Mastering Thoracoscopic Upper Lobectomy

Duke Thoracoscopic Lobectomy Workshop
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Disclosure

- Consultant Scanlan Instruments
- No conflicts related to this presentation
STS Database: % Thoracoscopic Lobectomy

- Thoracoscopy
- Thoracotomy


Series 1
17.4%
15.6%
39.7%
33%
11.6%
8.0%
11.6%
15.6%
26.2%
39.7%
42.8%
46%
Hospital level under-utilization of minimally invasive surgery in the United States: retrospective review

- NISD: Complications less common with VATS than Open: 17% vs 25% P<0.05
- Mean hospital utilization of thoracoscopic lobectomy ranged from 3%-66%
- Higher utilization of VATS not associated with location, hospital size, hospital teaching status
- Discordance: actual vs predicted utilization
VATS lobectomy for c-stage I NSCLC
VATS lobectomy for c-stage I NSCLC

Programs with Under-utilization
Video-assisted thoracoscopic surgery versus open lobectomy for primary non-small-cell lung cancer: a propensity-matched analysis of outcome from the European Society of Thoracic Surgeon database


Pierre-Emmanuel Falcoz, Marc Puyraveau, Pascal-Alexandre Thomas, Herbert Decaluwe, Martin Hürtgen, René Horsleben Petersen, Henrik Hansen and Alessandro Brunelli on behalf of the ESTS Database Committee and ESTS Minimally Invasive Interest Group

[Graph showing the comparison between TH-L and VATS-L from 2007 to 2013.]
Thoracoscopic Upper Lobectomy

- Represents clear majority of VATS lobectomy
- Greater degree of anatomic variation
- More difficult to manage pulmonary A. injury
- Higher likelihood of conversion to thoracotomy
- Higher likelihood of becoming pneumonectomy

- Mastery of upper lobectomy is essential
Thoracoscopic Left Upper Lobectomy

Probably the most difficult lobe

1. Left upper lobe bronchus
2. Variation in arterial anatomy
3. Incidence of common pulmonary vein
4. Subcarinal lymph node dissection
VATS Approaches to Lobectomy

- Robotic (5 ports)
- Anterior VATS (3-4 ports)
- Posterior VATS (3-4 ports)
- Duke Approach (2 ports)
- Uniportal
  - Standard
  - Modified
- Other: subxiphoid, cervical
2 incisions: Camera port (1 cm) + Access incision (4.5 cm)
Modified Uniportal Video-Assisted Thoracoscopic Lobectomy: Duke Approach


Modified Uniportal Approach

- Single interspace
- Separate incision for camera and tube
Right Upper Lobectomy

Duke Approach

- Bronchus
- Pulmonary artery
- Pulmonary vein
Right Upper Lobectomy: Standard

1. Upper Lobe Pulmonary Vein
2. Truncus Anterior
3. Posterior Ascending Artery
4. Upper Lobe Bronchus
5. Horizontal Fissure
6. Oblique Fissure
Right Upper Lobectomy: Bronchus First

1. Upper Lobe Bronchus
2. Truncus Anterior
3. Upper Lobe Pulmonary Vein
4. Posterior Ascending Artery
5. Horizontal Fissure
6. Oblique Fissure
Left Upper Lobectomy: Standard

1. Upper Lobe Pulmonary Vein
2. Apical and Anterior Arterial Branches
3. Upper Lobe Bronchus
4. Posterior and Lingular Arterial Branches
5. Fissure
Left Upper Lobectomy: Hilar Tumors

1. Upper Lobe Pulmonary Vein
2. Lingular and Posterior Arterial Branches
3. Transect Upper Lobe Bronchus
4. Apical and Anterior Arterial Branches
5. Fissure
6. Staple Upper Lobe Bronchus
Thoracoscopic Upper Lobectomy: What I Say Every Day

1. Memorize the pathway of ingress
2. Almost always articulate the stapler
3. Always articulate the stapler on camera
4. Always be able to see the back blade of the stapler
5. Don’t pull forward on the artery
6. Relax tension on the artery before applying stapler
7. Apply the stapler slowly
8. Beware of dragging the stapler across the hilum
Learning Thoracoscopic Lobectomy

1. Practice anterior hilar approach for upper lobectomy through standard incision
2. Transition to using the scope for visualization
3. Introduce thoracoscopic instruments
4. Gradually decrease the size of the incision and move the incision anteriorly
5. Preceptorship
Thoracoscopic Lobectomy: The Future

- Thoracic surgeons must perform and teach
- VATS lobectomy now a required case for Board certification in US
- Higher number of early stage patients, which will increase based on lung cancer screening
- Higher number of locally advanced cases with increased experience
- Improved instrumentation (in addition to robotics)
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