Navigational Bronchoscopy

9th Annual Masters in
Minimally Invasive Thoracic Surgery
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Disclosures

Consultant for Scanlan

No conflicts related to this presentation
## Cancer Mortality in the US


<table>
<thead>
<tr>
<th>Site</th>
<th>Deaths</th>
</tr>
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<tbody>
<tr>
<td>1. Lung</td>
<td>158,080</td>
</tr>
<tr>
<td>2. Colon/Rectum</td>
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</tr>
<tr>
<td>3. Pancreas</td>
<td>41,780</td>
</tr>
<tr>
<td>4. Breast</td>
<td>40,890</td>
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Survival 16%
NA: 40/100,000

LUNG CANCER
Mortality rate per 100,000, both sexes
Global Lung Cancer Mortality

### Lung Cancer in Non-Smokers

Siegel R, Naishadham D, Jemal A. *CA Cancer J Clin* 2012;62:10-29

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<td>1. Colon/Rectum</td>
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<td>2. Breast</td>
<td>39,920</td>
</tr>
<tr>
<td>3. Pancreas</td>
<td>37,390</td>
</tr>
<tr>
<td>4. <strong>Lung cancer, non-smokers</strong></td>
<td>30,000</td>
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The Impact of Minimally Invasive Strategies on The Practice Of Thoracic Surgery

• Better outcomes for patients due to the advantages of Minimally Invasive Strategies

• Advances in technology in Thoracic Surgery

• Development of better treatment strategies that involve Minimally Invasive Thoracic Surgery
Technical Advances

• Uniportal lobectomy
• Energy source vessel control
• Simulation
• 3-D visualization systems
• Awake thoracic surgery
• Preventing conversion
• CT-Guided Navigational bronchoscopy
Electromagnetic Navigational Bronchoscopy

- Electromagnetically navigated bronchoscopy based on registration of CT scans & bronchoscopy
- Displays multi-dimensional views during navigation: axial, coronal, sagittal, local
- Guides the placement of the tip of the guided catheter within 3mm of the target
- Goal: facilitate biopsy (needle, core, brush, forceps), tattoo, or fiducial placement
CT-Guided Navigational Bronchoscopy

- Fluoroscopy is limited
  - 2-dimensional
  - Small lesions are difficult to visualize
  - Ground glass opacities are impossible to visualize
- CT-Guided ENB may improve success rate and may be employed in the future for ablation
CT “Garage”
CT propeller

CT “Garage”
ENB

1. Lung cancer diagnosis

2. Marking small lesions for resection

3. Ablation
85 year old man with 1cm nodule
Case

- 68 year old man with a mixed GGO
- CT-guided biopsy negative
- Anatomically unsuitable for segmentectomy
- High-risk surgical candidate to proceed with lobectomy without a diagnosis
Lesion

Catheter
Emprint™ Ablation System with Thermosphere™ Technology

- Microwave tissue ablation technology
- Thermal control: minimizes uncontrolled thermal factors that contribute to a passive ablation zone
- Field control: delivers a precise, scalable spherical field
- Wavelength control: prevents wavelength elongation as tissue becomes desiccated or charred and its properties change during ablation
Thoracoscopic Lobectomy: The Future

- CT screening: Higher proportion of early stage patients, which should all be thoracoscopic
- Some patients may elect for resection; others may choose ablation
- Thoracic surgeons should be able to diagnose, stage, resect, ablate lung cancer