

Breast Procedures: Pearls & Pitfalls

Focus on Ultrasound and Localization

Elissa R. Price, MD FSBI

Professor of Clinical Radiology

Breast Imaging Fellowship Program Director

University of California San Francisco

elissa.price@ucsf.edu



Ultrasound-Guided Biopsy and Fine Needle Aspiration

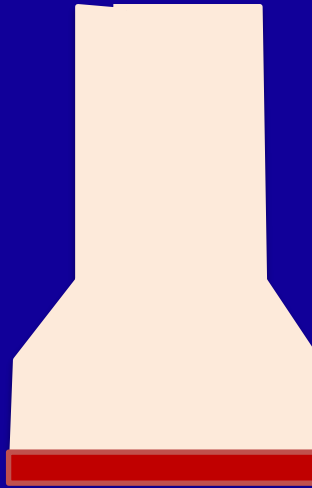
Ultrasound-Guided Core Biopsy

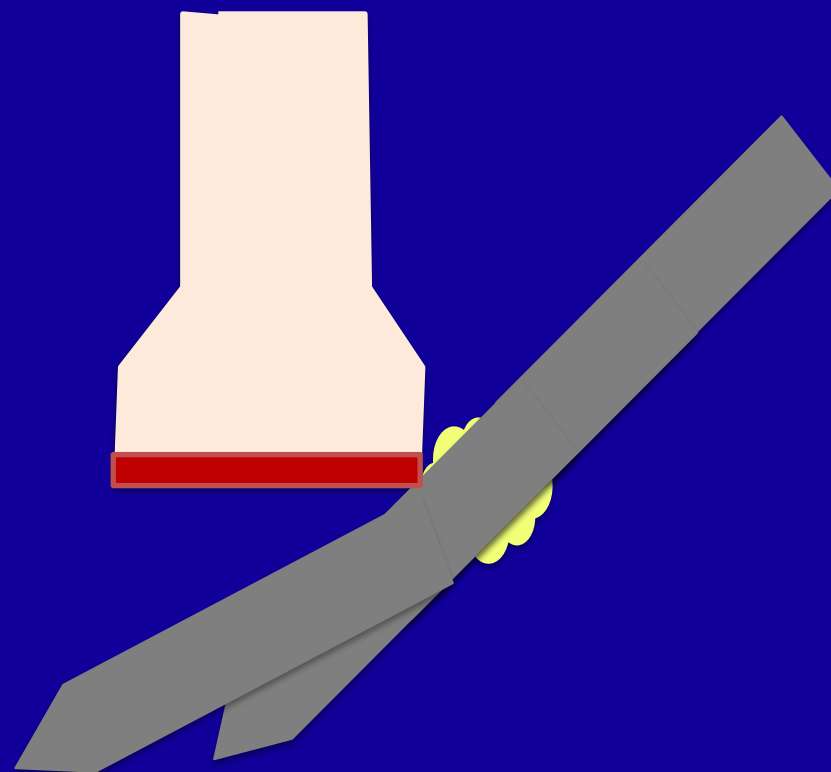
- Take a few extra moments up front....
 - Table height
 - Save your back!
 - Patient positioning
 - She is comfortable
 - YOU are comfortable
 - Tray position and set-up

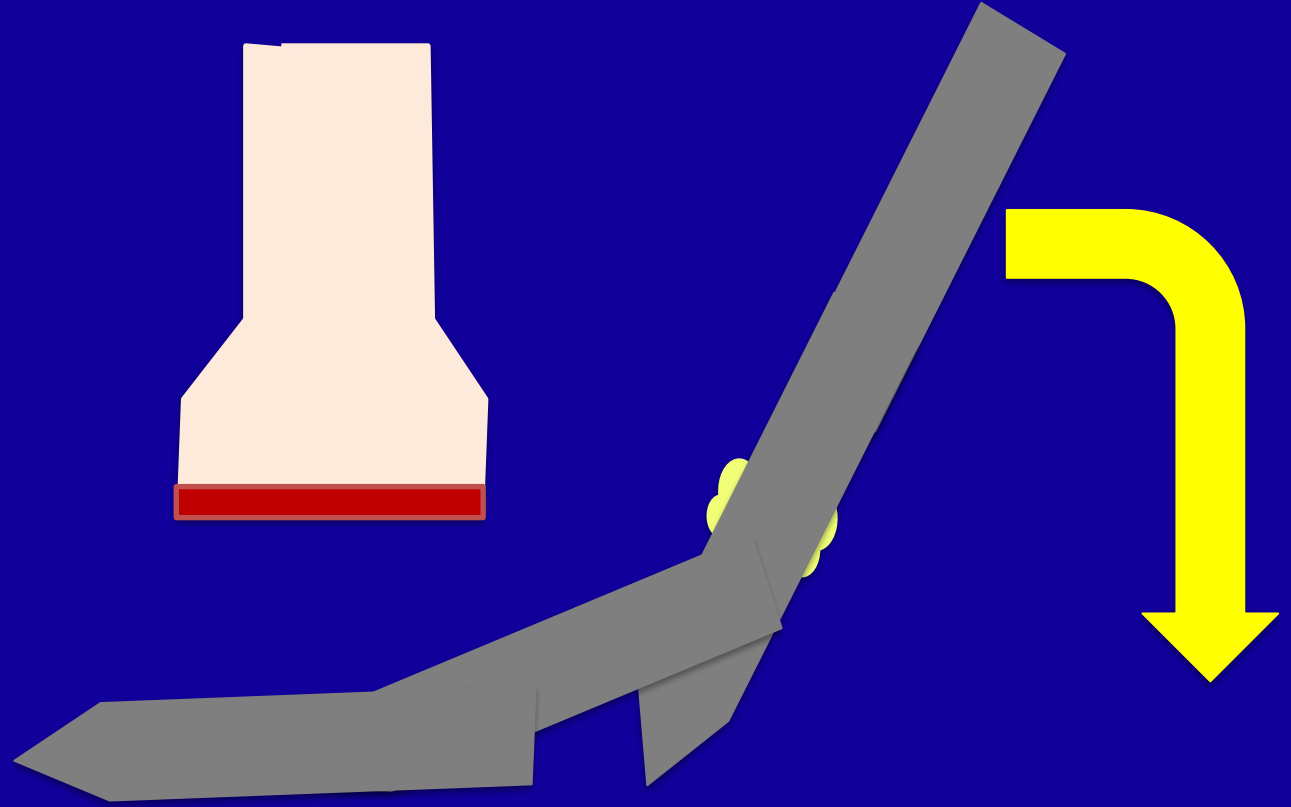


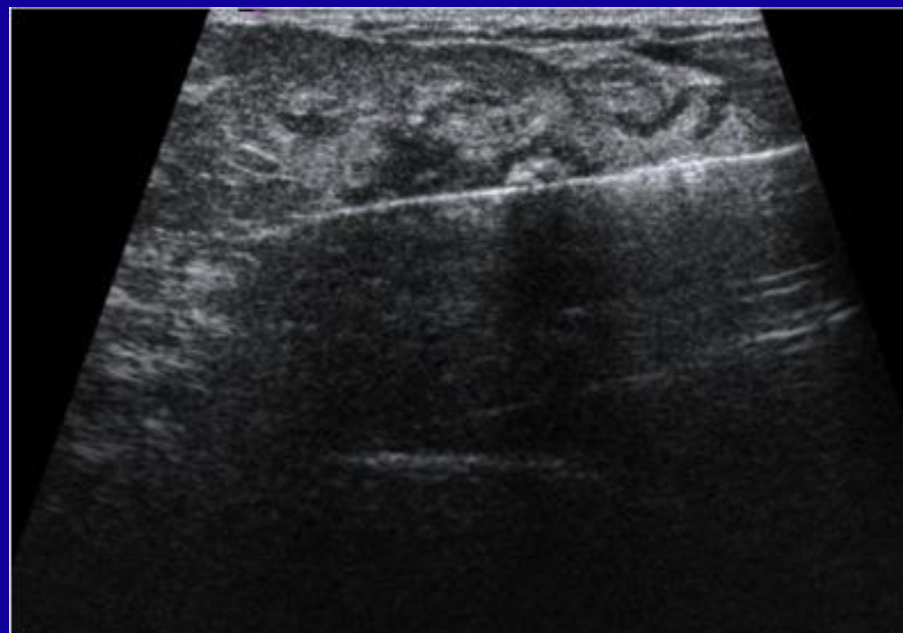
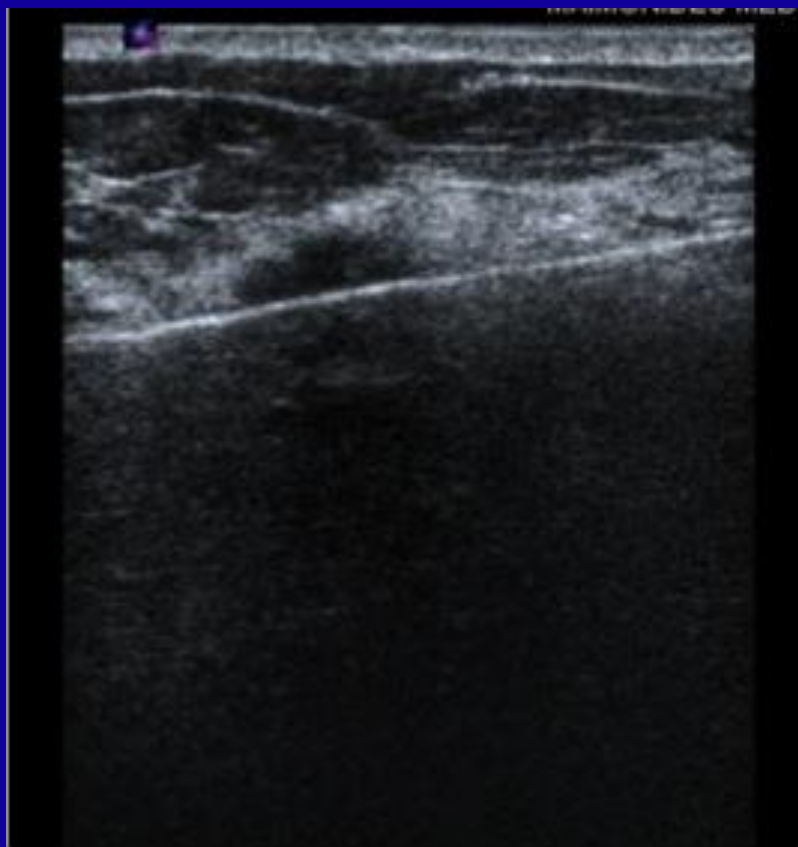
Ultrasound-Guided Core Biopsy

- Anesthetize 1-1.5cm from transducer
 - Facilitates needle visualization for the entire procedure









Ultrasound-Guided Core Biopsy

- *Look at your hands*
- Move probe OR needle.

Ultrasound-Guided Core Biopsy

- *Look at your hands*
- Move probe OR needle. Not both.

Ultrasound-Guided Core Biopsy

- *Look at your hands*
- Move probe OR needle. Not both.
 - If you see the lesion but not needle, keep the needle in place
 - Rock probe cranially and caudally to determine the relationship between your needle and your lesion

Ultrasound-Guided Core Biopsy

- *Look at your hands*
- Move probe OR needle. Not both.
 - If your needle is cranial to your lesion, pull needle back 1-2cm and advance in a caudal direction....and vice versa

Ultrasound-Guided Core Biopsy

- *Look at your hands*
- Minimize head motion
 - hand/needle – probe – screen



Ultrasound-Guided Core Biopsy

- *Look at your hands*
- Minimize head motion
 - hand/needle – probe – screen
- Change position of patient as needed
 - Patient positioned on table ‘head down’ for many right-sided lesions

Patient Positioning

- Decubitus for lateral lesions
- Supine for medial lesions
- Ipsilateral arm up for most
- Ipsilateral arm down for small breast

Whatever is best for any given patient/lesion

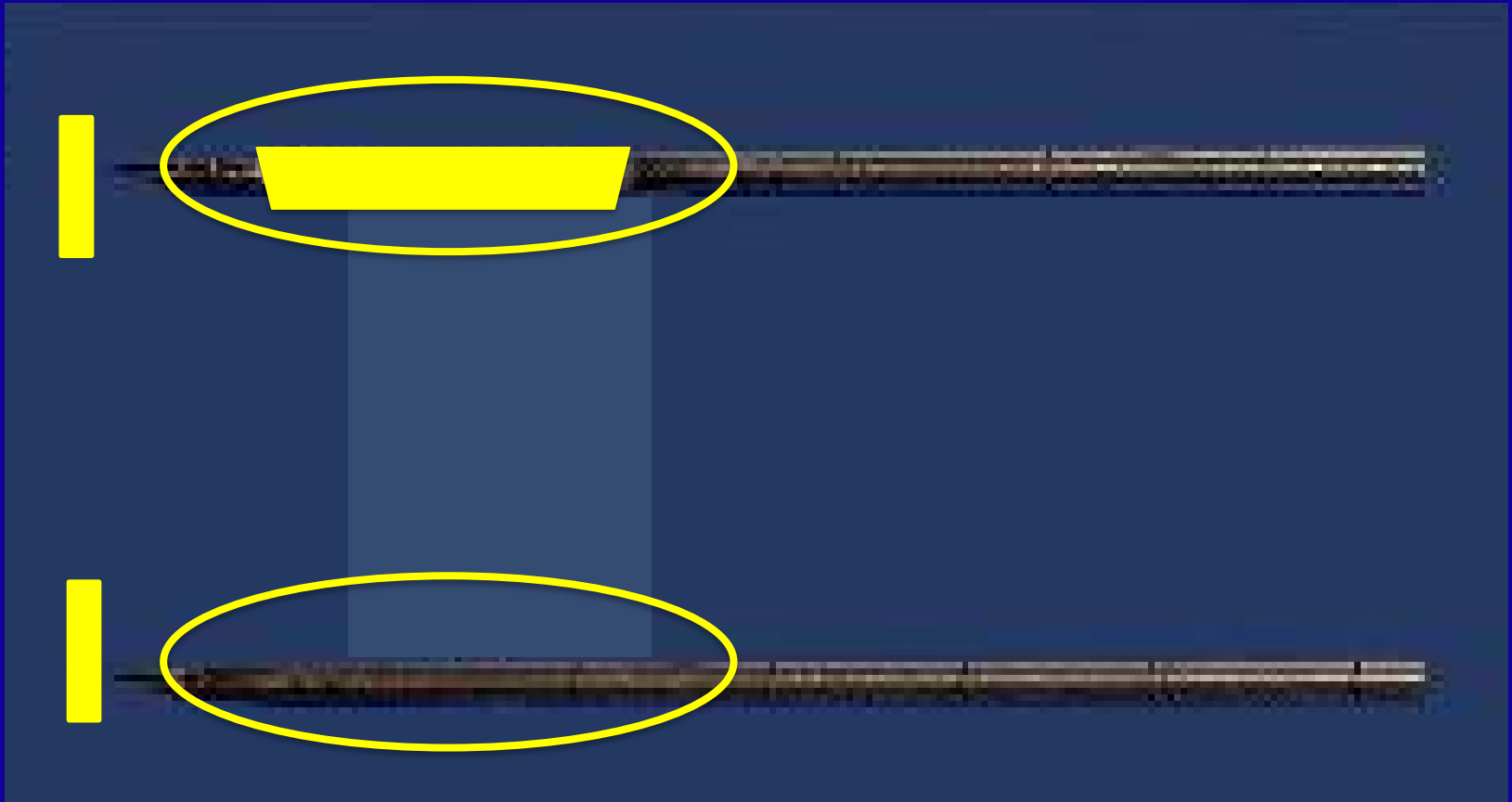
Ultrasound-Guided Core Biopsy

- Spring-loaded
- Vacuum-assisted
 - Single insertion

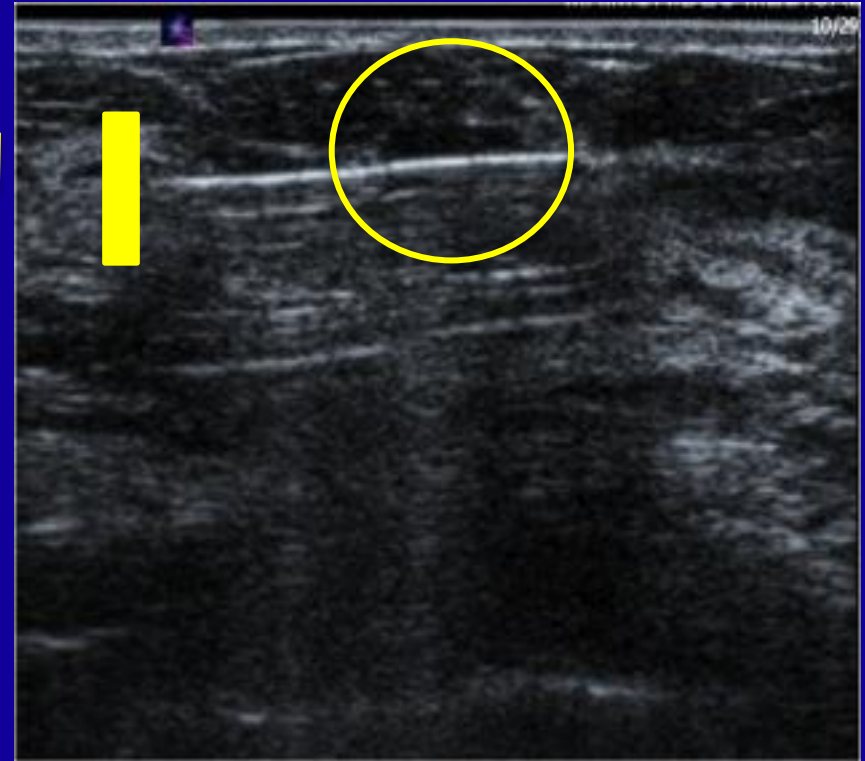
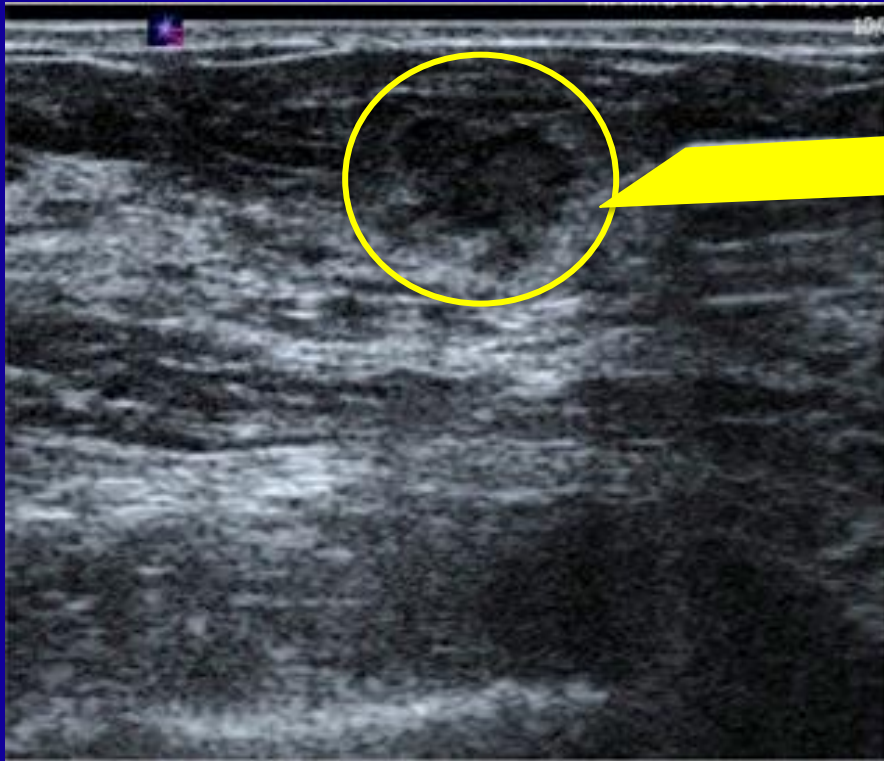
Ultrasound-Guided Core Biopsy

- “State” of device
 - Closed: Fire = advance to biopsy
 - Open: Fire = biopsy in same position
 - Very useful for deep lesions, axillary lesions

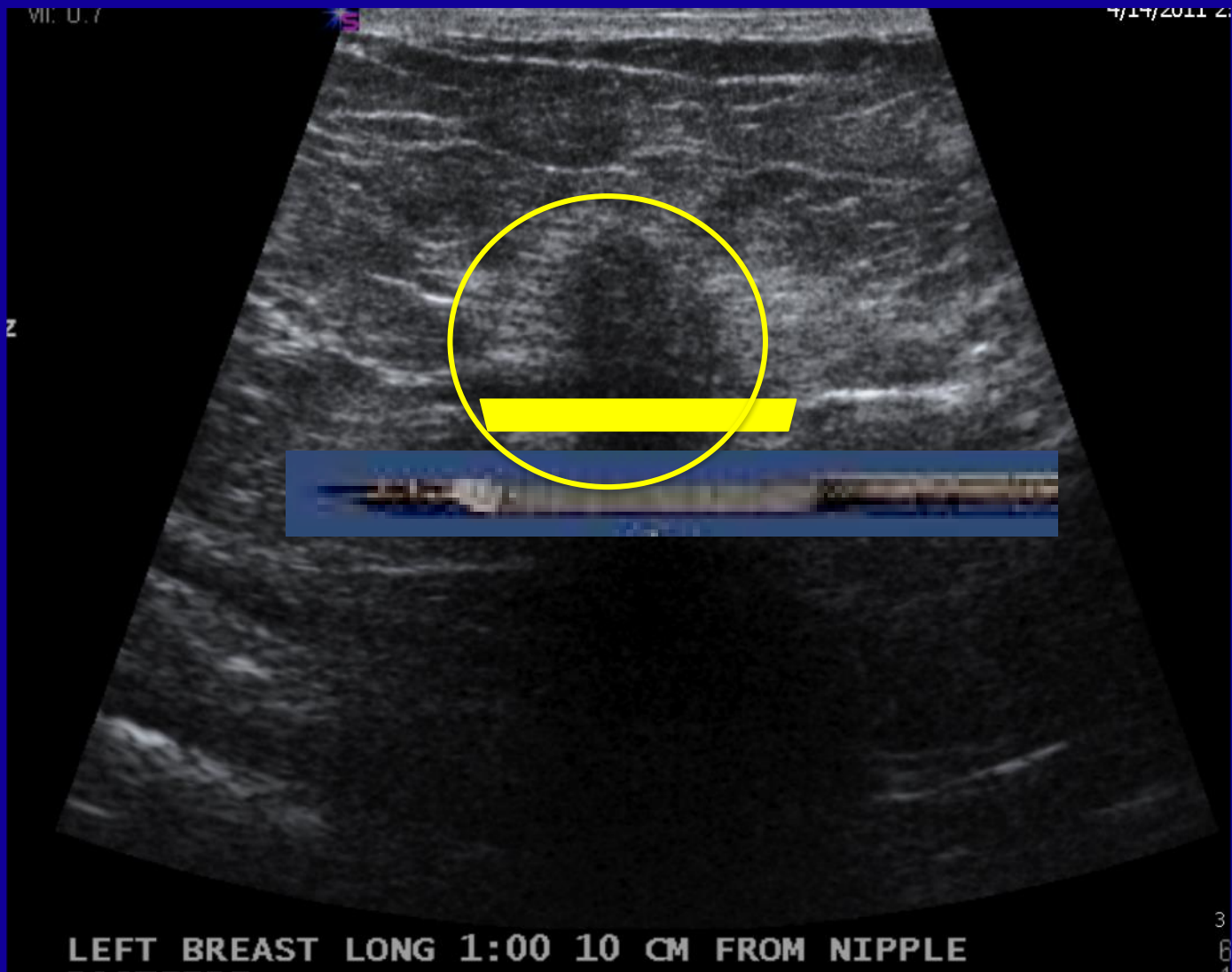
Open Device



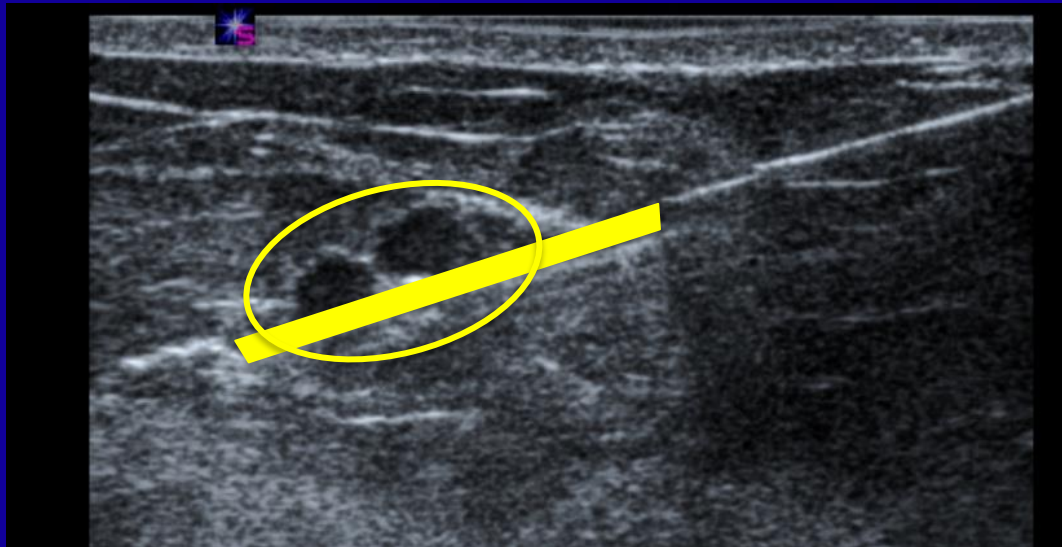
Closed Device



Open Device



Open Device



Ultrasound-Guided Core Biopsy

- Obtain a post-fire orthogonal view to confirm accurate sampling



Ultrasound-Guided Core Biopsy

Post-Fire



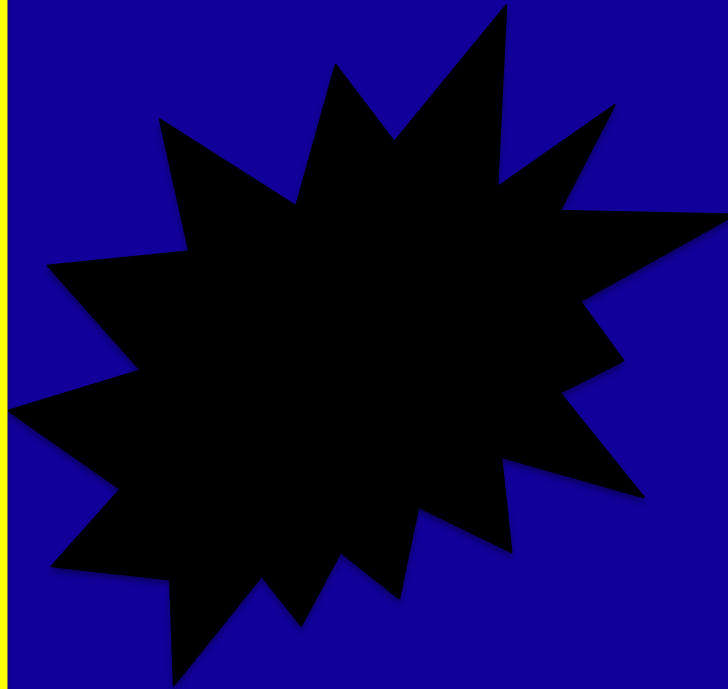
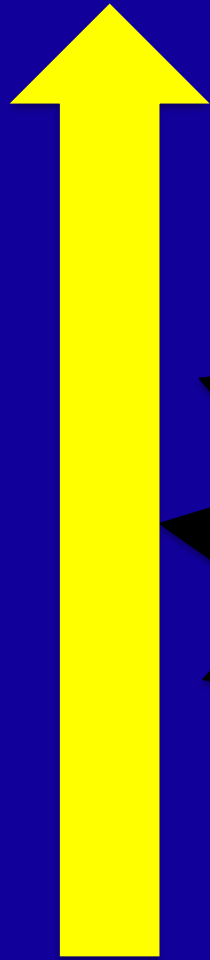
Post-Fire Orthogonal



