# How to Approach Mammograms

Diana L. Lam, MD
University of Washington, School of Medicine

Rebecca J. Leddy, MD
Medical University of South Carolina

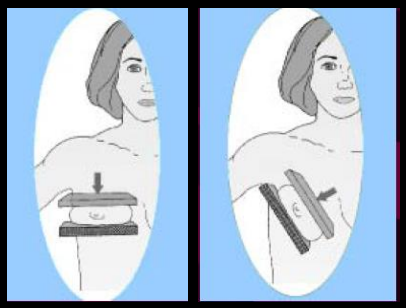
# Patient – Clinical History

- Risk factors for breast cancer
  - Personal history
  - Family history
  - Genetic mutation
- History of any breast procedures (core needle biopsies, excisional biopsy, lumpectomy)
  - Date, location, pathology

# Patient – Clinical History

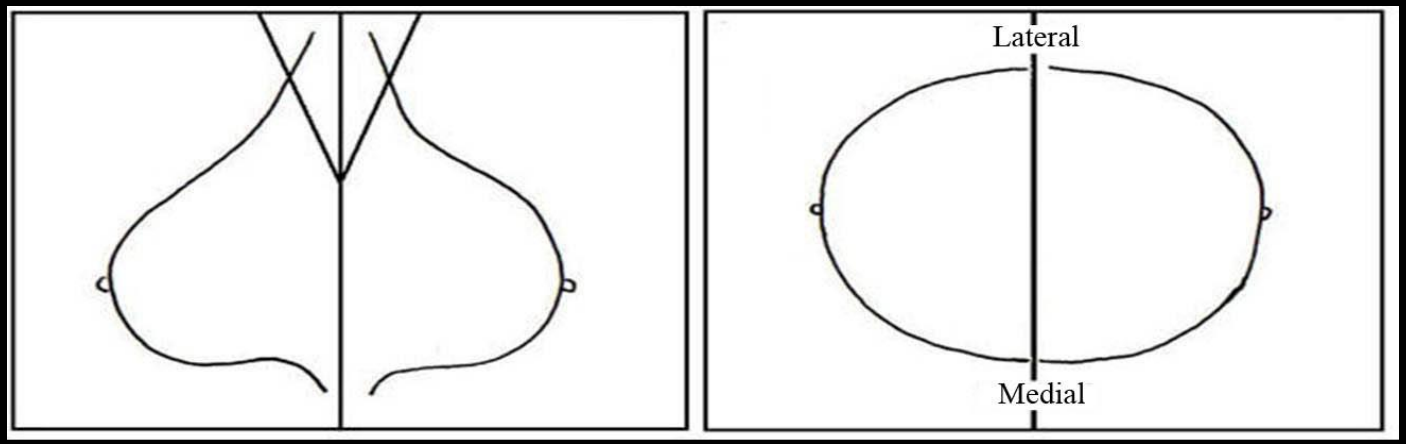
- Hormonal Status
  - Pre-menopausal / Post Menopausal
  - Menstrual cycle phase
  - History of exogenous hormone use
- History of exogenous hormone use
- Symptoms (diagnostic mammography)
  - Palpable lump, focal pain, nipple discharge

