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 \(^1\)
  - Pittsburgh series 15.7% \(^2\)

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

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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 4. Multivariable Logistic Regression for Mortality and Morbidity

<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
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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