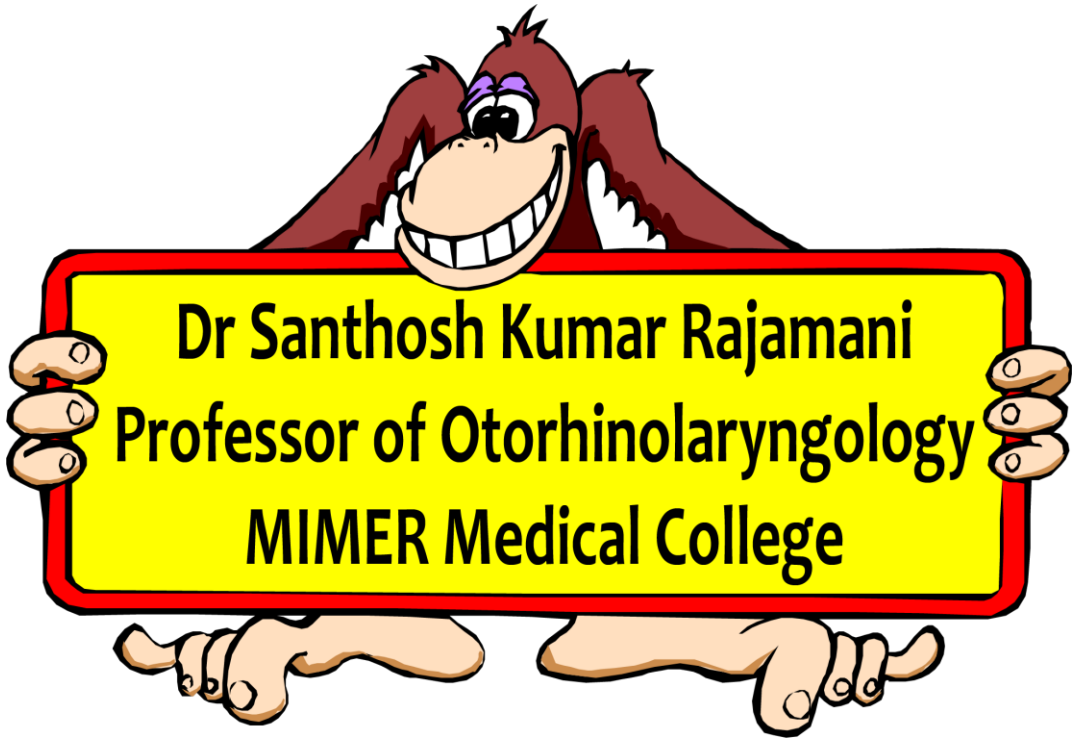
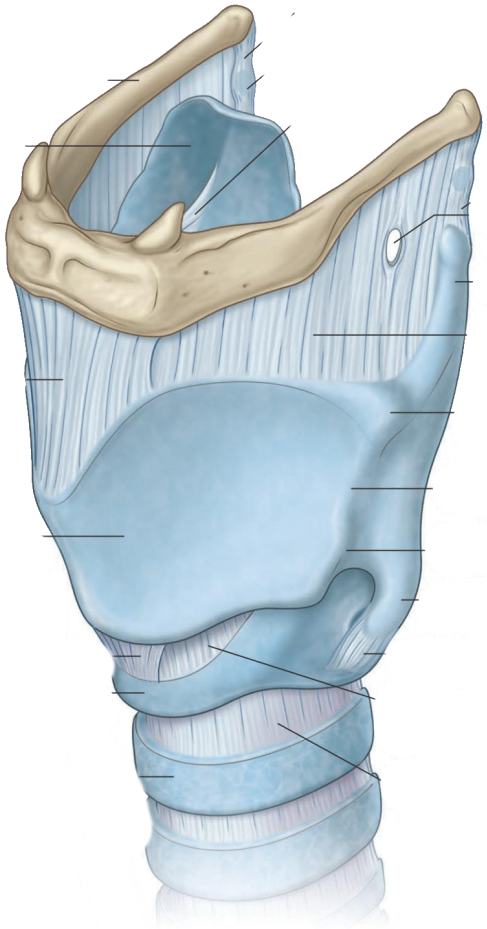
Lecture 18- Acute & Chronic Laryngitis, Benign lesions of the vocal cord and laryngeal nerve paralysis