# Technique: Screening Mammogram

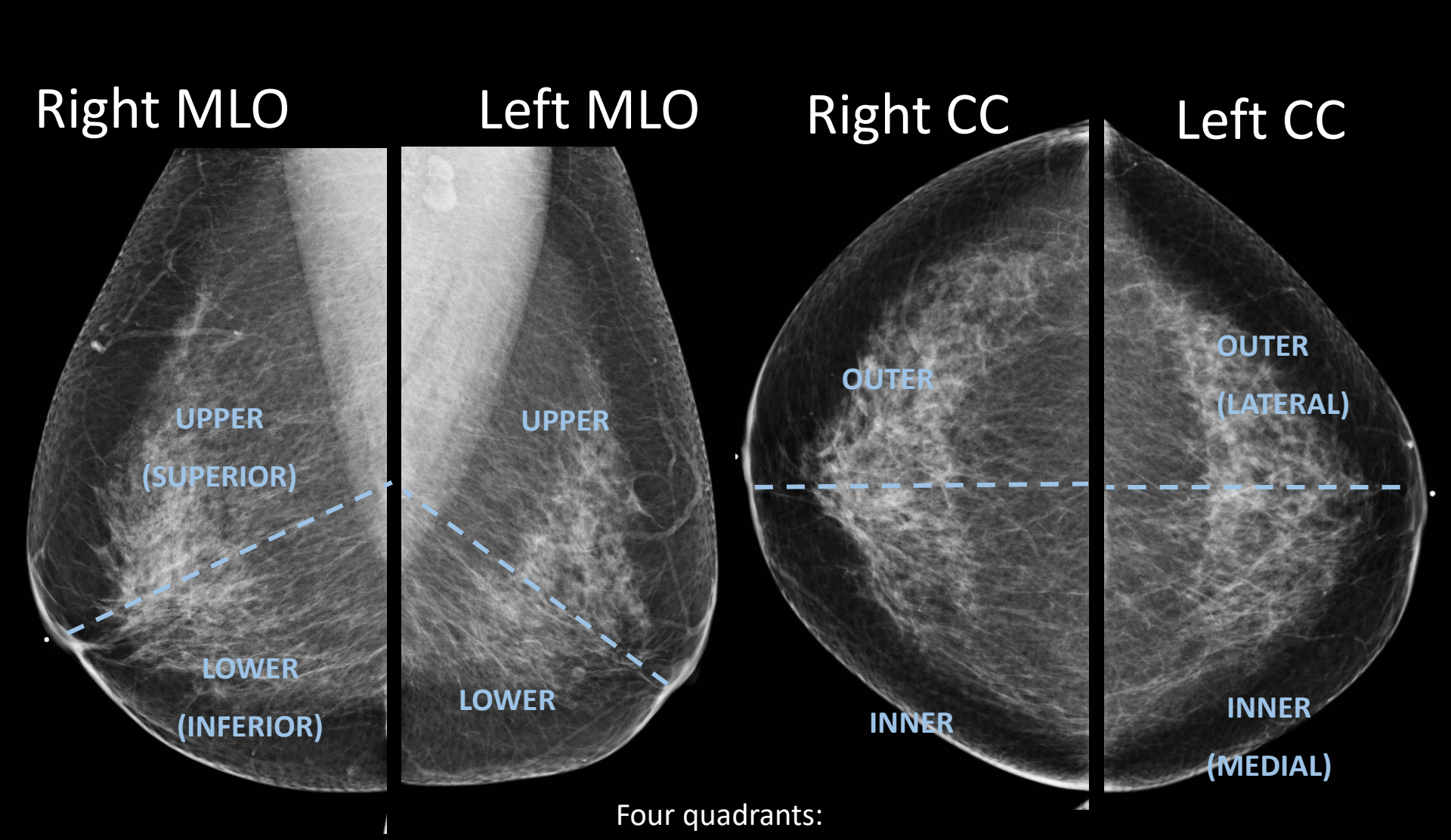


- Both Standard (2d) and tomosynthesis (3D) Mammography
- 4 standard views taken
  - Right/Left Craniocaudal Views (CC)
  - Right/Left Mediolateral Oblique (MLO)

- Additional views if needed (need to see more lateral tissue, folds in breast, etc.)




**MLO** **CC**




Four quadrants:

1. Upper outer
2. Upper inner
3. Lower outer
4. Lower inner

# Approach: Viewing Technique

- Focused attention; limit distractions
- Read patient history questionnaire
- Read previous mammogram report (s)
- Standard views on screen positioned same every time including how display old versus new mammograms and tomosynthesis
- Compare at least 2 previous mammograms, most recent and older (earliest available)

# Systematic Approach Interpretation

- Use consistent approach each time

- Evaluate technical factors –
  - Breast positioning- nipple in profile, open inframammary fold
  - Motion/blur
  - Deodorant artifacts
  - No folds or wrinkles
  - Tissue within 1 cm on MLO and CC view draw line from nipple to chest wall
  - Pectoralis muscle wide superiorly with convex anterior border

# Systematic Approach Interpretation

- Use overall and close in (magnifying) search technique
- About perception….is there potentially a lesion
- “Send” brain to specific look for things…..certain spaces, mass, distortion

- Evaluate from a distance:
  - Overall breast tissue density
  - Symmetry of breast
  - Breast contour
  - Breast size

