Surgical Treatment of Giant Hiatal Hernia

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Purpose: Review current concepts of PEH......

• Overview and Clinical Presentation
• Surgical management
  – Laparoscopic technique
• Controversial Issues
• Video presentation
Categories of Hiatal Hernia
Overview and Clinical Presentation

<table>
<thead>
<tr>
<th>Patulous Cardia</th>
<th>Sliding Hiatal Hernia</th>
<th>Early Incarceration (Rolling Phase)</th>
<th>End-Stage Incarceration</th>
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<tbody>
<tr>
<td>Type I</td>
<td>Type II &amp; III</td>
<td>Type IV</td>
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Should we operate?

**Skinner and Belsey (1967)**
- nonoperative observation of 21 minimally symptomatic patients
- 26% died of catastrophic complications

**Treacy and Jamieson (1987)**
- monitored 24 patients
- elective surgery in 13 (54%) because of progressive symptoms
  - none needed emergency surgery

**Haas (1990)**
- 21 patients intrathoracic volvulus (8 asympt)
- 10 required emergency surgery
Overview and Clinical Presentation

Radiographic Findings:

- Chest X-ray/CT Scan
- Retrocardiac Air Fluid Level
- Barium Contrast Studies
  - obstructed intra-thoracic stomach
  - “upside down” stomach
Many patients with giant HH have significant symptoms. These include:

- reflux
- mechanical complications of an intrathoracic stomach (chest pain, dysphagia, aspiration, dyspnea)
- bleeding
- anemia
Overview and Clinical Presentation

Complications of Paraesophageal Hernia:

- Gastric obstruction
- Gastric incarceration
- Gastric strangulation
- Occult anemia/gastric ulceration
- Pulmonary aspiration
Surgical Management

• If a complication occurs, emergency repair is associated with a 30-50% mortality
• Surgical dogma:
  – Should we repair all giant hiatal hernias?
• More recent data suggest the rate of acute presentation is less than 1% /year and minimally symptomatic giant hiatal hernias can be observed
Surgical Management

Which operative approach?

- Open
  - Transthoracic
  - Transabdominal
- Minimally Invasive
  - thoracoscopic
  - laparoscopic
- Gastropexy Alone
Surgical Management: Laparoschopy

**Potential Advantages:**

- Reduced hospital stay
- Early return to activities
- Equivalent repair success rate to open approaches

**Potential Disadvantages:**

- Significant learning curve
- Frequent difficult dissection
Surgery is technically challenging....

• Experience
• Hernia contents/volvulus make identification of anatomy difficult
• Dissection of large sac → bleeding → poor visualization
• Fundoplication might be difficult
• Safe dissection of anatomically abnormal hiatus
• Dealing with a shortened esophagus
• Management of large diaphragmatic defect
Surgical Management: Laparoscopy

- Experienced esophageal surgeons and referral centers
- Fundamental operative steps:
  - Identification of the plane between the hiatal hernia sac and mediastinal pleura
  - Meticulous dissection of the hernia sac
  - Preservation of peritoneal lining and the integrity of the crural muscle
  - Liberal use of esophageal lengthening
  - Tension-free approximation of intact crura
    - consider mesh
    - Release maneuver
- Anti-reflux procedure
- Long follow-up
Surgical Management: Laparoscopy
Esophageal Hiatus

• Lighted bougie facilitates esophageal identification
• Need complete circumferential dissection of hiatus to promote closure and esophageal length
• Leave fascia/parietal peritoneum overlying crura
• Beware vagus nerves
• Change visual field often to give perspective
Key Elements: Sac Dissection
Reduction of hernial contents
Reduction of hernial contents

- Atraumatic graspers
- Take care while reducing hernial contents b/c stomach wall may be ischemic/atrophic and prone to perforation
- Sac dissection
- Experienced assistant providing retraction
Maintaining the Crural Integrity
What to do if you encounter a short esophagus?

• Look for it!
• Keep working to gain length!
• Have a plan!
• Open if necessary!
• Laparoscopic Collis in selected cases
Hiatal defect

- Left crus
- Chest cavity
- Stomach
Alternatively, Mesh can be used to close very large defects.
Esophageal Hiatus

Liver

Esophagus

Aorta

Left Crus

Right Crus
Diaphragmatic defect:

- Nonabsorbable suture
- Simple closure
- Pledgets
- Mesh / PTFE
- Mesh over relaxing incision
Liver

Repaired crura
Anti-Reflux Maneuver

• Most perform one?
• 50% have a pre-op history of GERD
• 20-30% will reflux postoperatively
• Circumferential dissection of GEJ disrupts natural antireflux mechanisms
• Facilitates intraabdominal anchor
Successful Repair of Giant Paraesophageal Hiatal Hernia?

• Several Important Steps
• Identification of the plane between the hiatal hernia sac and mediastinal pleura and meticulous dissection of the hernia sac
• Mobilization of the crura, maintaining the peritoneal lining and the integrity of the crural muscle
• Tension-free approximation of intact crura, if either of these conditions cannot be met, consider mesh cruroplasty
Conclusions

• Complex giant hiatal hernias can be managed successfully by the laparoscopic approach in selected, experienced centers
• Same concepts as open operation should be adhered to
  - Reduction of HH, sac excision, hernia repair, fundoplication
• Operative principles
  – Reduce hernial contents
  – Excise sac
  – Repair diaphragm without tension
    • Simple sutures → pledgets → Mesh
  – Fundoplication

• Failure to recognize and treat a short esophagus contributes to recurrences, mesh in some cases
• Failure to accomplish complete mediastinal sac dissection and maintain crural integrity
Conclude: Laparoscopic repair of PEH is ….

• Difficult
• Technically feasible, safe, effective
• With laparoscopy we are also learn how to perform the open procedure better....