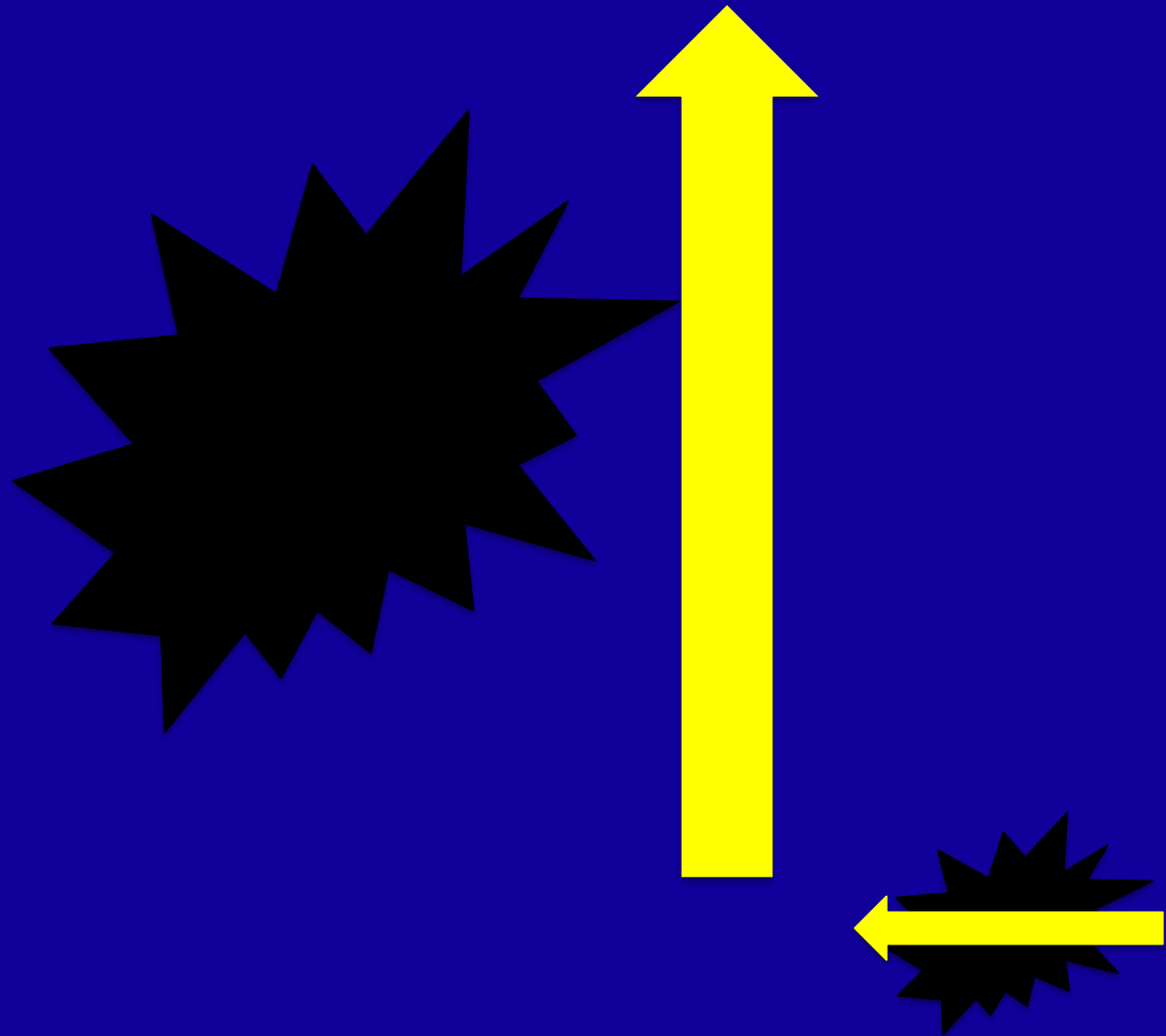
Post-Fire



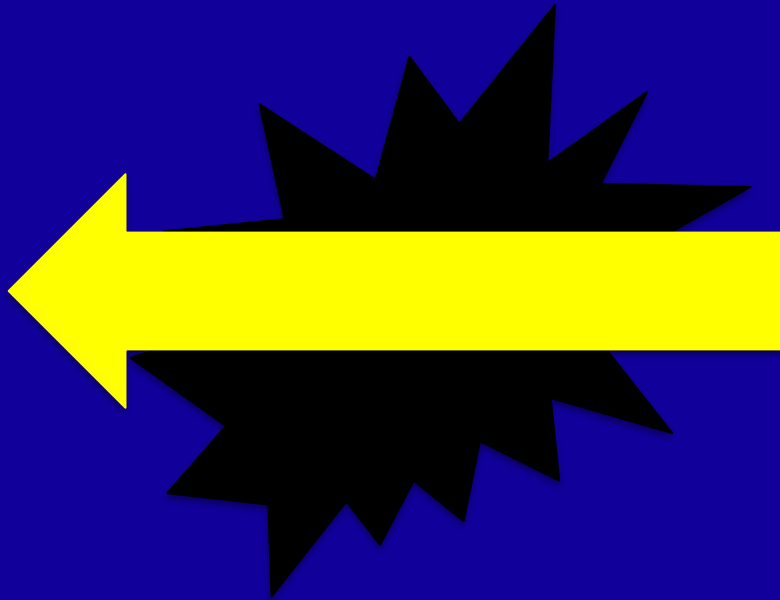
Post-Fire Orthogonal



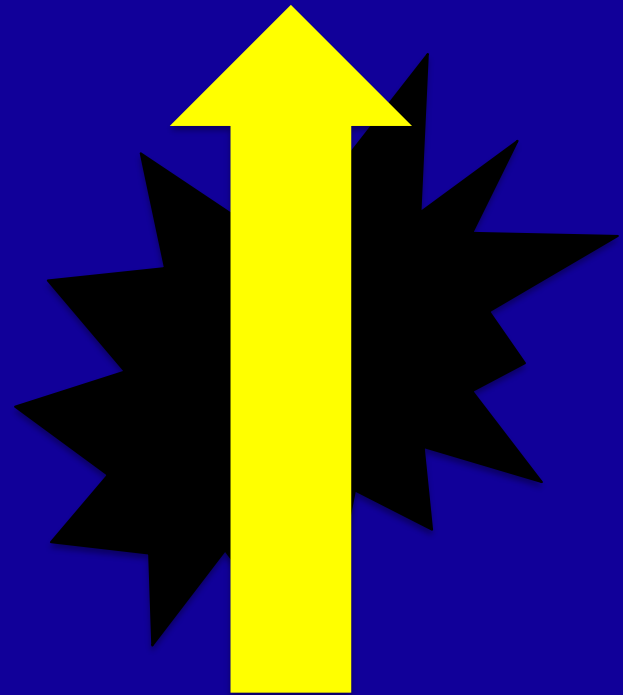
Post-Fire Orthogonal



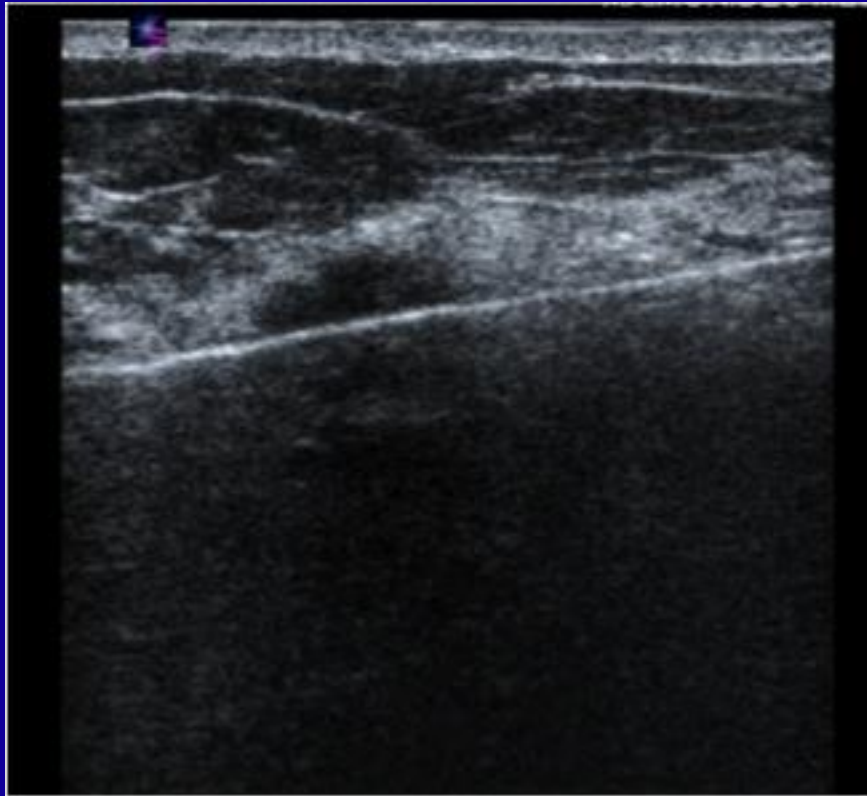
Post-Fire



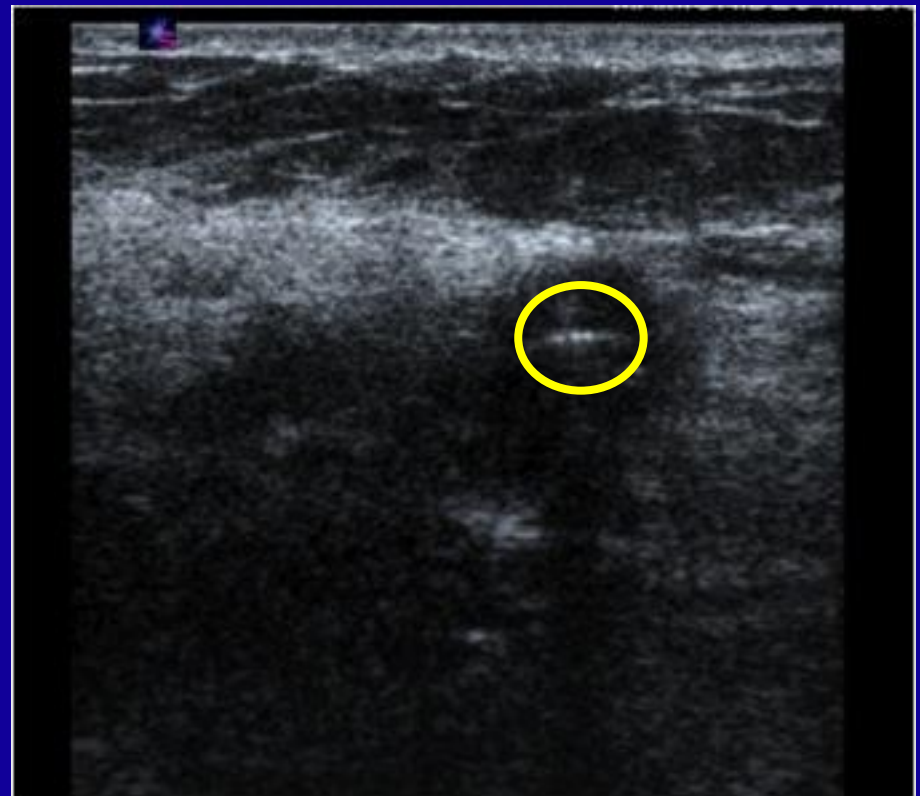
Post-Fire Orthogonal



Post-Fire

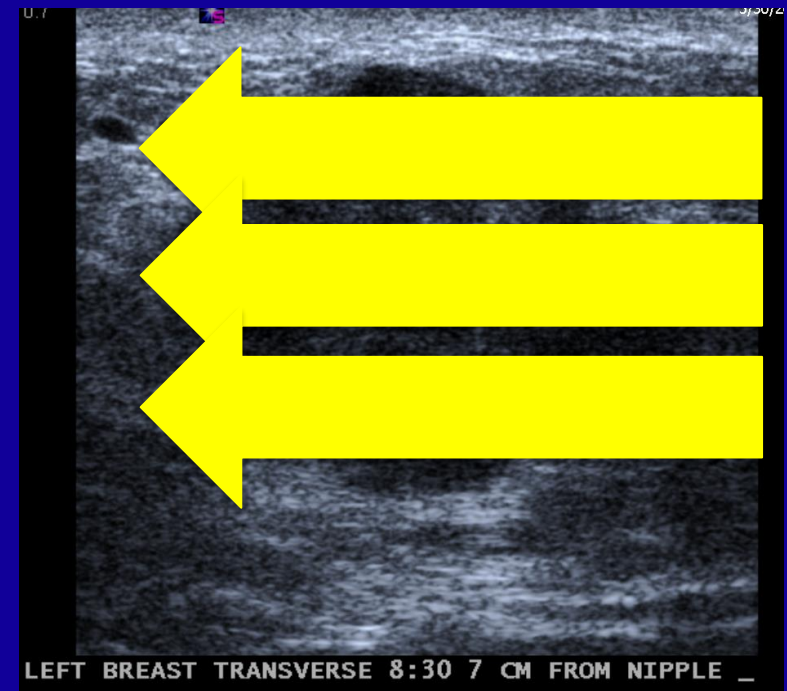


Post-Fire Orthogonal



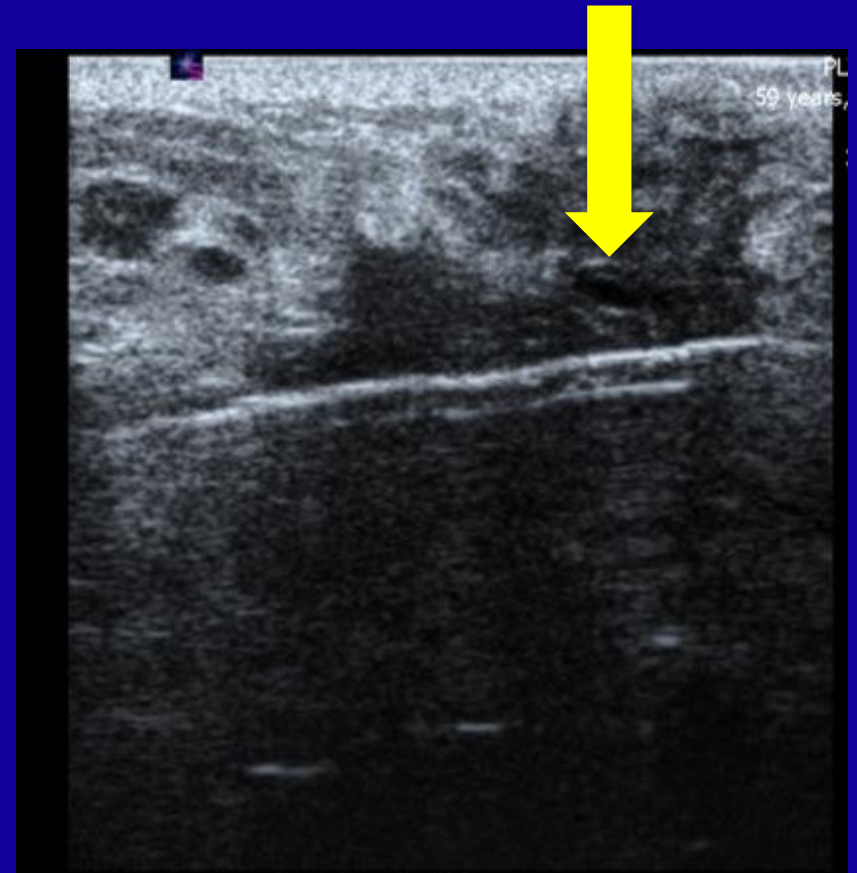
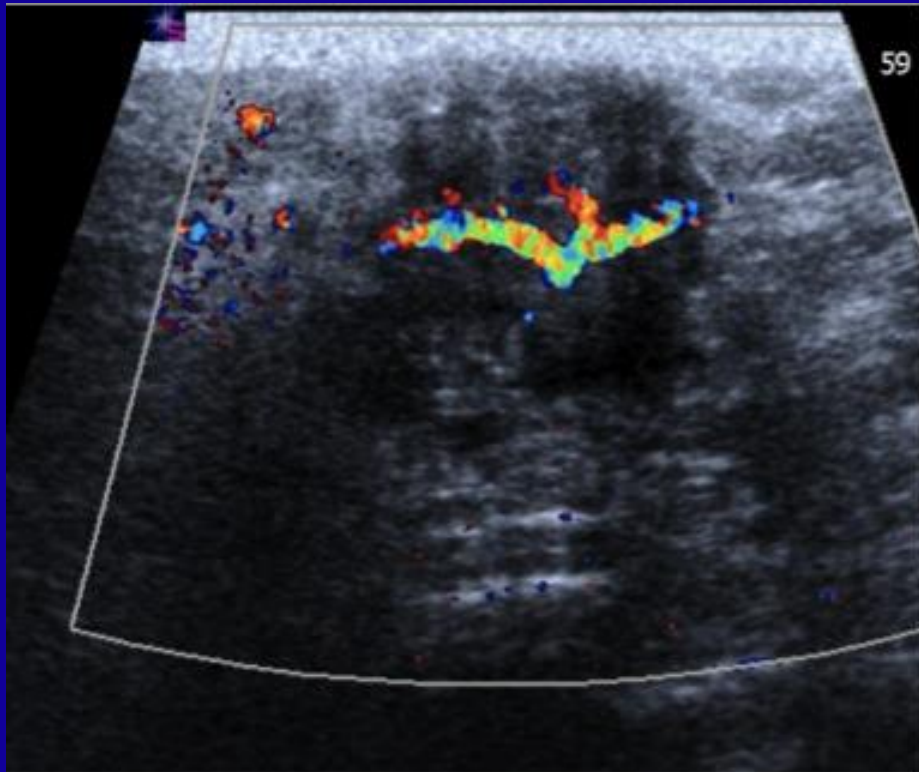
Ultrasound-Guided Core Biopsy

- Choose your target within your target
 - Solid component of complex mass
 - Vary depth with each pass



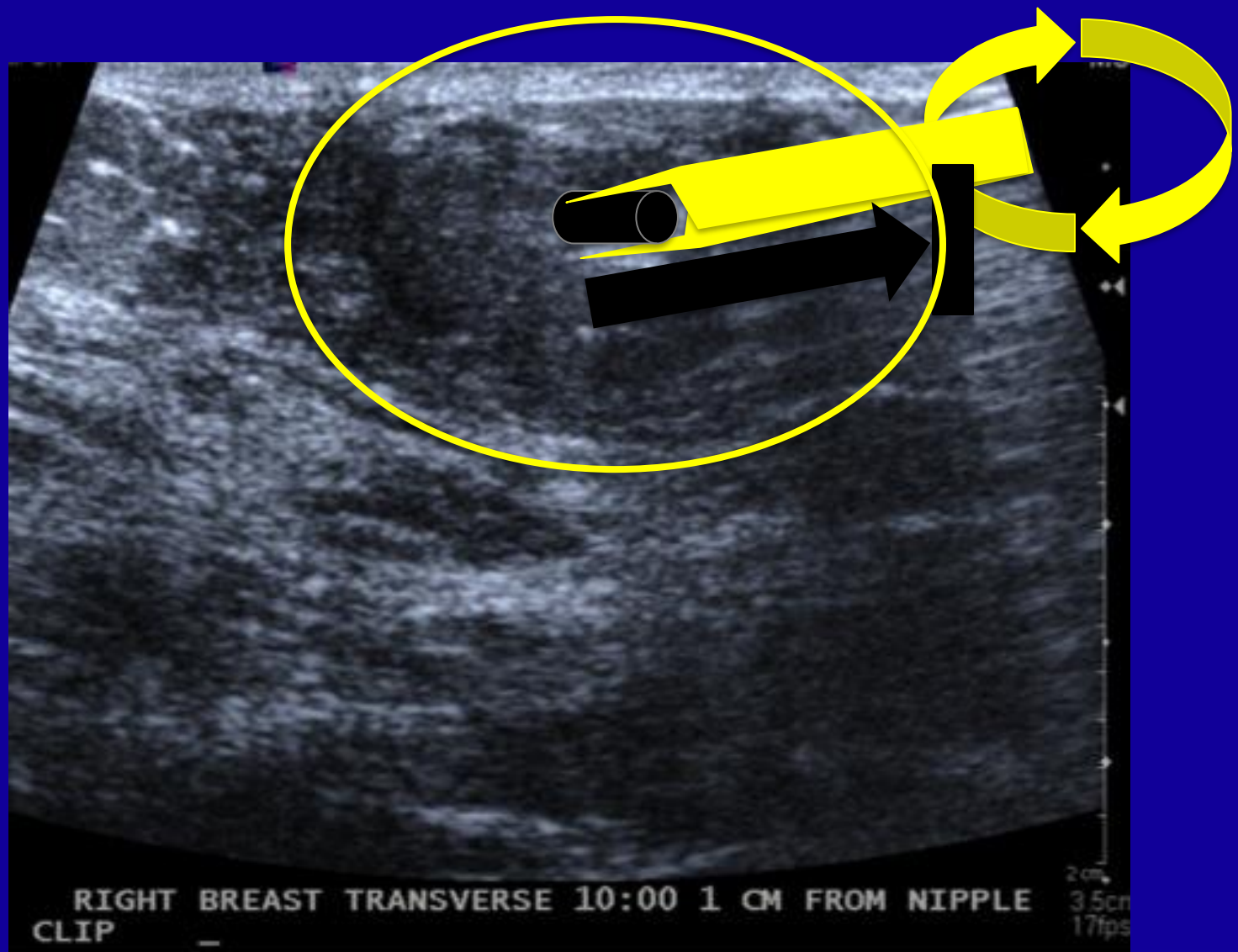
Ultrasound-Guided Core Biopsy

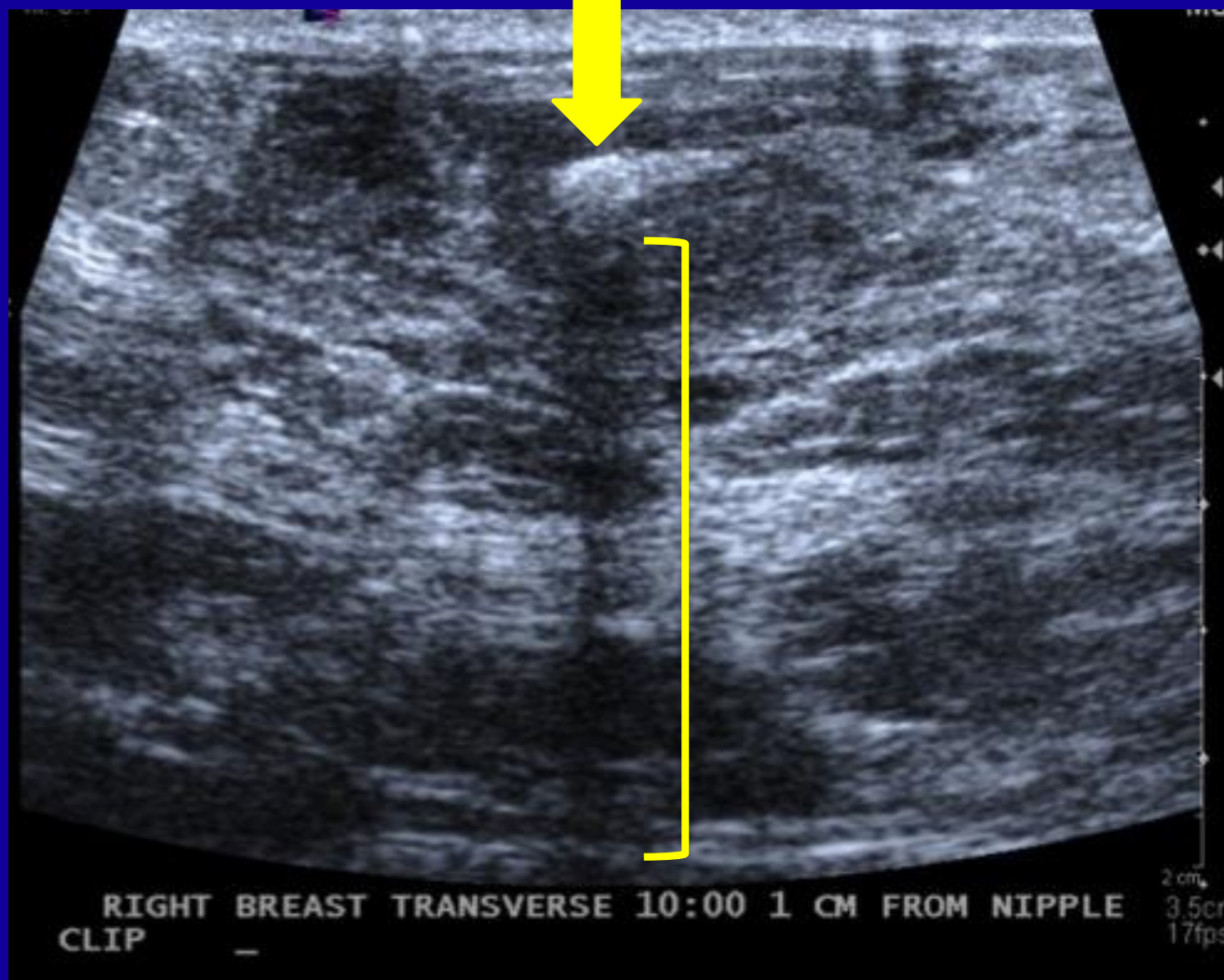
- Capitalize on the precision allowed



Post-Biopsy Clip/Marker Placement

- EP: Every case where specimen sent to cytology/pathology
- Deploy - roll - pull back 1cm

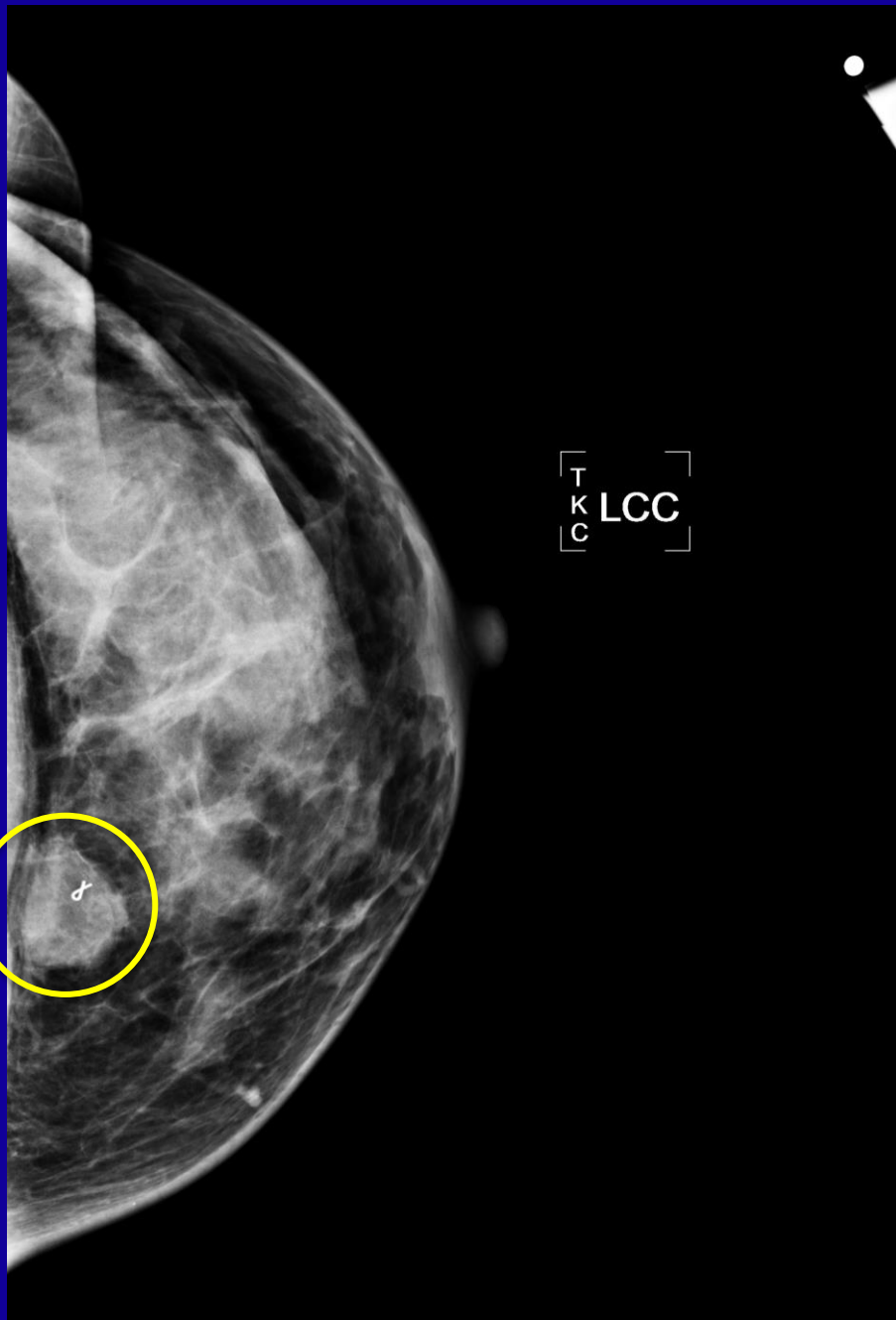




Post-Biopsy Clip/Marker Placement

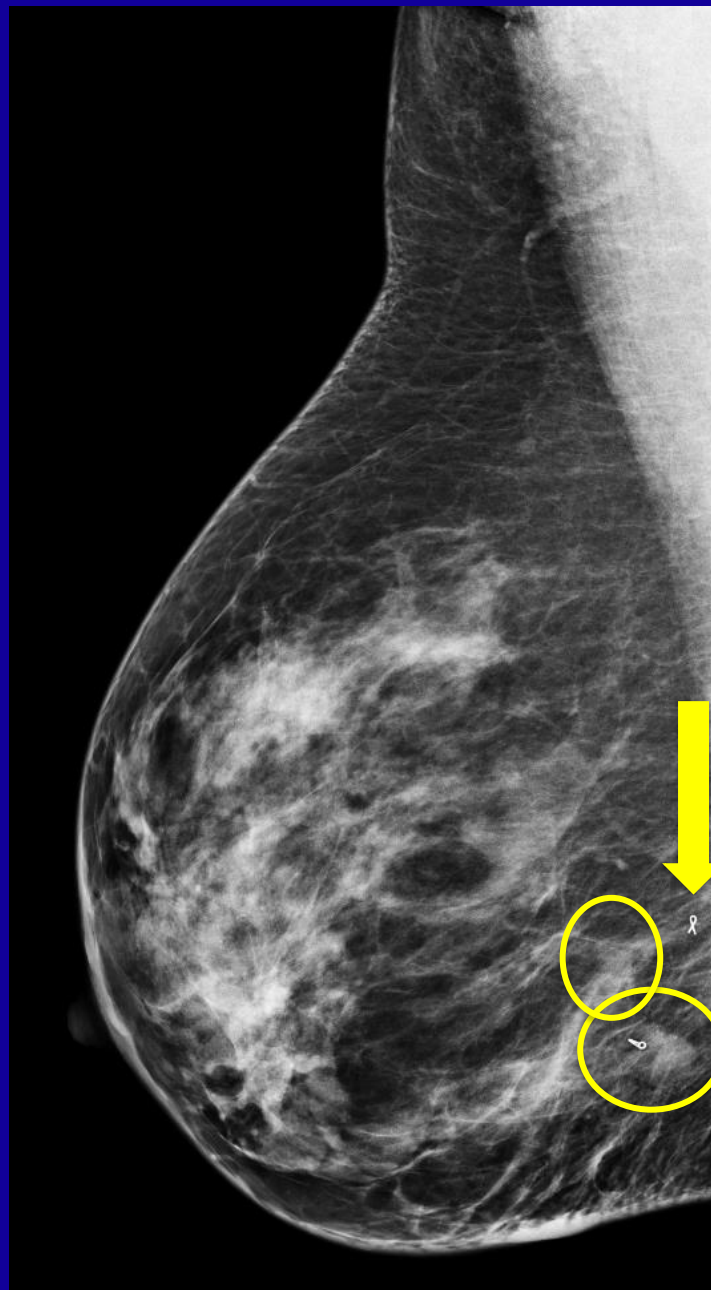
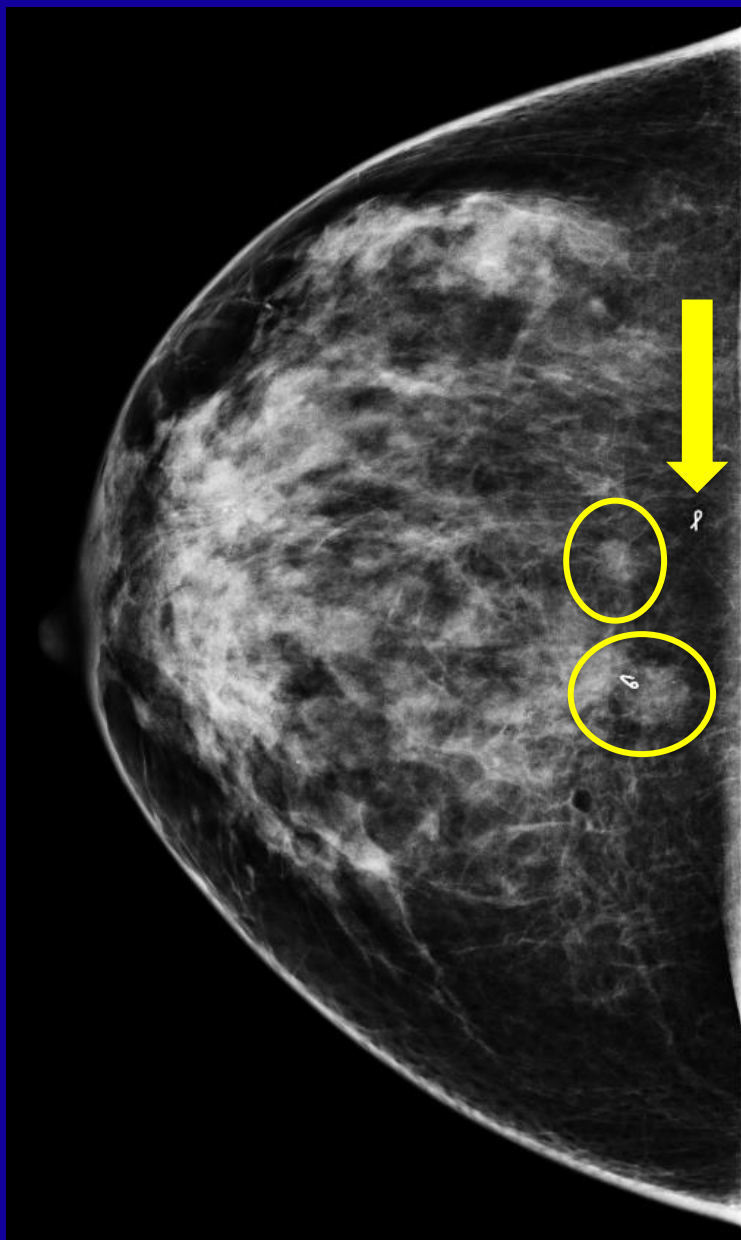
- Radiologist benefits:
 - Documentation of site sampled

*Thomassin-Naggara. Breast Cancer Research and Treatment 2011



Post-Biopsy Clip/Marker Placement

- Radiologist benefits:
 - Documentation of site sampled
 - Multiple lesions (each with different clip)



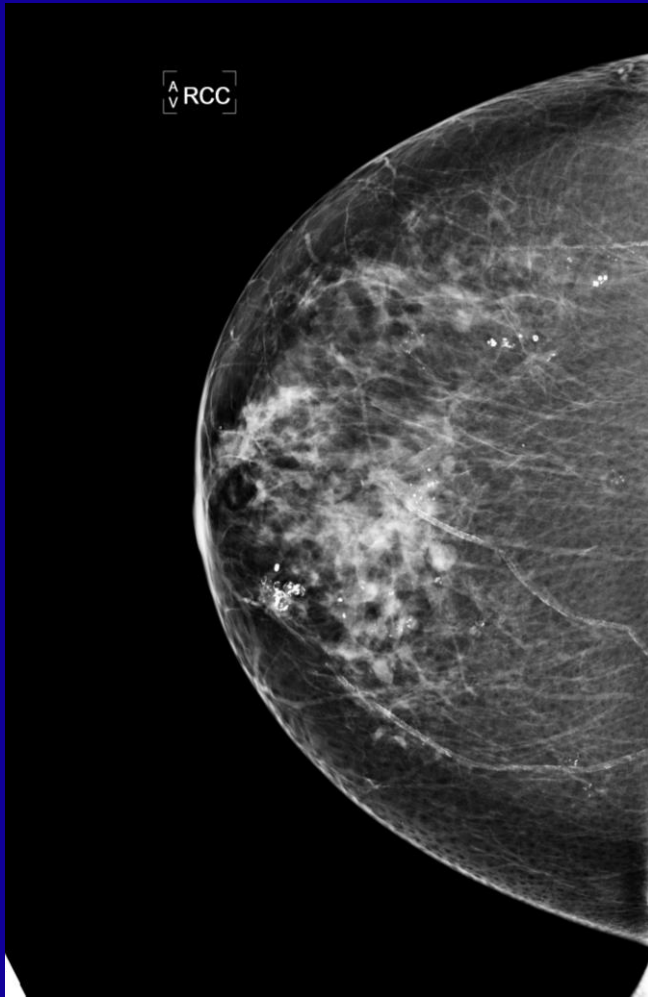
Post-Biopsy Clip/Marker Placement

- Be vigilant about identifying and documenting clip displacement
 - Include displacement in report Impression
 - Do NOT want to localize a displaced clip!