# Systematic Approach Interpretation

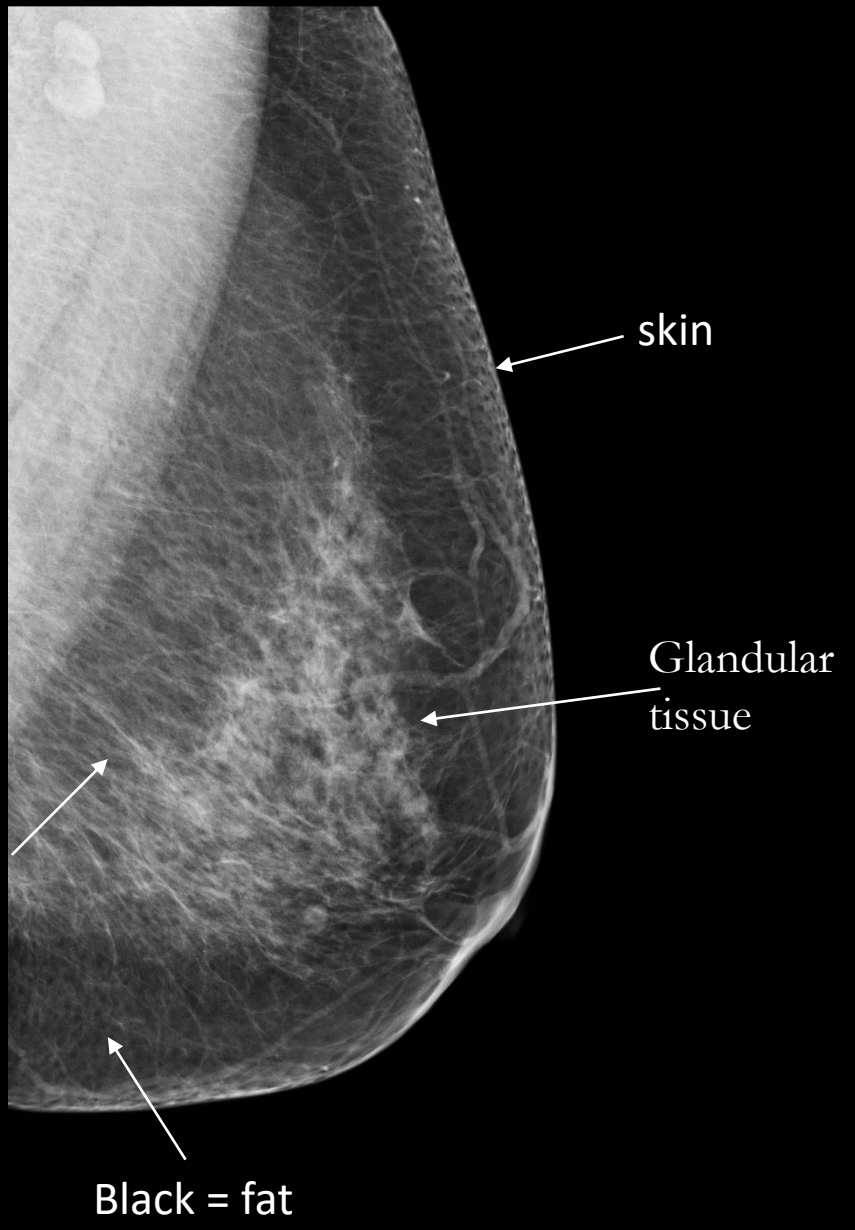
- Same search pattern every time
  - Square search pattern or
  - Split in 3rds: Lateral, mid, medial CC then upper, mid, inferior MLO
  - Tomosynthesis (3D Mammography)
    - Keep eye same spot scroll back and forth all way through then move on next spot

# Systematic Approach Interpretation

- Evaluate retroglandular spaces, medial aspect breast CC views, nipple/retroareolar area, axilla, edge of film
- Evaluate each view comparing new to old
- Evaluate for masses, asymmetries, architectural distortion, calcifications – from distance and closer view – one at time
- Beware satisfaction of search and stability (some cancers slow growing may not look that changed previous year)

# Breast Anatomy on Mammogram

- Nodular white densities = 1-2 mm TDLUs or glandular elements (seen if outlined by fat)
- Linear white densities = fibrous strands, coopers ligaments, ducts, vessels
- Radiolucent oval= fat (adipose tissue)
- Radiopaque homogenous tissue = fibrous connective tissue (structureless; dense)



