

Multimodality Approach to Diagnosis of Peripheral lesions- a Case Based Presentation

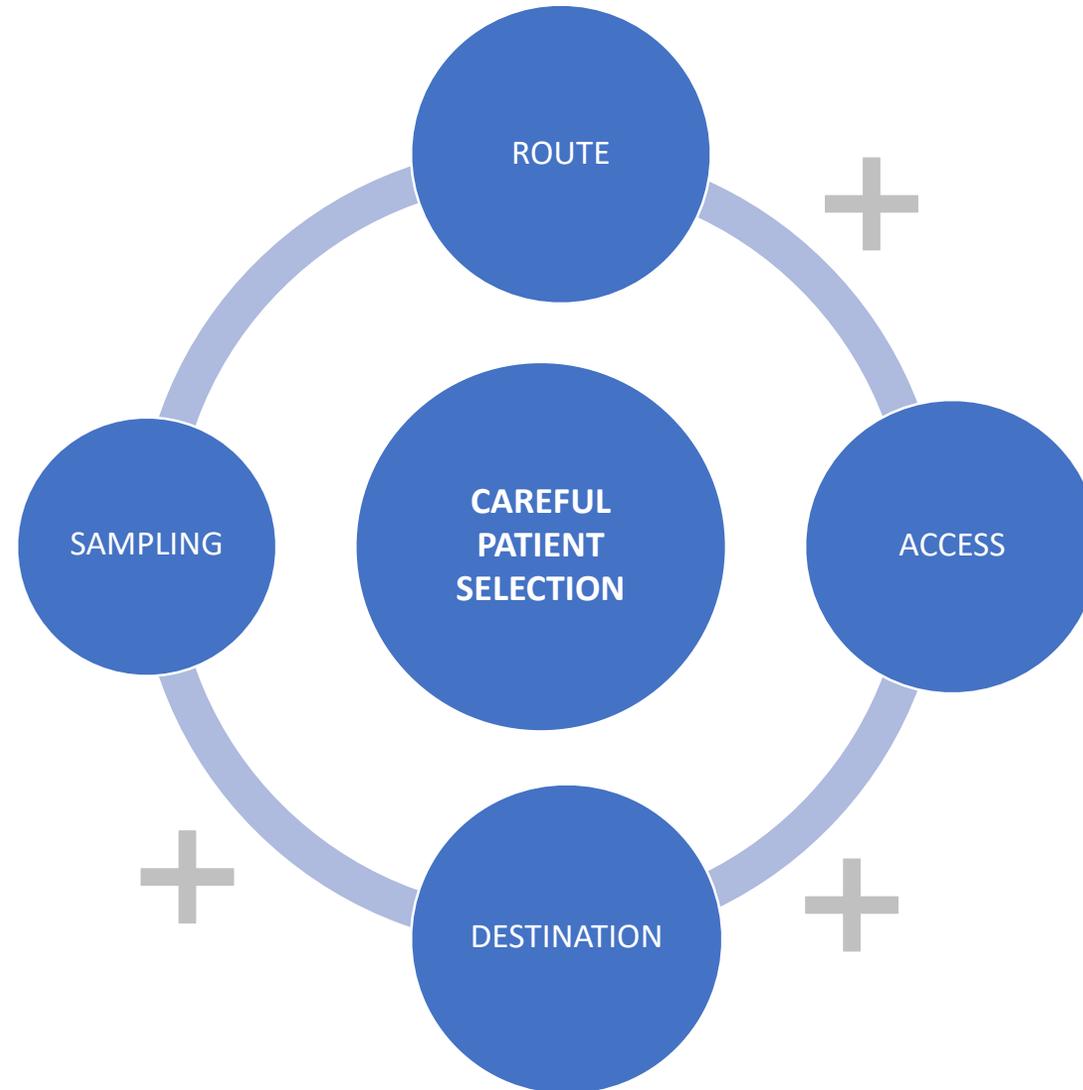
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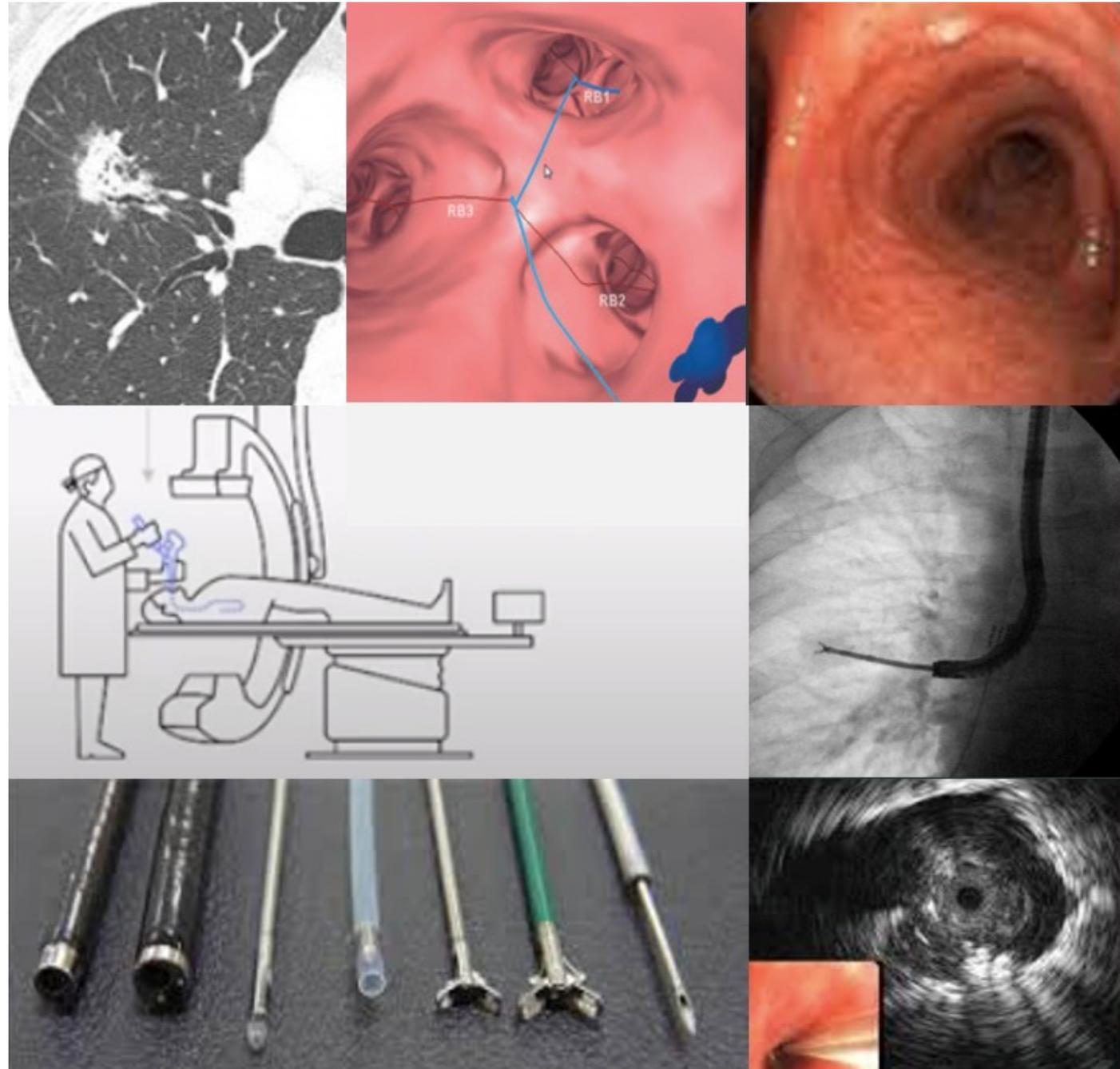


Principles of Peripheral bronchoscopy



Service at North Tees

- Virtual Bronchoscopic Navigation planner
- Thin +Ultrathin Bronchoscopy
- Radial EBUS +/-GS
- 2D Fluoroscopy
- ROSE
- Conscious Sedation/ GA
- (illumisite but rarely use)



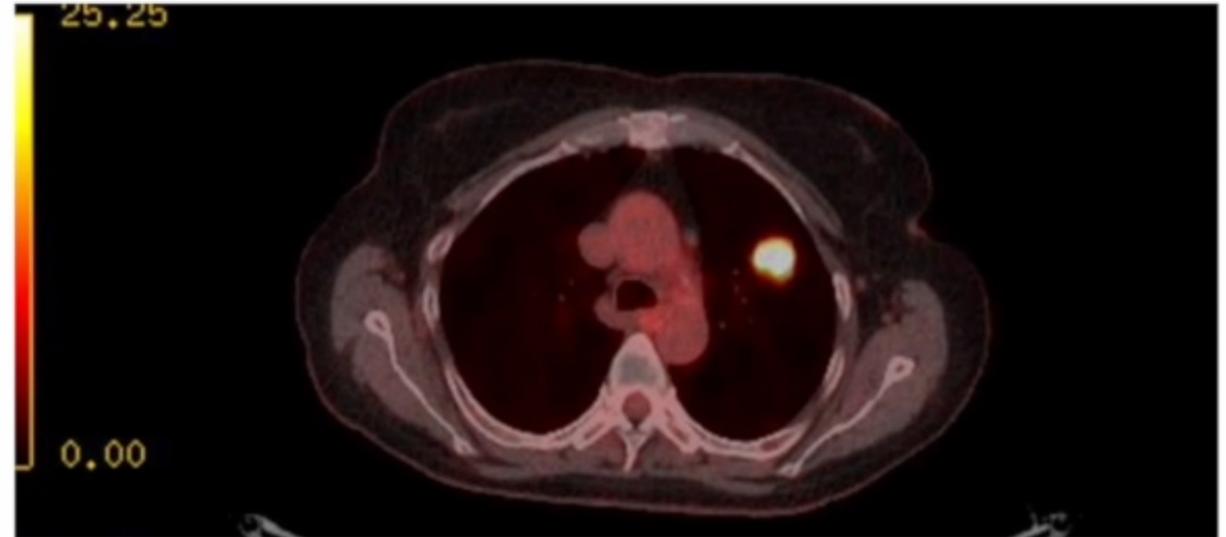
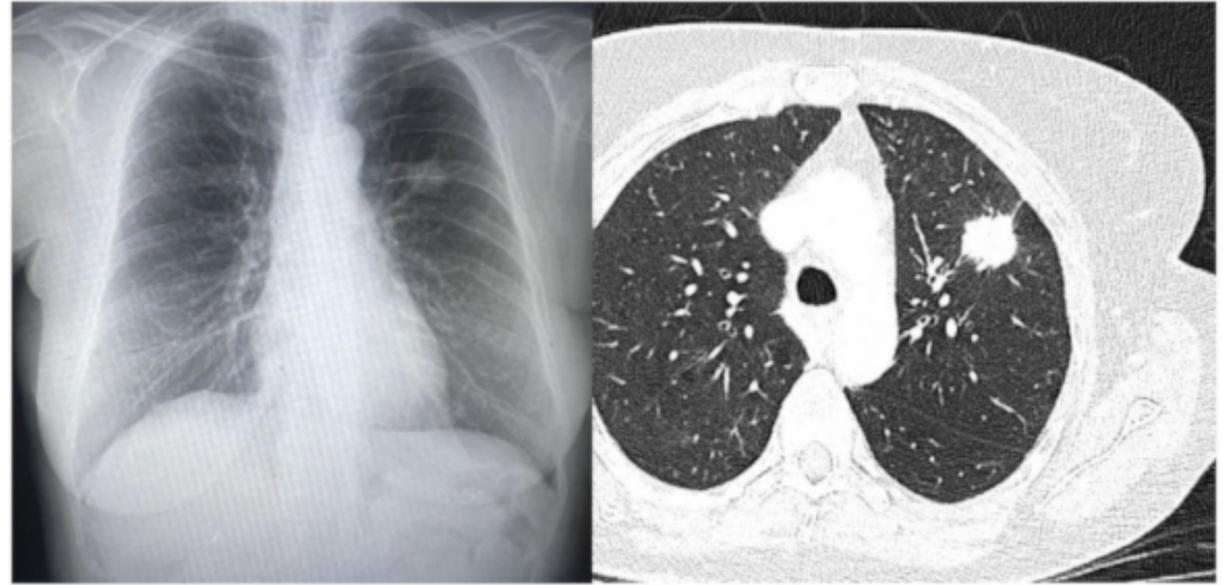
Pre-procedure- how I do it:

