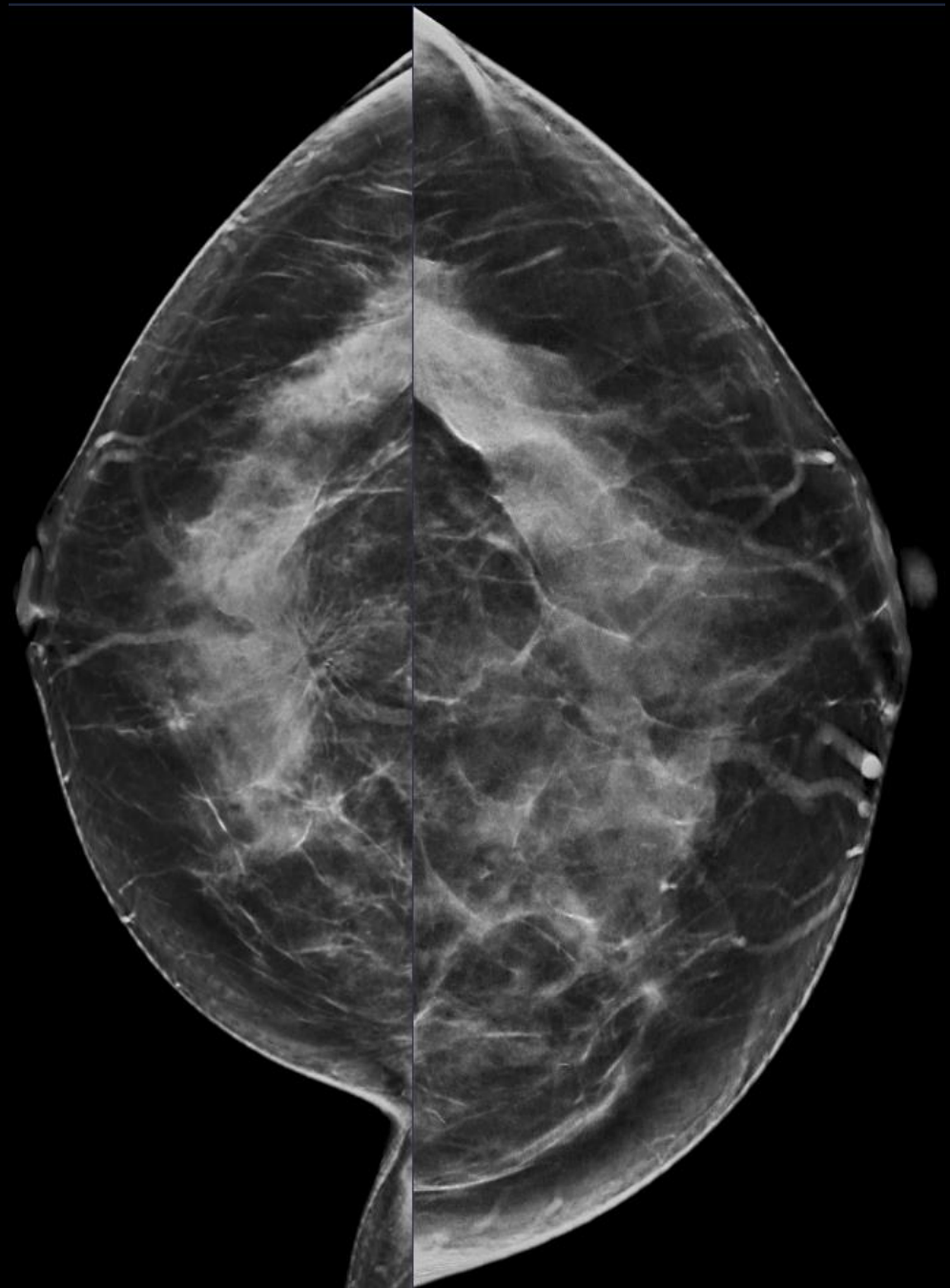
# Interesting Cases

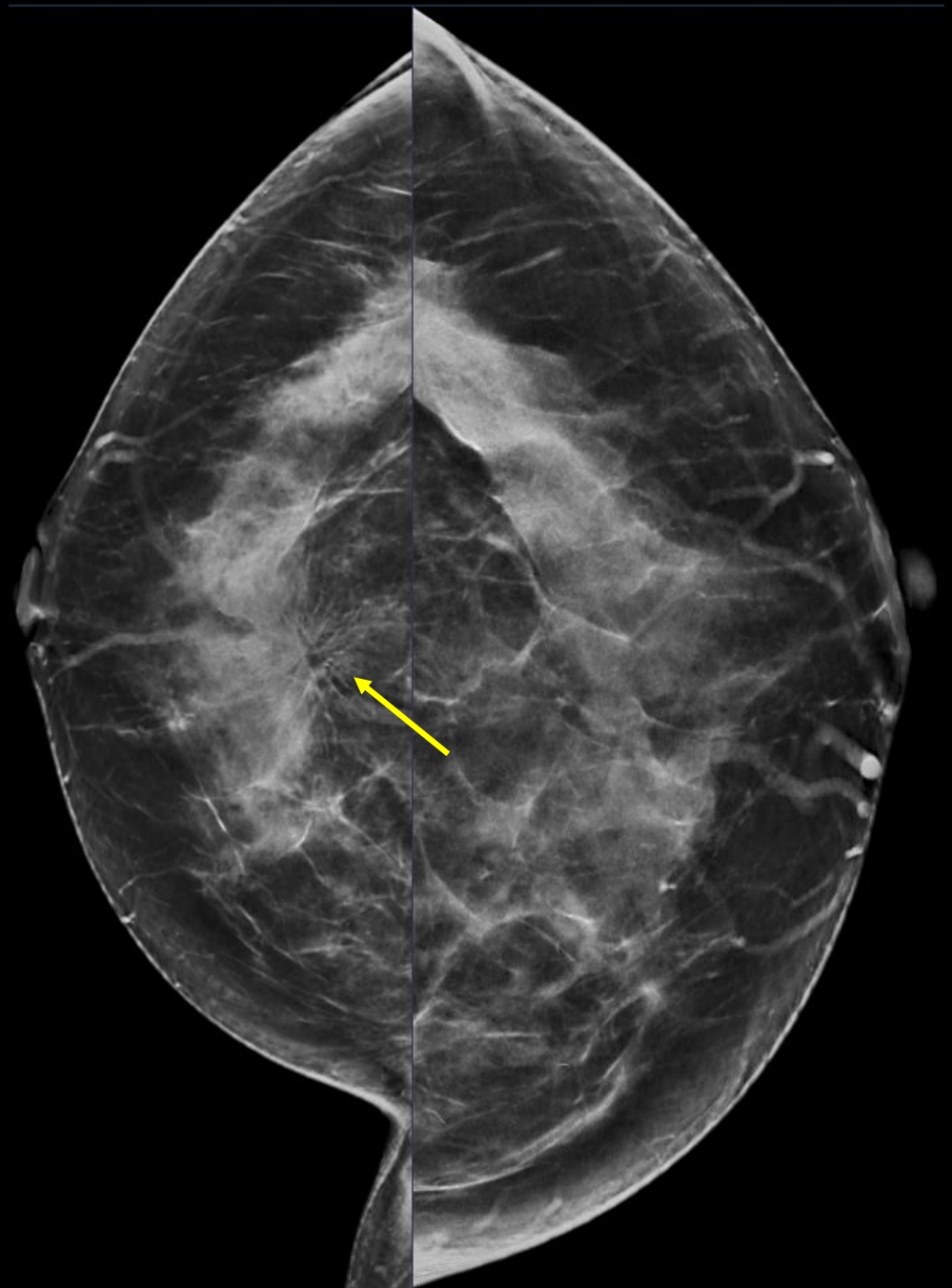
Stamatia Destounis, MD, FACR, FSBI, FAIUM
Managing Partner, Elizabeth Wende Breast Care, LLC.
Chair, ACR Breast Commission
Chair, ACR Breast MRI Accreditation Committee
Rochester, NY

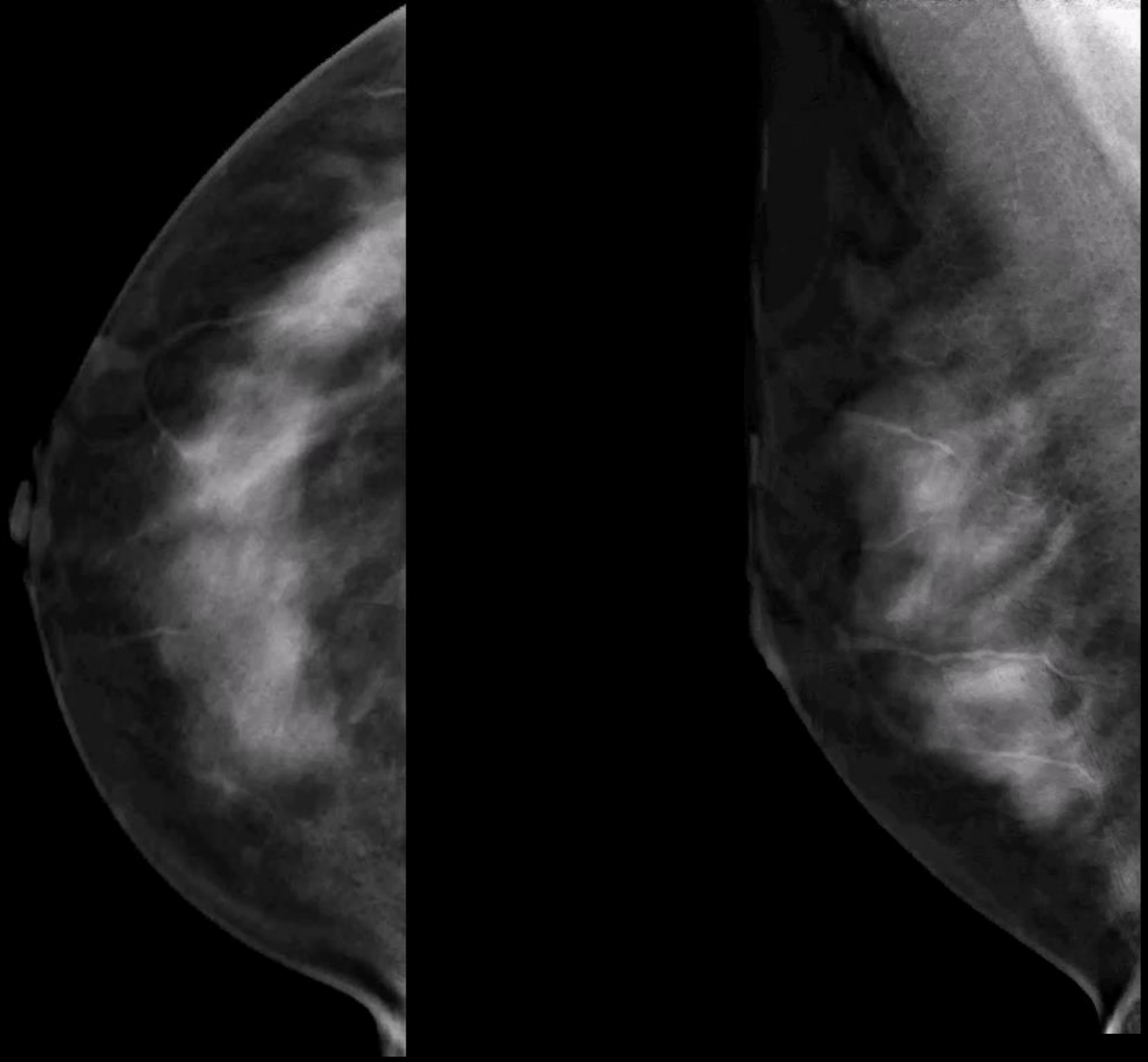
Elizabeth Wende Breast Care

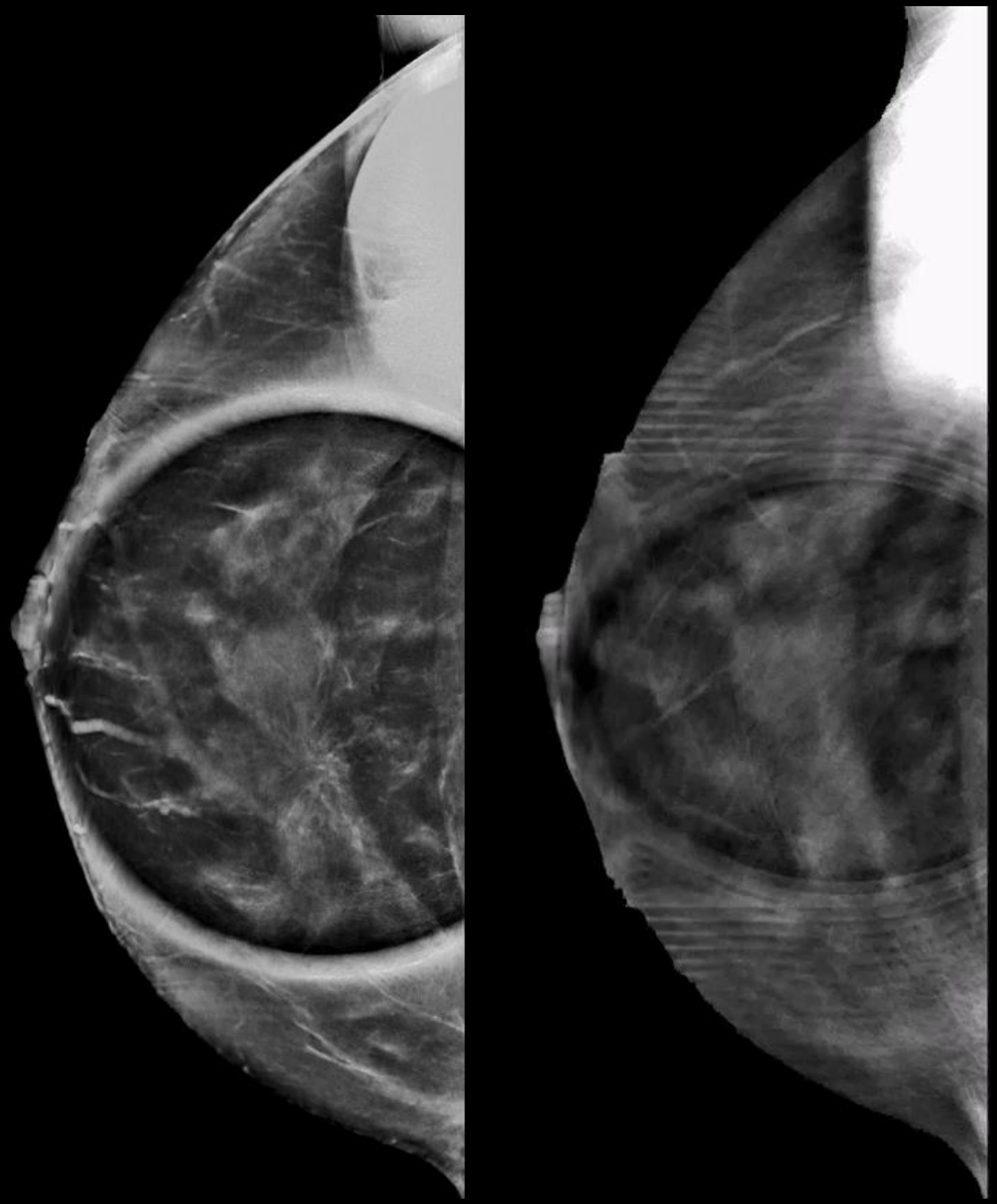
Breast Imaging Excellence

Case 1: Baseline Screening Mammogram. 42 y/o, No Personal or Family History









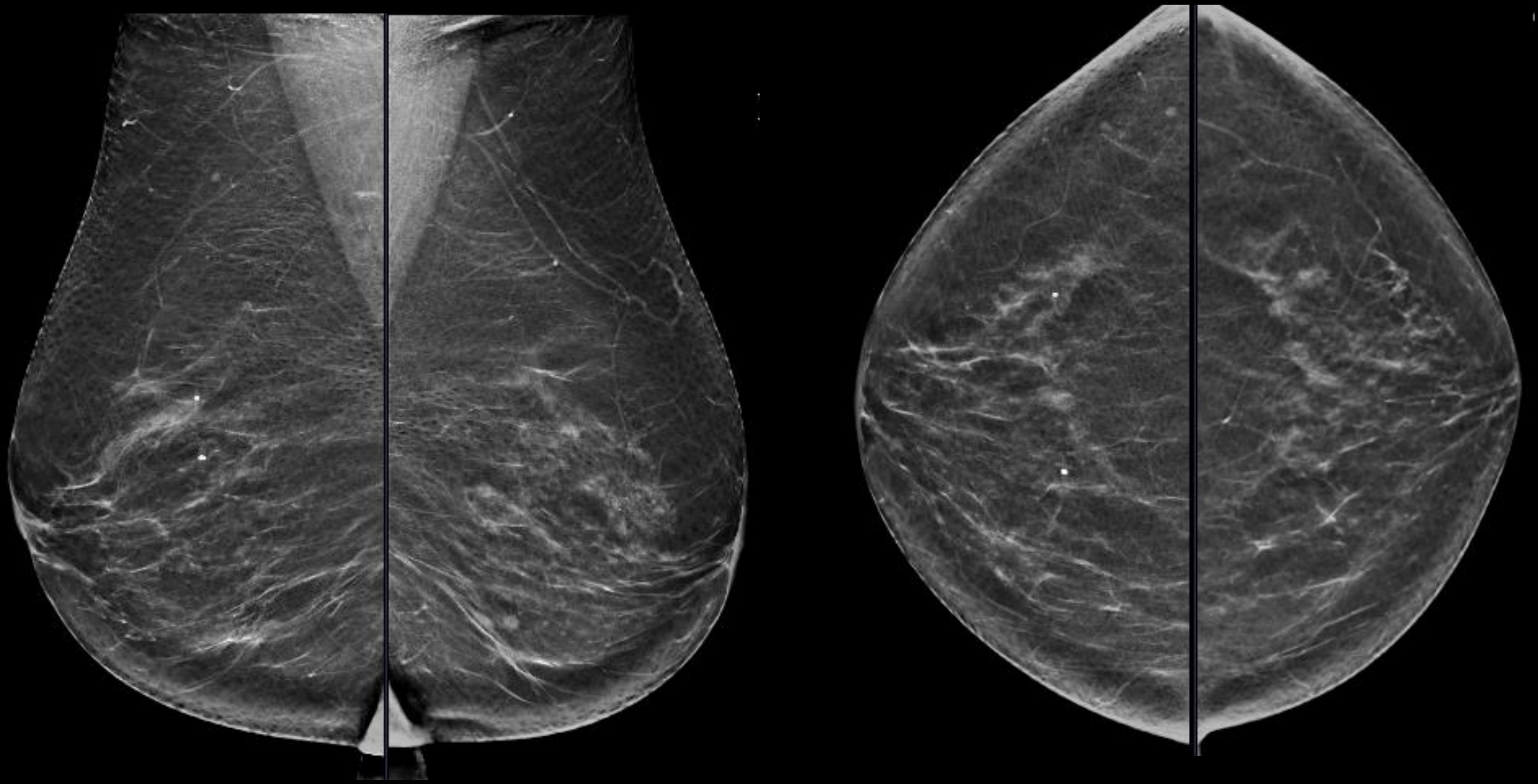
Radial Scar w/ atypia
Surgical Excision Recommended

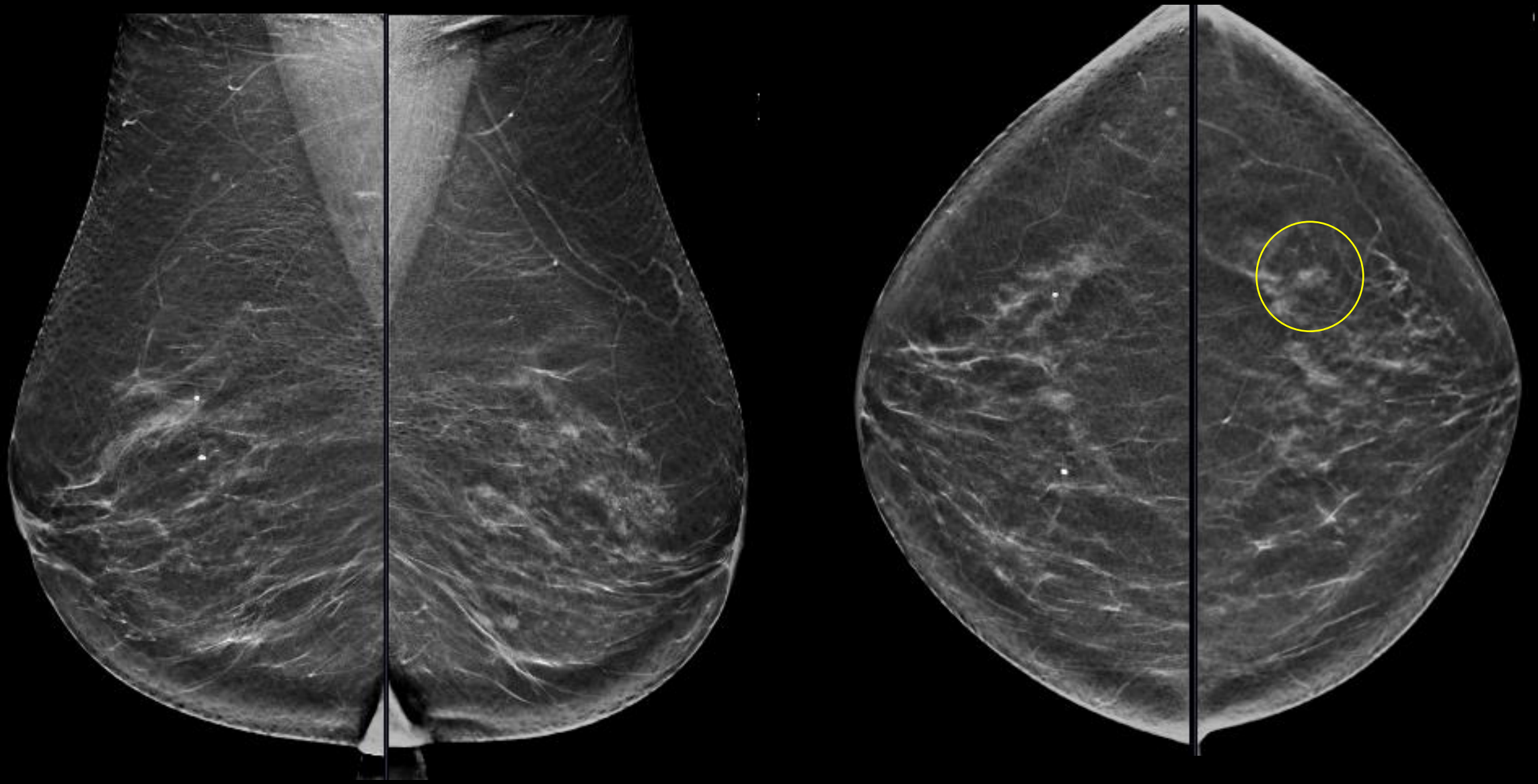
But it could have been invasive carcinoma