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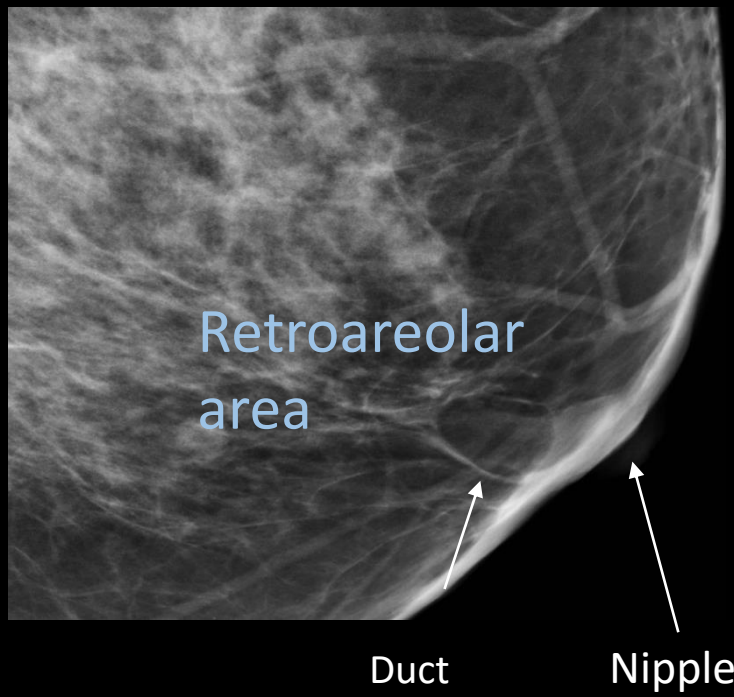
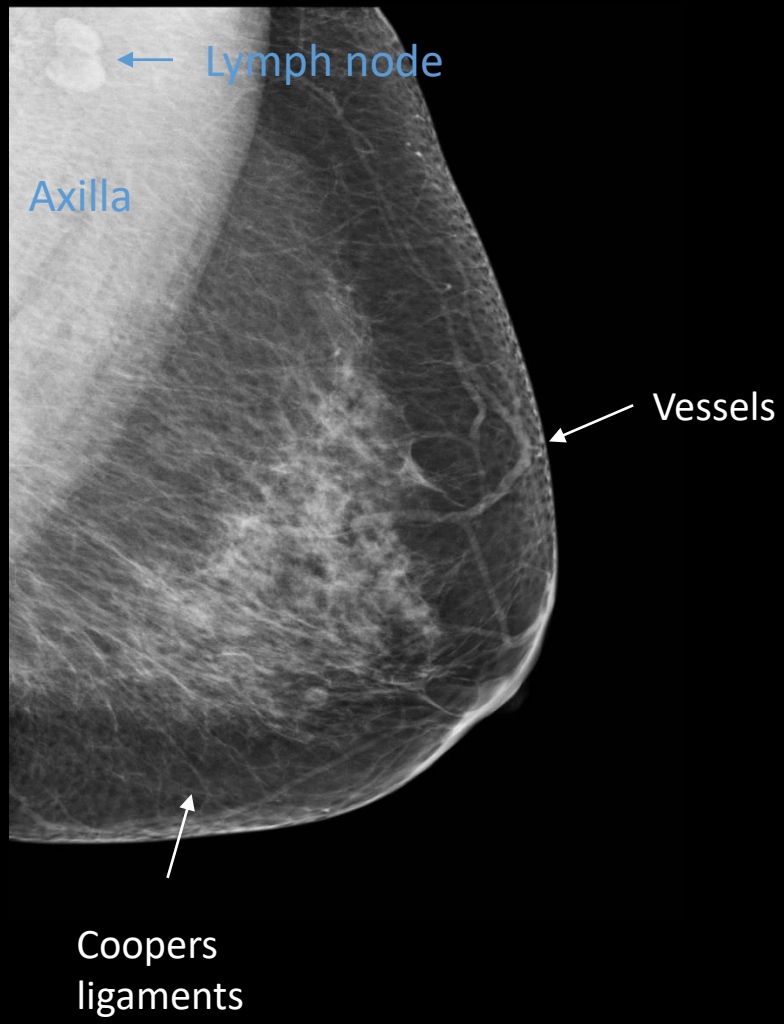


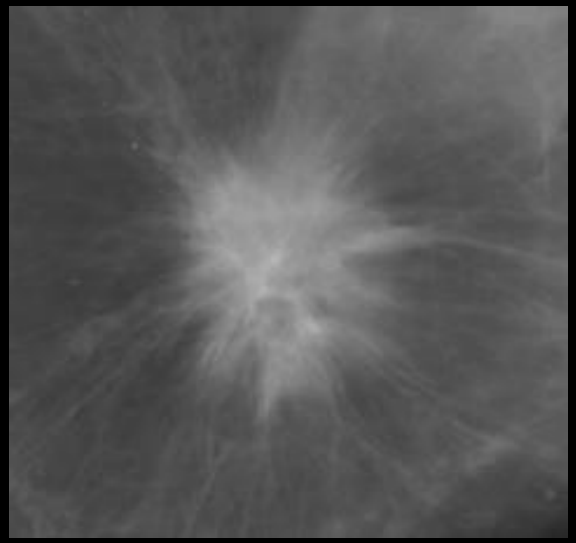
# Breast Anatomy on Mammogram


- Radiolucent ovals of fat
- No straight lines or bulging in fat/glandular interface
- Homogenous parenchyma
- Circular/oval areas of fatty involution of tissue

