Robotic Bronchoscopy: A Powerful, Effective and Efficient Adjunct for Diagnosis and Surgical Treatment of Lung Cancer

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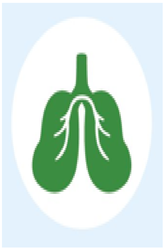
Problem

Lung cancer remains the leading cause of cancer-related death in the United States. There are several proposed reasons for this death rate to include advanced presentation of disease and difficulty in obtaining a definitive diagnosis. Current methods such as diagnostic bronchoscopy, endobronchial ultrasound, and CT guided biopsy have diagnostic yields ranging from 30-70%; and are associated with a 3-38% complication rate (ie pneumothorax, hemorrhage, and prolonged hospital stays)

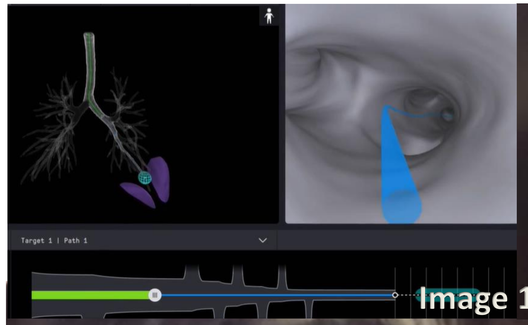
The Next Big Thing?

Robotic Bronchoscopy allows for pin-point accuracy, improved visualization, and superior control during the diagnostic process. In theory, this allows for improved diagnostic yield and lower complications. This is achieved via a protocoled CT scan and propriety software that creates a detailed roadmap, complete with directional arrows and highlighting of target lesion(s). Once the roadmap is created, the lesion can be reached using the robotic bronchoscope that eliminates tremors and allows for precise and gentle traversing of the airway. Early studies show diagnostic yields of 74.1-93% and complication rates ranging from 0-3.7%

General Steps



1. CT scan and road map creation
2. Robotic bronchoscope used to reach lesion
3. C-Arm to confirm location
4. Endobronchial ultrasound, fine/core needle biopsies, brushings, and forcep biopsies can be performed





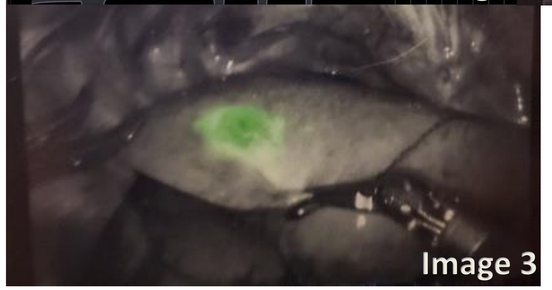


Image 1:
Example of detailed road map to lesion of interest from Ion website

Image 2 and 3:
Upper lobe lesion localized using robotic bronchoscopy. This allows for resection of non-distinct masses, without needing to convert to open to palpate the mass. ICG and Ink utilized

Added Benefits and Other Uses

Robotic bronchoscopy can improve more than just the diagnostic aspect of pulmonary pathology. From a treatment standpoint- the robotic bronchoscope can be used to tattoo lesions with ink or indocyanine green, allowing one to remain minimally invasive and visualize lesions that may not be readily visible or be normally palpated in an open operation. This technology can also allow for targeted delivery of medications in the future, such as chemotherapeutic agents. This technology is powerful when combined with robot-assisted thoracoscopic surgery as it allows for the aforementioned, as well as 3D visualization, seven degrees of freedom, and elimination of physiologic tremors

Disclaimer:
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