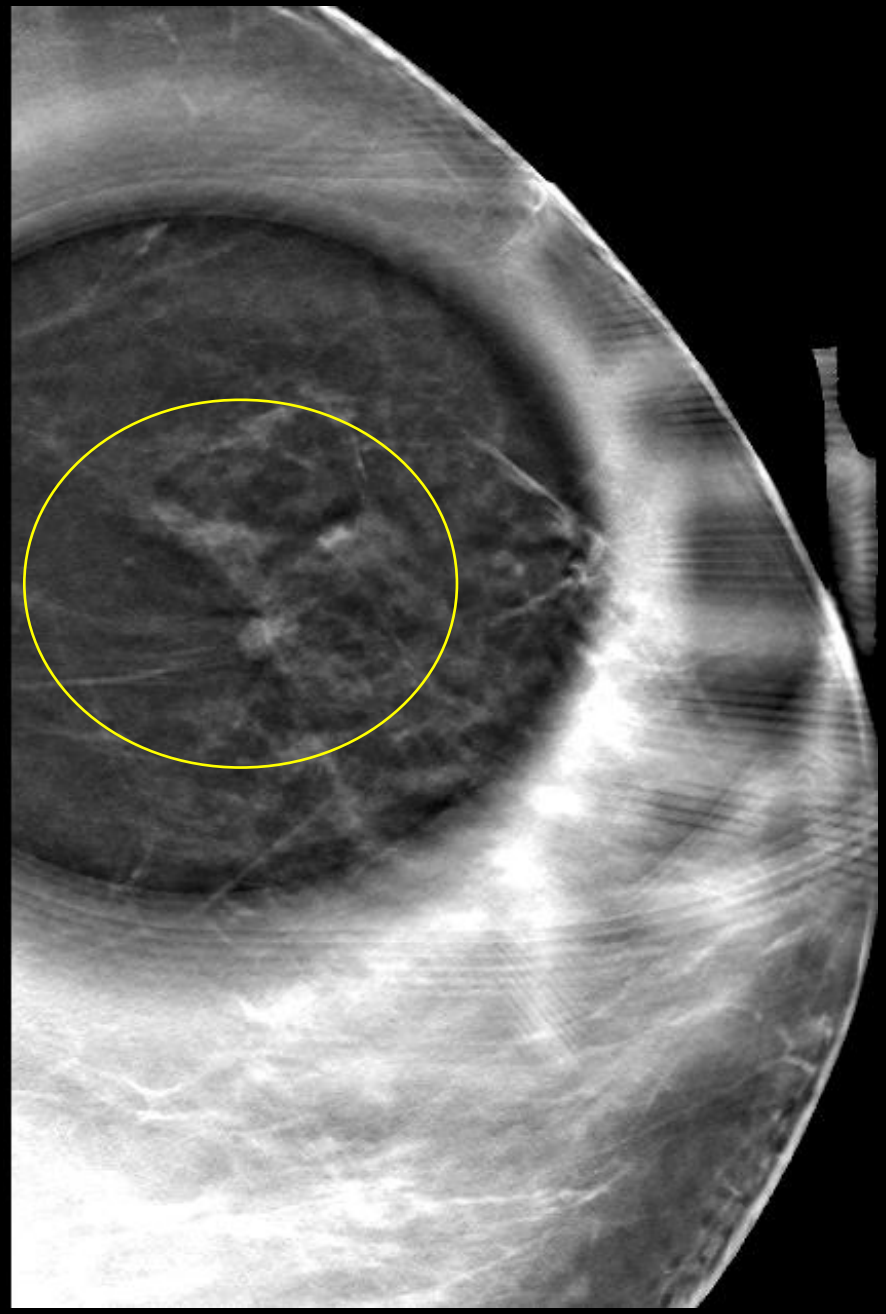
# Indications for Breast Ultrasound in Clinical Practice

- Diagnostic
  - Patient presents with a concern such as lump, breast pain, skin changes, discharge
  - Imaging finding on screening mammogram
  - Targeted US after breast MRI finding
- Screening
  - Due to dense breast tissue identified on mammography
  - Eligible for MRI because of high risk for breast cancer but is contraindicated

**Case 2-** Patient presents for screening mammogram

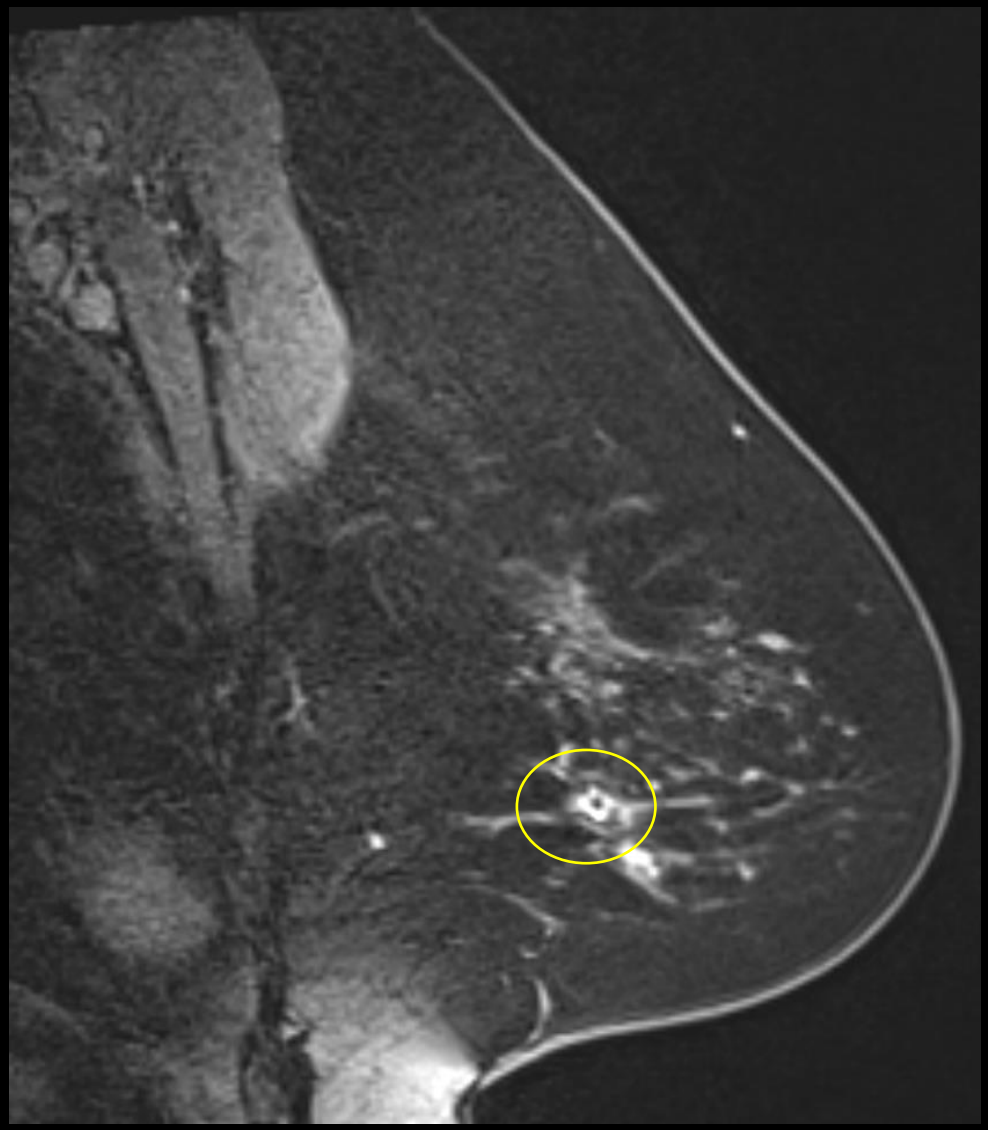


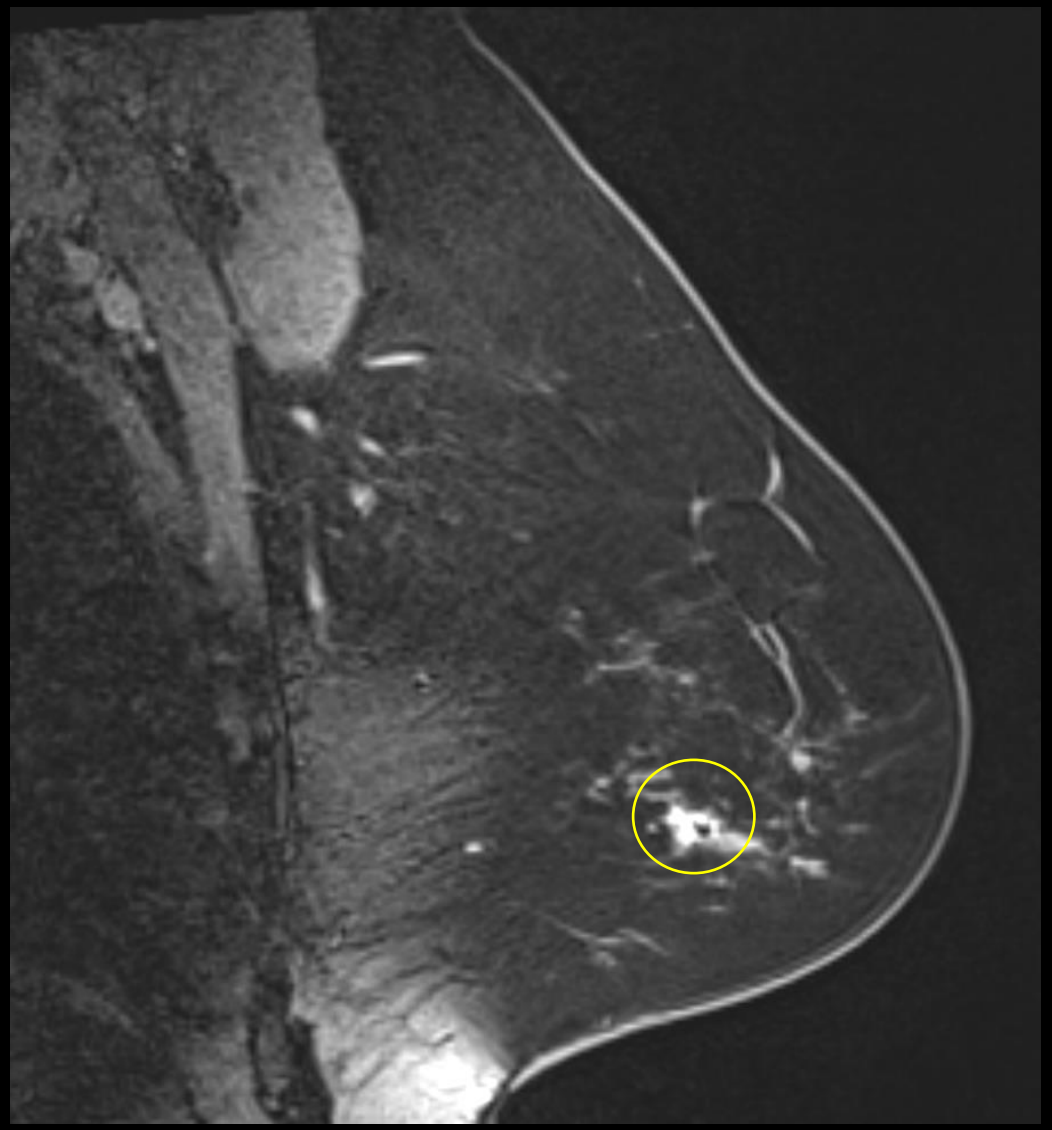






Left 3:00 & 3:15: Invasive ductal carcinoma gr 2,
ER Positive, PR Positive, Her2 Negative

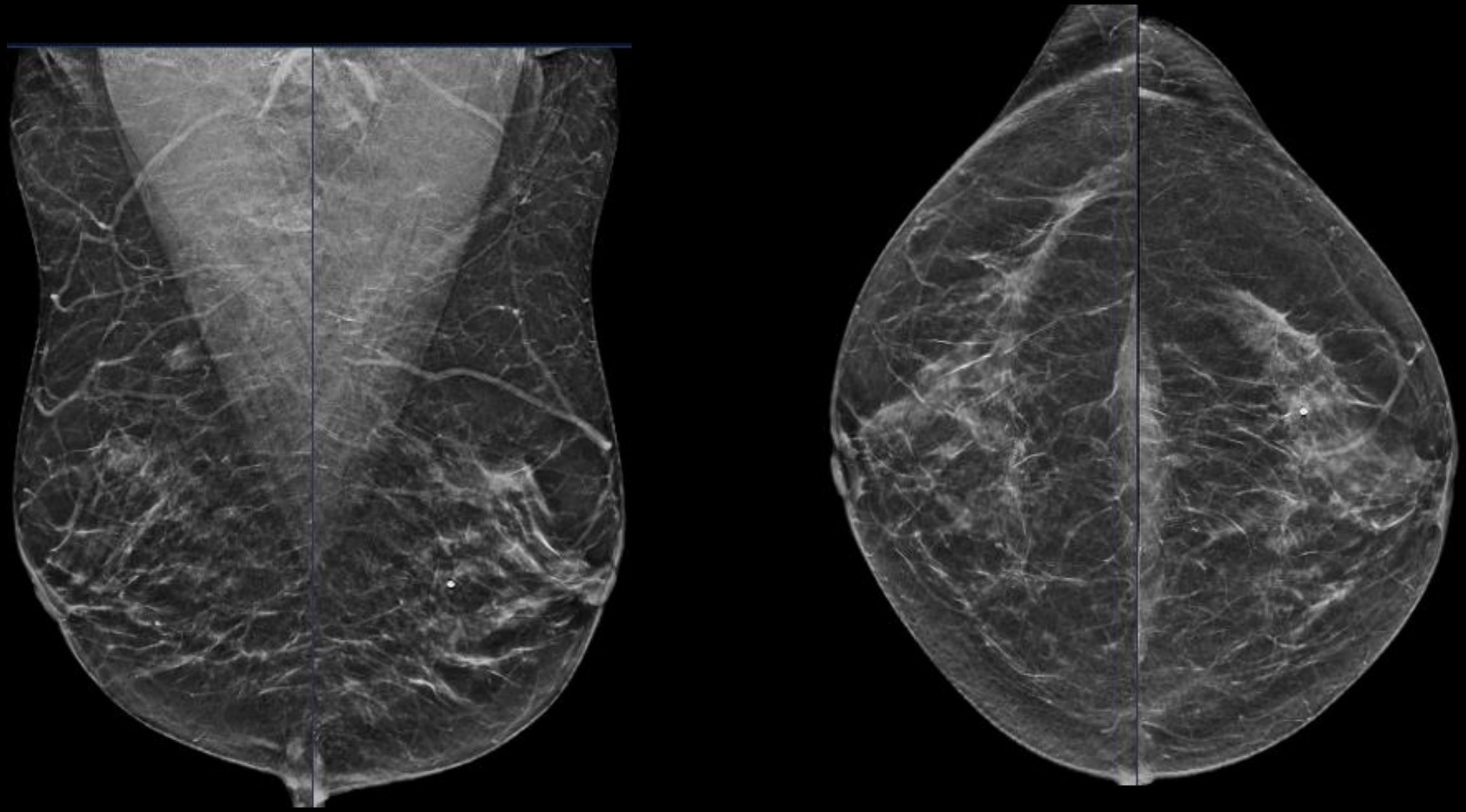


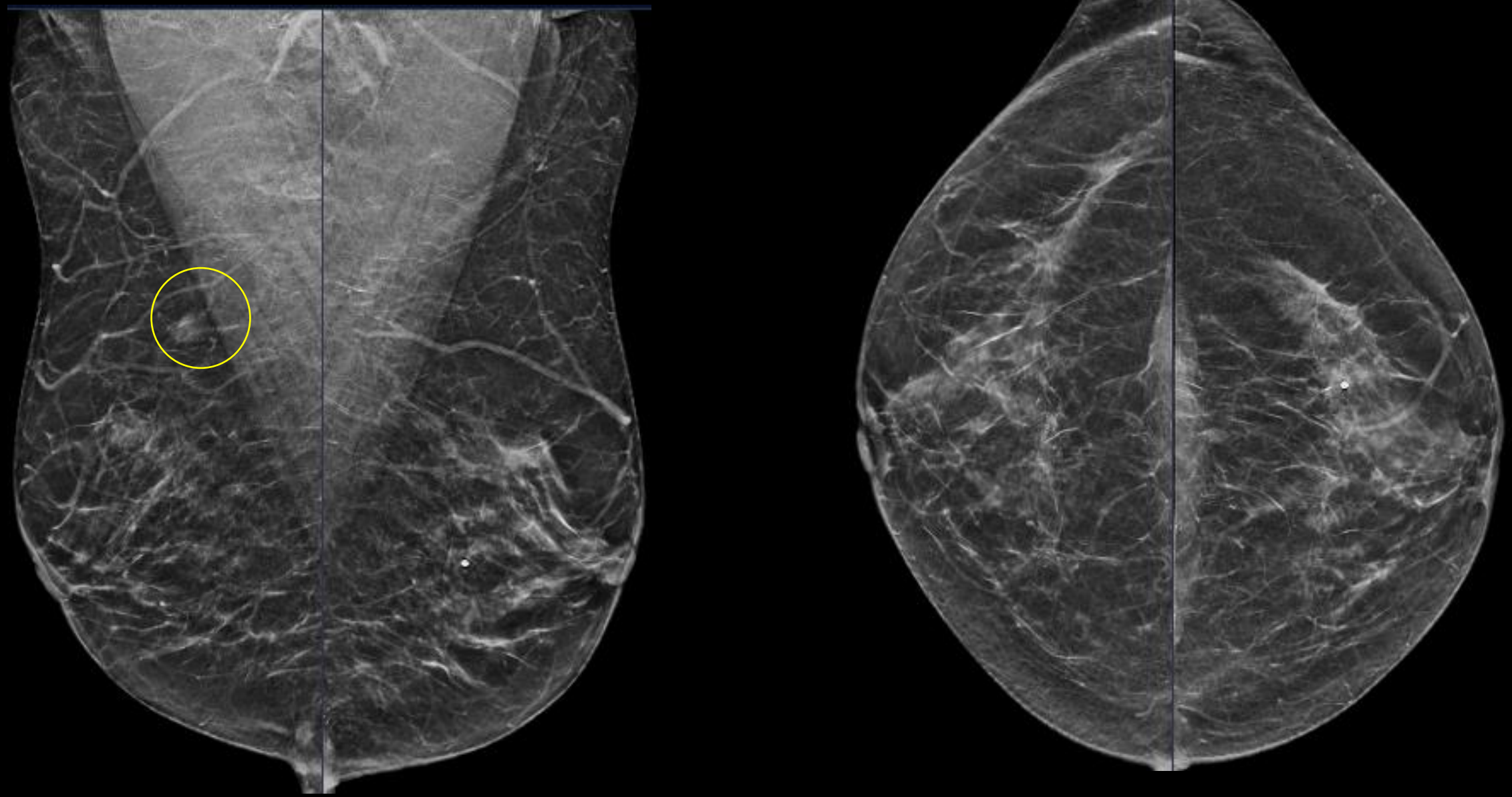


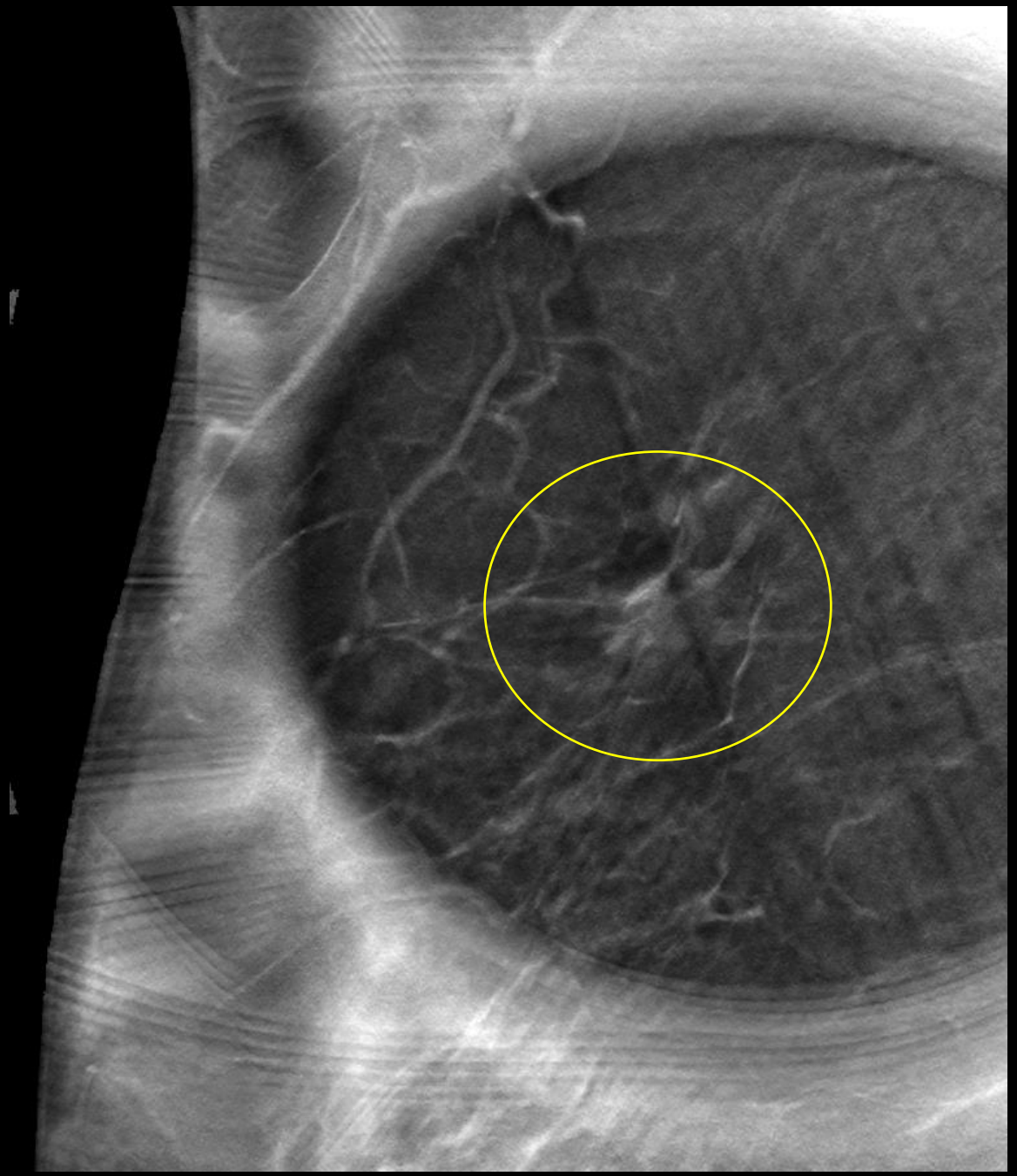
# Indications for Breast MRI in Clinical Practice