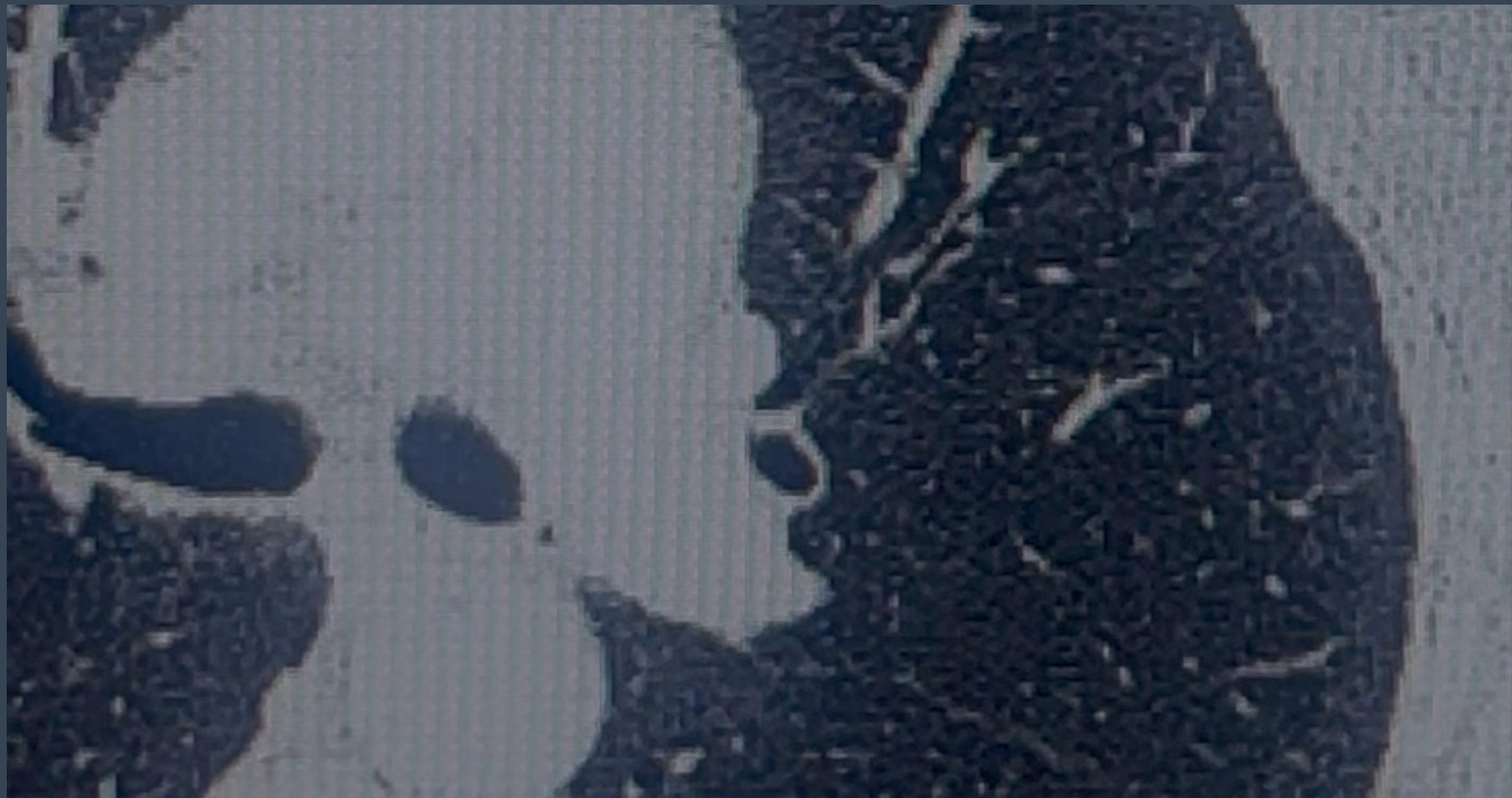
1. Referral vetting:
 - Do we really need this?
 - Technical feasibility: bronchus sign, size, location, risks
 - Alternative biopsy sites: pros and cons, including waiting times
 - Need for concurrent EBUS staging
 - Patient factors inc pre-test prob of cancer. Will they tolerate a prolonged bronchoscopy procedure?
 - Additional procedures to consider with surgical team: fiducial marking
 - Are they better off under GA: if in peripheral third, less than 2cm, close to diaphragm, likely to be higher bleeding risk such as need for Cryobiopsy, and maybe concurrent systematic staging
2. VBN Planning
 - Load up CT images in disc format into VBN planner-review path to target pre-procedure planning
 - Review site of lesion: which scope is best?
 - Review relation of target to airway: which tools am I likely to need
3. Consent as per Bronchoscopy and TBLB inc additional radiation risk and false negative rate
4. Lead-lined Interventional room Endoscopy or Theatre/ Xray table/ Radiographer/ 2 RGNs and 1 HCA/Biomedical Scientist

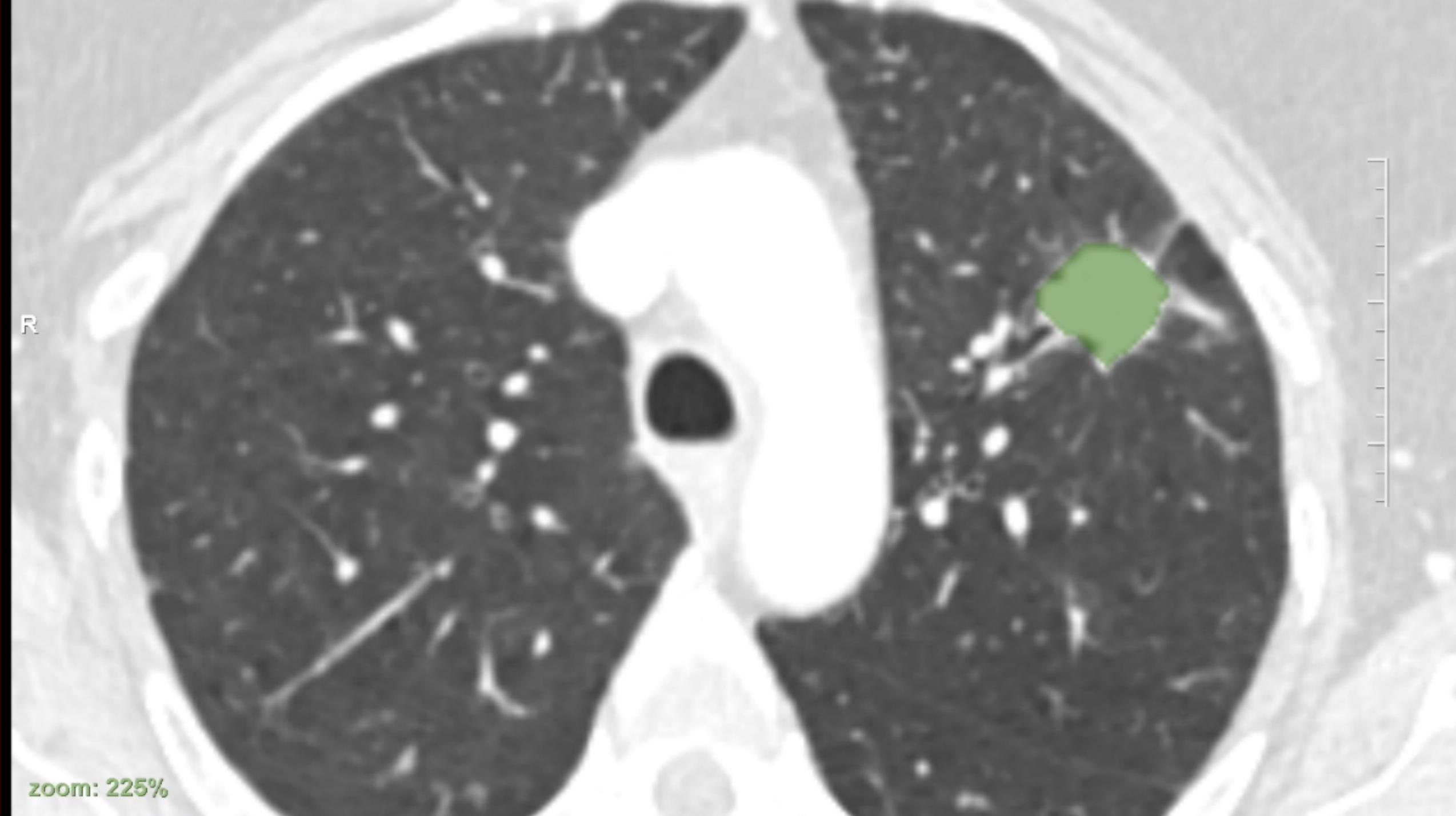
Patient 1

Patient 1

- 66 yr old F smoker
- RA on MTX
- Persistent cough
- 25 mm LUL spiculated lesion

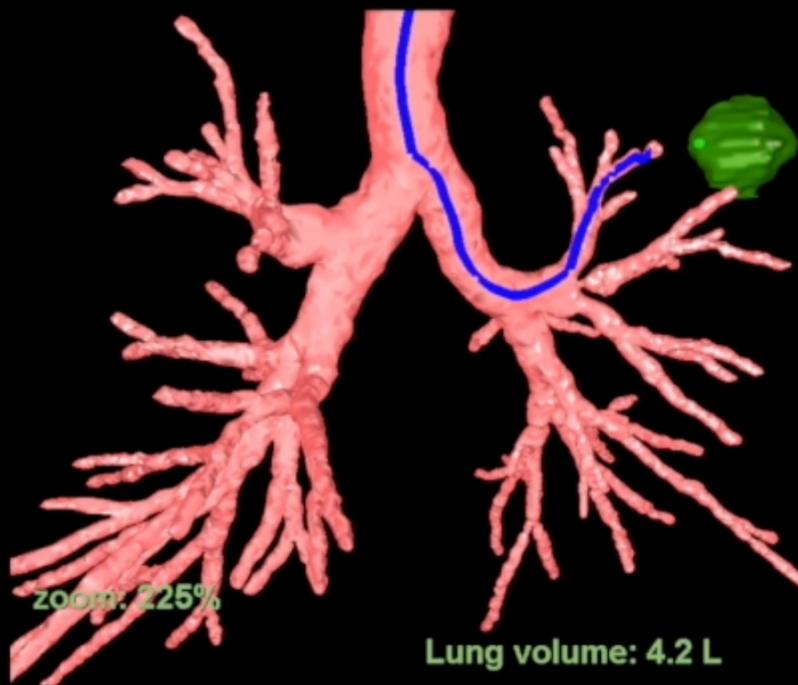
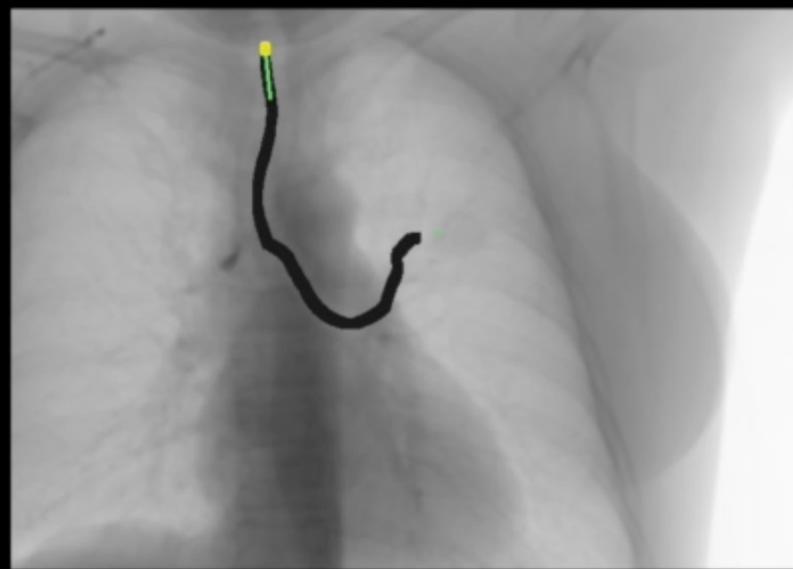
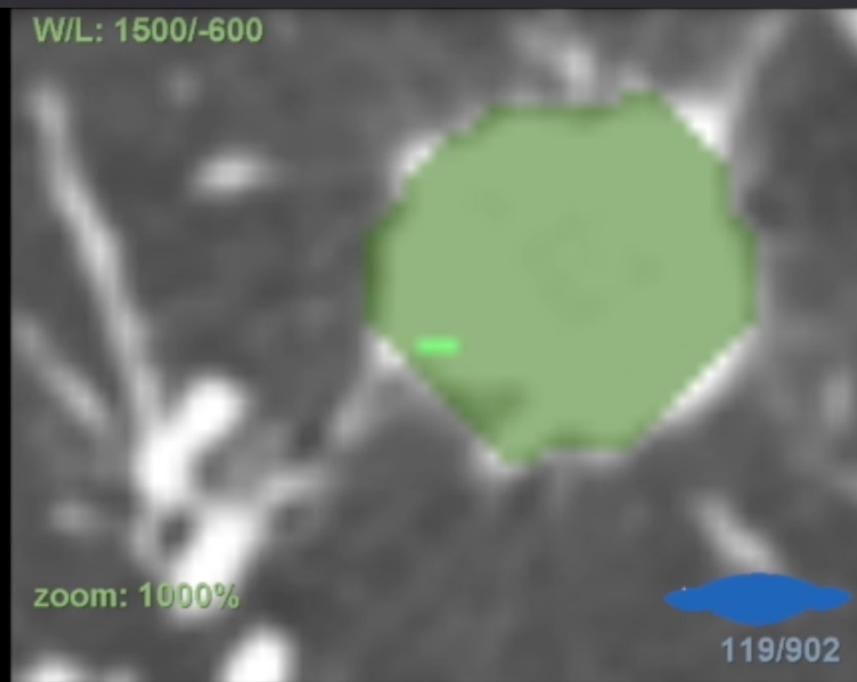
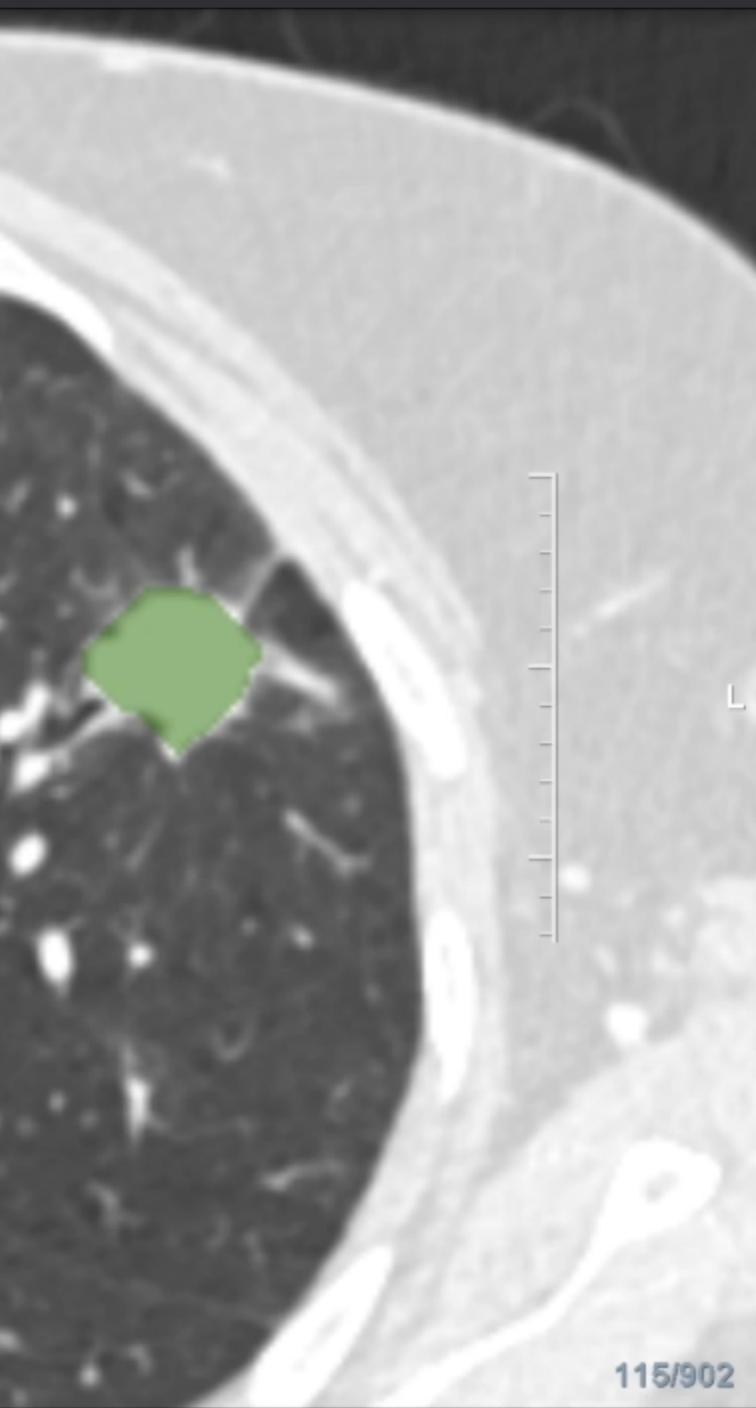