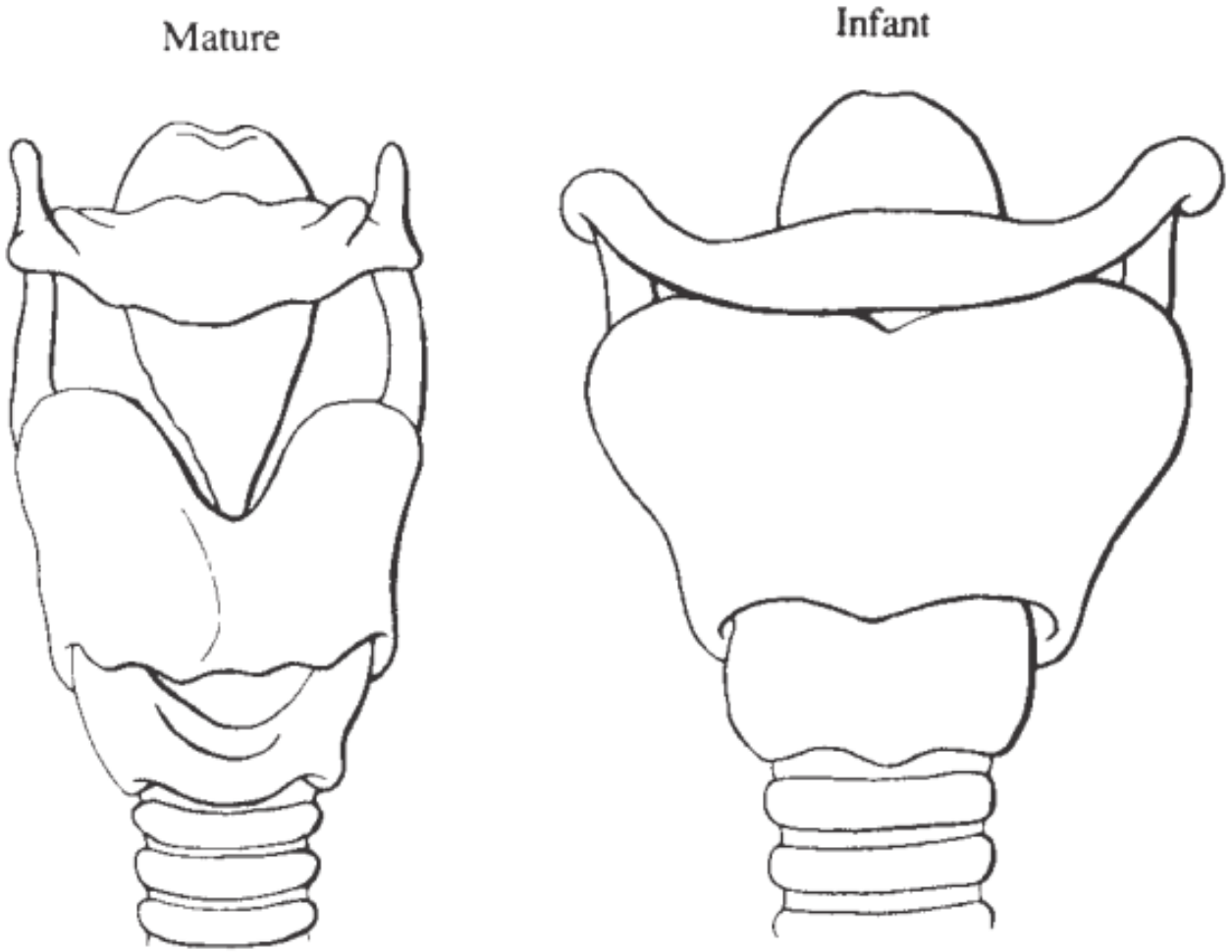


Office FFEL

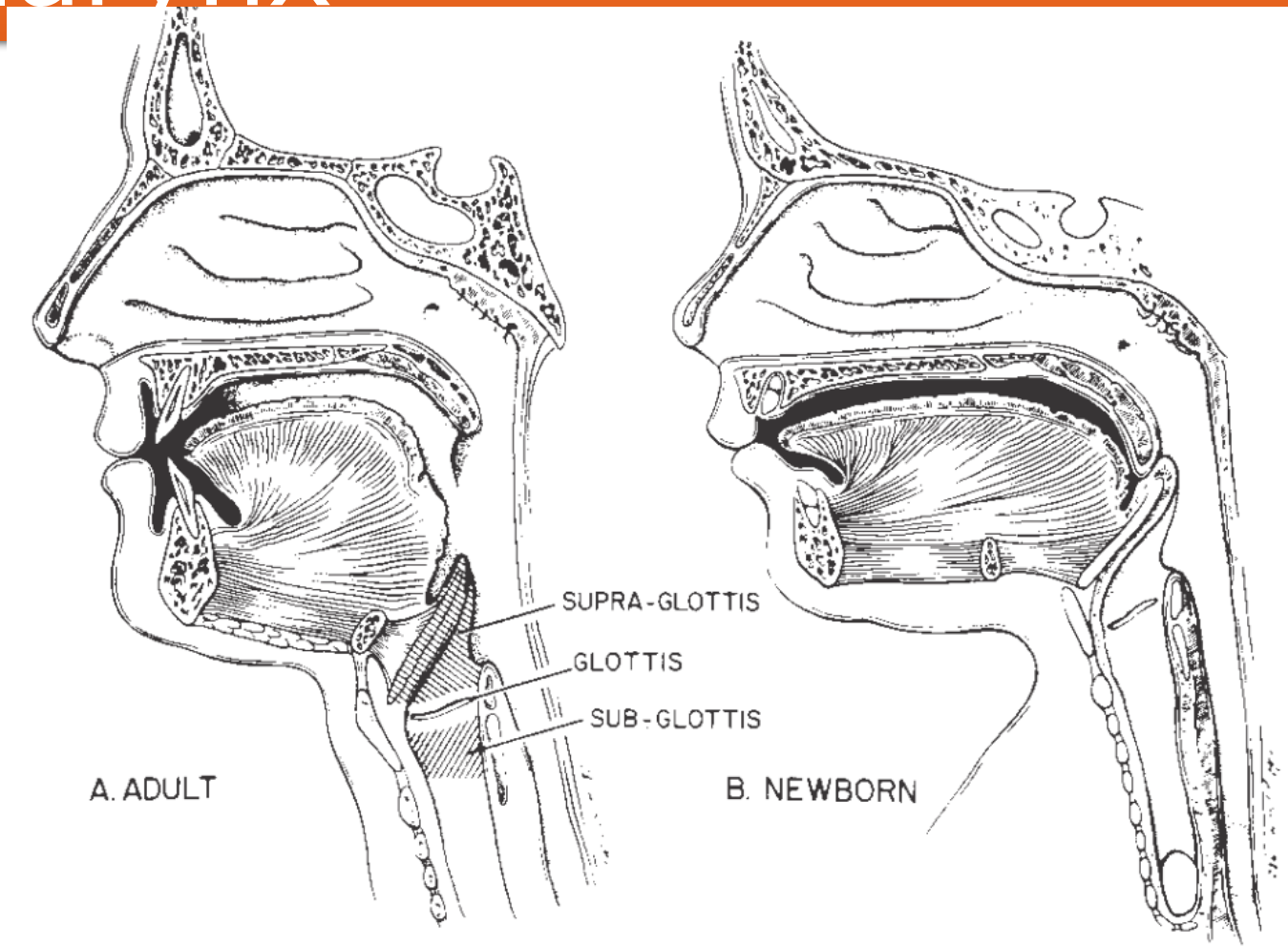
Children are physiologically different from adults.

X Ray ST Neck Lateral view

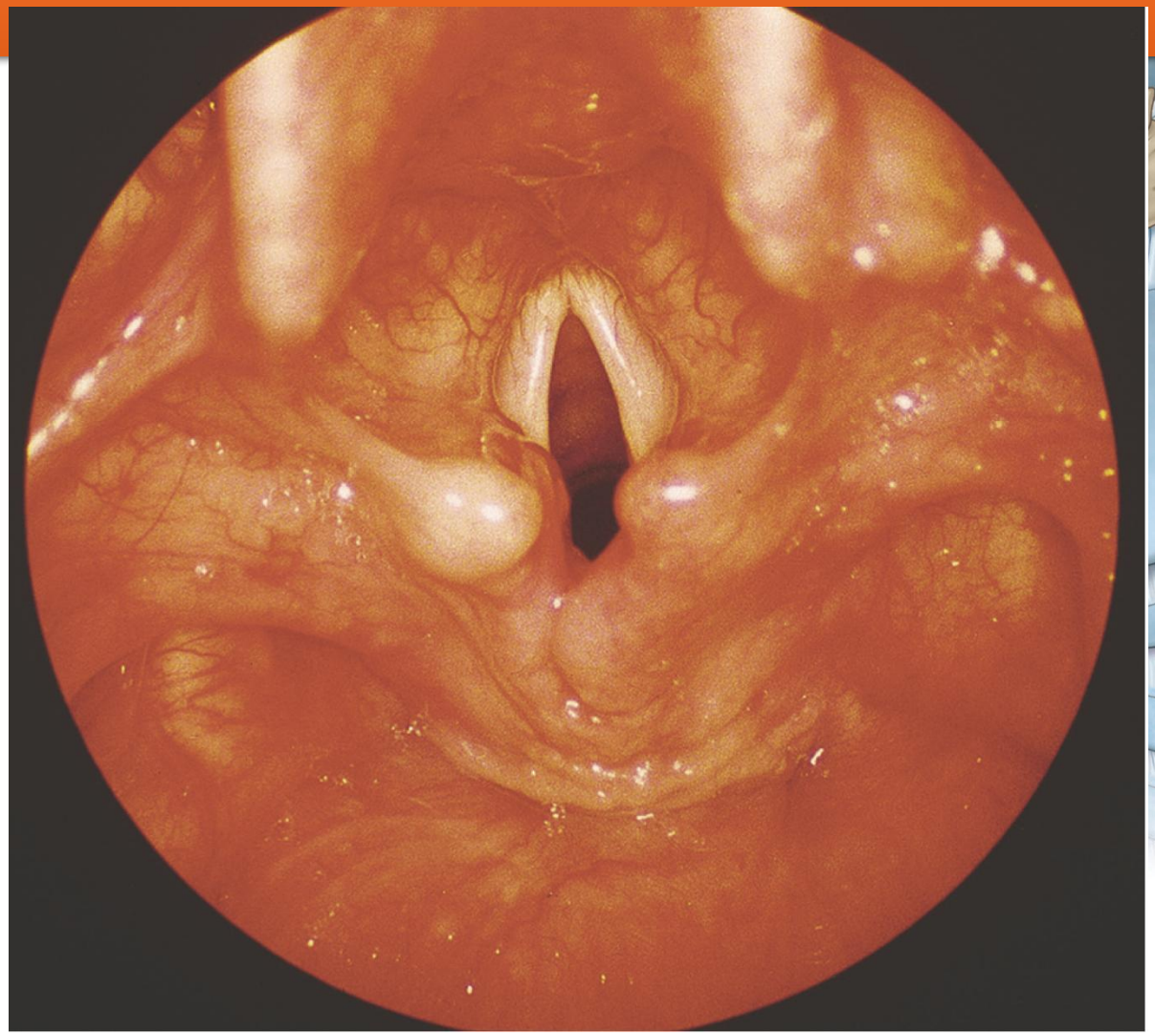
Adult versus Pediatric larynx

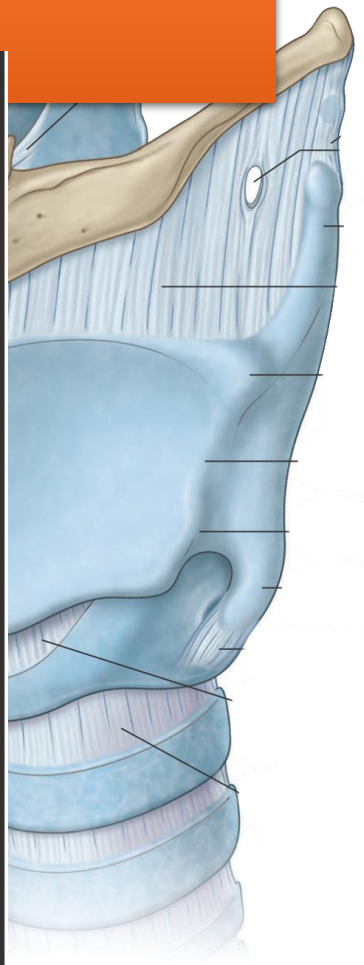


Adult versus Pediatric larynx

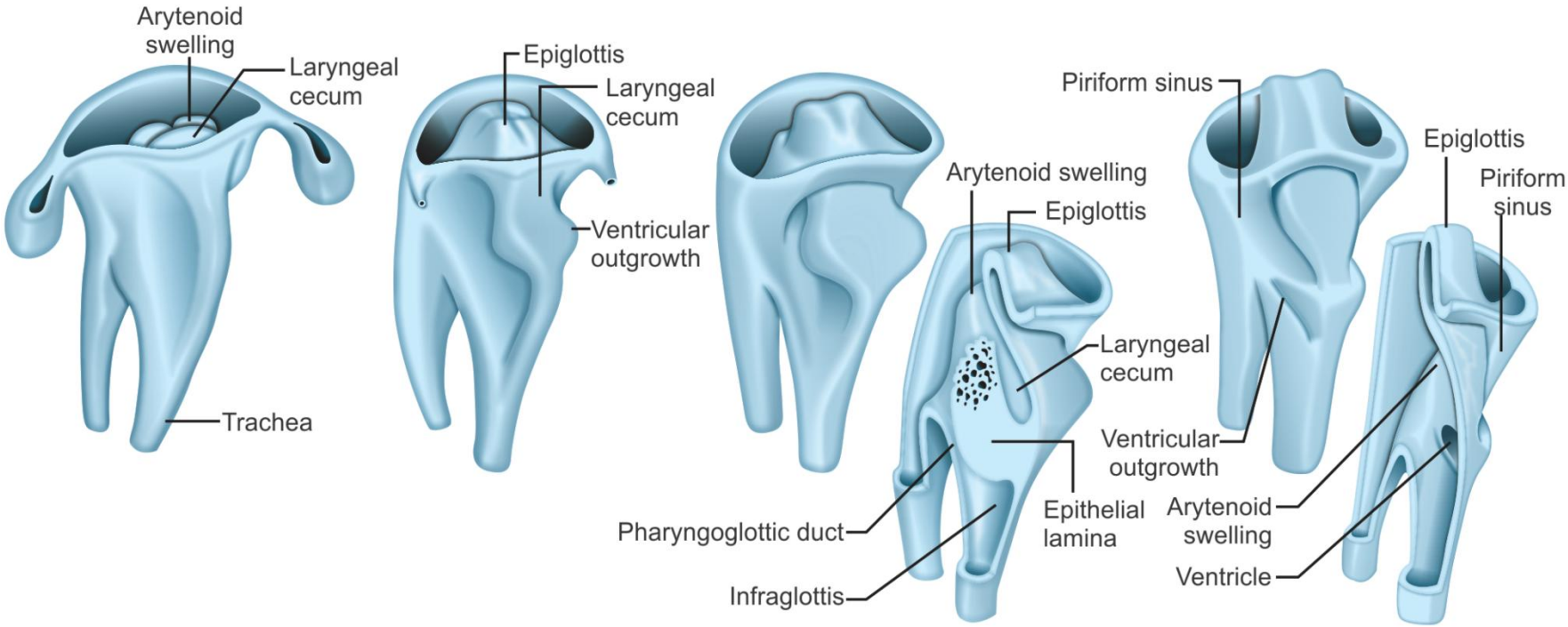


Normal Larynx





Development of Larynx



STRIDOR

- Continuous, High pitch, Musical, Monophonic sound
- Turbulence in airflow
- hallmark of laryngeal or tracheal obstruction
- Mostly Inspiratory or Biphasic only
- Stertor or Snoring
- Snuffling
- Grunting
- Wheezing