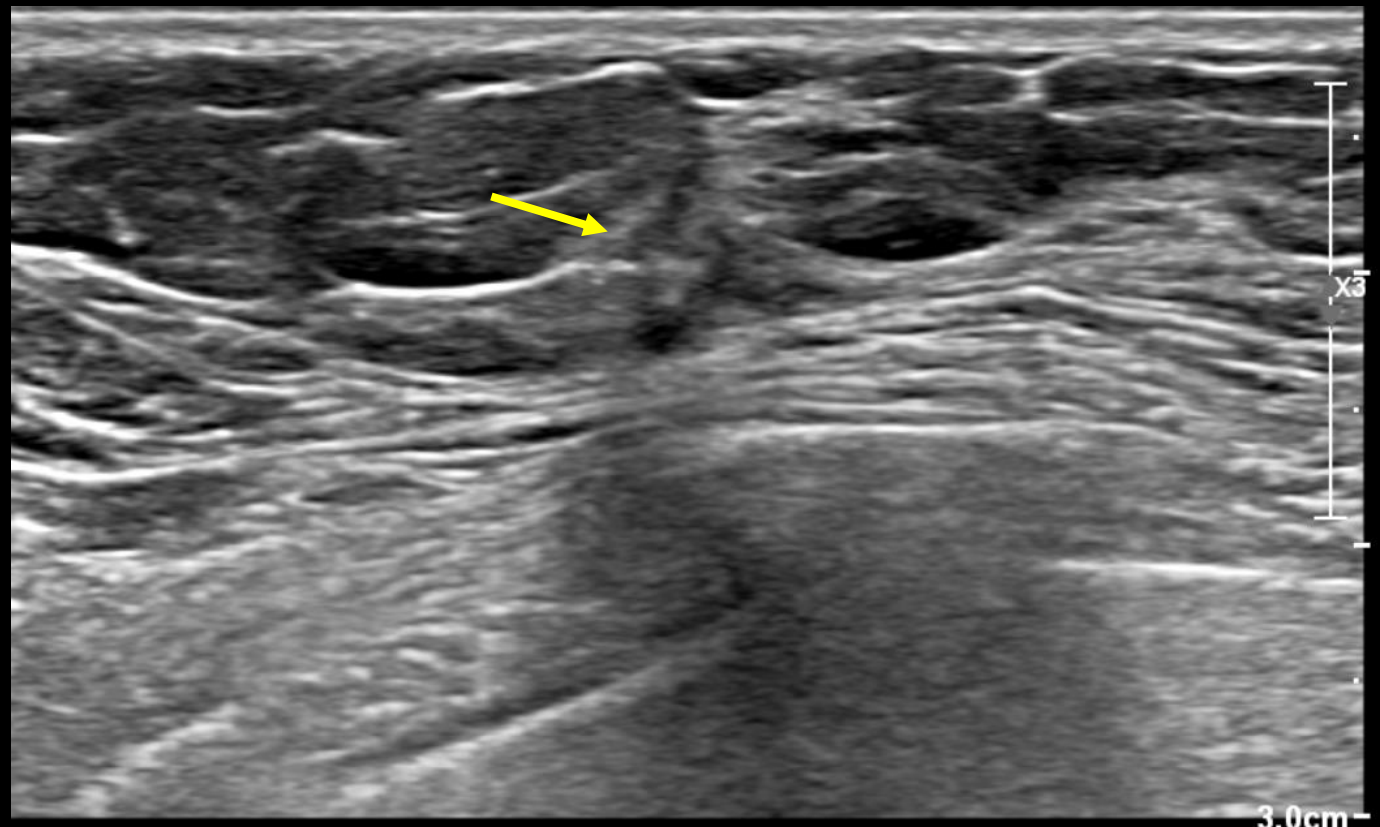
- Diagnostic
  - Extent of disease evaluation (newly diagnosed with breast ca)
  - Chemotherapy assessment
  - Inconclusive work-up
  - Search for occult primary
- Screening
  - High risk screening
    - >20% lifetime risk based on family history, genetic mutation, breast density
    - Personal history of breast cancer
    - Prior mantle radiation

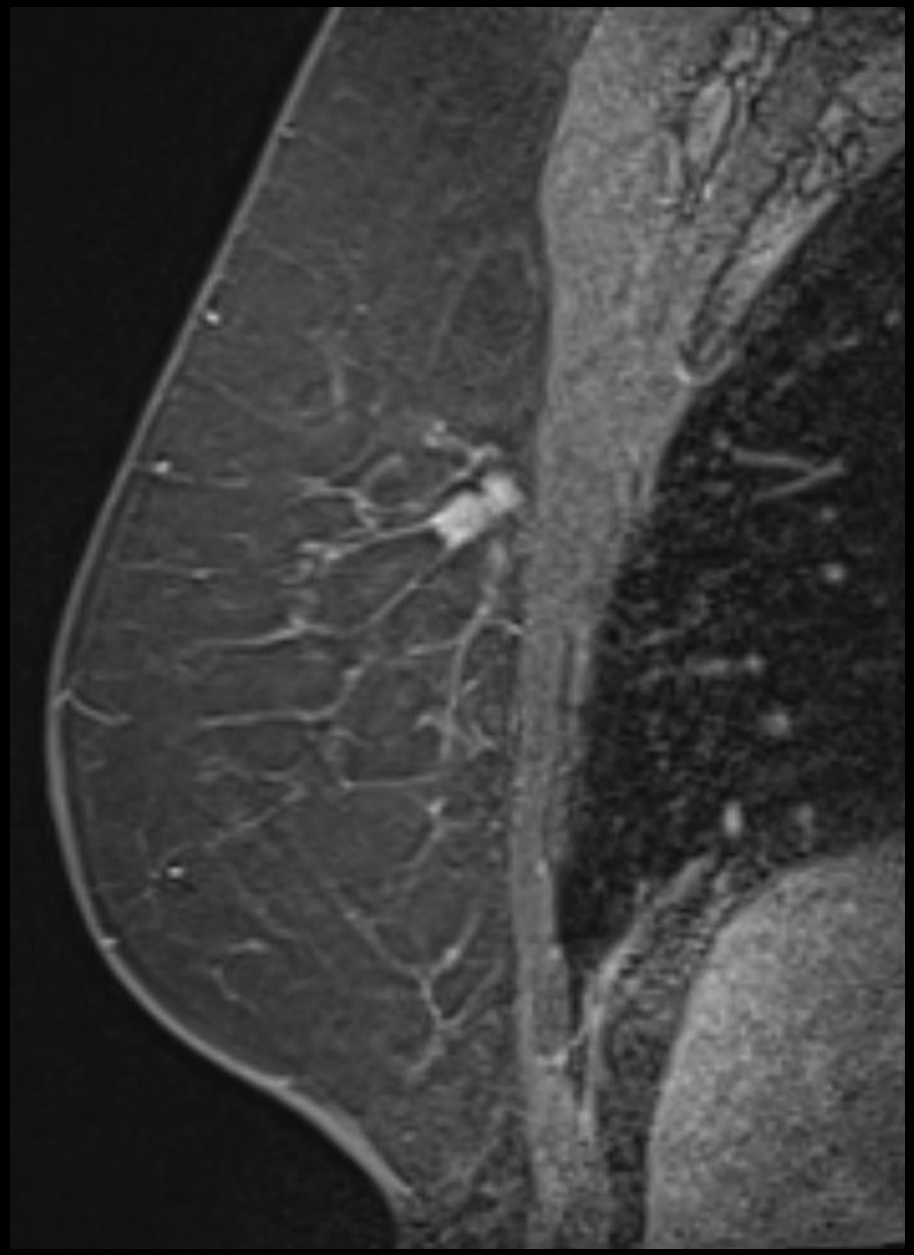
**Case 3-** Patient presents for screening mammogram





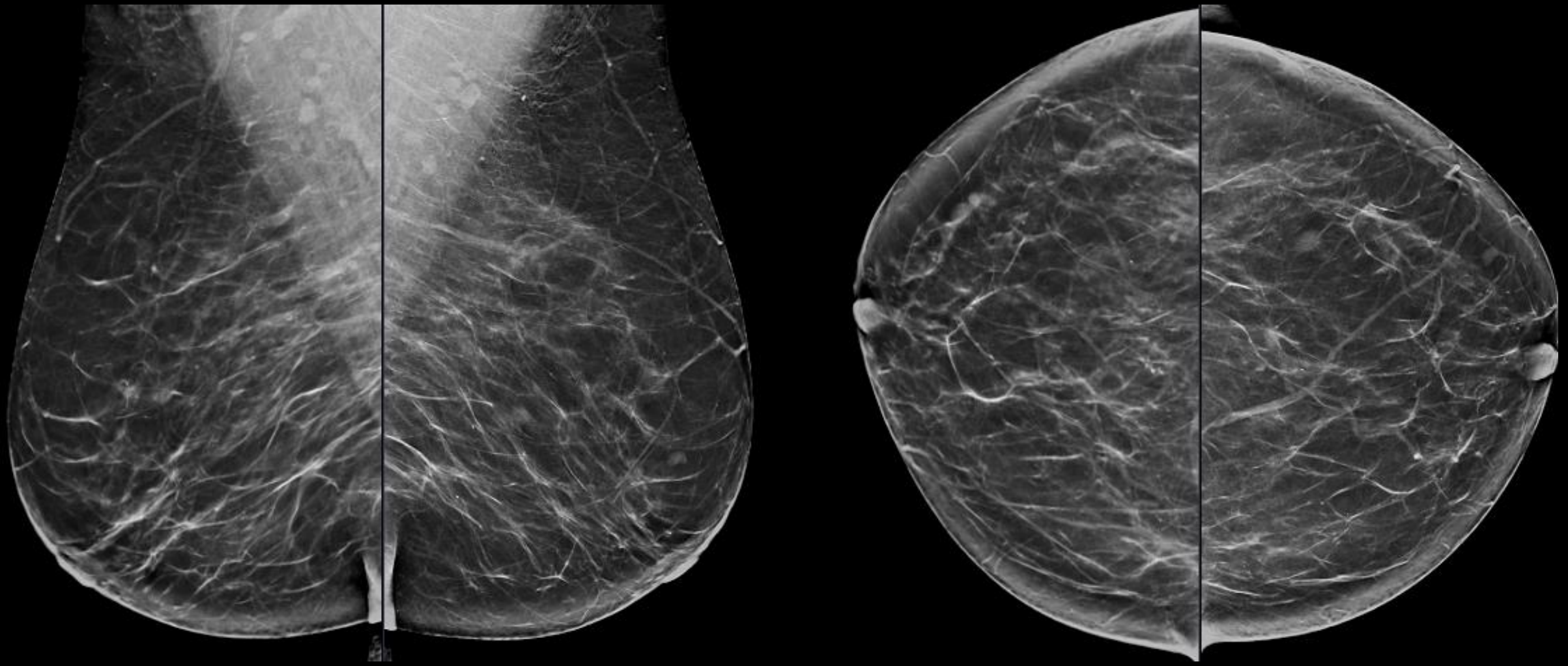


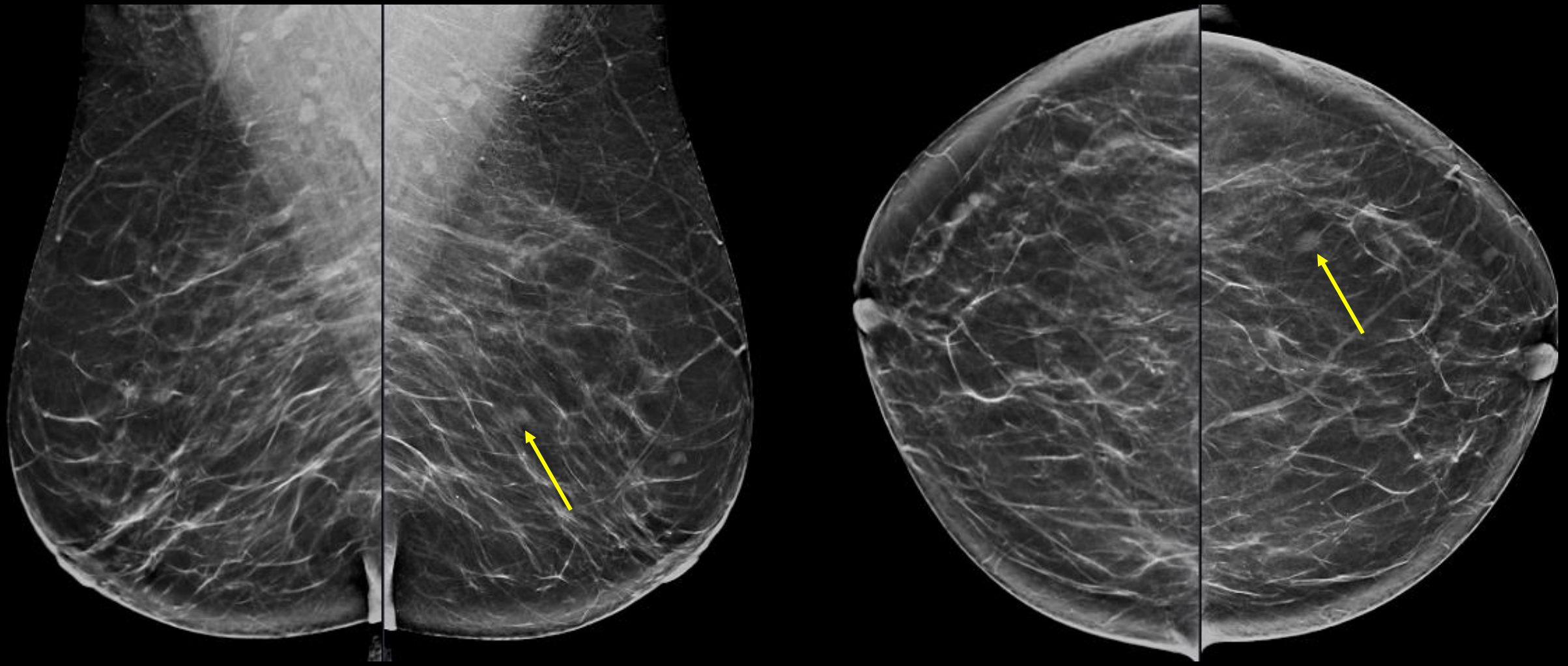


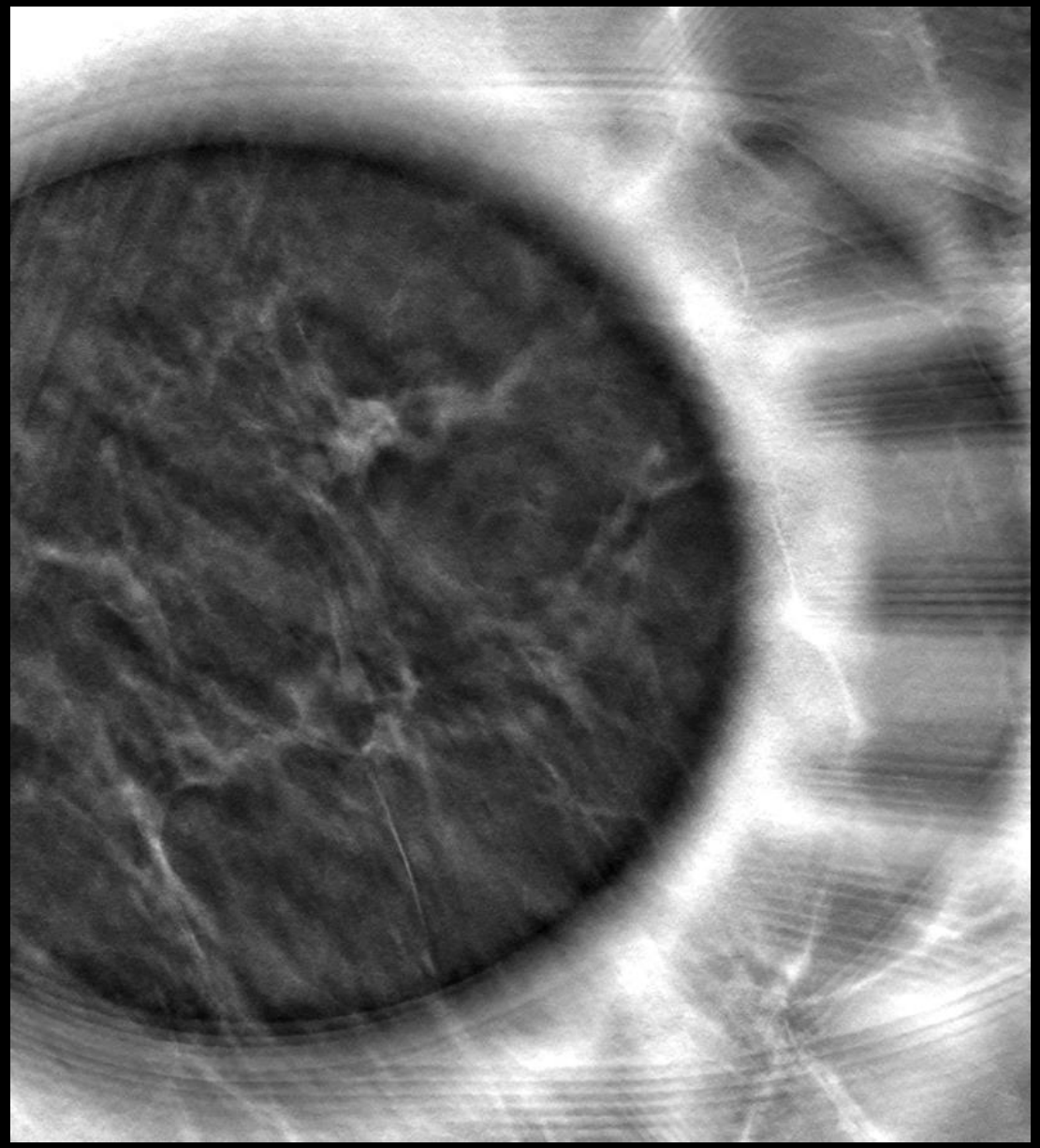



Right 10:30- Infiltrating ductal carcinoma gr 1
ER Positive, PR Positive, Her2 Negative