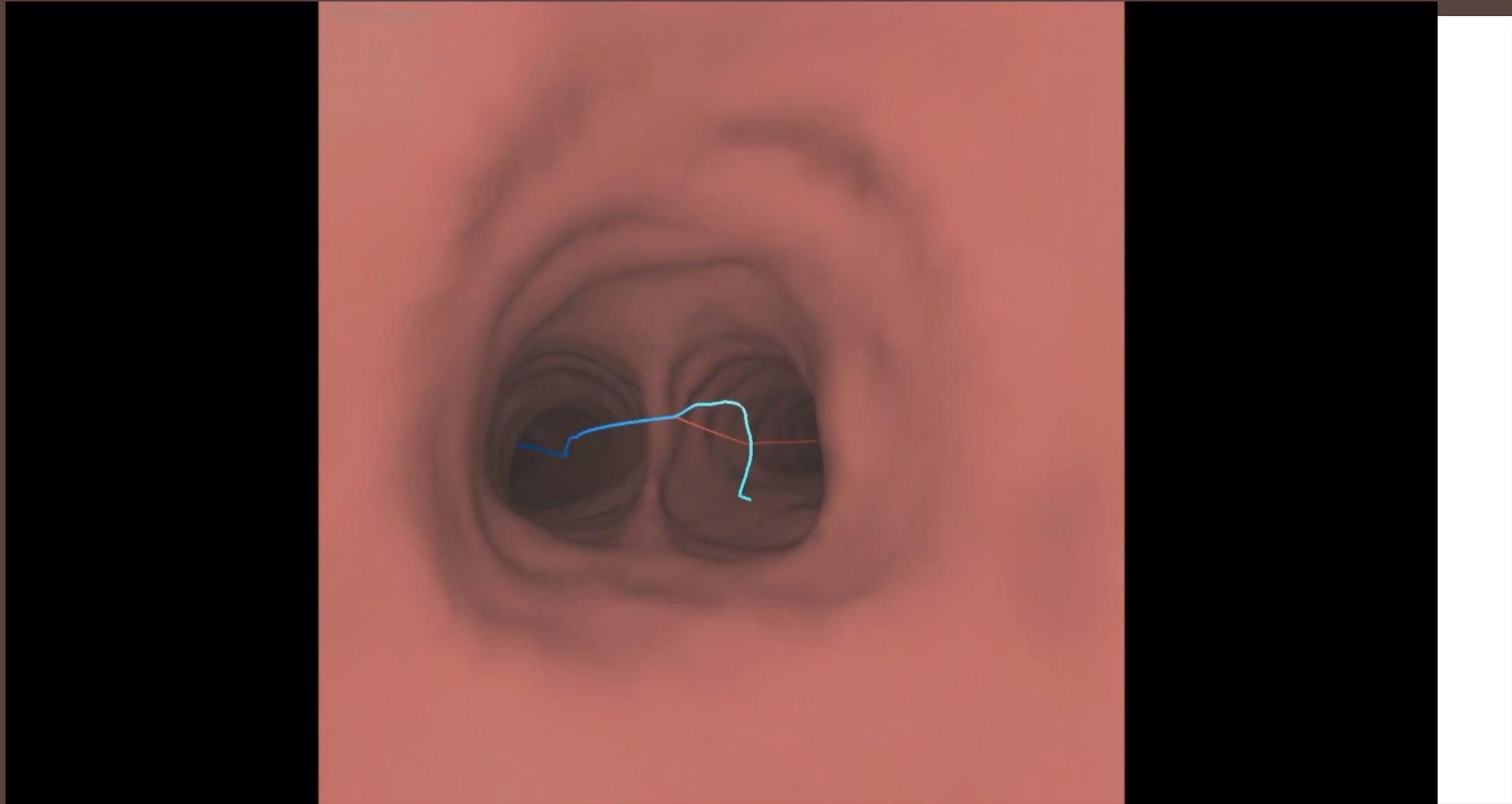




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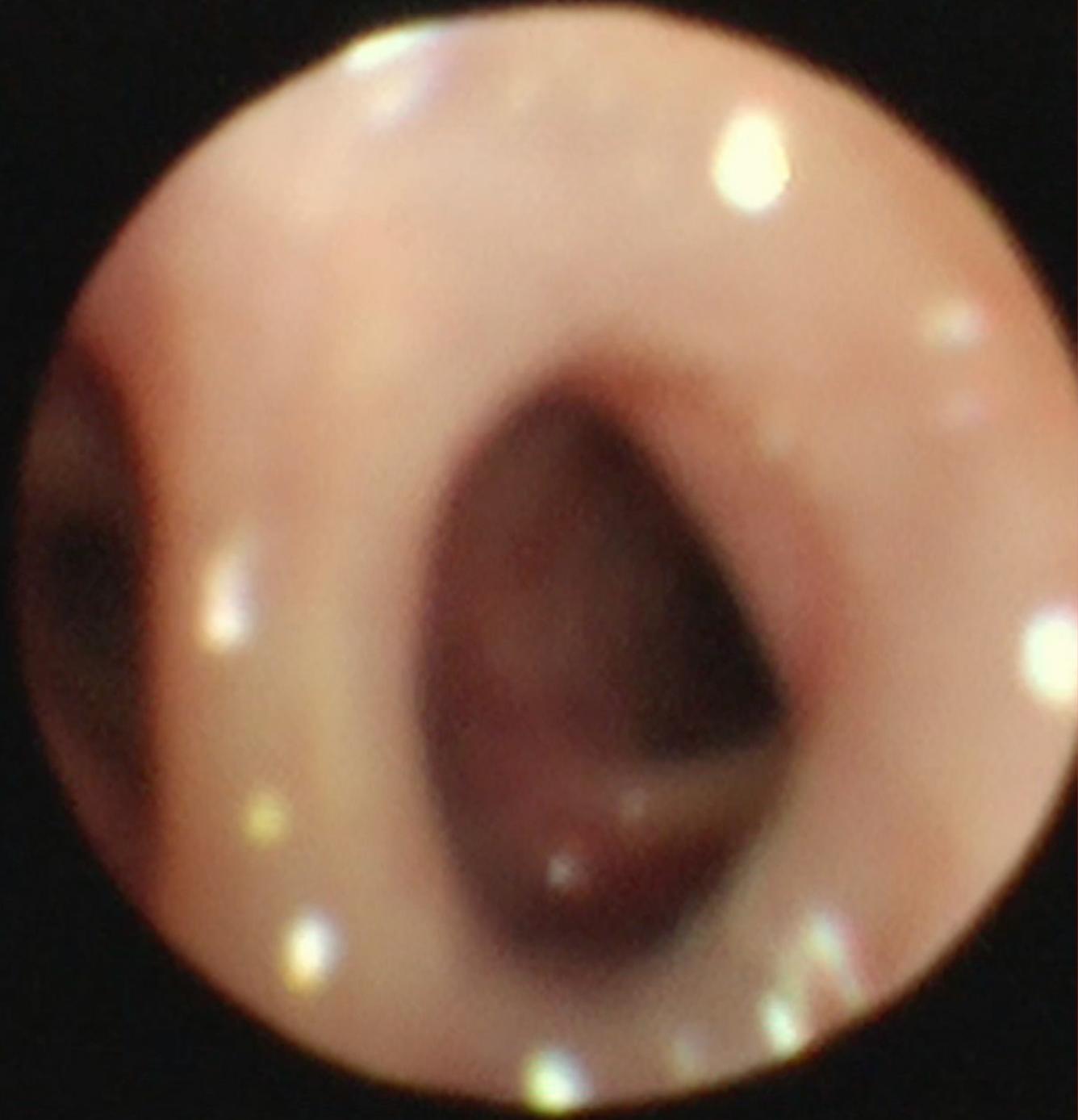
zoom: 225%





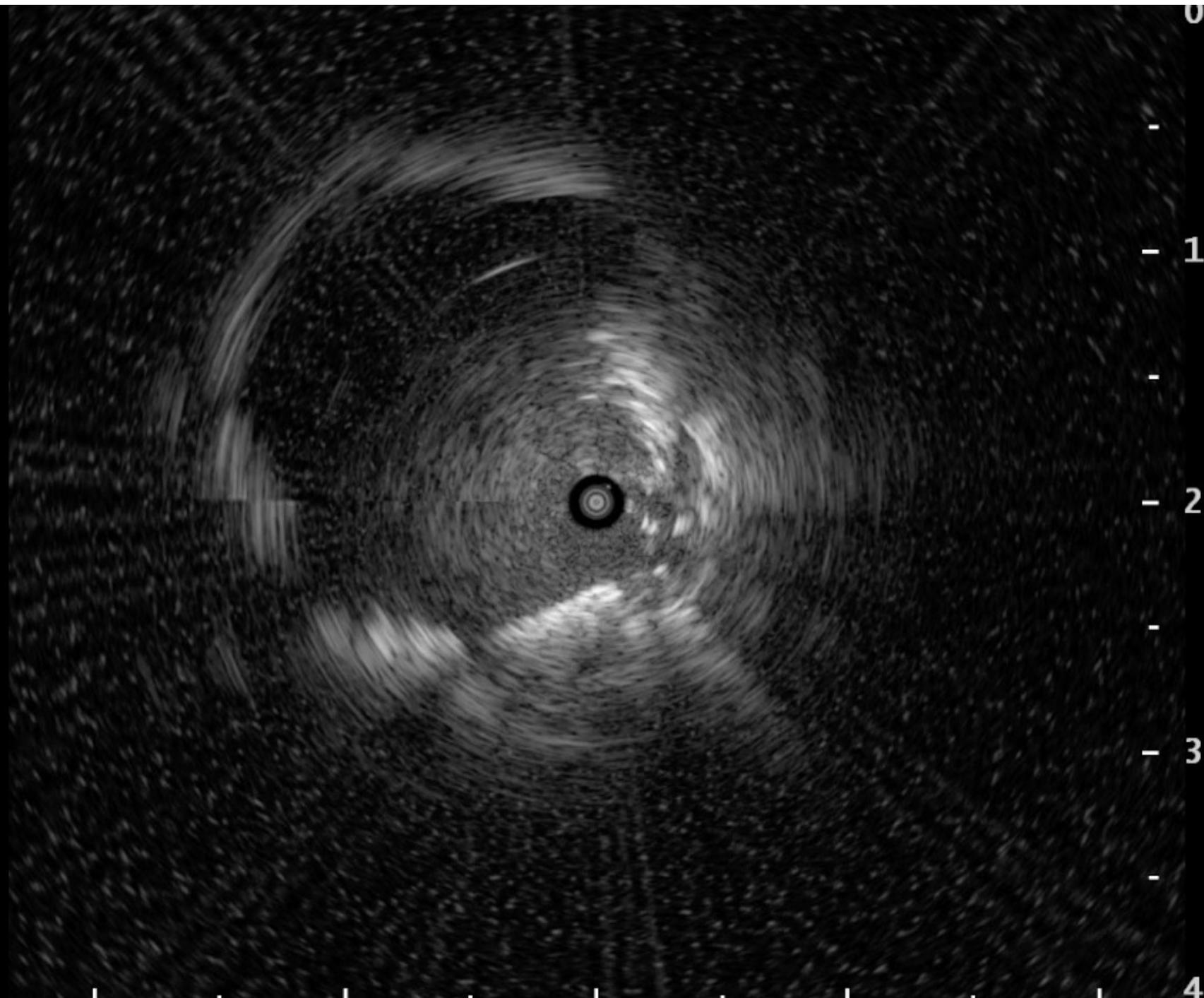
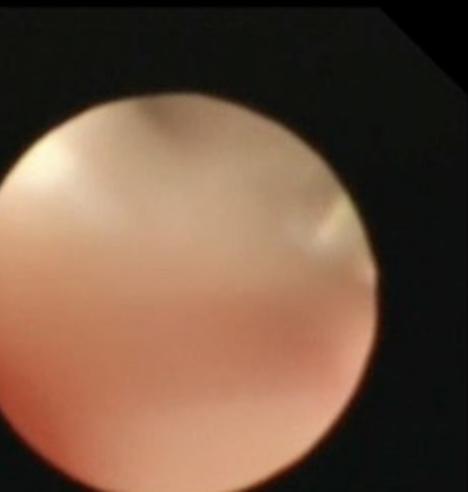
Next Steps: Procedure planning

