

## Upper airway Obstruction II

Sources: Lecture Notes, Slides, 427 Team

### AIRWAY EMERGENCY

#### A. Tumor:

- commonly tumors of aerodigestive tract or thyroid
- typically present with gradual airway obstruction
- initial management
  1.  $O_2$ , humidification
  2. steroids and IV antibiotics

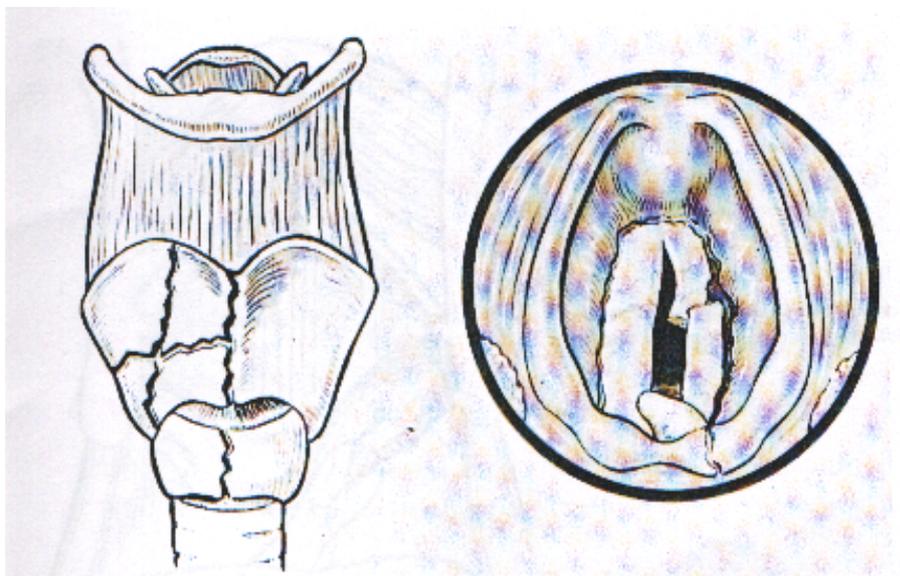
#### Airway stabilization

- organization between Surgeon and Anesthetist
- avoid blind attempt of intubation
- if available, fiberoptic intubation (experience)
- percutaneous jet ventilation to stabilize patient
- elective awake tracheostomy under local anaesthesia is the safest method to secure the airway
- precipitation of complete obstruction necessitates emergent cricothyroidotomy or tracheostomy

#### **B. TRAUMA**

##### **Presenting SX**

- Hoarseness, Pain tenderness, Hemoptysis, Dysphagia, Impaired respiration, Haematoma.



**Classification of Laryngeal Trauma & Treatment:**

**Type I**

- minor endolaryngeal haematoma or laceration
- absence of detectable fracture of laryngeal skeleton

• **Management**

1. 24 / 48 hours observation in ICU
2. head of bed elevated
3. humidification & systemic steroids

**TYPE II**

- edema, haematoma, mucosal disruption
- no exposed cartilage, no displaced fracture

• **Management**

1. tracheostomy under local anaesthesia
2. CT scan to R/O displaced fracture

**TYPE III**

- massive edema with large mucosal laceration,
- exposed cartilage, displaced fracture
- V.C. motion impairment

• **Management**

1. tracheostomy
2. laryngoscopy
3. exploration and repair

**TYPE IV**

- same as III but more severe

• **Management**

1. explore and repair
2. require endolaryngeal stent

**C. BURN PATIENT:**

- airway management is controversial
- considering the choice of airway
- **Oral or nasal endotracheal tube ?**
  1. May exacerbate existing thermal injury
  2. Inadvertent extubation is a potential disaster
  3. When facial grafting is necessary tube and ties will limit the access
  4. Tube obstruction occur more frequent