# The Screening Mammogram: What are Radiologists Looking for?

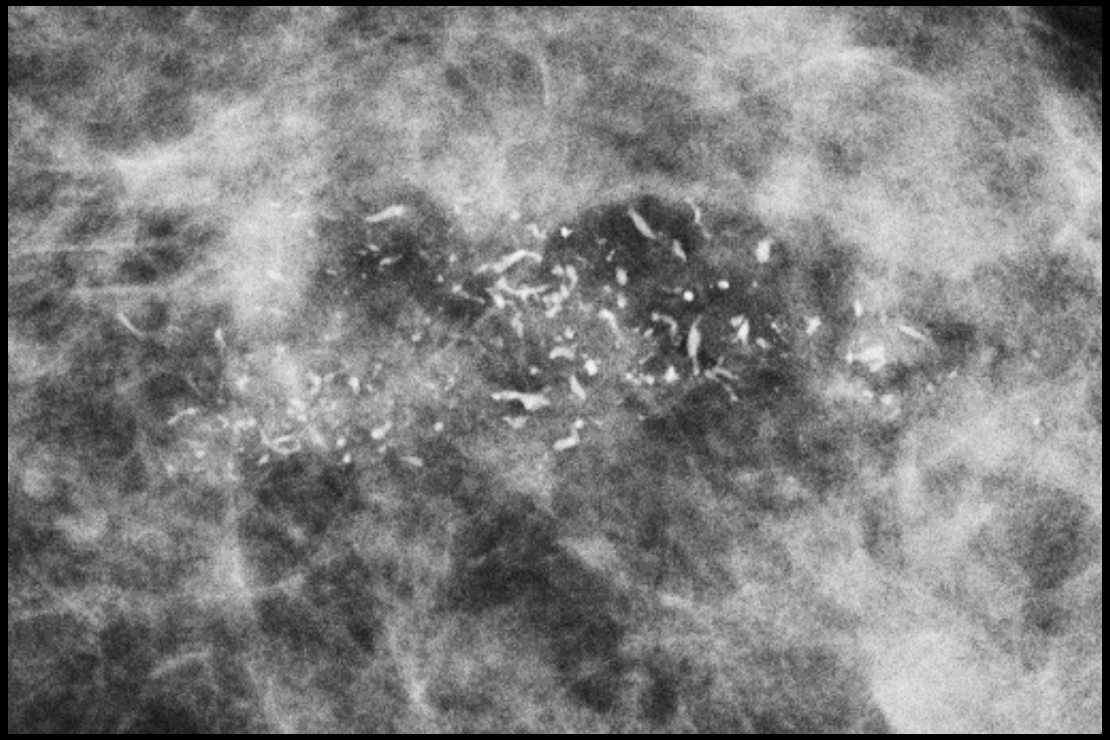
- Masses
- Calcifications
- Focal asymmetries
- Other findings
  - Architectural distortion
  - Nipple retraction
  - Skin thickening

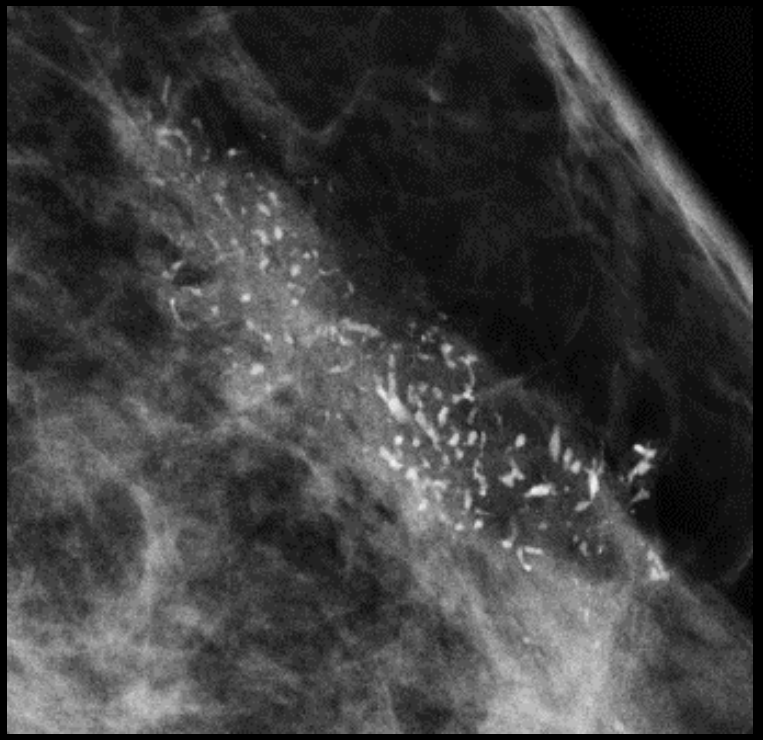
# Mammographic Masses



| | | | |
|---|---|---|---|
| Shape: | Round | Oval | Irregular |
| Margins: | Circumscribed | Circumscribed | Spiculated |