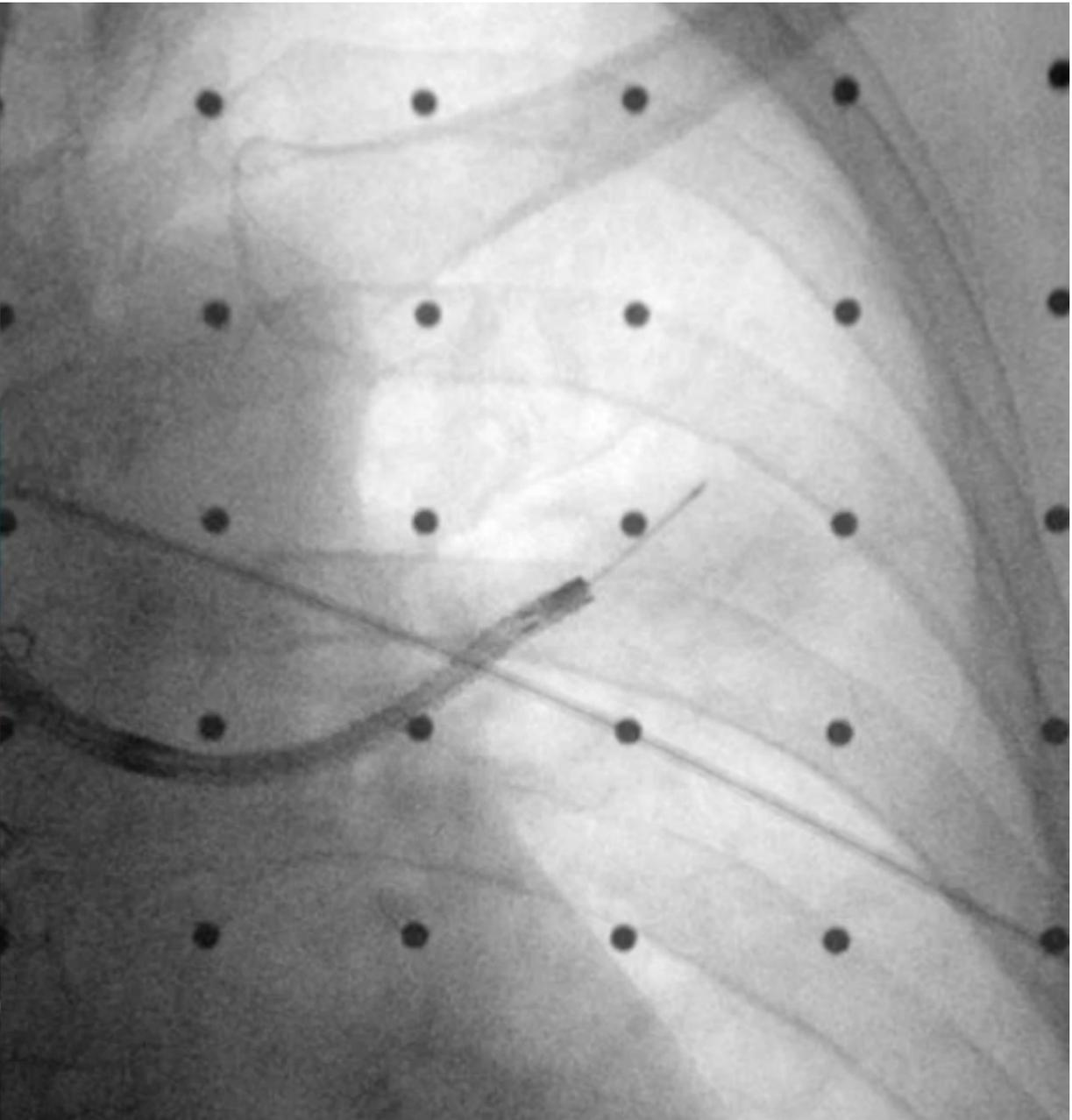
- Is staging required in 1 sitting? No
- Choice of Scope: Ultrathin Bronchoscope
- Choice of Sampling tools
 - Is lesion suspected to be
 - Concentric? Forceps/brush/lavage +/-TBNA
 - Eccentric : consider TBNA/cryobiopsy/brush
- Choice of Sedation



20MHz

G : 10
C : 5

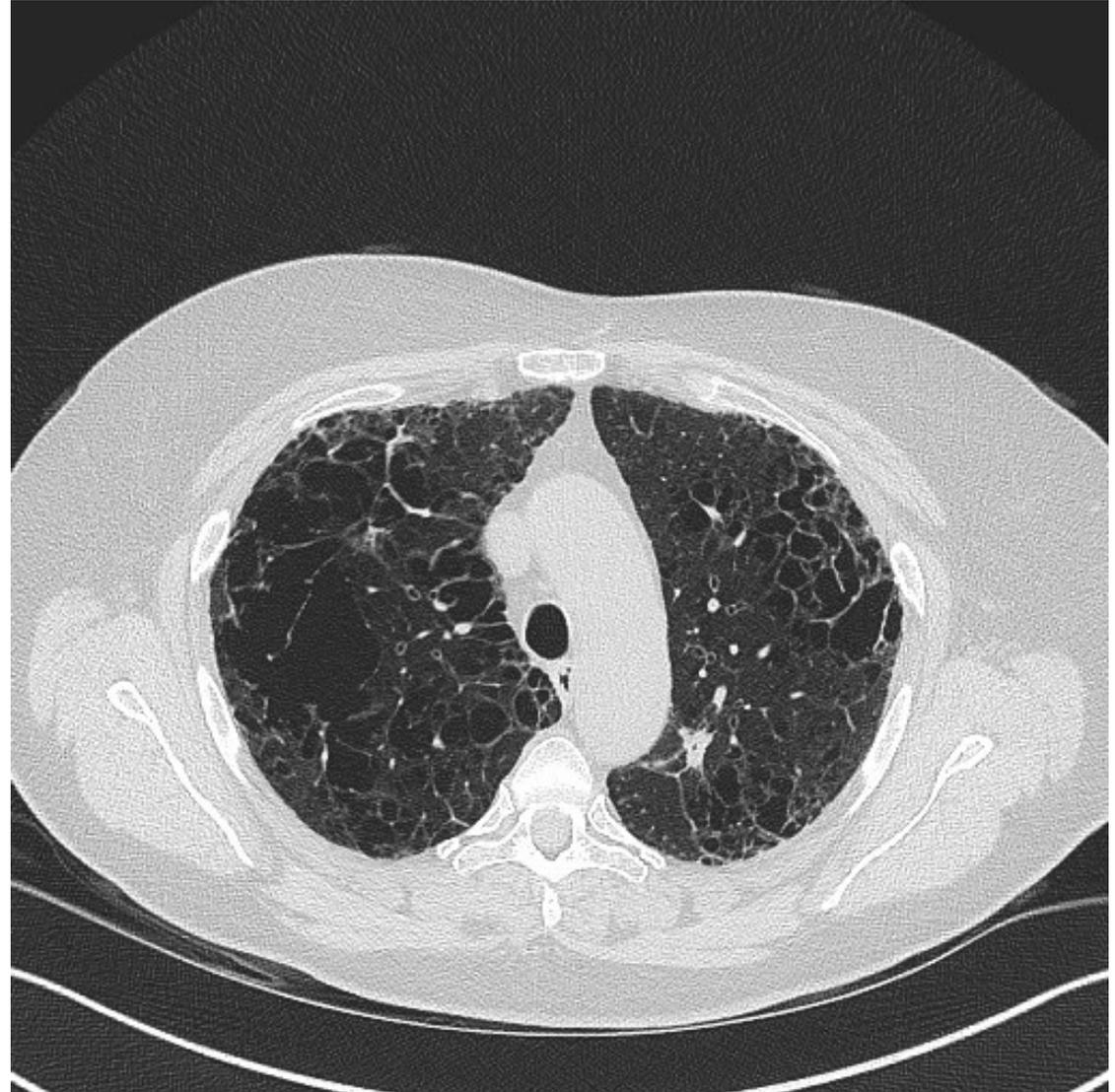




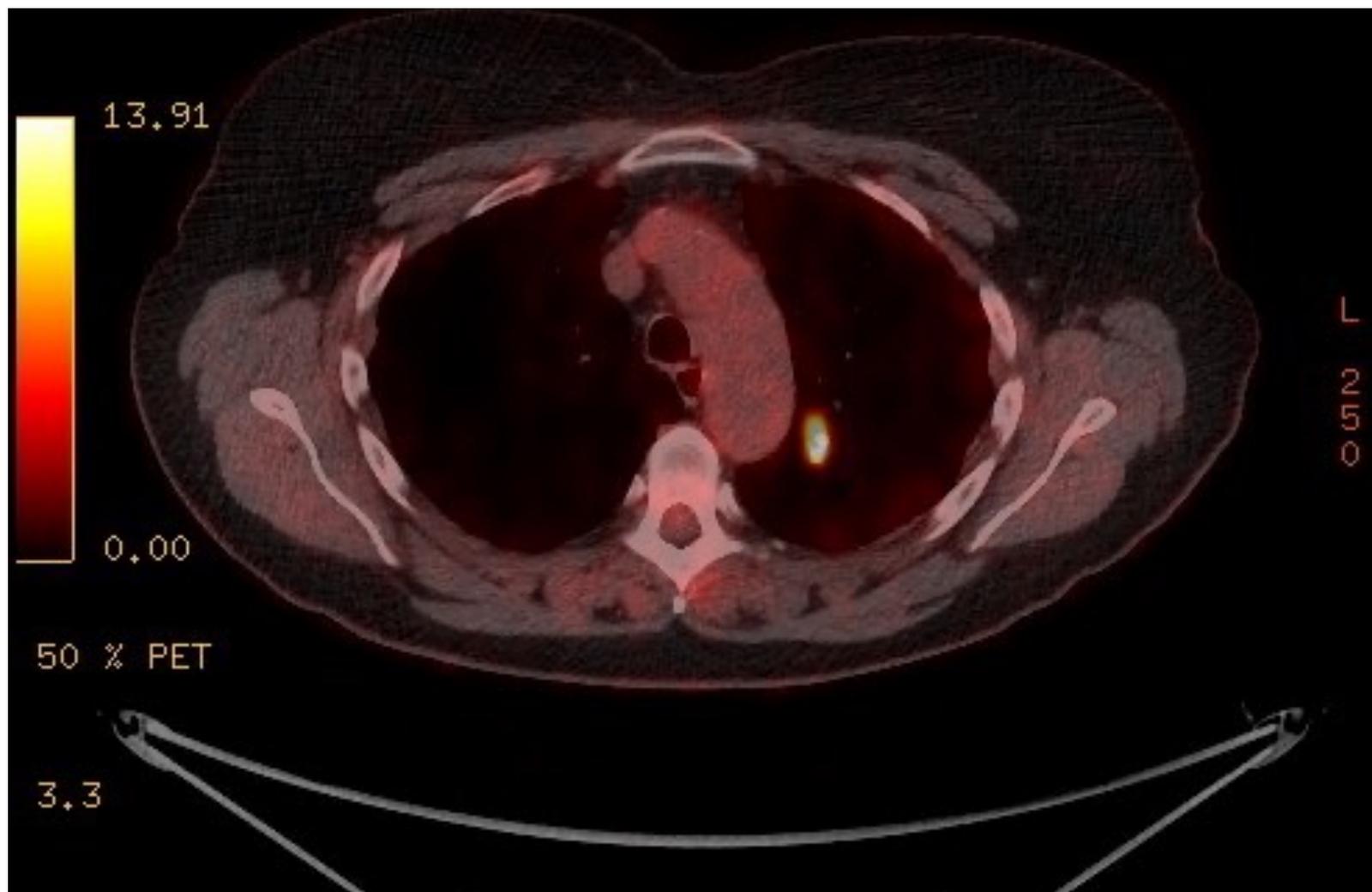
Patient 2

Patient 2

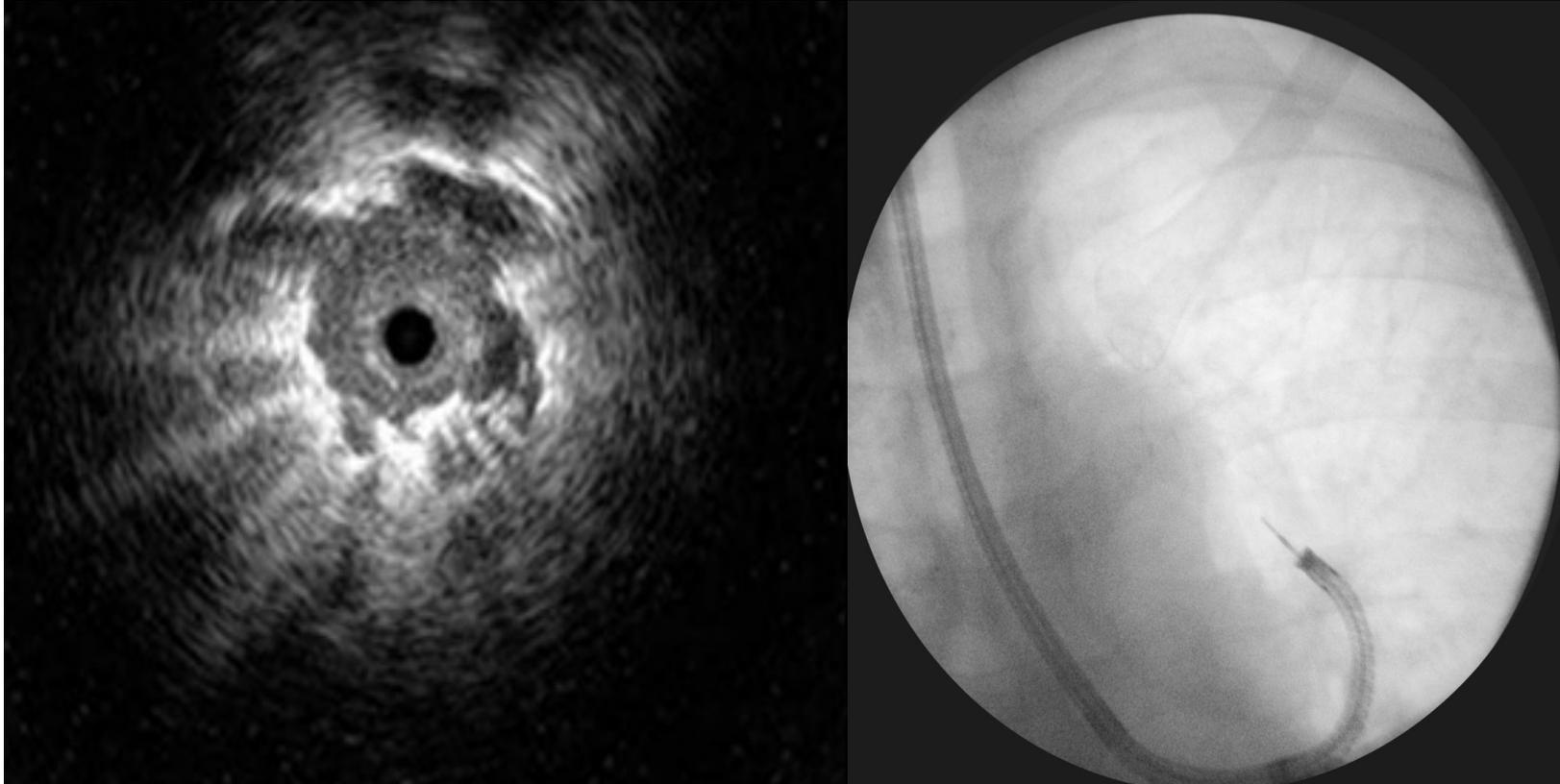
- 65 yr old Female
- **Severe COPD. FEV1 34% predicted.**
- **Weight loss**
- **PS1**
- **Staging CT: 13mm LUL nodule, extensive emphysematous changes T1bN0M0**



