



Dynamic Cell Imaging as an Alternative to Rapid Onsite Evaluation in Robotic Bronchoscopy: A Comparative Study

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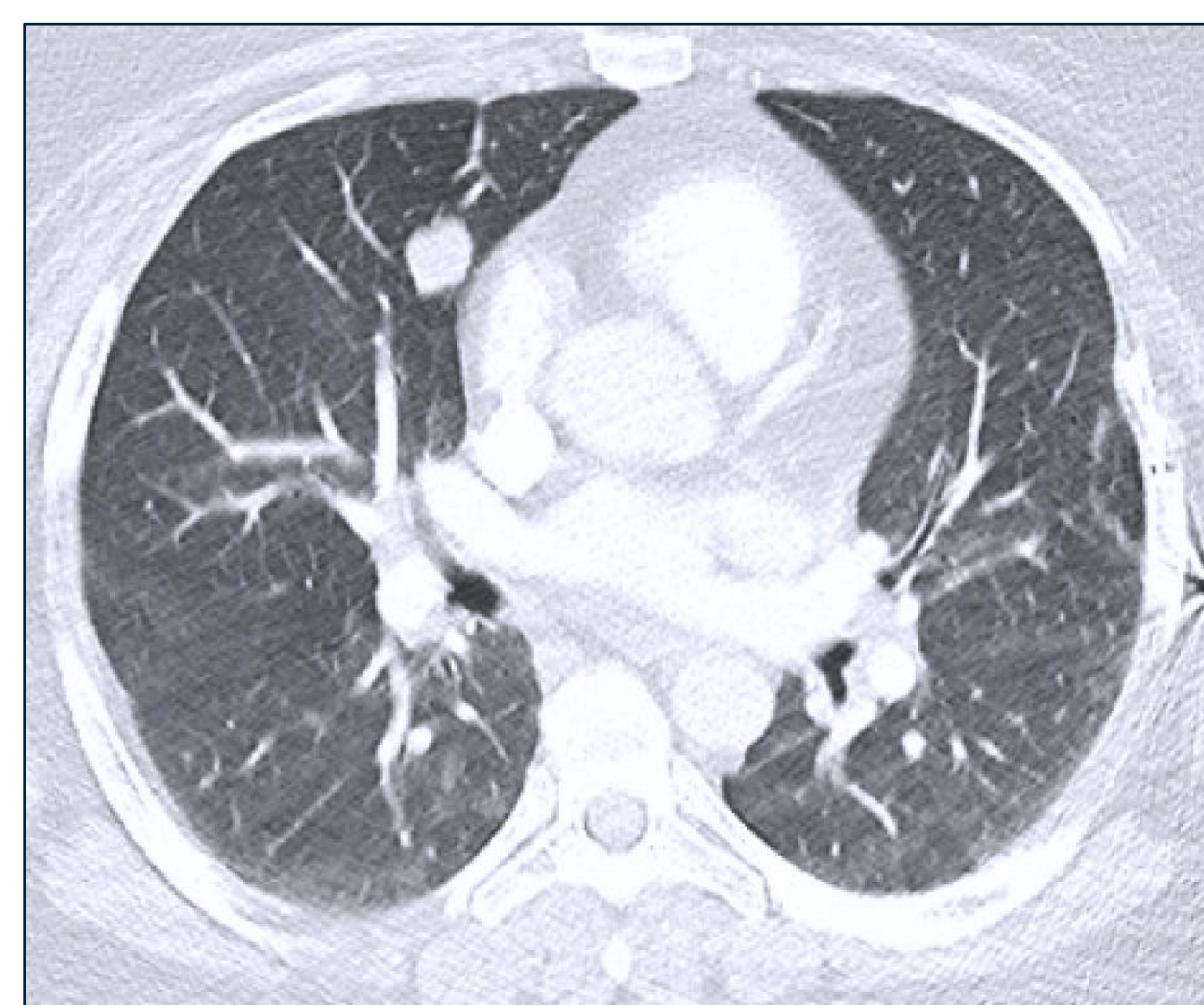
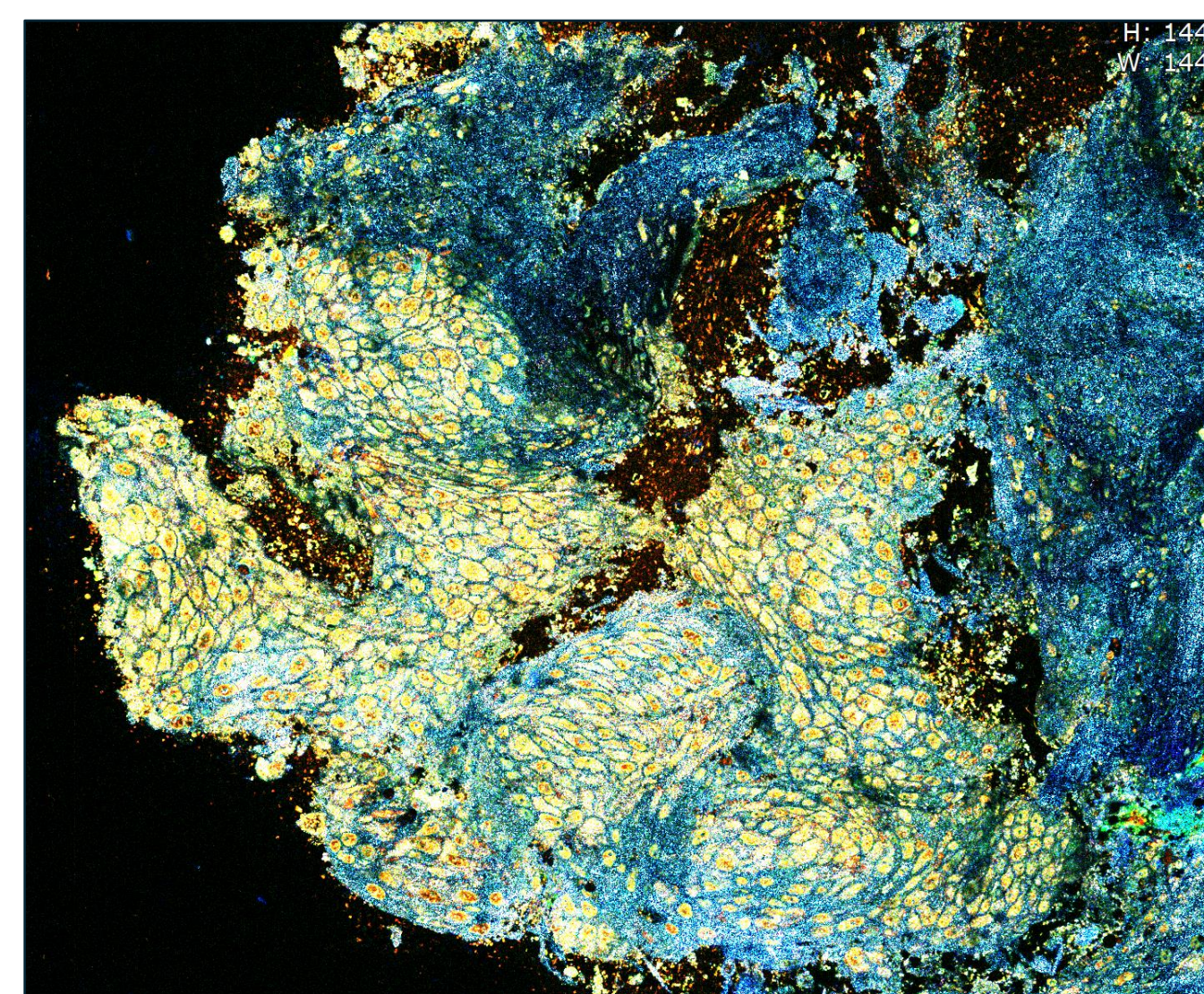
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Background