**Tracheostomy**

- Reported to have higher mortality rate as a result of infectious complication (pulmonary sepsis, necrotizing tracheitis, mediastinitis)
- Bleeding, pneumothorax, tracheal stenosis
- Edema of the neck results in
  - 1- difficult procedure.
  - 2- inadvertent removal of the tube.
- **Cricothyroidotomy, may establish the airway more easily**
- Stabilization of airway is indicated for thermal injury of trachea, and extensive burns of the face or oropharynx. Where impending UAWO necessitates intubation
- Intubation for assisted ventilation is required for inhalation injury with:

**changes in ABG, O<sub>2</sub> sat, and increase CO<sub>1</sub>**

**Once decision of intubation is made:**

- ET should be attempted initially
- if necessary, leave X 3-4 wks
- utilize this time for grafting neck burns
- shift to tracheostomy after that if necessary

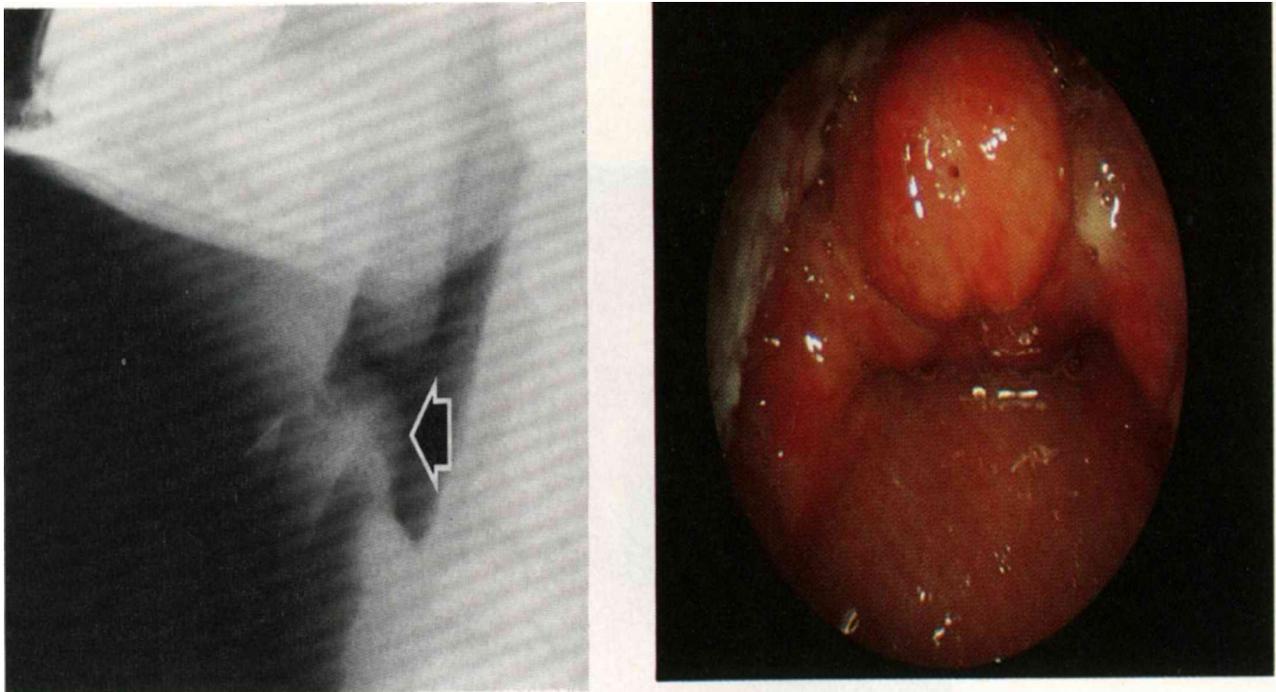
## **D. SUPRAGLOTTITIS / EPIGLOTTITIS:**

### **1- Paediatric :**

- sudden onset
- rapidly progressive course
- high fever, respiratory distress
- drooling, painful swallowing

### **2- ADULT :**

- dysphagia, severe sore throat
- fever, stridor, voice change



## **MANAGEMENT**

- **Children:** secure airway, ET tube, tracheostomy.
- **Adult:** frequently observed in an ICU, may need intubation.

