Lobectomy + Nodes 2012

- Accurate staging requires adequate operation
  Mediastinal node sampling / dissection
  - Japanese data suggest improved survival with dissection
  - ACOSOG Z0030 answered this question
    - 1050 patients T1-2N0 verified intra-op
    - All mediastinal stations sampled
    - 1/1 randomization to complete dissection
    - Primary objective: Overall survival
    - No difference in morbidity or survival
    
    Darling et al., J Thorac Cardiovasc Surg 2010
**Thoracoscopic Lobectomy: Definition**

- Totally anatomic, oncologic, & thoracoscopic
- Access incision 4-6 cm (usually 4.5 cm)
- No retractors, no rib spreading
- Complete, anatomic hilar dissection
- Mediastinal lymph node dissection

Duke Approach

- 1.5 cm incision in 8th ICS for camera port
- 4.5 cm incision in 5th ICS for instruments

Right side Up
**Thoracoscopic Lobectomy is a Safe and Versatile Procedure: 500 Patients**


500 consecutive patients (1999-2005)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chest tube duration: median</td>
<td>3 (1-53) days</td>
</tr>
<tr>
<td>(range)</td>
<td></td>
</tr>
<tr>
<td>Length of stay: median</td>
<td>3 (2-50) days</td>
</tr>
<tr>
<td>(range)</td>
<td></td>
</tr>
<tr>
<td>Conversion</td>
<td>8 (1.6%)</td>
</tr>
<tr>
<td>OR mortality</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Mortality at 30 days</td>
<td>6 (1.2%)</td>
</tr>
</tbody>
</table>

**Morbidity and Mortality of Lobectomy**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Z0030 (open)</th>
<th>Thoracoscopic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of stay</td>
<td>6 days</td>
<td>3 days</td>
</tr>
<tr>
<td>Chest tube &gt;7d</td>
<td>12%</td>
<td>2%</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>3%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Respiratory failure</td>
<td>6%</td>
<td>1%</td>
</tr>
<tr>
<td>Atrial arrhythmia</td>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>Overall Cx</td>
<td>38%</td>
<td>15%</td>
</tr>
<tr>
<td>Death</td>
<td>1.6%</td>
<td>1.5%</td>
</tr>
</tbody>
</table>
Thoracoscopic Lobectomy: Summary

- Advantages demonstrated
- Less pain and analgesic requirement
- Preserved pulmonary function
- Faster return to full activity
- Lower chest tube duration, length of stay, cost
- Decreased inflammatory response
- Lower overall complication rate
- More effective administration of adjuvant chemotherapy

Robotic Lobectomy:

- Robotic lobectomy is feasible with patient series in the 100s
- Robotics allows control of more instruments
- Robotic camera is better, and wristed instruments improve angles
- Improved instrumentation is coming
  However:
- Robotic set-up is less Flexible (camera/staplers)
- Not better than Thoracoscopic longer OR with setup
- Per case expense is a problem
Who gets Wedge Resection?

- Not Defined in 2012
- Usually Patients at high-risk for lobectomy
  - 15-20% Local recurrence with sub-lobar resection
- ACOSOG trial Z04032: Randomized Phase III
  - VATS Wedge + / - Intraop Brachytherapy
    - Tufts / Pitts data suggest lower recurrence rate
  - Not a candidate for lobectomy
  - Two of following: FEV1< 40%, DLCO<40%, Age > 75, CHF, Pulmonary hypertension, Home O₂

ACOSOG 4032: High-risk Wedge

252/250 enrolled, data maturing, ASCO 2013
**CALGB 140503**

**Solitary Pulmonary Nodule <2.0 cm by CT**

- **Verify NSCLC**
  - All N1 + N2 (-)

- **Randomize; n=900**

- **Lobectomy N=450**
- **Limited Resection N=450**

Accrual 475/900

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**Anatomic Segmentectomy**

- Initially described by Churchill and Belsey (1939)
- Interest has been increasing as an option for:
  - Very small tumors (<2.0cm)
  - A superior oncologic therapy for those with margin pulmonary reserve (better than non-anatomic wedge)
  - Most commonly performed include:
    - Superior segment lower lobe
    - Basilar segments of lower lobe
    - Lingual-sparing left upper lobe bi-segment
    - Lingular bi-segment
    - Others can also be completed.
Summary

- Significant advances have been made in Thoracic Surgical Oncology that have:
  - Improved accurate staging of patients for correct therapy decisions in the era of multimodal treatment
  - Extended the indications and patient cohort who are candidates for resection
  - Limited morbidity and mortality of operative resections