Procedures

SESSION TITLE: Lung Nodule Biopsy: Yield and Accuracy
SESSION TYPE: Original Investigations
PRESENTED ON: 10/16/2022 10:30 am - 11:30 am

COMBINING REAL-TIME 3-D IMAGING AND AUGMENTED FLUOROSCOPY WITH ROBOTIC BRONCHOSCOPY FOR THE DIAGNOSIS OF PERIPHERAL LUNG NODULES

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PURPOSE: The bronchoscopic approach to peripheral lung nodule biopsy utilizing a multimodality approach can help to accurately localize and improve diagnostic yield. Notably, the use of augmented fluoroscopy has demonstrated the ability to improve the diagnostic yield of peripheral pulmonary lesions. Body Vision's (Body Vision Medical Ltd, Ramat Ha Sharon, Israel) proprietary technology utilizes C-arm based tomography (CABT) which allows for confirmation of a peripheral lung nodule target using tomosynthesis registration of the lesion. Any standard C-arm can be used to reconstruct a 3D intraprocedural image of the target, overcoming CT to body divergence. Additionally, the Body Vision platform allows for fluoroscopic visualization of preplanned pathways and tool-lesion relationship, which assist biopsy targeting regardless of the navigation platform. Here we describe our experience with combining the Monarch® robotic bronchoscope (Auris, Redwood City, CA) and the Body Vision systems.

METHODS: We performed a retrospective review of patients who underwent navigational bronchoscopy with biopsy using both systems in 2021 at the University of Chicago Medical Center. Lesion and patient characteristics, final pathology and procedural complications were collected. Bronchoscopy utilized the Monarch® robotic platform, radial endobronchial ultrasound (REBUS), and the Body Vision system. Final pathologic diagnosis as well as follow up imaging and documentation were used to determine diagnostic yield.

RESULTS: Between 2/2021 and 11/2021, 45 patients underwent Monarch® robotic bronchoscopy in addition to utilizing the Body Vision platform. Lesion size ranged from 4 mm to 35 mm with an average of 16.9 mm. REBUS confirmation of target lesion was seen in 32 of 44 cases (73%). Immediate diagnosis was obtained in 38 of 45 cases (84%). 32 cases were malignant, 6 consistent with benign etiology, and 7 demonstrated inflammation (4) or were non-diagnostic/atypical (3). Of these 7, two had stable findings at 1 year follow-up and one had a surgical wedge biopsy that was benign leading to an overall accurate diagnosis achieved in 41/45 (91%). The initial 7 non-diagnostic lesions had a similar range (4mm to 32mm) and average (16.1 mm) size. There were 4 post-procedural pneumothoraces.

CONCLUSIONS: This is the largest cohort to date on combining the use of robotic bronchoscopy and Body Vision technologies. The results suggest that the addition of the Body Vision system with its real time imaging and augmented fluoroscopic navigation may result in more accurate targeting of a peripheral lung nodule as reflected in the high diagnostic yields demonstrated in this cohort. Additional large prospective studies are warranted to further demonstrate and quantify the benefit.

CLINICAL IMPLICATIONS: Real time targeting using Body Vision augmented flouroscopy and CABT technology may improve the diagnostic yield of peripheral pulmonary nodule biopsy.

DISCLOSURES: No relevant relationships by Grady Hedstrom

Consultant relationship with Noah Medical Please note: 2021-2022 Added 04/15/2022 by Ajay Wagh, value=Consulting fee

Speaker/Speaker's Bureau relationship with Biodesix Please note: 2021-2022 Added 04/15/2022 by Ajay Wagh, value=Honoraria

Advisory Committee Member relationship with Polarean Please note: 2021 Added 04/15/2022 by Ajay Wagh, value=Honoraria