Case 4: *BRCA1* positive patient presents for screening mammogram

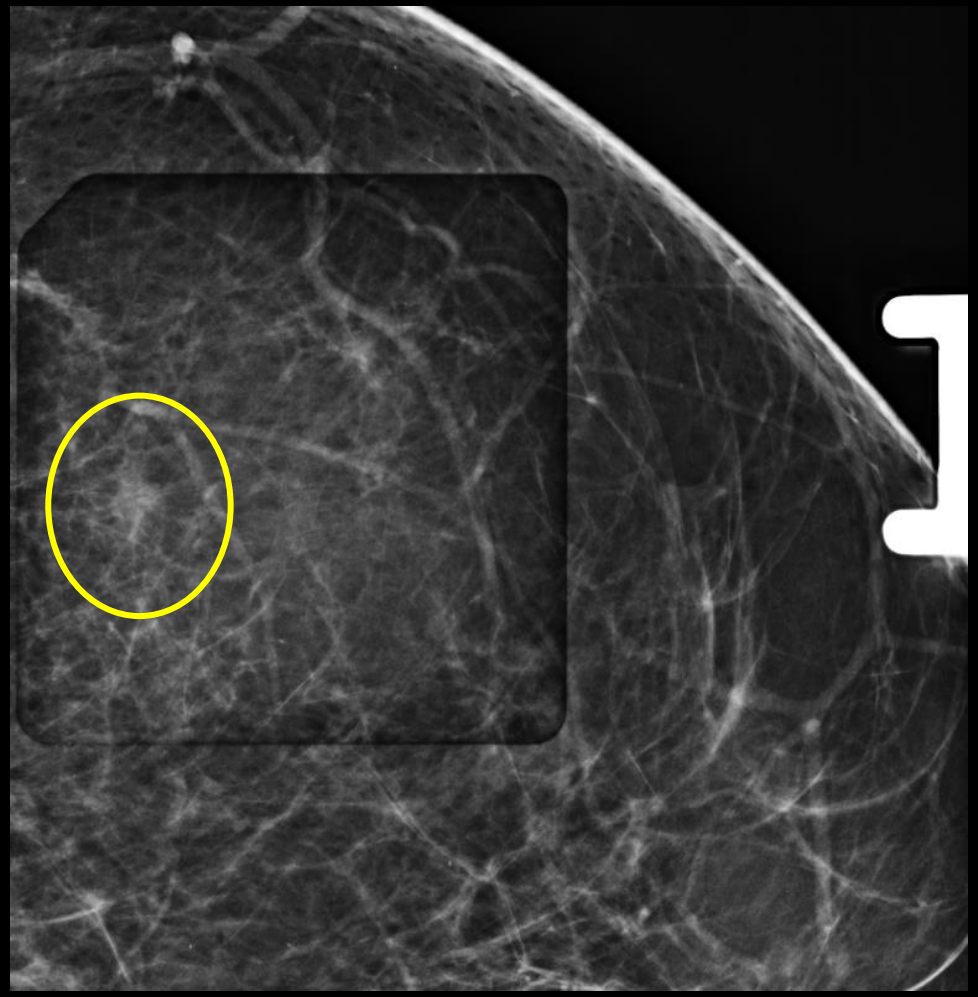


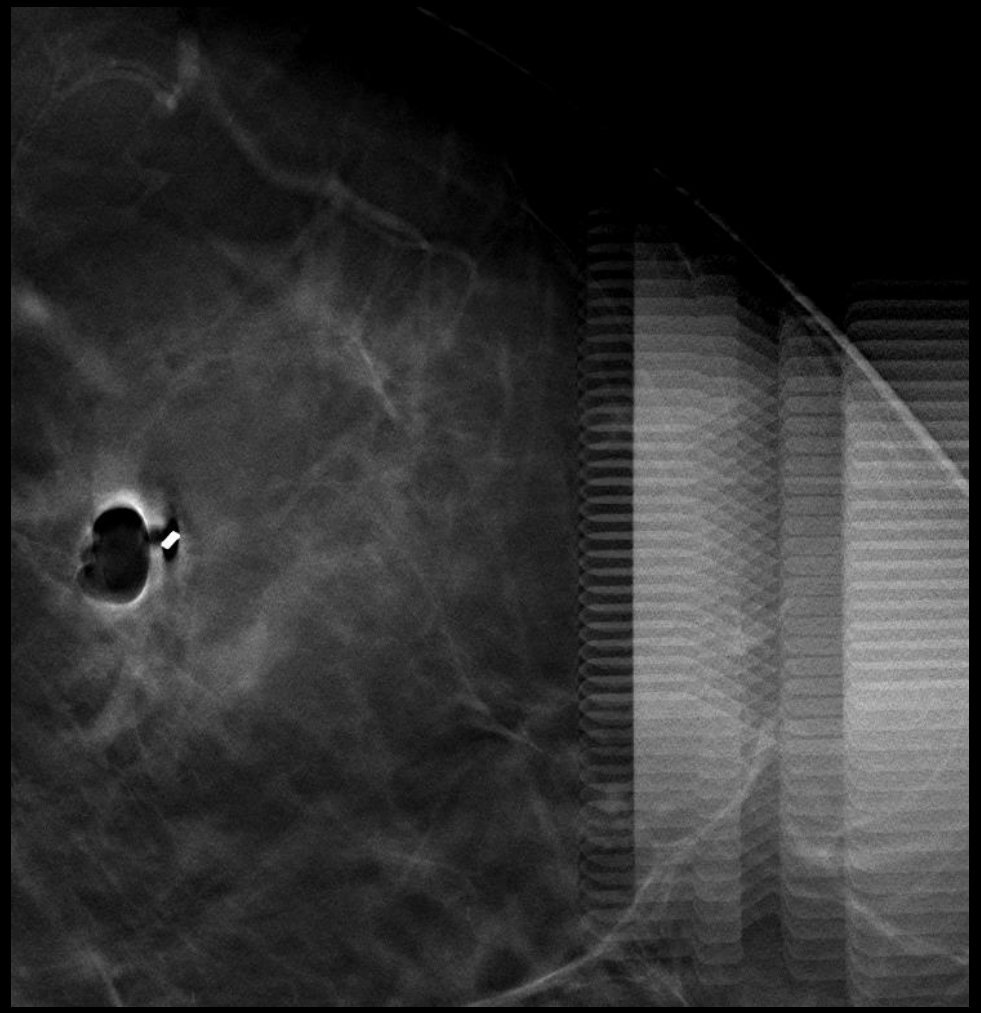




No correlate on ultrasound

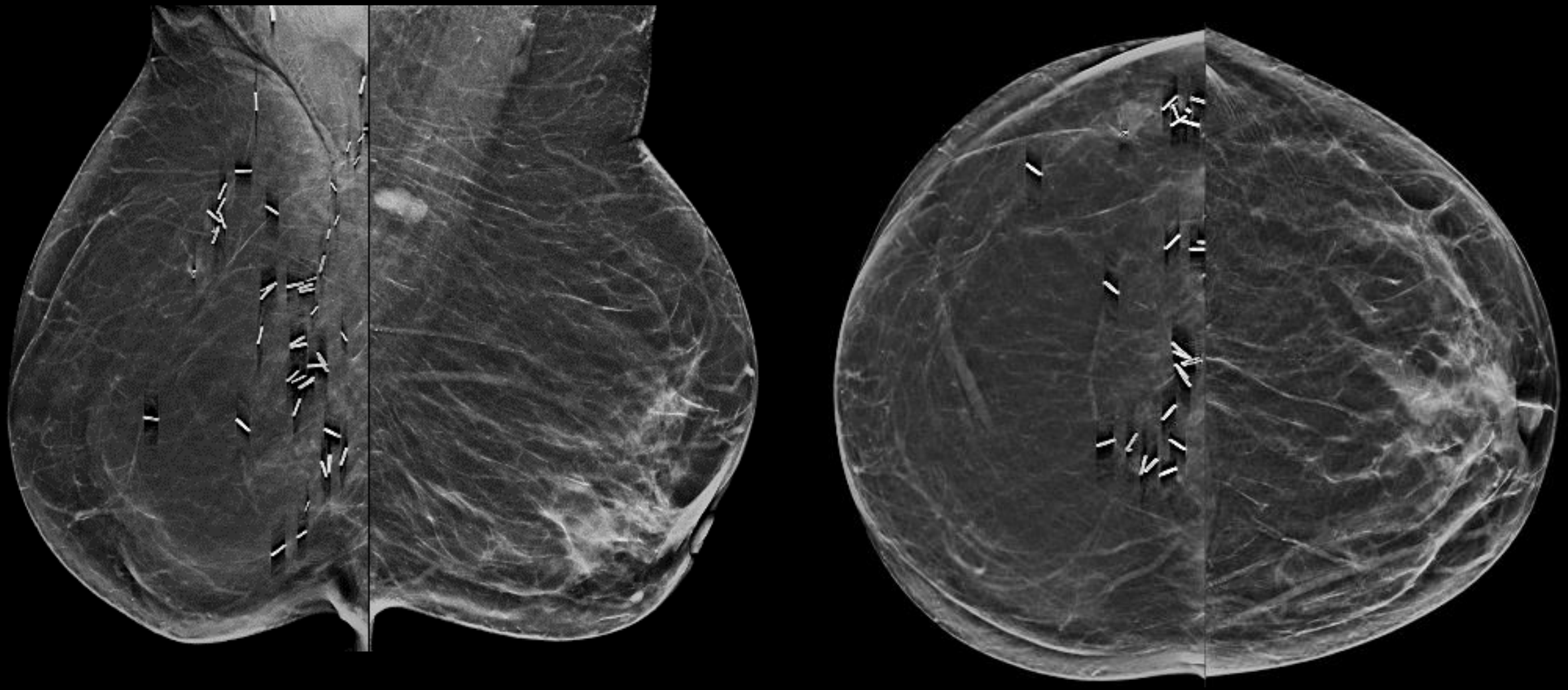
DBT guided biopsy – clip placement

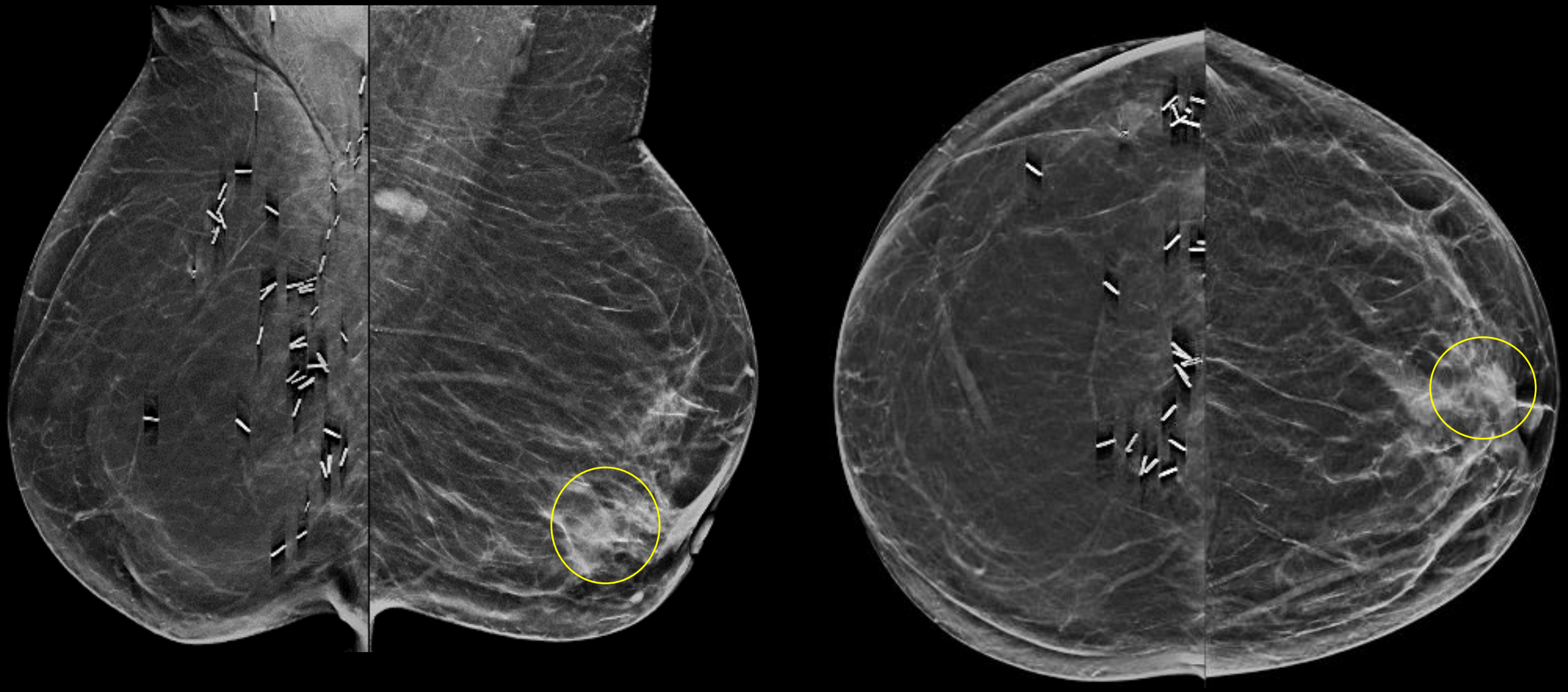


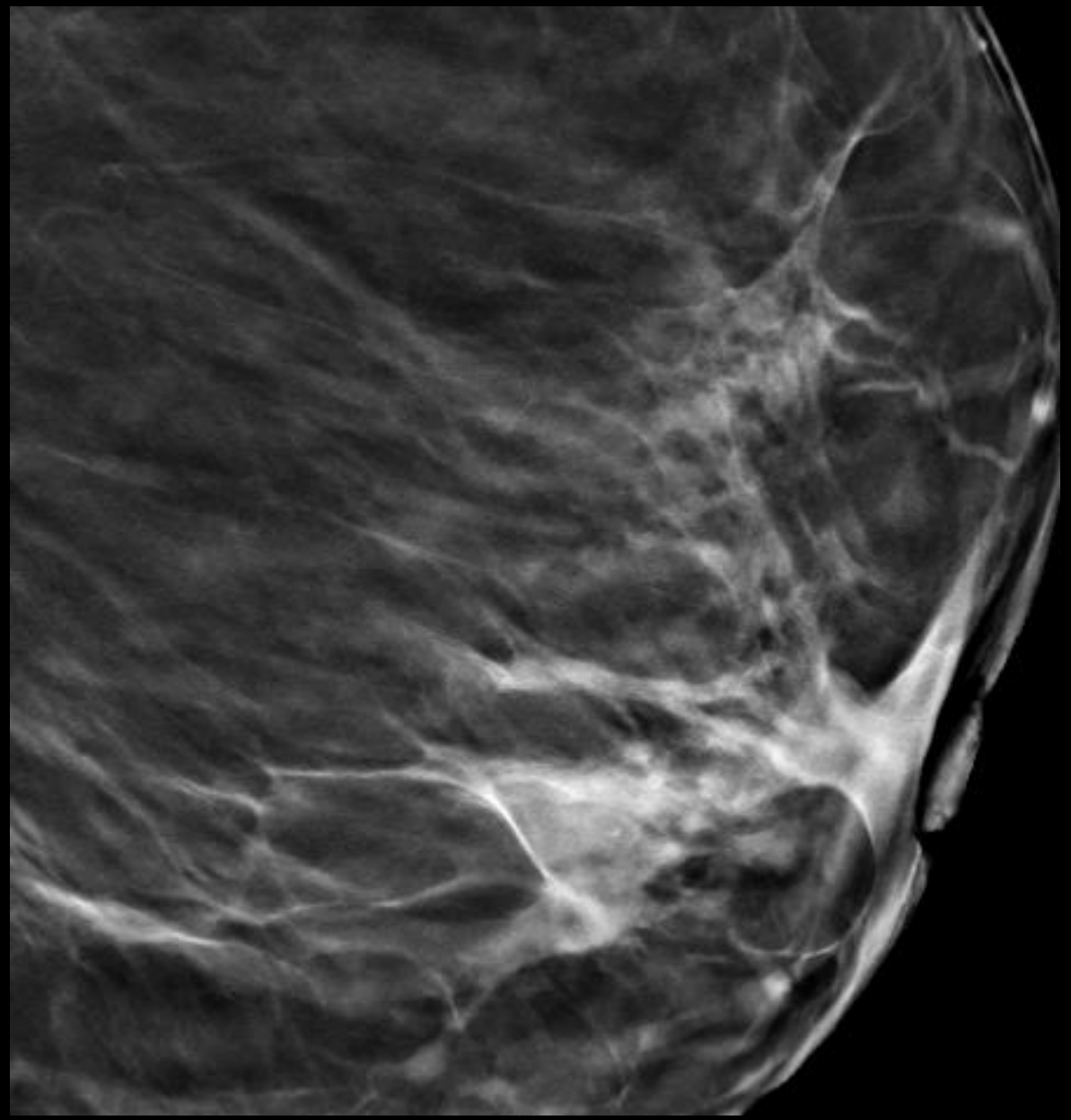


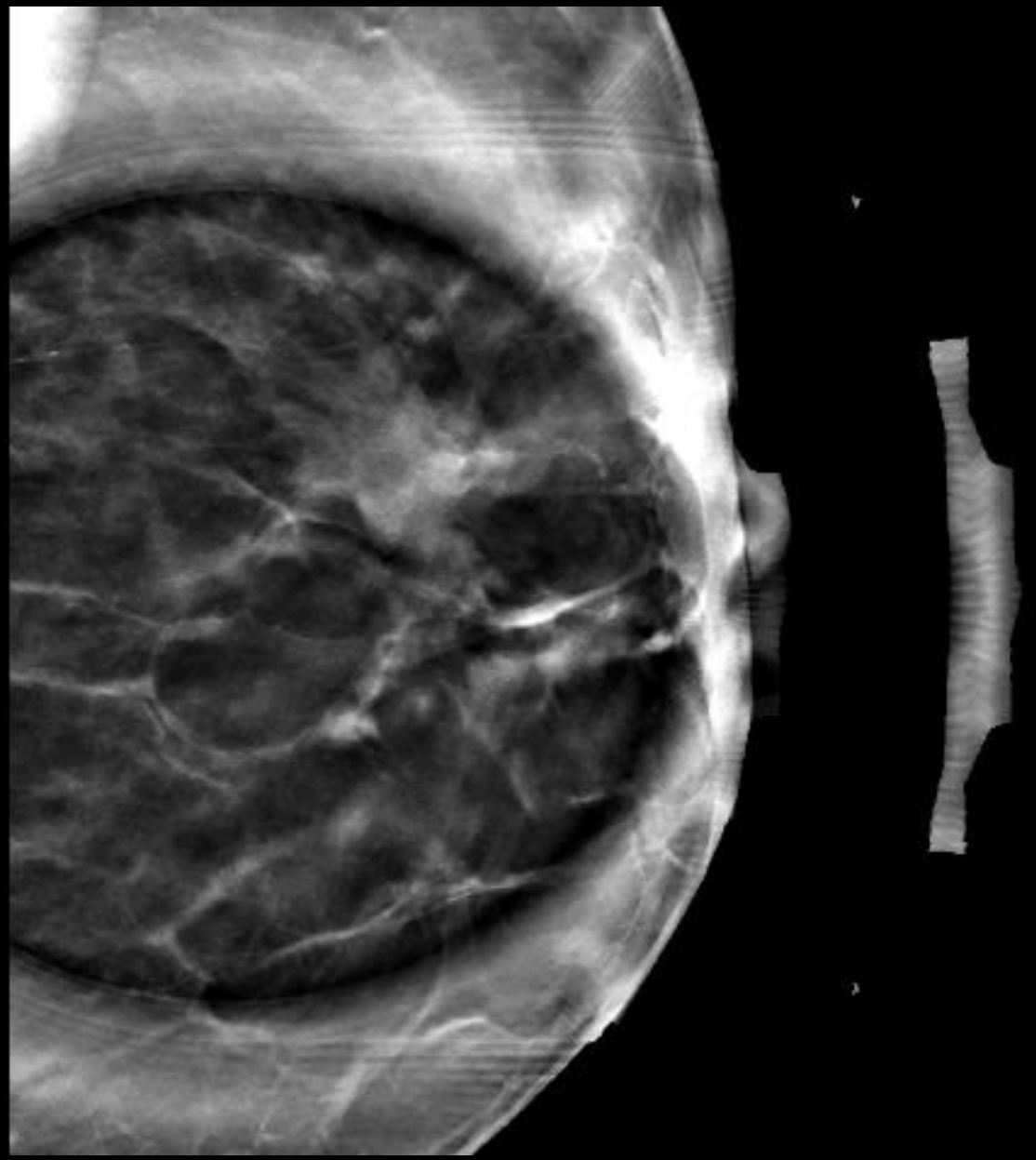
Grade 1 Invasive ductal carcinoma

**Case 5-** Patient presents for screening mammogram – personal history of right mastectomy with TRAM reconstruction

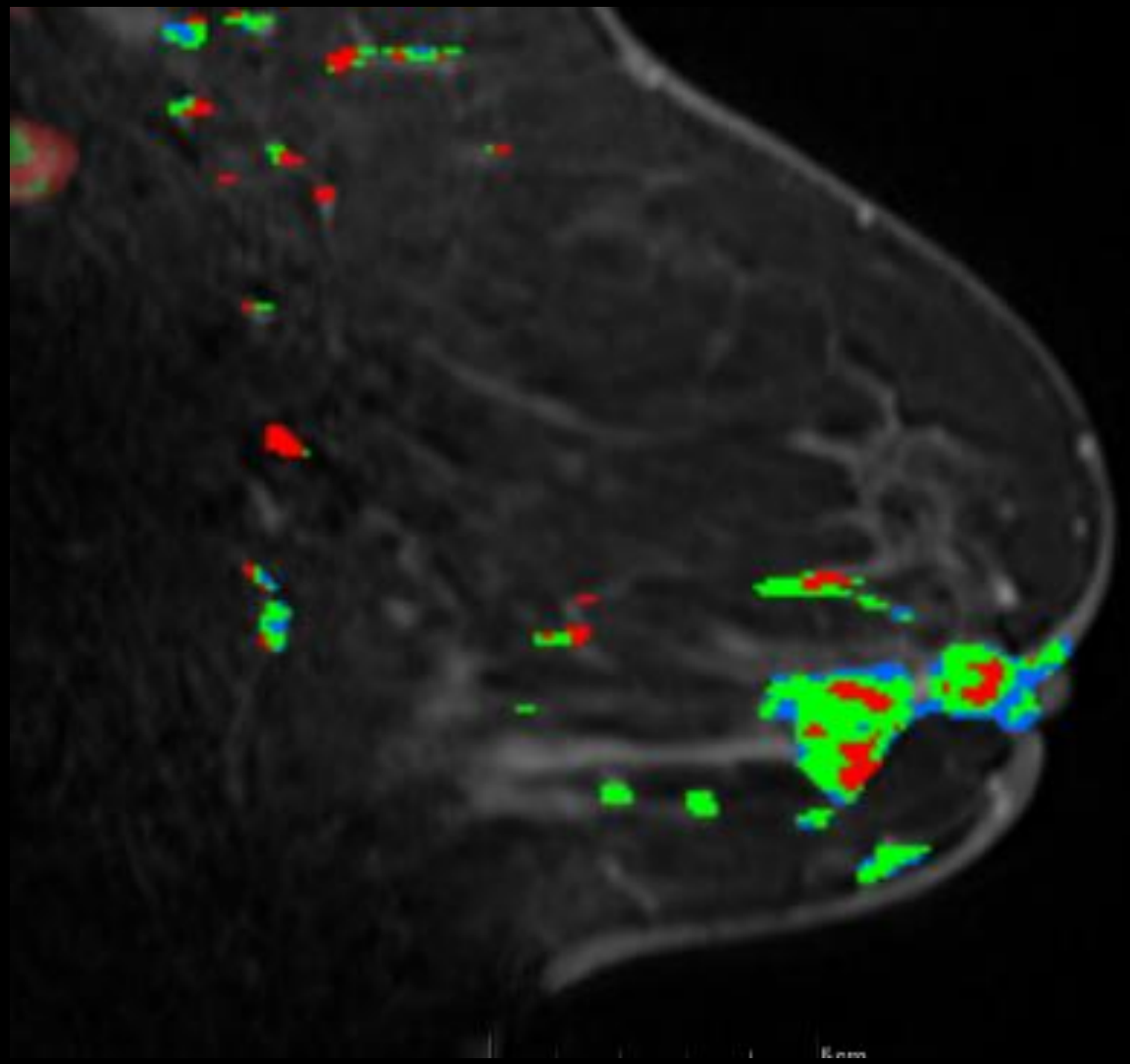


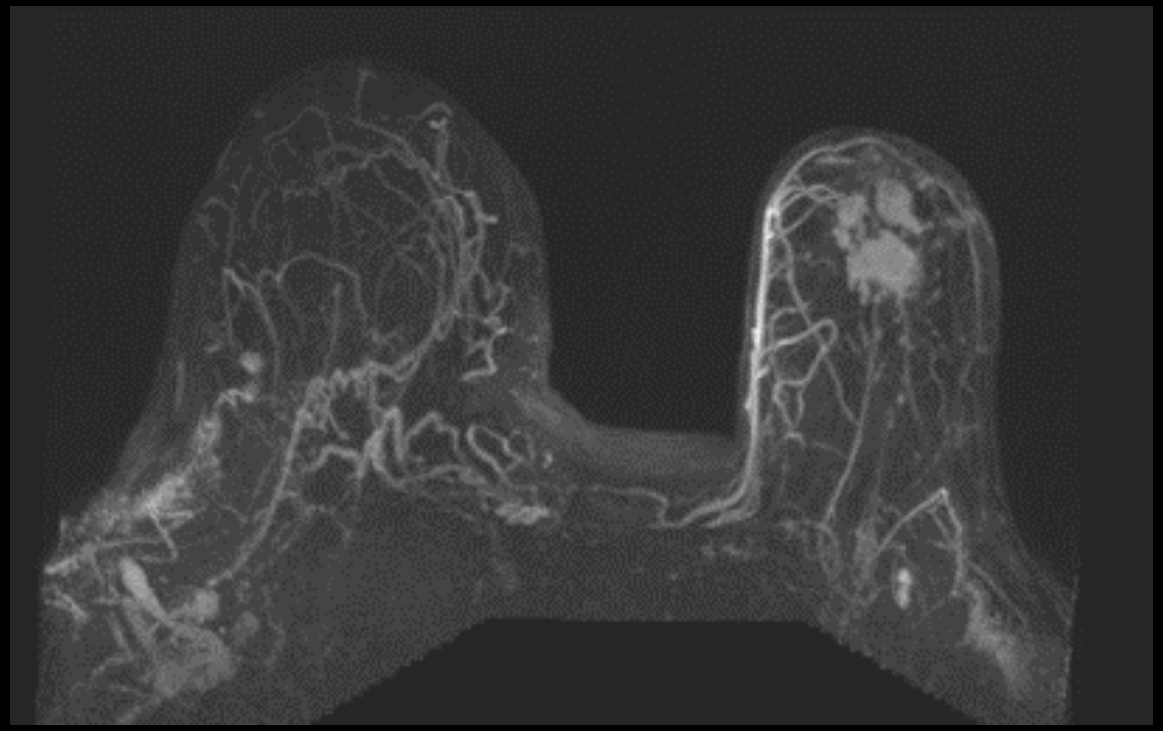


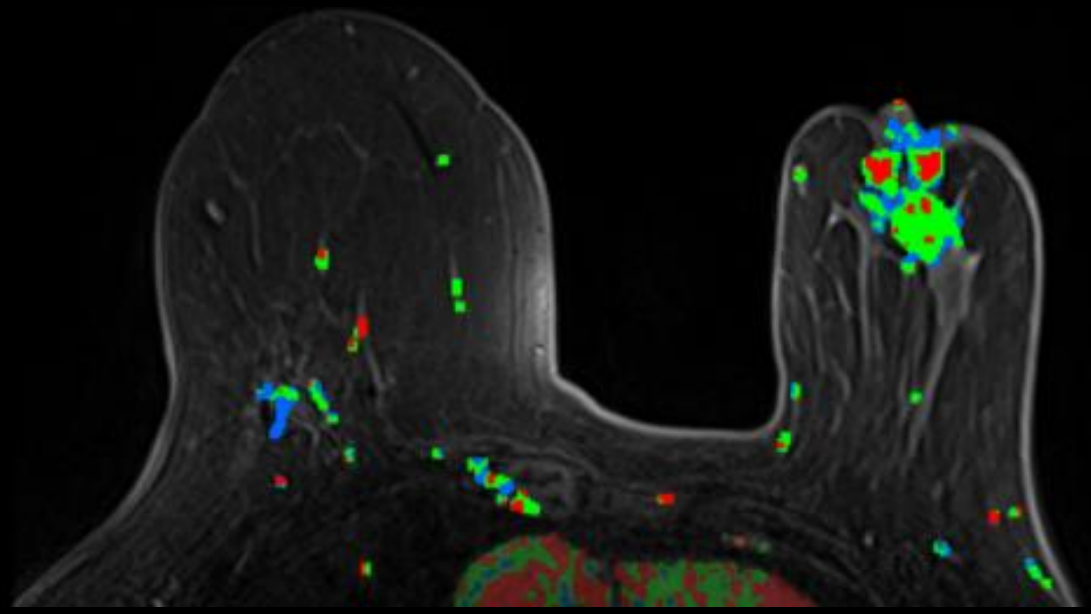




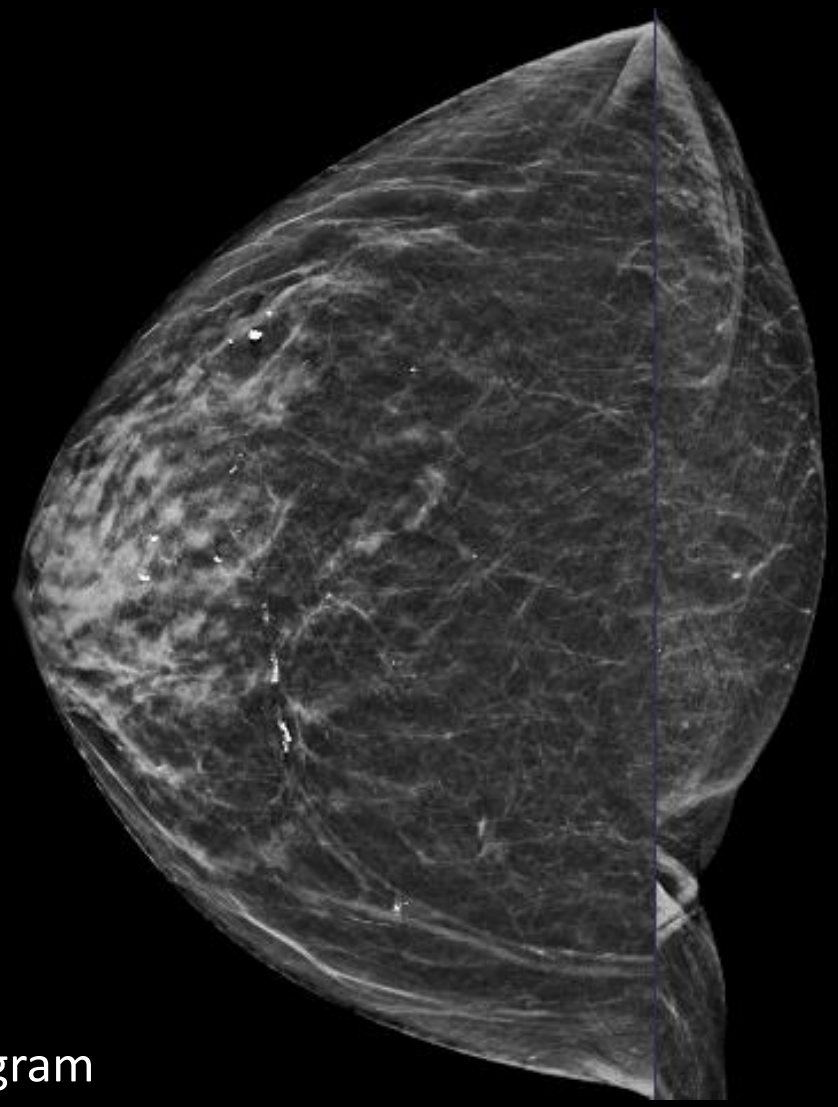

Left 6:00 US guided biopsy – Invasive ductal carcinoma, grade 1
ER Positive, PR Positive, Her2 Negative







**Case 6-** Patient presents for screening mammogram and screening US – personal history of left mastectomy



Negative mammogram