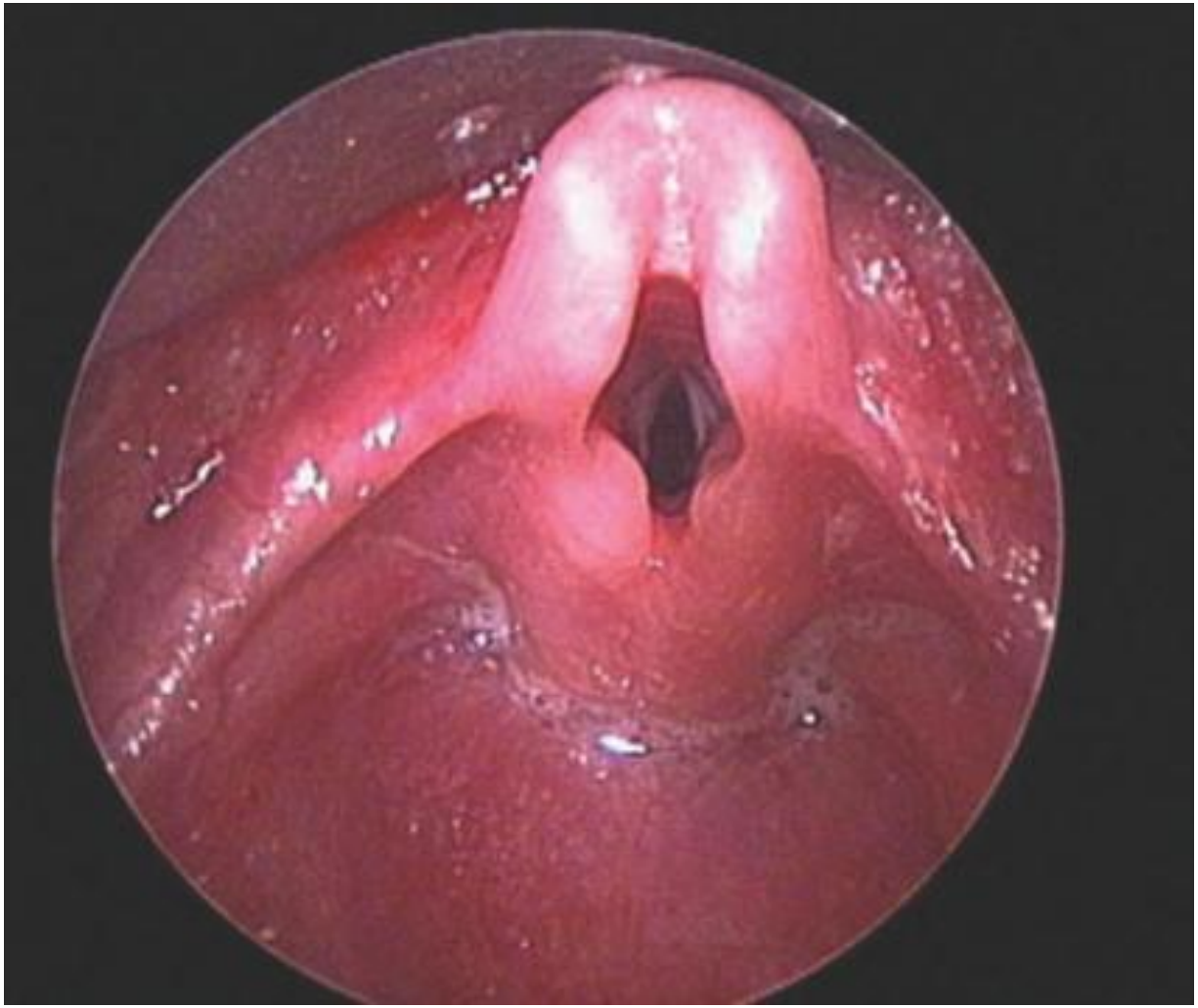
Congenital Anomalies

- Laryngomalacia (Most important)
- Tracheomalacia
- Unilateral or bilateral vocal cord paralysis
- Laryngeal clefts
- Laryngeal webs
- Congenital subglottic stenosis
- Subglottic hemangioma
- Laryngeal cysts—including vallecular, thyroglossal duct, saccular, and subglottic cysts
- Latest = paradoxical vocal fold motion (or ILOs)

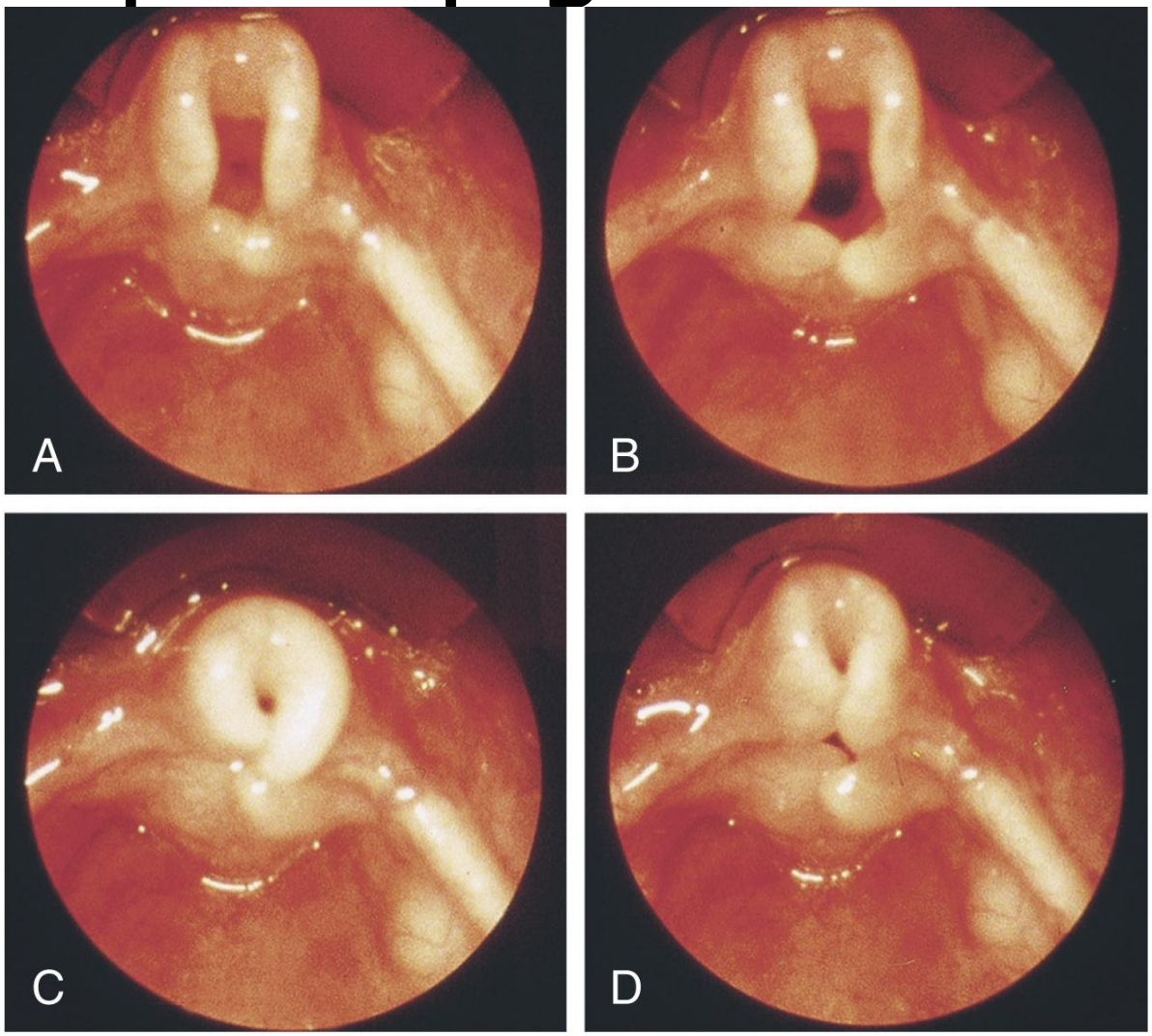
Laryngomalacia

- Collapse of the supraglottic structures on inspiration
- most common cause of stridor in an infant
- Intermittent inspiratory stridor within the first 2 weeks of life
- Stridor in sleep and severe exertion or Crying
- No other manifestation
- Stridor of Lying down position

