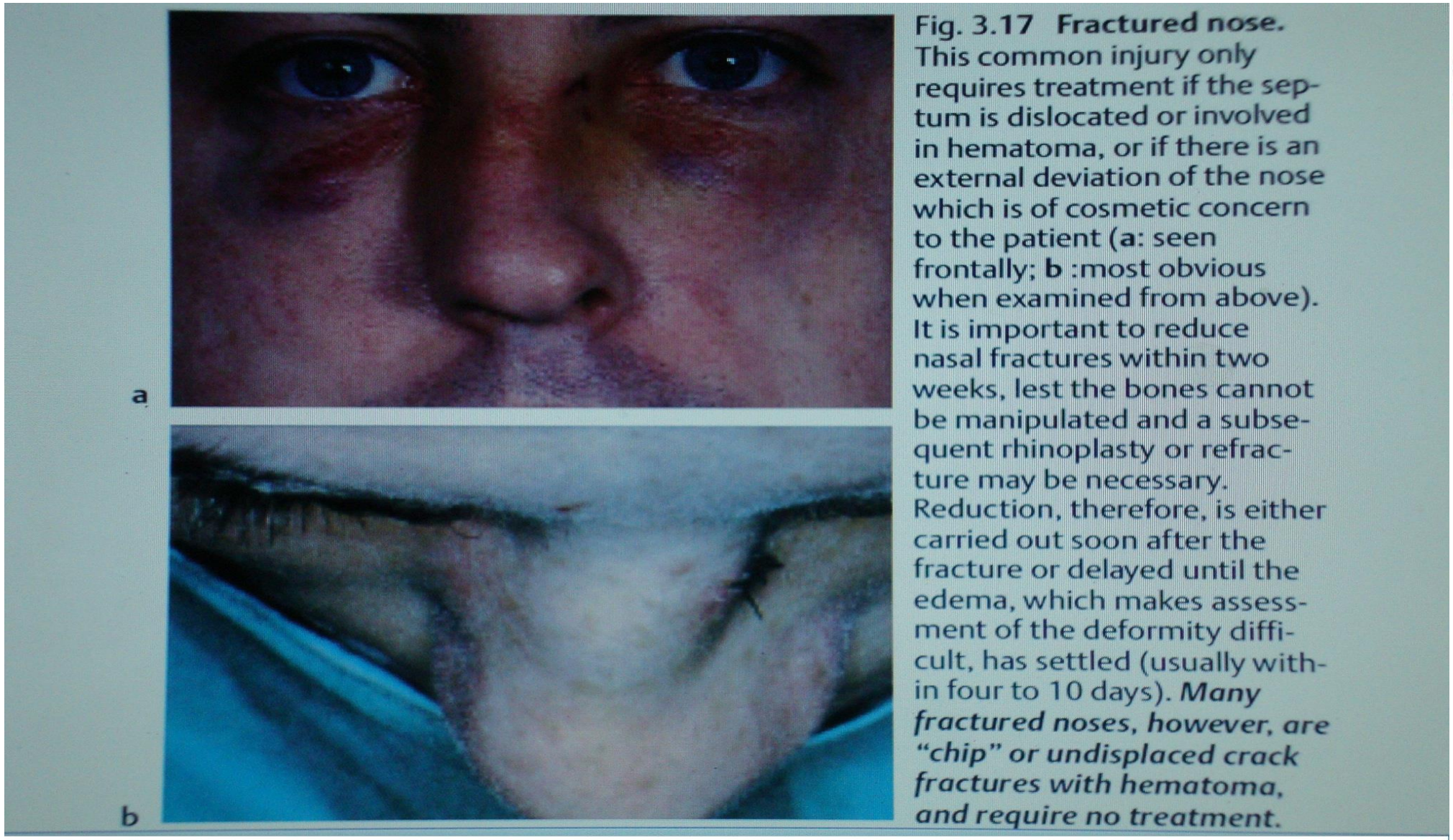


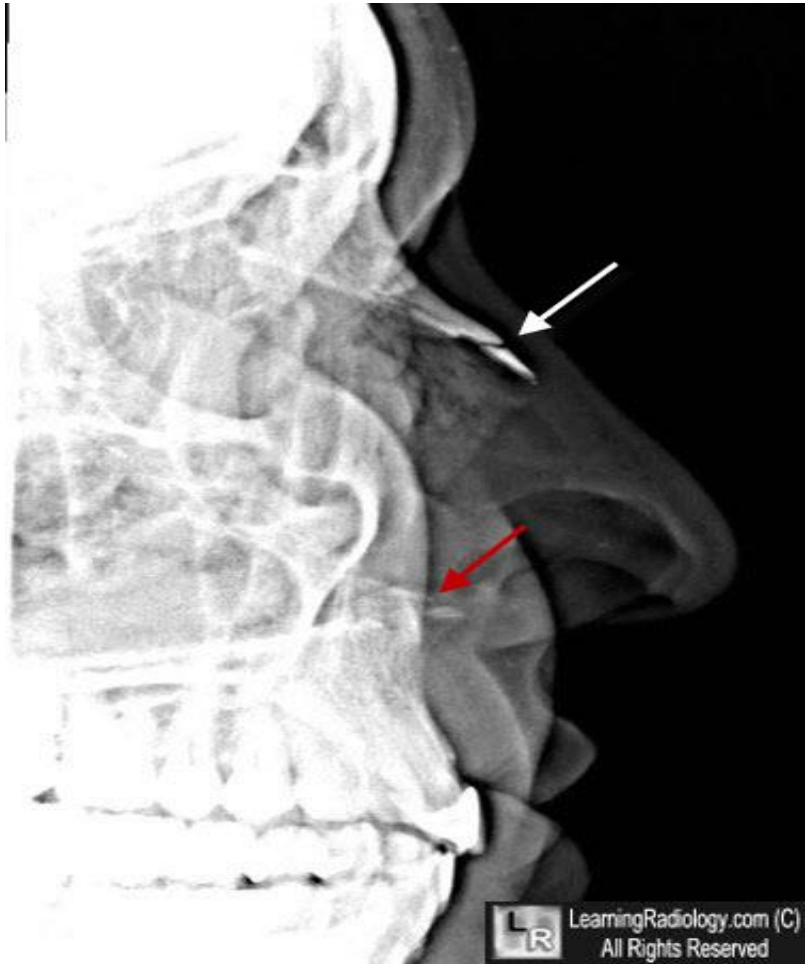
Fig. 3.17 **Fractured nose.** This common injury only requires treatment if the septum is dislocated or involved in hematoma, or if there is an external deviation of the nose which is of cosmetic concern to the patient (**a**: seen frontally; **b** :most obvious when examined from above). It is important to reduce nasal fractures within two weeks, lest the bones cannot be manipulated and a subsequent rhinoplasty or refracture may be necessary. Reduction, therefore, is either carried out soon after the fracture or delayed until the edema, which makes assessment of the deformity difficult, has settled (usually within four to 10 days). ***Many fractured noses, however, are "chip" or undisplaced crack fractures with hematoma, and require no treatment.***

Clinical features:

- Deformity →
- External swelling.
- Black eye.
- Pain.
- Epistaxis.
- Nasal obstruction

Diagnosis:

- X-ray of nasal bone (lateral view). It is important medicolegally, but is of little value clinically.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- Treatment
- A- Soft tissue
- 1- Wounds cleaning and closure
