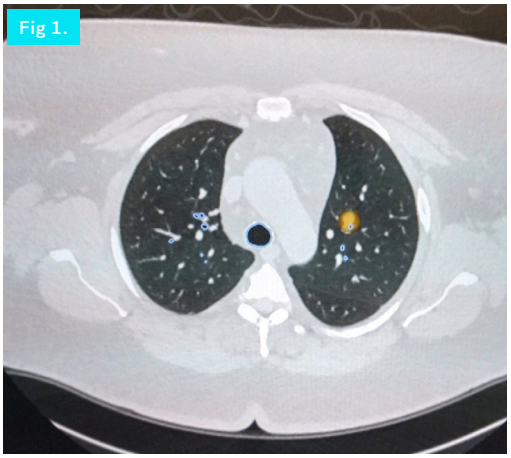
Diagnosis of Growing 10 mm LUL Carcinoid Tumor

Dr. John Egan

CASE STUDY



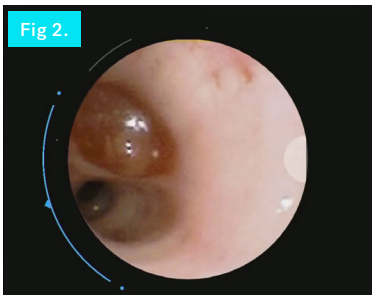


Fig 1. Axial CT of 10 mm nodule in apicoposterior segment

Fig 2. Endobronchial lesion seen with direct visualization

BACKGROUND

This patient presented with a small growing nodule in the left upper lobe after it was found incidentally four years prior. Within that time, the nodule more than doubled in size from 4 mm to 10 mm (**Fig. 1**). A CT guided biopsy was initially requested, but given the patient's high body mass index (BMI), and lesion characteristics, she was referred to Interventional Pulmonology to be evaluated using Robotic-Assisted Bronchoscopy.

PROCEDURE

Initial planning identified a 10 mm nodule in the apicoposterior segment with a definitive bronchus sign leading into the center of the nodule. A plan was created and saved for the procedure to ensure the appropriate airway path was utilized. The main concern for this procedure was the patient's size and lesion attributes. Once the MONARCH® Platform was in position, the bronchoscope was navigated to an ideal area of interest in under two minutes. The nodule was then identified endobronchially (**Fig. 2**). Given the location and size of the nodule, traditional methods would have been difficult and direct access of the small nodule was ideal for obtaining a diagnosis. Of note, navigational accuracy was maintained throughout the procedure which was confirmed bronchoscopically with the robotic system. REBUS along with fluoroscopy were used in conjunction with the platform for added verification. To ensure enough tissue was attained in the targeted area, the FNA, laterally shaving core biopsy and BAL were all performed under visual guidance (**Fig. 3**).

Final pathology results came back as carcinoid and lymph nodes were negative for malignancy. The patient was referred for surgical resection to remove the enlarging neoplasm (**Fig. 4**).

> *This technology allows us to diagnose and stage malignancies with a high degree of accuracy in a single procedure.*

NODULE CHARACTERISTICS

Lobar Location
Left upper lobe, apicoposterior

Nodule Size
10 mm

Bronchus Sign
Yes

Case Information
Navigation Time:
Within 2:00 minutes

Total Procedure Time:
35:00 minutes

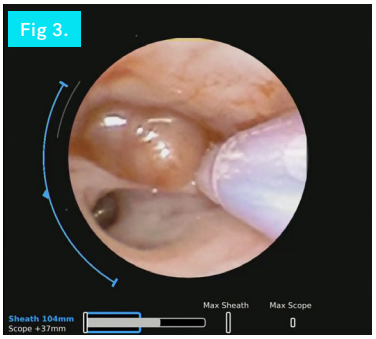
EBUS Staging: Non-malignant

REBUS: Concentric

Biopsy Tools Used: FNA needle and BAL

Final Diagnosis: Carcinoid Tumor

Therapeutic Interventions:
Surgical resection



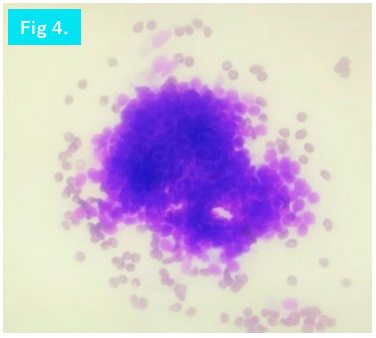


Fig 3. Positioning Biopsy Tool

Fig 4. Cytology slide with biopsy result

CONCLUSIONS

The MONARCH® Platform permitted a quick and easy procedure to access a small nodule located in the periphery of the left upper lobe. Direct visualization and control allowed for samples to be taken of the area with multiple tools to provide adequate tissue for diagnosis. As demonstrated, being able to stage and biopsy the nodule in a single anesthetic event resulted in less procedures, and a productive transition to treatment. Due to the nature of this case, including a patient with a high BMI and a difficult location, the success of this procedure would not have been possible with legacy technology.

Dr. John Egan

Dr. Egan is a board-certified physician who specializes in Interventional Pulmonologist and critical care. He is based in Grand Rapids, MI and is an Assistant Professor of Medicine for Michigan College of Human Medicine. His clinical interests include diagnostic and therapeutic procedures for lung cancer.

Indications for Use: The MONARCH® Platform and its accessories are intended to provide bronchoscopic visualization of and access to patient airways for diagnostic and therapeutic procedures.

Important Safety Statement: Complications from bronchoscopy are rare and most often minor, but if they occur, may include breathing difficulty, vocal cord spasm, hoarseness, slight fever, vomiting, dizziness, bronchial spasm, infection, low blood oxygen, bleeding from biopsied site, or an allergic reaction to medications. It is uncommon for patients to experience other more serious complications (for example, collapsed lung, respiratory failure, heart attack and/or cardiac arrhythmia).

MONARCH®

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