### **Antibiotic should be started:-**

- 1- initially: cefuroxime , cefotaxime or ceftriaxone.
- 2- Then change antibiotics according to sensitivity.

**E- foreign body:**

- Death from foreign body aspiration in USA is about 3000 per year for all ages.
- Complete airway obstruction may be recognized in the conscious child as sudden respiratory distress , inability to speech or breath or cough .

**Types of foreign body:**

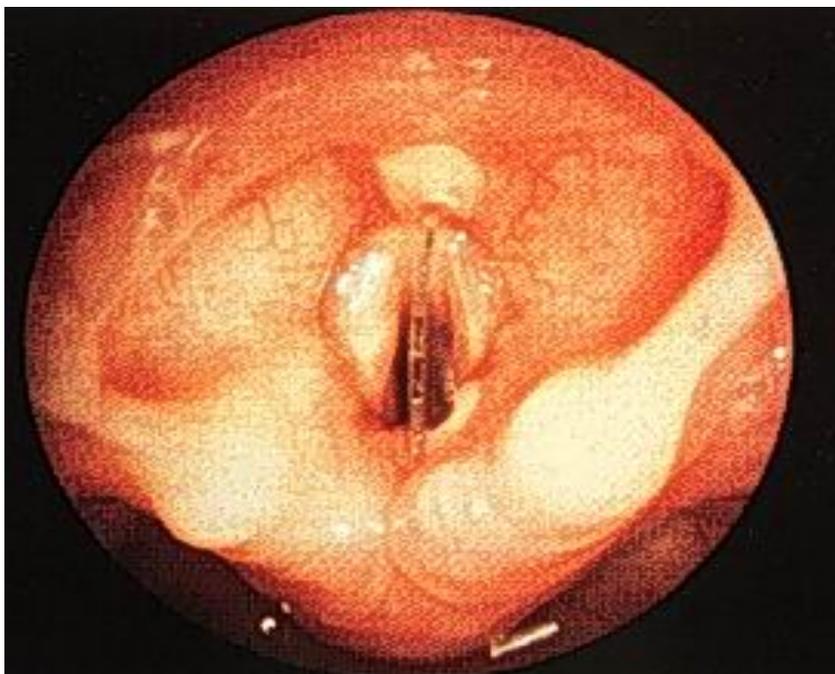
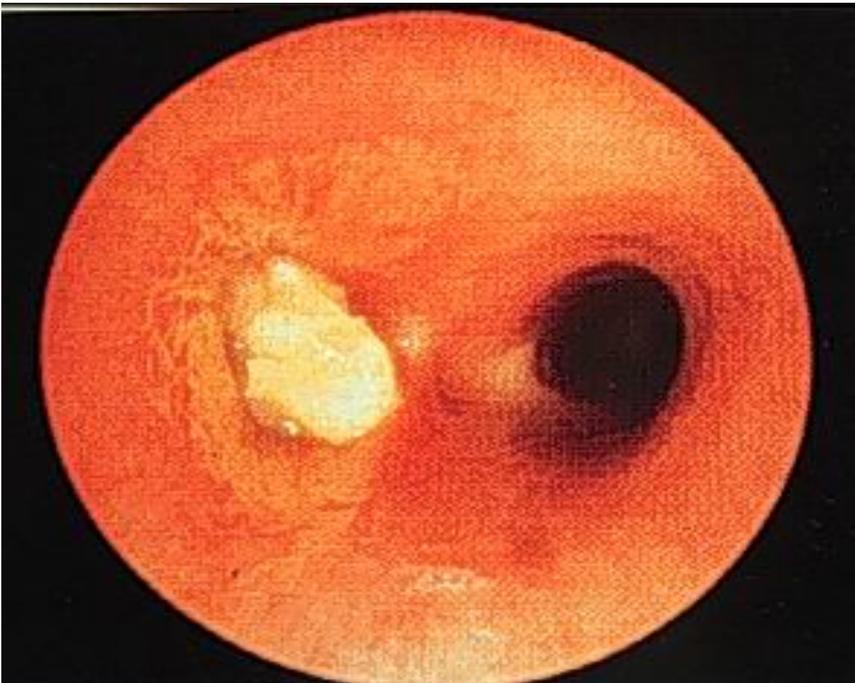
1-vegetable matter are the most common in the children's airway.

