I have no disclosures
What are the appropriate BI-RADS descriptors for this findings?

A. Oval mass with circumscribed margins
B. Oval mass with obscured margins
C. Indistinct and obscured asymmetry
D. Fat containing mass with circumscribed margins

Case 1: Mass versus asymmetry

Asymmetry =

- Area of tissue with fibroglandular density that is more extensive (asymmetric) in one breast relative to the corresponding region in the contralateral breast
- Concave borders, rather than the convex outward borders
- Lacks the conspicuity of a mass
- Interspersed with fat

VS

Mass = three dimensional structure with convex outward borders, usually seen on two orthogonal views, denser towards the center
Case 2: Spot compression views

What are the appropriate BI-RADS descriptors for this finding (arrow)?
A. Oval mass with circumscribed margins
B. Lobular mass with circumscribed and obscured margins
C. Spiculated mass with irregular margins
D. Oval mass with indistinct margins

BI-RADS:
Shape
- Round
- Oval
- Irregular

BI-RADS:
Margins
- Circumscribed*
- Obscured
- Microlobulated
- Indistinct
- Spiculated

* Note for a mass to be considered circumscribed only 75% of the margin must be circumscribed.
However, the remaining margin must be obscured NOT a more suspicious margin.
Case 2a: Screening mammogram

Which goal of general screening programs does this case illustrate?
A. To avoid unneeded biopsies in the case of multiple benign masses  
B. Biannual screening is effective  
C. To find preclinical, non-palpable, breast cancer  
D. Screening exams are low risk or cost to the patient

Case 2a: Goals for any screening test

• Finds cancer/disease before symptoms appear  
• Screens for a cancer/disease that is easier to treat and/or cure when found early  
• Has few false-negative results and false-positive results (low risk)  
• Decreases the chance of dying from cancer/disease compared to non-screened population  
• Low cost
Case 2a: Goals for any screening test

Which goal of general screening programs does this case illustrate?

A. To avoid unneeded biopsies in the case of multiple benign masses
   *Has few false-negative results and false-positive results*

B. Biannual screening is effective
   Not a goal of screening mammograms/tests

C. Screening exam are low risk or cost to the patient
   *Has few false-negative results and false-positive results*

D. To find preclinical, non-palpable, breast cancer
   *Finds cancer/disease before symptoms appear*

Case 3: Additional views for finding on baseline screening mammogram

What is the next most appropriate step and BI-RADS assessment?

A. Stereotactic biopsy BI-RADS 4
B. Ultrasound to evaluate masses BI-RADS 0
C. Normal breast tissue, return to routine annual screening BI-RADS 1
D. Probably benign focal asymmetry BI-RADS 3
Case 3a: Additional views performed for finding on screening mammogram

Biopsy results are Pseudoangiomatous stromal hyperplasia, assessment and next step?
A. Concordant, return to routine screening
B. Concordant, 6 month follow up mammogram
C. Discordant, recommend surgical excision
D. Discordant, MRI for further evaluation

Case 3a: Management and concordance for biopsied lesions

- This case demonstrates a highly suspicious irregular mass with spiculated margins and a satellite lesion (arrows)
- Diagnostic work up must include ultrasound as this can provide additional information and guides biopsy (in this case it better demonstrated the satellite lesion as more suspicious)
In this case, really the only acceptable concordant pathology is invasive cancer
  - **BI-RADS 5: Highly Suggestive of Malignancy**
    - Appropriate Action Should Be Taken.
    - Requires biopsy or surgical treatment

- Benign results in the setting of BI-RADS 5 assessment should generally be considered discordant and require surgical excision

- While eventually MRI may be obtained in this case, it is not the most appropriate next step

### Invasive Ductal Carcinoma

- Most common type of breast cancer (65-75%)

- Variety of imaging appearances:
  - Mass with spiculated margins (as in this case)
  - Can be a round mass with well to partially circumscribed or indistinct margins
    - Often more poorly differentiated
  - Architectural distortion with or without associated mass
  - Asymmetries
    - Focal, global, developing
Case 3a: Management and concordance for biopsied lesions

BI-RADS: Associated findings

- Skin/nipple retraction
- Trabecular thickening
- Skin thickening
- Architectural distortion
- Axillary adenopathy

Case 4: Screening mammogram

What are the appropriate BI-RADS descriptors for this finding (arrow)?

A. Irregular mass
B. Oval mass with circumscribed margins
C. Developing asymmetry
D. Focal asymmetry
Case 4: Asymmetry

- No shape or margin description is used (vs mass)
- Four types of asymmetries described in BI-RADS (fifth edition)
  - Asymmetry
  - Focal asymmetry
  - Global
  - Developing asymmetry
- This case is an example of a focal asymmetry
- Could be a developing asymmetry if a comparison showed smaller or absent focal asymmetry

Case 4: Focal Asymmetry

- TWO VIEW FINDING, < 1% of mammograms
  - two words, two views
- Planar and lack convex outward borders
  - Does not fit criteria for a mass
  - Less than one quadrant in size
- Non-specific
  - Could represent normal island of tissue, especially when interspersed with fat
  - Likelihood of malignancy is low at <1%
- In this case, the focal asymmetry had been stable for years and is consistent with benign breast tissue
Case 5: Asymptomatic