# Mammography Imaging Post-Mastectomy

- Routine mammography screening after mastectomy is controversial
  - Yield of finding a recurrence is low
  - These women are at increased risk
- 0.2 to 1% annual recurrence rates in patients without reconstruction
- Newer skin sparing techniques

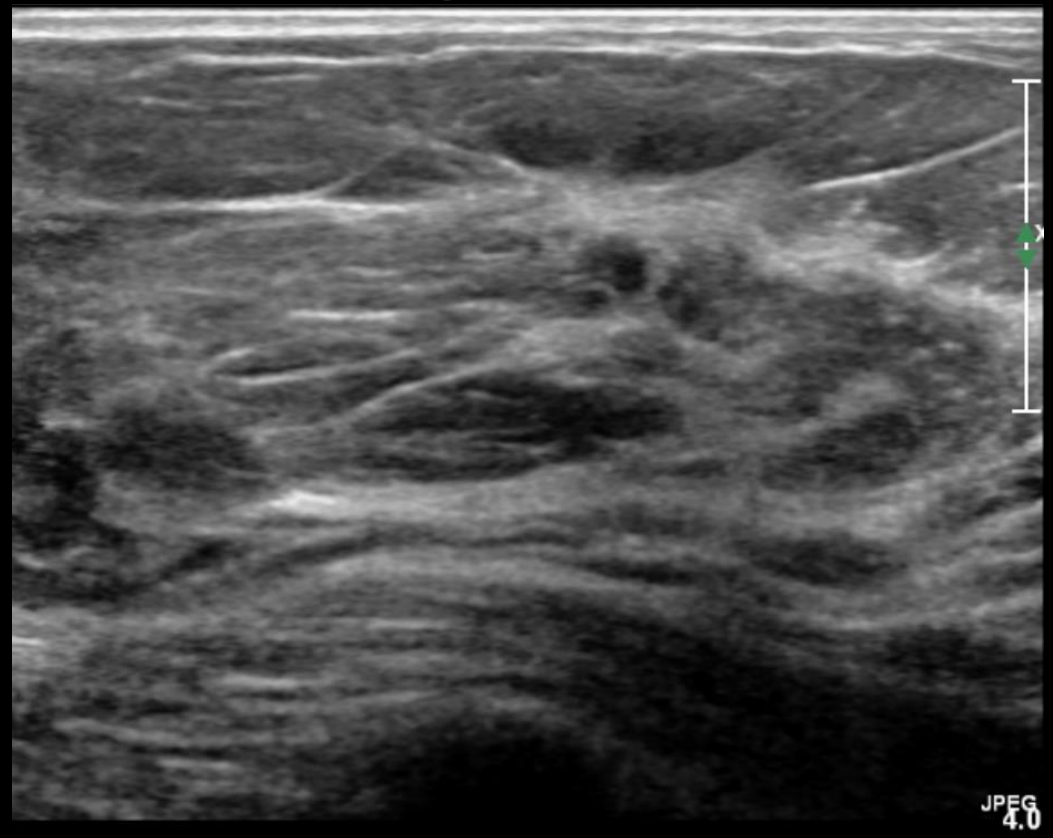
Destounis S, et al. A review of breast imaging following mastectomy with or without reconstruction in an outpatient community center. *Breast Cancer* (2011)18:259-267

# Screening US

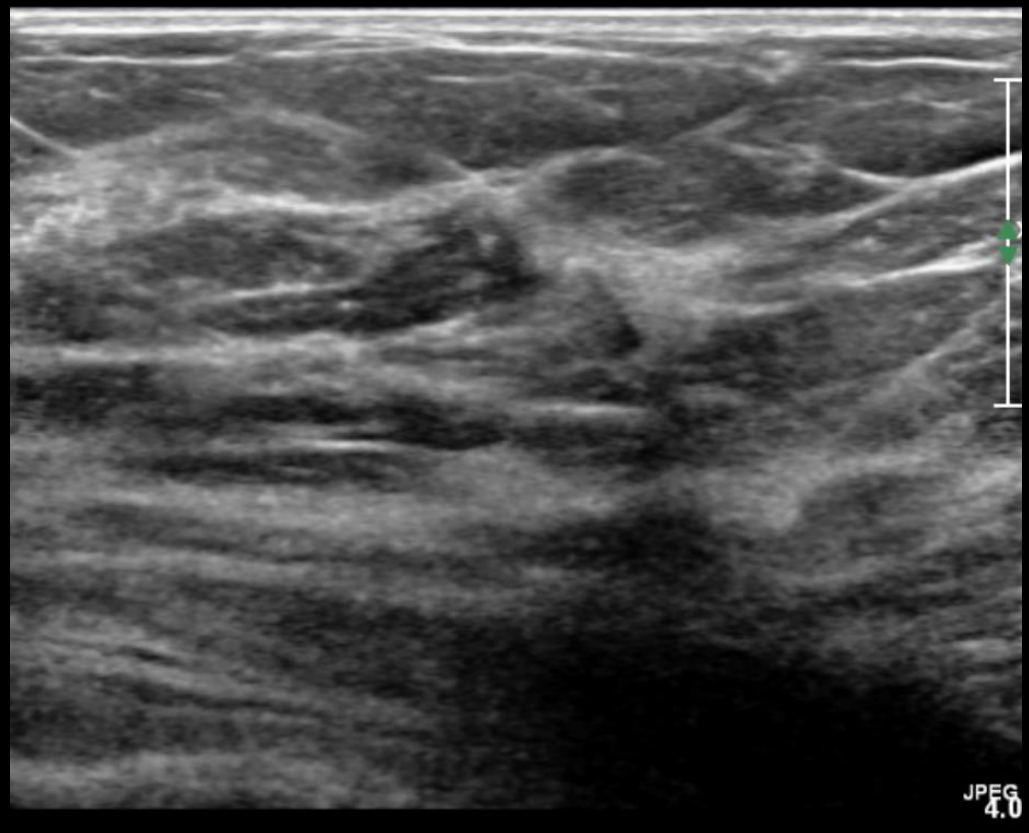


Small hypoechoic mass seen on US
US-guided core biopsy – Invasive ductal carcinoma, gr 1

# Screening US – Additional Finding




RT Breast 11:30 3 cm from nipple Long

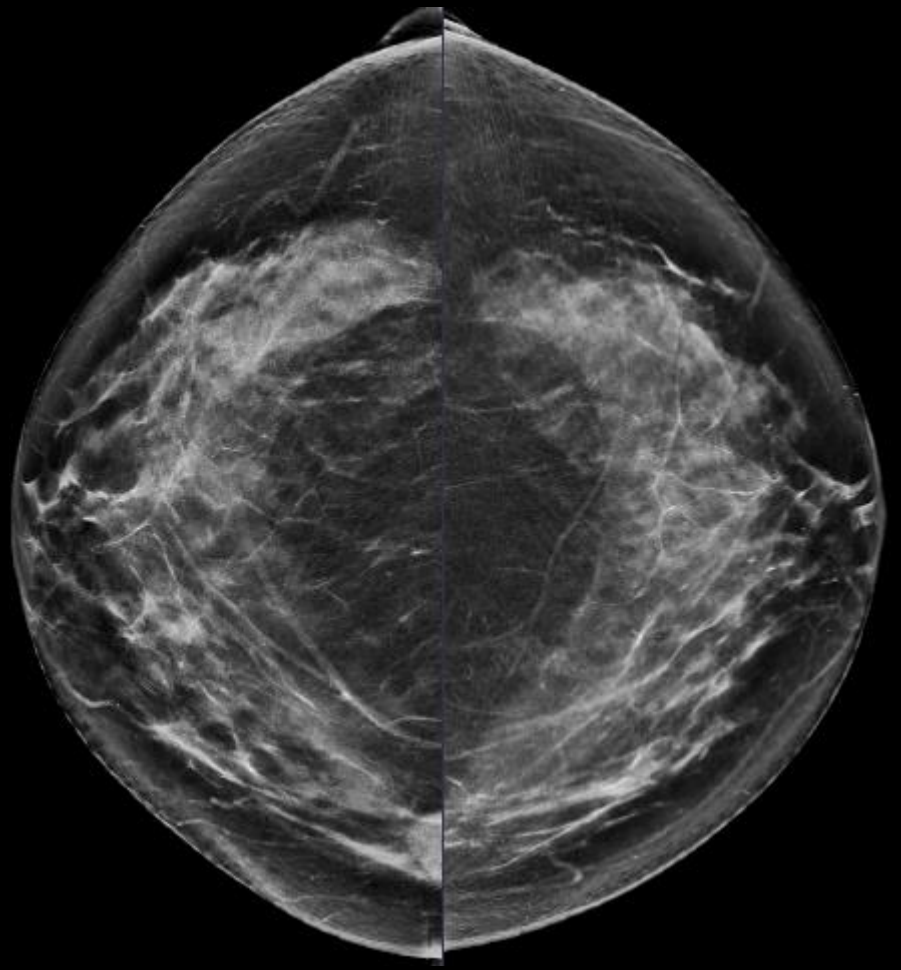


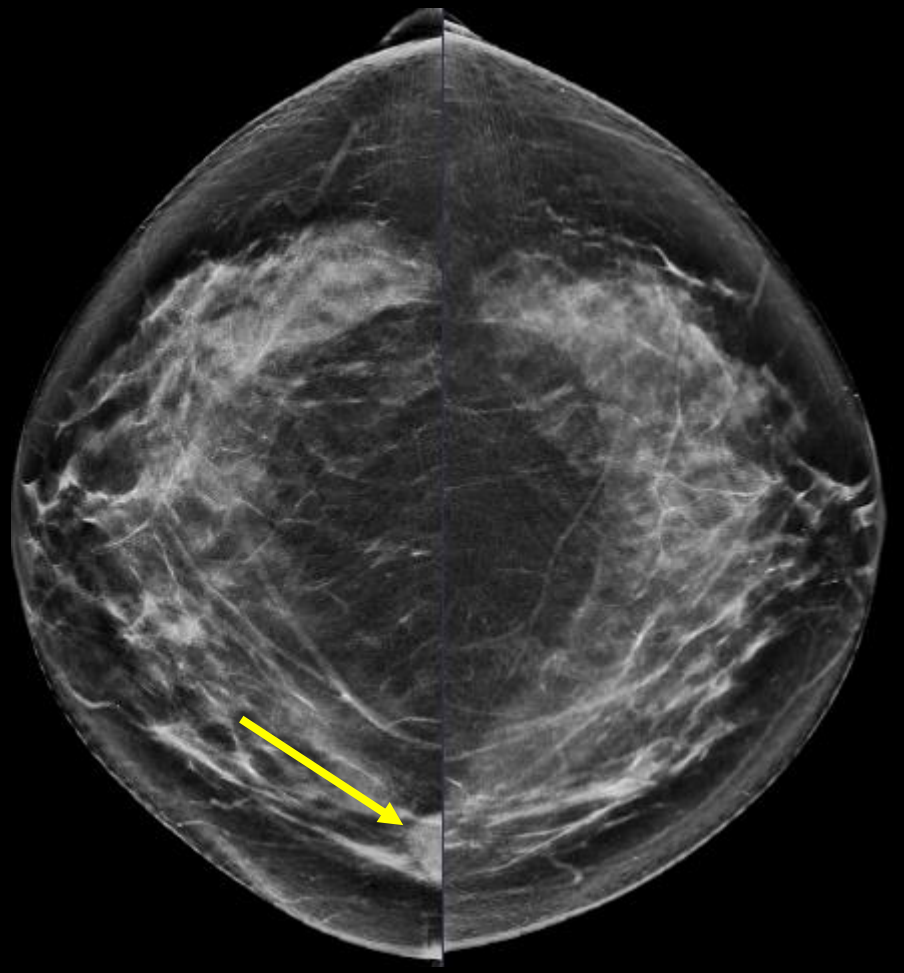

RT Breast 11:30 3 cm from nipple Trans

A small irregular hypoechoic mass is also seen

US-guided core biopsy – Invasive ductal carcinoma, gr 2, ER Positive, PR Positive, Her2 Negative