2-plastic.

3-metal.

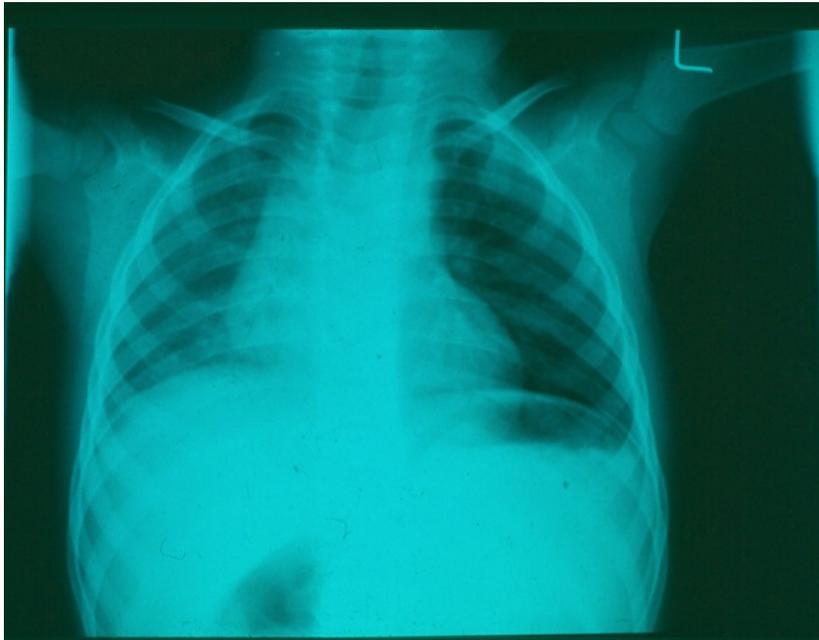
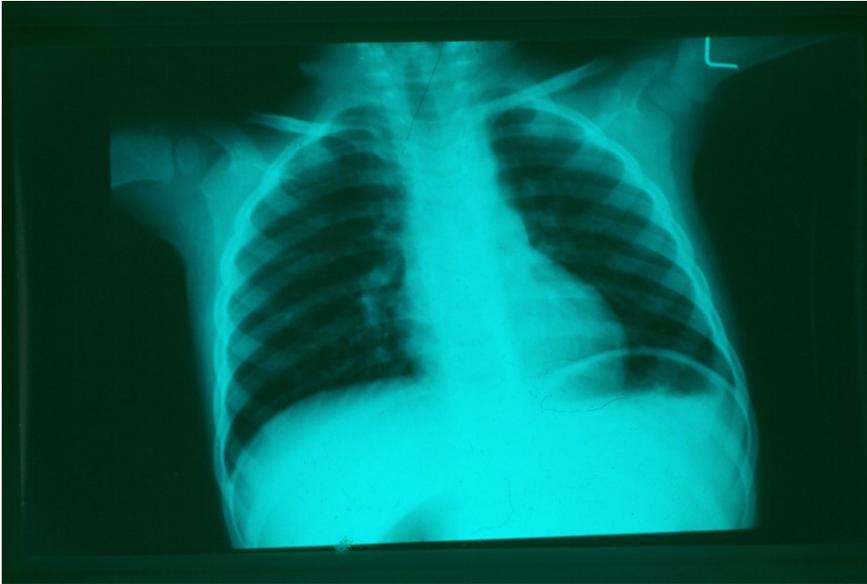
**Location of foreign body in the airway:-**

1. **Commonly** the final destination is one of the main bronchi ( right one is more common than left because it is more straight and wider ).
2. **Larynx** : for sharp objects .
3. **Trachea** : if there is narrowing in the trachea



**Presentation :**

1. **(acutely)**1-usually coughing , choking , gaging and wheezing .
2. **(followed by)** 2- no symptoms or signs (mimic different acute or chronic disease of the lung e.g. croup, bronchial asthma .
3. **(finally )**3-stage of complication (erosion, infection, abscess)



**Diagnosis:**

**1- Radiological** : extended soft tissue in the neck , PA, lateral chest (most efficacious)

- it can demonstrate foreign body : emphysema (commonest & earliest ) , then atelectasis of the lung.
- do it in inspiration & expiration you will see the findings in expiration
- the scope the best Dx & Rx method

**Management:**

- Endoscopic removal is both diagnostic & therapeutic .