- Robotic bronchoscopy allows for sampling of lesions inaccessible to traditional techniques
- Rapid On-Site Evaluation (ROSE) is often utilized during biopsy to ensure adequate sampling and obtain a preliminary diagnosis
- Proceduralist-led on-site diagnostic adjuncts may increase diagnostic accuracy and lead to increased efficiency
- We present a comparative study using the Celtivity biopsy system (Acquyre Biosciences) using Dynamic Cell Imaging (DCI) with full-field optical coherence tomography (FFOCT)

Methods

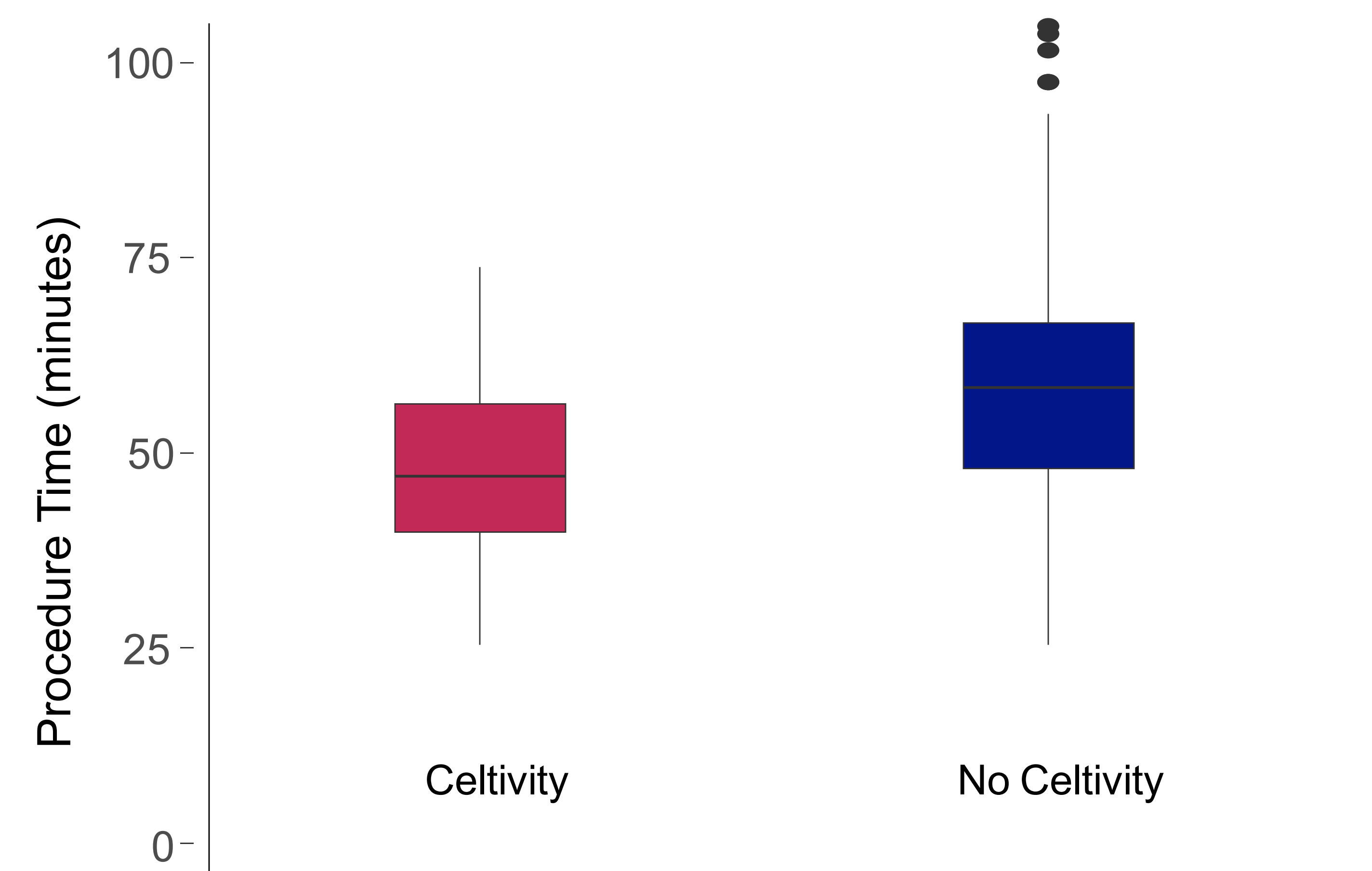
- 94 Robotic bronchoscopy cases performed at a single center using the Monarch (J&J) were analyzed
- Cases using Celtivity were matched to non-Celtivity cases in a 1:2 ratio based on lesion size, region, lobe, BMI, and concomitant use of endobronchial ultrasound (EBUS)
- Success probabilities with Celtivity versus ROSE were compared using a two-sample test for equality of proportions with a continuity correction



