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Carly Mehta

Daniel Schwed-Lustgarten MD

Brian Civic MD

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# Accuracy of Rapid On-Site Cytology (ROSE) for the Diagnosis of Peripheral Lung Nodules during Robotic Bronchoscopy

Carly Mehta, Daniel E. Schwed-Lustgarten, MD., Brian Civic, MD.  
Lehigh Valley Health Network, Allentown, Pennsylvania

## Background

- An estimated 200,000 new lung cancers are diagnosed yearly, 3<sup>rd</sup> most common cancer diagnosis.<sup>3</sup>
- During a bronchoscopy, a fiberoptic camera is inserted through the nose or mouth and advanced into the lungs to diagnose a variety of lung diseases.<sup>2</sup>
- The Ion Robotic Bronchoscopy allows mapping through the smaller airways to a lung nodule using a CT scan. It enables the ability to biopsy smaller and more peripheral nodules with more accuracy and precision compared to standard bronchoscopy.<sup>1</sup>

## Methods

Prepare

Become comfortable with the work up for a patient with a newly diagnosed lung nodule, understand the bronchoscopy procedure and role of ROSE

Extract

All procedures and patient data from April 1<sup>st</sup> to July 1<sup>st</sup>.

Collect

Input data into an Excel database for further analyzing.

Analyze

Statistical analysis utilized to focus on the demographics and outcomes of ROSE vs final pathology for robotic bronchoscopies.



Scan Me!

## Results

### Patient Demographics (n=70)

Age, mean (SD)	68 (11)
Female, No.(%)	48 (69)
Smoking History	77%
Pack Years, Mean (SD)	23 (20)

### Nodule Characteristics

Nodule Size, Median (SD)	16mm (18)
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### Location

LUL* (%)	19%
LLL* (%)	15%
RUL* (%)	30%
RML* (%)	27%
RLL* (%)	10%

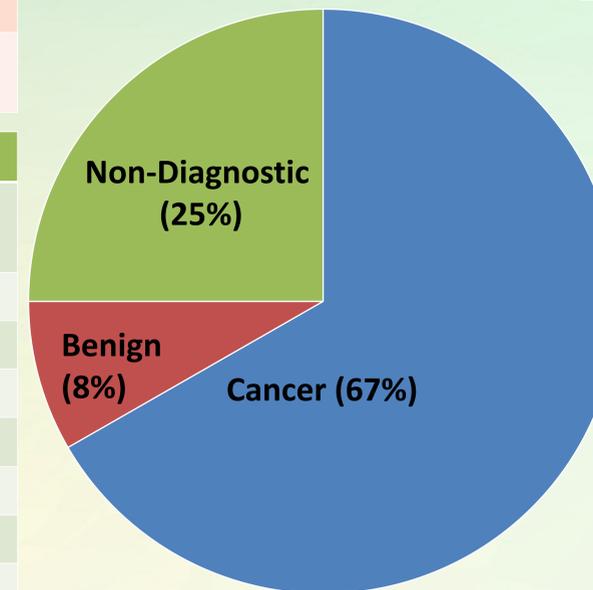
### Appearance

Solid Characteristic	89%
GGO*	8%
Cavitary	3%

### Cancer Classification

Non-Small Cell (%)	70%
Small Cell (%)	15%
Other (%)	15%

### Diagnostic Yield



### 10 mm or Less Nodules

Diagnostic Yield (%)	67%
False Negative ROSE (%)	50%

ROSE Positive Predicted Value (%)	95%
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Atypical ROSE with final cancer diagnosis (%)	66%
% concentric	74%
% eccentric	21%
% none	5%

False Negative ROSE (%)	38%
% concentric	67%
% eccentric	22%
% none	11%

## Conclusion

- Robotic bronchoscopy has a high diagnostic yield (75%) overall.
- Robotic bronchoscopy provides cancer diagnosis even in small nodules (less than 10 mm) with high reliability
- Positive ROSE reliably predicts final pathology diagnosis of cancer
- Atypical ROSE with concentric signal has a high probability of cancer diagnosis
- Non-diagnostic ROSE with concentric signal also has a high chance of still being cancer

### References

*How Ion Works: A look at Intuitive's robotic-assisted minimally invasive biopsy platform.* (2024). Intuitive.com; Intuitive Surgical . [https://www.intuitive.com/en-us/products-and-services/ion/how-ion-works?utm\\_campaign=ion&utm\\_source=google&utm\\_medium=cpc&utm\\_content=system&gad\\_source=1&gclid=EAIaIQobChMI9-3yLCLhwMV3UtHAR2IHQOBAAAYASABEgLVNPD\\_BwE](https://www.intuitive.com/en-us/products-and-services/ion/how-ion-works?utm_campaign=ion&utm_source=google&utm_medium=cpc&utm_content=system&gad_source=1&gclid=EAIaIQobChMI9-3yLCLhwMV3UtHAR2IHQOBAAAYASABEgLVNPD_BwE)

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