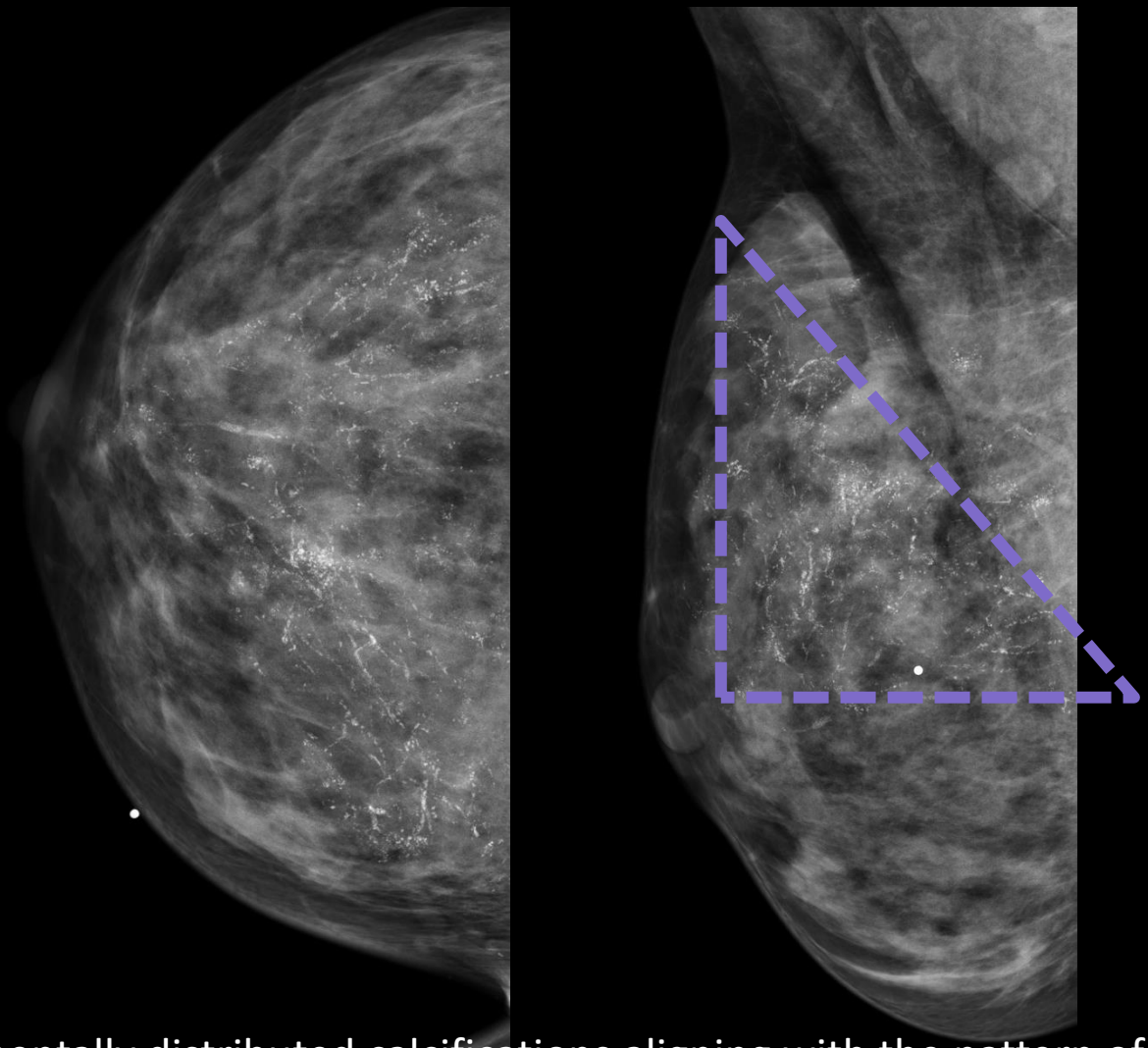
# Suspicious Calcifications





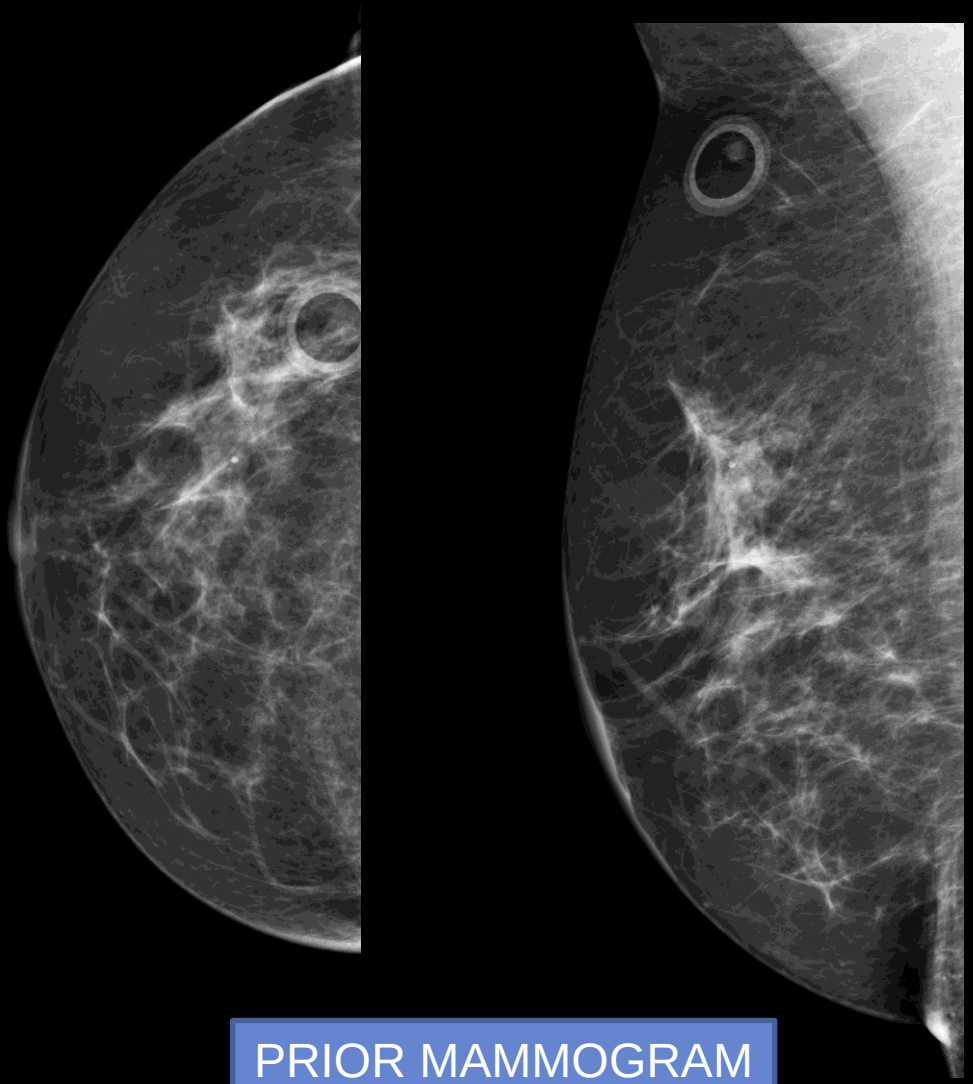
The morphology of these calcifications are fine and pleomorphic. Biopsy of these calcifications revealed ductal carcinoma in situ (DCIS).

