

An Unusual Presentation of Impacted Foreign-Body in the Larynx: A Case Report

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Case Report

Abstract: Most airway foreign body aspirations occur in children younger than 15 years; children aged 1-3 years are the most susceptible. Vegetable matter tends to be the most common airway foreign body; peanuts are the most common food item aspirated. Our case become unique in the sense that in spite of being horny projections of foreign vegetative material retained for almost 30 hours, patient presented with no signs of laryngeal spasm.

Key Words: foreign body, x-ray of airway, larynx.

Introduction

The diagnosis and treatment of foreign bodies in the airway are a challenge for otolaryngologists. Despite improvements in medical care and public awareness, approximately 3000 deaths occur each year from foreign body aspiration, with most deaths occurring before hospital evaluation and treatment. A high index of suspicion is needed for foreign body aspiration to allow for prompt treatment and avoidance of complications. Chevalier Jackson revolutionized endoscopic foreign body removal in the early 1900s with principles and techniques still followed today. The development of the rod-lens telescope in the 1970s and improvements in anesthetic techniques have made foreign body removal a much safer procedure. The history and physical examination are the most important aspects in the decision for surgical intervention. A strong history of suspected foreign body aspiration prompts an endoscopic evaluation, even if the clinical findings are not as conclusive or are not present.



Figure 1: Flexible laryngoscopy showing prickly fruit of thorn apple(*Datura Stramonium*) over anterior commissure.

Case History

A 13 years old female patient presented to the emergency room of our hospital with a history of accidental aspiration of a vegetative foreign body (prickly fruit of THORN APPLE). Her history from relatives revealed that she never had any respiratory problems and was symptomatic for the previous 8 hours only. The patient was in mild respiratory distress and had hoarseness of voice. Patient also had dysphagia with three episodes of vomiting. The Patient had no history of loss of consciousness or altered sensorium. Patient was conscious and oriented. On inspection she had mild suprasternal retractions. On auscultation the air entry was bilaterally equal with mild rhonchi. Indirect laryngoscopy was performed in the emergency room but patient was not cooperative, no evidence of ulcerations or bleeding over posterior pharyngeal wall..... Rest of the ENT examination was normal. X-ray neck AP and lateral views and Chest X-ray were normal. The patient was admitted and started with nebulization and intravenous steroids. The respiratory distress decreases but hoarseness of voice went on worsening. On flexible laryngoscopy, the vegetative foreign body was seen to be lodged in the glottis over the anterior commissure(Fig2). The patient was taken under general anaesthesia and foreign body, a prickly fruit of thorn apple of size 2 by 1 cm(Fig 2) was removed by direct laryngoscopy. Post operatively patient was continued on antibiotics, steroid pump inhaler and nebulization.



Figure 2: Arrow indicates swollen foreign body (2 by 1cm size), removed, other one for comparison.

Discussion

Airway foreign bodies can become lodged in the larynx, trachea, and bronchus. The size and shape of the object determine the site of obstruction; large, round, or expandable objects produce complete obstruction, and irregularly shaped objects allow air passage around the object, resulting in partial obstruction. Young children comprise the most common age group for foreign body aspiration because they tend to put objects in their mouth more frequently and also lack coordination of swallowing and glottic closure and lack molars for proper grinding of food contributes for foreign body aspiration. After foreign body aspiration occurs, the foreign body can settle into 3 anatomic sites, the larynx, trachea, or bronchus. Of aspirated foreign bodies, 80-90% become lodged in the bronchi. In adults, bronchial foreign bodies tend to be lodged in the right main bronchus because of its lesser angle of convergence compared with the left bronchus and because of the location of the carina left of the midline. Several papers have demonstrated equal frequency of right and left bronchial foreign bodies in children. Larger objects tend to become lodged in the larynx or trachea.

In general, aspiration of foreign bodies produces the following 3 phases:

Initial phase - Choking and gasping, coughing, or airway obstruction at the time of aspiration

Asymptomatic phase - Subsequent lodging of the object with relaxation of reflexes that often results in a reduction or cessation of symptoms, lasting hours to weeks

Complications phase - Foreign body producing erosion or obstruction leading to pneumonia, atelectasis, or abscess

Clinical presentation depends on the location of the foreign body. A large foreign body lodged in the larynx or trachea can produce complete airway obstruction from either the dimensions of the object or the resulting edema.

Laryngeal foreign bodies present with airway obstruction and hoarseness or aphonia.

Tracheal foreign bodies present similarly to laryngeal foreign bodies but without hoarseness or aphonia.

Tracheal foreign bodies can demonstrate wheezing similar to asthma. **Bronchial** foreign bodies typically present with cough, unilateral wheezing, and decreased breath sounds, but only 65% of patients present with this classic triad. Foreign body aspiration can mimic other respiratory problems, such as asthma. Foreign body aspiration differs in the presence of unilateral wheezing and decreased breath sounds. Chest auscultation is critical in the evaluation of a patient in whom a foreign body aspiration is suspected. Typically, these patients have wheezing, decreased breath sounds, or both on the side of the foreign body. Patients may have normal examination findings despite having a foreign body within the airway because it may partially

obstruct the airway. High-kilovolt anteroposterior and lateral radiographs of the airway are the tests of choice in patients in whom laryngeal foreign bodies are suspected. The high kilovoltage used produces greater definition of the airway while reducing the effect of the surrounding bony structures. Posteroanterior and lateral chest radiographs are an adjunct to the history and physical examination in patients in whom foreign body aspirations are suspected. To at least have a baseline study for future comparison, perform chest radiographs on all such patients. Radiopaque objects are visible, but radiolucent objects (eg, plastic) are not. Chest radiographs may reveal obstructive emphysema or hyperinflation, atelectasis, and consolidation. Biplane fluoroscopy uses intraoperative fluoroscopic evaluation while identifying and locating a foreign body within the lung periphery.