What best describes this finding (arrow) using BI-RADS lexicon?
A. Global asymmetry
B. Developing asymmetry
C. Irregular spiculated mass
D. Focal asymmetry

Case 5a: Asymptomatic follow up

Ultrasound demonstrates only normal breast tissue – next step?
A. Stereotactic biopsy
B. 6 month follow up
C. Return to annual screening
D. Breast MRI
Case 5a: Developing Asymmetry

- New, larger or denser focal asymmetry
  - Obviously requires older mammograms for comparison
- Rare, 0.16% of screens in one study
- Worrisome, 13 - 27% malignant → requires additional evaluation
- 24-29% may have no sonographic correlate and given rate of malignancy, stereotactic biopsy is recommended
- This was visible with US and was an invasive ductal carcinoma

Case 6: New asymmetric palpable finding, marked with BB

Which is the most appropriate BI-RADS descriptor for these images?

A. The breast is almost entirely fatty – BI-RADS 1
B. Multiple oval fat containing circumscribed masses – BI-RADS 2
C. Gynecomastia in male breast – BI-RADS 2
D. Multiple oval and round circumscribed equal density masses – BI-RADS 2
Case 6a: Palpable finding

Which of the follow is the most fitting clinical scenario in this case?
A. Female patient with history of breast reduction
B. Male patient with history of marijuana use
C. Female patient with similar findings in the other breast
D. Male patient with history of trauma several months ago

Case 6a: Fat containing masses

BI-RADS:
Density
- Fat containing
- Low density
- Equal density
- High density
Case 6a: Fat containing masses

- Multiple round and oval fat density masses with circumscribed margins DDX:
  - Oil cysts
    - Typically after surgery or trauma
    - Form of fat necrosis
  - Steatocystoma multiplex
    - Autosomal dominant, typically asymptomatic
    - Multiple cutaneous cysts usually involving trunk, proximal extremities and genitalia

Case 6a: Fat containing masses

- Generally fat containing masses at mammography are benign
- DDX:
  - Fat necrosis, oil cyst
  - Lipoma
  - Hamartoma
  - Intramammary lymph node (fatty hilum)
  - Galactocele
  - Angiolipoma
Case 7: New palpable lump in left breast, several BB markers placed

What best describes the left breast finding using BI-RADS lexicon?
A. Global asymmetry
B. Developing asymmetry
C. Irregular mass
D. Focal asymmetry

Case 7: New palpable lump in left breast, several BB markers placed

What best describes the left breast finding using BI-RADS lexicon?
A. Global asymmetry
B. Developing asymmetry
C. Irregular mass
D. Focal asymmetry
Case 7a: New area of thickening in left breast, several BB markers placed

Which of the following is the classic etiology for this newly palpable finding?
A. Benign asymmetric breast tissue
B. Invasive ductal carcinoma
C. Invasive lobular carcinoma
D. Ductal carcinoma in situ

Case 7a: Global Asymmetry

More than one quadrant of the breast
– Nearly superior half of the left breast
Case 7a: Global Asymmetry: Usually Benign

- **If palpable** ~ 8% cancer rate and needs further work up (diagnostic mammogram and ultrasound)
- Almost always represents normal variant, present in ~ 3% of mammograms
- **To be benign:**
  - No associated mass, suspicious calcifications, or architectural distortion, skin or trabecular thickening
  - Not palpable: If such a large area is not palpable near zero possibility of malignancy
  - Not new

Case 7a: Invasive Lobular Carcinoma

- Approximately 10-15% of all breast cancers
- 6-28% bilateral and more advanced compared to Invasive Ductal Carcinoma
  - Clinical and mammographic diagnosis often difficult
  - May present as area of thickening rather than discreet mass
- Extent of disease often underestimated on imaging studies
Case 7a: Invasive Lobular Carcinoma

- Overlaps in appearance with invasive ductal carcinoma
  - Spiculated mass
  - Asymmetries
  - Architectural distortion
  - Diffuse breast changes
  - Relatively well circumscribed mass

Case 8: Left breast pain, right asymptomatic, no prior mammogram or breast surgery
Case 8: Left breast pain, right asymptomatic, no prior mammogram or breast surgery

Given the mammographic appearance what is the most likely etiology of this finding?

A. Invasive ductal carcinoma
B. Asymmetric breast tissue
C. Surgical scar
D. Radial scar/complex sclerosing lesion
Case 8: Architectural distortion

- Pulling in of structures towards a point disrupting normal architecture
- Often subtle, especially if no associated mass
  - This is a very dramatic, unusual case
- DDX
  - Cancer, cancer, cancer
  - Radial scar/complex sclerosing lesion
  - Prior surgery scar/fat necrosis
  - Superimposition
    - This a very common cause
    - Although not in this case

Case 8: Radial scar/Complex sclerosing lesion

- Not related to prior surgery or trauma
- Can be large (> 2cm) but not palpable as in this case
- Associated with atypical ductal hyperplasia, ductal carcinoma in situ and tubular carcinoma
  - As a result surgical excision is recommended
Thank you
Any questions?

References