Thoracic Emergencies

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KEYWORDS

• Upper airway obstruction • Massive hemoptysis • Spontaneous pneumothorax
• Pulmonary empyema

KEY POINTS

- Rigid bronchoscopy can handle almost any cause of airway obstruction.
- The current first-line treatment of managing massive hemoptysis is interventional radiology embolization after stabilization of the airway.
- The decision to surgically treat for prevention of recurrence depends on the cause and to some extent the risk associated with recurrence.

ACUTE UPPER AIRWAY OBSTRUCTION

Introduction

The incidence of death from acute airway obstruction in adults increases with age and peaks at 85 years old.[1] The most common cause is aspiration of a foreign body. This situation leads to sudden obstruction of an otherwise normal airway in most instances. Other causes include trauma, inflammation, tumors, and neurologic diseases. Apart from trauma, these other causes are usually chronic, but when they reach a critical point, they present as acute airway obstruction. The most common cause of chronic airway obstruction is tracheal stenosis related to prior intubation. This condition accounts for approximately 90% of cases.[2] Intubations as short as 24 hours can lead to tracheal stenosis.[3] Often, patients with chronic airway compromise are asymptomatic at rest but may note stridor or dyspnea on exertion.

Critical stenosis occurs when the diameter of the airway has decreased to 25% or less of the normal tracheal diameter. The normal diameter varies for individuals and is typically 15 to 25 mm. In general, critical stenosis occurs when the diameter of the trachea is less than 4 mm (**Fig. 1**).

Anatomy/Pathophysiology

Upper airway obstruction is defined as an obstruction of the airway at any location from the mouth to the carina. The narrowest portion of the upper airway is the larynx

Disclosures: None.
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Surg Clin N Am 94 (2014) 183–191
http://dx.doi.org/10.1016/j.suc.2013.10.013 **surgical.theclinics.com**
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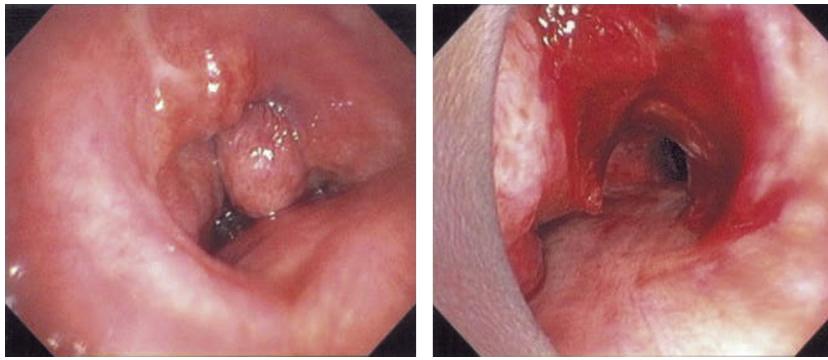

Fig. 1. Tracheal mass semiobstructing the airway before and after removal by coring out the mass.

at the glottis in adults and the subglottic region in infants. Most foreign body obstructions occur in this area. However, obstruction can occur at any location in the upper airway.

Clinical Presentation/Examination

Presenting signs and symptoms
Cough
Hoarseness
Shortness of breath
Dyspnea on exertion
Stridor (biphasic if within the extrathoracic trachea)
Use of accessory muscles
Nasal flaring
Chest wall retractions
Cyanosis
Decreased consciousness

Diagnosis

Rapid diagnosis and treatment are critical to patient survival. Complete upper airway obstruction can lead to cardiac arrest and death within minutes. Once stridor is present, the airway is already severely compromised. It is imperative to first assess the degree of obstruction. This situation can quickly be evaluated by the distress of the patient. Are they working hard to breathe? Can they talk?

The cause of upper airway obstruction can be broken down into 2 categories: aspiration versus nonaspiration. With aspiration, there is typically a clear history of the event. No endotracheal tube should be placed to avoid potentially pushing the object more distally in to the oropharynx. Instead, the Heimlich maneuver should be attempted if feasible. If this maneuver is not successful or feasible and the patient is stable and moving air, the safest option is to rapidly bring the patient to the operating