- 2-Tetanus immunization
- 3-Ice is used to reduce swelling

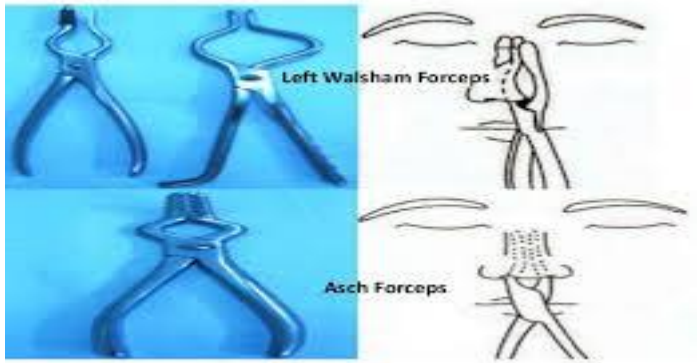
B-Nasal bones:

- If the patient presented early(within 1 hour) before swelling appears, we reduce the fracture immediately.
- If the patients presented with swelling over the nose, then we have to leave him as the facture is reduced after 7-10 days.
- When the fracture is left to be reduced after 7-10 days we have to give topical *vasoconstrictor* to improve the nasal airways and analgesia.
- The time allowed for reduction is up to 3 weeks, after 3 weeks there is more callus which make reduction unlikely to be successful.

- In type 1 fracture reduction by digital pressure or Walsham's forceps or an elevator is enough.
- In type 2 fractures we need to reduce the nasal bone fracture by Walsham's forceps .
- In type 3 fracture we need open reduction and internal fixation.

Walsham Forceps

Ash forceps


Left Walsham Forceps
Asch Forceps

Complication of nasal bone fracture:

- Deformity and nasal obstruction.
- CSF leaks.
- Orbital complication:

  1-Telecanthus. 2-Epiphora due to damage to the lacrimal ducts.
- Septal haematoma.
- Septal deviation.
- Anosmia.