Curled up Epiglottis



Exaggerated Omega shaped Epiglottis



Findings

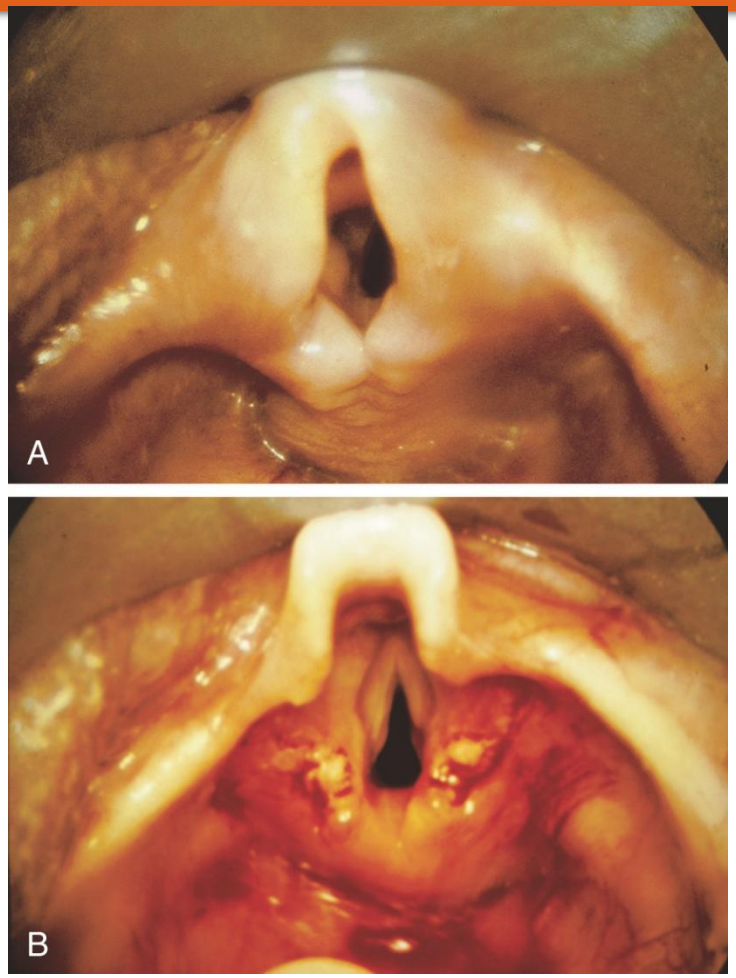
1. Inward collapse of the aryepiglottic folds, primarily the cuneiform cartilages, which often are enlarged.
2. A long tubular epiglottis (a pathologic exaggeration of the normal omega shape).
3. Anterior, medial collapse of the arytenoids cartilages.
4. Posterior inspiratory displacement of the epiglottis against the posterior pharyngeal wall or inferior collapse to the vocal folds.
5. Short aryepiglottic folds

Laryngomalacia

- Chest Retractions,
- Difficulty sleeping/feeding,
- failure to thrive
- Associated with Micrognathia, retrognathia
- Benign condition→ spontaneous resolution of stridor is 7 to 9 months of age maximum by 18 months

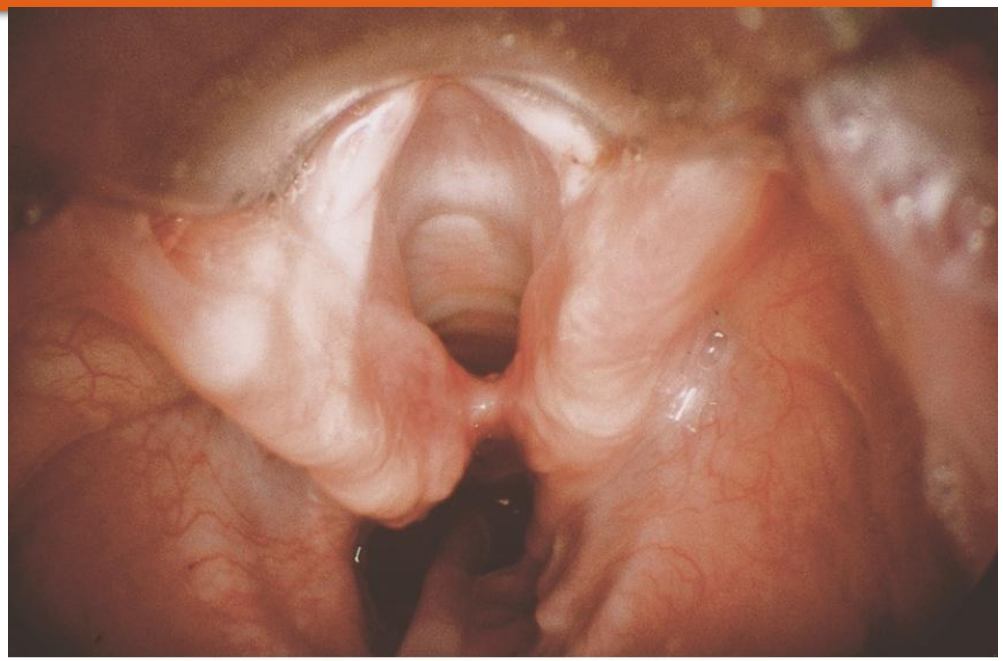
- Most severe cases supraglottoplasty operation

Supra-glottoplasty before A and after B



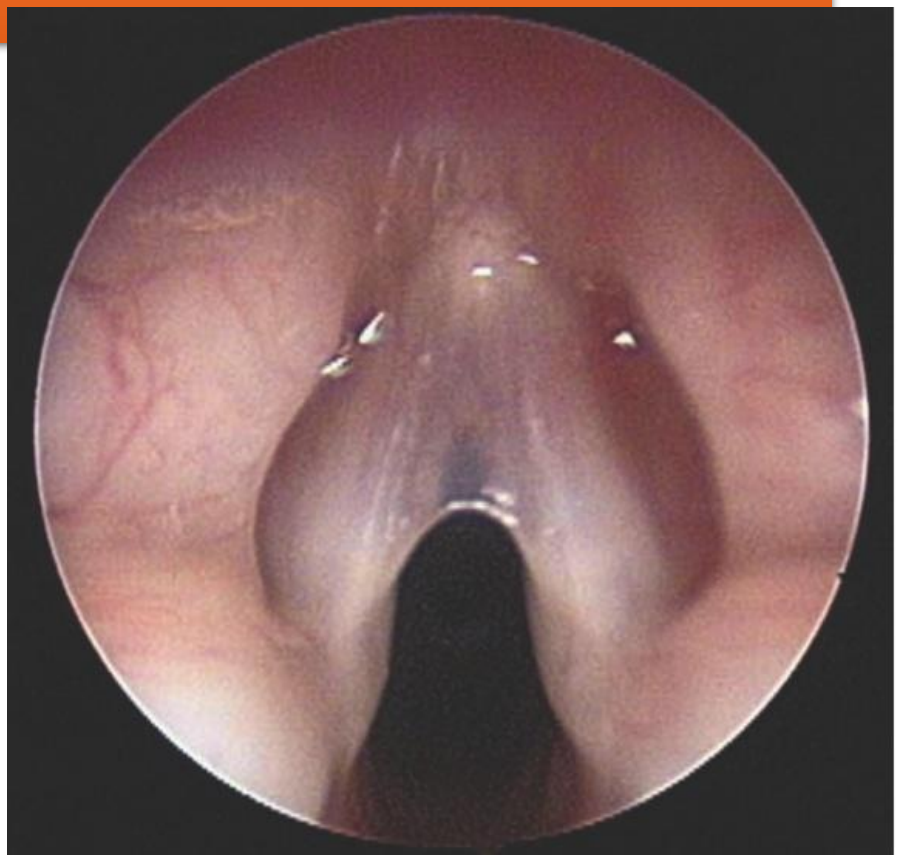
Laryngeal cleft

- Failure of fusion of the posterior cricoid lamina
- Fistula between Cricoid and Oesophagus
- life-threatening airway obstruction big cleft
- No symptoms for small cleft



Laryngeal web

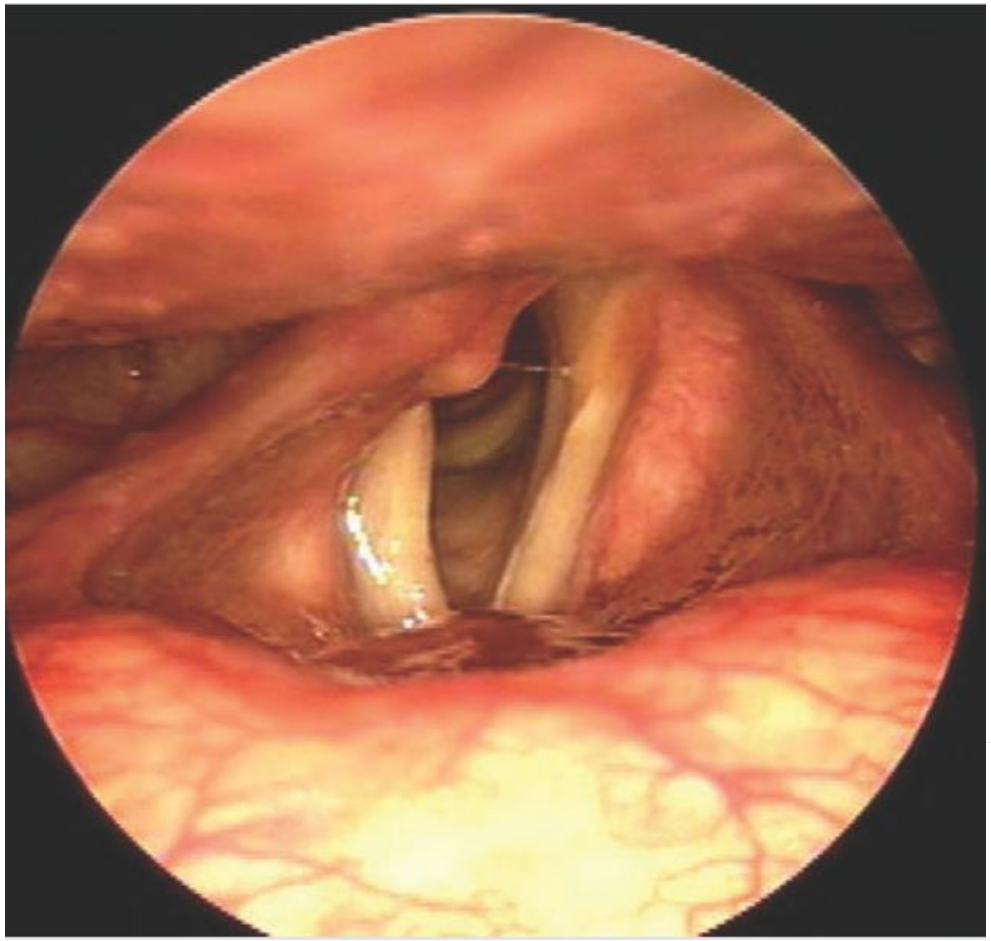
- Stridor, aphonia, hoarseness
- Retractions, difficulty feeding
- Associated with Velocardiofacial syndrome
- Surgical repair

