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Electromagnetic Navigation Bronchoscopy™
A New Treatment for Patients with Peripheral Lung Lesions
Lung Cancer: An Epidemic?

• In the U.S.:
  • #1 cause of cancer-related death\(^1\)
  • Kills more people every year than breast, prostate, colon and pancreatic cancers combined\(^1\)
  • 87% of lung cancer deaths are related to tobacco usage\(^2\)

Sources:
2. American Cancer Society, 2006
Lung Cancer: A Growing Problem

• 2010 estimates for U.S.:
  • >222,000 new cases\textsuperscript{1}
  • >157,000 deaths\textsuperscript{1}

• 43 million smokers in the U.S.

• Lung cancer risk\textsuperscript{3}:
  • 20 times higher for male smokers
  • 12 times higher for female smokers

• The population is aging and the incidence of lung cancer will grow\textsuperscript{4}

Sources:
1. American Cancer Society, 2010
2. CDC National Health Survey, 2007
Lung Cancer: A Poor Prognosis

- >75% of new cases have late-stage lung cancer (Stage III or IV)\(^1\)
- 5-year survival rate is only 15%\(^2\)

Sources:
Early Diagnosis Offers Hope

• If diagnosed at Stage III or IV, 15% survival rate at 5-years\(^1\)

• If diagnosed at Stage I, 88% survival rate at 10-years\(^1\)

• 92% survival rate if immediate removal of lesion\(^1\)

• Yet, only 16% of lung cancer patients are diagnosed at an early, localized stage\(^2\)

Sources:
1.Intl Early Lung Cancer Action Program Investigators, 2006
Early Stage Advantage

**STAGE I OR II LESION**
- SMALLER (size of pencil eraser)
- DISTAL LOCATION
- DISCRETE
- EASIER TO TREAT
- SURVIVAL RATE = 88% @ 10 YEARS

**STAGE III OR IV LESION**
- LARGER (size of golf or tennis ball)
- PROXIMAL LOCATION
- ORGANIZED & WIDESPREAD
- TOO LATE FOR EFFECTIVE TREATMENT
- LIFE EXPECTANCY +/- 6 MONTHS

Source:
1. Intl Early Lung Cancer Action Program Investigators, 2006
Failure of Bronchoscopy

- 500,000 bronchoscopies performed annually in the U.S.\textsuperscript{1}
- 65\% of bronchoscopies fail to reach peripheral lesions\textsuperscript{2}
- Failure of bronchoscopy often leads to more invasive diagnostic procedures
  - TTNA
  - Surgical Biopsy

Sources:
1. Ernst et al., Chest 123: 1693-1717, 2003
2. Schwarz Y et al., Chest Apr 2006; 129:988-994
<table>
<thead>
<tr>
<th>Method</th>
<th>Limitations</th>
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<tbody>
<tr>
<td>Watchful Waiting</td>
<td>Malignant CANCER can ADVANCE stage</td>
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<tr>
<td>Sputum, CXR, CT, PET</td>
<td>No tissue collection</td>
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<td>Bronchoscopy</td>
<td>Limited reach and low diagnostic yield</td>
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</table>
| Transthoracic Needle Aspiration (TTNA) | Pneumothorax  
Not all patients are candidates |
| Surgery                   | Non-therapeutic thoracotomy  
Highly invasive  
Not all patients are candidates |
Electromagnetic Navigation Bronchoscopy (ENB)

- Using the patient’s natural airways, the i-Logic System provides the ability to diagnose, stage, and prepare to treat distal lung lesions in one procedure.
- Provides safe and efficient access for non-operable patients.
- Carries a 3% or less risk of pneumothorax. 

Electromagnetic Navigation Bronchoscopy (ENB)

Procedure Overview

CT-Scan → DICOM CD

Planning Software → Planned Pathway File

Navigation → Biopsy → Treatment
Electromagnetic Navigation Bronchoscopy (ENB) Procedure Overview

Locatable Guide (LG): 360° steerability for navigation to lesions and lymph nodes

Extended Working Channel (EWC): Lock EWC in place for insertion of biopsy tools and other catheters

Patient Sensor Triplets: Placed on patient and are tracking sensors to show LG position and account for patient movement

Location Board: creates electromagnetic field

Bronchoscopic Access: LG and EWC go through mouth/nose to steer through bronchial tree to lesions and lymph nodes

Planning Screen
Close Up of Navigation Phase

- Position locatable guide (LG) catheter near the target
- Lock extended working channel (EWC) in place and remove LG catheter
- Insert endobronchial instruments through EWC for tissue sampling
Advantages of i·Logic – Extended Reach

- Navigate to peripheral lesions and biopsy for diagnosis
- Stage lymph nodes for diagnosis and pre-operative planning
- Place fiducial markers in and around tumors for radiation therapy
- Place markers to facilitate VATS localization
- Guide high dose radiation catheters
Advantages of i·Logic – Greater Clarity

- Virtual 3D bronchial tree extends deep into the lungs reaching 17+ airway generations
- Multiple guidance and navigation views enhance lung lesion and vessel visualization
- Diagnostic yield of 70%-74%\textsuperscript{1,2} for lesions and 100% for lymph nodes\textsuperscript{1}

Sources:
Electromagnetic Navigation Bronchoscopy (ENB) provides advantages for several specialties:

- Diagnose lesions
- Stage lymph nodes
- Place fiducial markers for radiation therapy
- Place markers to guide VATS
- Guide high dose radiation catheters
Clinical Results - Effective

- Successful diagnosis of peripheral lesions in 70–74% of ENB cases\textsuperscript{1,2}

- High success rates for lymph node staging

Sources:
Clinical Results – Safe

- Pneumothorax rate of 2-3%\textsuperscript{1,2}
- Over 20 published papers
- >19,000 patient cases worldwide

Sources:
1. Eberhardt et al., Chest June 2007; 1800-1805
Why i·Logic Benefits Patients

• Minimally-invasive and uses the patient’s natural airways

• Enables earlier diagnosis and earlier treatment decisions

• Potential for lower complication rates
Why i·Logic Benefits Physicians

• Expanded options for accessing lung lesions

• Improved steering through 17+ generations of airways

• Ability to diagnose and stage lymph nodes in one procedure

• Improve patient care with minimally invasive procedure

• Faster route from diagnosis to treatment
Why i·Logic Benefits Hospitals

- Improves patient care – shortens time between diagnosis and treatment
- May reduce complications often associated with more invasive procedures
- Retains patients for treatment and other services:
  - Radiation Oncology
  - Thoracic Surgery
  - Medical Oncology
  - Other Ancillary Services
Closing Comments

Thank You for Coming!

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