Minimally Invasive Esophagectomy: OVERRATED!!!

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Esophageal Cancer

- Est. 15,000 cases in 2006
- Est. 14,000 deaths

- Overall 5-year survival: 15.6%
  - 33.6 % for local disease @ Dx
  - 16.8 % for regional disease @ Dx
  - 2.6 % for mets @ Dx
Esophageal Cancer Tidbits

- **S/SX**: Insidious
- **Dx:**
  - EGD with biopsy
  - CT +/- PET
  - Barium Swallow
  - Endoscopic Ultrasound
- **Histologic Types**
  - Adenocarcinoma
    - US and Europe mostly
  - Squamous Cell Carcinoma
    - Asian countries and worldwide
Staging: TNM

• T:
  – Tis = Carcinoma in situ
  – T1 = Invades lamina propria
  – T2 = Invades muscularis propria
  – T3 = Invades adventitia
  – T4 = Invades adjacent structures

• N:
  – N0 = No regional nodes
  – N1 = Regional mets

• M:
  • M0 = No distant mets
  • M1a = Tumors in celiac nodes, cervical nodes or other non-regional nodes.
  • M1b = Other distant mets.
Stages and Typical Tx:

- **Stage 0**: Tis, NO, MO
  - Surgery (Esophagectomy, PDT, EMR)
- **Stage 1**: T1, N0, M0
  - Surgery (Esophagectomy, PDT, EMR)
- **Stage IIA**: T2 or T3, N0, M0
  - Neoadjuvant chemotx +/- surgery
- **Stage IIB**: T1 or T2, N1, M0
  - Same as IIA
- **Stage III**: T3N1 or T4
  - Same as IIA
- **Stage IV**: M any
  - Palliation
A Little History Lesson

- Limited body cavity exams in mid-1800s with hollow tube + refractive lens
- Greatest strides came from George Kelling and achieved “celioscopy.”
- 1960s used for GYN but limited due to instrumentation
- 1980s improved instruments allowed procedures
- …the rest is history.
Proposed benefits (ie MYTHS) of MIE

• Smaller incisions => less pulmonary complications
• Magnification => safer operation => decreased surgical mortality
• Decreased ICU and hospital LOS
• Improved or equivalent survival
Debunking the Myths

• Morbidity
  – Hospital LOS
  – Pulmonary Complications
  – Anastamotic Leak

• Mortality
  – Surgical (Short-term)
  – Oncologic (Long-term)
## Length of Stay (ICU and Hospital)

<table>
<thead>
<tr>
<th>Location</th>
<th>MIE</th>
<th>vs.</th>
<th>Traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Georgia</td>
<td>2 d / 18 d</td>
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<tr>
<td>Australia</td>
<td>1 d / 11 d</td>
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<tr>
<td>Minneapolis</td>
<td>1 d / 9 d</td>
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<tr>
<td>Pittsburgh</td>
<td>1 d / 7 d</td>
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<tr>
<td>Belgium</td>
<td>2 d / 20 d</td>
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<tr>
<td>MD Anderson</td>
<td></td>
<td>LOS 12 days</td>
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Pulmonary Complications

MIE vs. Traditional

- **Australia** (Liebman 2005)
  - > 50% pts

- **Pittsburgh** (Luketich 2003)
  - > 20%

- **Minneapolis** (Collins 2006)
  - > 30%

- **Japan** (Tachibana 2003)
  - ~ 37%

- **Kentucky**
  - < 20%
Leaks

MIE vs. Traditional

- **Australia** (Martin 2005)
  - 19% Leak Rate
  - Only 36 pts

- **Pittsburgh** (Luketich 2003)
  - 12% Leak Rate
  - > 200 pts

- **Minneapolis** (Collins 2006)
  - 12% Leak Rate
  - 25 pts

- **Transhiatal**
  - Initially 15%
  - Now:
    - 3% - (Orringer 2000)
    - 8% - (Casson 2002)

- **Transthoracic**
  - 11% (Altorki 2005)
  - 4.2% (Lerut 2004)

- **Overall** (Tx MDA)
  - 6% (Hofstetter 2002)
The Ultimate Outcome: Survival
<table>
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<tr>
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<tbody>
<tr>
<td>• Georgia (Early exp)</td>
<td></td>
<td>• Belgium</td>
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<tr>
<td>– 5%</td>
<td></td>
<td>– 1% (Lerut 2004)</td>
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<tr>
<td>• Pittsburgh (222 pts)</td>
<td></td>
<td>• Kentucky- 10 yr experience</td>
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<tr>
<td>– 1.3 %</td>
<td></td>
<td>– 1% (Bousamra 2002)</td>
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<tr>
<td>• Minneapolis</td>
<td></td>
<td>• MD Anderson</td>
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<tr>
<td>– 4%</td>
<td></td>
<td>– 5-6%</td>
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## Oncologic Survival

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<tbody>
<tr>
<td><strong>Australia</strong></td>
<td></td>
<td></td>
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<tr>
<td>– Median Survival 32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>months</td>
<td></td>
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<tr>
<td>– 20% survival @ 4 yrs</td>
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<tr>
<td>for invasive CA</td>
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<tr>
<td><strong>Pittsburgh (222 pts)</strong></td>
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<tr>
<td>– Est. survival @ 20-30%</td>
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<td>@ 40 months for invasive CA</td>
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<td><strong>Japan</strong></td>
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<td>– 30-50% @ 5 yrs</td>
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<tr>
<td><strong>MD Anderson</strong></td>
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<tr>
<td>– &gt; 45% @ 4 yrs</td>
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Problems with the Literature: Apples to Oranges

- “Comparison of MIE with TTE and THE”
  - Retrospective. MIE group got supplemental nutrition. THE and TTE groups had > 90% cancer while MIE group had > 20% benign.
- MIE group MUST tolerate single-lung ventilation and so have better CP status.
- MIE group typically have had smaller tumors that do NOT invade local tissues.
- MIE procedures only being done by full-time MIE surgeons
- Difficult to get RCT for many reasons

Summary

• MIE does NOT offer decreased pulmonary complications.
• MIE does NOT offer decreased mortality
• MIE is NOT better than traditional open esophagectomy for long-term survival
Conclusions

Open esophagectomy, should remain the standard of care for esophageal cancer.

This is because the M&M associated with these procedures stems from the esophagectomy and dissection and not the incisions themselves.

The open approach allows for better overall exposure with better short- and long-term results.
References

Oncologic Perspective: Nodes

MIE                          vs.                          Traditional

9 per specimen
Collins 2006

7 per patient
Law 1997

• 13 per patient
  – Law 1997