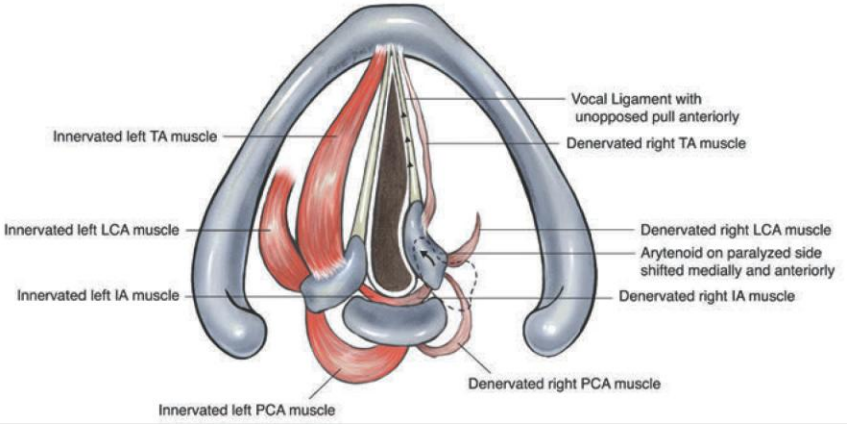


Congenital Vocal fold paralysis

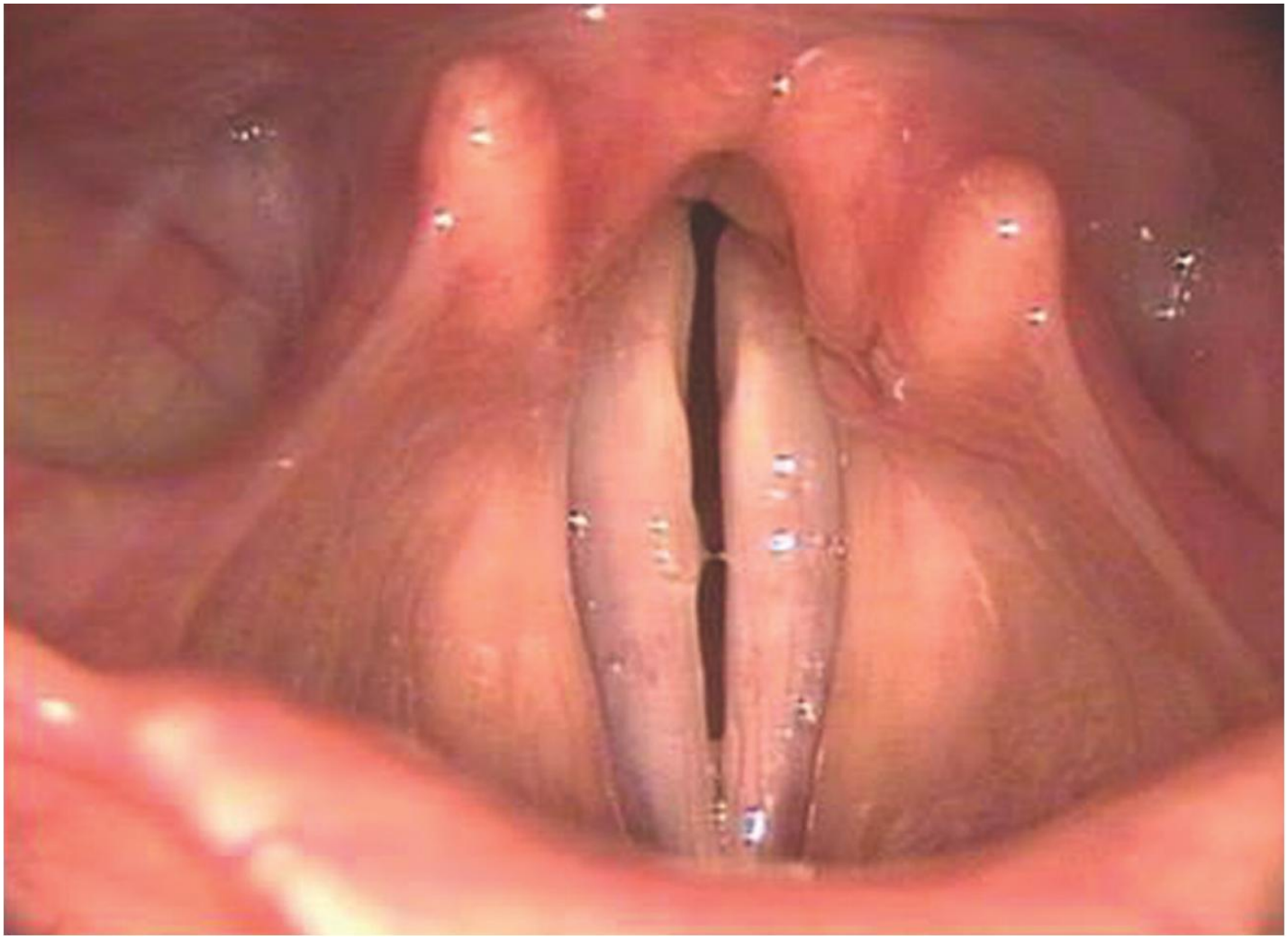
- Stridor, aphonia, hoarseness
- Retractions, difficulty feeding/sleeping, aspiration
- Causes
  - Bilateral: central nervous system pathology (Arnold-Chiari malformation), birth trauma, postsurgical (cardiac surgery), mediastinal mass

Unilateral RLN Paralysis





Bilateral Abductor paralysis



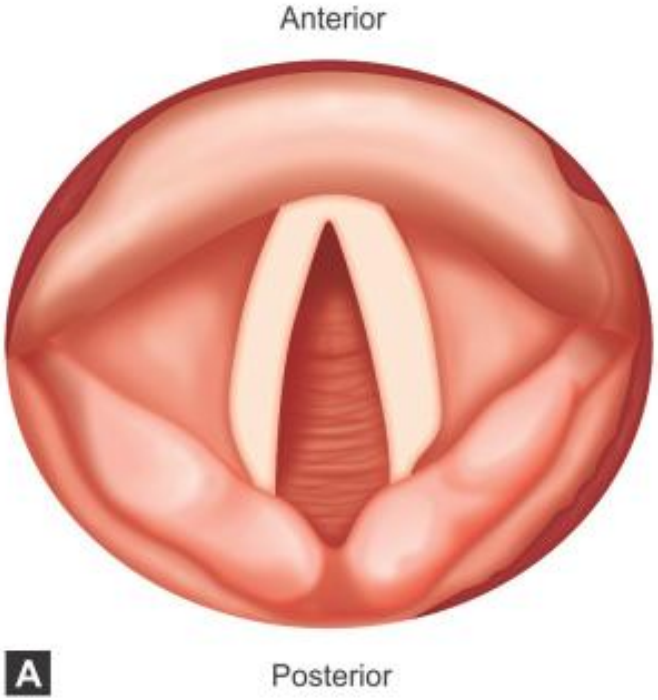
Treatment

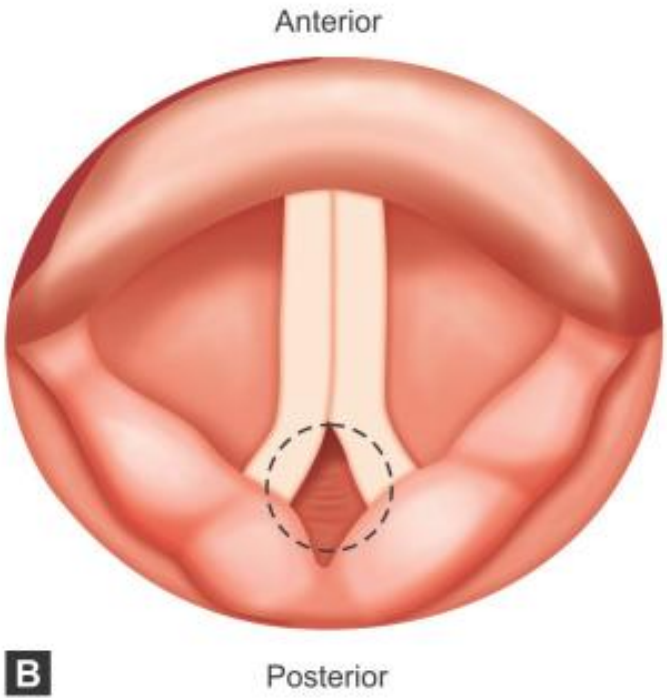
- Nasogastric tube feedings,
- Oxygen supplementation,
- Tracheostomy,
- Posterior cricoid graft (bilateral);
- Vocal fold injection (unilateral)

Paradoxic vocal fold motion

- Episodic inspiratory stridor with crying, agitation, during feeding (infant), or with anxiety or exercise (child)
- Gastroesophageal reflux,
- Allergic rhinitis with postnasal drip,
- Anxiety
- Reassurance only
- Reflux treatment,
- treatment of nasal allergies,