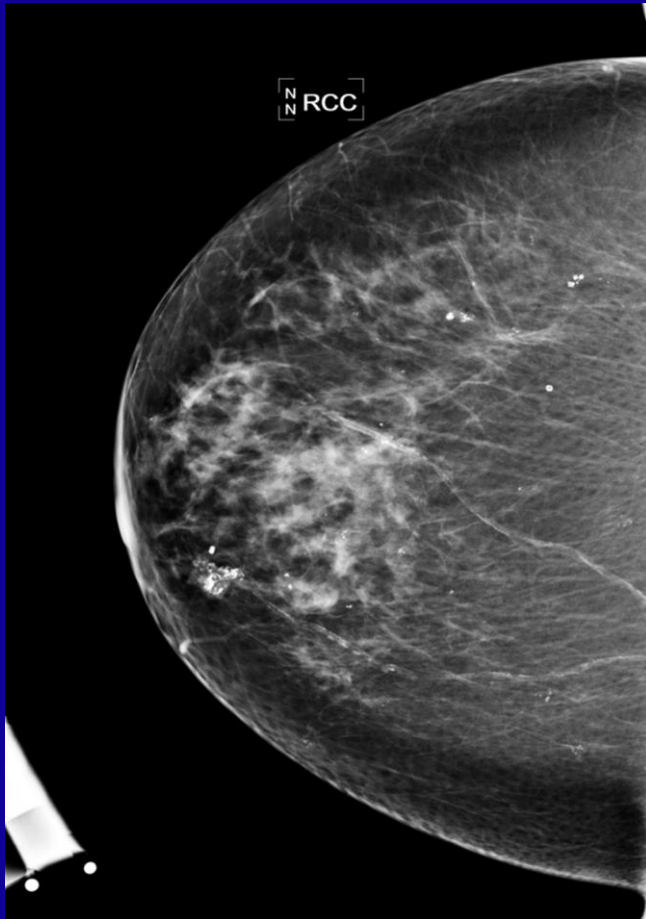
Post-Biopsy Clip/Marker Placement

- Radiologist benefits:
 - Documentation of site sampled
 - Multiple lesions (each with different clip)
 - Mammographic-sonographic correlation

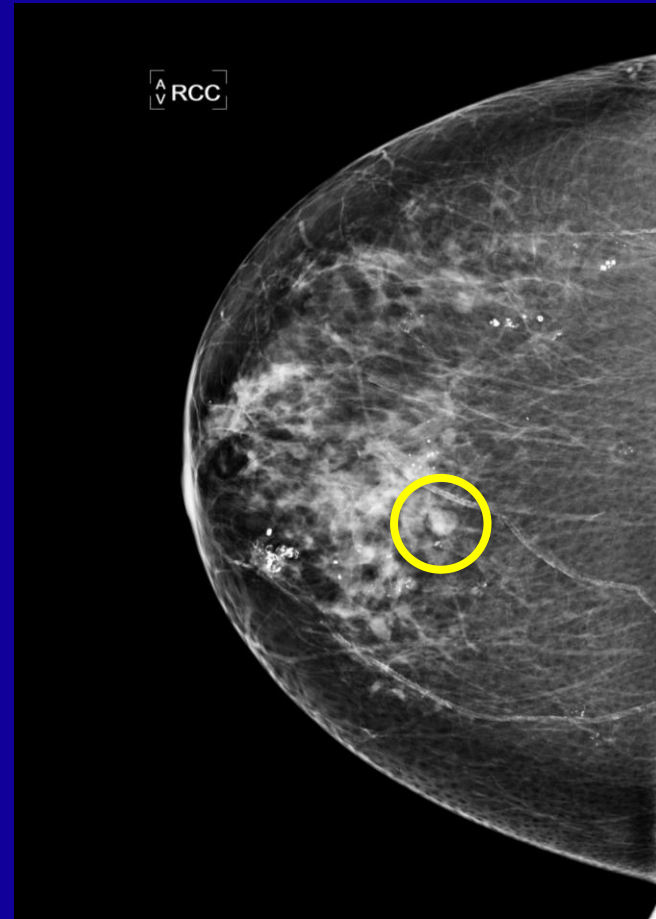
Case:
68 year old female;
Annual screening
mammogram



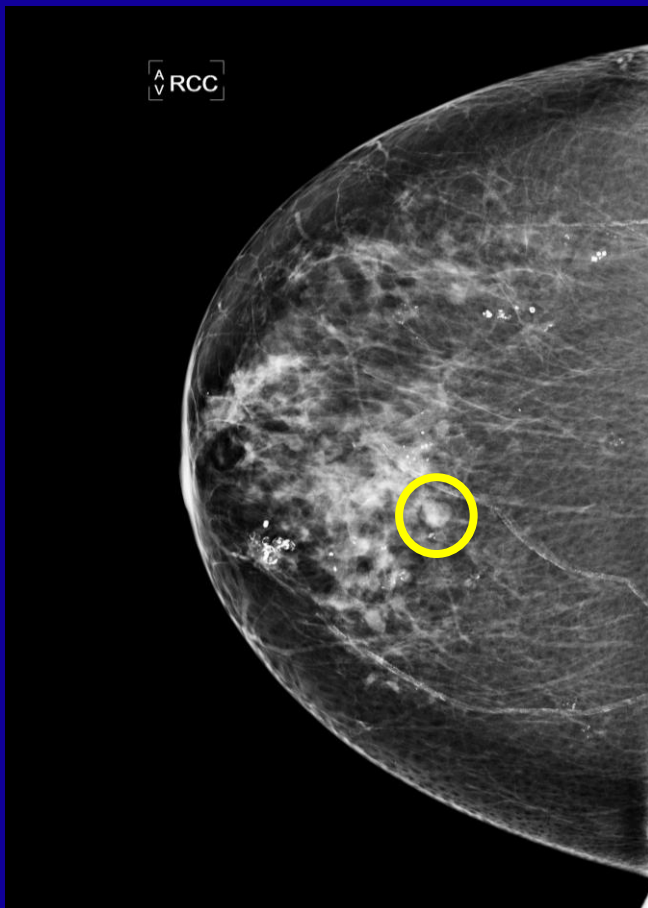
Prior

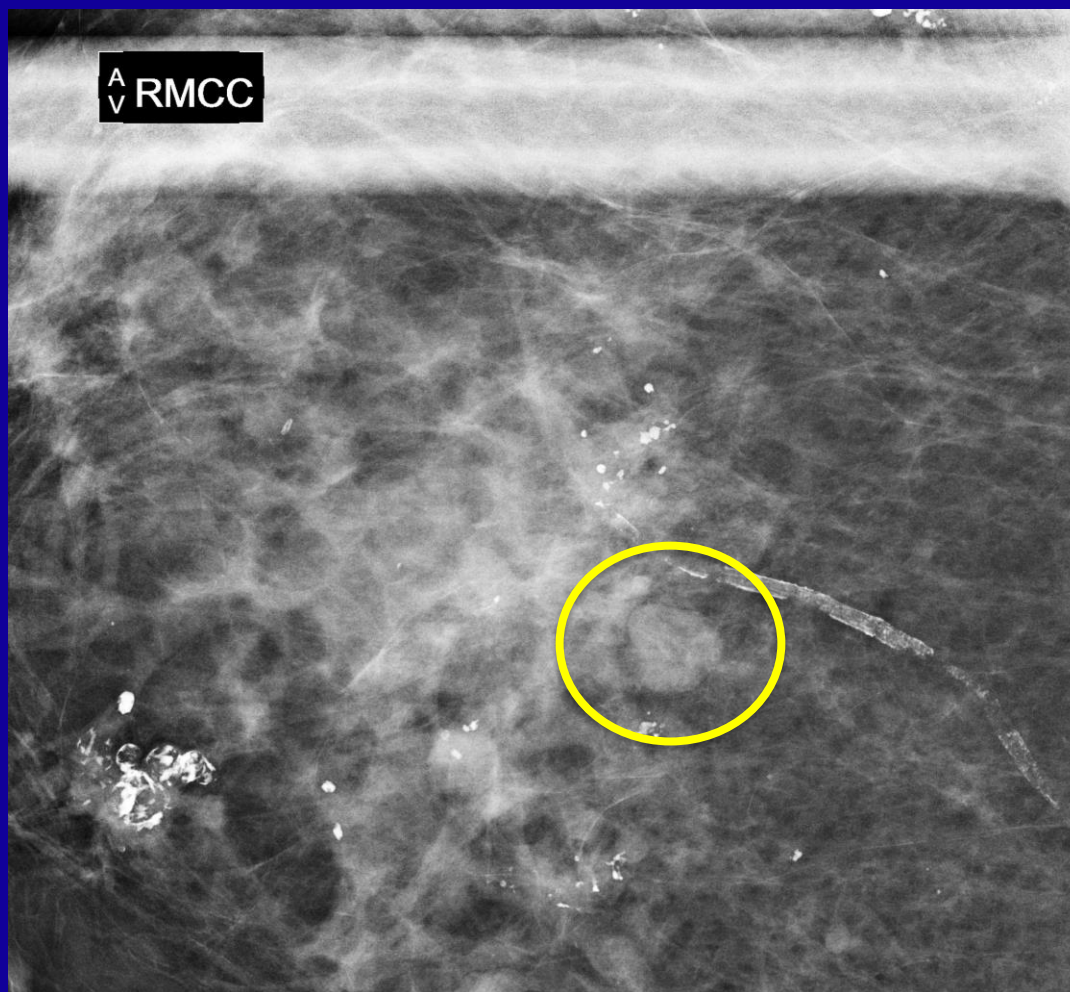


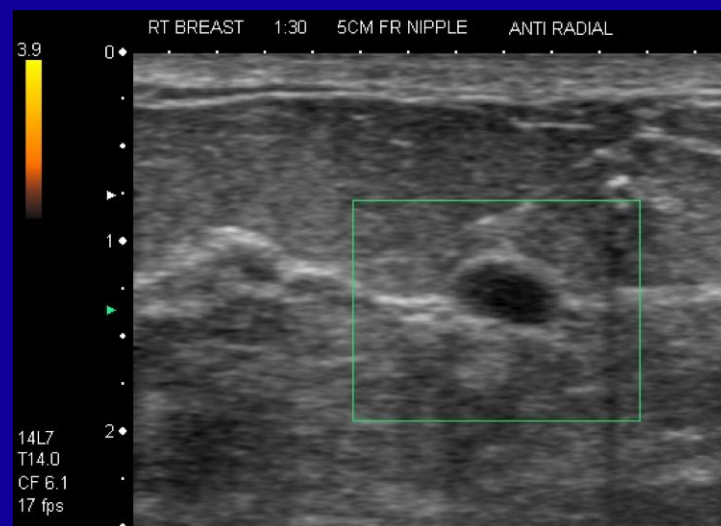
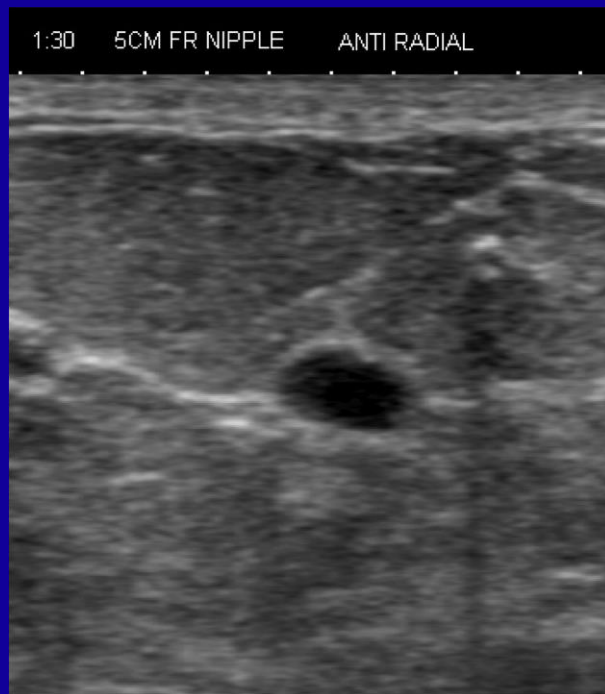
Current



Current







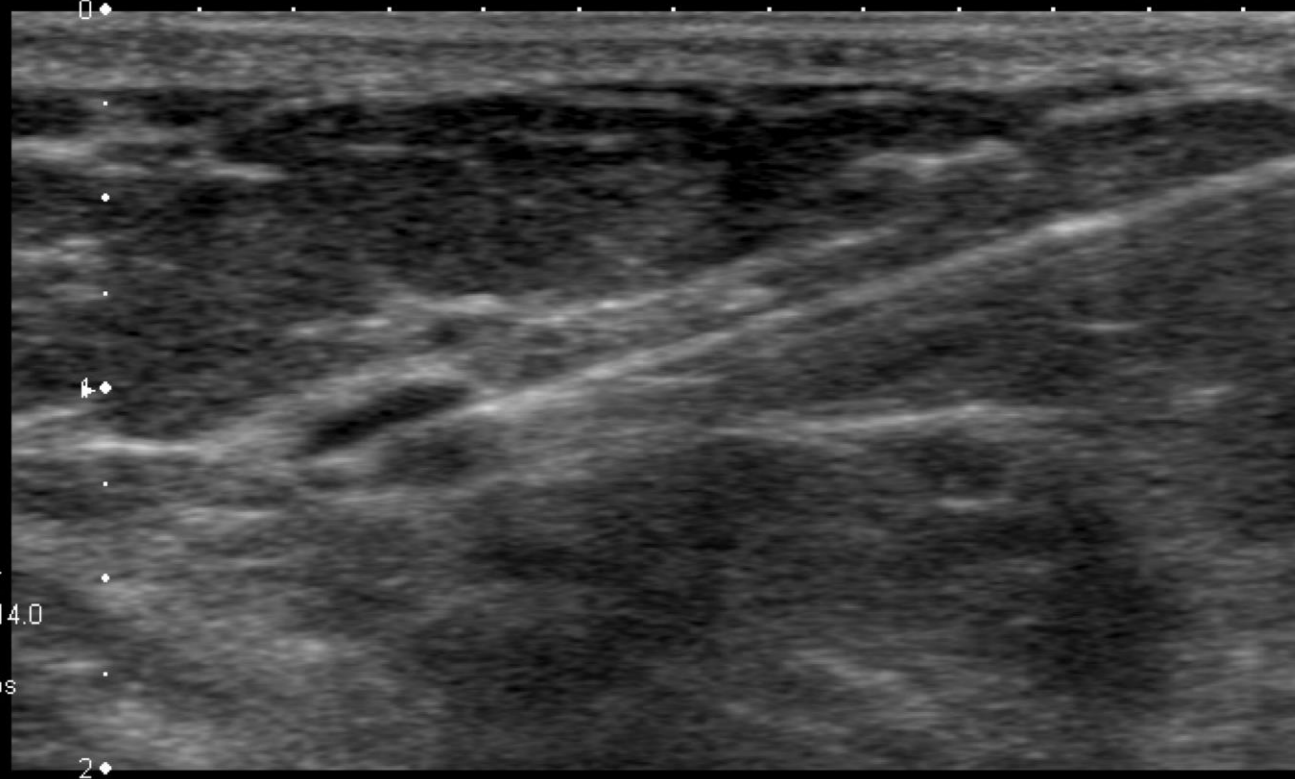
RIGHT

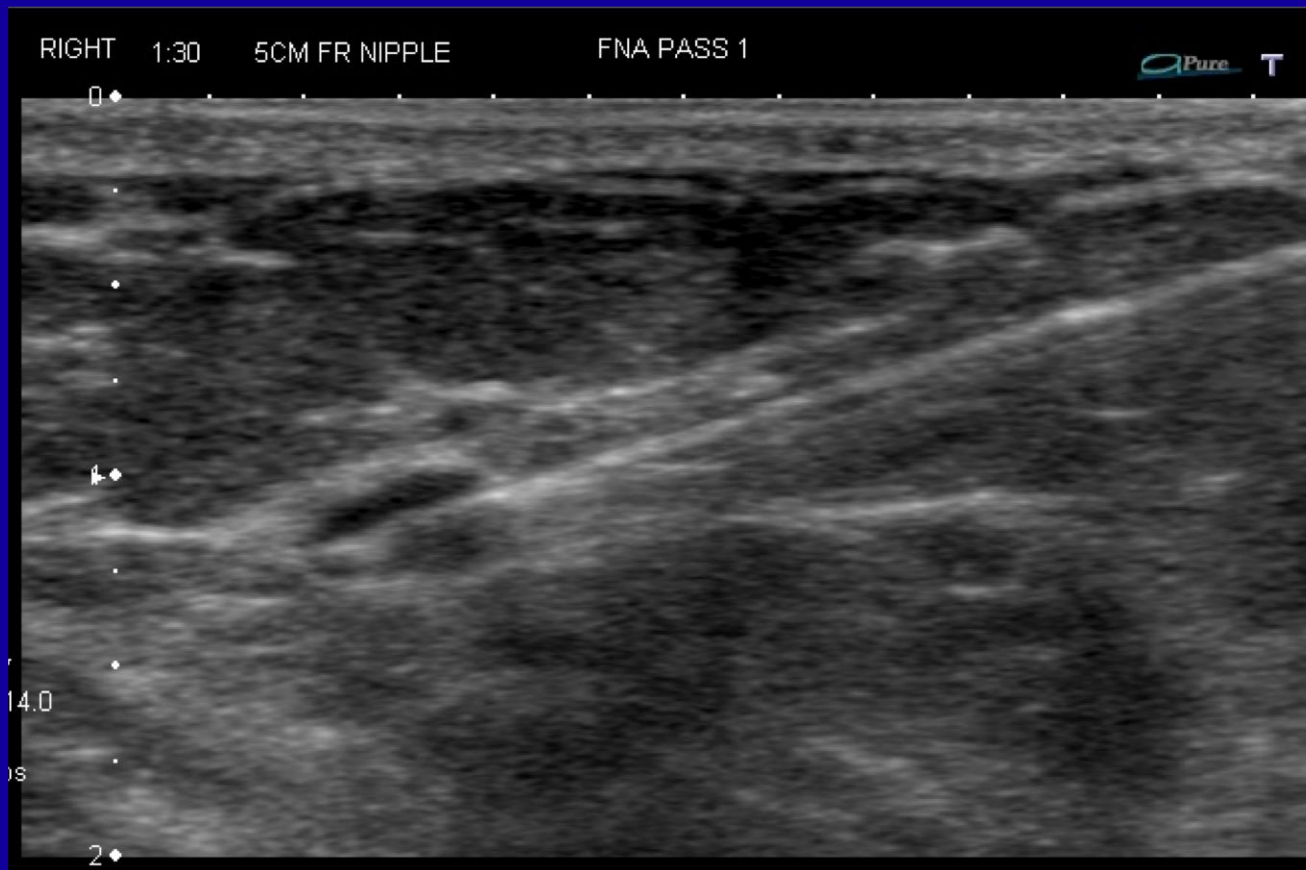
1:30

5CM FR NIPPLE

FNA PASS 1

QPure T

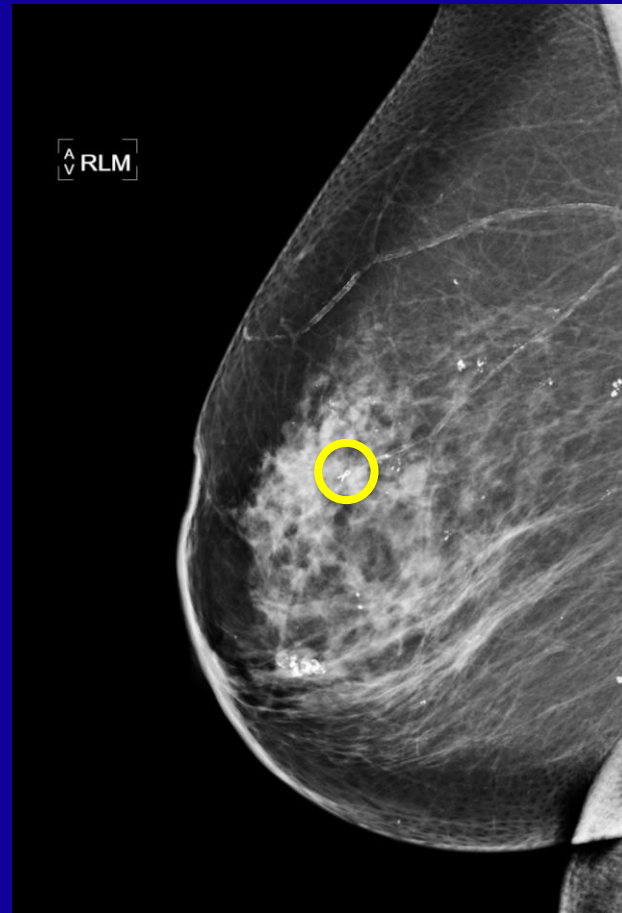




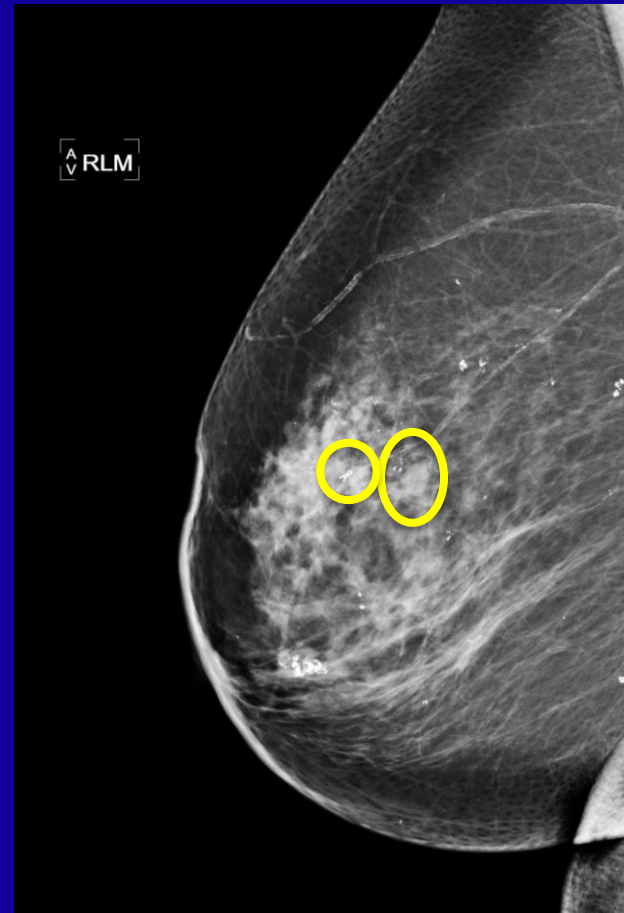
Target aspirates to completion

Ribbon-shaped clip deployed

Post-Aspiration Mammogram

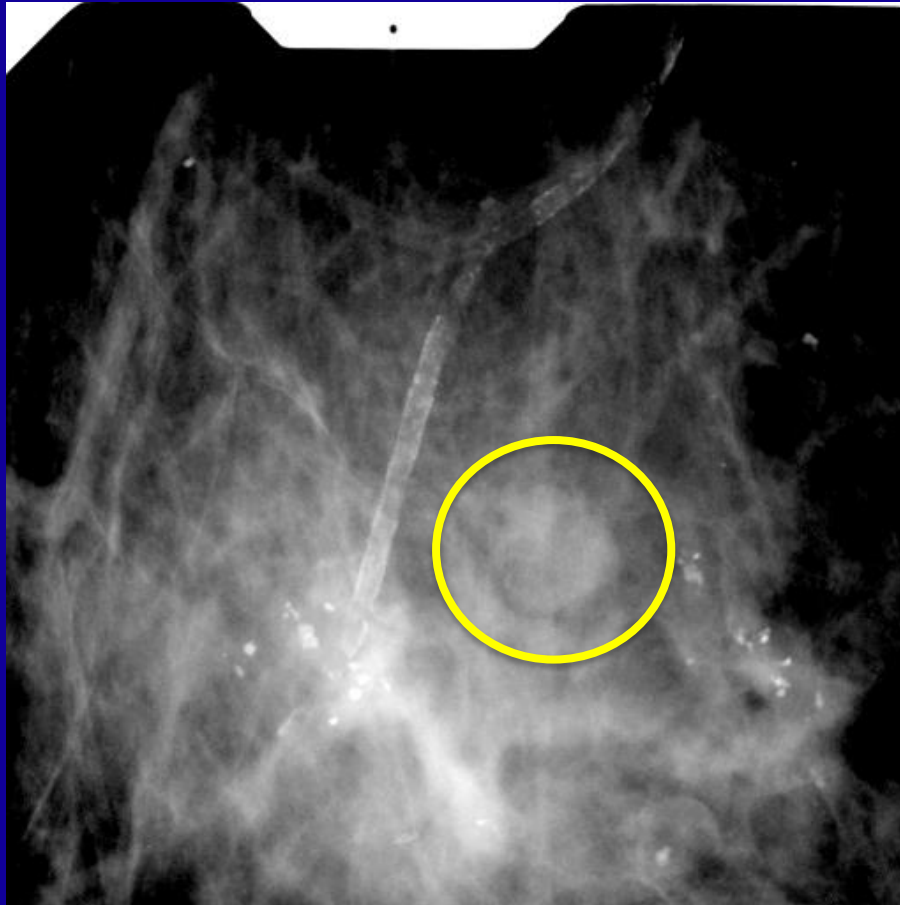


Post-Aspiration Mammogram

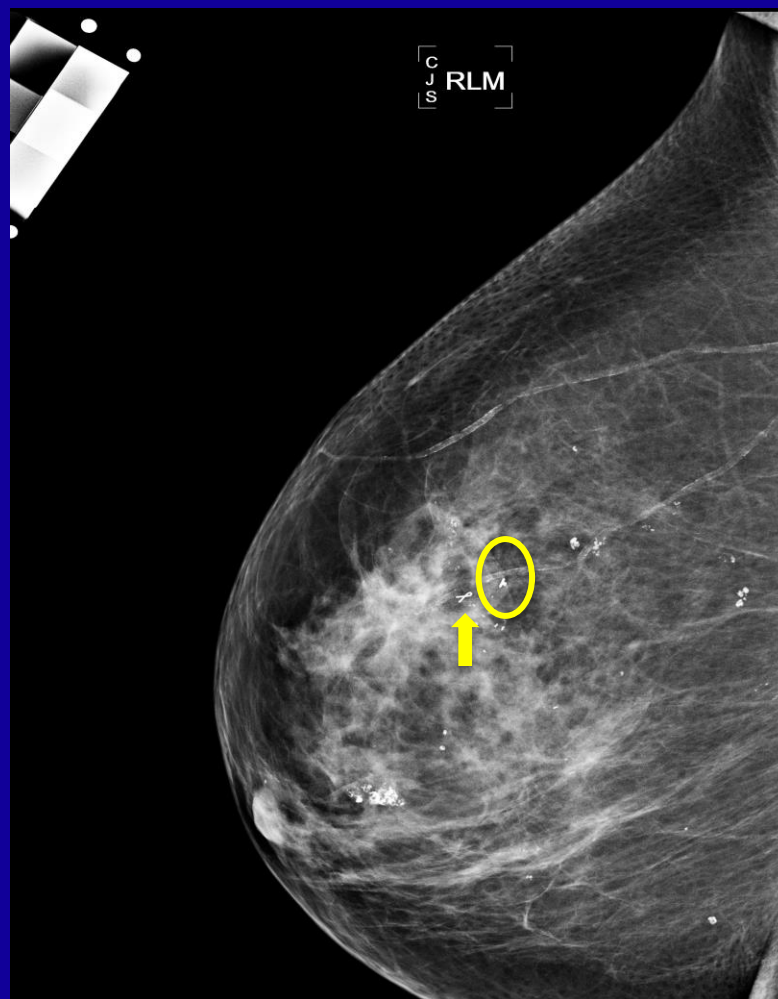
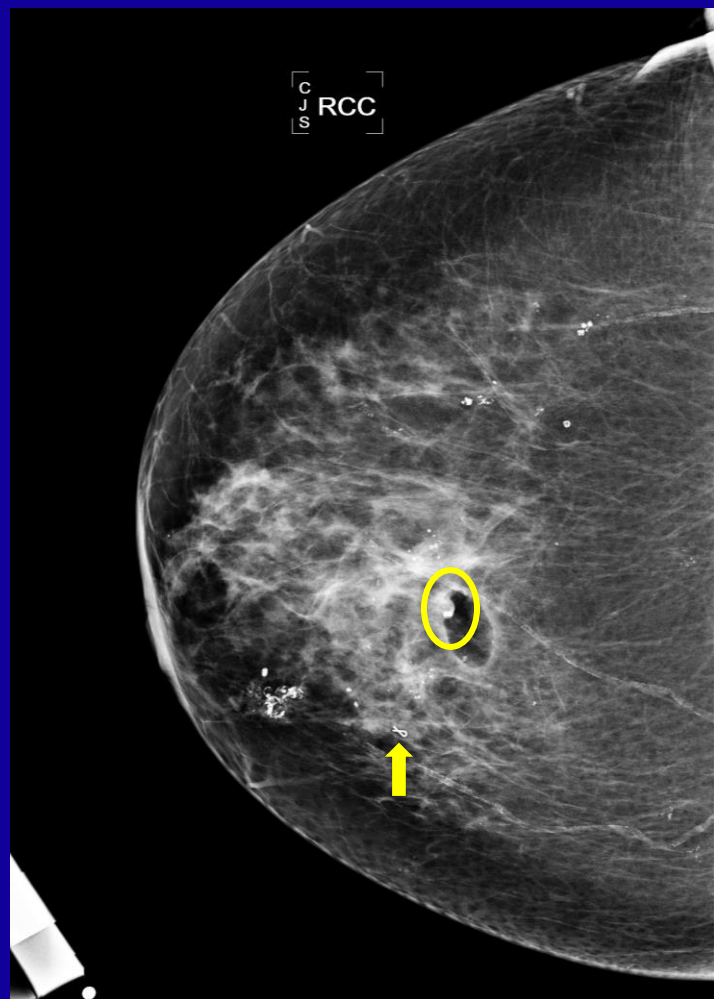


