

EVALUATION OF THE SAFETY AND DIAGNOSTIC YIELD OF THE GALAXY SYSTEM OF ELECTROMAGNETIC NAVIGATION BRONCHOSCOPY AND TOOL IN LESION TOMOSYNTHESIS FOR LUNG NODULES.

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Background: This is the first retrospective case series where we evaluate the initial experience, diagnostic yield, and safety of the Galaxy robotic bronchoscopy platform (Noah Medical) at our institution. This novel technology combines robotic electromagnetic navigation bronchoscopy (ENB) with tomosynthesis using a standard C-Arm to guide and confirm tool placement in a lesion and overcomes CT-body divergence. **Methods:** After inspection bronchoscopy, the Galaxy system was docked and the bronchoscope was "driven" to the target airway using ENB. Once in the target airway a C-arm sweep was performed with a breath hold at adjustable pressure limit (aPL) of 20cmH₂O using a standard GE-9900 C-arm. The resultant tomosynthesis image provided real-time view of the bronchoscope and lesion and real-time correction of the virtual target. Then transbronchial biopsies (TBBx) were performed with needle, forceps, or 1.1 mm cryoprobe using augmented fluoroscopy. Tool-in-lesion spin was performed at user discretion. From December 2023 to February 2024 a total of 67 lesions in 60 patients underwent sampling using this system. These cases were analyzed for diagnostic yield and safety outcomes. The definition of diagnostic yield was based on the recent ATS/ACCP Delphi statement (Figure 1). **Results:** Mean age was 70 years and 70% were female. Seven patients had known lung cancer and twenty had other known cancers. Two patients had ILD, five had COPD, and one had PHTN. 49% of the patients were current/former cigarette smokers. Nodule was in the peripheral 1/3 of the lung in 55% of cases. Four had a bronchoscopically visible lesion. The mean lesion diameter was 21.8mm (SD 10.29mm), the median was 19mm, and the range was 6mm-45mm. There was a bronchus sign present in 24% of cases. There was successful navigation in all cases. Overall diagnostic yield was 88% based on the new ACCP/ATS Delphi statement (see Table 1). Based upon the traditional definition of diagnostic yield by presence of definitive histopathological findings, the yield was 94%. There was one case of pneumothorax (1.5%) and one case of mild pneumomediastinum (due to EBUS-TBNA). There was one case of Nashville bleeding scale grade 2 in a patient who underwent cryobiopsy that was easily controlled. The mean total fluoroscopy time was 4 minutes and 30 seconds with mean dose of 65.43 mGy. **Conclusion:** Lung biopsy using the Galaxy system is safe and effective. Diagnostic yield was significantly improved compared to first generation robotic bronchoscopy. Cumulative radiation doses were significantly lower than CBCT. Complication rates were very low.