**F- laryngomalacia:**

- Accounts for 60% of laryngeal problems in newborn.
- Characterizes by stridor in the first few weeks.
- Due to flaccidity or incoordination of supralaryngeal cartilage which are pulled inside the lumen during inspiration leading to upper airway obstruction.

**Cause is unknown:**

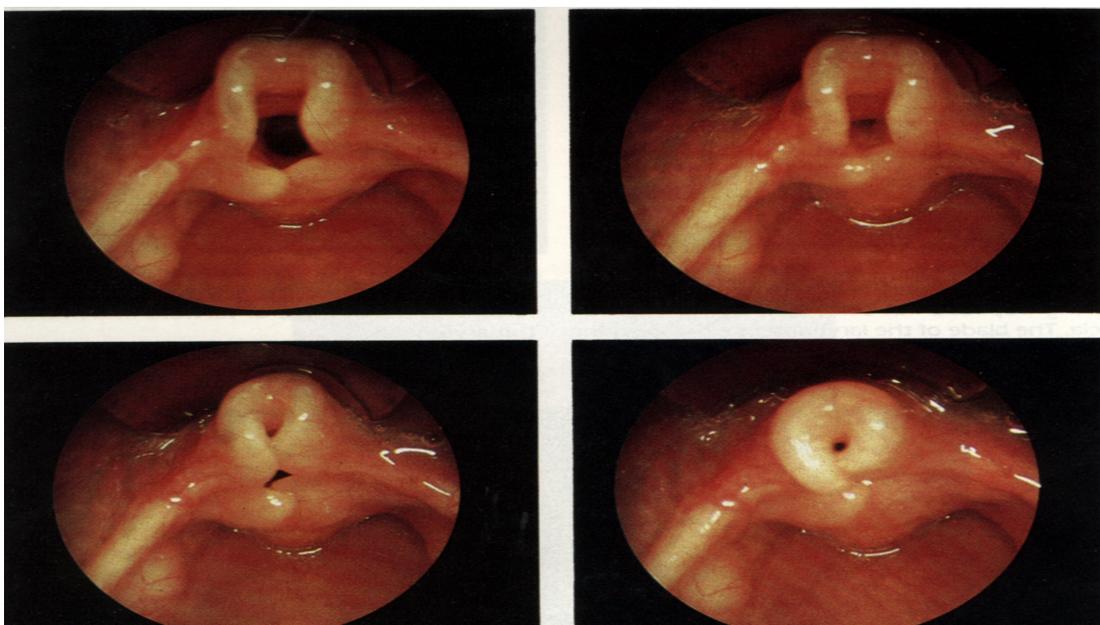
1. Edema of the Aryepiglottic folds and loose suspension of the epiglottis.
2. Embryologically - rapid growth of the third branchial arch causes the epiglottis to curl open itself forming an omega shape.
3. Neurologic immaturity of Brainstem & vagus - infolding of the aryteroids in the AW

**Diagnosis:**

- Can only be confirmed by direct observation of movement of supraglottis during respiration
- fiberoptic evaluation is the most appropriate method of visualization
- Radiologic evaluation by (high voltage X-ray PA lateral) may help in excluding the presence of associated AW problem:

Example:

1. SGS.( subglottal Stenosis )
2. Innominate artery compression.



### **Complication of laryngomalacia :**

1-failure to thrive ( it's one of the high index indicate chronicity ).

2-feeding difficulty .

