Basic Science

- Venturi effect
- Bernoulli principle
- turbulence → stridor
Basic Science

- glottis
- supraglottic
- subglottic
- intrathoracic trachea
Basic Science

- pedi airway narrowest at subglottis
- cross-section of airway proportional to square of radius ($\pi r^2$)
Supraglottitis

- “angina epiglottidea anterior”
- bacterial cellulitis of supraglottis
- 2 to 7 years old
- *Haemophilus influenzae* type B most common
- incidence greatly decreased since vaccine
Supraglottitis

- odynophagia
- fever
- irritability
- stridor
- rapidly progressive
Supraglottitis

- If suspected, diagnose by direct laryngoscopy in OR
- Lateral neck film - “thumb sign”
- 1 nasotracheal intubation
- IV antibiotics
- Extubate when air leak noted - usually within 48 hours
Laryngotracheobronchitis

- *croup* - Scottish for barking cough
- 6 months to 3 years old
- Parainfluenza viruses types 1 and 2 most common
Laryngotracheobronchitis

- URI symptoms
- barking cough
- hoarseness
- inspiratory stridor
- low-grade fever
Laryngotracheobronchitis

- laryngoscopy for those with respiratory distress
- AP neck - “steeple sign”
- supraglottis normal
Laryngotracheobronchitis

- usually self-limited
- humidified air
- racemic epinephrine
- steroids
- heliox
- intubation for severe, refractory cases
Spasmodic Croup

- presentation similar to LTB
- sudden onset stridor
- afebrile
- recurrent episodes that resolve spontaneously
- unknown cause
Bacterial Tracheitis

- Jackson - 1945, Jones - 1979
- 6 months to 8 years old
- bacterial infection complicating viral LTB
- *Staph aureus* most common
Bacterial Tracheitis

- URI symptoms
- acute onset high fever and respiratory distress
- no odynophagia
Bacterial Tracheitis

- “steeple sign” on AP neck
- intraluminal soft tissue irregularities
- endoscopy best diagnostic method
Bacterial Tracheitis

- subglottic edema
- ulceration
- pseudomembrane formation
- suction and debride
- nasotracheal intubation
- IV antibiotics
- extubate after 3-7 days
Case Study 1

- 14 month old male
- breathing difficulties
- 2-3 days of URI symptoms
- this morning, cough and loud breathing sound
Case Study 1

- afebrile, respirations 26/min, pulse 124 beats/min
- reclining in mother’s lap, NAD
- soft, biphasic stridor
- lungs clear to auscultation
Case Study 1

- laryngotracheobronchitis
- differential: epiglottitis, bacterial tracheitis, foreign body, subglottic stenosis
Case Study 1

- lateral airway film - neck extended, inspiratory
- racemic epinephrine
- oral dexamethasone
Case Study 1

- observe for 3 hours
- vastly improved at 4 hours post-treatment
- consider direct laryngoscopy and bronchoscopy in 3-4 weeks
Case Study 2

- 6 year old
- rhinorrhea, cough, low grade fever
- acute onset high fever and stridor
Case Study 2

- to OR for endoscopy
- edematous larynx
- ulceration and sloughing of tracheal mucosa
- purulent secretions in right lower lobe
Case Study 2

- nasotracheal intubation
- IV Cefuroxime
- *S. aureus*
- CXR with right lower lobe pneumonia
- extubated 4th day post intubation
Controversies and Future

- drastic decrease in supraglottitis as a result of vaccine
- nasotracheal intubation for supraglottitis
- disposition of children treated for LTB with epinephrine
- steroids in LTB
Conclusion

- cause of much morbidity in pediatric population
- potentially life-threatening
- prompt diagnosis
- assure adequate airway