Patient 2



Patient 2



- VBN guided to 2 divisions beyond LB1+2
- Thin Bronchoscopy +RP-ebus +guide sheath
- TBLB x4
- Brush x2
- Lavage

- Adenocarcinoma
- SBRT

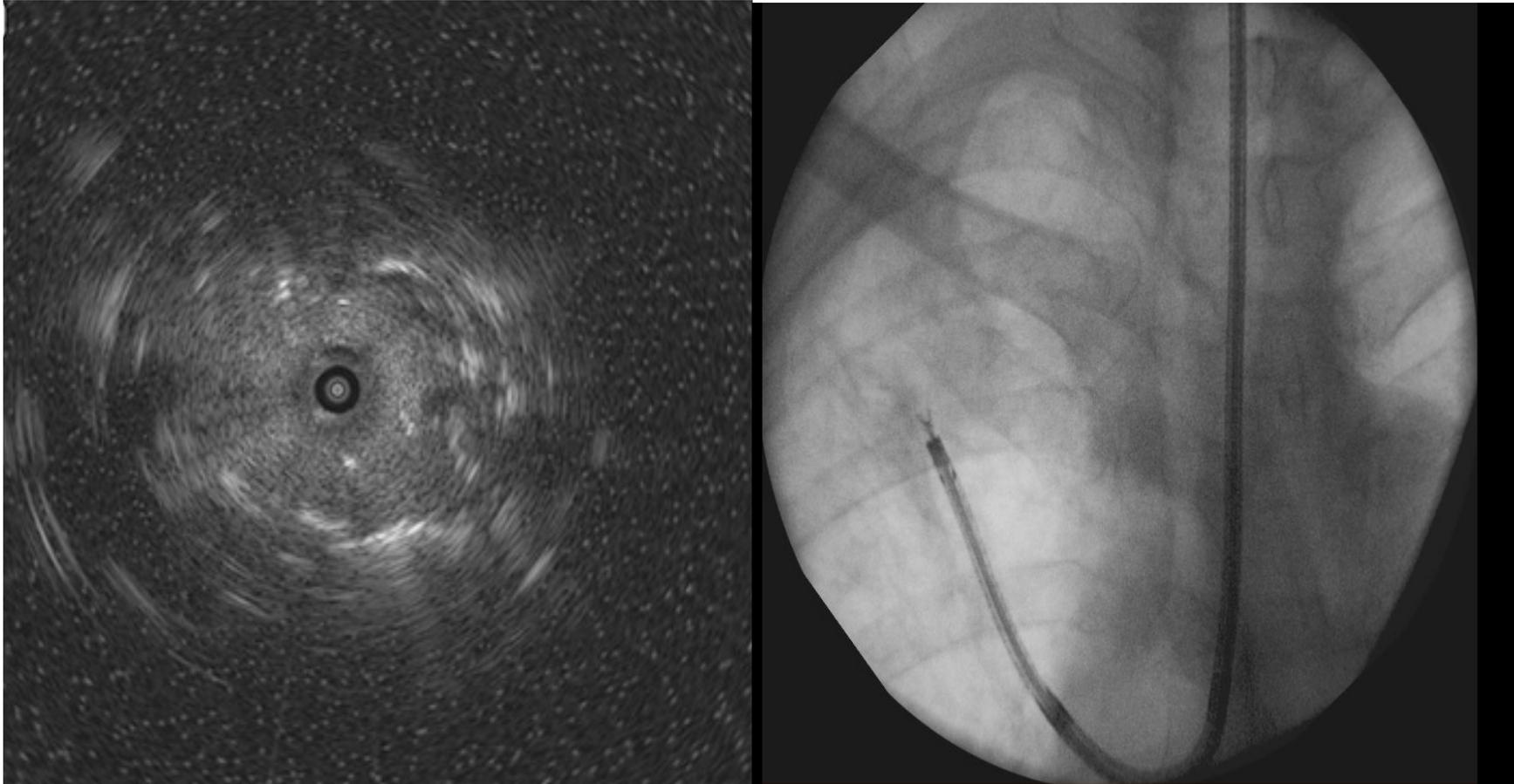
Patient 3

Patient 3

- 64 yr old Male smoker
- Admission with pancreatitis
 - Irregular 3.5x 1.5cm, cavitating RUL lesion
 - VBN guided to 3 divisions beyond RB1



Patient 3



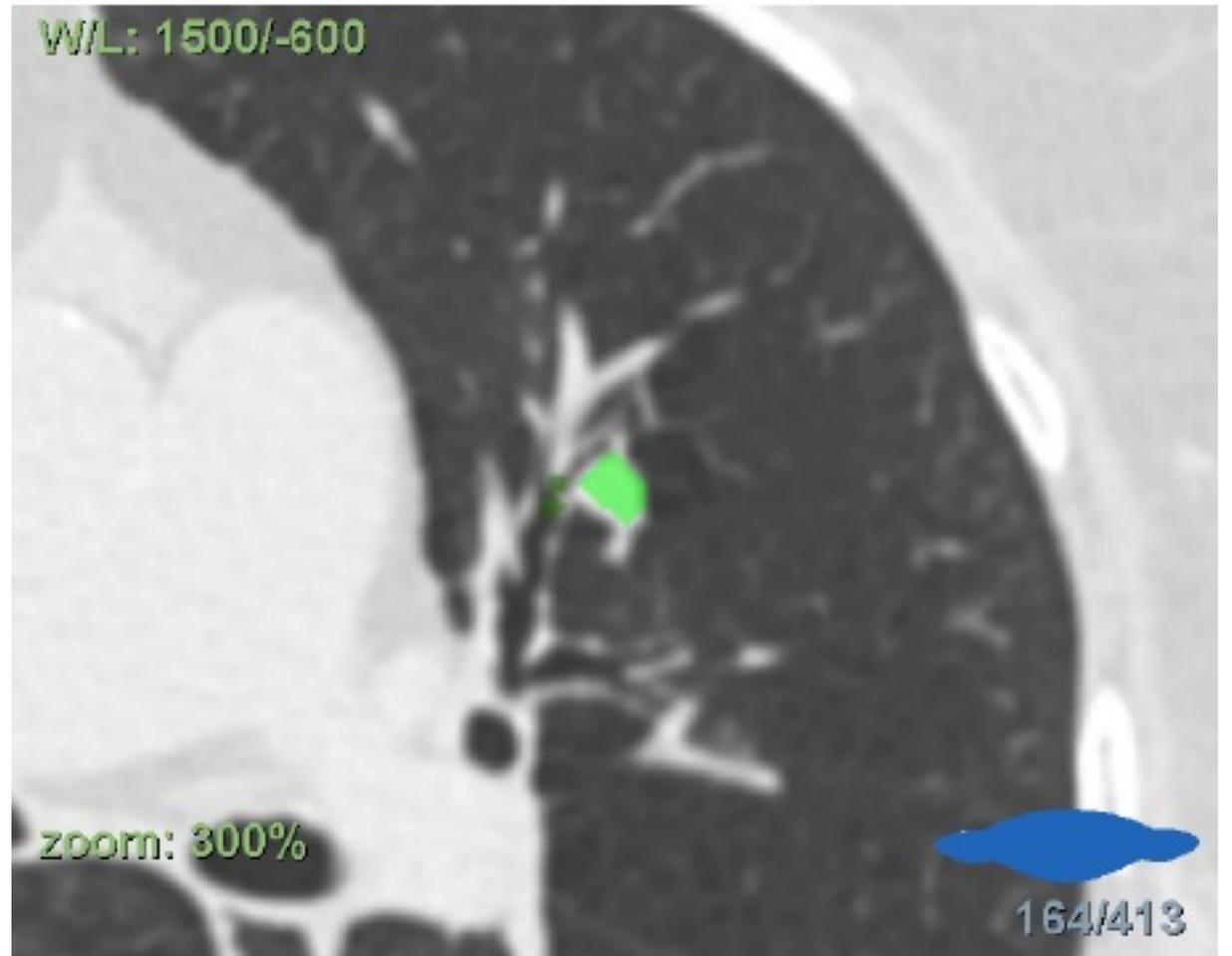
- Ultrathin bronchoscopy
- Radial EBUS without Guidesheath
- TBLB x8
- Brush x1
- Lavage

- Abundant Inflammatory cells, Klebsiella pneumonia
- Completed PO ATBs
- Repeat CT 3/12 much improved