**Case 7** – Patient presents for evaluation of spontaneous right bloody nipple discharge

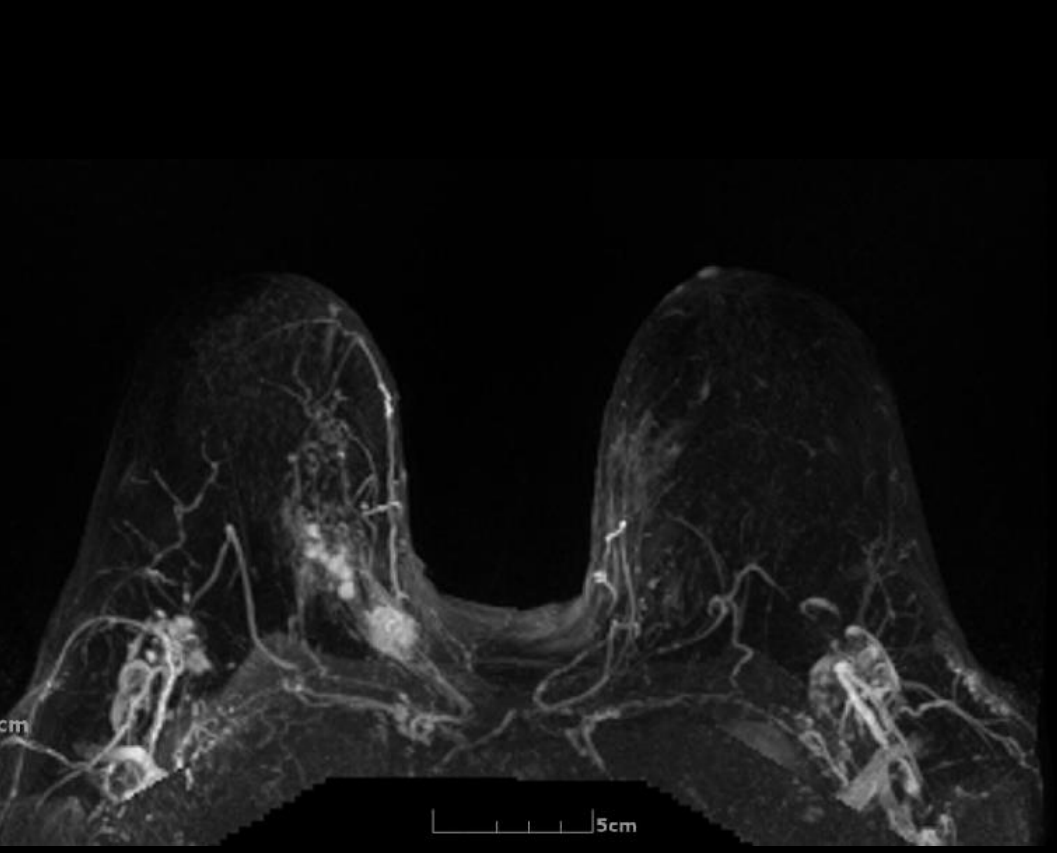


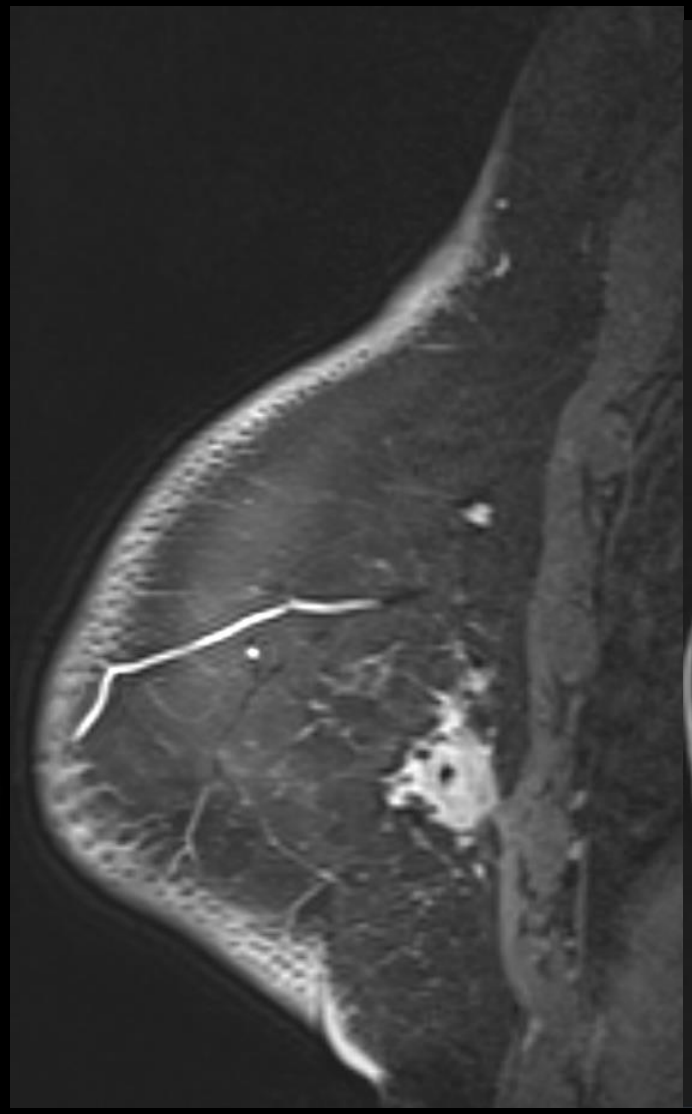


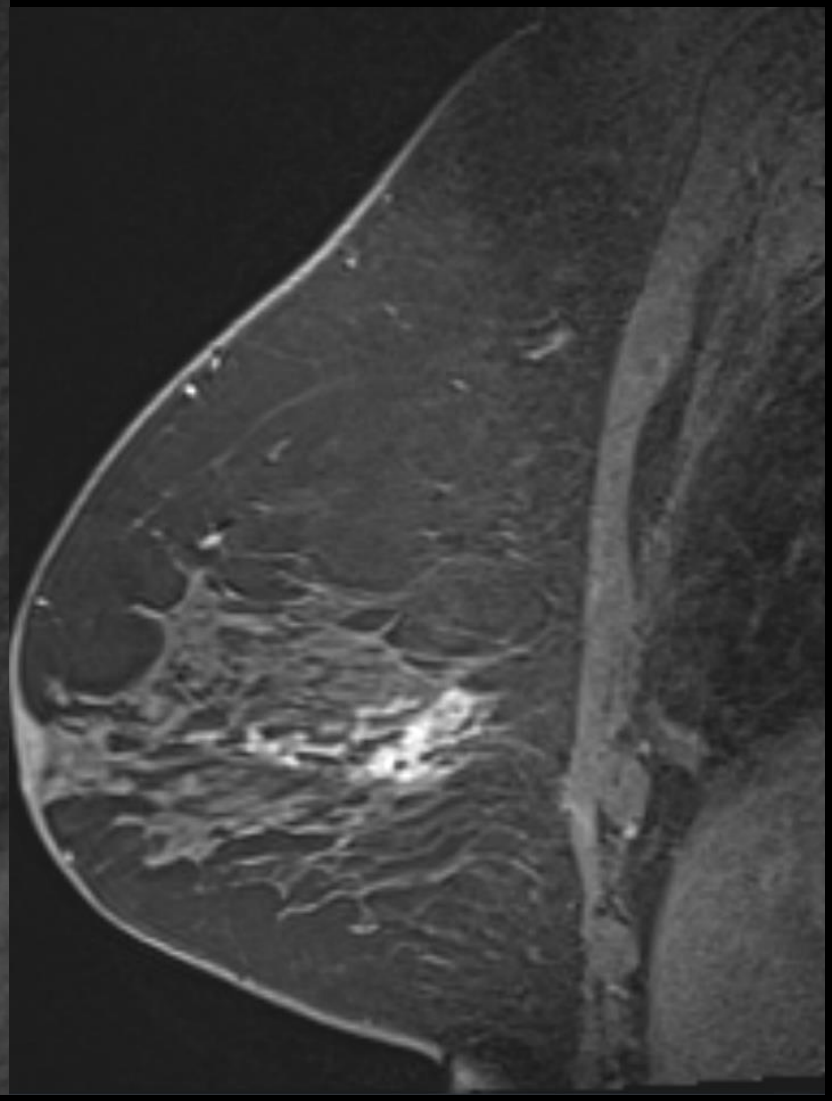
# Diagnostic US


Irregular hypoechoic mass
US-guided biopsy: Invasive ductal carcinoma with micropapillary features, gr 3

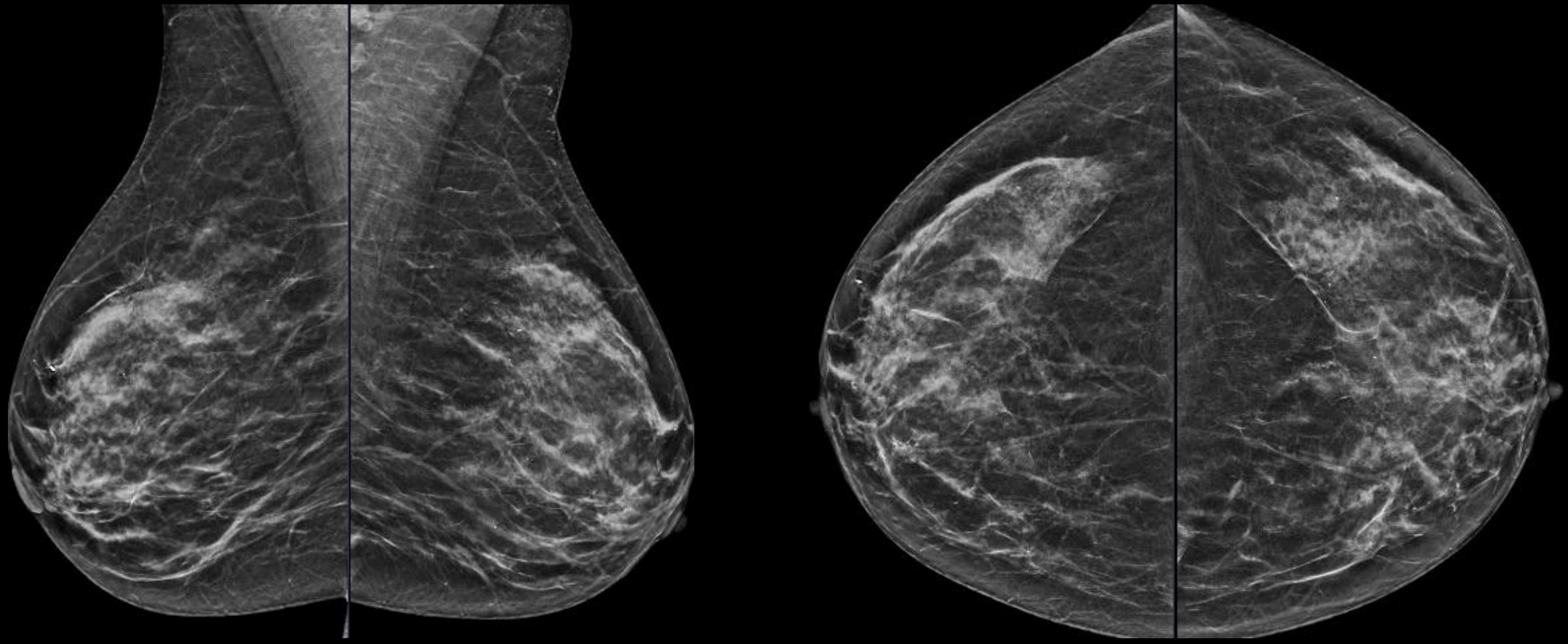

Adjacent hypoechoic masses
US-guided biopsy: Invasive ductal carcinoma with micropapillary features, gr 3


5cm





**Case 8** – Patient presents for screening mammogram and screening US due to dense breast tissue



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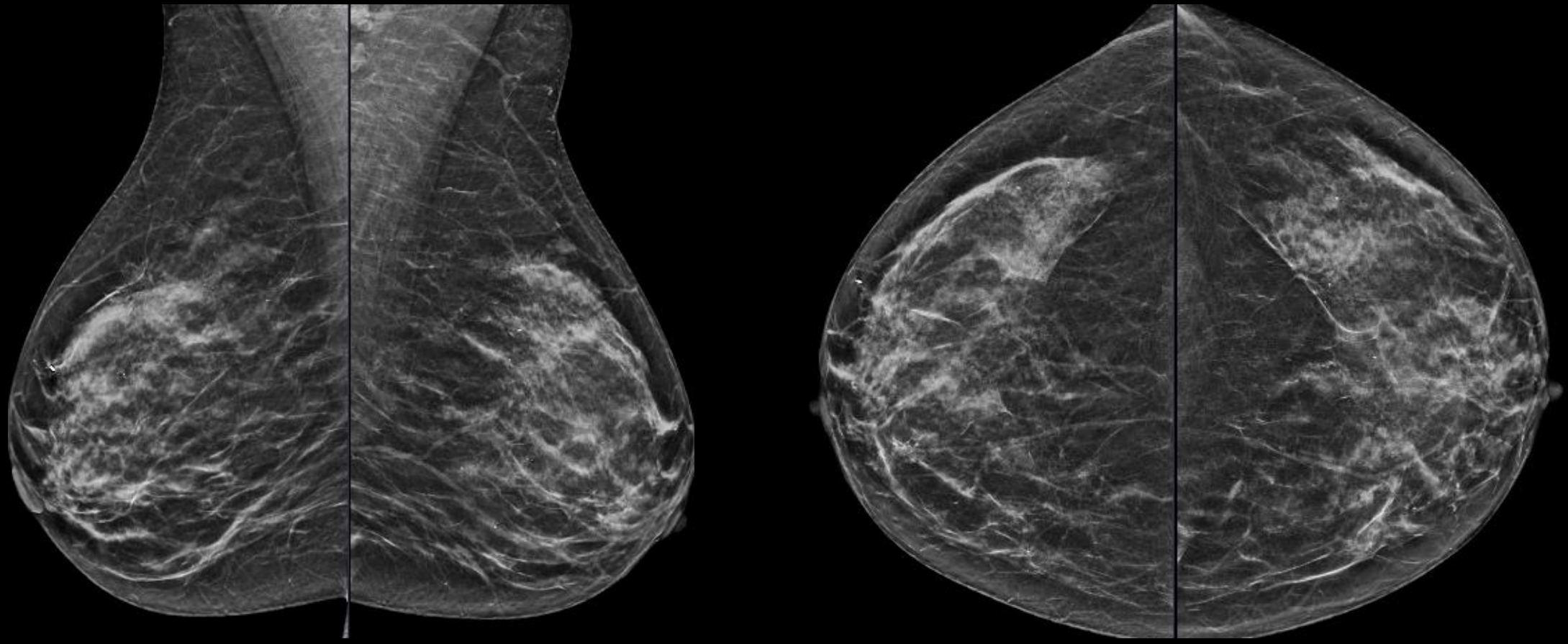
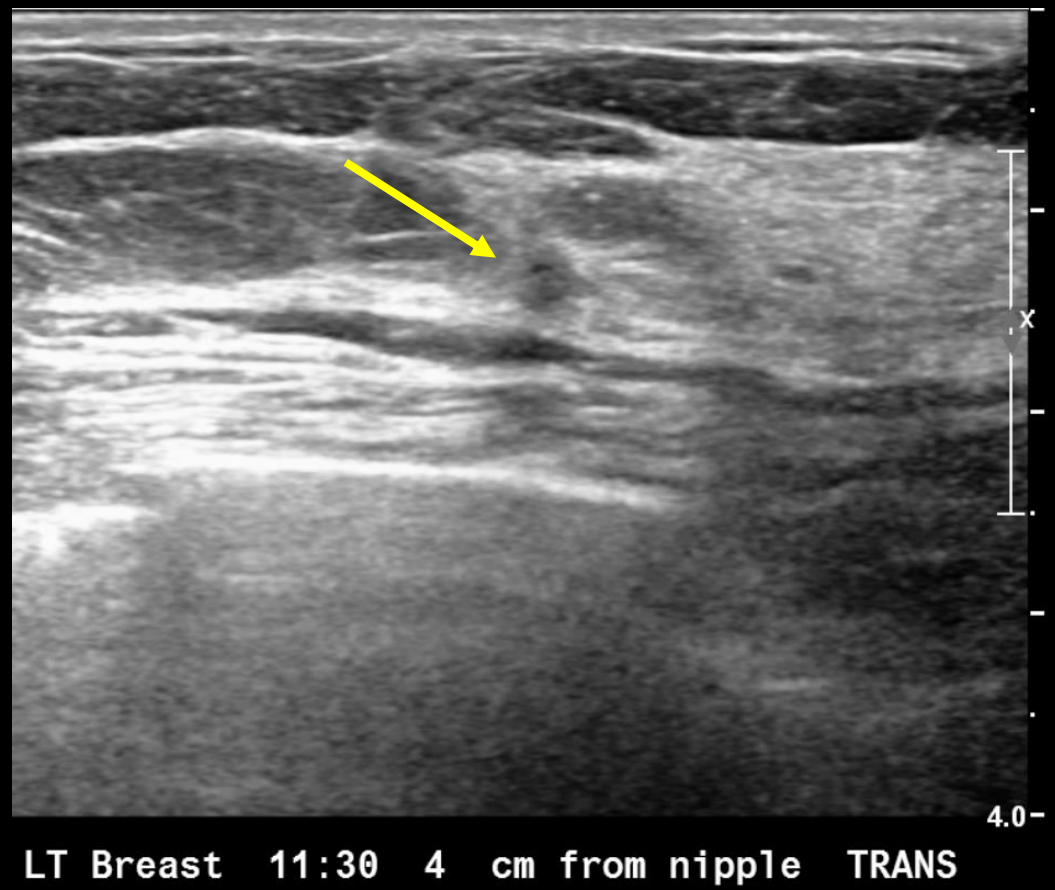


Negative mammogram

# Screening US

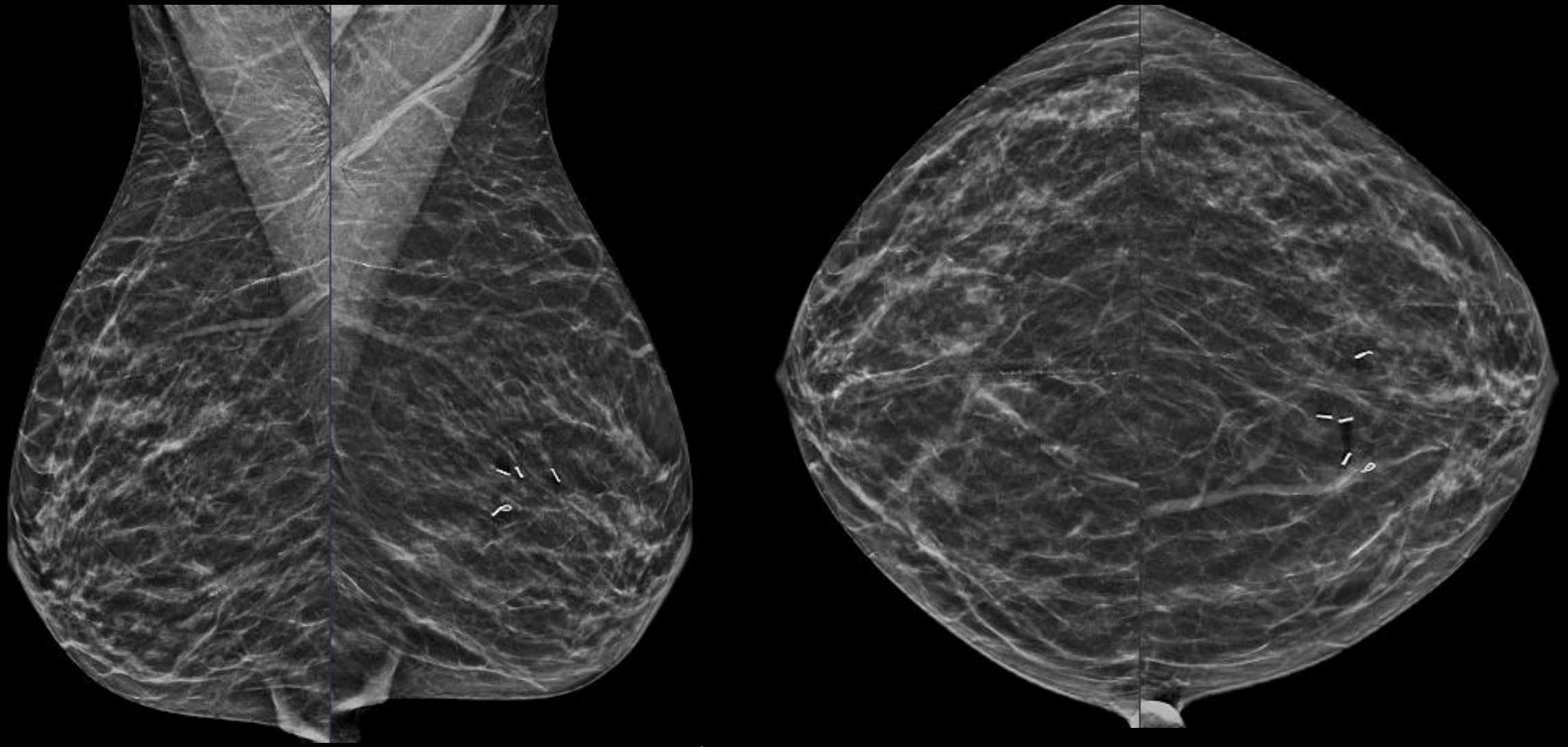

Small ill-defined mass on ultrasound

US-guided biopsy: foci of invasive ductal carcinoma, gr 1, ER Positive, PR Positive, Her2 Negative

# Screening Ultrasound

- Breast Density Inform Law - Mammography reports must include information about breast density based on the four BI-RADS® density categories; patient letter in easy-to-understand terms
- Ultrasound (US) used in imaging patients with dense breasts due to its low costs and availability
- Shown to detect additional cancers between 3 and 4.6 patients per 1000
- US detected cancers are often smaller, lower grade and node negative
- We have been performing screening US for dense tissue since implementation of the NYS law in 2013
  - Initially slow uptake, now approx. 50% of our eligible dense breast population are having screening US

**Case 9** – Patient presents for screening mammogram; post left lumpectomy



Negative mammogram

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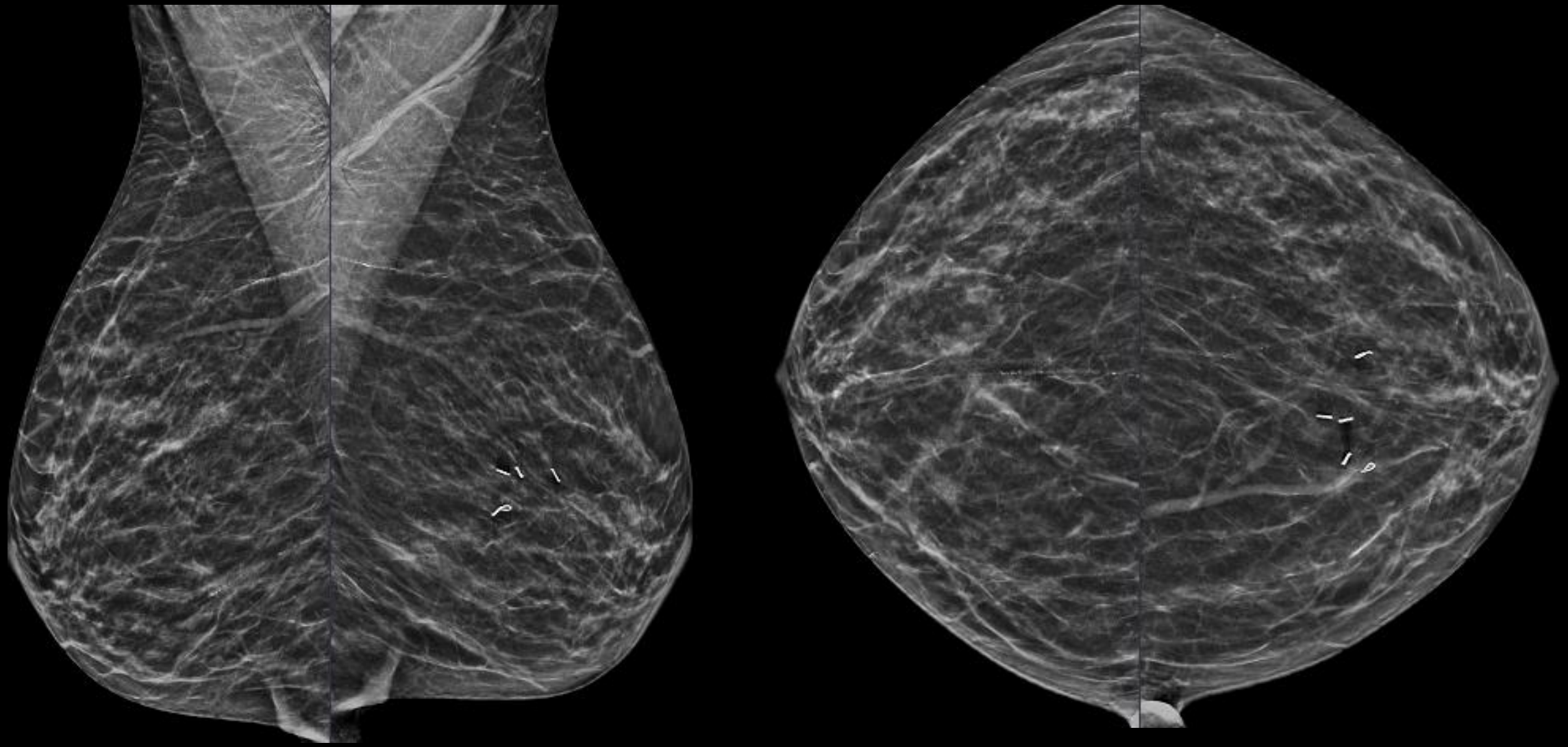
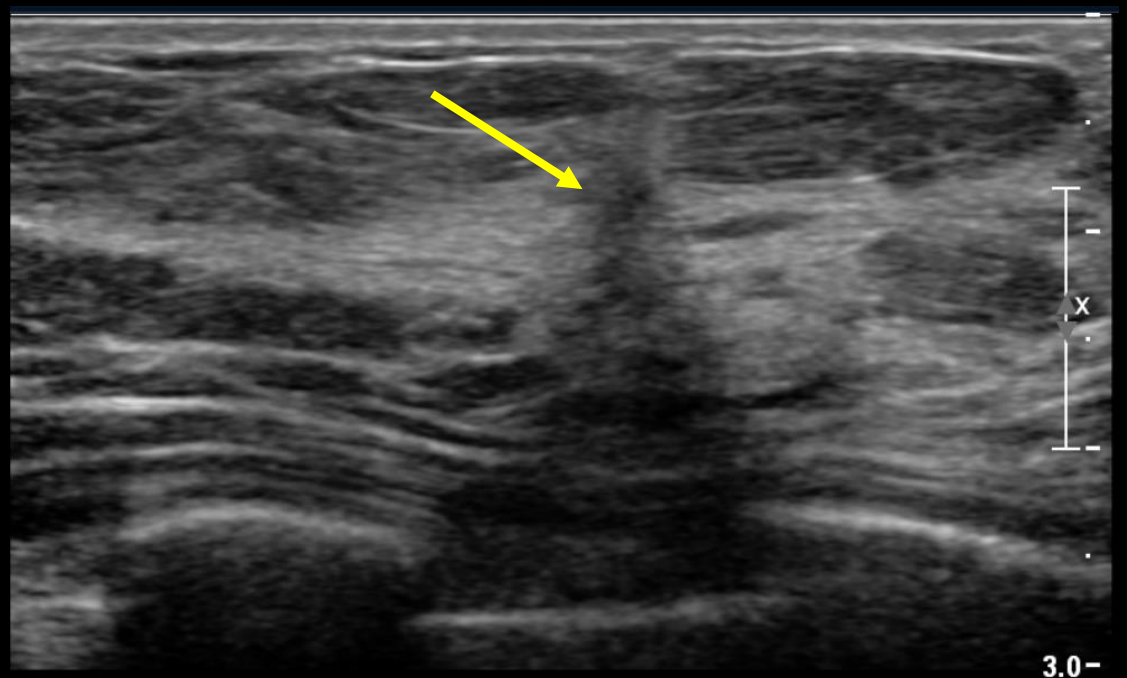
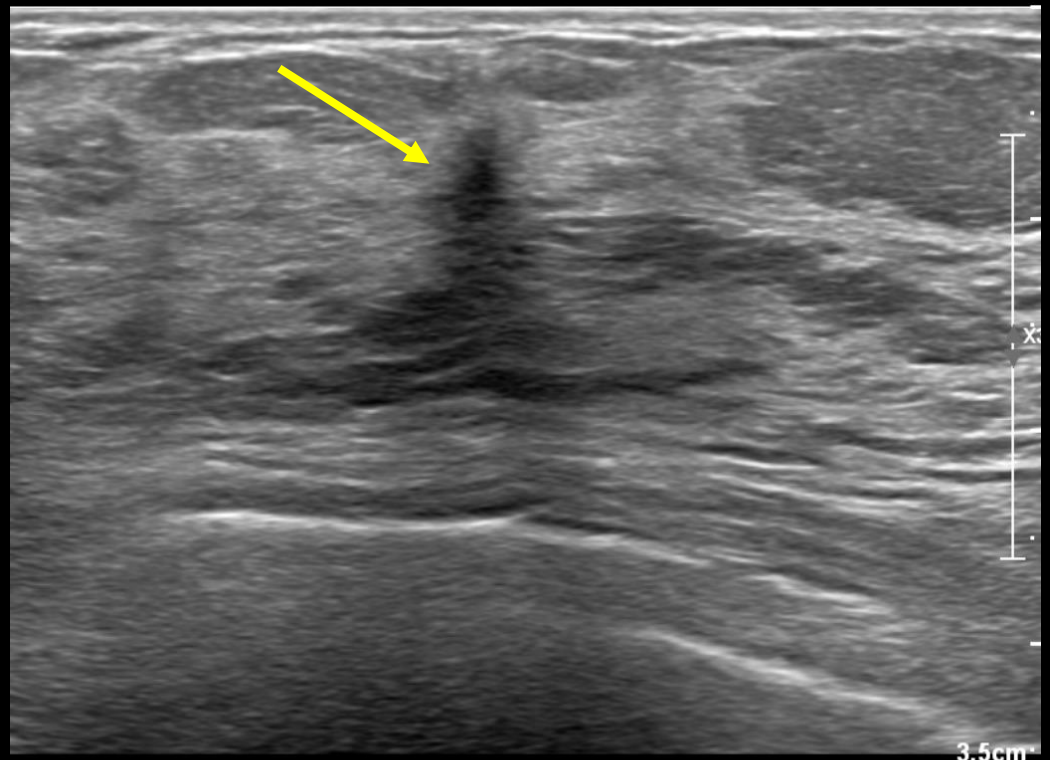


