Transthoracic Hiatal Hernia Repair

*Of Historic Interest Only?*

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AATS-STS General Thoracic Surgery Symposium
April 26, 2015
Disclosures

- None relevant for current presentation
For a Type III Paraesophageal hiatal hernia (no prior treatment) my preferred approach for Repair:

A. Laparoscopic
B. Laparotomy
C. Thoracoscopic
D. Open Transthoracic
E. Combination Abdominal and Thoracic
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Objectives

- Review the results from the literature on Hiatal Hernia Repairs (Paraesophageal Hernias)
- Discuss the current role for transthoracic hiatal hernia repair
Surgical Management of Esophageal Reflux and Hiatus Hernia: Long-Term Results with 1,030 patients

Skinner DB, Belsey RH

JCTVS 1967; 53(1):33-54

- 27% mortality in patients managed with observation
3:00 p.m. Hiatal Hernia and Gastroesophageal Reflux Disease - Does Thoracic Surgery Still have a Role?
F. Griffith Pearson, M.D., Toronto, Ontario, Canada
Principles

- Reduction of herniated contents
- Removal of hernia sac
- Repair of diaphragmatic defect without tension
  - +/- Esophageal lengthening
- Fundoplication
Literature

- No RCTs for approach
  - Open Laparotomy vs. Transthoracic
  - Lack of data evaluating minimally invasive thoracic (VATS) approaches
Laparoscopic Approach

- **1990s**
  - Initial good symptomatic results
  - *Recurrence* rates
    - 42% vs 15% open

A 25-year experience with open primary transthoracic repair of paraesophageal hiatal hernia

Himanshu J. Patel, MD
Bethany B. Tan, MD
John Yee, MD
Mark B. Orringer, MD
Mark D. Iannettoni, MD

1977 to 2001 – 240 patients

Results (mean follow-up 42 months)

- Mortality 1.7% (3 patients)
- Intraoperative complications 1.7%
- Post-op complications 8.5%
- Recurrence rate 7.9% (19/240)

Laparoscopic 2nd Decade

- Areas of focus and modification
  - Crural closure and reinforcement
  - Shortened esophagus

- Recurrence Rates
  - 42% → 18% USC Series
  - Pittsburgh series 15.7% 

Comparative Analysis of Diaphragmatic Hernia Repair Outcomes Using the Nationwide Inpatient Sample Database

Subroto Paul, MD; Abu Nasar, MS; Jeffrey L. Port, MD; Paul C. Lee, MD; Brendon C. Stiles, MD; Andrew B. Nguyen, MD; Nasser K. Altorki, MD; Art Sedrakyan, MD, PhD

Arch Surg. 2012;147(7):607-612
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Figure. Patients with uncomplicated diaphragmatic hernia admitted to US hospitals from 1999 to 2008 by procedures per 100,000 procedures.
Nationwide Inpatient Sample

- 1999 to 2008 (n = 38,764 patients)
  - 91% - Open
    - 74.4% Abdominal
    - 17% Transthoracic
  - Multivariate analysis
    - Transthoracic → longest LOS (7.8 days), >post-op mechanical ventilation (5.6%), independent predictor of PE

Paul S, et al
Arch Surg 2012; 147(7):607-612
Thirty-Day Outcomes of Paraesophageal Hernia Repair Using the NSQIP Database: Should Laparoscopy Be the Standard of Care?

Benedetto Mungo, MD, Daniela Molena, MD, FACS, Miloslawa Stem, MS, Richard L Feinberg, MD, FACS, Anne O Lidor, MD, MPH, FACS

ACS NSQIP

- 2005 to 2011 (n = 8,186 patients)
  - 78.4% Laparoscopic
  - 19.2% Open Abdominal
  - 2.4% Transthoracic
  
  ➔ “Sicker, more likely to have COPD, CHF”
<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Group</th>
<th>Odds ratio (95% CI)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-day mortality</td>
<td>TA</td>
<td>2.97 (1.69–5.20)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Overall morbidity*</td>
<td>TA</td>
<td>2.12 (1.79–2.51)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>TT</td>
<td>2.73 (1.88–3.96)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Serious morbidity†</td>
<td>TA</td>
<td>1.90 (1.53–2.37)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>TT</td>
<td>2.49 (1.54–4.00)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*Adjusted for age, ASA, emergency cases, functional status, steroid use
Laparoscopic Repair for Recurrences

- 46 patients 2005-2013
  - 37% previously unresected sac
  - 46% wrap created using gastric body
- Procedures
  - 87% PEH repair with redo fundoplication (40/43)
  - 35/43 biologic mesh
  - Relaxing incisions 4 patients
  - Esophageal lengthening procedures 5 patients

Borbely Y, Wright A, et al.
SAGES 2015
Guidelines for the Management of Hiatal Hernia

Geoffrey P Kohn MBBS(Hons) MSurg FRACS, Raymond R Price MD FACS, Steven R Demeester MD FACS, Joerg Zehetner MD, Oliver J Muensterer MD, Ziad T Awad MD FACS, Sumeet K Mittal MD FACS, William S Richardson MD FACS, Dimitrios Stefanidis MD PhD FACS, Robert D Fanelli MD FACS and the SAGES Guidelines Committee

February 2011
Recommendations

- Symptomatic paraesophageal hiatal hernias should be repaired (++++, strong)
Recommendations

- Can be repaired by transabdominal or transthoracic approach (+++, strong).

- Morbidity of laparoscopic approach is less than open approach (++, strong)
Recommendations

- Laparoscopic repair effective as open transabdominal
  - ↓ morbidity, LOS

- Preferred approach for majority of hiatal hernias
  (++++, strong)
What is the role for Transthoracic approach?
Reality

- Unless you’re doing laparoscopic procedures, you will see very few PEH patients.
Summary

- Majority PEH repairs are done via abdominal approach
  - ↑ use of laparoscopy
- Emerging series of laparoscopic recurrent hernia repairs
- Transthoracic
  - Hostile abdomen
  - Multiple recurrent PEH
Thanks!

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