Lesion identified
sonographically is not
the correlate to the
lesion identified
mammographically

MUST pursue the
mammographic lesion: stereo



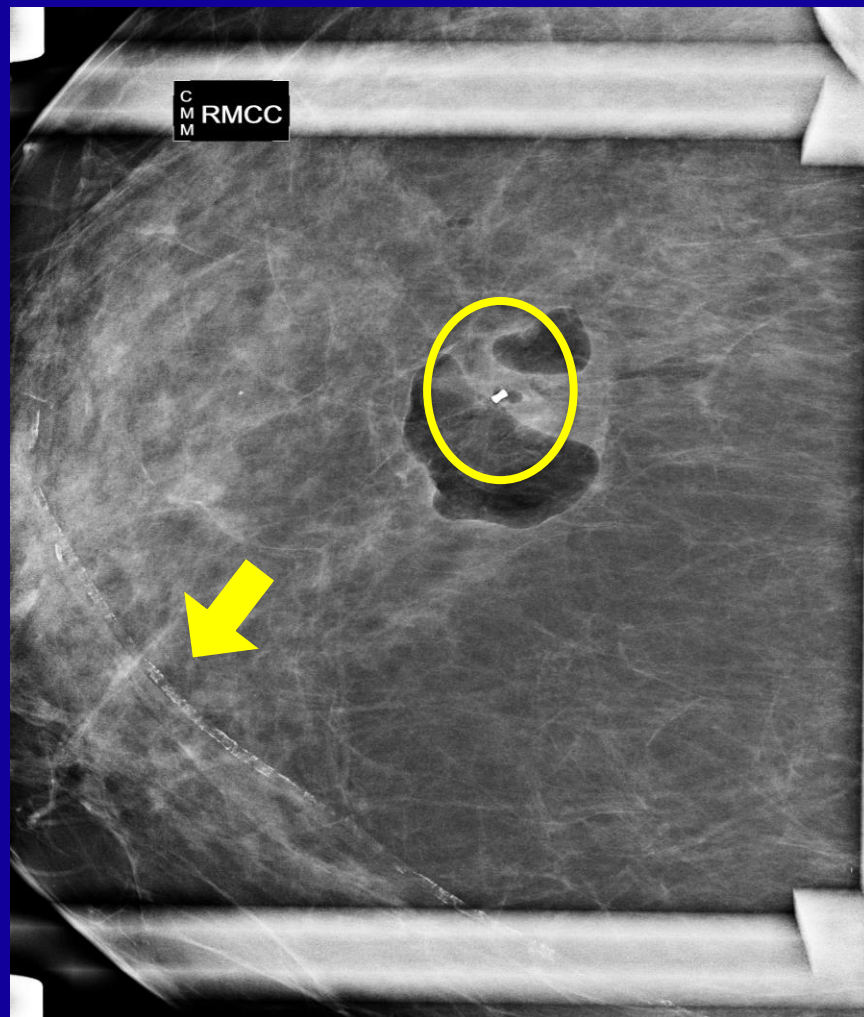
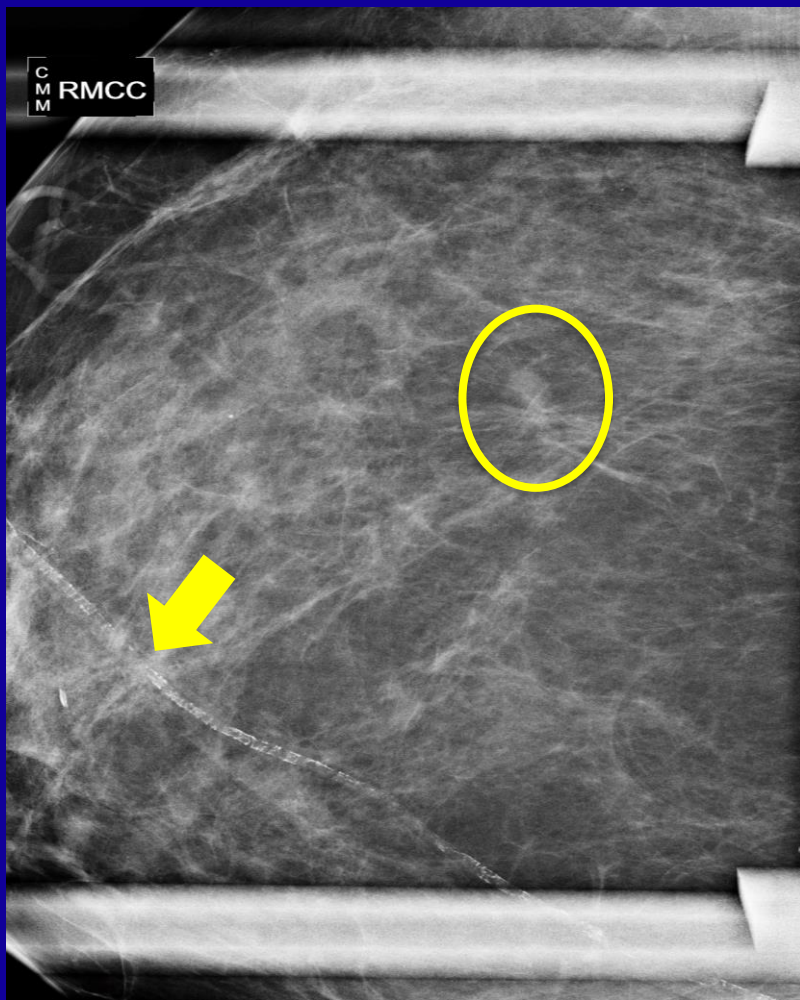
Stereotactic biopsy performed.
Top hat clip deployed.



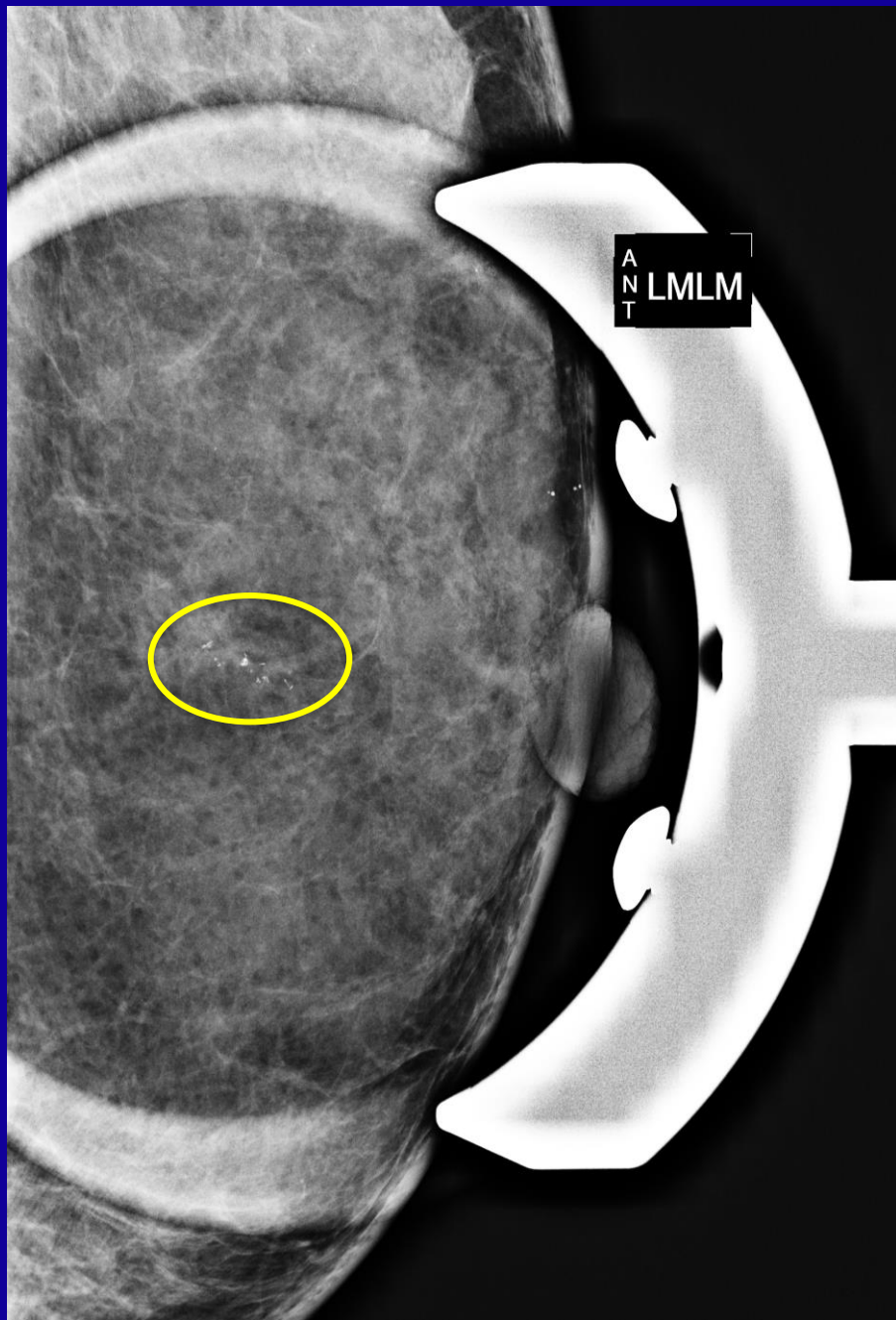
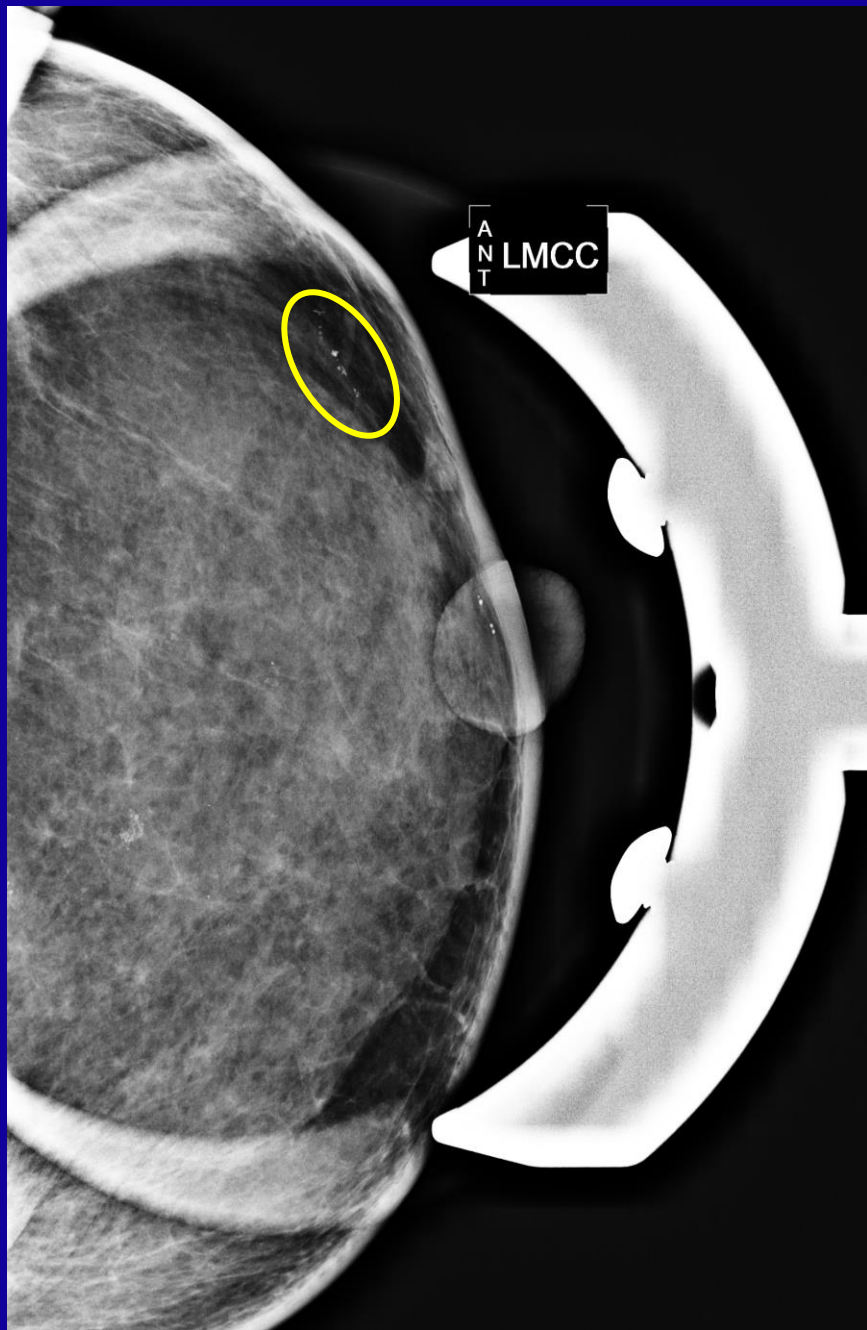
Pathology at Stereo: Non-Calcified DCIS

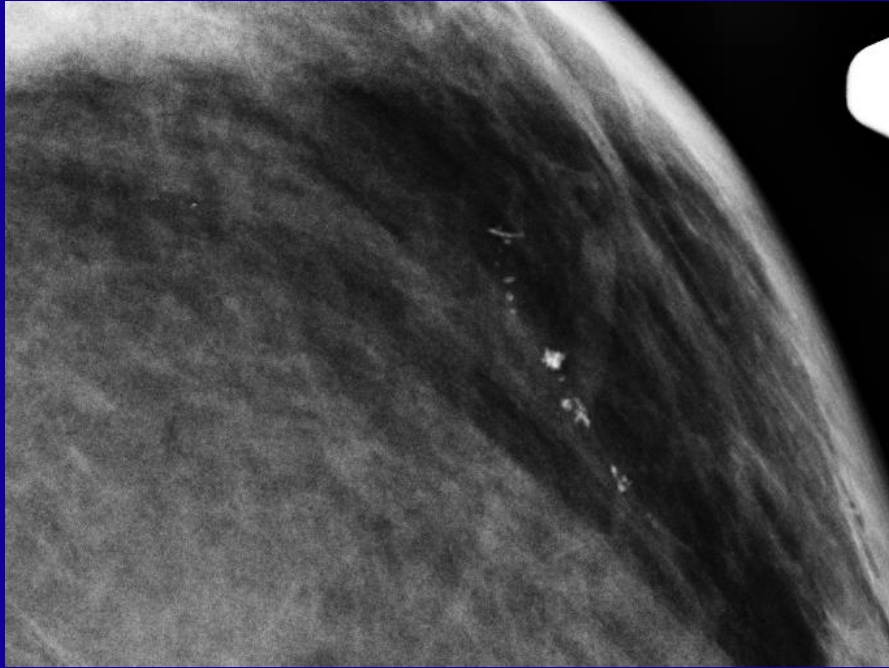
Post-Biopsy Clip/Marker Placement

- Mammographic-sonographic correlation
 - Rigorous review of post-sampling mammogram
 - ‘Apples to apples’ comparison
 - May require spots, mags for subtle findings



Case:
49 year old female;
Callback for new left
breast calcifications on
annual screening



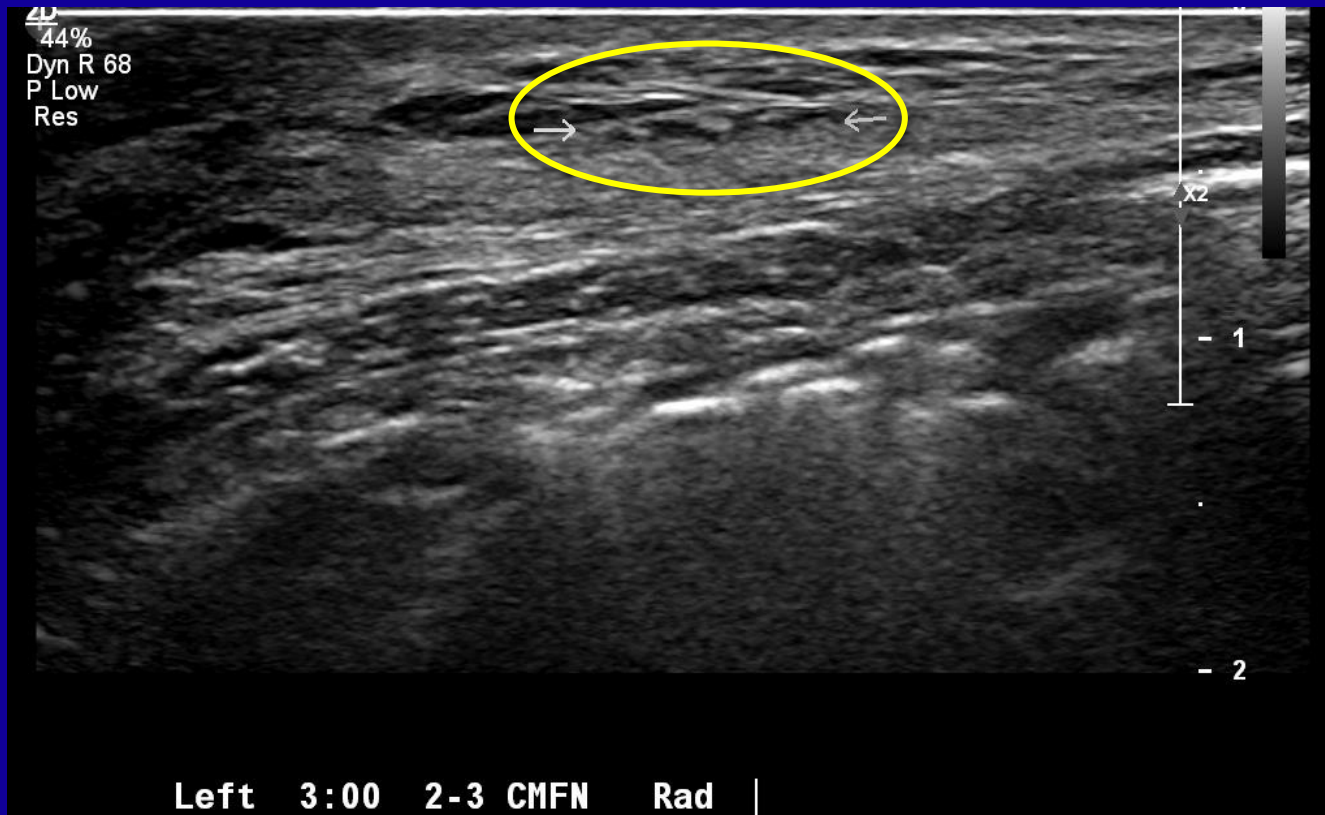


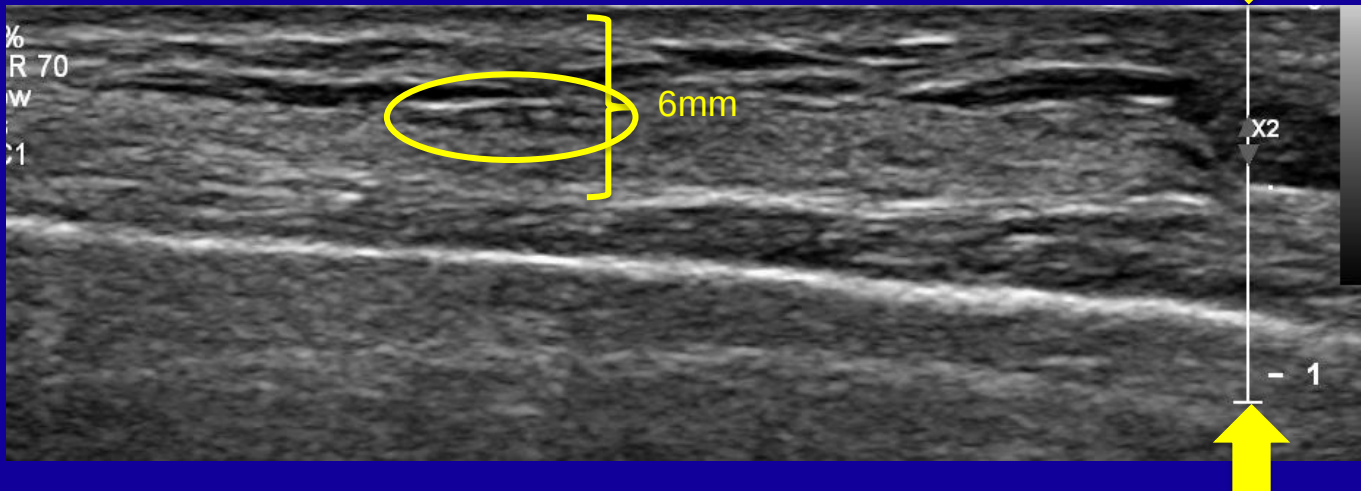
BI-RADS 4

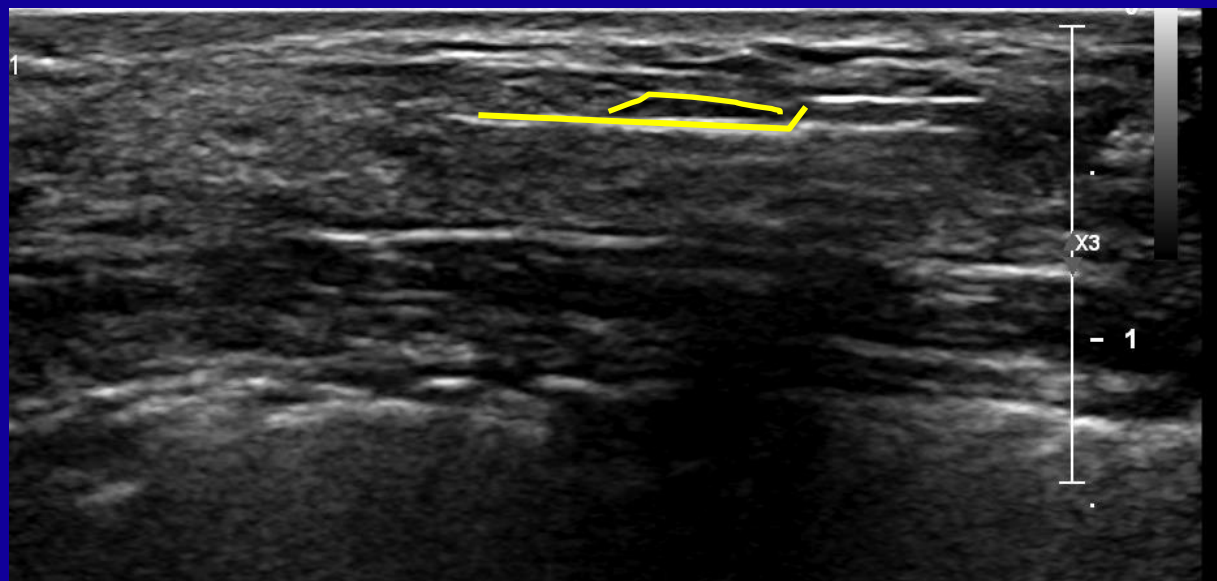
Problem:

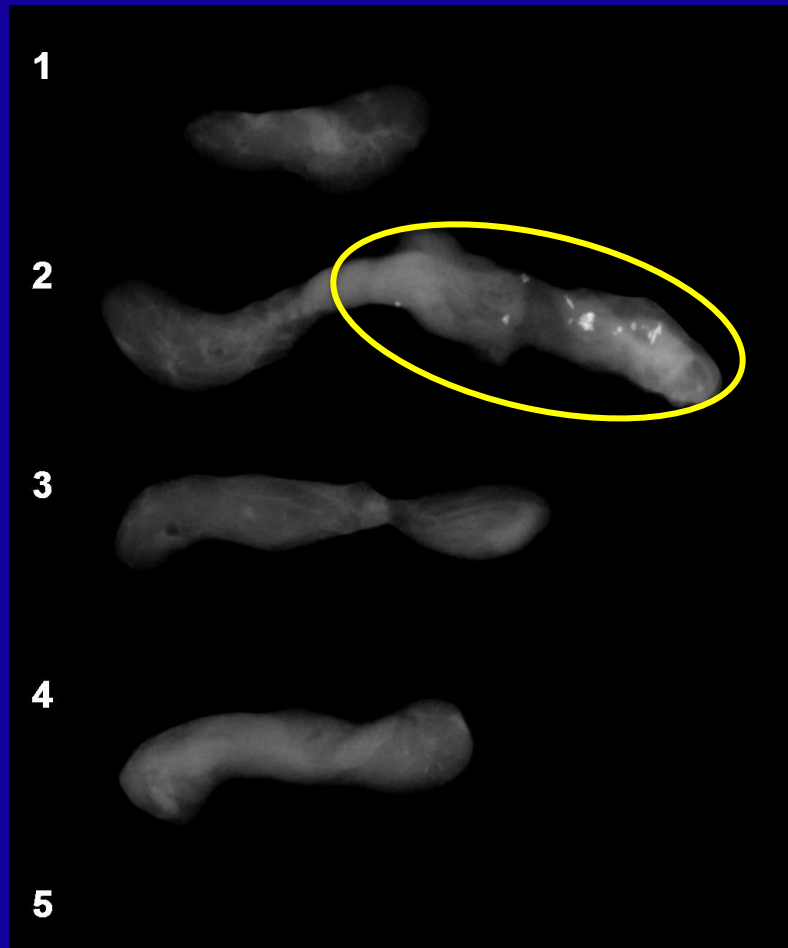
Patient compresses 1cm

(Remember: compression is limited posteriorly;
thickness anteriorly is often less than reported)





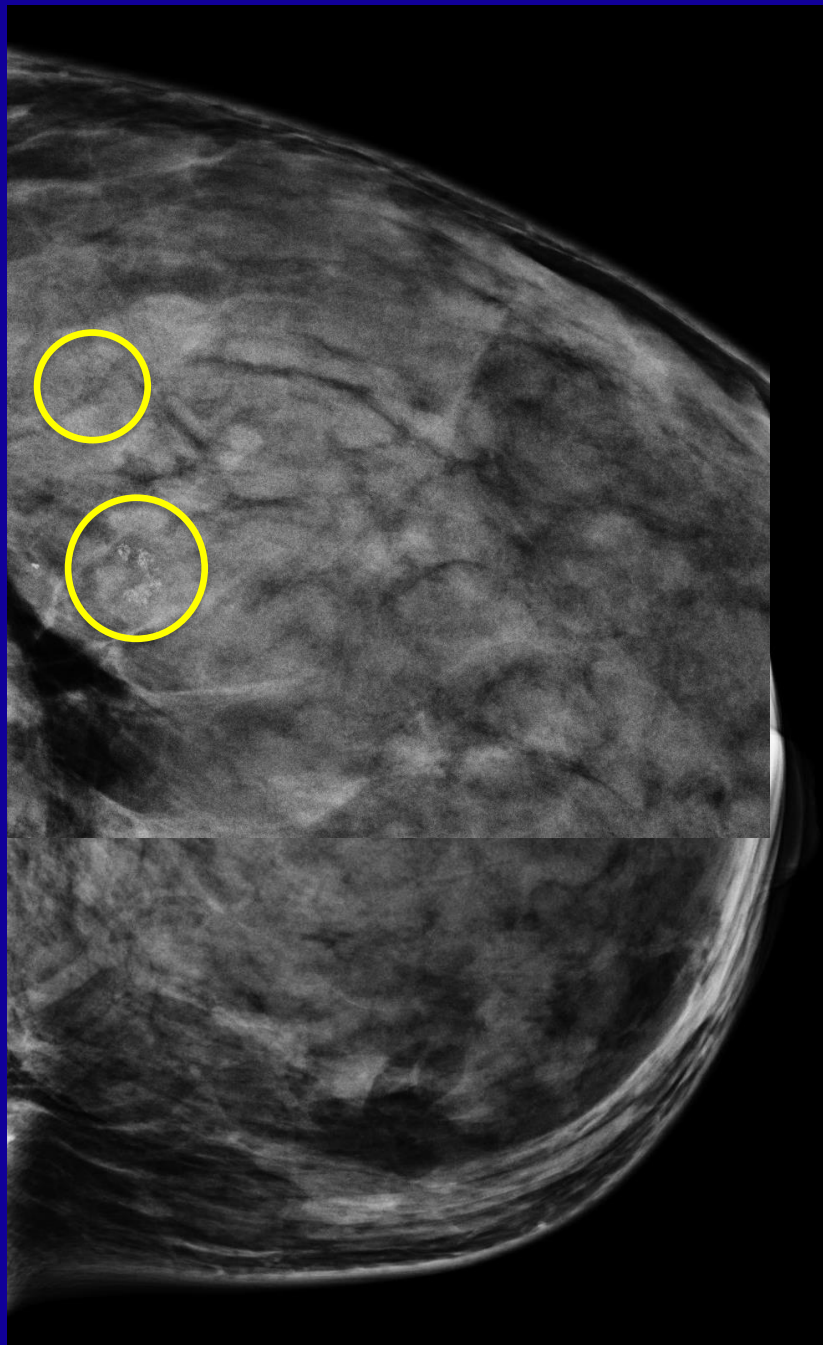
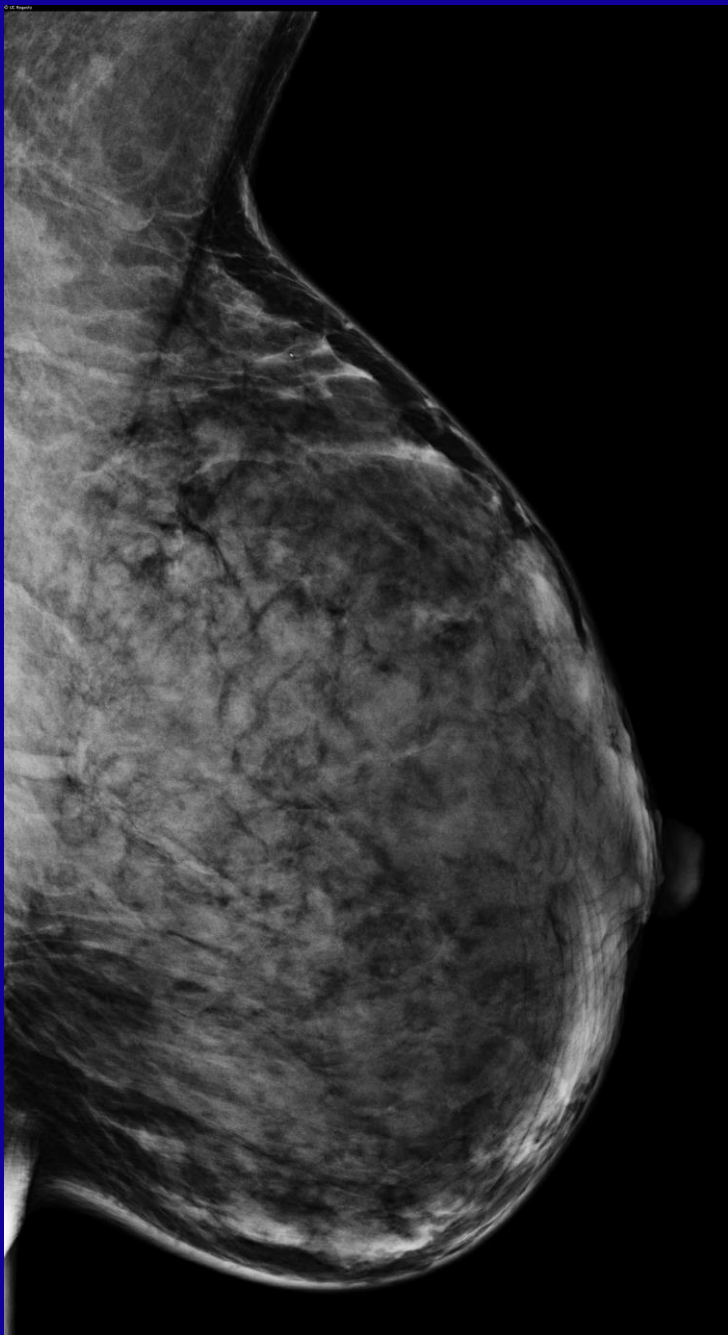