Septal Haematoma:

- **Definition:**

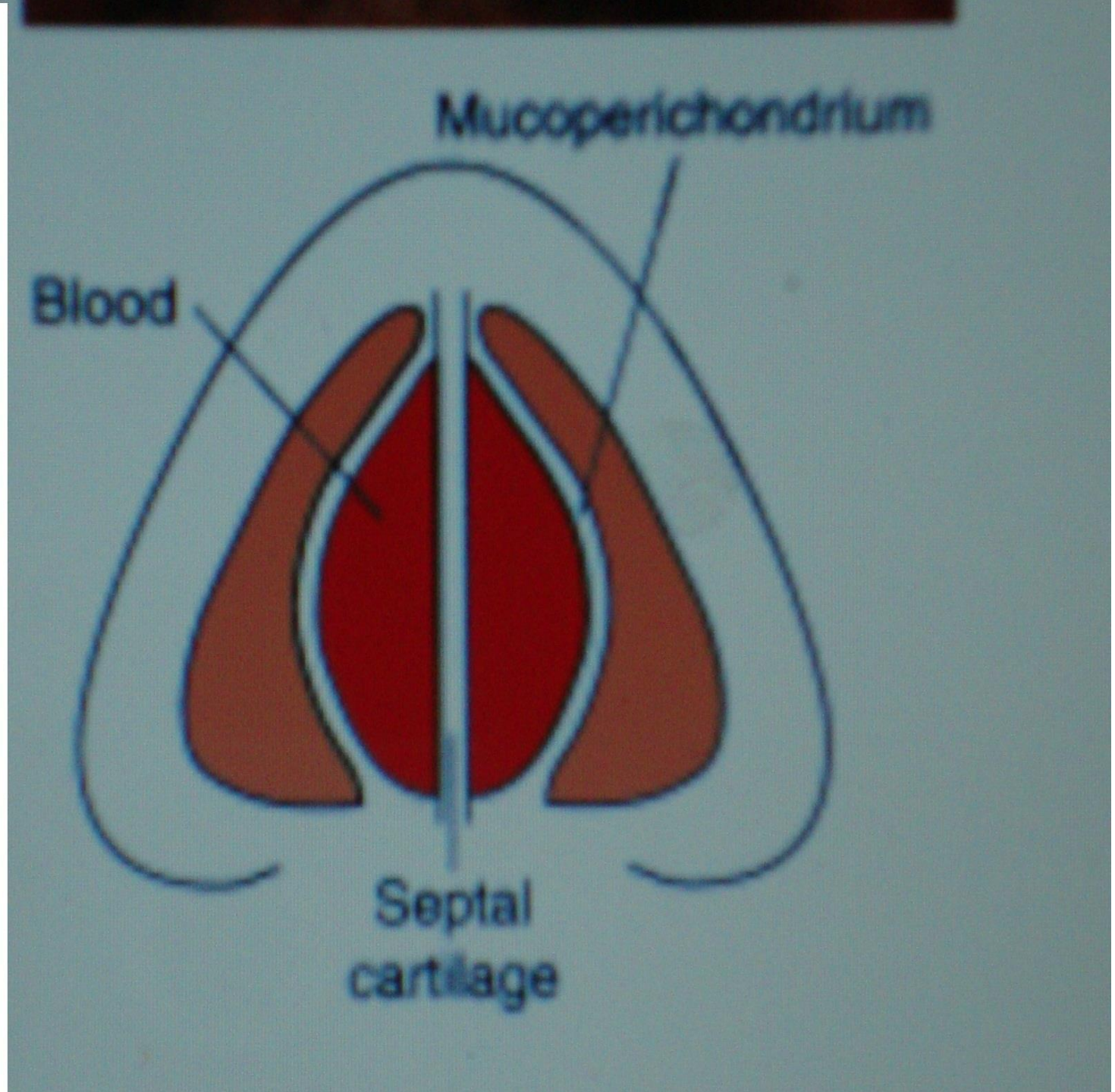
  Collection of blood beneath muco-perichondrium &/or periosteum of nasal septum.

