FOREIGN BODY ASPIRATION (PEDIATRICS)

Background
1. General Information
   - 73% of cases <3 years old
     - Organic causes > nonorganic causes. Peanuts account for 1/3
     - Organic sources: carrot, apple, beans, popcorn, sunflower and watermelon seeds
     - Nonorganic sources: small toys (balloons), batteries, other small parts.
     - Hot dogs relatively common cause, but seen less often clinically; higher probability of complete aspiration.

Pathophysiology
1. Pathology of Disease
   - R>L bronchus>trachea
   - Esophageal FB can compress trachea and cause resp. symptoms
2. Incidence, Prevalence
   - 600 pediatric deaths per year (US) (2/100,000)
3. Risk Factors
   - Age: small airways, lack of fully developed larynx, oral exploration.
   - M>F
4. Morbidity / Mortality
   - Unintentional suffocation leading cause of injury-related death in <1 y/o
   - Most serious complication is complete obstruction: most commonly completely obstructed items: hotdogs, grapes, nuts, candies

Diagnostics
1. History
   - Complete obstruction—cough to syncope
   - Incomplete—clinical suspicion most important
     - Initial: paroxysms of cough/choke/gag/wheeze
     - Asymptomatic interval: initial irritative symptoms subside
     - Complications: obstruction/erosion/infection
2. Physical Examination
   - Choking/gagging/wheezing or asymptomatic (up to 1/3), cyanosis—all have low positive predictive value
3. Diagnostic Testing
   - CXR: + in 70-85%. Contralateral mediastinal shift, segmental hyperlucency, atelectasis, pneumonia. Opaque foreign body in 10-25%
   - CT scan
   - IF moderate/high index of suspicion, esp. if nuts, proceed to bronchoscopy
4. Laboratory evaluation
   - Not useful
5. Other studies
   - Bronchoscopy is definitive diagnostic and treatment modality
**Differential Diagnosis**
1. Key Differential Diagnoses
   - Asthma
   - Pneumonia/bronchitis
   - Other cardiopulmonary causes dependant on presentation

**Therapeutics**
1. Acute Treatment
   - Heimlich if witnessed complete obstruction.
   - Laughter or nonintervention if can breathe
2. Further Management
   - Bronchoscopy if index of suspicion warrants

**Follow-Up**
1. Prompt referral to specialist for bronchoscopy if indicated

**Prognosis**
1. Most recover with appropriate diagnosis if incomplete aspiration
2. Bronchiectasis may develop for some with organic foreign bodies of longer duration

**Prevention**
1. No nuts or round crunchy objects in <4 y/o.
2. Parental supervision during eating
3. Child Safety Protection Act requires choking hazard warning labels on some nonfood items.

**Patient Education**
2. Children’s Medical Center—Dallas. Foreign Bodies in the Airway. [http://portal.childrens.com/wps/portal!ut/p/b0/04_Sj9CPykssy0xPLMnMz0vMAfIjioSS8tTc3KsAgyMDIxn9cP1o_SjiSoLUVUIjLQ30C3JzHQFFwUP1/](http://portal.childrens.com/wps/portal!ut/p/b0/04_Sj9CPykssy0xPLMnMz0vMAfIjioSS8tTc3KsAgyMDIxn9cP1o_SjiSoLUVUIjLQ30C3JzHQFFwUP1/). Accessed 1/14/2012.

**References**
5. Gregori D, Salerni L, Morra B, et al. The ESFBI Study Group. Foreign Bodies in the Upper Airways Causing Complications and Requiring Hospitalization in
Children Aged 0-14 years: Results from the ESFBI Study. Arch Otorhinolaryngol 2008;265: 971-8.

**Author:** Vince WinklerPrins, MD, Georgetown University-Providence Hospital, Washington DC