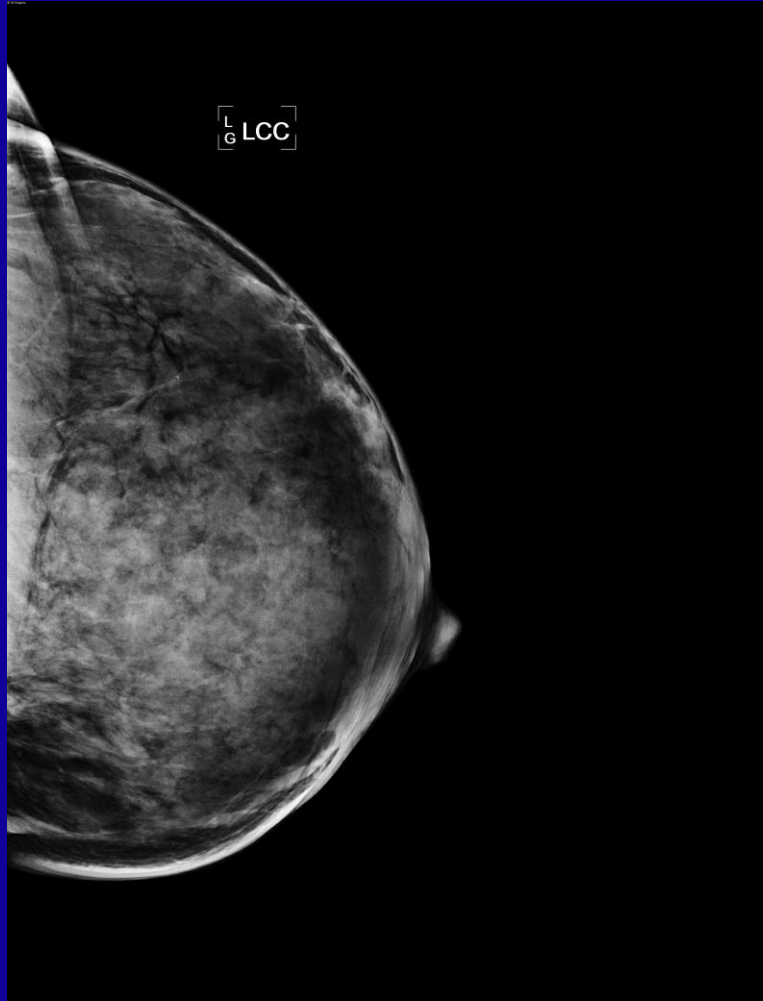
DCIS

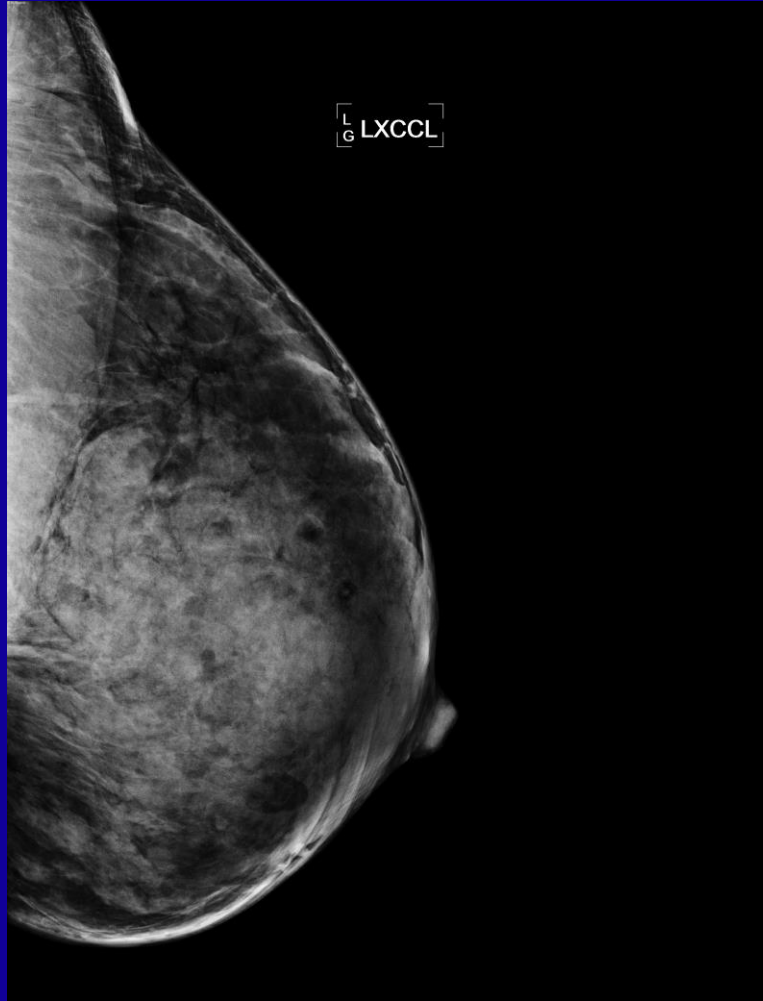
Companion Case

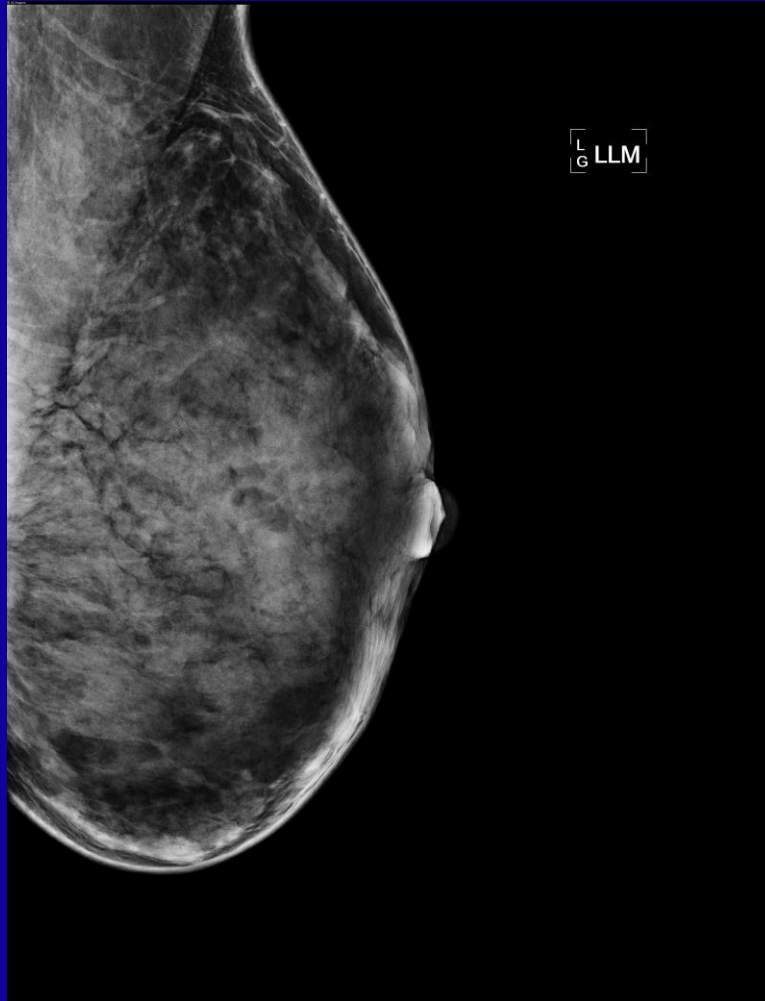
50 year old female;
baseline screening mammogram

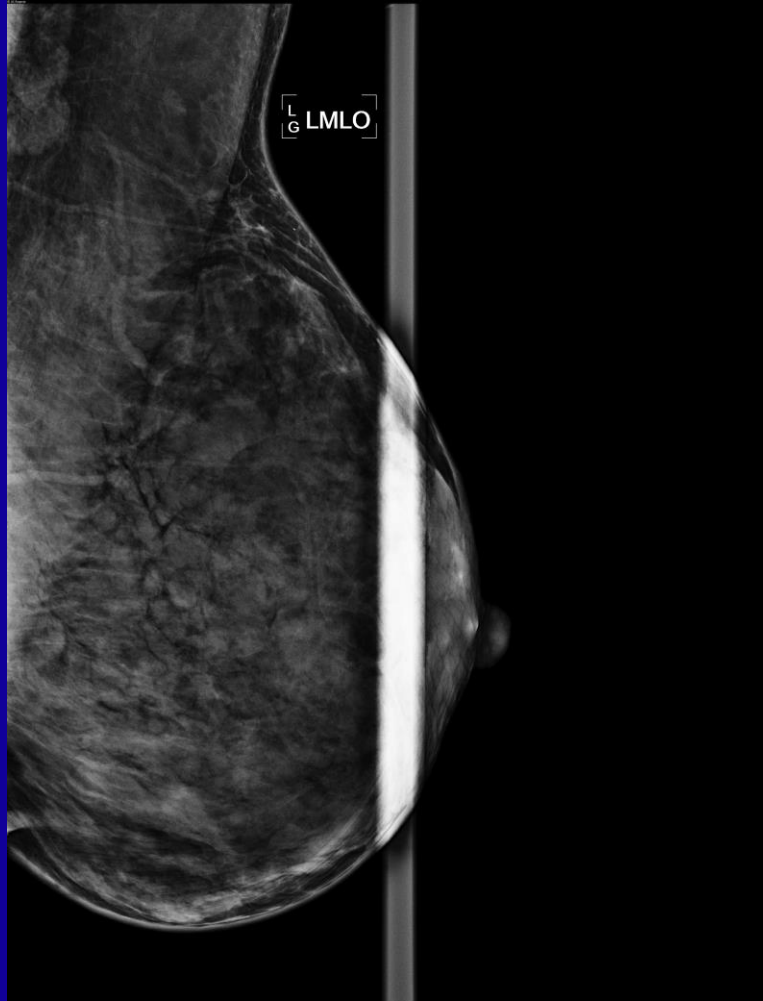


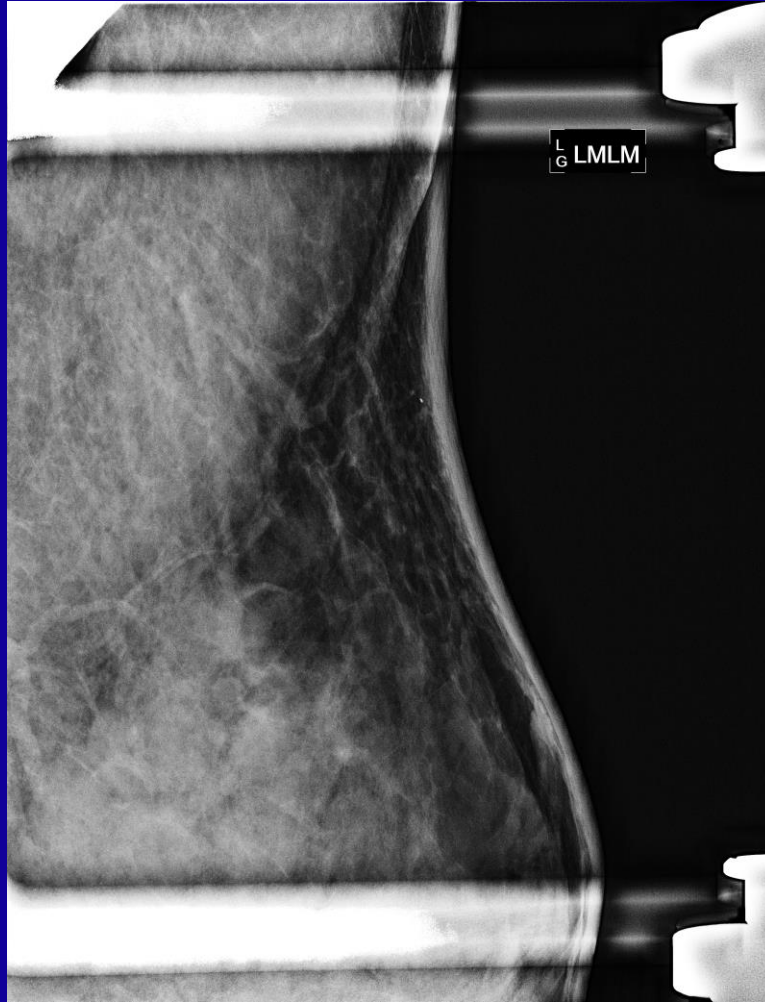
BI-RADS 0;
Returns for diagnostic evaluation



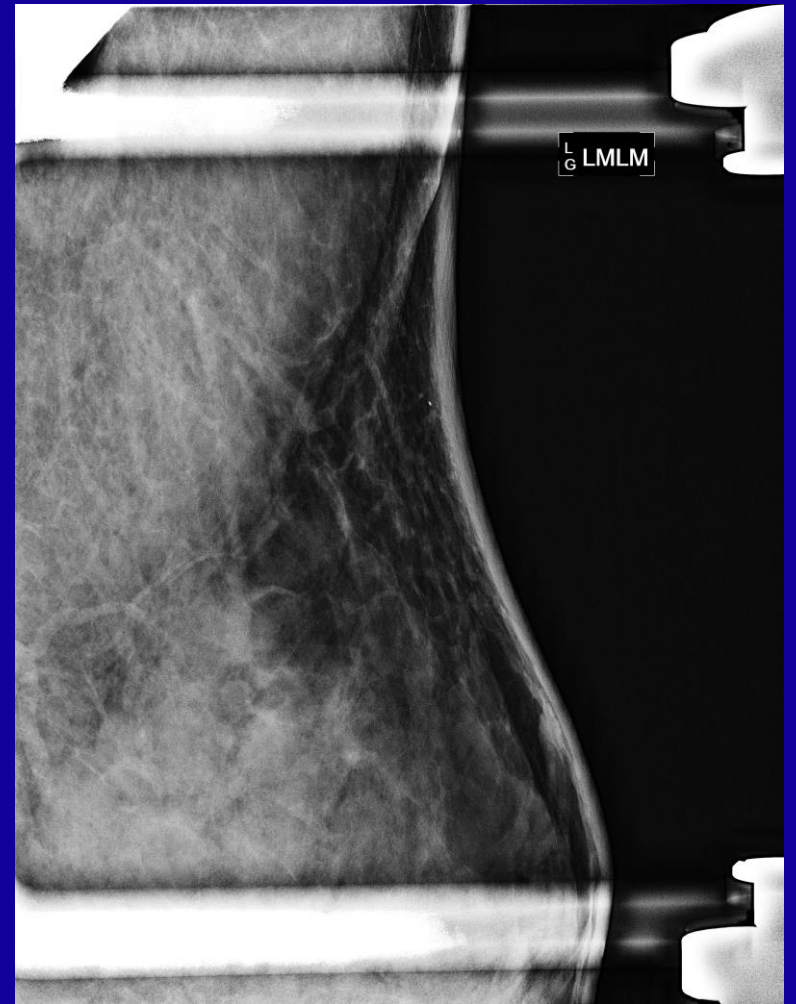
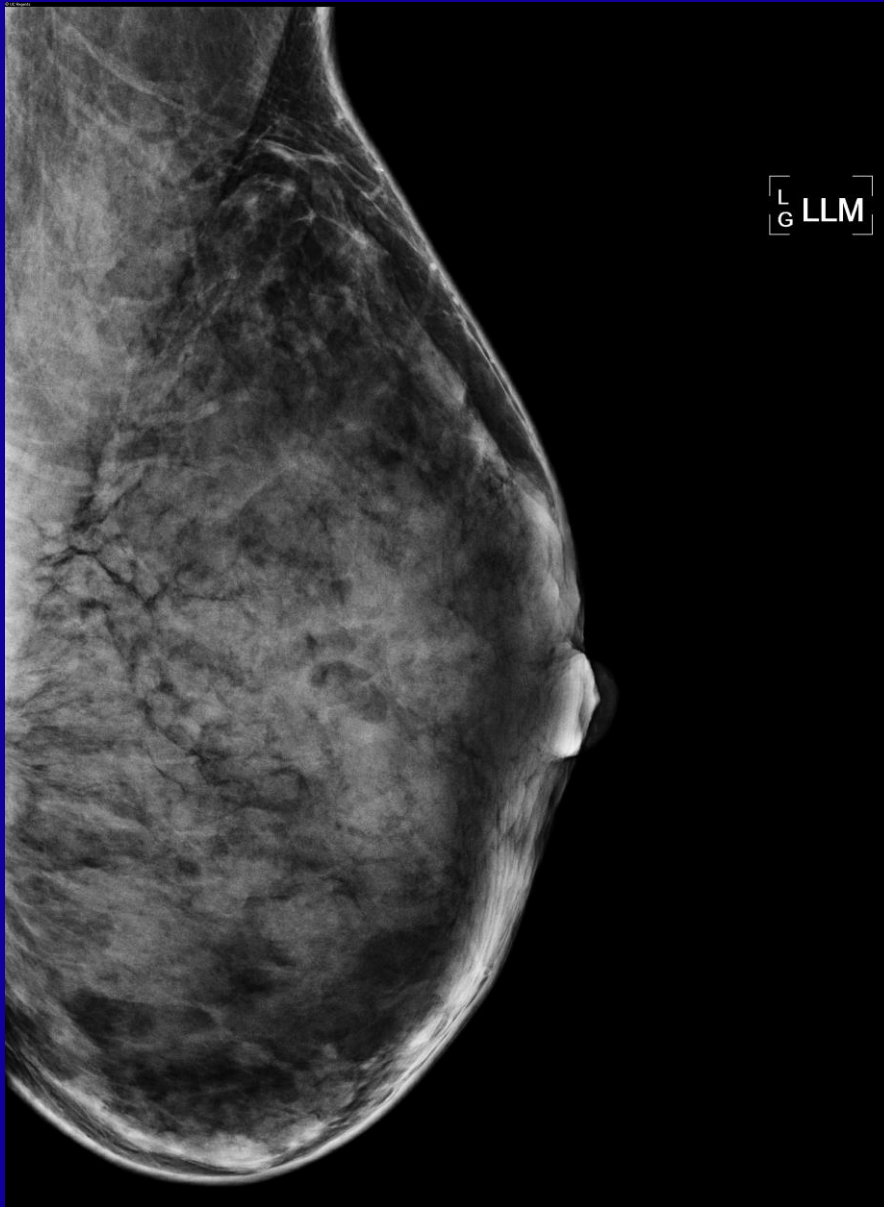


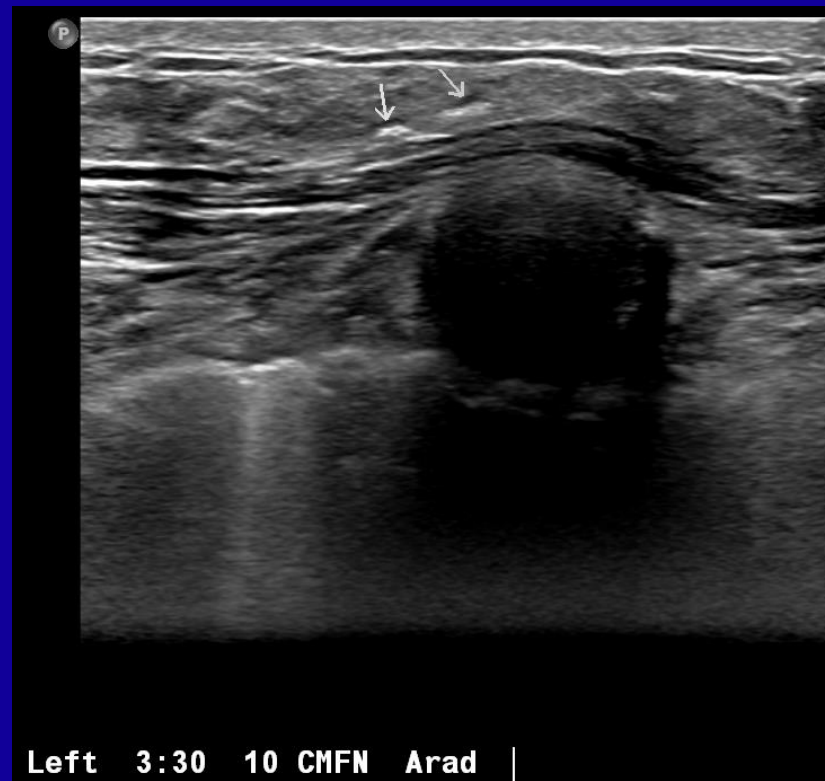
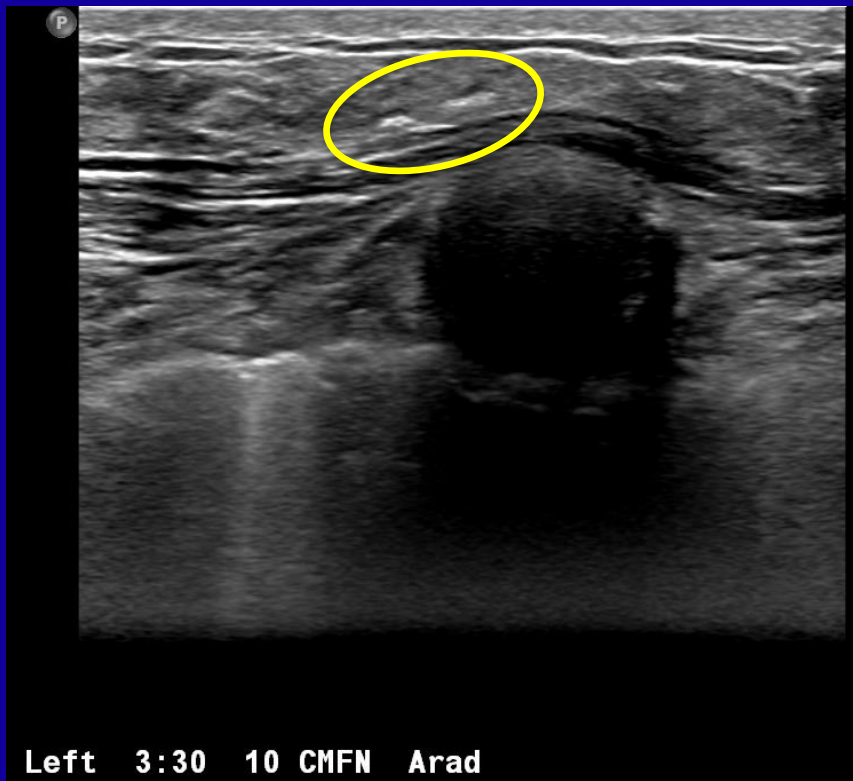






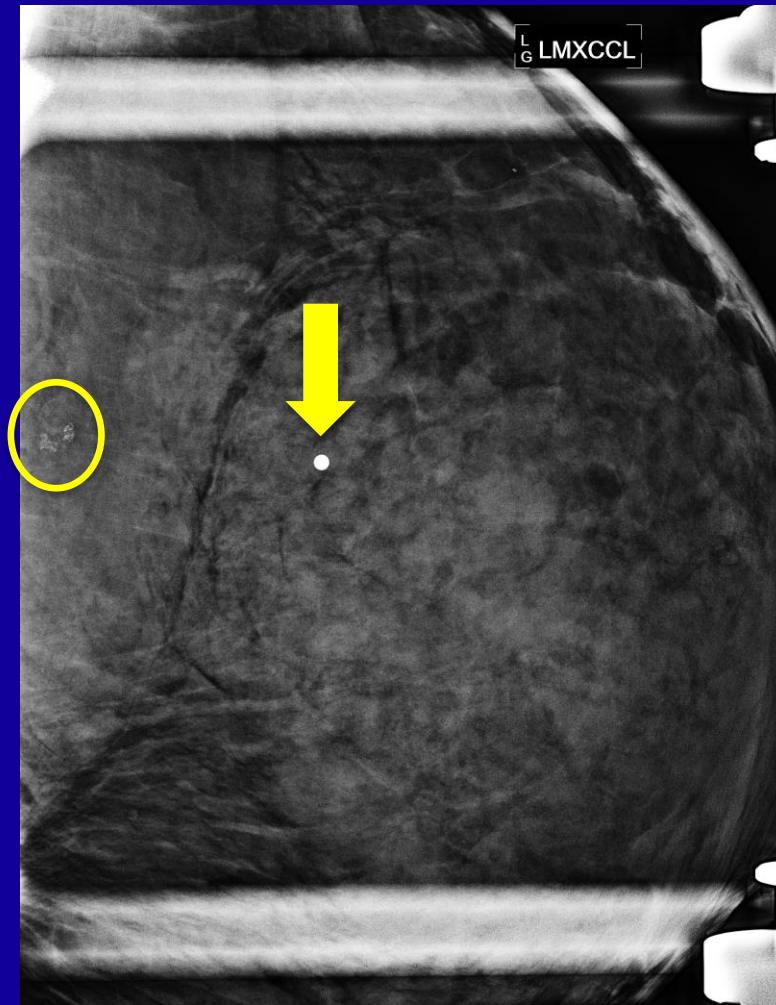


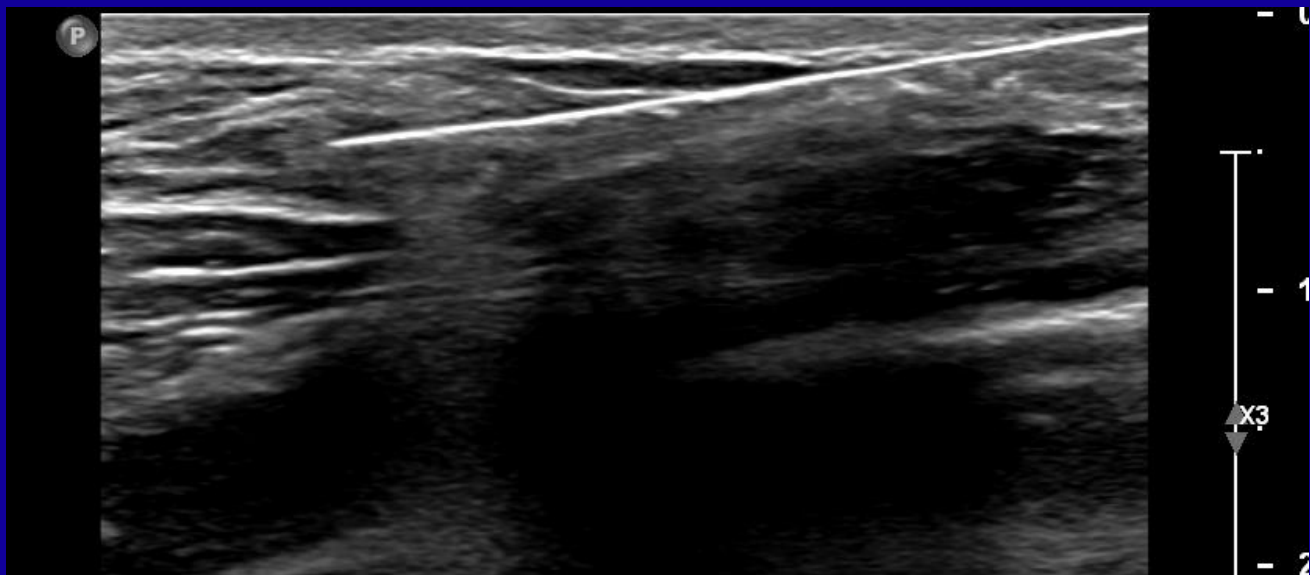






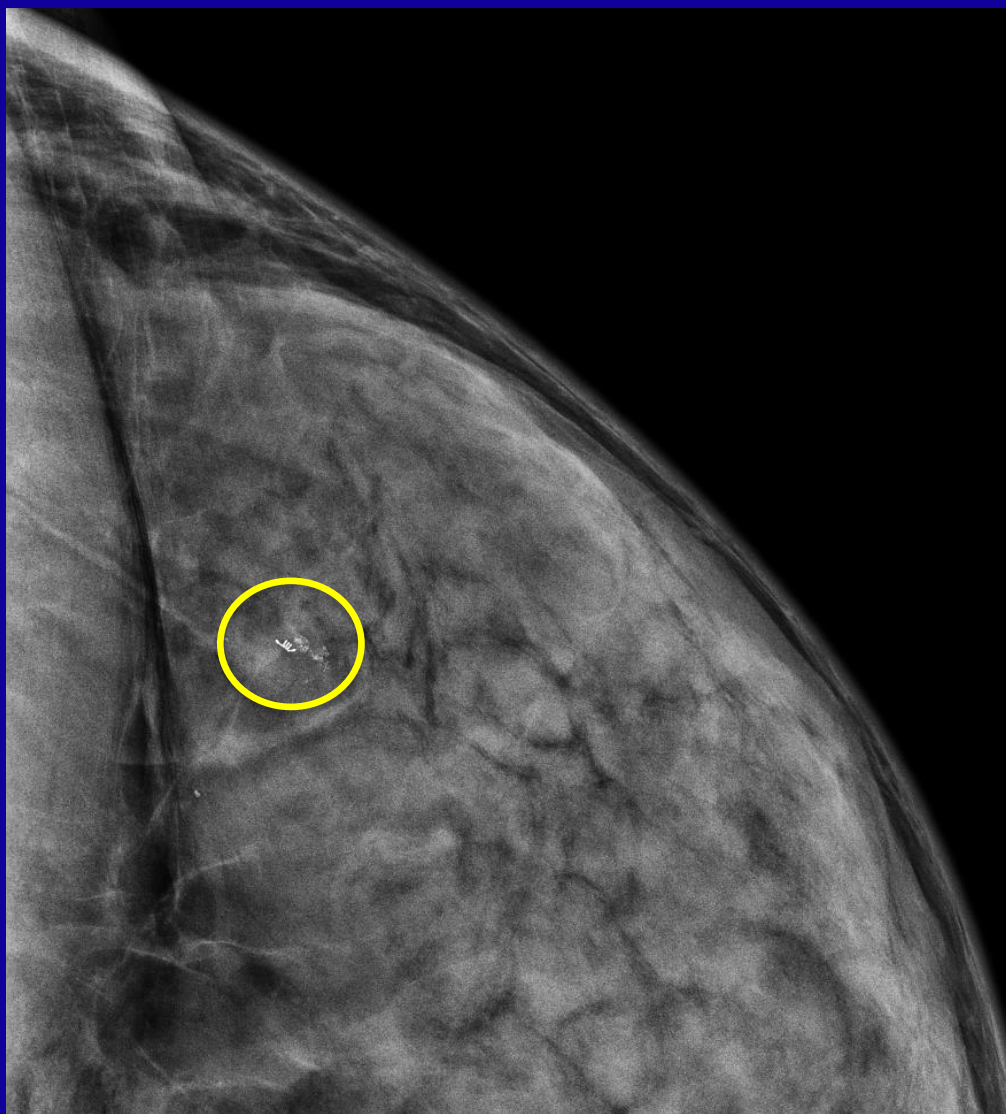
BB placed overlying ?correlative calcifications