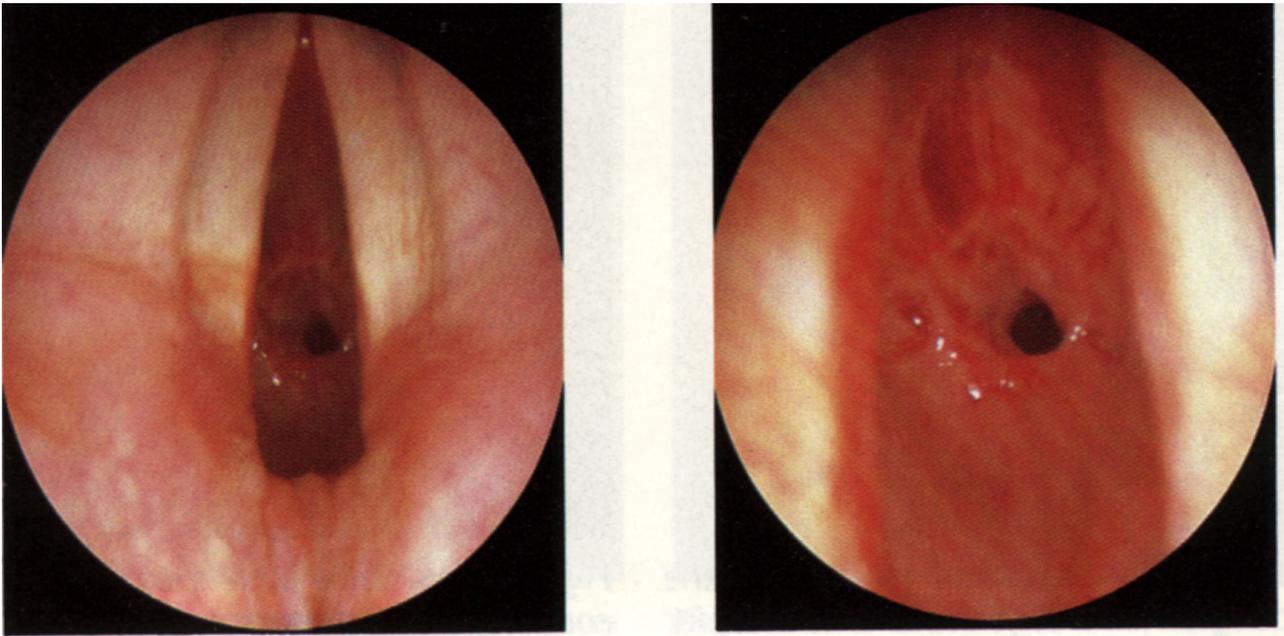
### **Treatment : " 95% of cases are mild "**

- Reassurance.
- Infant can outgrow this problem .
  - ✓ Tracheostomy for sever cases only in case of children (because of high mortality rate) not good for them because high mortality rote that happen because they have small trachea, small tube can easily obstruct it so we use Tracheostomy .
  - ✓ Epiglottoplasty for sever cases ( definitive procedure for laryngomalacia , done under general anesthesia ).

### **J- SUBGLOTTIC STENOSIS :**

- It's a narrowing of the subglottis. In newborn the subglottis diameter of less than 3.5 mm.
- Two type of subglottic stenosis :-
  1. congenital .
  2. acquired . ( *the most common* )

*note : the most common cause of acquired stenosis is Endotracheal intubation*



### **Subglottis stenosis presentation :**

- Mild cases may present as recurrent croup (laryngotracheobronchitis) secondary of upper respiratory tract infection .
- Generally present with symptoms and sign of upper respiratory tract obstruction .

• **subglottis stenosis evaluation :**

1. plain film of the neck ( high KV ) .
2. confirm the diagnosis by endoscopy .
3. MRI for difficult cases .

**Subglottis stenosis management :**

1. Endotracheal intubation . (emergency situation)
2. Tracheostomy ( preferred ) ( the best )
3. cricothyroidotomy above the stenosis, we can pass a rigid tube to bypass the stenosis, sometime we cannot bypass4Tracheostomy .
4. Endoscopic Techniques: dilatation, laser.

