Toddler with Airway Foreign Body

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Objective:

After this exercise, the participant will become familiar with the pre-operative evaluation, anesthetic management, options for surgical management and post-operative issues relevant to the management of airway foreign bodies in children.

Case Stem:

An eighteen month old male child is referred to the otolaryngology service of your institution for management of a suspected airway foreign body. The toddler has always enjoyed good health, and was being watched by his grandparents today. Two hours ago he suffered with the acute onset of coughing, which quickly resolved leaving residual respiratory distress. Upon evaluation in the emergency department he was noted to have a respiratory rate of 35 breaths per minute with oxygen saturations of 97% on blow by oxygen. He is using accessory muscles of respiration to a moderate degree. On auscultation the toddler has some diminished breath sounds over the right middle and right lower lobes and has expiratory wheezing. His chest radiograph demonstrates an open safety pin in the trachea and right bronchus.

Key Questions for Discussion:

1. Pre-operative Evaluation:

   a. What are the three histories typical of airway foreign body?
   b. Who most commonly aspirates foreign bodies into the airway?
   c. Does the absence of symptoms in the ED, or absence of radiographic abnormalities, exclude airway foreign body?
   d. What are the most common objects aspirated?
   e. Which organic materials are the most noxious to the lung tissue?
   f. Which ones are the most lethal?
   g. What is the natural history of most choking episodes?
   h. What clinical symptoms warrant immediate response before coming to the operating room?
   i. What interventions could be tried prior to arrival in the operating room if the patient was rapidly deteriorating?
   j. In the relatively stable patient, when should the case be done?
      i. What are the risks associated with waiting?
      ii. What are the risks associated with not waiting?
   k. Would you treat the patient’s wheezing?
      i. How is reactive airway disease treated for urgent / emergent cases?
2. **Intra-operative Management:**

   a. Should this patient be pre-medicated?
      i. Aspiration prophylaxis
      ii. Anxiolysis
   b. What technique would you use for induction of anesthesia?
   c. What are the merits of:
      i. Inhalation induction.
      ii. Intravenous induction.
      iii. Use of neuromuscular blockade.
      iv. Not using neuromuscular blockade.
   d. What are most of our anesthesia colleagues doing to manage airway foreign bodies in children?
   e. If during induction the patient develops complete airway obstruction, what can be done to relieve it?
   f. What surgical complications could be reasonably expected during removal of the pin and what could be done to prevent and / or manage them?
      i. Bleeding in the airway.
      ii. Perforation of the airway by the pin.
   g. How would anesthetic management and potential for surgical complications change if the patient had presented one month after (after misdiagnosis as reactive airway disease exacerbation) aspiration instead of two hours later?
   h. What would be the implications for anesthetic management if the patient presents with inspiratory / expiratory stridor (sometimes misdiagnosed as croup) instead of expiratory wheezing?

3. **Surgical Management:**

   a. Discuss the options, indications, and merits for the following modalities for removal of airway foreign bodies.
      i. Rigid bronchoscopy.
      ii. Flexible fiberoptic bronchoscopy.
      iii. Bronchoscopy with removal through tracheotomy.
      iv. Bronchotomy.
      v. Lobectomy.
      vi. Pneumonecotomy

4. **Post-operative Management and Complications:**

   a. Discuss the common post-operative complications after uncomplicated endoscopic airway foreign body removal?
   b. Discuss the potential sequelae of longstanding airway foreign bodies?
   c. The indications for post-operative mechanical ventilation?
Recommended Reading