J
C
L LMCC



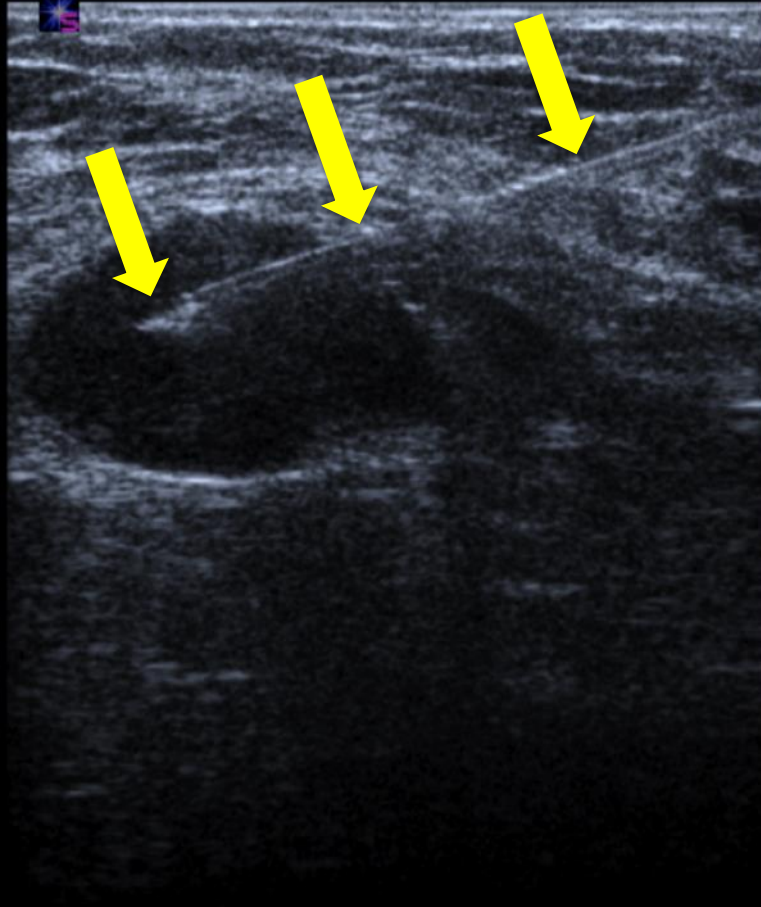


Fibrocystic change with
calcifications

Ultrasound-Guided Core Biopsy

- Can be done for calcifications
 - Associated mass/asymmetry/distortion on mammography (goal is to find something with calcs)
 - Potential for failed stereo (goal is to find calcs)

Ultrasound-Guided FNA



RIGHT BREAST TRANS AXILLA FNA 2_

- Cytology (22-25G)
- Lymph nodes, likely benign lesions (cysts, fibroadenomas)
- Essentially cannot differentiate invasive cancer from DCIS

Case:
28 year old lactating
female with tender mass
and overlying erythema

BREAST1

L18-5

30Hz

RS

2D

52%

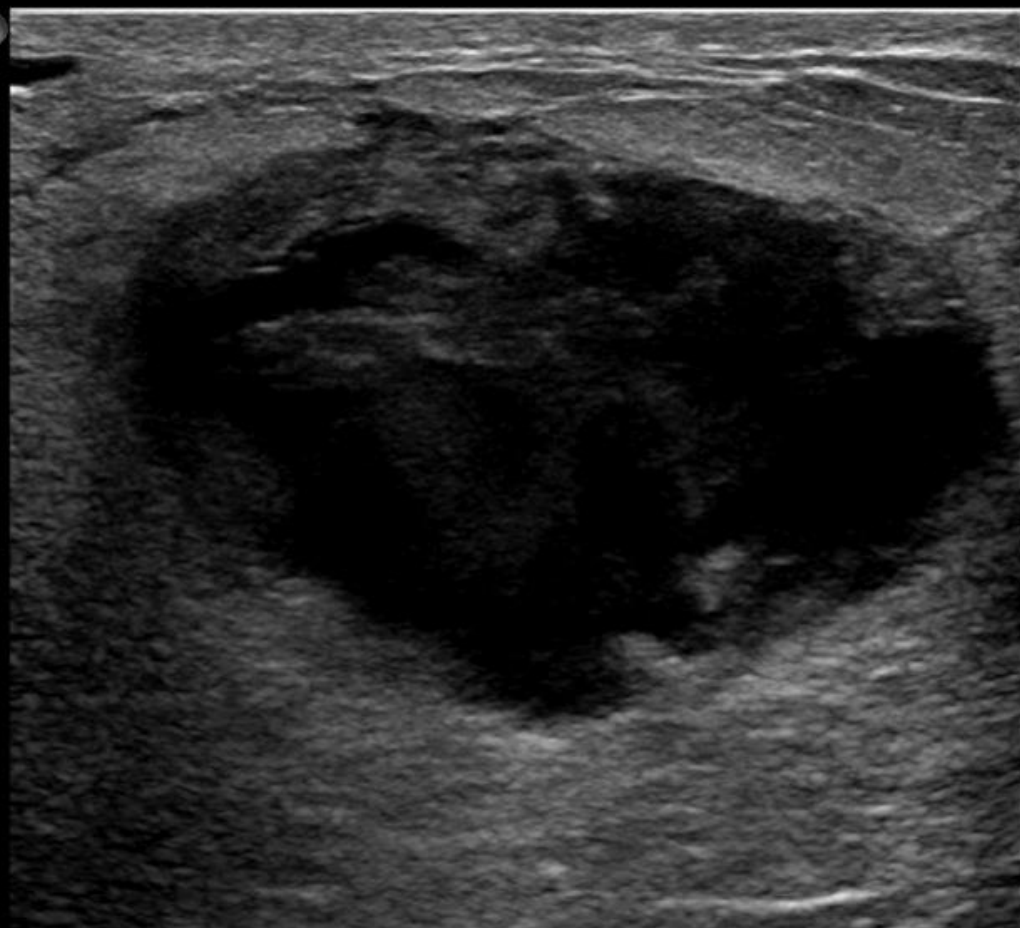
Dyn R 70

P Low

Res

TAC1

P



TIS0.1 MI 0.9

- 0

M4

- 1

- 2

- 3



BREAST1

L18-5

30Hz

RS

2D

56%

Dyn R 70

P Low

Res

TAC1

TIS0.1 MI 0.9

- 0
M4

- 1

- 2

- 3



Image-Guided Localization (mg/us)

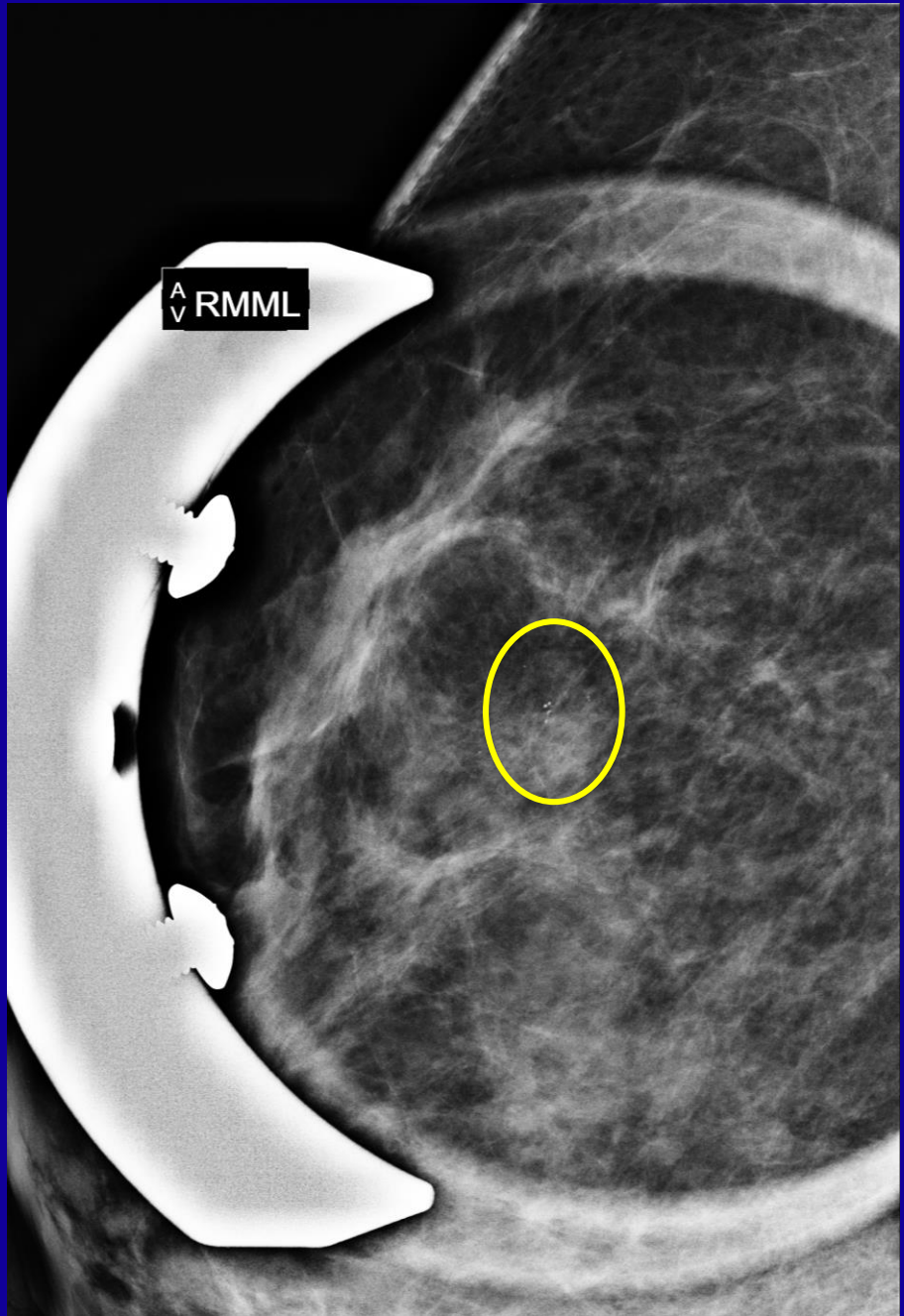
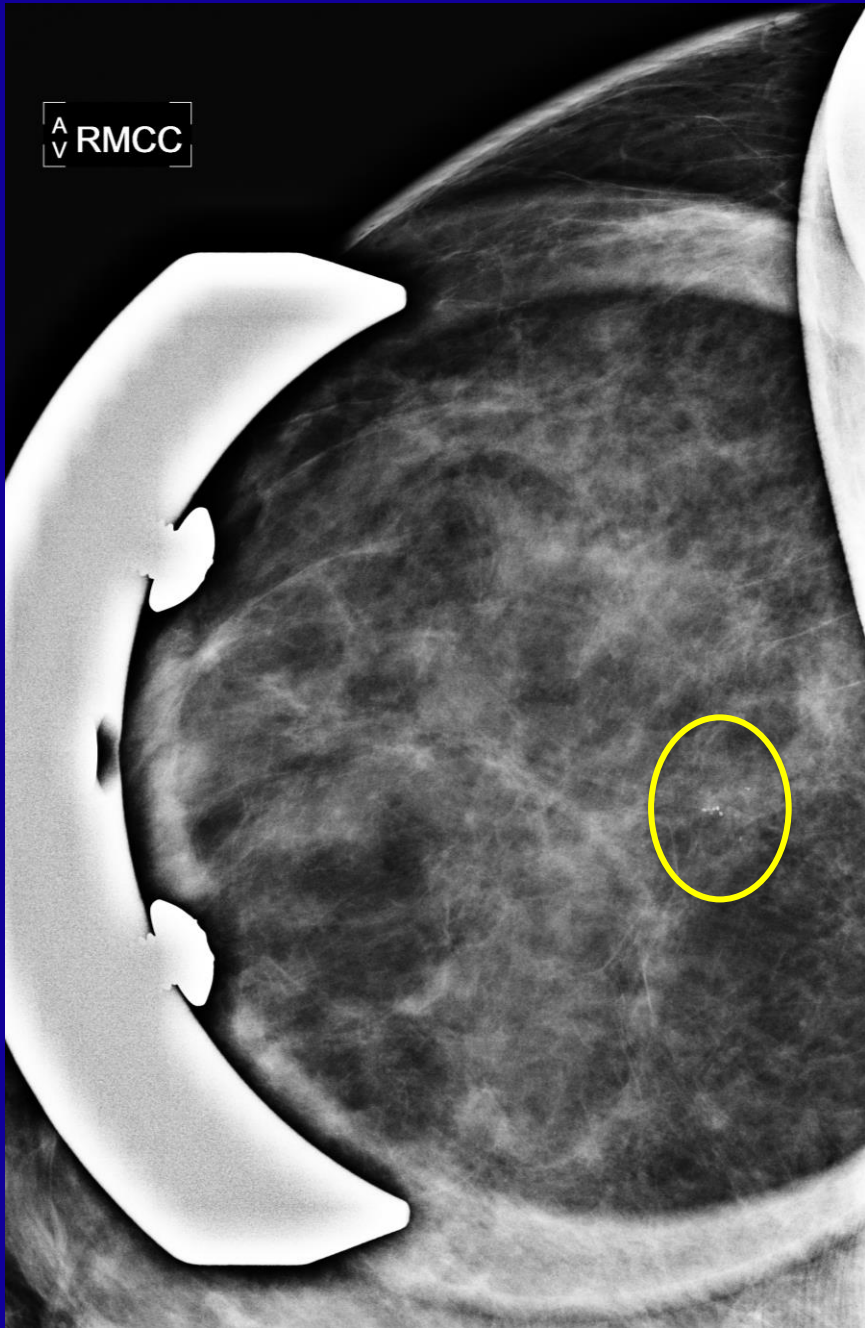
Image-Guided Localization

- Goal = assist surgeon
 - Discuss case and develop plan w/surgeon
- Options ++++
 - Wire
 - Non-wire tools

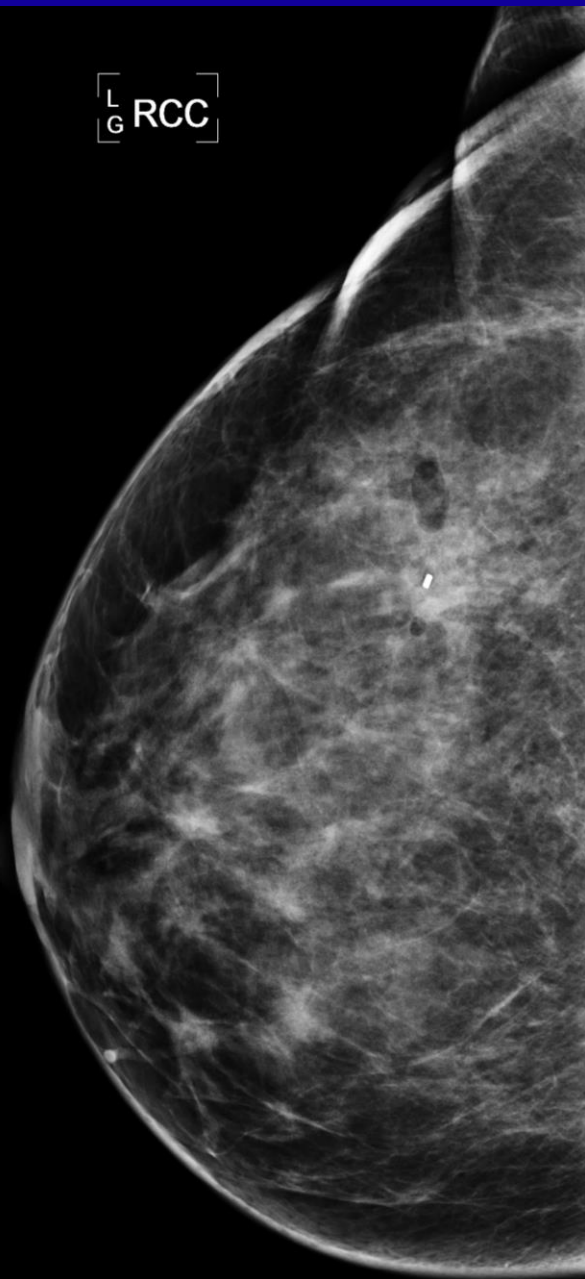
Image-Guided Localization

- Goal = assist surgeon
 - Discuss case and develop plan w/surgeon
- Options ++++
 - Wire
 - Non-wire tools

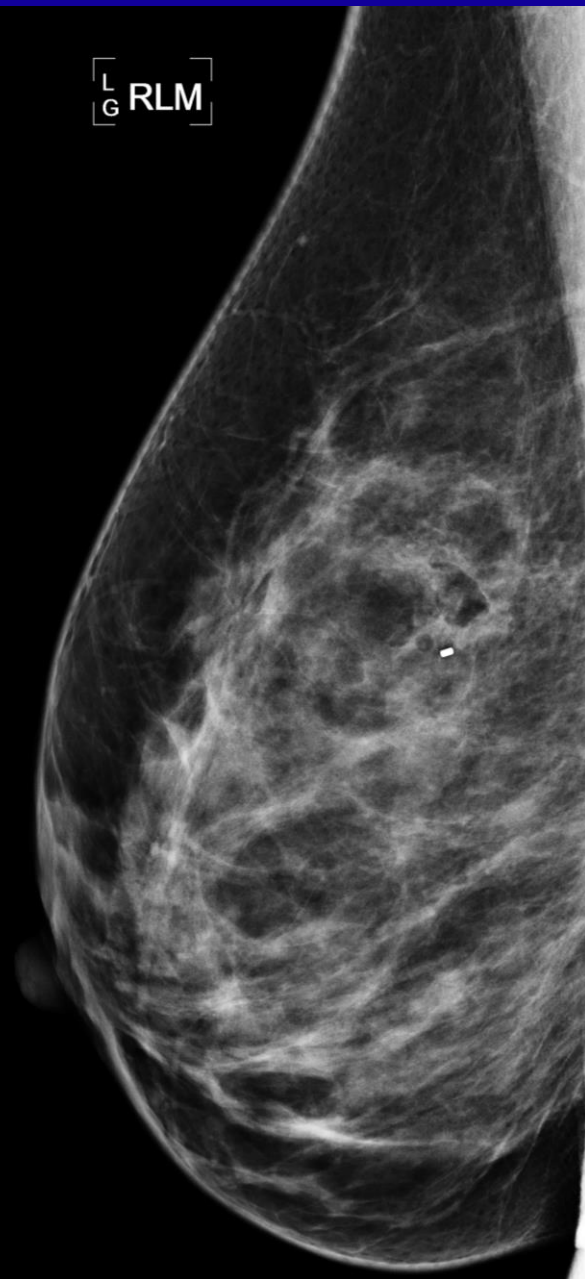
Non-Wire Mammographic Guidance

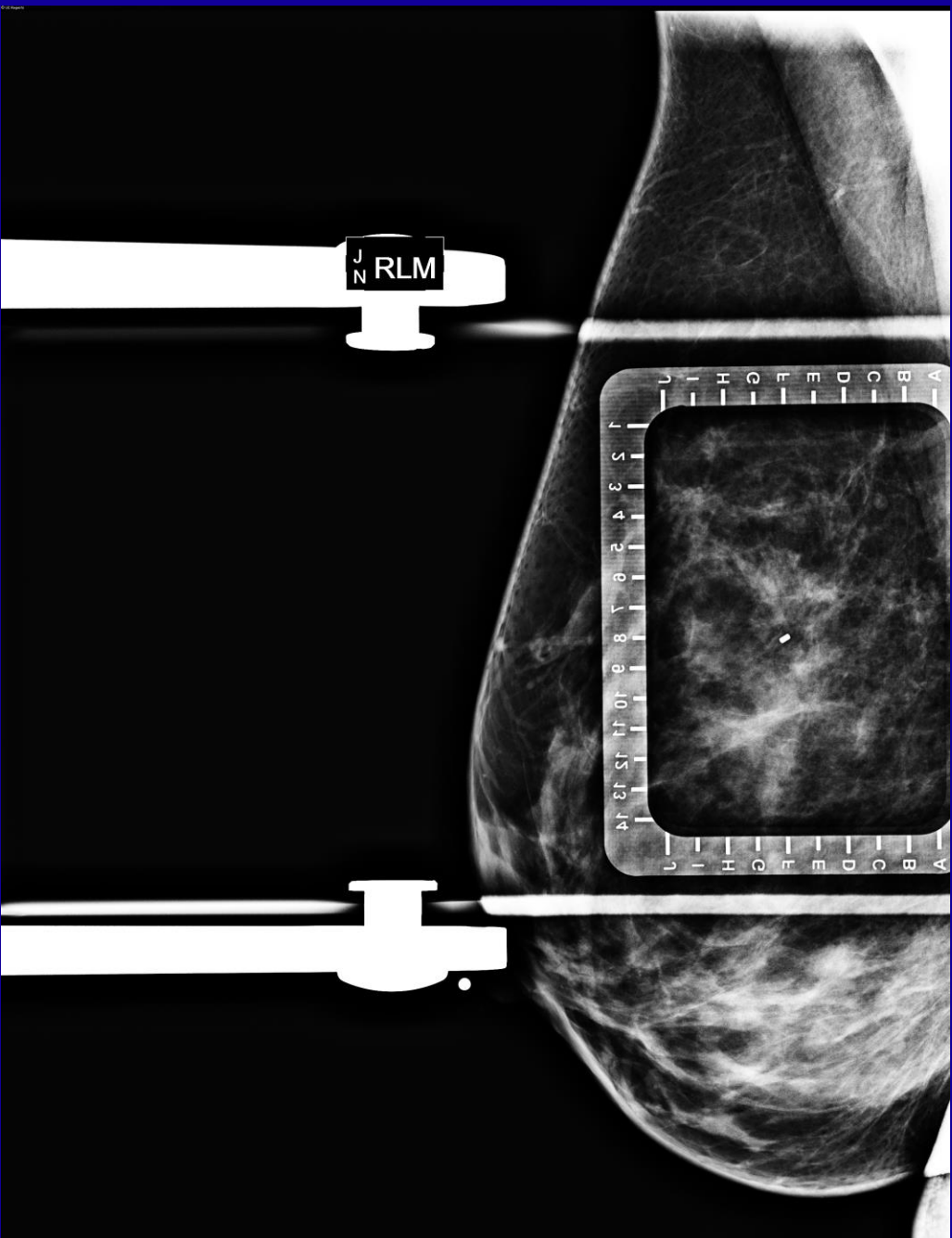


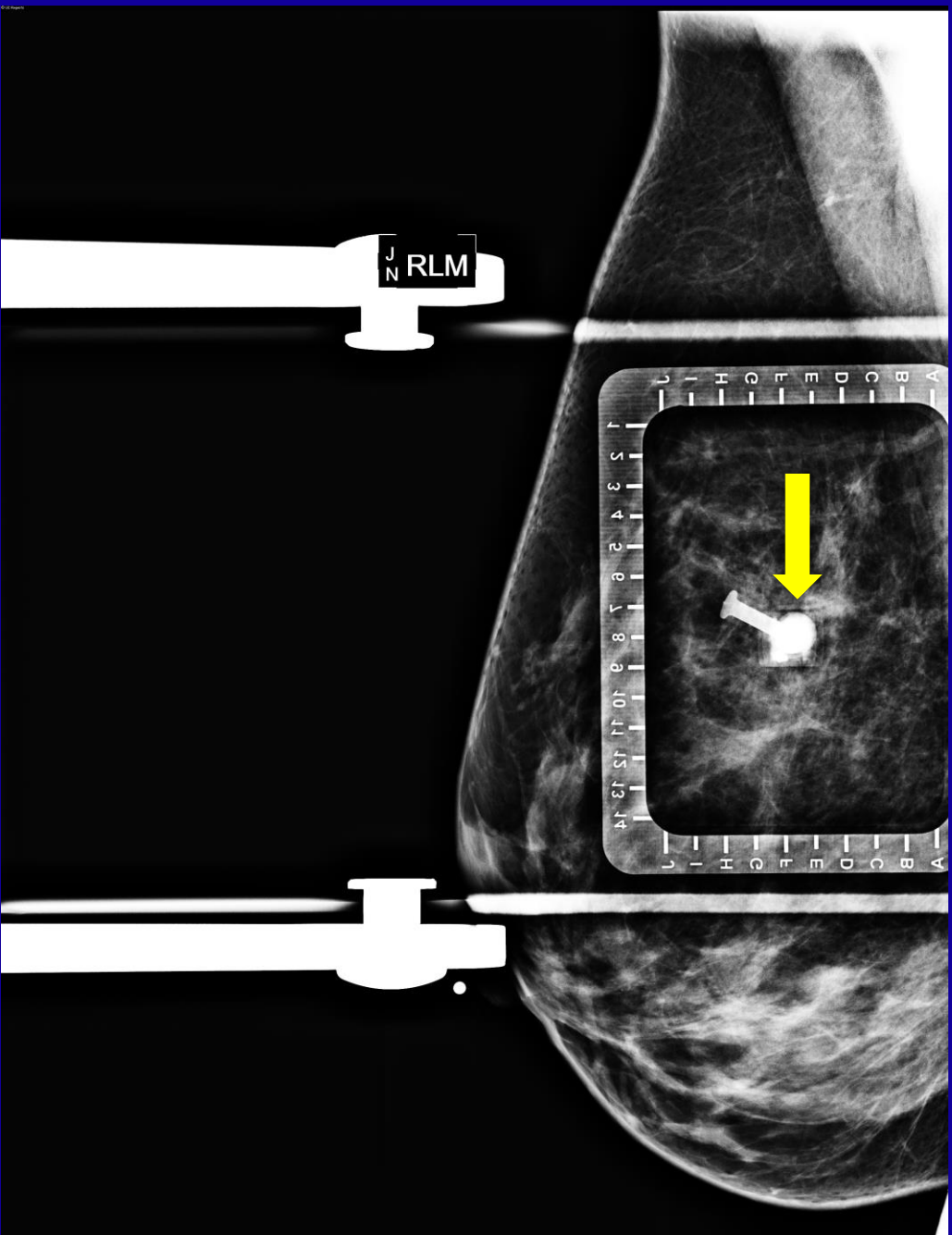
[_G^L RCC]

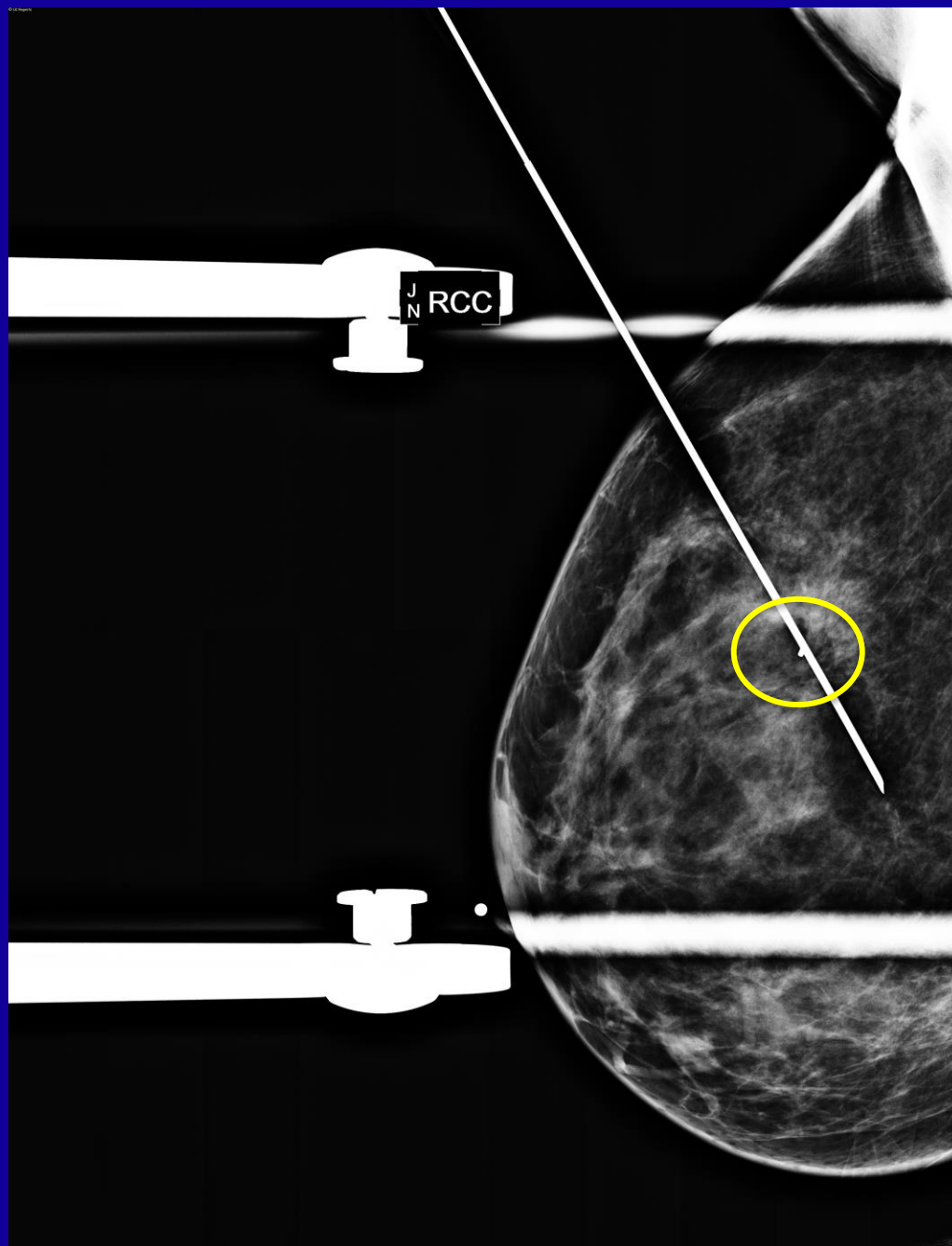


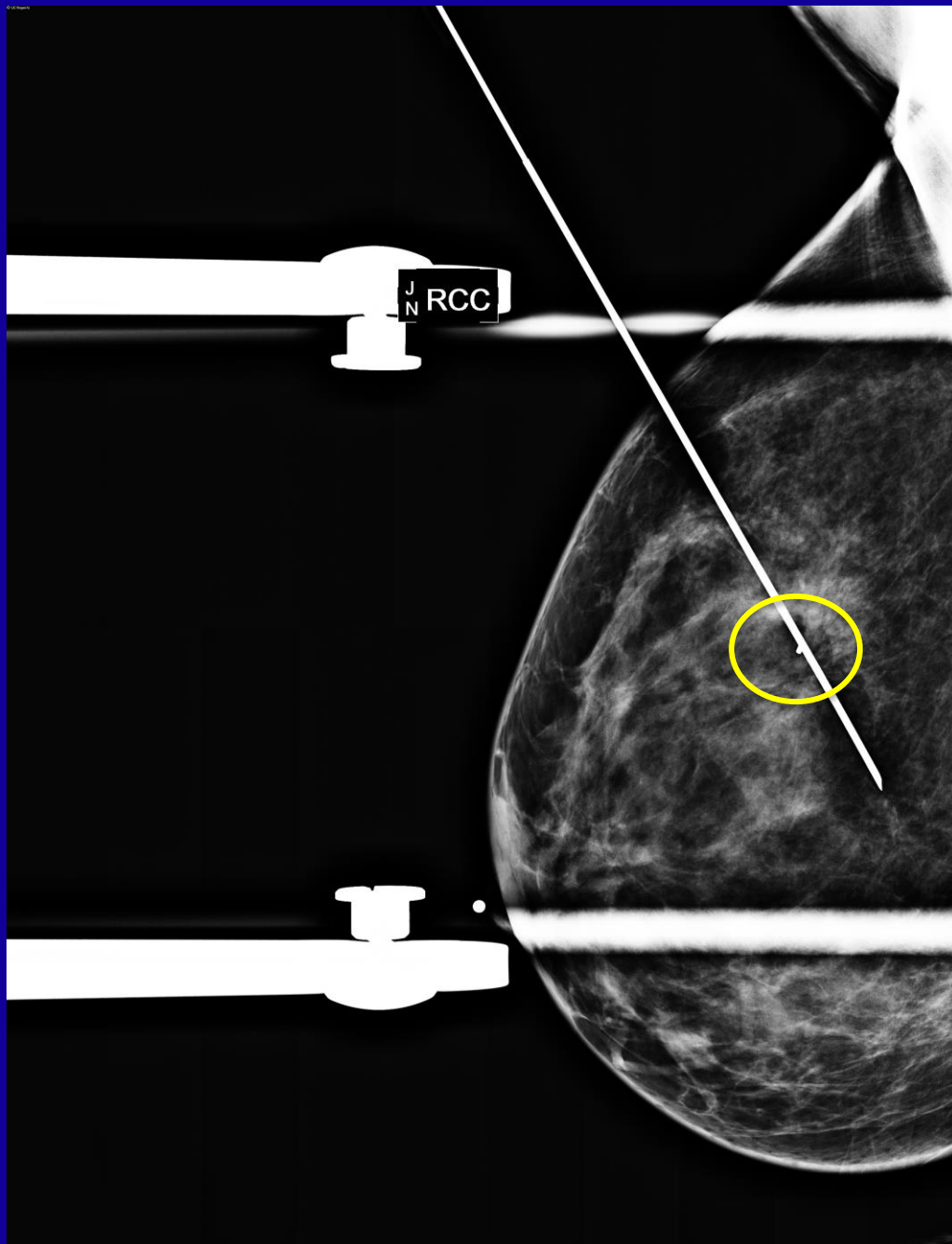
[_G^L RLM]