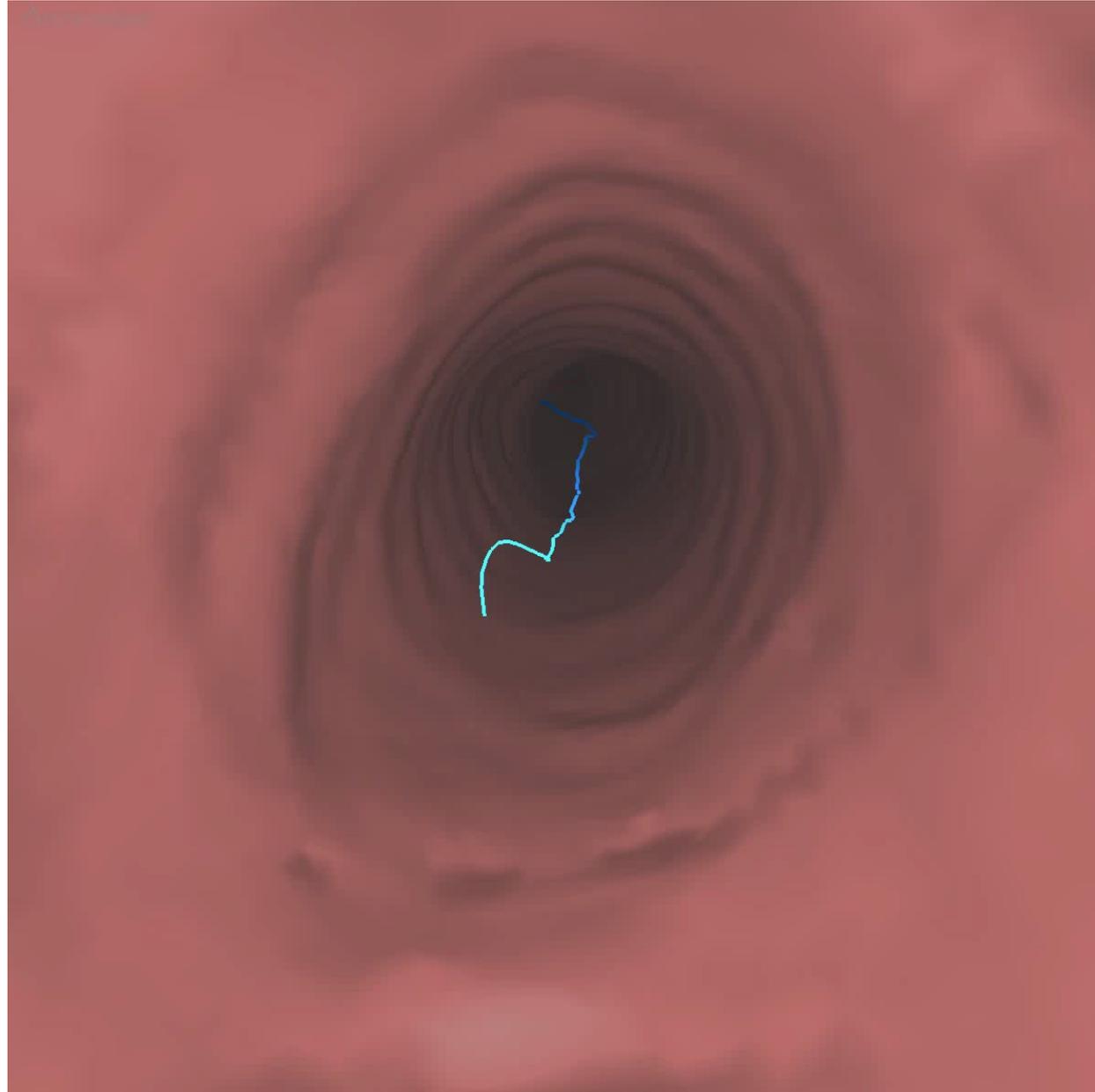
Patient 4

Patient 4

- 78 year old
- Exsmoker
- 10mm LUL FDG avid rounded nodule



Patient 4



VBN: 3 divisions beyond
Anterior segment LUL

Ultraslim Bronchoscope

Lesion as eccentric on
Radial EBUS

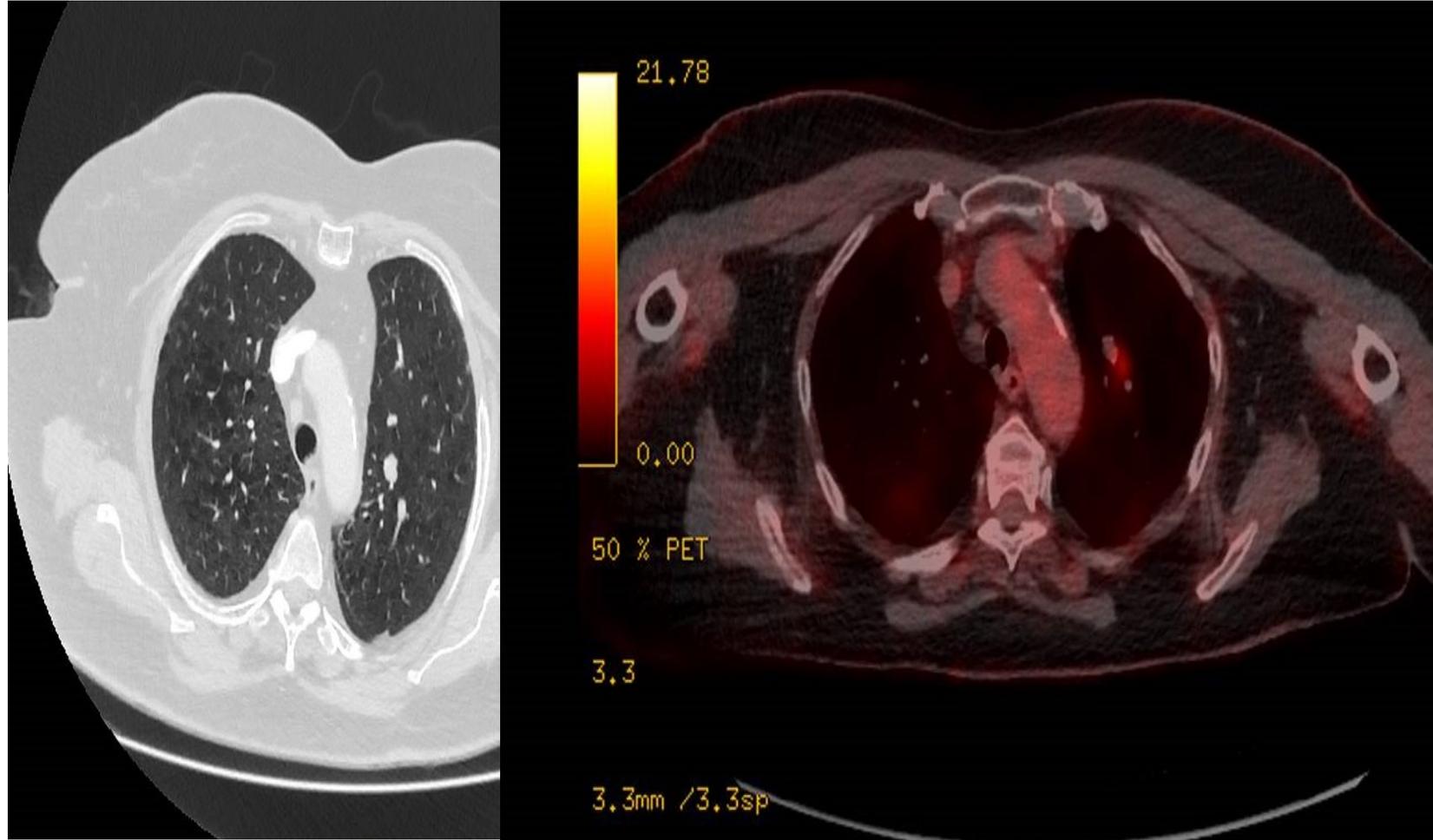
Forceps and Brush Non-
diagnostic

1.1mm Minicryobiopsy:
adenocarcinoma

Patient 5

Patient 5

- 72 year old
- Exmoker
- Incidental CT finding
 - LUL 12mm lesion
 - Airway leading into it
- PS 0



Patient 5

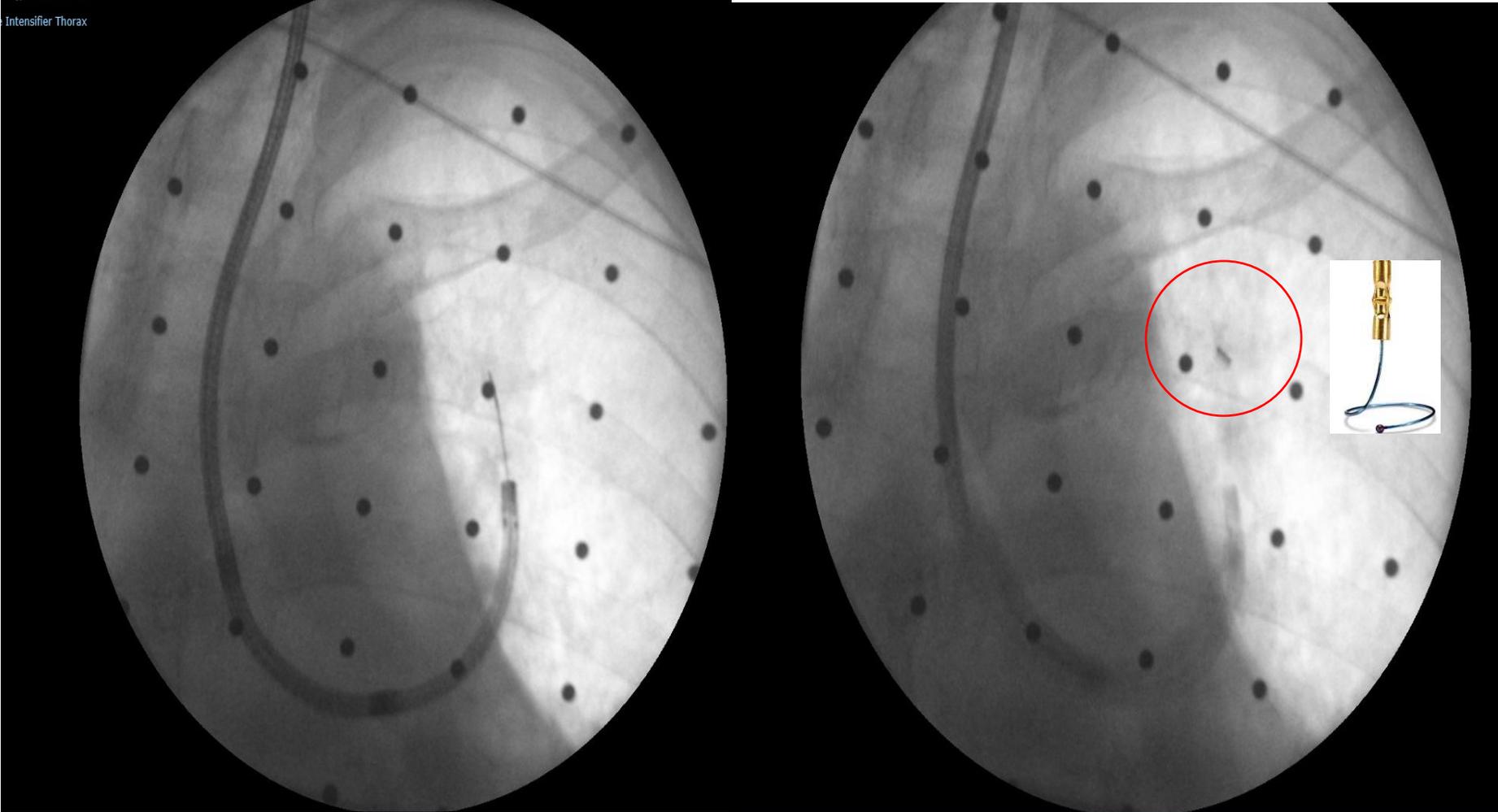
VBN

Pre-procedural planning

2 divisions beyond Apico-
posterior segment LUL



Patient 5

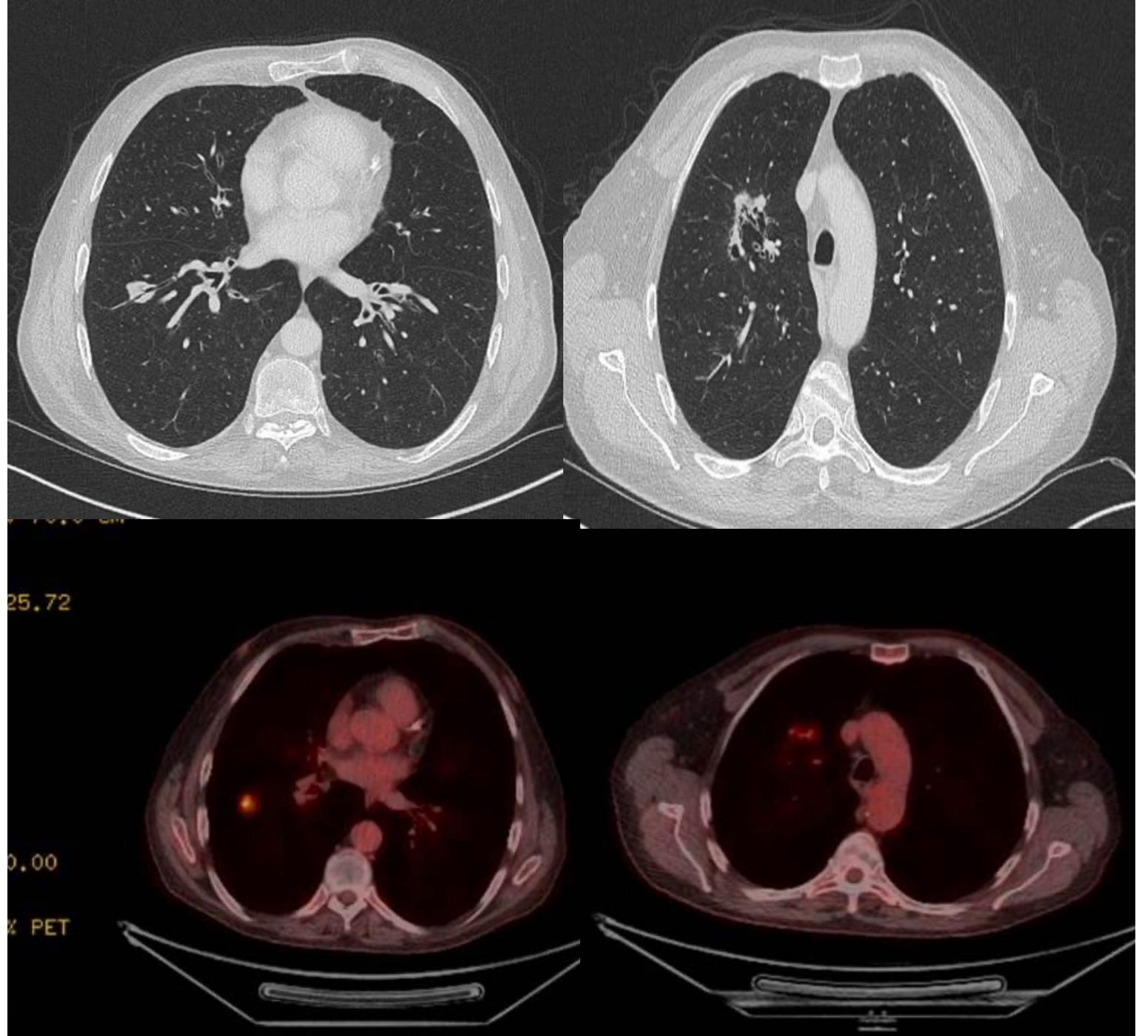


- Ultrathin scope
- Lesion identified as on radial EBUS
- Forceps/brush
- Rose positive
- Placement of fiducial
- **Carcinoid**
- Trisegmentectomy

Patient 6

Patient 6

- 72 year old smoker
- Mild COPD
- TLHC CT 2 key findings:
 - 16mm RLL nodule
 - RUL pericycstic lesion

