

Diagnosis & Tissue Acquisition for NGS of Left Upper Lobe Mass

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CASE STUDY



Fig 1. CT scan showing mass in left upper lobe

BACKGROUND

A patient came to UC with a 3.5cm mass in the LUL near the aorta and other vascular structures. This patient had a previous navigation bronchoscopy resulting in insufficient tissue for tumor biomarker testing and Next-Generation Sequencing (NGS). A robotic-assisted bronchoscopy with the MONARCH® Platform was scheduled to acquire enough tissue for NGS.

PRE-PROCEDURE PLANNING

The mass was located in the left upper lobe near the aorta. CT showed a possible small, very medial airway compressed by the mass traveling eccentric to the mass. A sharp turn at the distal tip would be required to align with any aspect of this mass and any tip deflection during biopsy may lead to a pathological analysis of insufficient tissue. The MONARCH® Platform was chosen for this procedure due to its control, stability, and continuous vision.

PROCEDURE

After a quick initialization, navigation to the mass location was achieved in under 2 minutes. A small, compressed, and inflamed airway was visible. The MONARCH® Platform scope was aligned to the mass in a controlled fashion using small micromovements. A flexible biopsy needle was used to penetrate the inflamed airway wall and create a path for radial EBUS (REBUS). REBUS confirmed an eccentric view,

“ This procedure was successful because of the fine control, stability, & continuous vision of the MONARCH® Platform ”

NODULE CHARACTERISTICS

Lobar Location

Left upper lobe near vasculature

Size (Diameter max/min)

35mm

Bronchus sign

No

REBUS result (if used)

Eccentric

Fluoro

Difficult due to nearby vascular structures

MONARCH® Camera

Directly viewed tool/tissue interaction

Time to First Biopsy

2 minutes

Procedure Time

35 minutes

Biopsy instruments used

ArcPoint biopsy needle and superTrax biopsy forceps



Fig 2. Radial EBUS (REBUS) deployment

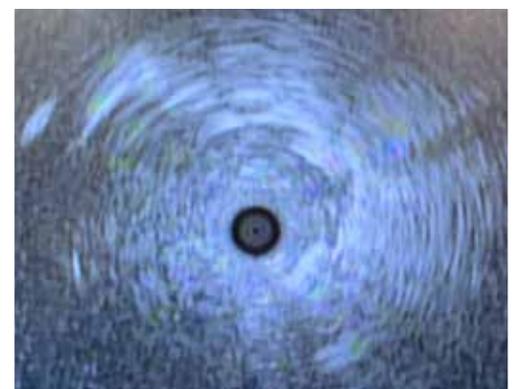


Fig 3. REBUS eccentric pattern

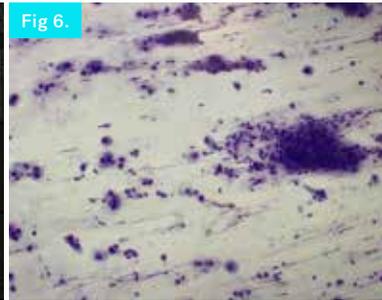
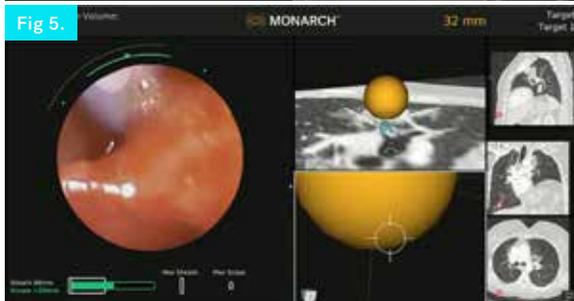


Fig 4. Needle biopsy
 Fig 5. Forceps passed through needle biopsy hole to gather larger tissue biopsy
 Fig 6. Tissue evaluated with ROSE (Adenocarcinoma)
 Fig 7. Dr. Hogarth performing the MONARCH® procedure in a seated position

but because use of the mini-probe was done under live vision, the location of the mass behind the airway was able to be determined with a high degree of confidence. After aligning to the appropriate trajectory and airway insertion point, several needle biopsies were performed. A biopsy forceps was then passed through the needle hole in the airway wall to obtain large pieces of tissue. All biopsies were confirmed on ROSE as adenocarcinoma.

POST-PROCEDURE:

Tissue biopsy quality and quantity were deemed sufficient for NGS, PD-L1, and other tests. This patient had a several week delay in the care of her progressive cancer, but the oncology team was able to use these results to continue the patient's personalized treatment plan.

CONCLUSIONS

This case would have been difficult without the fine control at the scope distal tip and ability to access and hold a highly articulated position. Live, continuous vision with REBUS provided directional feedback and allowed for repeat biopsies in one location to facilitate a track to fit biopsy forceps and acquire sufficient tissue for NGS.



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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).

