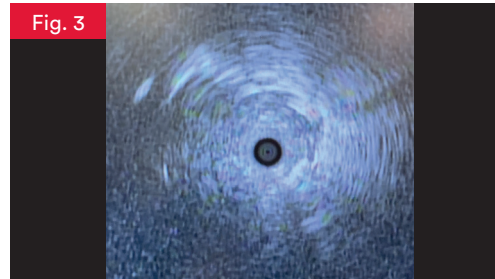
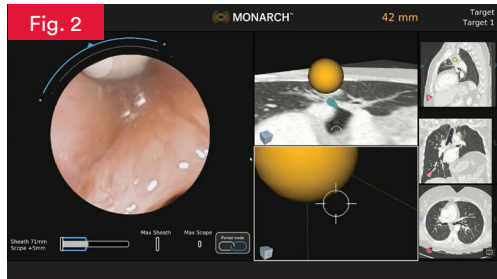
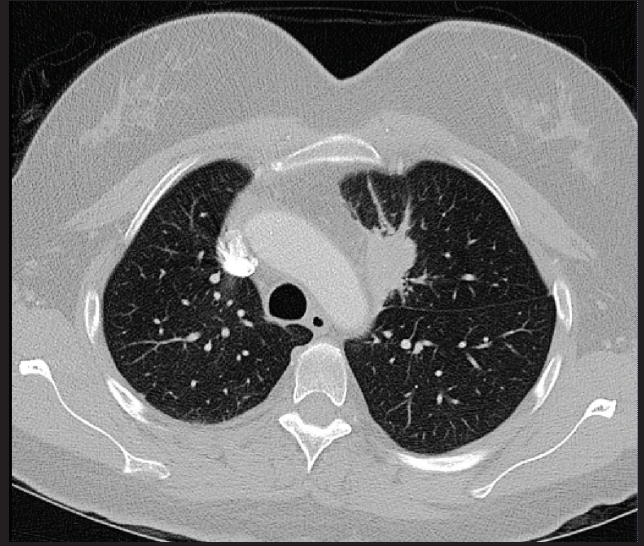


DR. KYLE HOGARTH & DR. ABHINAV AGRAWAL
– THE UNIVERSITY OF CHICAGO MEDICINE

Diagnosis & Tissue Acquisition for NGS of Left Upper Lobe Mass

Fig. 1



Background

A patient came to UC with a 3.5 cm 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.

Procedure

Pre-Procedure Plan

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.

MONARCH™ 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, 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.

Nodule Characteristics

Lobar Location
Left upper lobe near vasculature

Mass Size
35 mm

Bronchus Sign
Negative

REBUS
Eccentric

Fluro
Difficult due to nearby vascular structures

MONARCH™ Camera
Directly viewed tool/tissue interaction

Case Information

Time to First Biopsy (min.)
3:50

Procedure Time (min.)
35:00

Biopsy Instruments Used
ArcPoint biopsy needle and superTrax biopsy forceps

Fig.1. CT scan showing mass in left upper lobe
Fig.2. Radial EBUS (REBUS) deployment
Fig.3. REBUS eccentric pattern

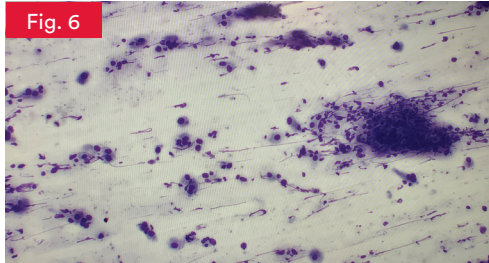
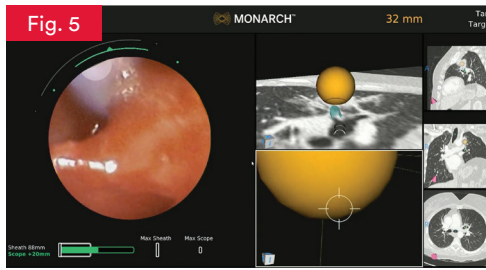
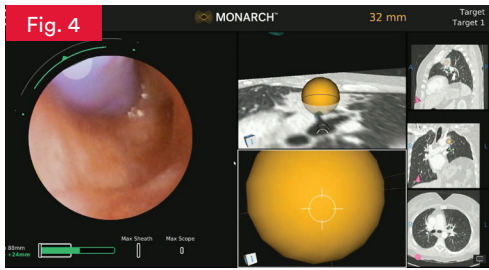



Fig.4. Needle biopsy
Fig.5. Forceps passed through needle biopsy hole to gather larger tissue biopsy
Fig.6. Tissue evaluated with ROSE (Adenocarcinoma)
Fig.7. Dr. Hogarth performing the MONARCH™ procedure in a seated position

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.

Conclusion

Performing this procedure would have been difficult without fine control at the scope distal tip to enable and hold a highly articulated position. Live, continuous vision was an asset during this procedure by providing directional feedback with REBUS and allowing for repeat biopsies in one location to facilitate a track to fit a biopsy forceps and acquire enough tissue for NGS.

 *This procedure wasn’t possible without the fine control, stability, & continuous vision of the MONARCH™ Platform*

– Dr. Kyle Hogarth



About Kyle Hogarth, MD, FCCP

Dr. Hogarth is a Professor of Medicine and Director of Bronchoscopy in Chicago, IL



About Abhinav Agrawal, MD

Dr. Agrawal is an Interventional Pulmonary Fellow (2019-2020) in Chicago, IL

Bronchoscopy 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.

Bronchoscopy 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).

This document reflects the techniques, approaches and opinions of the individual physician. This Ethicon sponsored document is not intended to be used as a training guide. Other physicians may employ different techniques. The steps demonstrated may not be the complete steps of the procedure. Individual physician preference and experience, as well as patient needs may dictate variation in procedure steps. Before using any medical device, review all relevant package inserts with particular attention to the indications, contraindications, warnings and precautions, and steps for use of the device(s).