# Distribution of Calcifications



These are segmentally distributed calcifications aligning with the pattern of ducts. It is pyramid or cone shaped with the base directed posteriorly.

# Developing Asymmetry



PRIOR MAMMOGRAM

# Developing Asymmetry

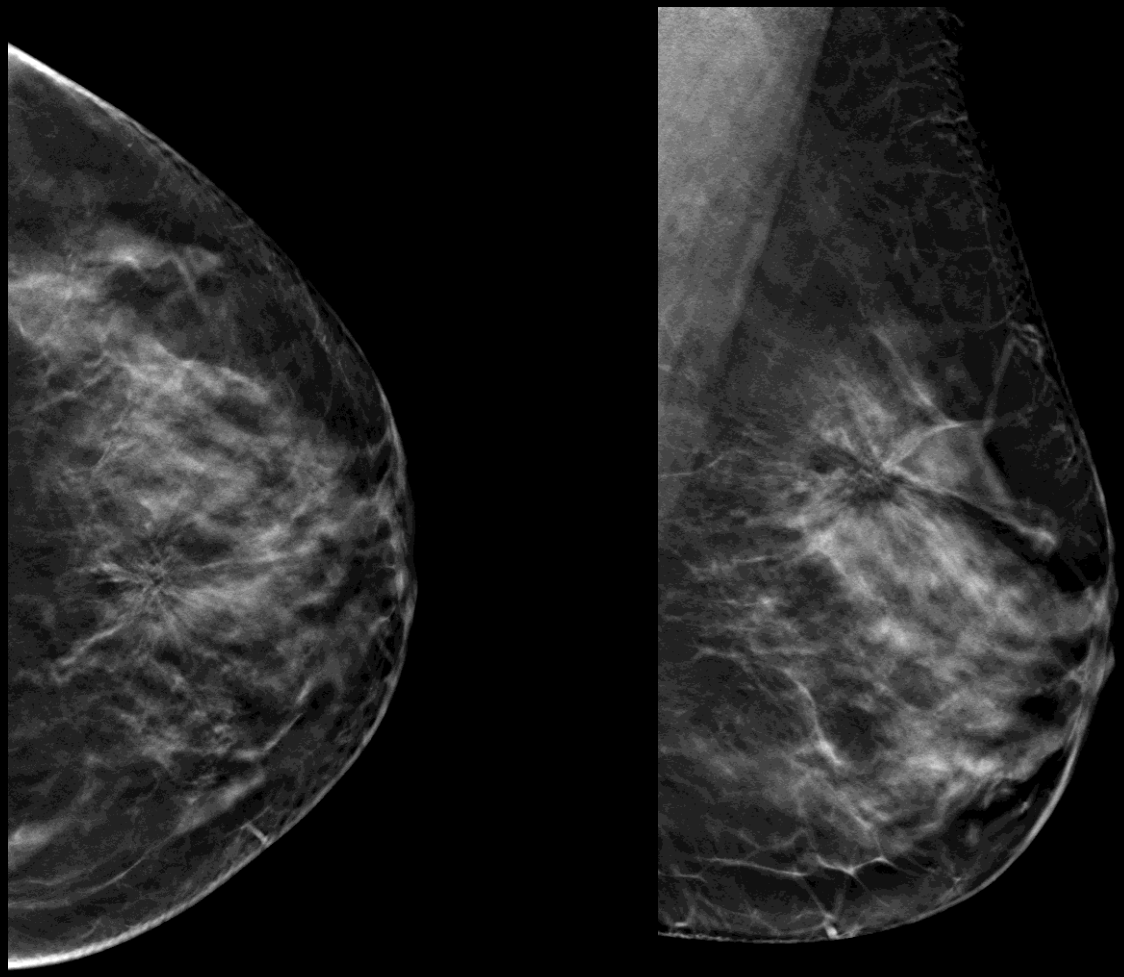
CURRENT MAMMOGRAM

# Developing Asymmetry

There is a focal asymmetry which has developed and is denser compared to prior mammogram.