# Screening US offered due to personal history and dense tissue



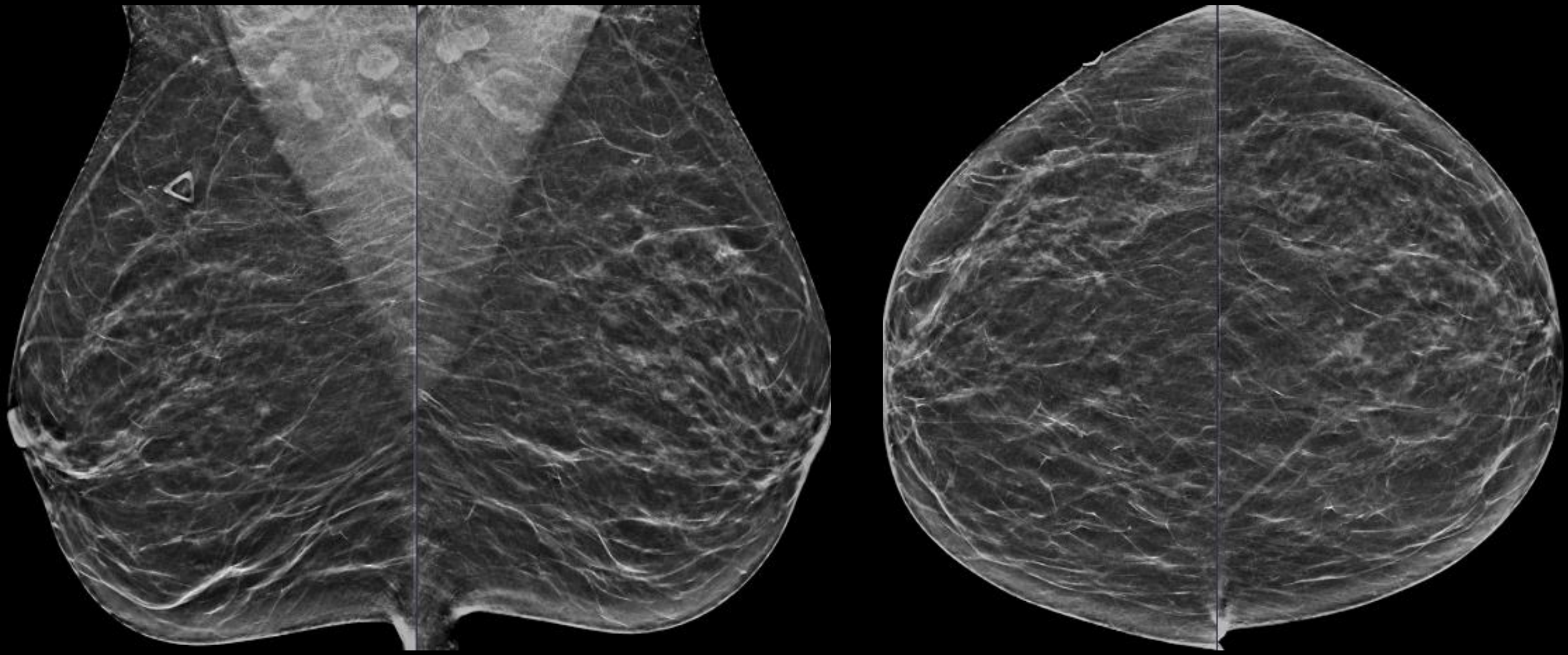

RT Breast 10:30 3 cm from nipple Long




RT BREAST 1030 3 CMFN Trans

Area of hypoechogenicity/distortion seen
US-guided biopsy: Invasive ductal carcinoma gr 2
ER Positive, PR Positive, Her2 Negative

**Case 10** – 57-year-old patient presents for diagnostic evaluation of right lump – personal history of melanoma at 44, recurrence at 46



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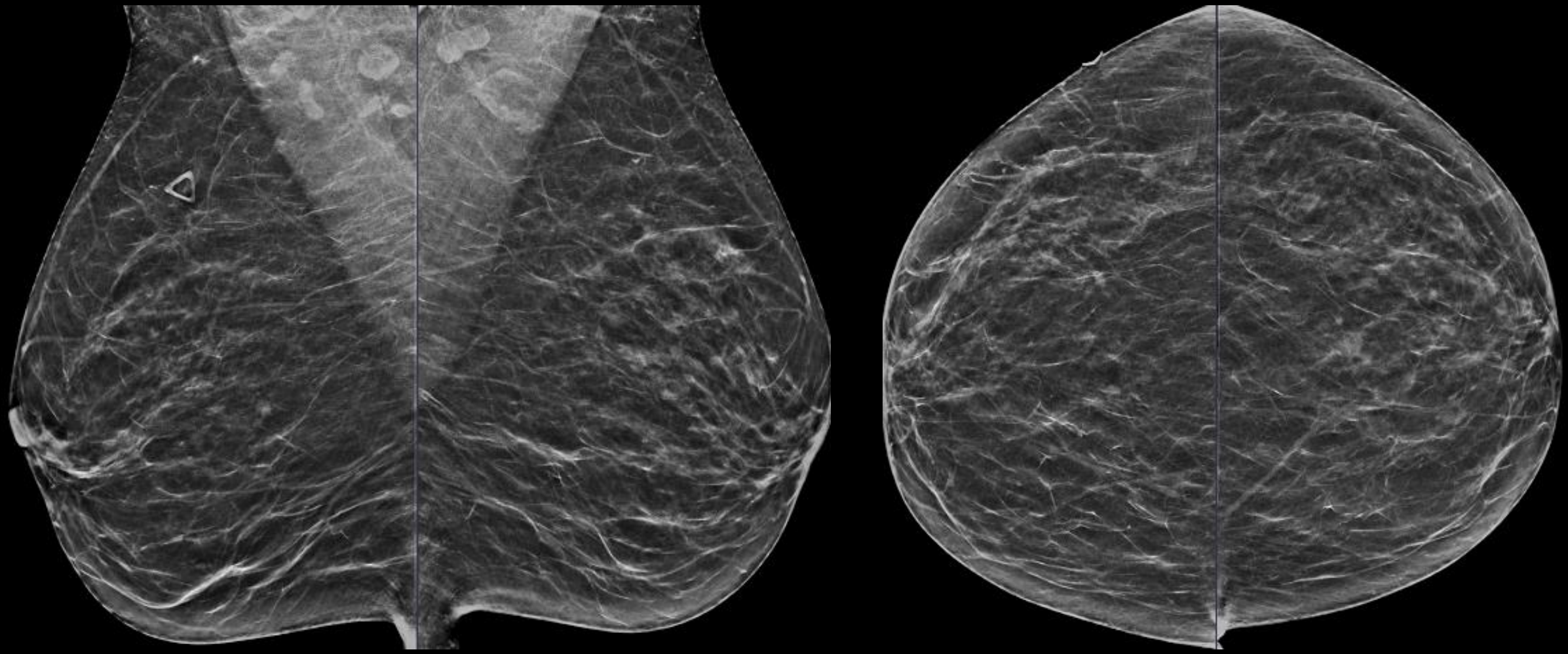
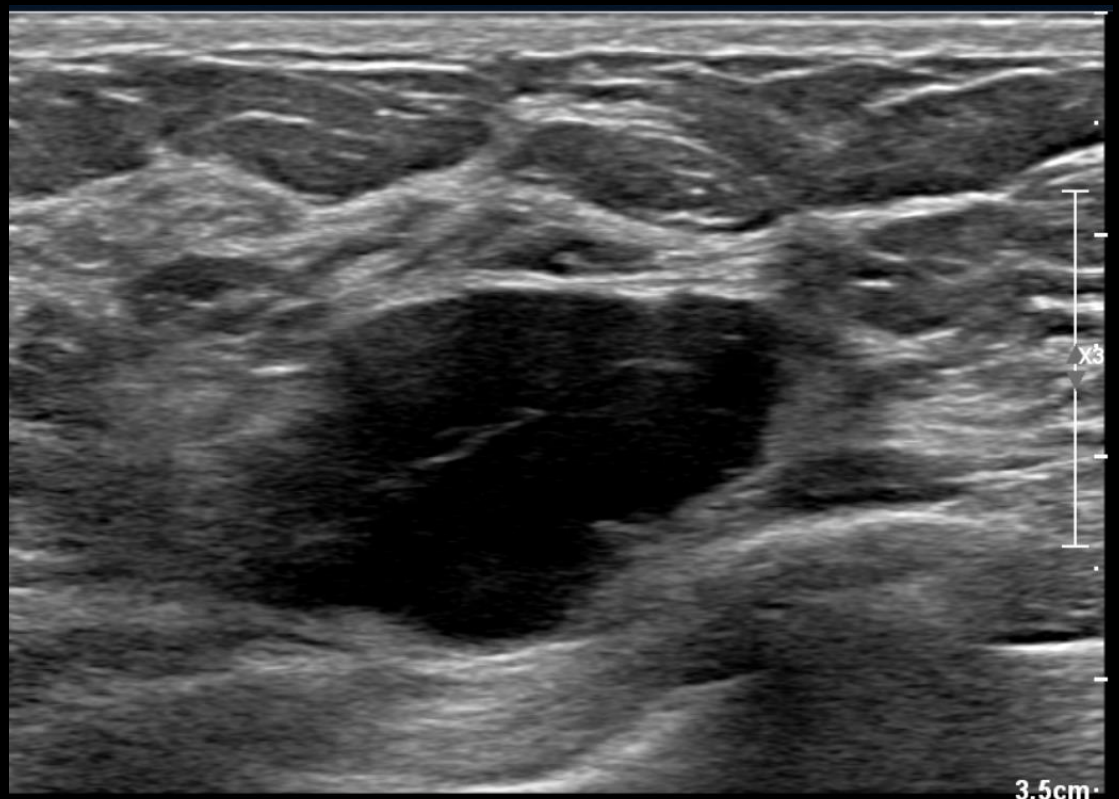
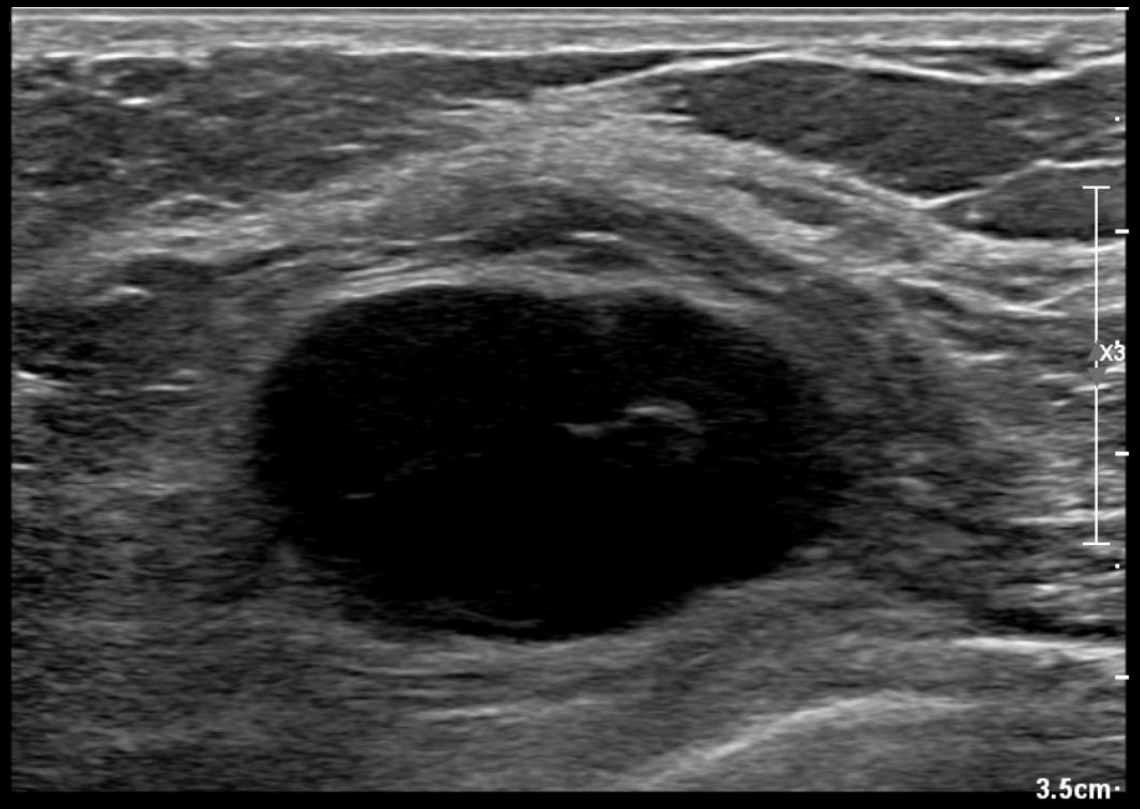
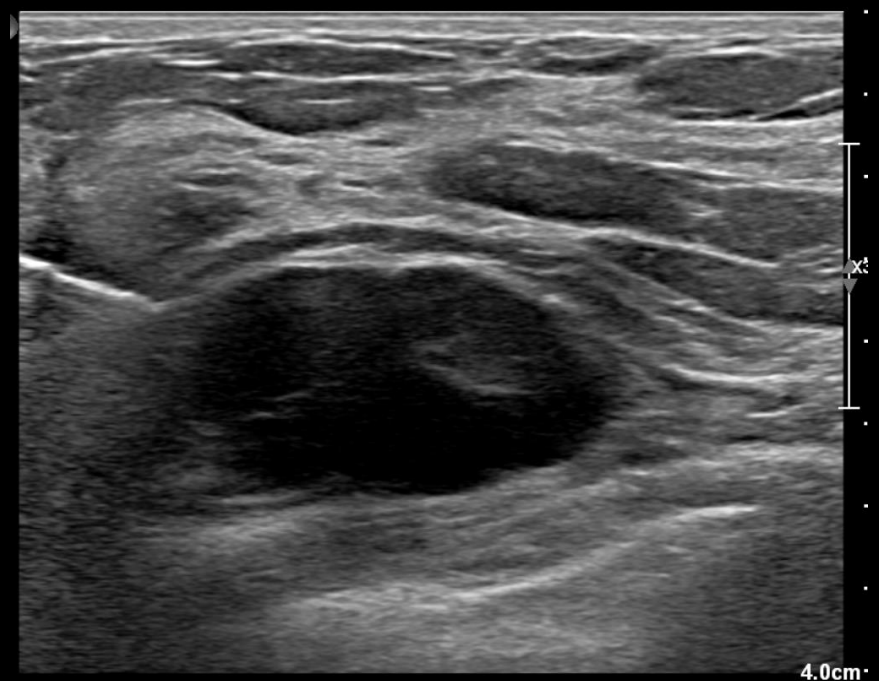


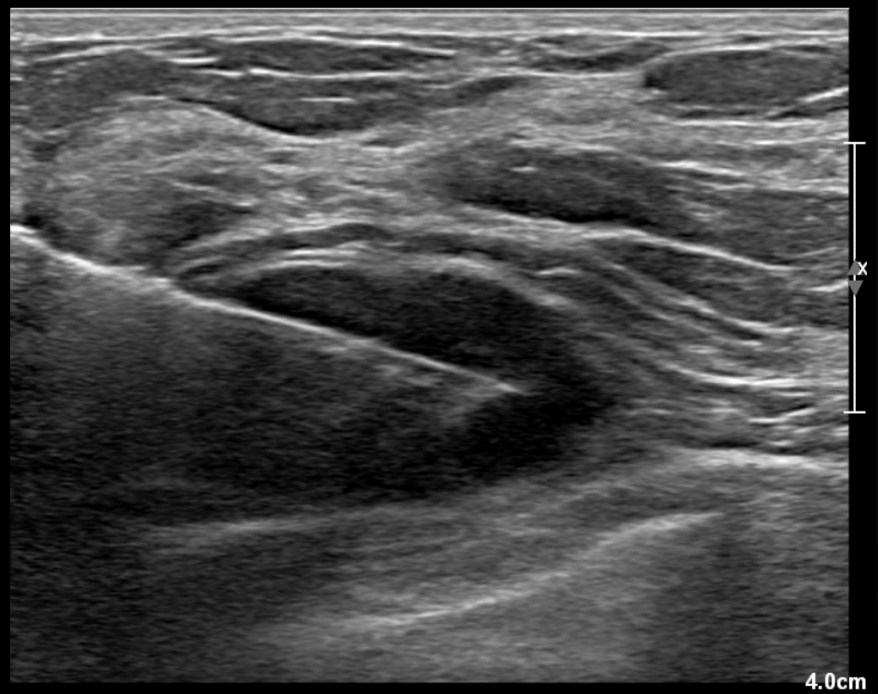
Nothing on mammogram to correlate to palpable lesion

# Diagnostic US





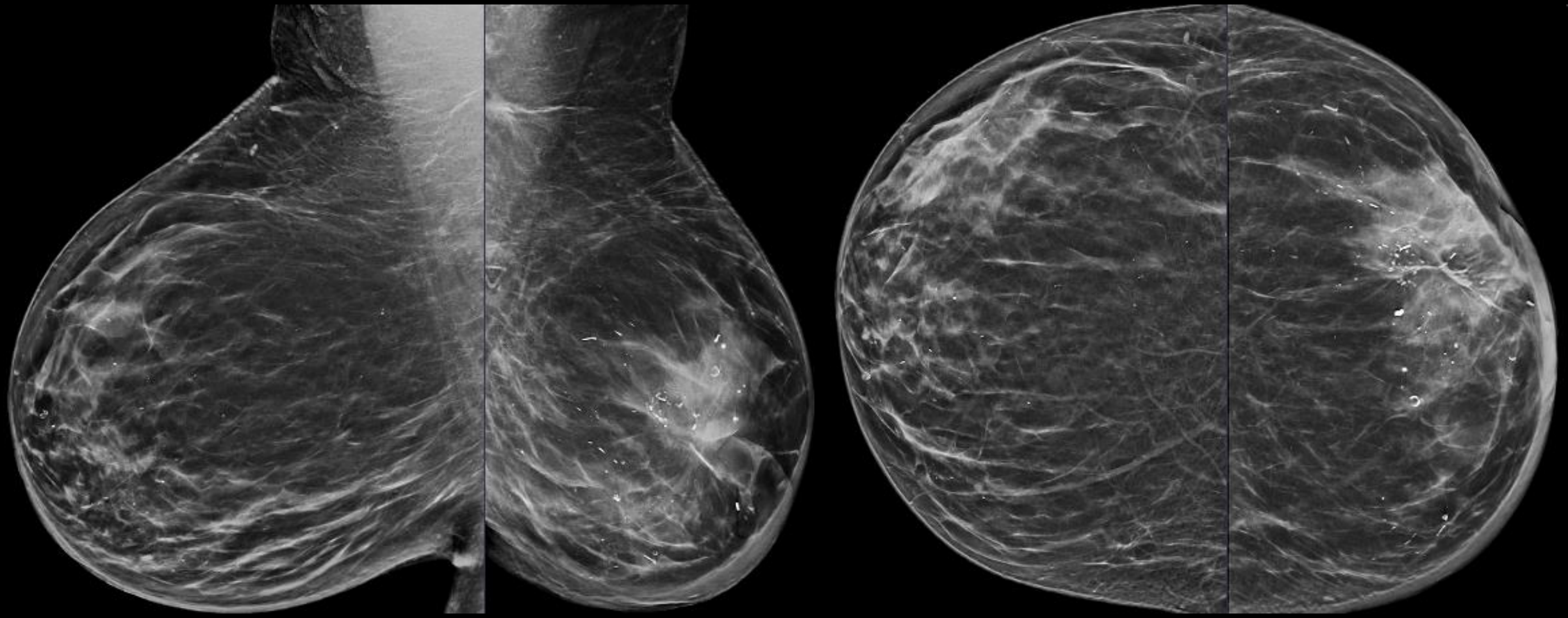

US-guided biopsy: metastatic malignant melanoma

# Metastases to the Breast

- Metastases to the breast
  - Extremely rare
    - The most common primary tumor sources for breast metastases are represented by lymphomas, melanomas, rhabdomyosarcomas, lung and ovarian tumors
- Most patients with breast metastases have a known carcinoma at the time of presentation, however the metastasis can be the first manifestation in up to 25% of cases
- To diagnose metastases to the breast, clinical history is most important factor
  - Radiologic presentation can be misleading

Bartella L, et al. Metastases to the Breast Revisited: Radiological-histopathological Correlation. *Clin Radiol* 2003; 58: 254-531.
Fulciniti F, et al. Metastases to the breast: role of fine needle cytology samples. Our experience with nine cases in 2 years. *Ann Oncol* 2008; 19: 682-687.

