Esophageal Perforation

Esophageal perforation is an emergency that carries a high level of morbidity and mortality. A delay in the diagnosis and treatment is the most important factor contributing to mortality. Esophageal perforations may be spontaneous, iatrogenic, or result from trauma. It can rapidly evolve into sepsis with mediastinal and pleural involvement. The optimal treatment depends on the nature and size of the perforation as well as the latency to detection. Regardless of treatment modality, early detection is key.

Pathophysiology

- The most common location of iatrogenic esophageal perforation is at sites of esophageal narrowing, such as the cricpharyngeus muscle, aortic impression, gastroesophageal junction and pathologic sites of tumor or stricture.
- Underlying conditions, such as malignancy, gastroesophageal reflux disease or laryngopharyngeal reflux, achalasia, stricture, scleroderma or hiatal hernia are commonly found in these patients.
    - Nirula R. Esophageal perforation. The Surgical clinics of North America. 2014;94(1):35-41

Treatment Methods

- Non-operative management with broad spectrum antibiotics and parenteral nutrition can be implemented successfully in about one-quarter of these patients Non-operative management tends to be successful in the absence of signs of systemic infection / sepsis, in a recent perforation not associated with malignancy, obstruction or stricture, and in a contained cavity that drains back into the esophagus. These patients should be kept nil per os for 7 days followed by a Gastrografin swallow to confirm resolution. If the patient does not stabilize within 24 hours, surgery should be considered.
- For operative management, early primary surgical repair portends the best recovery. This is performed with a double-layer closure (mucosa and muscle) using 3-0 vicryl sutures. The repair is further supported by an adjacent soft tissues, e.g muscle flap. Perforations In the thoracic and abdominal esophagus require thoracotomy and laparotomy respectively and therefore cardiothoracic surgery assistance is essential.
    - Altorjay A, Kiss J, Voros A, Bohak A. Nonoperative management of esophageal perforations. Is it justified? Annals of surgery. 1997;225(4):415-21

- Eroglu A, Turkyilmaz A, Aydin Y, Yekeler E, Karaoglanoglu N. Current management of esophageal perforation: 20 years experience. Diseases of the esophagus : official journal of the International Society for Diseases of the Esophagus. 2009;22(4):374-80

Management of Complications

- Perforation associated with malignancy, scleroderma, strictures from caustic ingestion, severe achalasia, development of serious mediastinitis, insufficient mediastinal drainage, persistent leak or dehiscence of primary repair is best treated with esophageal resection. Kiernan et al reported successfully treating patients with primary repair leaks with resection and reconstruction with low mortality.
- A meta-analysis by Dasari et al showed that esophageal stents (plastic or metal) can be successfully used to address perforations primarily or for anastomosis leaks with clinical success 81% of the time. It is a safe and effective method when performed along with mediastinal or pleural drainage to control contamination.

  - Kiernan PD, Sheridan MJ, Hettrick V, Vaughan B, Graling P. Thoracic esophageal perforation: one surgeon's experience. Diseases of the esophagus : official journal of the International Society for Diseases of the Esophagus. 2006;19(1):24-30
  - Dasari BV, Neely D, Kennedy A, Spence G, Rice P, Mackle E, et al. The role of esophageal stents in the management of esophageal anastomotic leaks and benign esophageal perforations. Annals of surgery. 2014;259(5):852-60