Upper Airway Obstruction in Children

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Anatomy

• Upper airway includes:
  ✓ Nose
  ✓ Pharynx
  ✓ Larynx
  ✓ Trachea
Stridor

Is a high-pitched breath sound resulting from turbulent air flow in the upper airways...A cute or chronic
Causes

- Upper Airway Obstruction
- Viral Laryngotracheobronchitis (Croup)
- Bacterial Tracheitis
Supraglottic
- Craniofacial
  - Pierre Robin
  - Treacher Collins
  - Hallermann-Streiff
- Macroglossia
  - Beckwith-Wiedemann
  - Down syndrome
  - Glycogen storage disease
  - Congenital hypothyroidism
- Choanal atresia
- Encephalocele
- Thyroglossal duct cyst
- Lingual thyroid

Laryngeal
- Laryngomalacia
- Vocal cord paralysis
- Congenital subglottic stenosis
- Laryngeal web
- Laryngeal cyst
- Subglottic hemangioma
- Laryngotracheoesophageal cleft

Intrathoracic
- Tracheomalacia
- Tracheal stenosis
- Vascular rings/slings
- Mediastinal masses
<table>
<thead>
<tr>
<th>Age Related Differential Diagnosis of Upper Airway Obstruction</th>
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<tbody>
<tr>
<td><strong>Newborn</strong></td>
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<tr>
<td>• Choanal atresia</td>
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<td>• DiGeorge syndrome</td>
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<tr>
<td>• Laryngeal web, atresia</td>
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<td>• Vocal cord paralysis</td>
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<td>• Pharyngeal collapse</td>
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Croup
Clinical Manifestations

- Usually starts with **minor respiratory symptom**: non-specific cough, rhinoorhea and fever
- **Barking cough**, stridor, and resp distress that develops suddenly during the evening or at night
- **Stridor** typically occurs during **inspiration**. Biphasic with more severe cases.
- Hoarseness of voice
Steeple sign on CXR
Bacterial Tracheitis

- 3-5 years old
- Fever
- Barky cough
- Stridor

[Looks similar to croup/epiglottitis]

Rapid progression

Muco-purulent secretions

Pseudomembrane

Airway emergency

- Aggressive airway management (in OR)
- IV antibiotics (broad spectrum)
- IV fluids
- Bronchoscopy

But...Toxic appearing
Epiglottitis

Clinical presentation:
- Drooling
- Sick looking
- Hyperextended neck
- Stridor
- Cough is unusual
- Initial rapid assessment of potential for epiglottitis
- Approach the child calmly and avoid aggravating the child, do not use a tongue depressor to examine the oral cavity
- Ensure the multi-disciplinary team is available and alerted for the potential patient
- Airway management if necessary should be performed in the operating room with mask ventilation proceeding to airway evaluation and intubation; a surgical airway is a last resort
- Obtain cultures if possible, continue airway intubation in an ICU setting until a leak develops, and begin appropriate antibiotics as indicated
- Wean to extubate as airway parameters permit; consider an interval examination in the operating room prior to extubation
Laryngomalacia
M/C cause of chronic stridor
Signs/Symptoms

- Low pitched inspiratory stridor
  - Peaks at 6-9 months
  - Positional variation
  - Exacerbated by activity (feed, exertion), supine position, and during viral illnesses.
  - Appears within first 2 weeks of life
  - Diminishes by rest, prone position, and sleeping
- Rarely produces cyanosis
The child with stridor

Clinical features to assess

- Toxic, ill looking
- Exhaustion
- Level of consciousness
- Drooling saliva
- Stridor
- Chest recession:
  - Mild – at rest only
  - Severe – marked sternal recession even at rest
- Fever
- Hoarse, barking cough
- Cyanosis
- \( O_2 \) saturation

Clinical conditions

**Croup**
- Mostly viral
- 6 months to 6 years of age
- Harsh, loud stridor
- Coryza and mild fever, hoarse voice

**Bacterial tracheitis:**
- High fever, toxic
- Loud, harsh stridor

**Inhaled foreign body**
- Choking on peanut or toy in mouth
- Sudden onset of cough or respiratory distress

**Epiglottitis:**
- Caused by *H. influenzae* type b, rare since Hib immunisation
- Mostly aged 1-6 years
- Acute, life-threatening illness
- High fever, ill, toxic-looking
- Painful throat, unable to swallow saliva, which drools down the chin

**Laryngomalacia or congenital airway abnormality:**
- Recurrent or continuous stridor since birth

**Other rare causes:**
- See Box 16.1
THANK YOU