New findings on screening mammogram generally need further work-up with diagnostic mammography.

# Architectural Distortion



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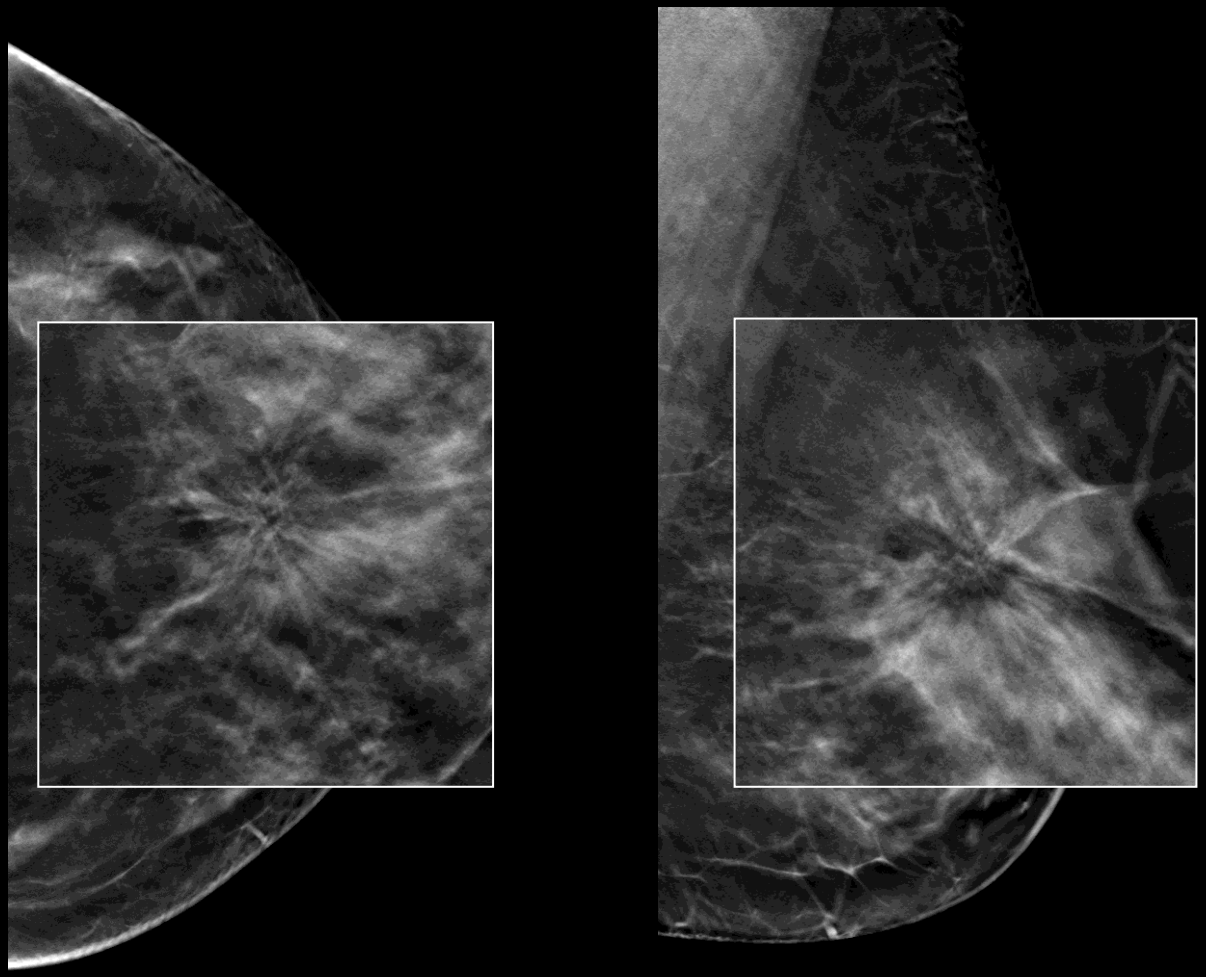

These are images taken from tomosynthesis (3D) mammography. This shows an area of architectural distortion which appears like a star with the breast tissue being tethered into the central point of the star. This is a suspicious finding and biopsy revealed invasive lobular carcinoma.