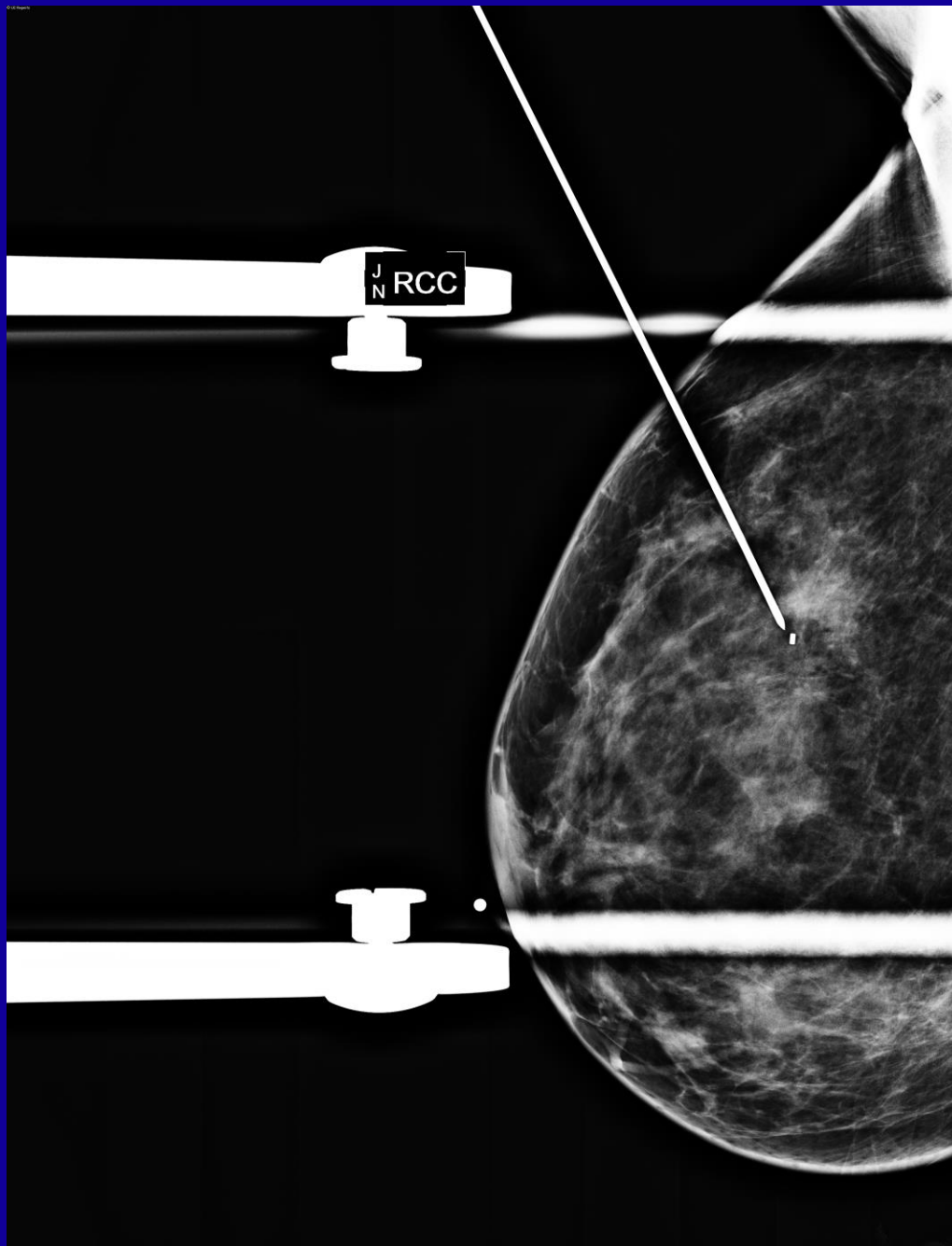


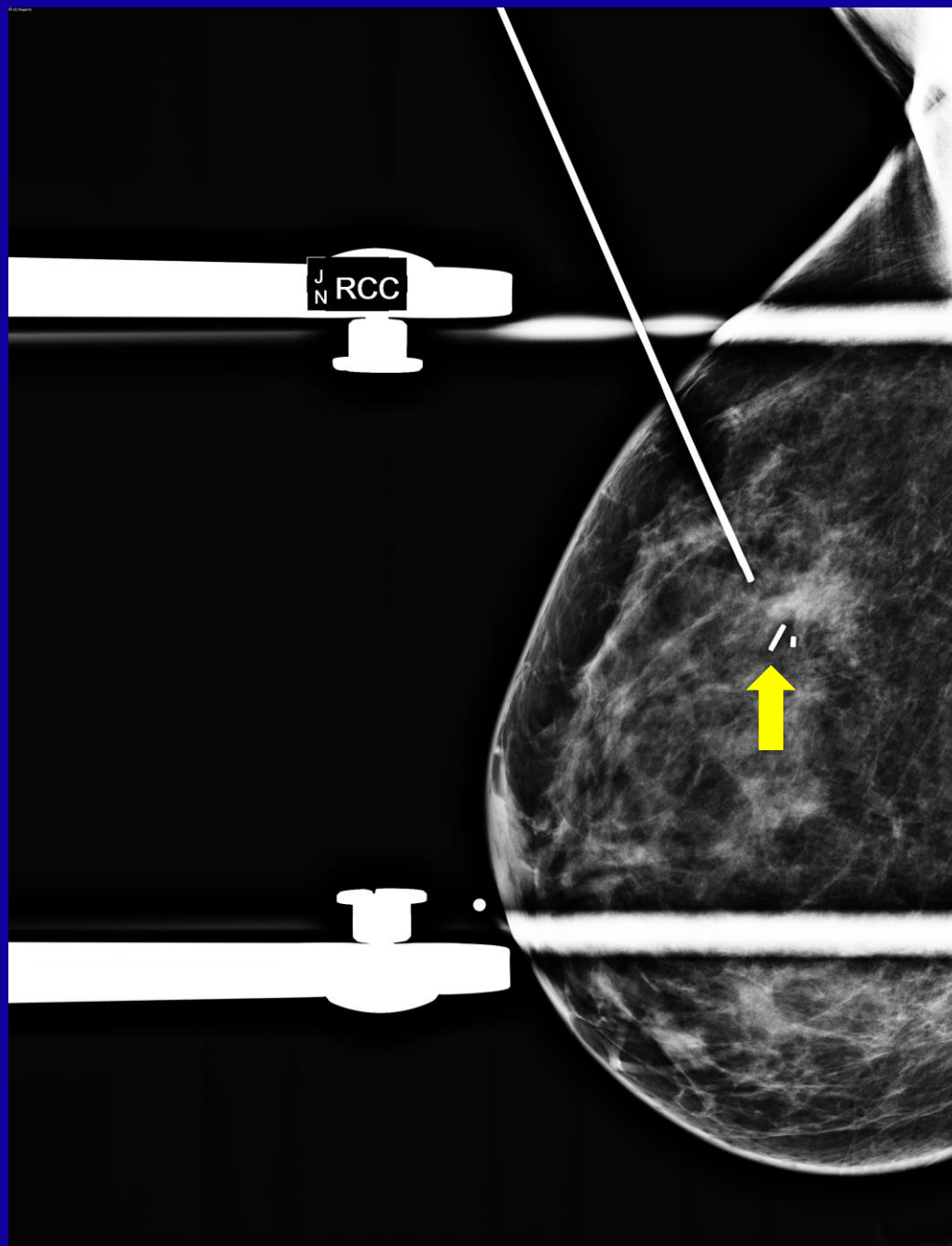


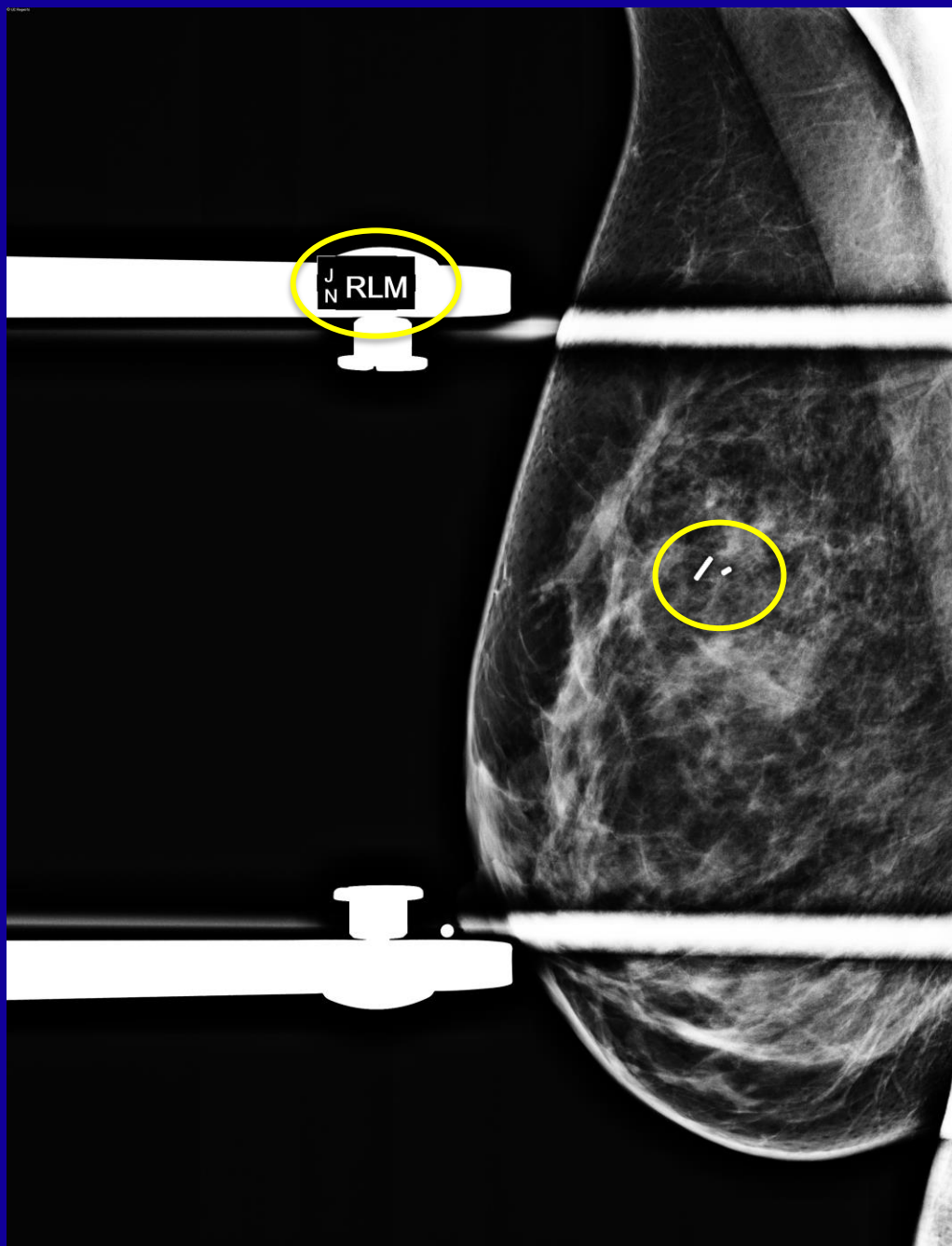


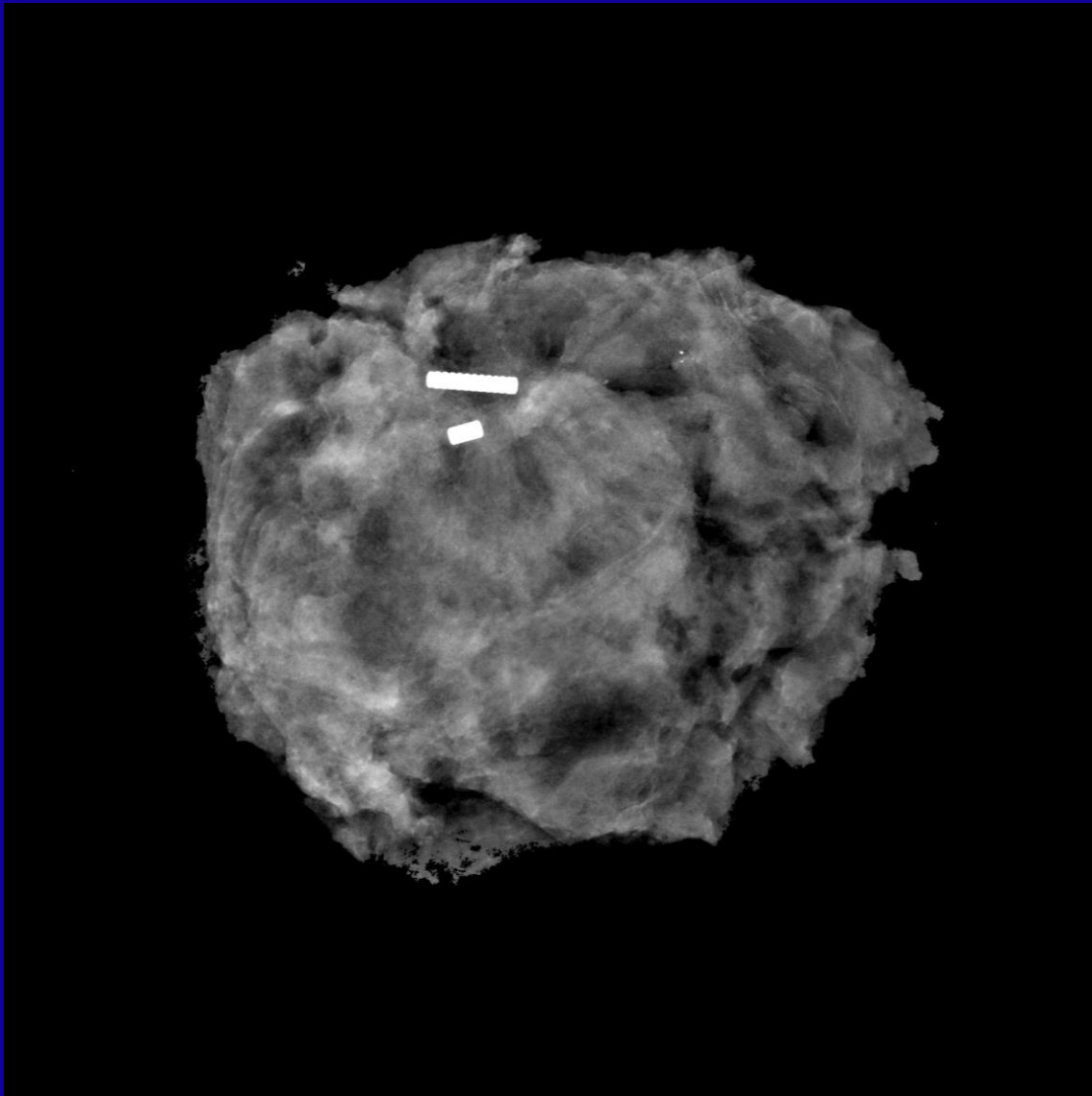
Wire Loc: Needle tip approx.
15mm beyond target

Seed Loc: Needle tip at target

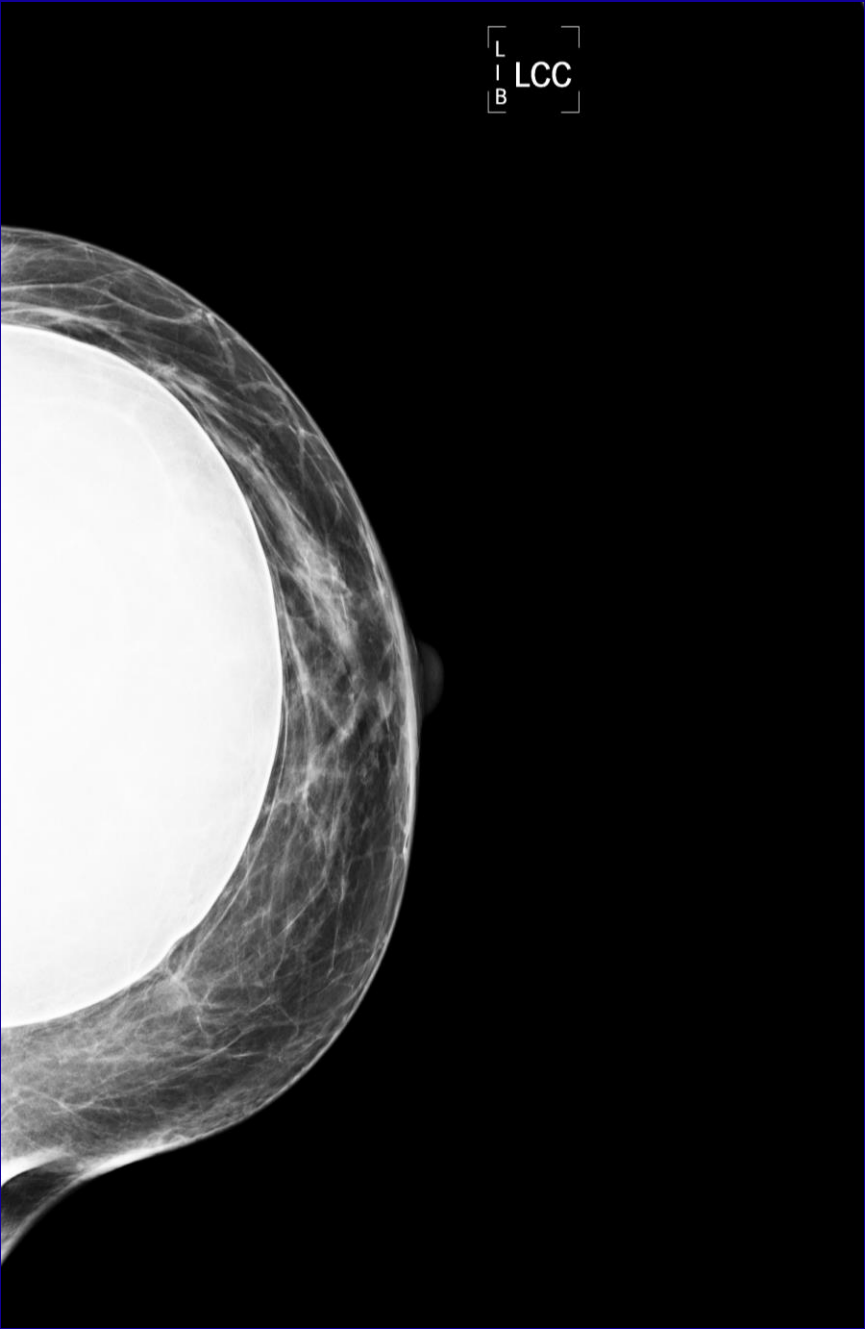




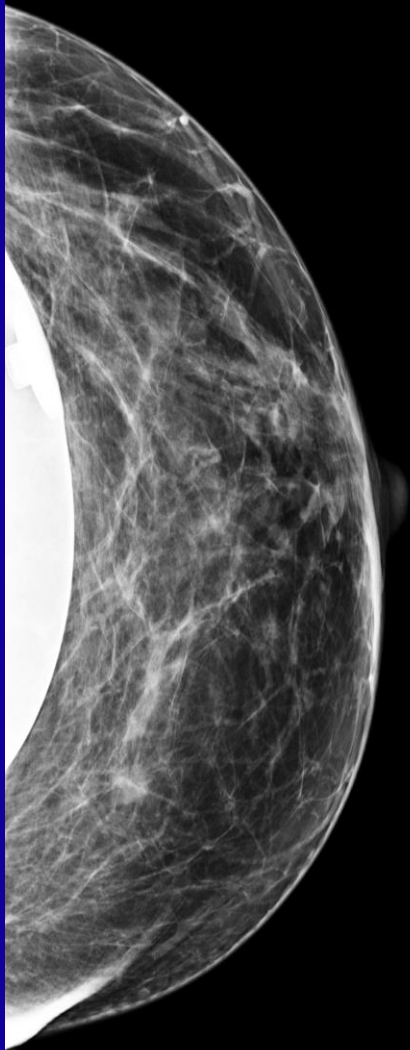




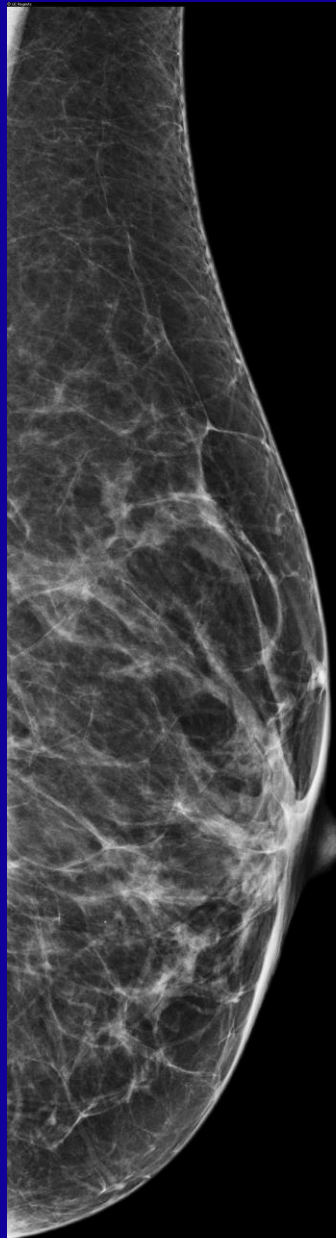
Non-Wire Ultrasound Guidance

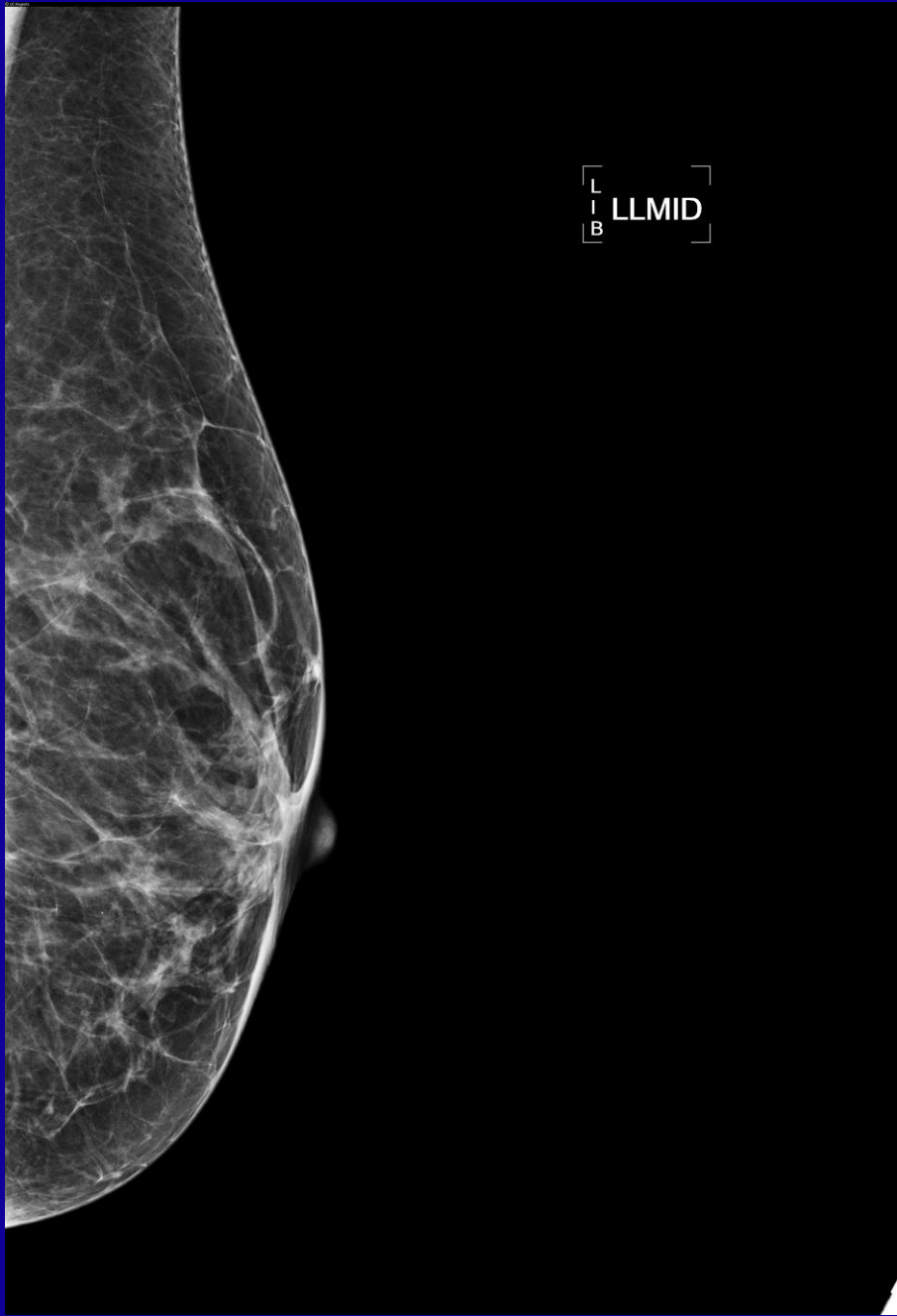
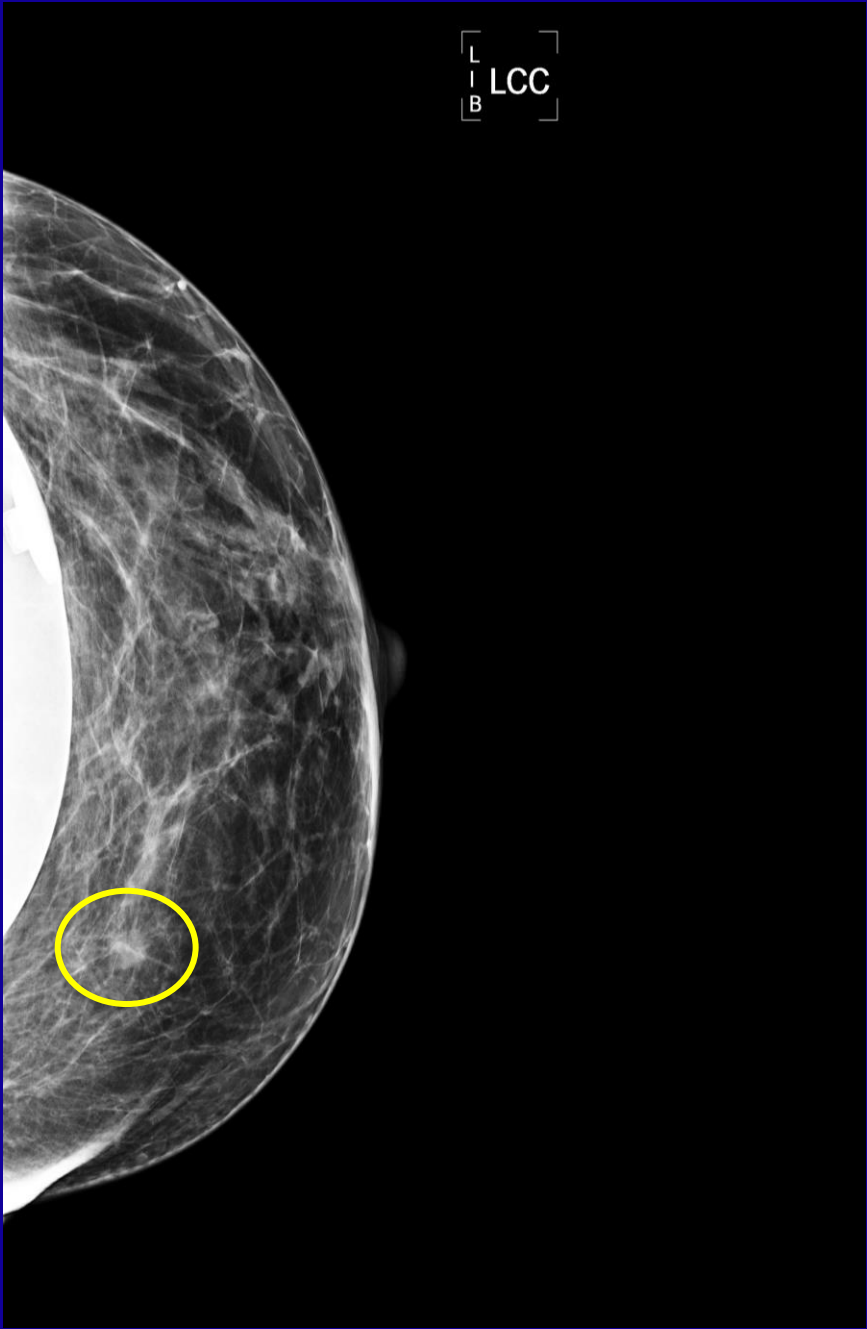