Paradoxical vocal fold motion (PVFM)

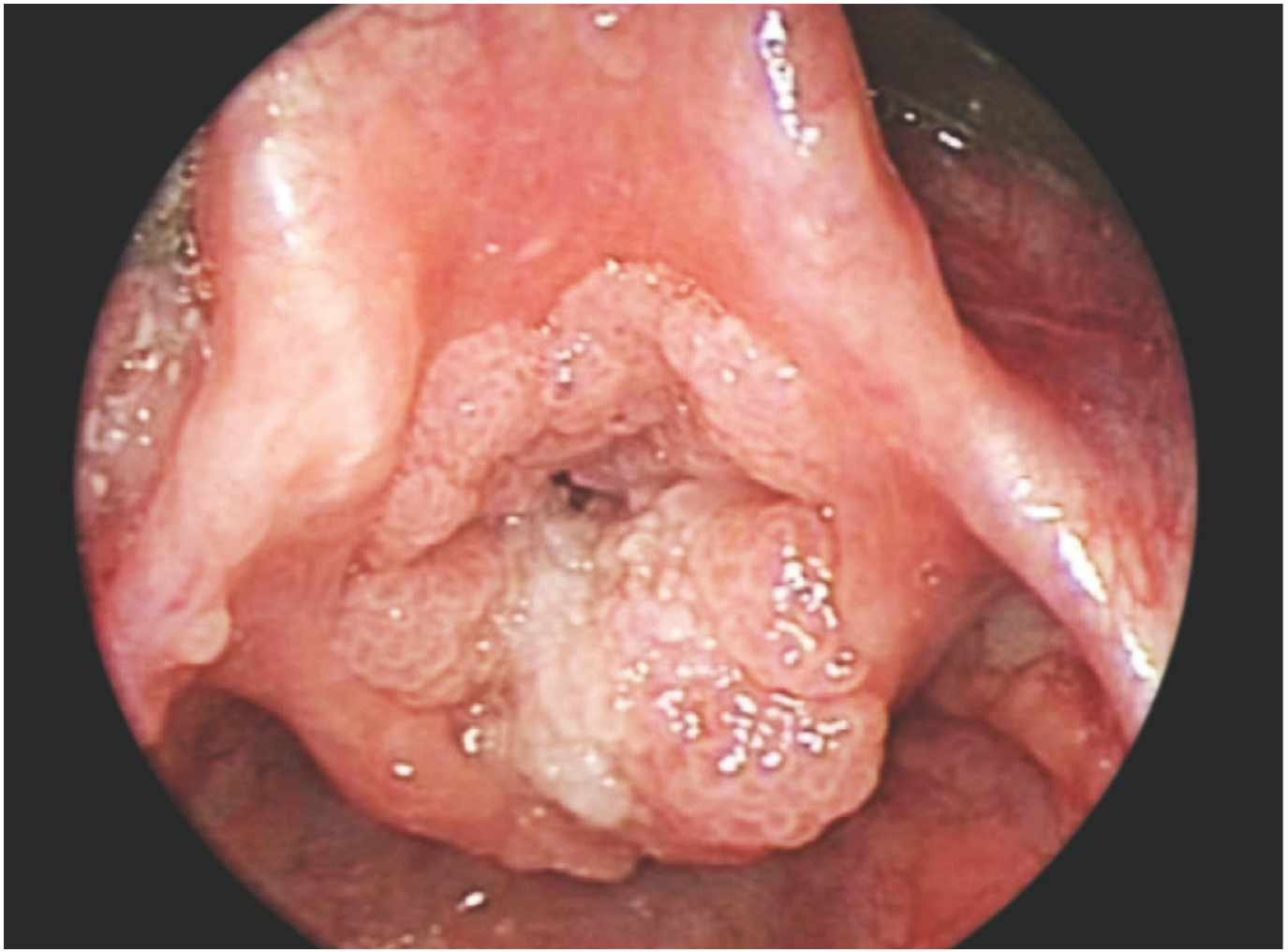




Juvenile Laryngeal Papillomatosis JORP

- JRP Juvenile Respiratory Papillomatosis
- Stridor, hoarseness, aphonia in child
- Birth acquired from maternal cervix warts
- Retractions, hoarseness progressing to aphonia
- Human papilloma virus that causes Genital warts type 16,18
- Surgical debridement,
- Cidofovir intralesional injection

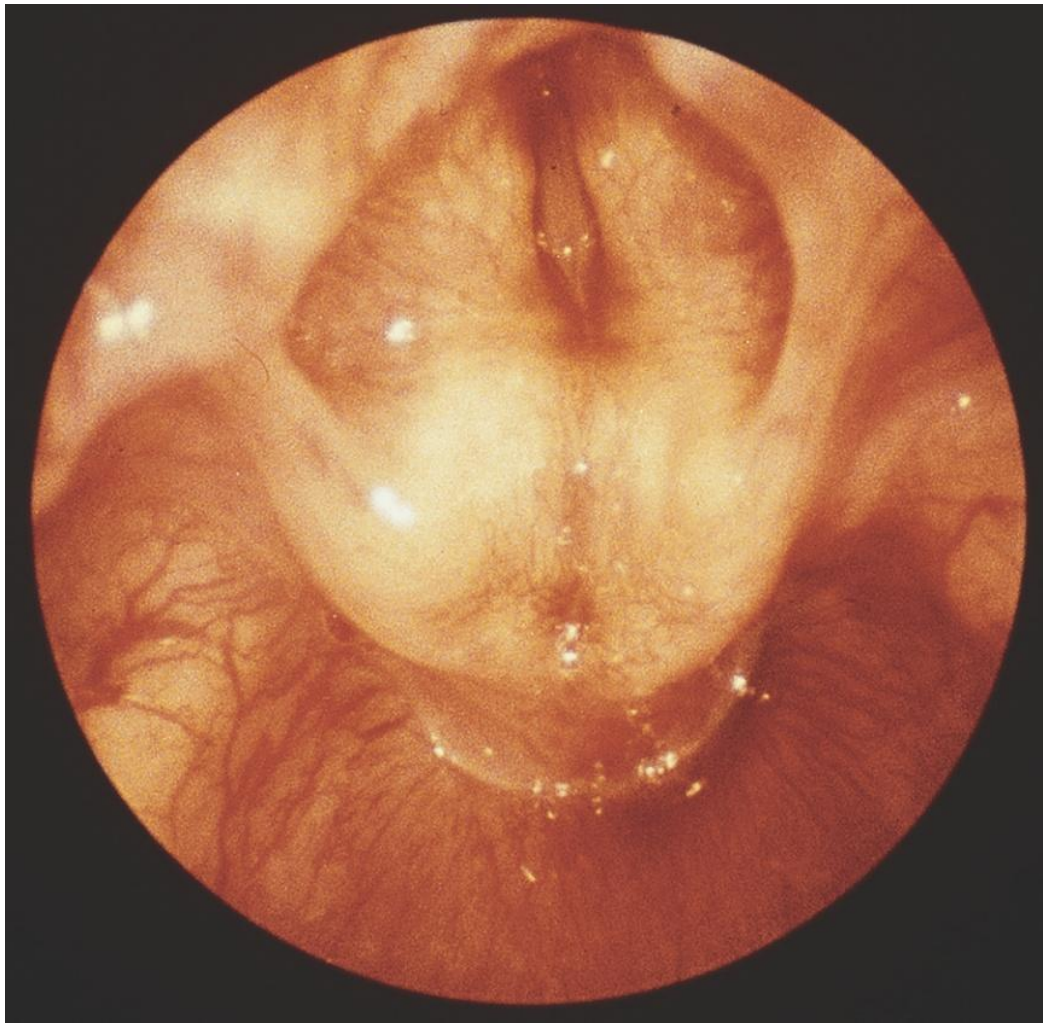
Juvenile recurrent respiratory papillomatosis



Tracheomalacia

- Stridor, biphasic “washing machine” or “rattling” noise,
- coarse upper airway sounds on auscultation,
- expiratory wheeze
- Retractions, exacerbated with exertion or excitement, persistent cough
- Associated with Laryngomalacia
- CPAP, tracheostomy for severe cases