**5. open surgical technique :**

- a-cricoid split for small children + mild stenosis .
- b-resection and primary anastomosis .
- c-laryngotracheoplast + Rib graft + ( stent for 6w ).

**Choanal atresia**

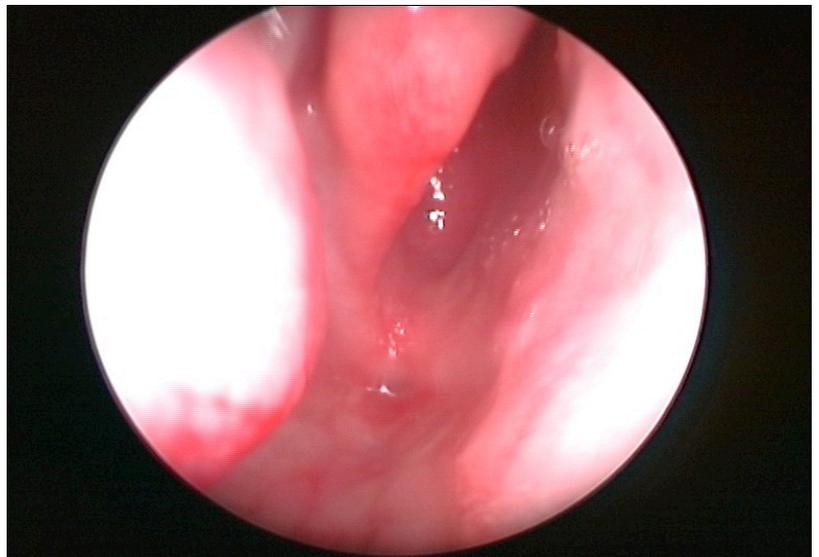
- Uncommon anomaly 1/ 5000- 8000
- Unilateral: present late
- Bilateral : birth emergency
- Mixed bone-membranous CA account for 90%
- Remaining bony CA

**Association of CA**

- CA may be associated with other anomalies in 20-50% of cases
1. CHARGE ( the Most common )
  2. VATER
  3. craniofacial anomalies