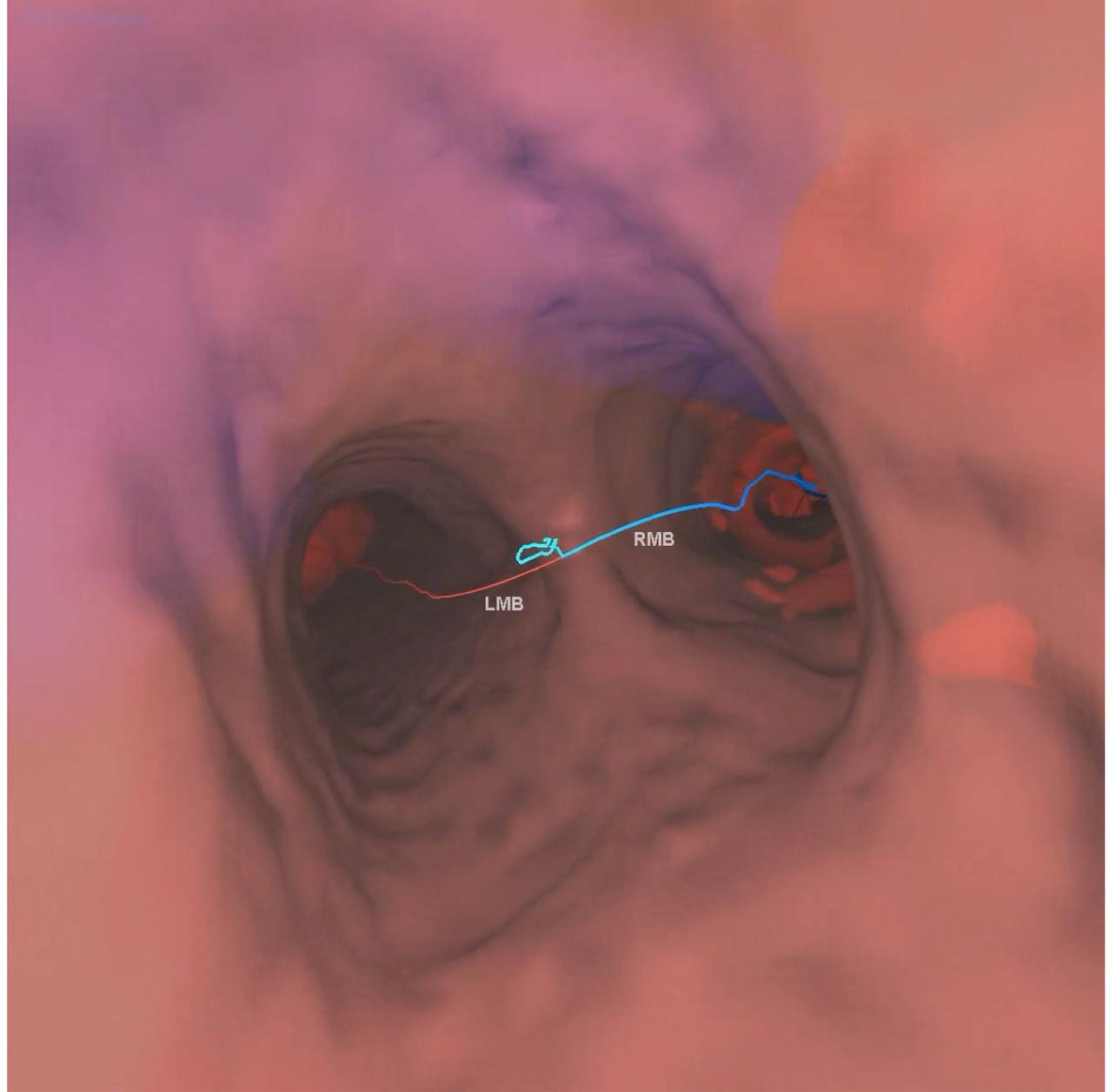


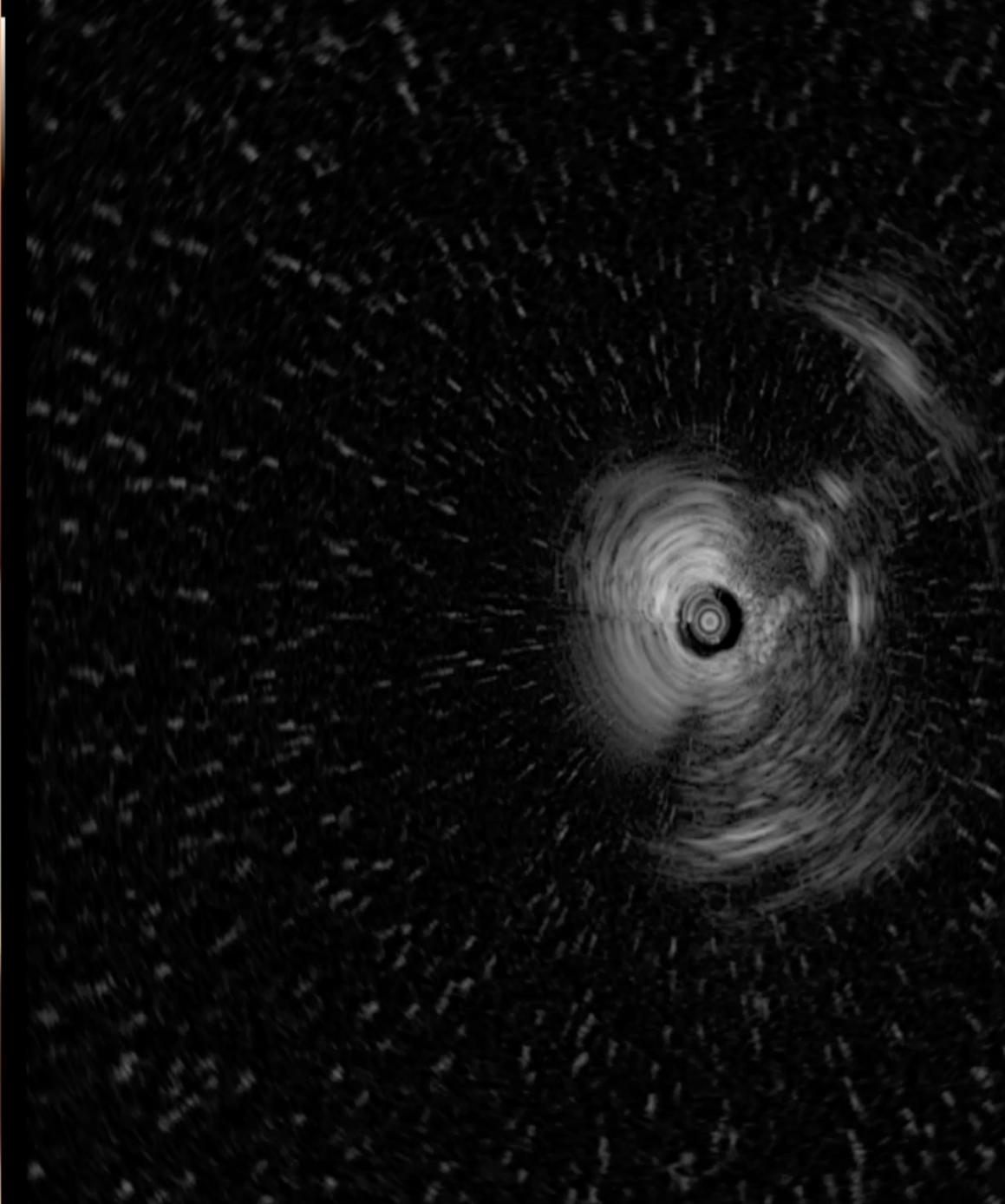
Patient 6

VBN

Pre-procedural planning

3 divisions beyond anterior
basal segment RLL





Ultrathin scope

RLL: Brush/TBNA

RUL: harder to visualize on RP
EBUS

Brush at site of VBN guidance
under fluoroscopy

Both ROSE positive for
malignancy

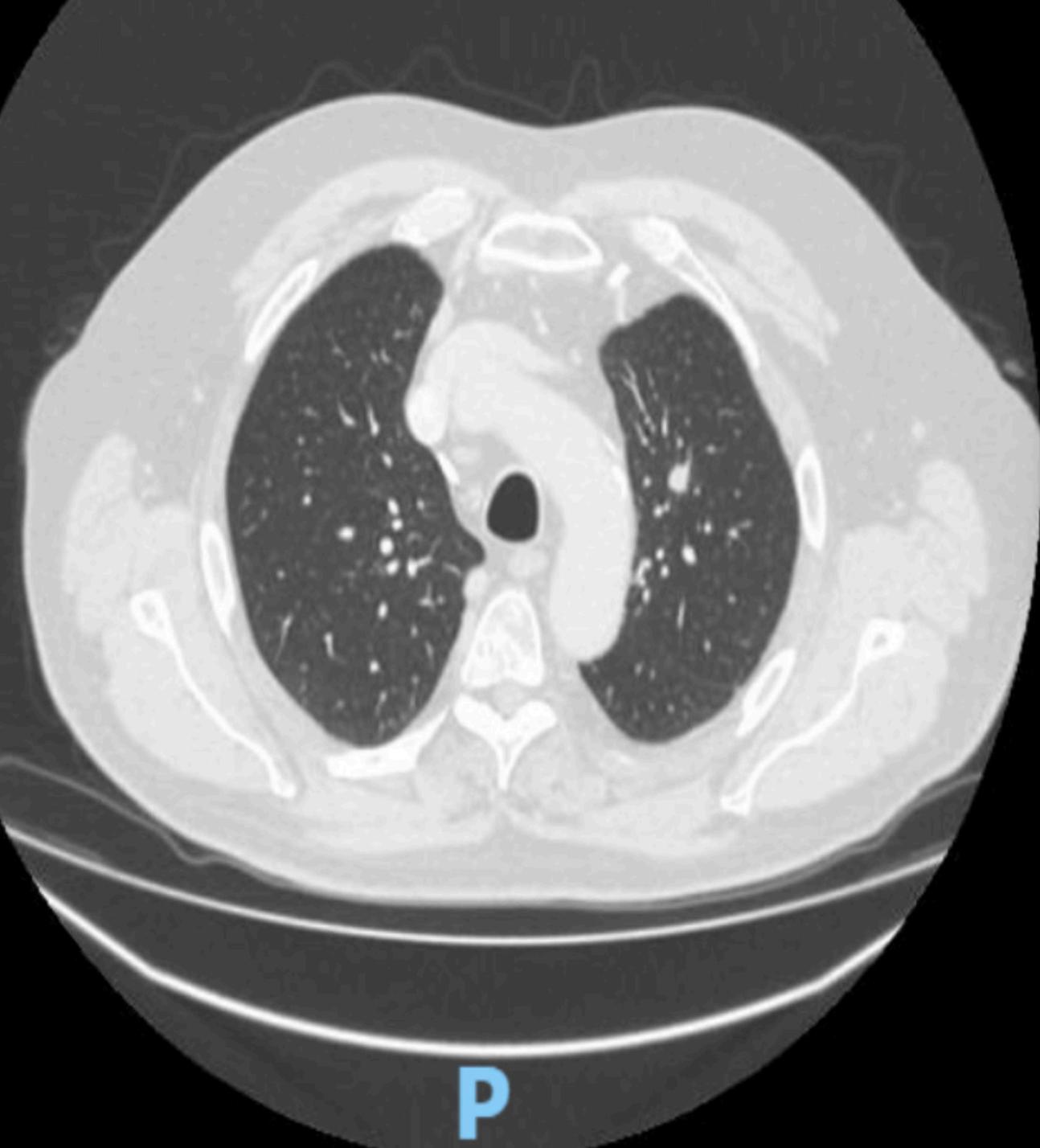
Final Pathology:
Adenocarcinoma at both sites

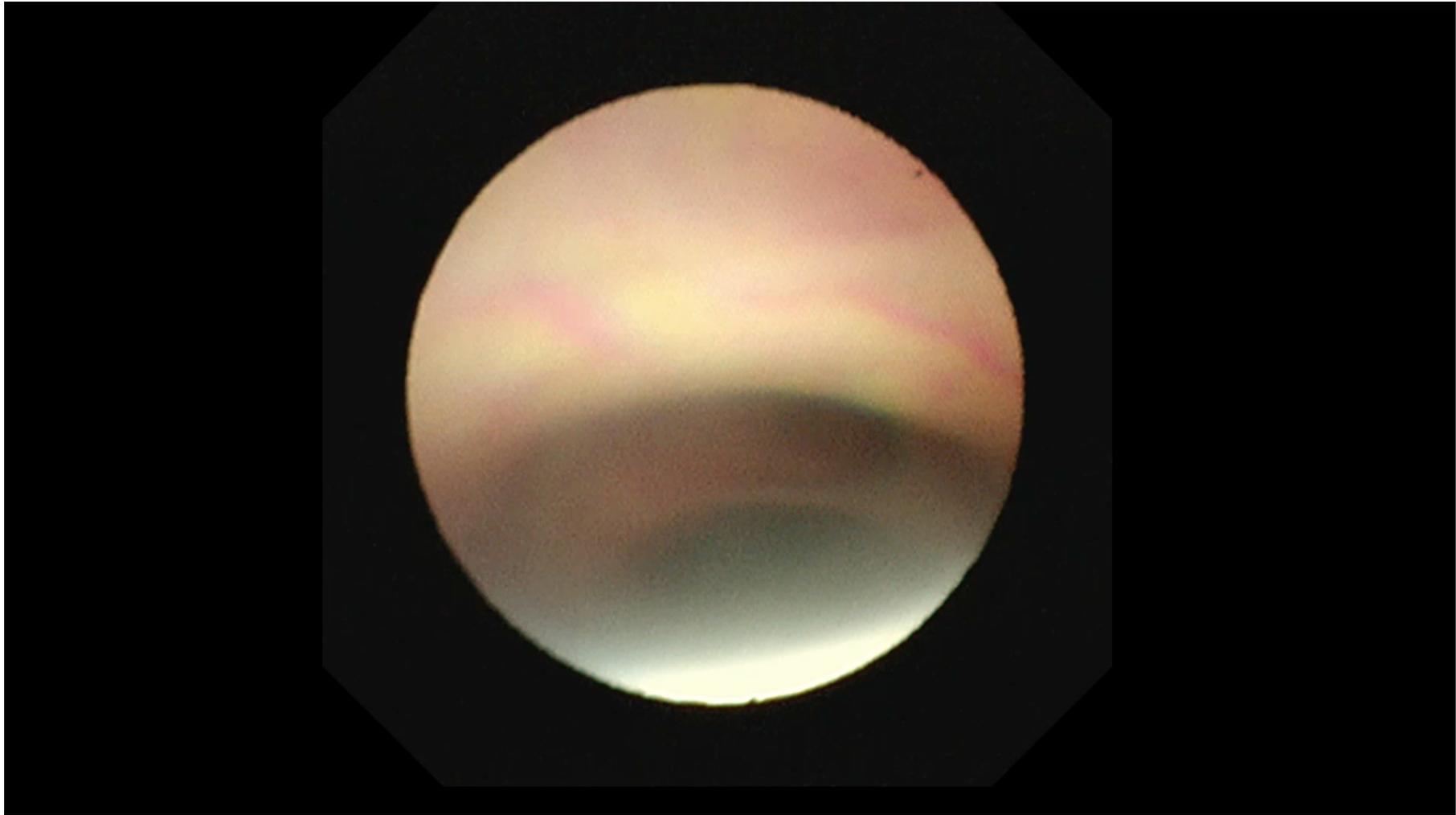
Patient proceeded to
RULobectomy and SBRT to
RLL

Patient 7

Patient 7

- 73 year old smoker
- FDG avid 9mm LUL and Left hilar node
- Combined Staging and Nav bronch



