Paraesophageal hernia

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Injury/Disease Demographics

- Paraesophageal hernia (PEH) is typically spontaneous and is more common in older patients (most commonly 7th decade)
- There are multiple anatomic varieties:
    - Type I: intrathoracic migration of gastroesophageal junction (GEJ) (95% of all PEH)
    - Type II: intrathoracic migration of the fundus alongside the esophagus
    - Type III: combined I and II
    - Type IV: PEH with another intra-abdominal organ
- Volvulus may be:
    - Organoaxial: occurs along a line from GEJ to pylorus. This rotation is seen in the majority of cases and is more likely to be associated with strangulation or perforation.
    - Mesenteric-axial; occurs along a line bisecting greater and lesser curvatures. This rotation is more likely to be intermittent and has less association with vascular compromise.
- PEH are frequently asymptomatic, and may be incidentally identified during workup for another condition.

Clinical Presentation

- PEH frequently are asymptomatic, and are identified during routine imaging.
- PEH may present with dysphagia, abdominal pain, nausea/vomiting, or reflux.
- PEH with volvulus and a strangulated hernia may present with septic shock, mediastinitis and possibly peritonitis.
- PEH may be associated with and/or mimic cardiac symptoms.

Evaluation/Diagnostics/Imaging

- CXR: may demonstrate gastric bubble in the chest, possible free air if perforation present.
- Barium UGI: best study to evaluate for volvulus or the intrathoracic component of the PEH.
- CT: best single study to make diagnosis and determine perforation.
- Endoscopy: typical findings of hiatal hernia with GEJ above hiatus, useful intraoperatively during repair, little role preoperatively in emergency cases.

Role of Nonoperative Management and Associated Considerations

- Asymptomatic hernias are treated nonoperatively.

Indications for Operative Intervention

- Symptomatic hernia.
- Acute volvulus with obstruction, perforation, strangulated hernia.

Preoperative Preparation

- Elective: esophageal manometry/motility study.
    - Important for ruling out achalasia
    - May alter the style of fundoplication (360 vs partial)
    - One-third of patients will have atypical peristalsis
- Elective: pH monitoring.
    - Half of symptomatic patients will have abnormal pH results
    - May require anti-reflux procedure with or without gastropexy
- Emergent: NG decompression, fluids, rule out cardiac etiology.

Operative Techniques/Intraoperative Considerations

- Laparoscopic approach preferable especially for elective, but circumstances may require open procedure.
    - Anatomy is more easily visualized laparoscopically.
    - The patient may not tolerate insufflation in the setting of perforation and septic shock.
    - Cases are technically challenging with steep learning curve.
- Hernia sac excision is critical to minimize recurrence and tension:
    - Start with short gastrics and full mobilization of greater curve, clear off the left crus, developing plane between pleura and peritoneum; this may be difficult to visualize in acute setting or with significant inflammation.
    - Divide the phrenoesophageal ligament and circumferential attachments to the esophagus, preserving the vagus nerves.
    - Divide the gastrohepatic ligament, beware of replaced right hepatic artery.
    - If the lung is visualized the pleura is violated; monitor the patient closely for signs of pneumothorax, CXR postop, chest tube not mandatory.
- Intra-abdominal esophageal lengthening (goal is 2.5-3cm):
    - If shortened, continue generous mediastinal circumferential esophageal dissection.
    - May consider Collis gastroplasty for more length (<5%).
- Repair of hiatal defect:
    - Posterior non-absorbable suture repair hiatoplasty (Ethibond, silk).
    - If hiatoplasty is under significant tension or tissue is attenuated/weak, consider biologic or absorbable mesh cut in a keyhole/"U" shape.
    - Minimize use of permanent mesh and pledgets to eliminate erosion into esophagus.
- Gastropexy +/- fundoplication:

    - Unless esophageal dysmotility is confirmed preoperatively, partial fundoplication preferred.
    - Perform over a 54-60F Bougie.
- Strangulated hernia may require gastric resection (partial, sleeve, subtotal) and reconstruction depending on degree and location of necrosis.

Postoperative Management/Complications

- Postoperative upper GI study is optional.
    - Concern for esophageal injury
    - Cases requiring resection and/or anastomosis
- Radiographic recurrence is common (50%) but few develop recurrent symptoms.

Considerations for Special Populations

- Lower impact operation in physiologically compromised patient population. Elderly, moribund, severe physiologic compromise may be temporized and potentially definitively managed with PEH reduction and gastropexy (e.g. Lap-assisted reduction and insertion of two PEG tubes)

Selected Readings

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