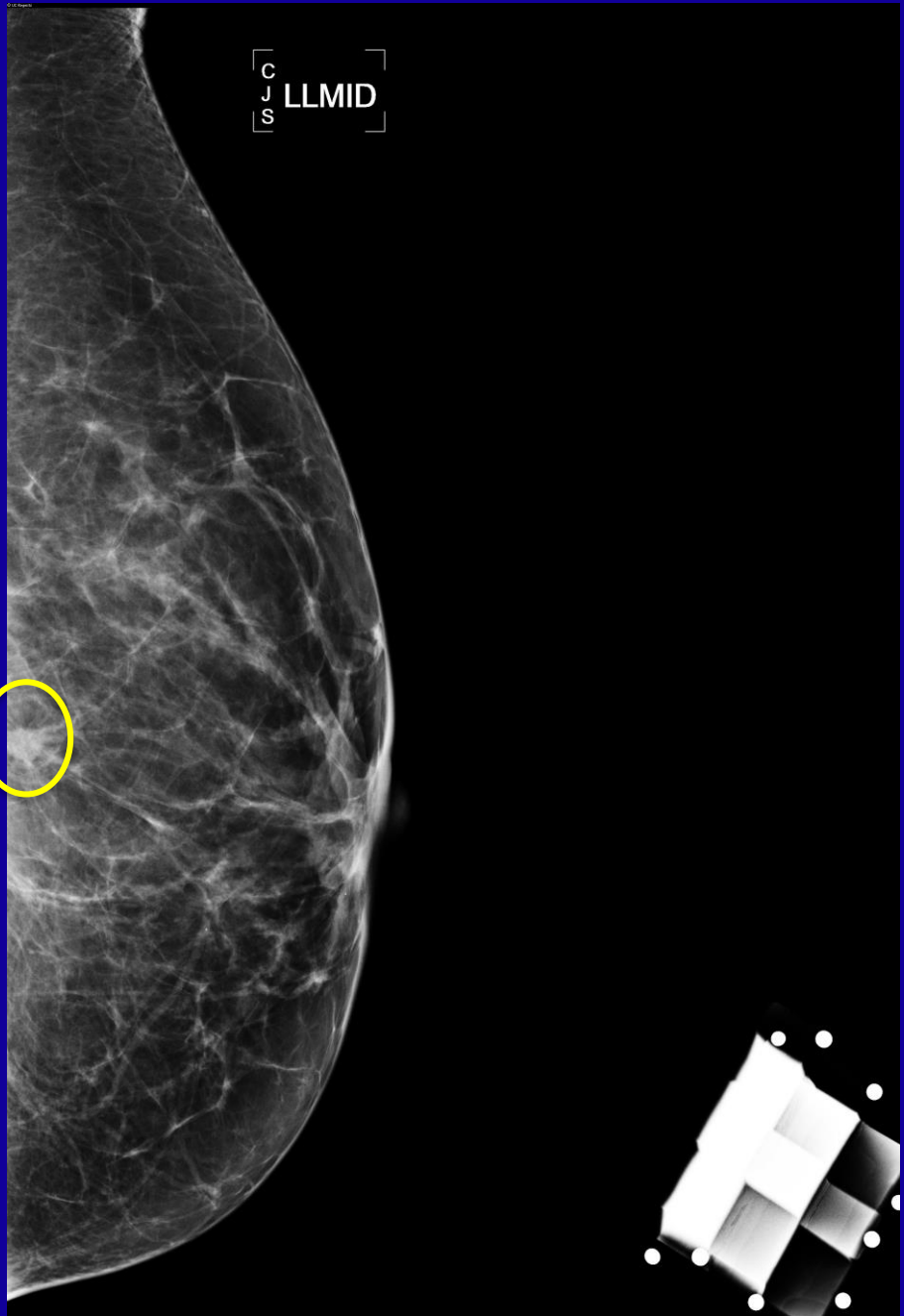
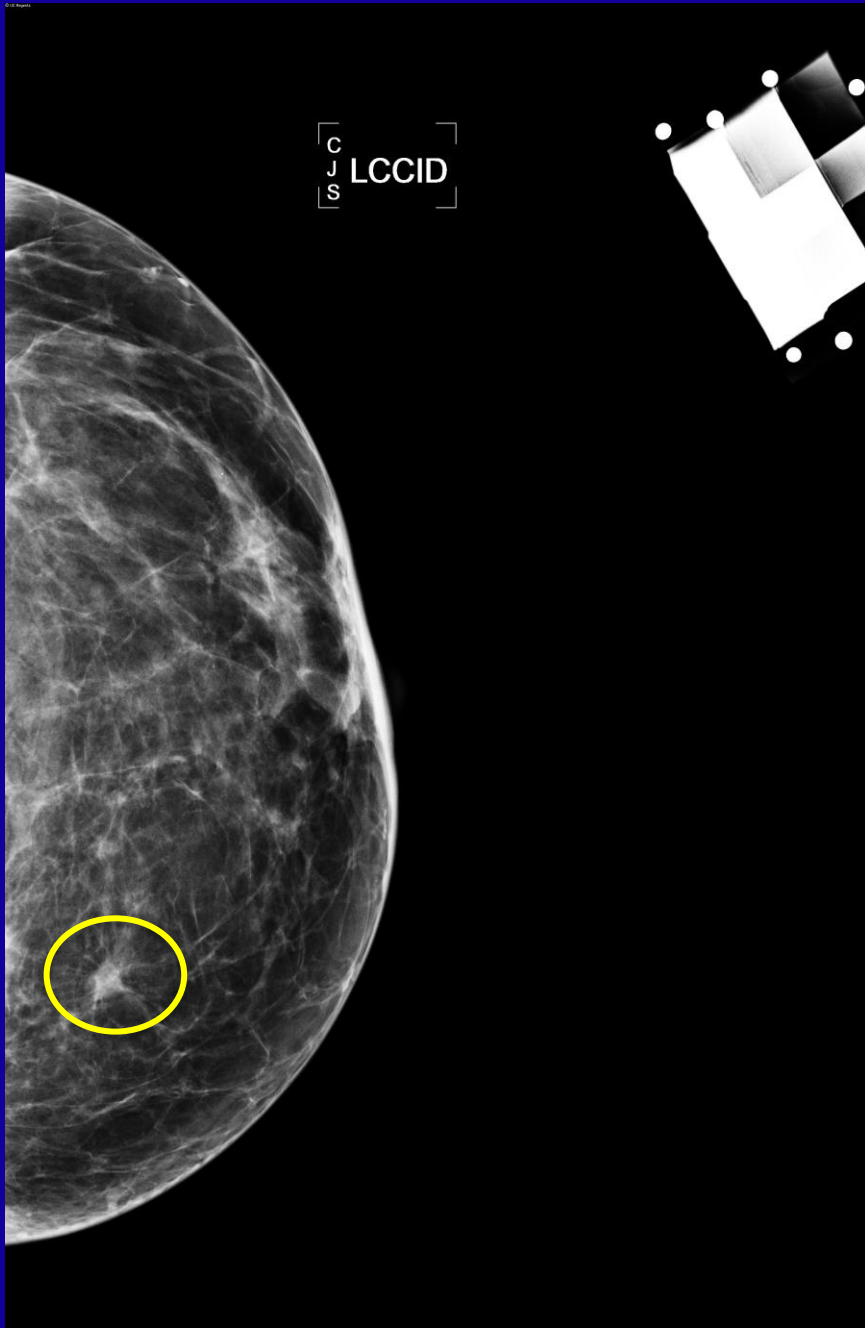
L
I
B LCC

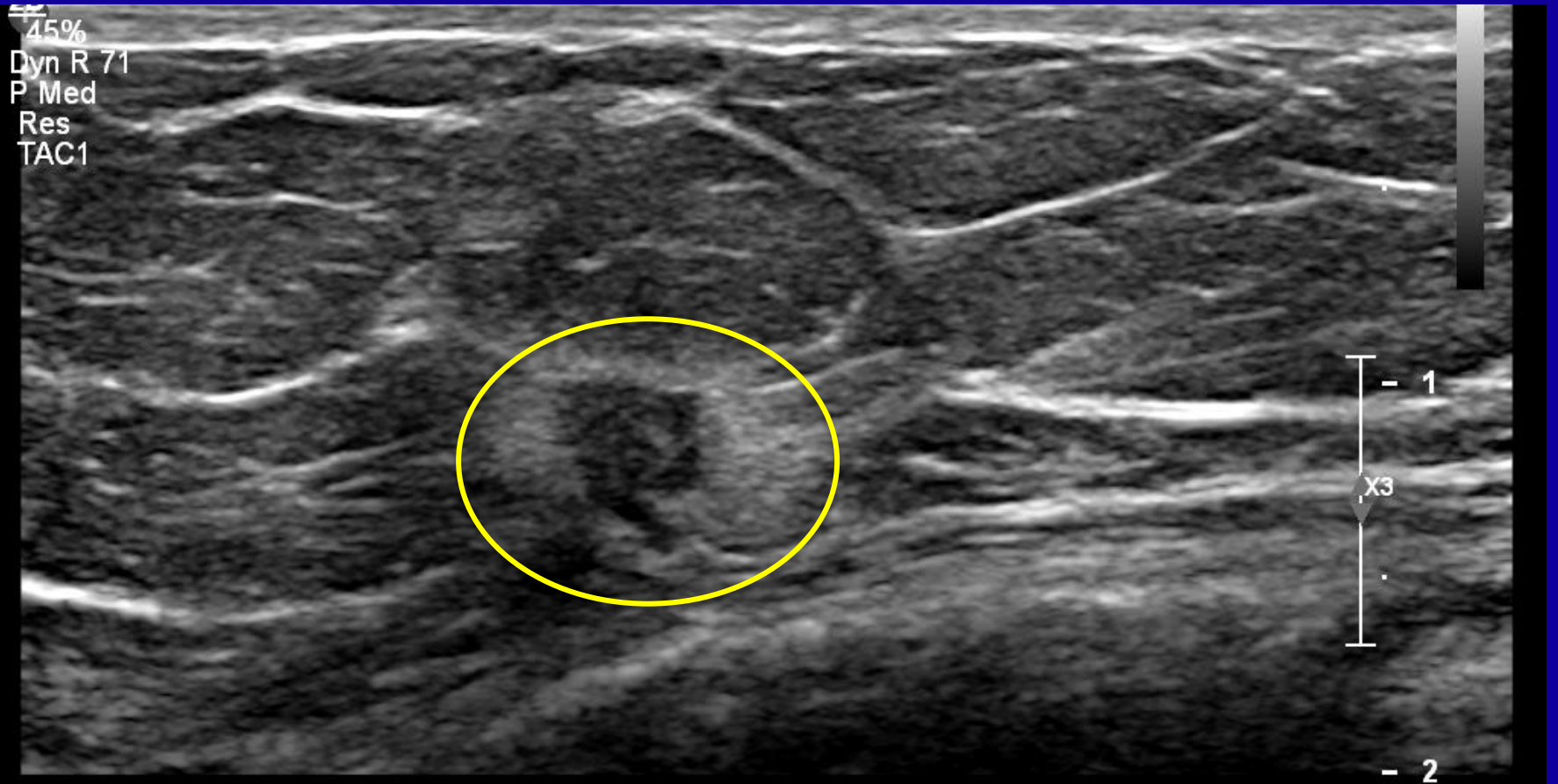


L
I
B LLMID

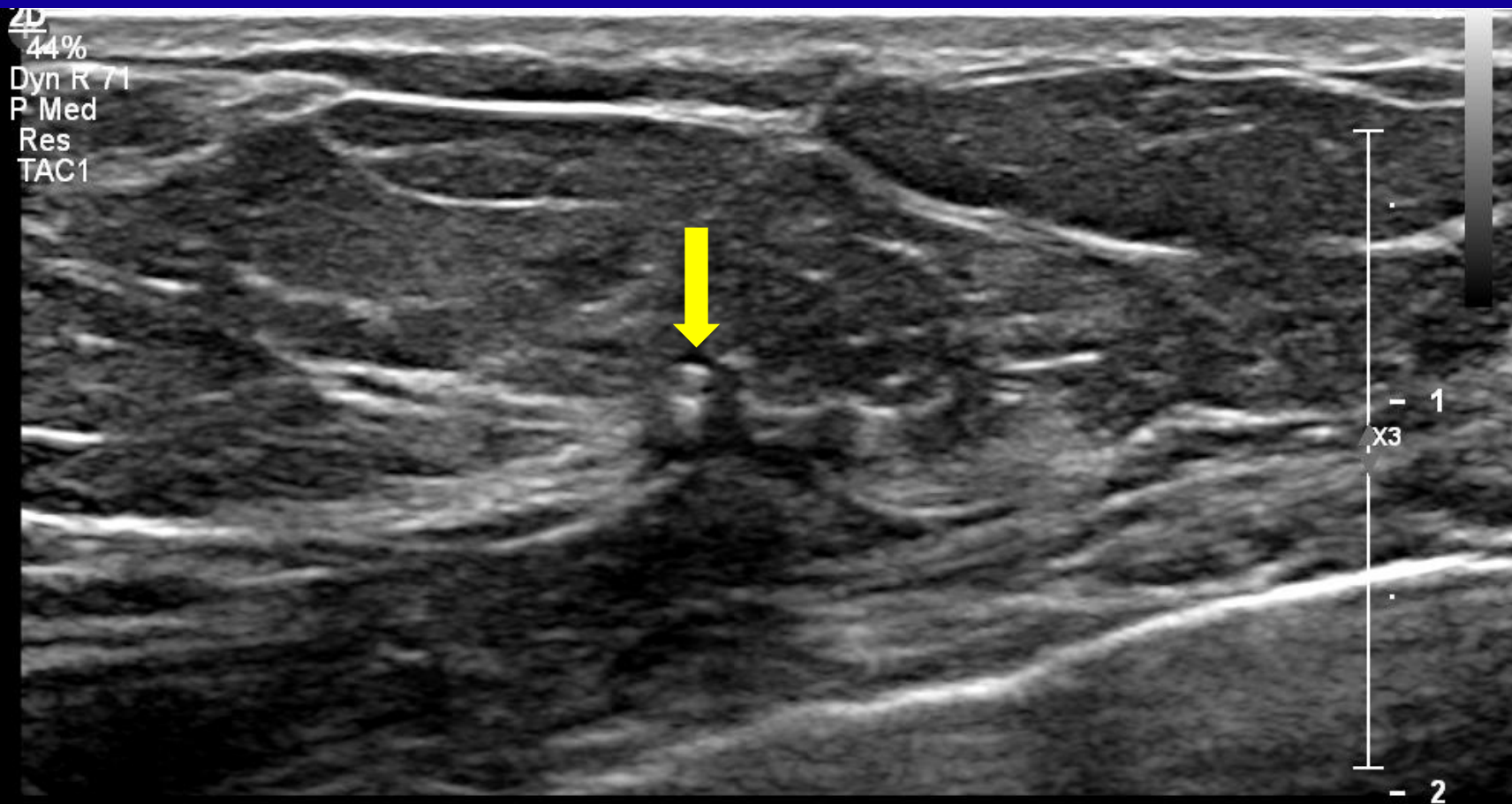




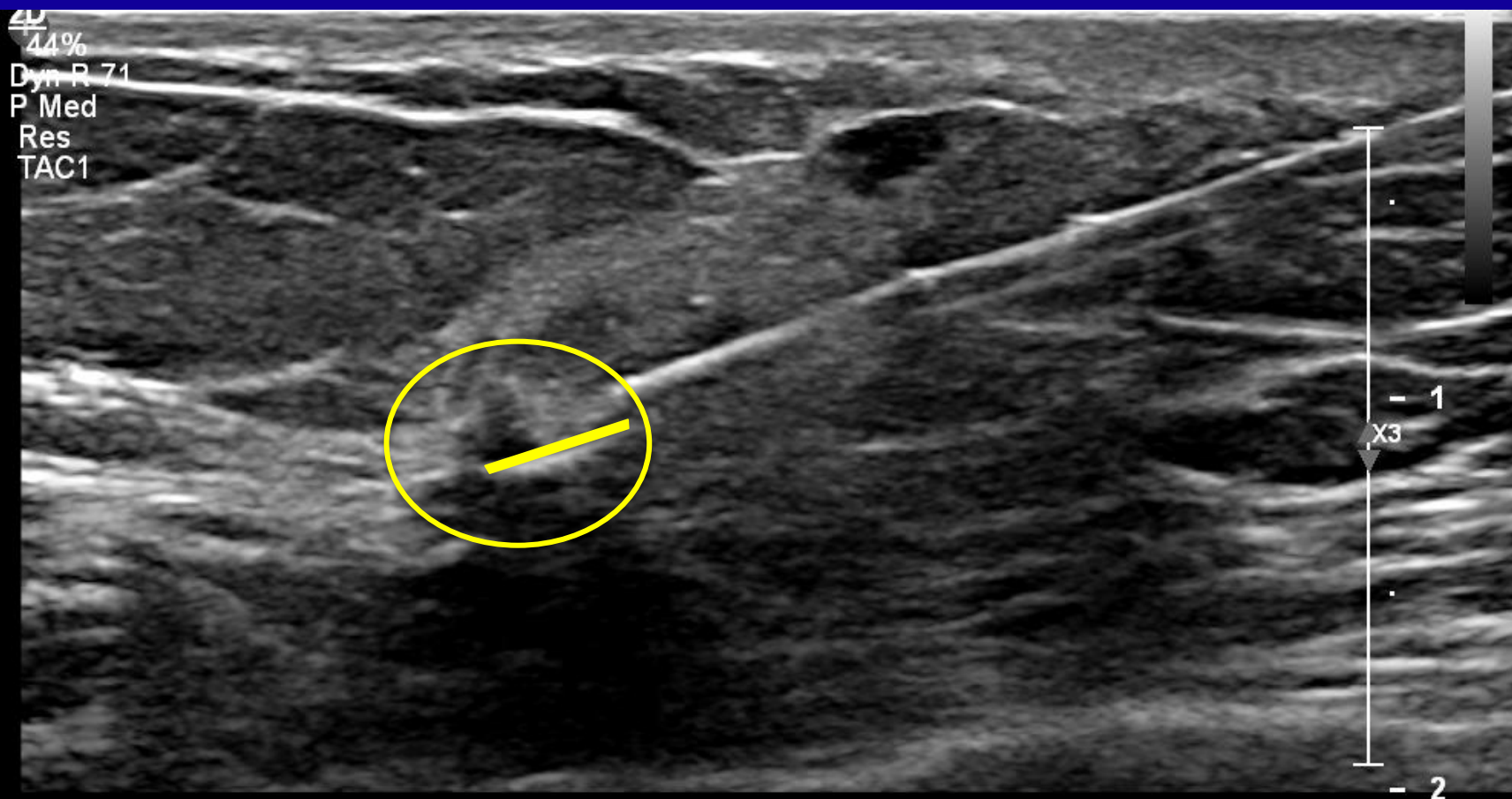




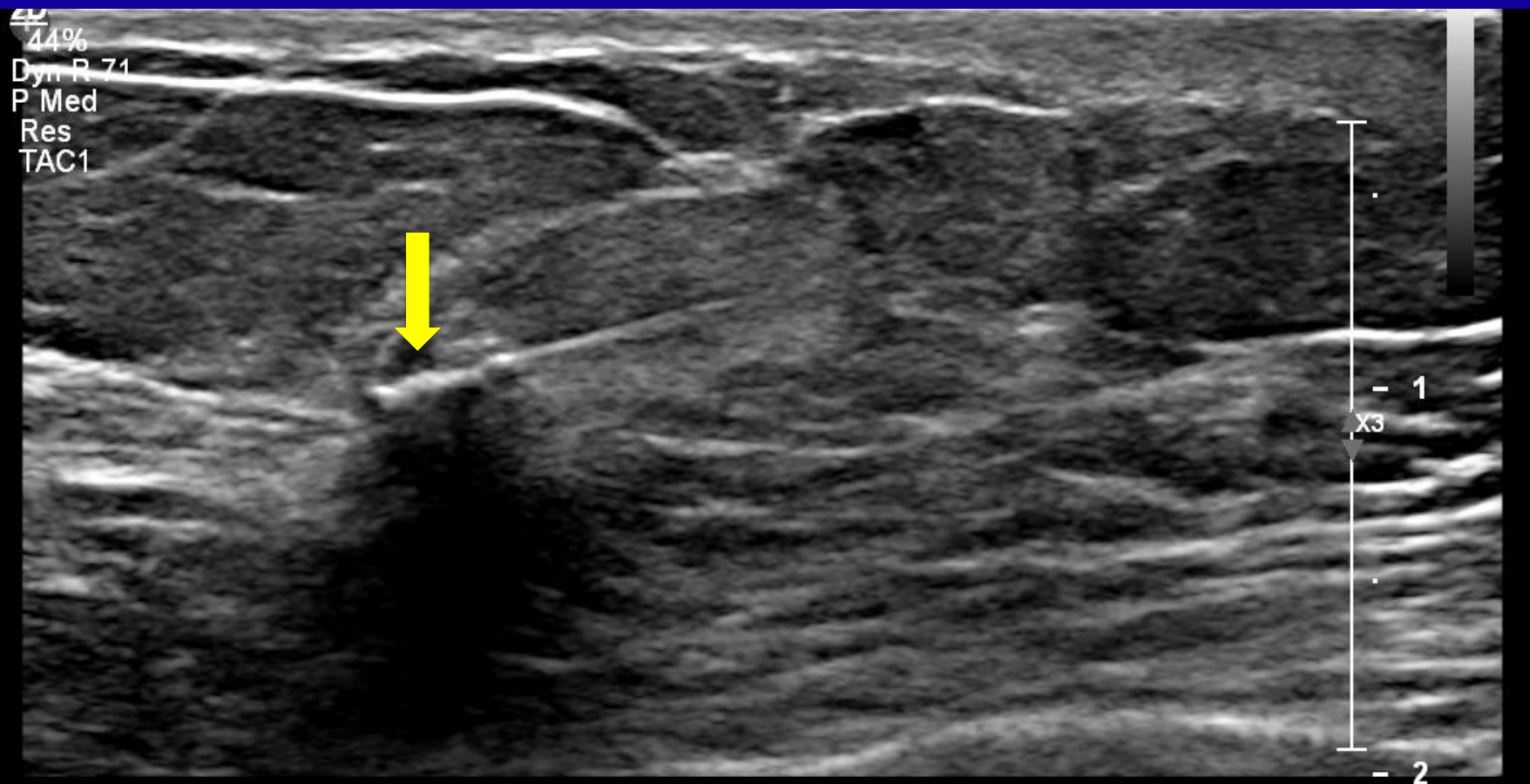
Left 9:00 5 CMFN Arad |



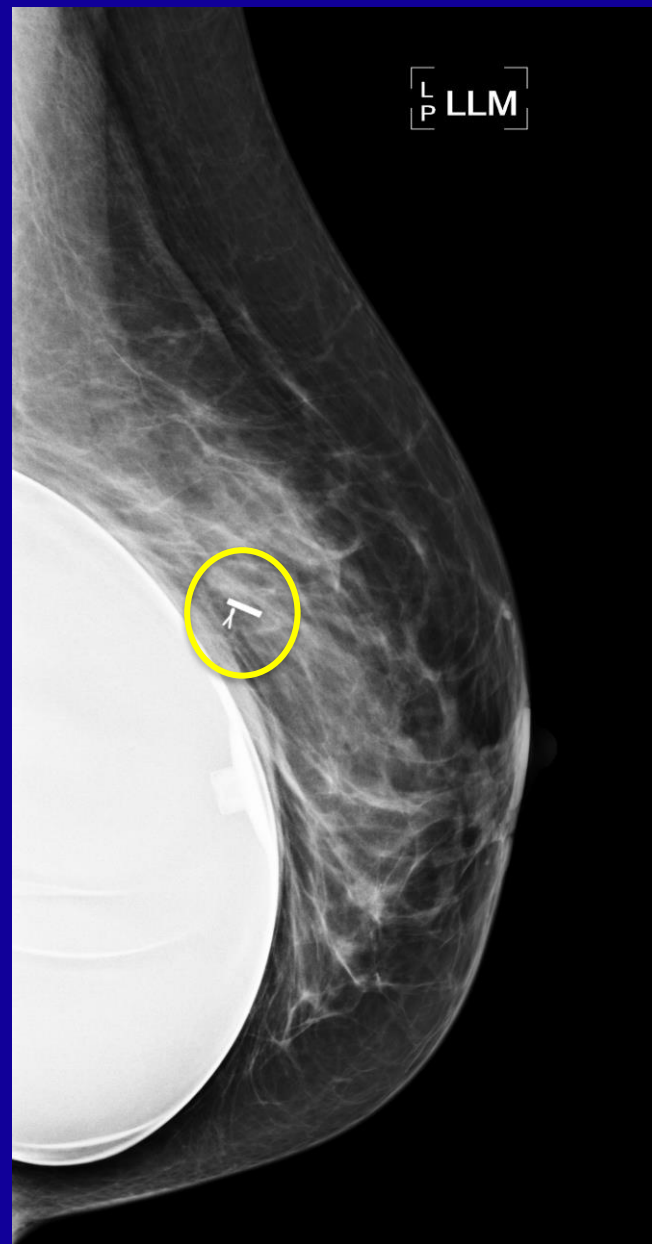
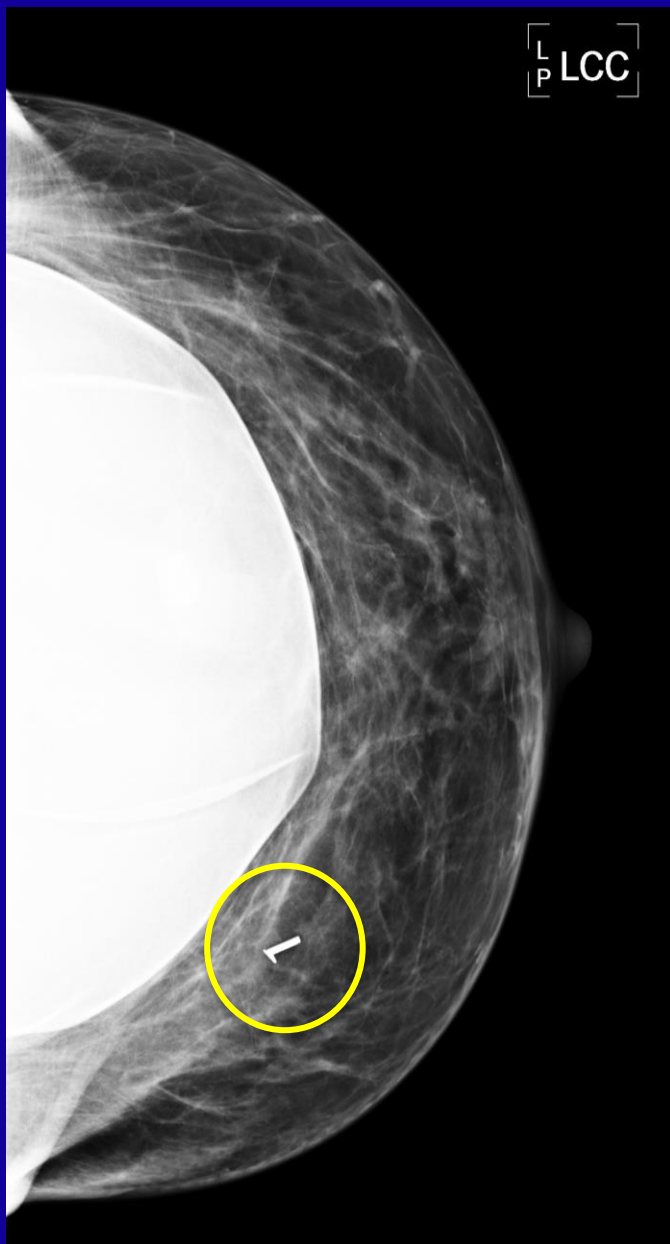
Left 9:00 5 CMFN PRE LOC

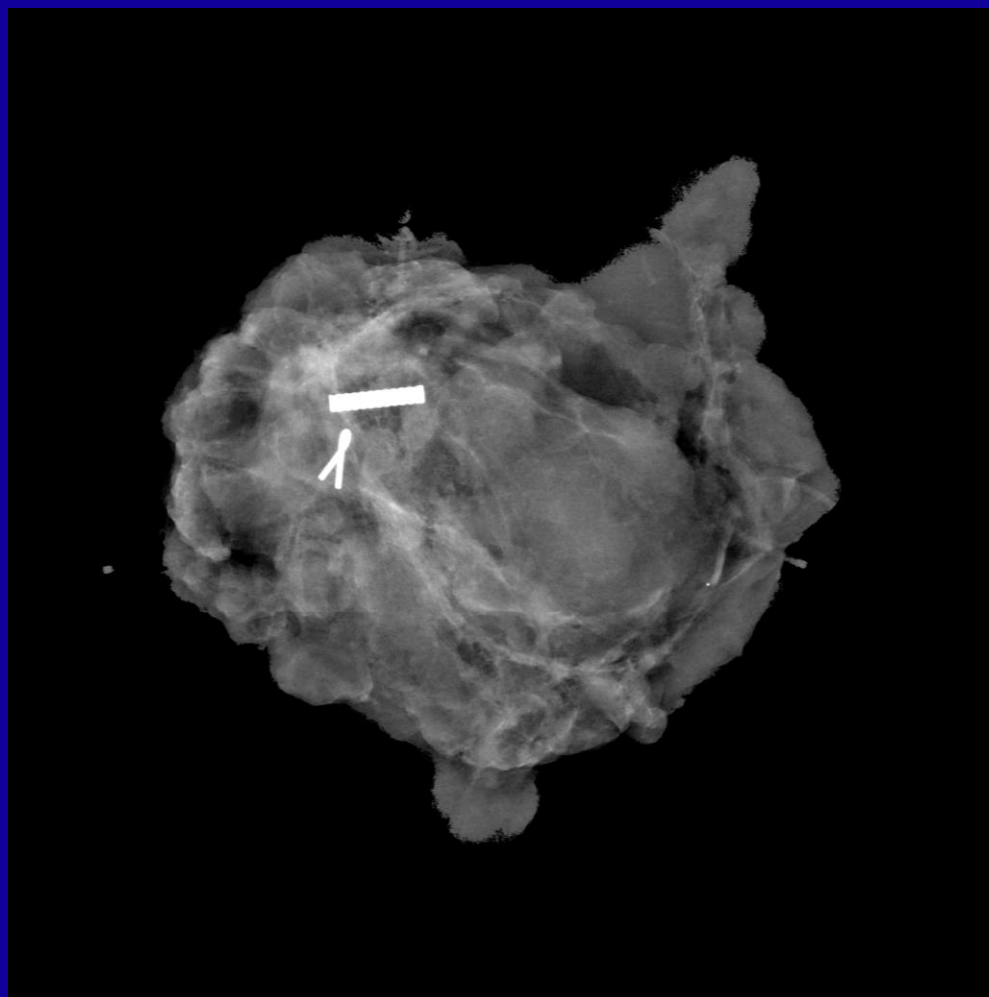


Left 9:00 5 CMFN SEED LOC



Left 9:00 5 CMFN SEED LOC





Ultrasound-Guided Biopsy and Fine Needle Aspiration

Image-Guided Localization

Thank you

elissa.price@ucsf.edu