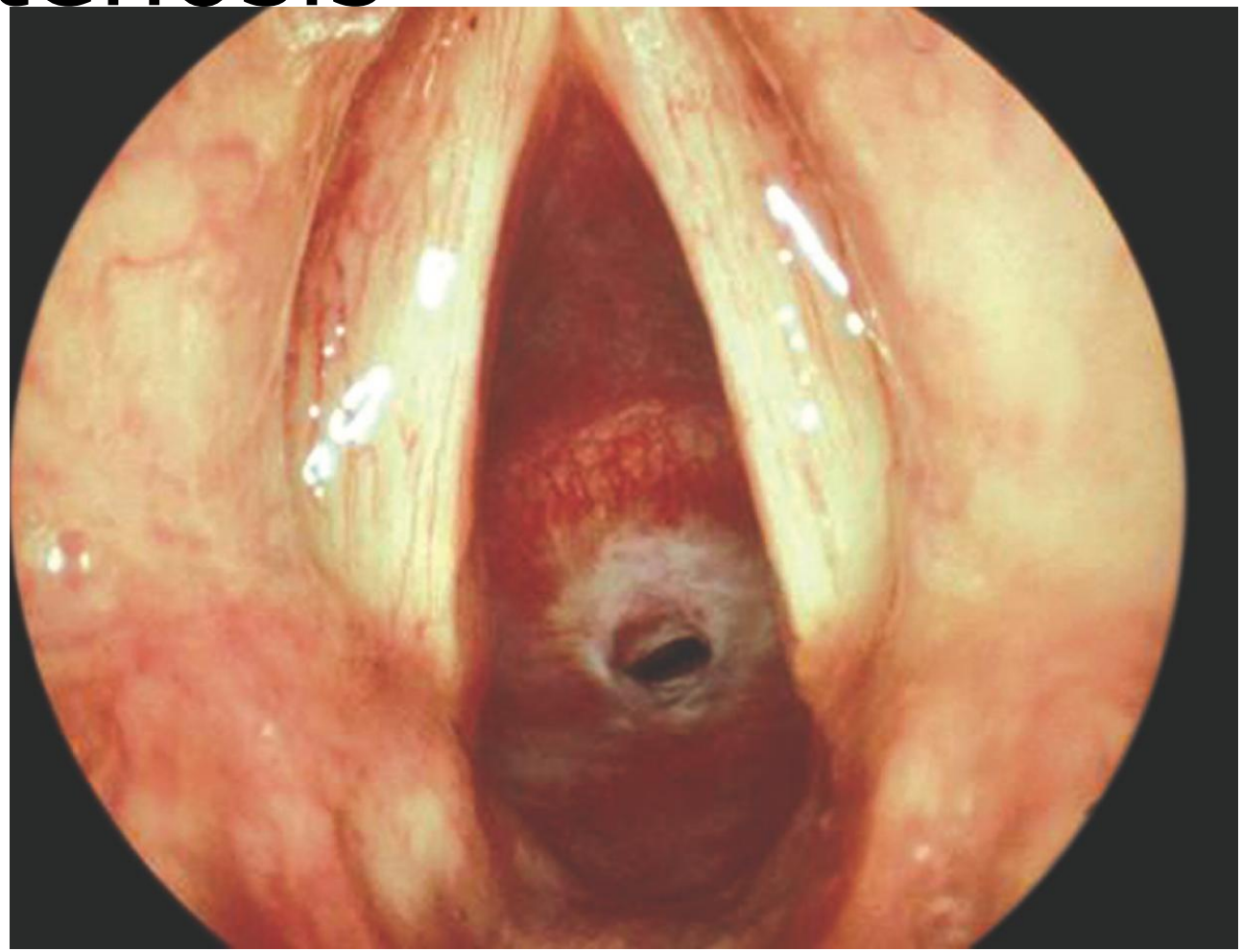
Laryngeal atresia



Subglottic hemagioma

Subglottic hemangioma

Congenital Subglottic Stenosis



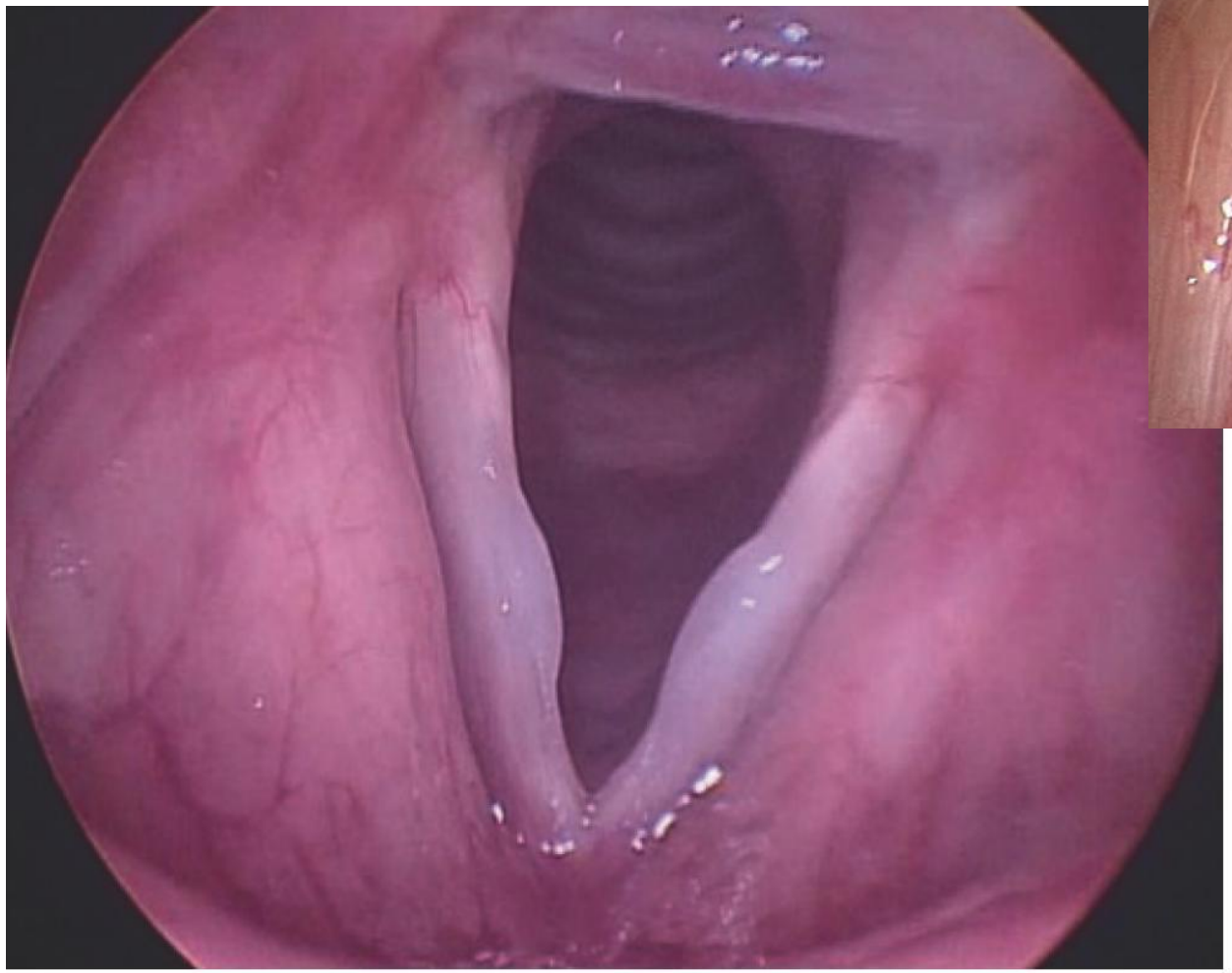
PUBERPHONIA

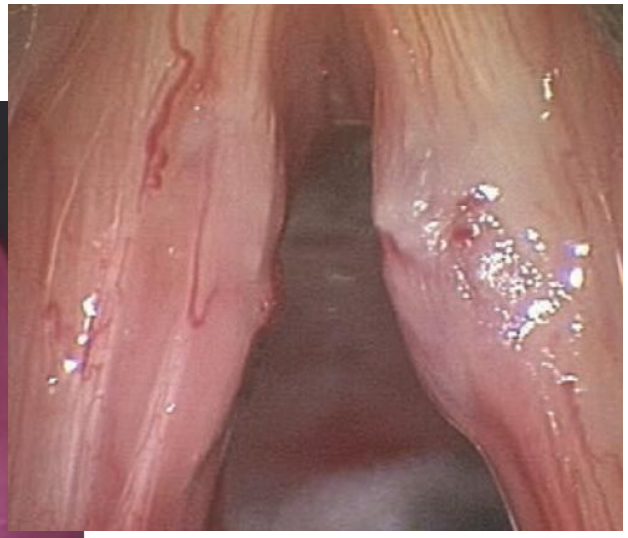
- Persistence of a highpitched voice beyond the teenage
- Boys most common
- Laryngeal growth results in a more drop in fundamental frequency in males (one octave) than in females (three to four semitones)
- Speech therapy

Vocal Nodules

- Singers' nodules, Hawkers' nodules, Teachers' nodules, Shouters nodules
- Professional voice users
- bilateral, fairly symmetric, fibrotic, whitish masses found in the **striking zone** of the true vocal fold (TVF)
- Point of maximum contact on the medial surface
- Etiology: voice misuse/abuse