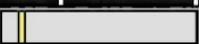


TX :100%
MI :0.8
TIS:<0.4

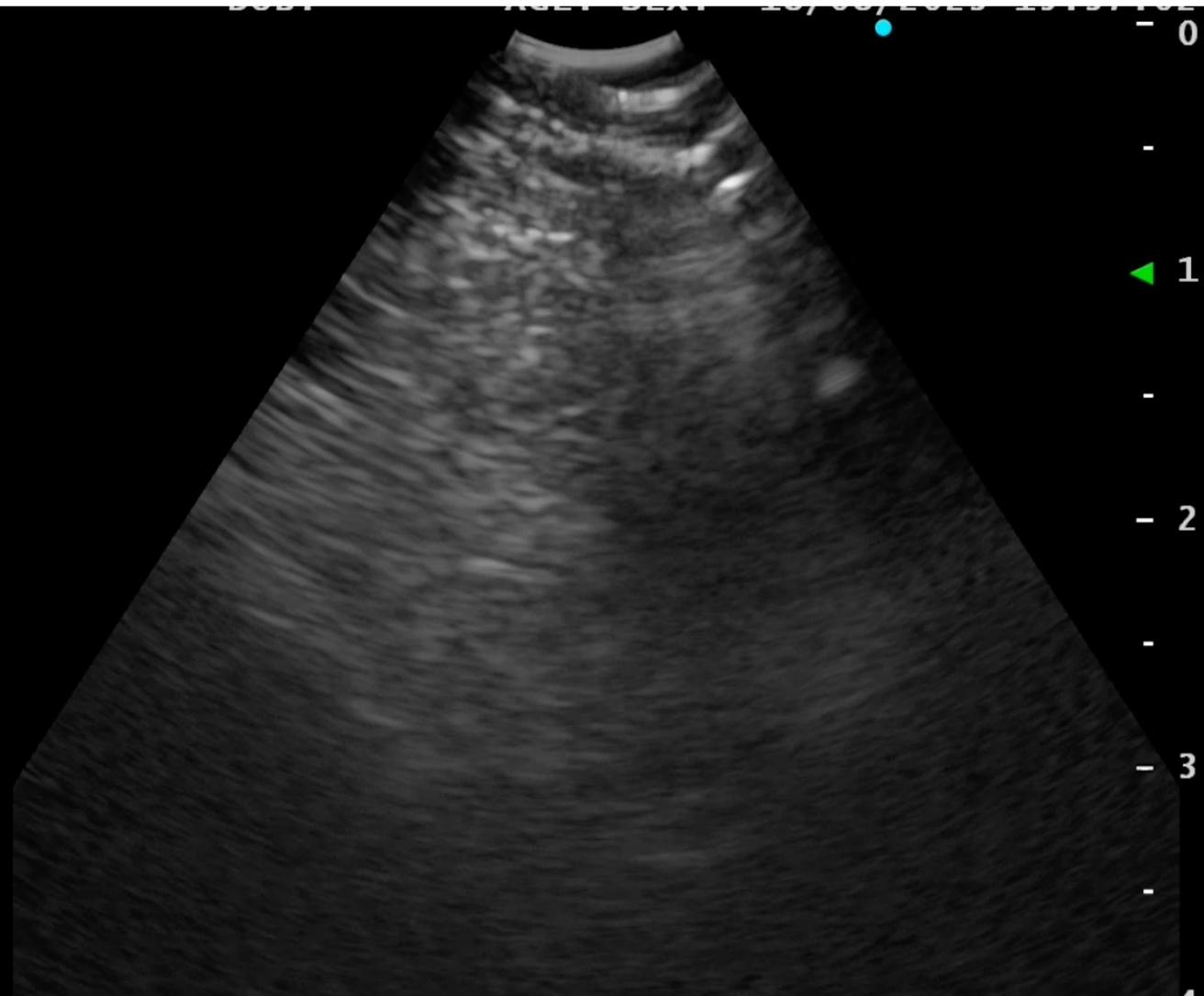
10MHZ

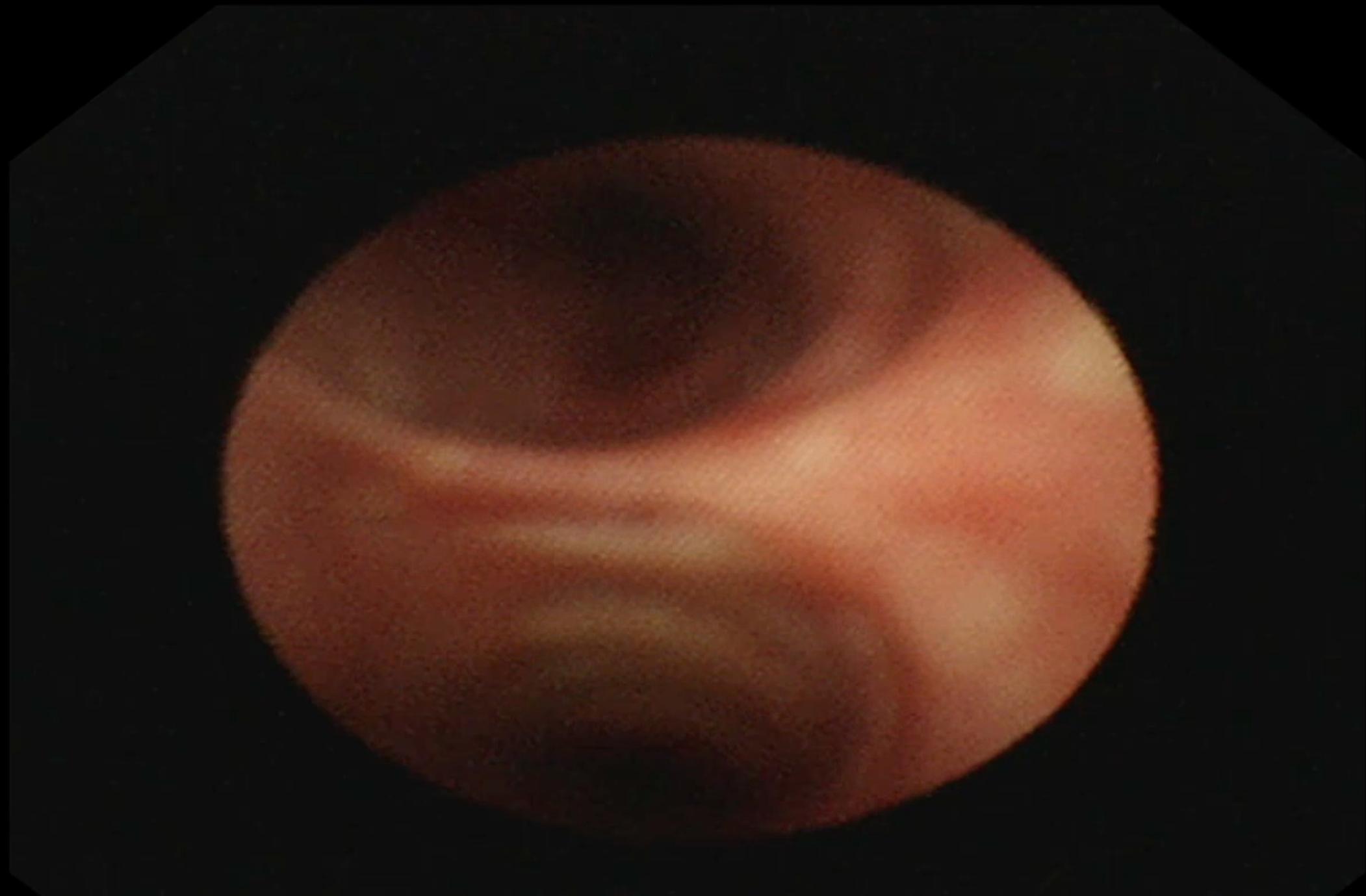
G :10
C : 5

RSP 4cm MEDIA

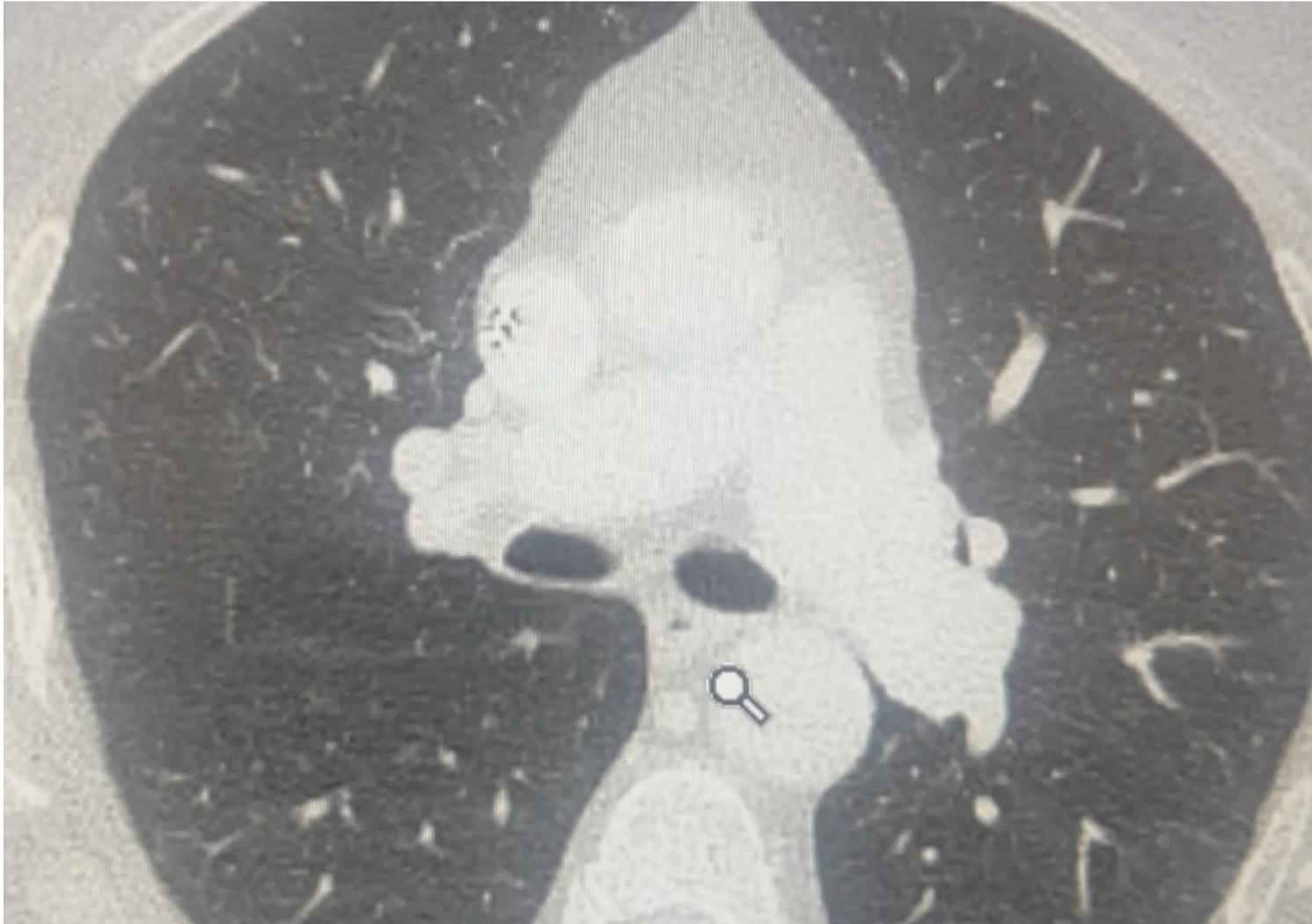


(R)





Patient 8



Reflection on the False Negatives

Learning Curve

Lack of tool in lesion confirmation

Challenges with CT-to-body divergence

Gap in Lesion localisation versus Diagnostic yield

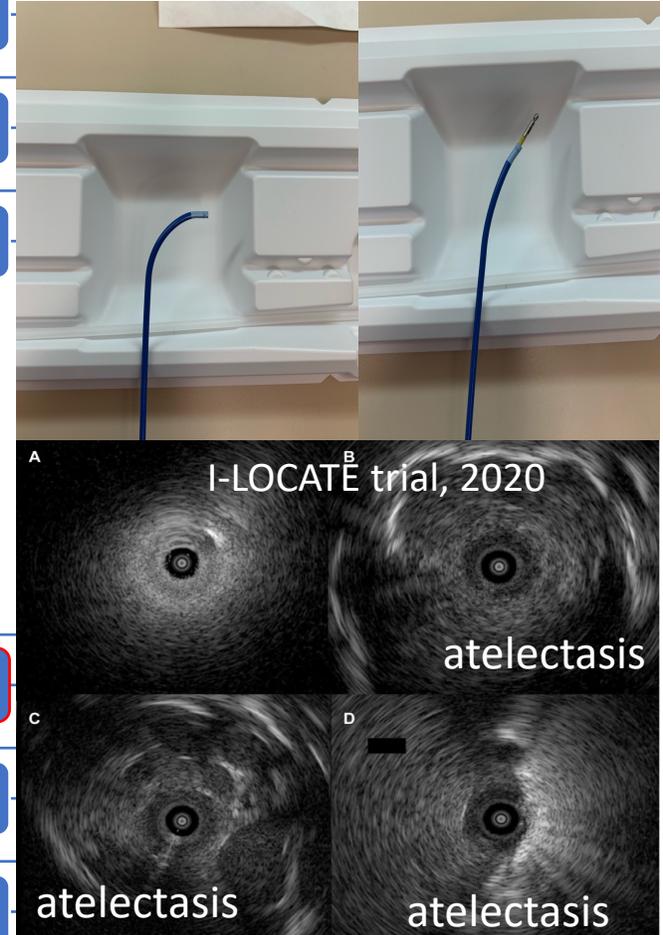
- Eccentric lesions
- Small size
- Tool deflection
- False positive Radial EBUS
- Tumour heterogeneity
- Lack of real time sampling
- Procedural complications precluding further sampling
- Discordance between ROSE and final pathology

Difficulty tolerating, esp under conscious sedation 1 in 10

Sampling Tools and their limitations

Drawbacks of Thin and Ultrathin scopes

- Suction/Views/smaller tissue sample size/distal tip stability and steerability



Summary

- New Guidance Systems improve sensitivity compared to conventional bronchoscopy for peripheral lung lesions with lower complication rates compared to TTNA
- Opportunity for diagnosis and staging or sampling >1 lesion in one sitting
- Paves the way for future one stop endobronchial diagnosis and therapies
- Challenges remain in optimising diagnostic yield.
- Careful Patient Selection and team based approach (Radiology/Pathology/Surgery) are key
- Multimodality approach essential. Essential to understand the gaps with existing tools
- Need for large multicentre randomised studies comparing techniques with better definitions of Diagnostic Yield and protocolised approach. More UK based data on cost effectiveness
- Need for development and adoption of cost effective strategies, to ensure equitable patient access