Treatment

Patients with complete airway obstruction require immediate medical attention and typically are aphonic and unable to breathe. Patients who are coughing, gagging, and vocalizing have partial obstruction.

- Use of the Heimlich maneuver has improved the mortality rate of patients with complete airway obstruction, but use of it in patients with partial obstruction may produce complete obstruction.
- Most patients who arrive at the hospital are beyond the acute stage and are not in respiratory distress.
- After a complete history and physical examination are completed and radiographic studies are performed, a decision is made in regard to the need for surgical intervention.

In most cases, antibiotics and steroids are administered preoperatively.

Surgical Therapy

An operating room well equipped with proper endoscopic equipment of various sizes, personnel familiar with the use of the instrumentation, and anesthesiologists experienced in foreign body removal are critical for safe removal of airway foreign bodies.

Preoperative Details

Select and organize age-appropriate endoscopic equipment before the patient enters the operating room. Various foreign body forceps should be available for use, and a similar object should be available for comparison. Communication between the endoscopist and anesthesiologist before the procedure to outline a plan of action is critical. Prior to surgical intervention in patients who are not in respiratory distress, the patient should remain on nothing by mouth (NPO) status for an adequate period to prevent aspiration.

Intraoperative Details

Use inhalational anesthetics to anesthetize patients. Apply 1-2% lidocaine to the larynx to reduce reflexes and prevent laryngospasm. Keep patients spontaneously breathing throughout the procedure for control of the airway.

With laryngeal foreign body, the laryngoscope tip is placed in the vallecula for exposure, and the foreign body is visualized in the larynx and removed with appropriate foreign body forceps. After removal, reassess the larynx for other foreign bodies. Perform rigid bronchoscopy afterward to assess for other foreign bodies in the lower airway.

In tracheobronchial foreign body removal, the bronchoscope is inserted into the airway after exposure to the larynx, and continuous ventilation of the patient is provided through the bronchoscope. In a patient with a bronchial foreign body, the unaffected side is examined first. The bronchoscope then is placed immediately above the foreign body. Secretions are gently suctioned around the object. The patient is oxygenated with 100% oxygen before any attempt at removal. The forceps are placed through the bronchoscope, and the object is grasped after complete visualization of the foreign body. The bronchoscope is advanced to the foreign body while the surgeon continues to grasp the object. The foreign body, foreign body forceps, and bronchoscope are removed as a unit, and the bronchoscope immediately is returned to the airway for ventilation and reassessment for other foreign bodies. Occasionally, easy retrieval of the foreign body is not possible. Larger objects unable to pass through the larynx can be broken into pieces and removed. If the object cannot pass through the larynx, a tracheotomy can be performed to remove the object through the tracheostoma. At times, the object becomes embedded into the surrounding mucosa because of edema caused by the object or because of multiple failed attempts at removal. In this situation, stop and to wait 48-72 hours to allow the edema to subside for a repeat attempt at removal. Thoracotomy may be necessary when the object stays embedded after failed endoscopic attempts. Foreign bodies in the distal bronchial segments may be removed with the use of a Fogarty endovascular catheter through the suction port of a rigid bronchoscope. Flexible bronchoscopy as an adjunct may be beneficial in the removal of distal objects.

Sharp objects are extremely challenging for endoscopic removal. The pointed end tends to engage in the mucosa, causing the object to tumble with the point trailing. Pointed objects tend to be bendable or breakable. The bronchoscope is placed into the airway, and, using foreign body forceps, the pointed end of the object is disengaged from the mucosa, moved distally, and then removed. Pin-bending forceps may be used in certain situations. Safety pin removal is uniquely challenging; removal is performed endoscopically by sheathing the pointed end into the endoscope and locking the keeper outside the endoscope. Open removal by thoracotomy may be necessary when the sharp object is severely embedded into the mucosa.^[2]

Postoperative Details

The use of steroids or racemic epinephrine is not necessary when age-appropriate endoscopes are used. Antibiotics typically are not prescribed because the source of infection has been removed. Chest physiotherapy is performed after foreign body removal to help remove secretions. Patients are discharged when fully awake and breathing comfortably without the need for supplemental oxygen. Chest radiographs are performed postoperatively if the patient's signs and symptoms persist or worsen.

Most complications are the result of a delay in diagnosis.

Of patients with laryngotracheal foreign bodies, 67% experience associated complications when the removal delay is more than 24 hours. Pneumonia and atelectasis are the most common complications secondary to and after removal of bronchial foreign bodies. Bleeding can occur from granulation tissue surrounding the foreign body or erosion into a major vessel. Pneumothorax and pneumomediastinum can result from an airway tear.

Conclusion

Foreign-body aspiration is a preventable mishap and can be prevented by educating the society, especially parents. Also, it is equally important to educate the medical fraternity to aid in early diagnosis and prompt removal, thus preventing a potentially fatal outcome.

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