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Late Breaking

SESSION TITLE: Updates in Bronchoscopic Diagnostics and Therapeutics: Late-Breaking Scientific Abstracts
SESSION TYPE: Rapid Fire Original Inv **PRESENTED ON:**10/21/202501:45 pm-02:30 pm

BEYONDTHE SCOPE: COST-BENEFIT AND DIAGNOSTIC FACTORS IN COMMUNITY-BASED ROBOTIC BRONCHOSCOPY

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PURPOSE: To evaluate the cost-effectiveness of Robotic Bronchoscopy (RB) combined with Augmented Fluoroscopy (AF) and C-arm Based Tomography (CABT) in a community hospital lung nodule program using guided bronchoscopy techniques.

METHODS: We prospectively analyzed 70 consecutive cases over 1.5 years at our institution. All patients underwent RB-guided biopsy using integrated AF and CABT under general anesthesia for pulmonary nodules. The Galaxy Noah system was employed with a GE 9900 C-arm for imaging. Diagnostic Yield (DY) was categorized per ATS/ACCP consensus as Specific Malignant (SM), Specific Benign (SB), or Non-Diagnostic (ND) at the index procedure.

A cost-benefit analysis was performed per case, comparing RB to conventional bronchoscopy with integrated imaging (BI). This included calculating Contribution Margins (CM) and Cost-Benefit Ratios (CBR) based on current reimbursement rates using CPT codes 31628, 31629, and 31653 within complexity-adjusted APC bundles. Cost comparisons were made for procedures performed in the operating room (OR) versus the Endo suite (ES). A CBR >1 was considered financially viable.

Statistical analysis was conducted using SPSS. Categorical means were calculated, and Fisher's exact test, along with linear logistic regression, were used to identify factors significantly impacting DY, with significance set at $p < 0.05$.

RESULTS: The mean lesion size was 2.0 cm (median 1.8 cm). Overall, DY was 89% at the index procedure. SM diagnosis in 64% (45/70), SB in 24% (17/70), and ND in 11% (8/70). Two patients developed pneumothorax requiring chest tube placement. Key factors associated with improved DY included:

- Radial EBUS views obtained in 86% of cases (60/70);p=0.017
- Localization in at least two AF planes prior to biopsy in 87% (61/70);p<0.001
- C-arm spins and tool re-adjustments based on AF imaging in 81%(57/70);p=0.012
- Direct tool adjustments with vision at the lesion periphery in 84% (59/70);p=0.01

The CM percase for RB was40%, compared to 70% for BI .In the OR setting, CBR was 1.1 for RB and1.5 for BI.When performed in the ES, RB had a CBR of 1.5 versus 2.5 for BI, indicating greater financial viability in the ES setting.

CONCLUSIONS: RB with integrated AF and CABT is a financially sustainable approach, particularly when performed in an endosuite rather than an operating room. High diagnostic yields are achievable even when stringent diagnostic definitions are applied.

CLINICAL IMPLICATIONS:

1. Direct peripheral tool adjustment with vision enhances DY during RB-assisted lung nodule biopsy.
2. AF and CABT are essential for optimizing RB performance and DY.
3. Performing RB in an endosuite offers superior cost-effectiveness compared to the OR.

DISCLOSURES:

No relevant relationships by Roshen Mathew

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