Singers' nodules



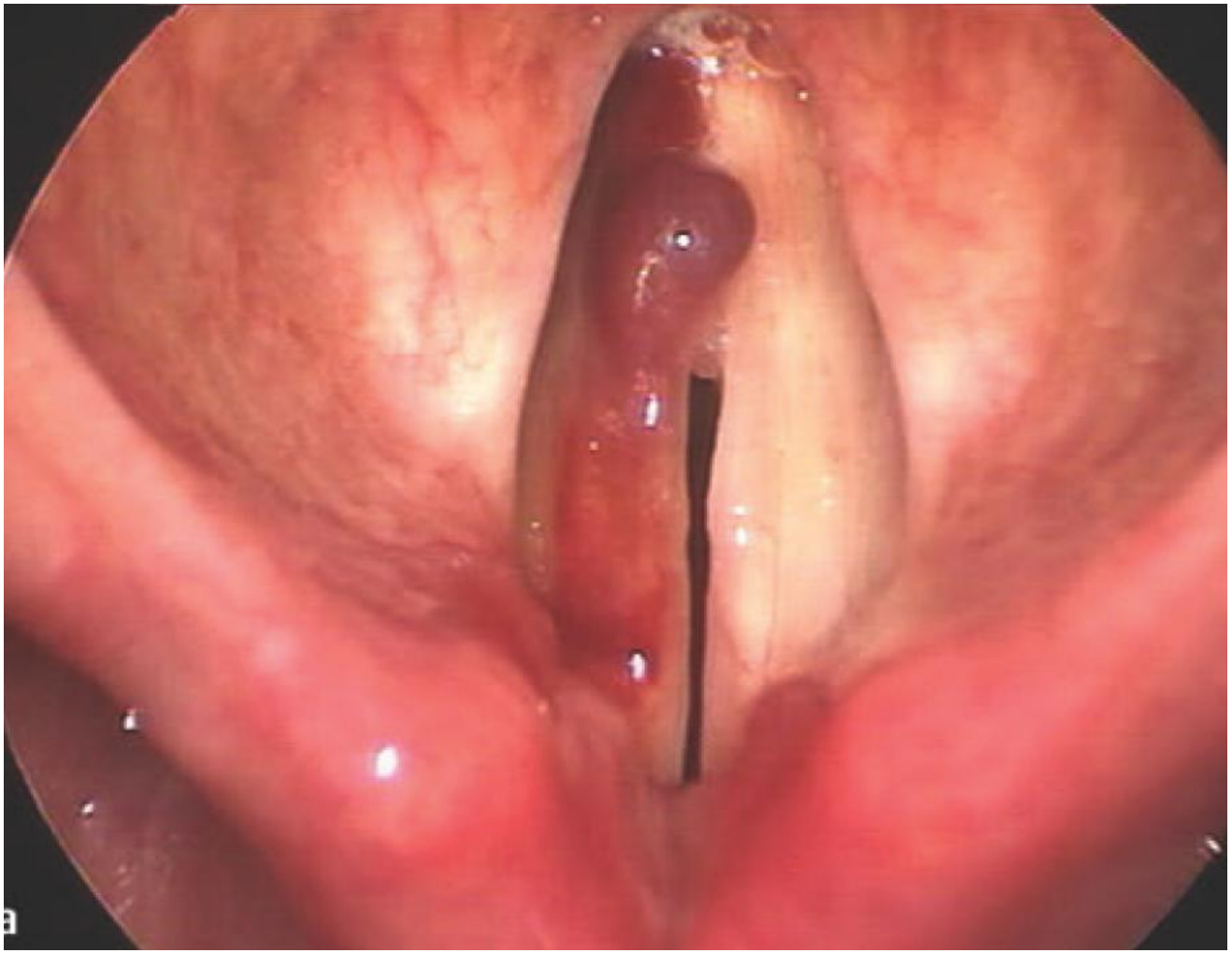


- Pathophysiology: mechanical stress causes epithelial basement membrane duplication and increased collagen deposition in the superficial lamina propria (LP)
- Presentation: hoarseness, breathiness, vocal fatigue, loss of range, pressed speech, strap muscle tension and tenderness; uncommonly asymptomatic
- Tx: Speech therapy, rarely surgery
- Voice therapy for at least 6 to 12 weeks results in cure of symptoms and/or lesions ~90% of the time

Vocal Polyps

- generally unilateral, gelatinous masses of varying size
- Etiology: cough usually traumatic (vocal abuse/misuse); may have increased risk in the setting of chronic irritation/inflammation (eg, tobacco use, laryngopharyngeal reflux [LPR], etc)
- Pathophysiology: traumatic shearing forces cause damage to the vocal fold microvasculature, increased leukocyte infiltration and mucopolysaccharide deposition in the superficial lamina propria

Vocal Polyp

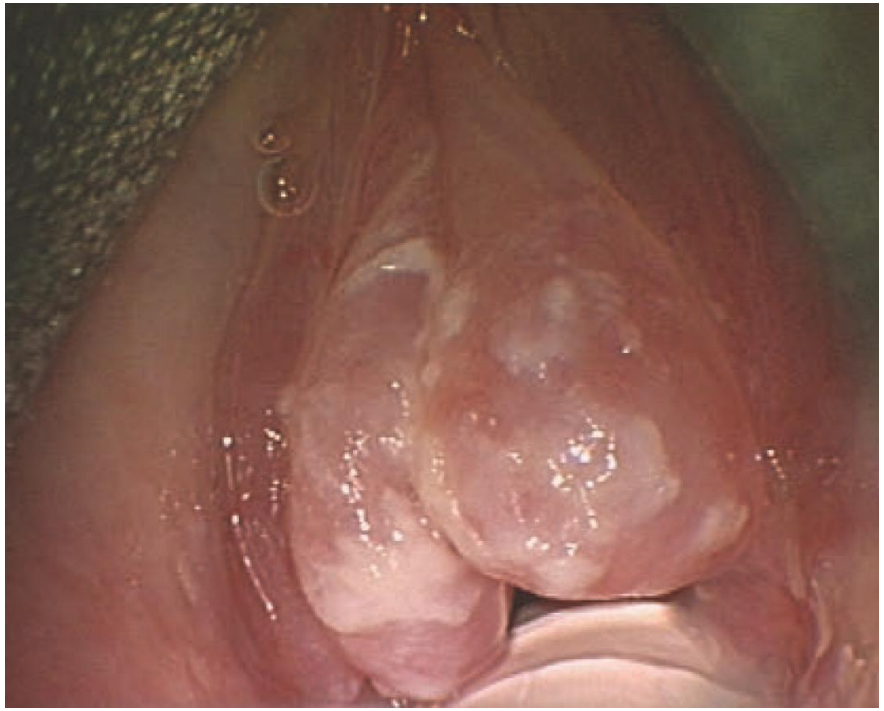


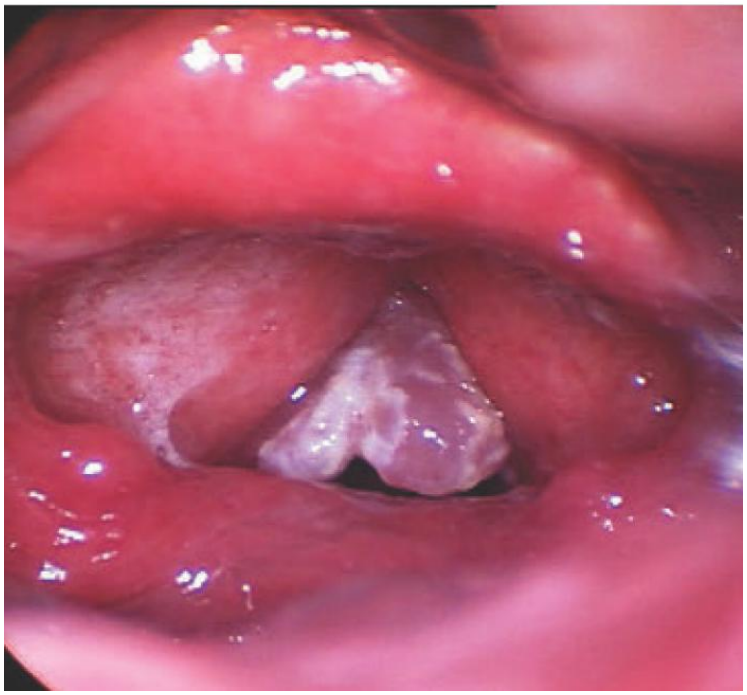
- Presentation: progressive hoarseness, breathiness, vocal fatigue, loss of range and pitch control, cough, stridor, shortness of breath, globus sensation, dysphagia, muscle tension dysphonia (MTD)
- Translucent, fleshy, or erythematous mass with

Preservation of mucosal wave in most cases

- Tx: relative voice rest, vocal hygiene, voice therapy, corticosteroids,surgery

Reinke's edema- Smokers' polyposis – Polypoidal corditis





Acute Laryngitis

- Inflammation of the larynx and Oedema of Vocal cords
- MC caused by viral infection or vocal strain
- Infectious Etiology
  - adenovirus and influenza
  - associated with high fevers
- Secondary bacterial infections
  - Streptococcus pyogenes (group A streptococcus)
  - Staphylococcus aureus

Acute Laryngitis causes

Infectious	
Viral	Rhinovirus, parainfluenza viruses, respiratory syncytial virus, adenovirus, influenza virus, coronavirus, measles virus, human papillomavirus, varicella zoster, herpes simplex, cytomegalovirus
Bacterial	*Hemophilus influenzae*, *Streptococcus pneumoniae*, β-hemolytic Streptococcus, *Klebsiella pneumoniae*, *Moraxella catarrhalis*, *Staphylococcus aureus*, *Mycobacterium*
Fungal	*Candida*, *Aspergillus*, coccidioidomycosis, blastomycosis
Noninfectious	
Mechanical	Vocal abuse, misuse, and overuse
Traumatic	Direct injury from intubation or surgical endoscopy, internal or external blunt or penetrating trauma
Allergic	Various environmental antigens, foods, medications
Nonallergic	Hereditary or acquired angioedema, angiotensin-converting enzyme inhibitors, angiotensin receptor blockers
Thermal	Hot liquids/foods, steam inhalation, proximity to fire, smoking certain illicit substances
Smoke, noxious fumes, occupational exposure	Smoking, pollutants, inhaled exposures, inhaled steroids

Clinical Features

- Dysphonia
- hoarseness and a change in voice
- Short duration
- Fever
- Other respiratory viral symptoms
  - rhinorrhea, low-grade fever, sore throat, and cough

Diagnostic Evaluation

- Rapid influenza test
- Adenoviral polymerase chain reaction (PCR)
- Rapid strep test
- Bacterial culture of throat
- Endoscopy of Larynx

Oedematous vocal folds

- Aperiodicity with incomplete vibratory closure
- Vocal fold tissue becomes more viscous and difficult to mechanically move
- The phonation threshold pressure ↑↑
- Irregular mucosal thickening of edges of VC
- Lowering of speaking fundamental frequency
- Incomplete glottal closure in Vocal cycle

Management

- A self-limited illness like Coryza
- oral hydration,
- Important to advice voice rest,
  - ultimately sustain vocal fold injury from straining
  - greater adduction forces
- Pain medication
- Steroids if airway Oedema is present
- Antibiotics are indicated in cases of secondary bacterial infection

Main messages

- Children are physiologically different from adults
- Most common cause of stridor in infants is laryngomalacia
- Neonatal unilateral or bilateral vocal cord paralysis resolve spontaneously in more than 50%
- Congenital anterior laryngeal webs = 22q11
- MC cause of Acute Hoarseness of voice in adult is Acute laryngitis

Thank you