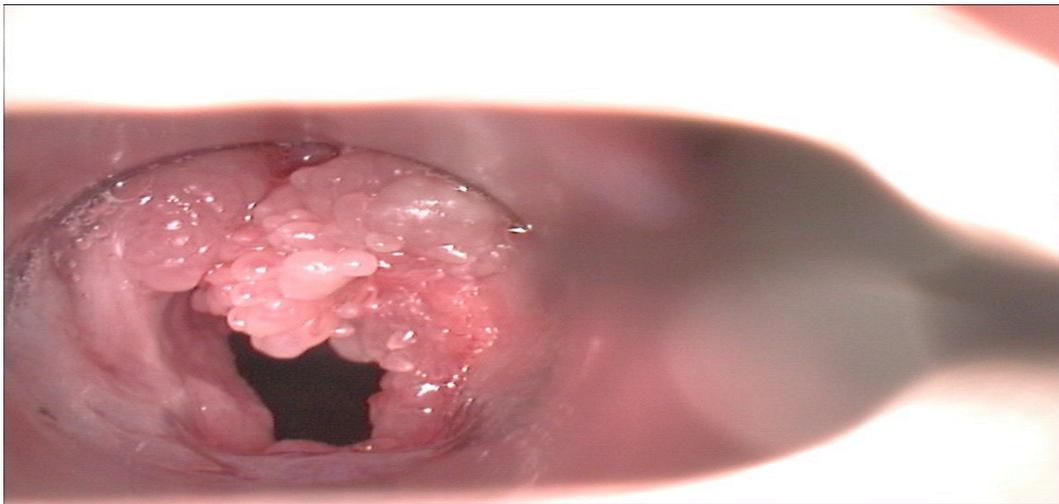
**Examination of CA:**

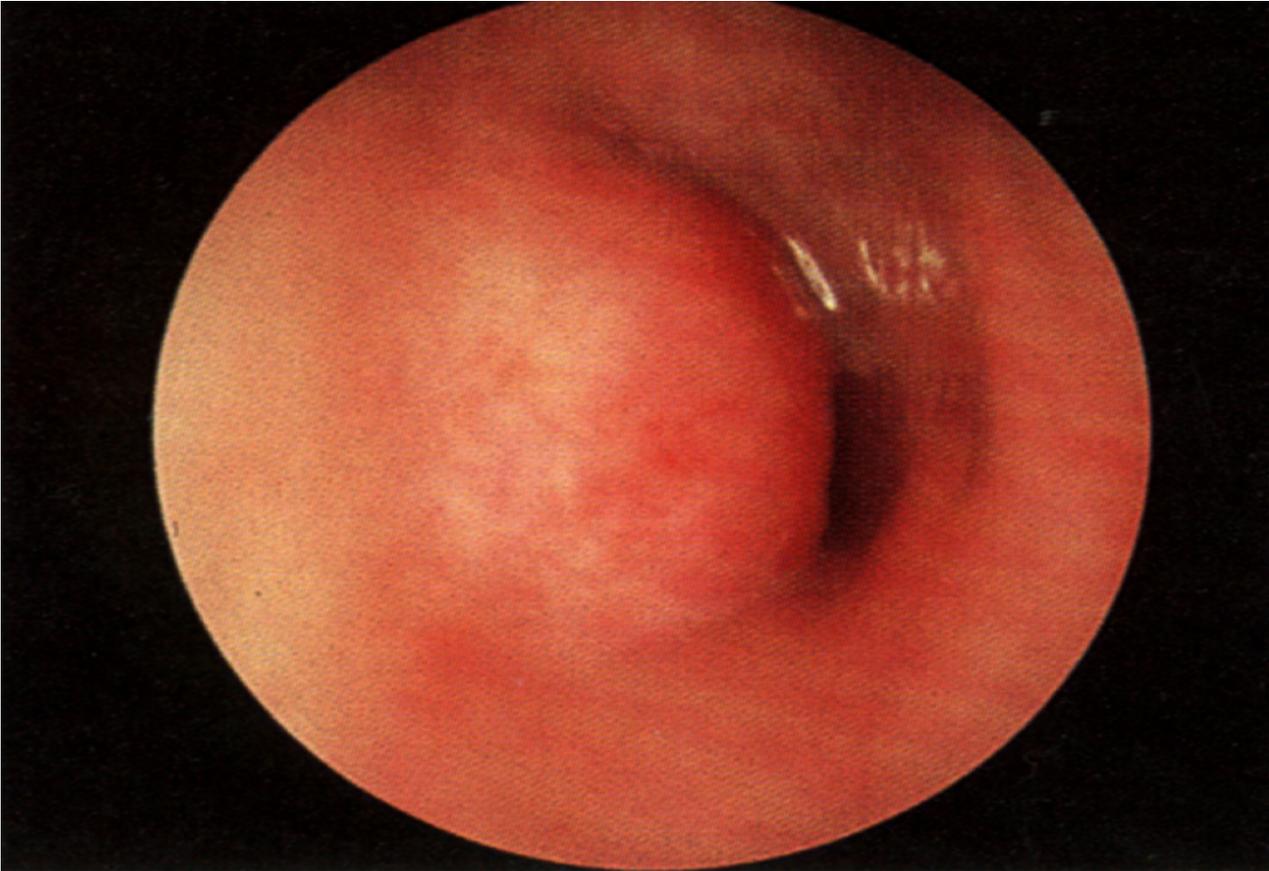
- Infants; failure to pass # 6- 8 catheter
- pyriform aperture stenosis (1 CM)
- choanal atresia (3.5 cm)
- Fiberoptic nasoscope



### Surgical repair of CA

- **Many approaches;**
  - transpalatal
  - transnasal
  - transantral
  - transseptal
- Endoscopic repair: outcome is variable
- Success rates reported to range between 20-80%





DONE !