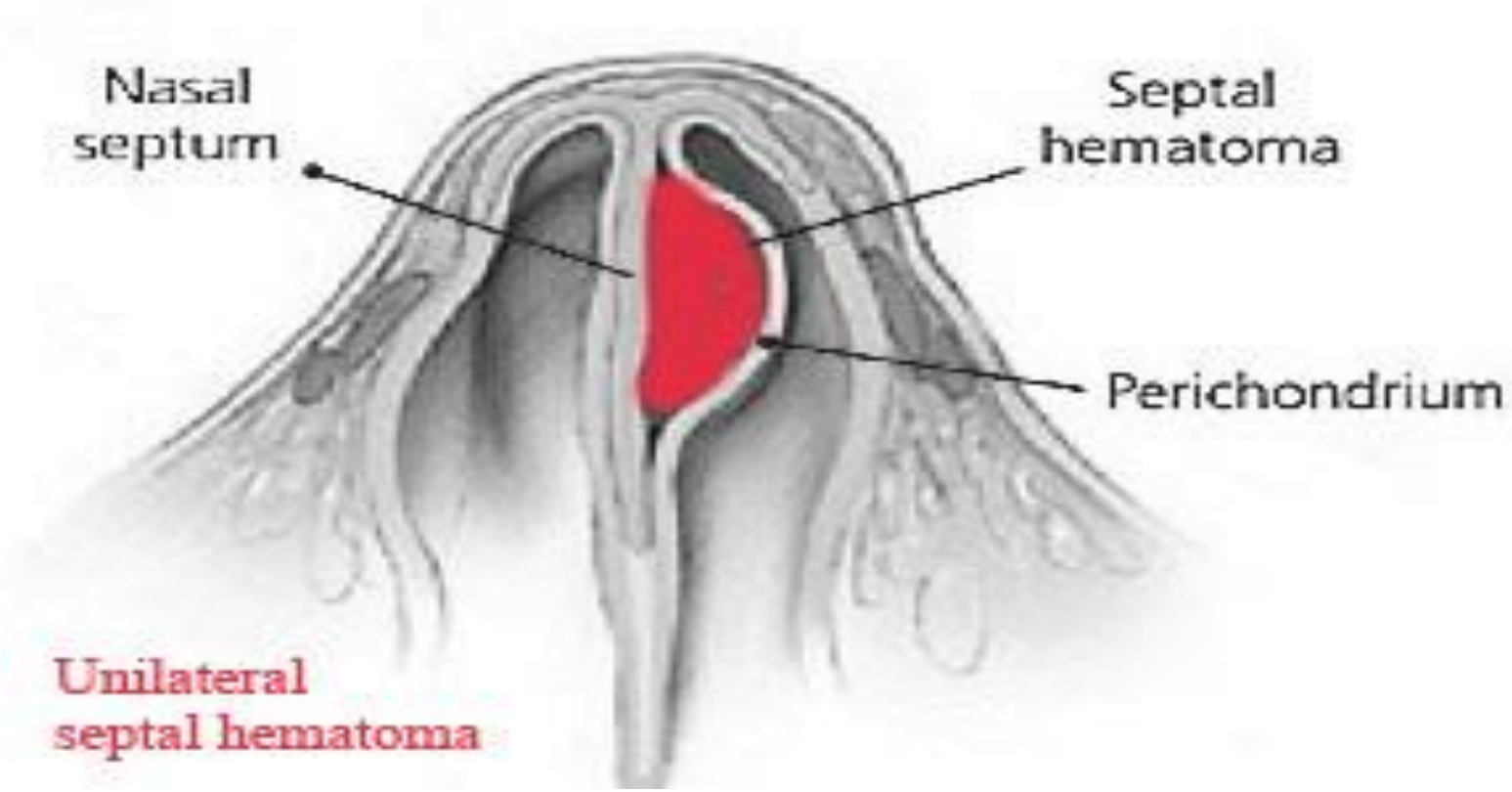
- **Aetiology:**

  Septal haematoma occurs due to trauma and may be associated with nasal bone fracture.

Pathology:

- Submucasal blood vessels are torn and the mucosa remains intact resulting in haematoma formation.
- There may be septal fracture and the blood pass from one side to other side resulting in bilateral haematoma. The blood accumulates in the subperi-chondrial layers interfere with the vitality of the cartilage → cartilage necrosis → saddle nose, so that the haematoma should be treated immediately.
- Also the collagenases enzymes *increase* the rapidity of cartilage *necrosis*.


Mucoperichondrium
Blood
Septal
cartilage


Nasal septum
Septal hematoma
Perichondrium
Unilateral septal hematoma

Symptoms and signs:

- Nasal obstruction.
- Discomfort.
- On examination there is smooth rounded bilateral septal swelling which can be confermed by probing(compressible) and aspiration.

Treatment:

- Early surgical drainage of the haematoma to reduce the risk of cartilages necrosis by using incision, suction of the blood, put drain and then packing of the nose.
- Aspiration in early small haematoma under aseptic technique by wide bore needle may be repeated.
- Antibiotic to prevent *infection*.

Complications:

- External nasal deformity.
  - → Saddle nose (because the septal cartilage support the nasal dorsum).
  - → Affection of facial growth.
- Septal thickening.
- Septal abscess: due to infection of haematoma, clinically there is fever and *increasing pain* treated by surgical drainage.
- Septal perforation due to *necrosis* of the *cartilage*.
- Intracranial spread of infection:
  - Cavernous sinuses thrombosis.
  - Meningitis.
  - Brain abscess.

Saddle nose