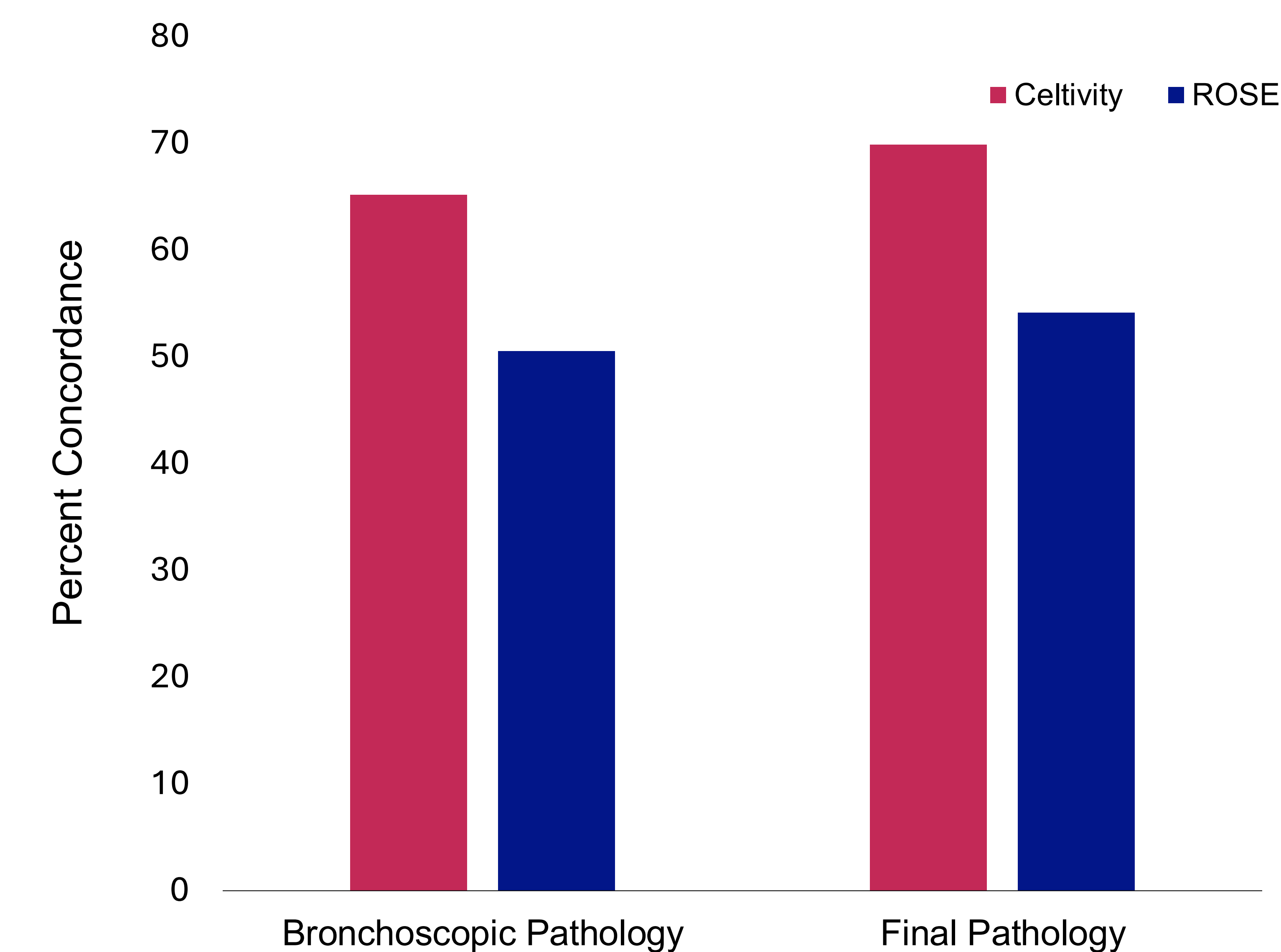
Results

- Celtivity was interpreted more readily than ROSE (98% vs 54%) of cases
- Celtivity lowered procedure time compared to ROSE (42 [35-51] vs. 53 [43-61] minutes, $p < 0.001$)
- Compared to ROSE, Celtivity significantly lowered indeterminate bronchoscopic biopsy rates (4.3% versus 11%, $p=0.04$)
- In 12 cases that resulted in benign bronchoscopic pathology, interpretation with Celtivity of suspicious cellular avidity led to additional biopsy/resection confirming malignancy

Operating Room Time Comparison



Concordance With Pathology by Diagnostic Adjunct



- Celtivity showed greater concordance with both robotic bronchoscopic pathology (65.2% versus 50.5%, $p=0.019$) and final pathology on long-term follow-up compared to ROSE (69.9% versus 54.1%, $p=0.008$).

Conclusions

- In this series, Celtivity was found to have significantly better concordance than ROSE to both bronchoscopic and final pathology.
- Operating room time and indeterminate biopsy rates were significantly reduced.
- Celtivity may be a valuable adjunct for proceduralists to more efficiently and accurately perform robotic bronchoscopy compared to traditional methods.