**Case 11** – Patient presents for diagnostic evaluation of left breast lump; prior left lumpectomy + radiation

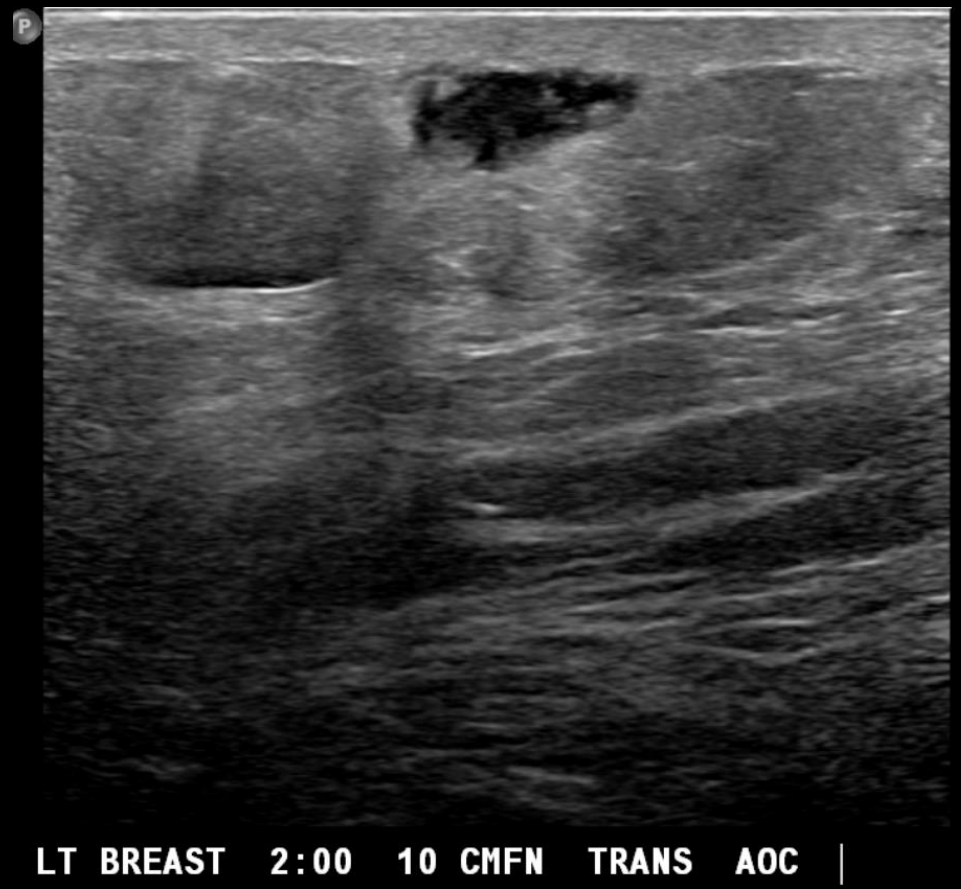


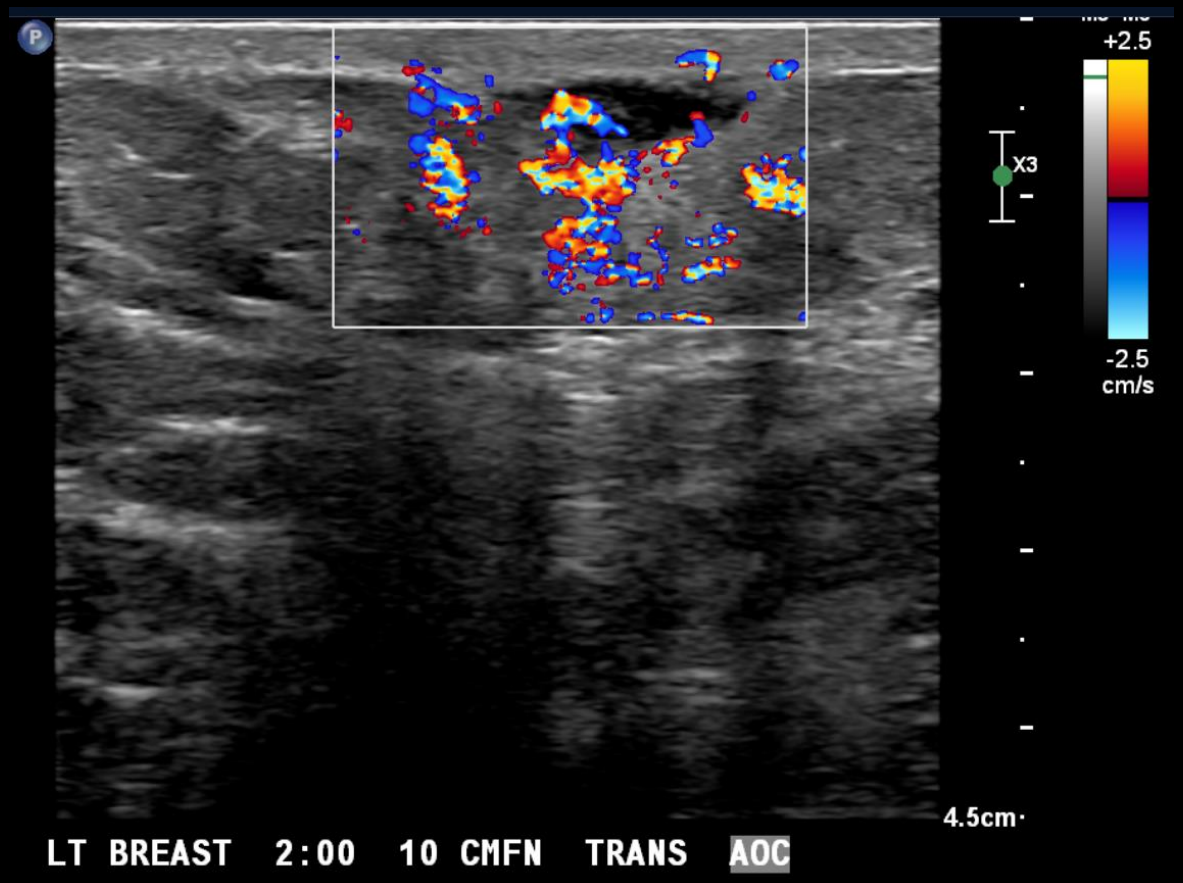
Left postsurgical changes

# Mammography - LSTAN

AOC correlates to isodense superficial mass

# Diagnostic US



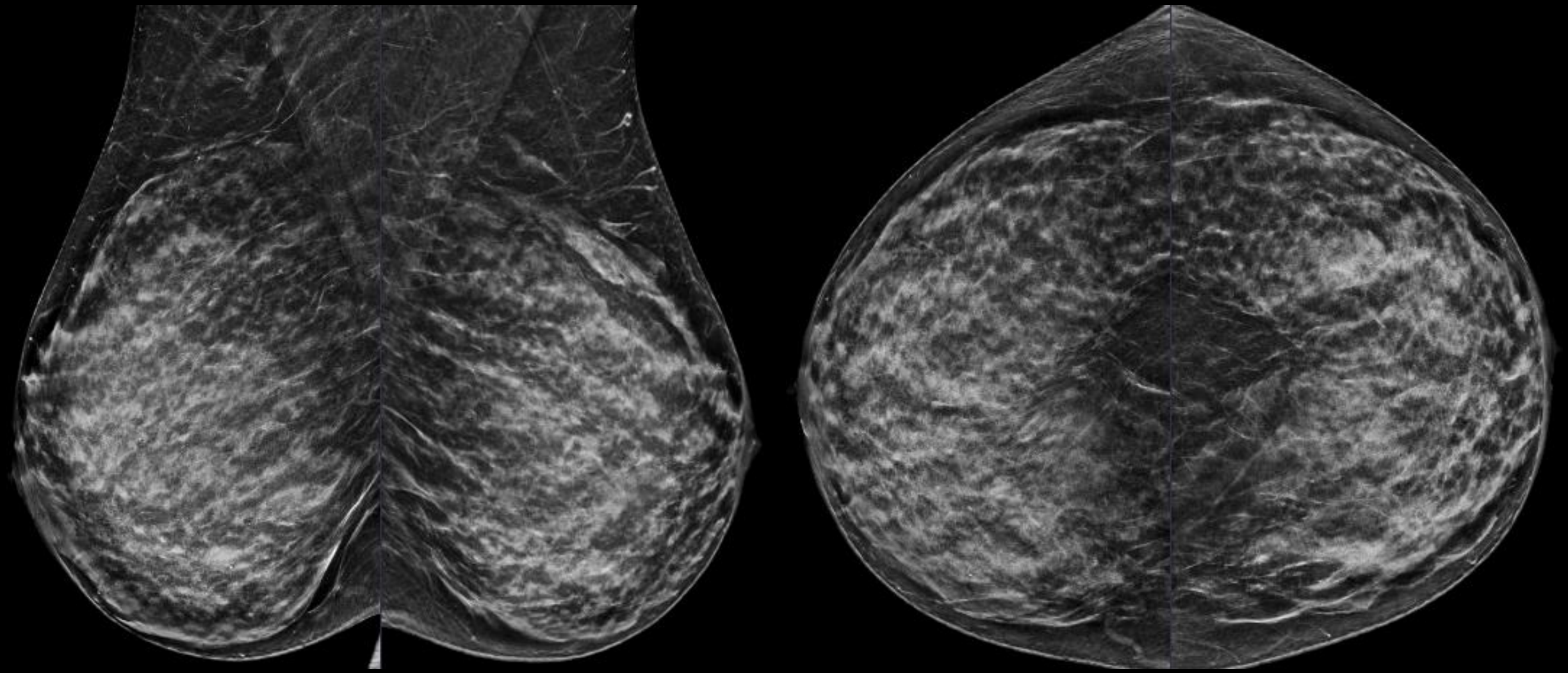

US-guided biopsy: atypical spindle cell proliferation; favor a malignant process
Surgical excision – malignant spindle cell neoplasm, post radiation sarcoma, gr 2

# Post-radiation Sarcoma

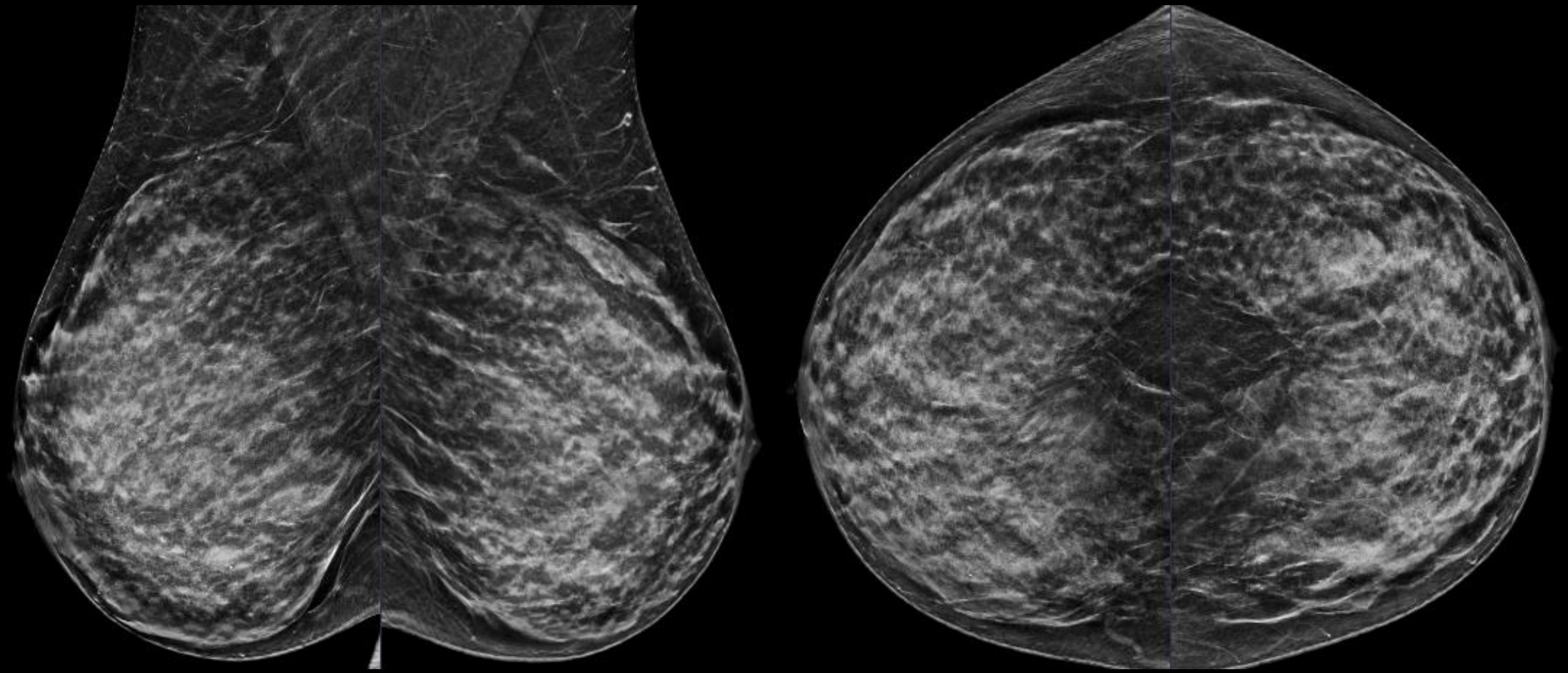
- Radiation-associated sarcoma (RAS) is a rare complication of radiation therapy (RT) to breast cancer
  - Tends to be aggressive, poor outcomes
- After RT, the cumulative incidence is 3.2 per 1,000 at 15 years (versus 2.3 per 1,000 for primary sarcoma in a population without RT)
- The occurrence rate is low: over a 10-year period, 0.03%–0.2%
  - Comprise about 3% of all soft-tissue sarcomas

Sheth GR, et al. Radiation-Induced Sarcoma of the Breast: A Systematic Review. Oncologist 2012; 17(3): 405-418.

**Case 12** – Patient presents for screening mammogram and screening US due to dense tissue

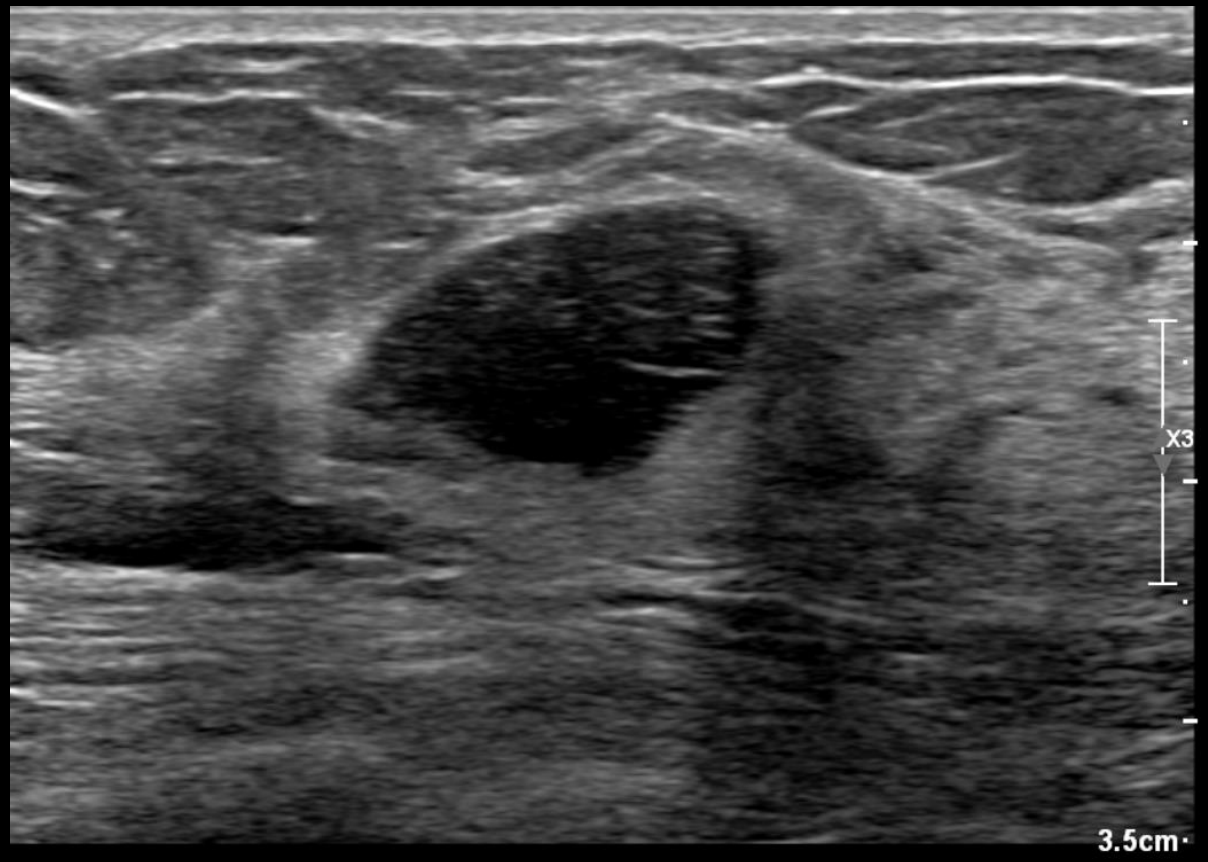


**Case 12** – Patient presents for screening mammogram and screening US due to dense tissue

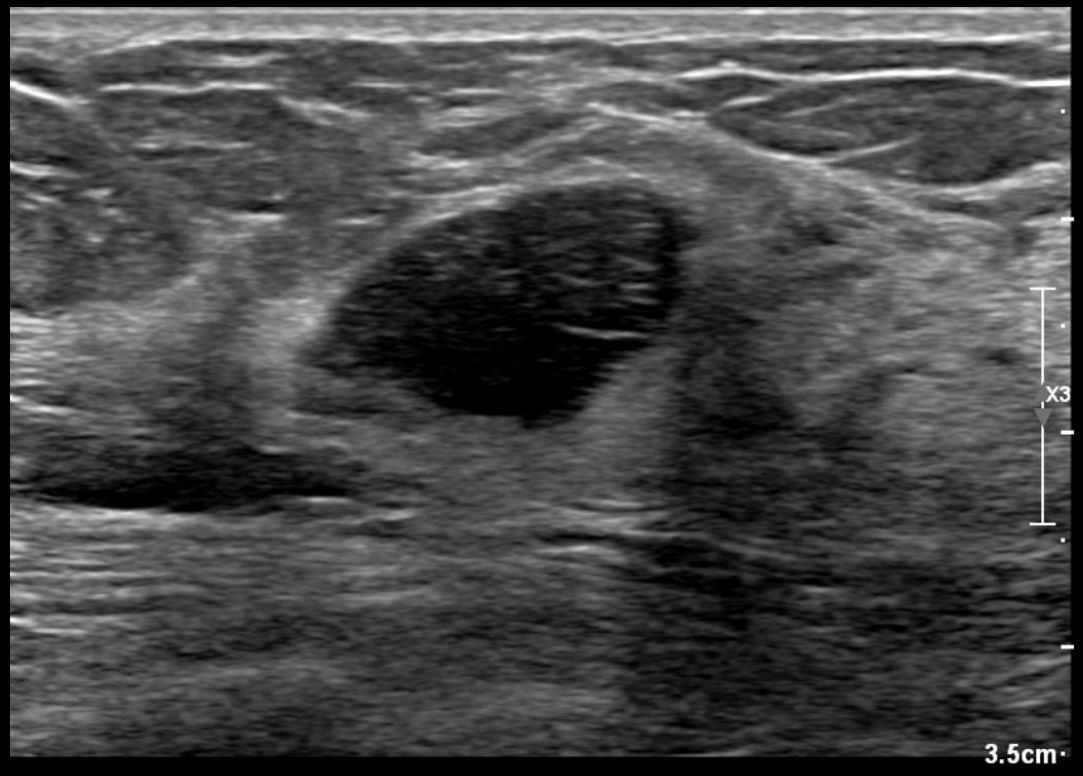


Normal mammogram

# Screening US




# Screening US





US-guided biopsy: spindle cell lesion, differential includes phyllodes or cellular FAD
Surgical excision: benign phyllodes tumor

# Phyllodes Tumors of the Breast

- Phyllodes tumors of the breast are rare, accounting for less than 1% of all breast tumors
- Start in the connective (stromal) tissue
- Grow rapidly, high rate of local recurrence, so surgical excision is required
- Pathology can be benign (most common) or malignant (about 1 in 4)

# References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- Wang L, et al. Breast metastasis from lung cancer: a report of two cases and literature review. Cancer Biol Med 2014; 11(3): 208-215.
- Sheth GR, et al. Radiation-Induced Sarcoma of the Breast: A Systematic Review. Oncologist 2012; 17(3): 405-418.
- Phyllodes Tumors of the Breast. American Cancer Society, 2019. https://www.cancer.org/cancer/breast-cancer/non-cancerous-breast-conditions/phyllodes-tumors-of-the-breast.html