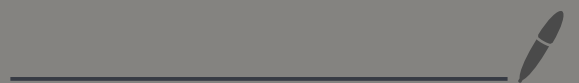


# Breast Imaging



# Breast Imaging

## → Mammography

### 2 main views

MLO

CC

+

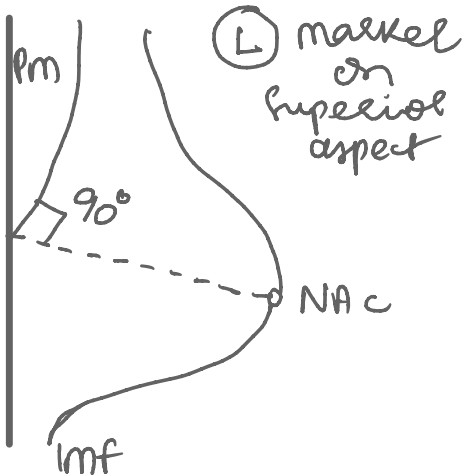
Spot compression  
if any abnormality  
detected.

### Supplementary views

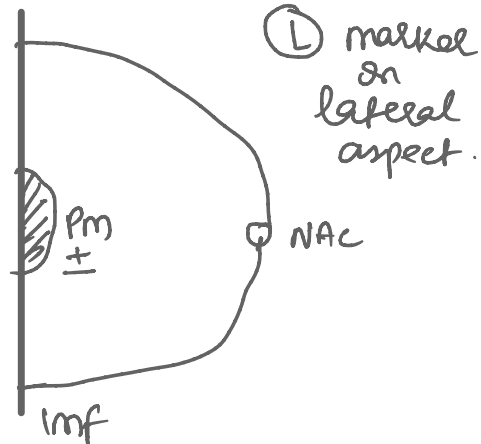
- Extended MLO for lesions in axillary tail
- Lateral
- Cleavage

## → Adequate mammography

MLO



CC



mammography

Conventional  
mammography

↓  
on x-ray  
film

↓  
Digital  
mammography

↙  
Direct  
conversion

↘  
Indirect  
conversion

↓  
x-ray  
↓  
light energy

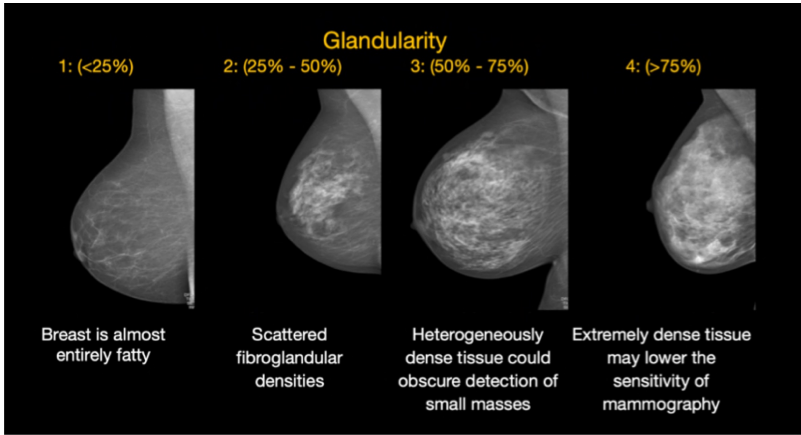
↓  
Image  
production

Tomosynthesis

↓  
Multiple  
low  
dose  
x-ray  
of breast  
from  
different  
Angles

↓  
3D  
Reconstruction  
of  
tumor  
tissues

# Breast ACR grading



- fibroglandular dense breast can be mobilised  
↓  
Type 2 neoplasia feasible.

- fatty breast mobilisation risk of fat necrosis.

## features of malignancy on mammos:

### ① Spiculated mass

95% IDC unless proven otherwise

Other DD

[	Radial scar	Complex sclerosing scar
	Surgical scar	

# ② Microcalcification



Benign

Malignant

- \* Pop corn - Fibroadenoma
- \* Tram track - Vasculal Cavitation
- \* Round clusters - Sclerosing Adenosis

\* classification  $\bar{c}$   
central leucency

\* Plasma cell mastitis

\* post op classification

↳ clumped class.  $\bar{c}$   
central leucency  
↓  
Fat Necrosis

## \* Suspicious Calcification needing Bx



## \* Distribution of Calcification

Diffuse  
focal  
cluster

Linear

Segmental

## \* Rationale for mammos in proven CA

- No multicentricity / focality

- No extensive DCIS

multifocal - same quadrant

- CLC breast

multicentric - different quadrant

- Baseline for flu

in male breast CA - flame shaped mass in retroareola

### ③ Architecture distortion

Better appreciated  $\bar{v}$  tomosynthesis

### ④ Asymmetry

- comparison of both sides & previous mammos
- more specific for lobular carcinoma

Review areas

- IMF
- Retro areola
- Retro glandular
- medial breast on CC views

} usually fatty (Black)  
↓  
whitens in

these areas may be malignant.

### ⑤ Axilla Nodes

- loss of fatty hilum
- round shape

## → Mammo f/s/o TNBC

- more rounded margins  
CO2 TNBC pushes tissue.
- luminal A → infiltrates surrounding  
tissues, shows spiculations.

B  
I  
R  
A  
D  
S

Final Assessment Categories			
	Category	Management	Likelihood of cancer
0	Need additional imaging or prior examinations	Recall for additional imaging and/or await prior examinations	n/a
1	Negative	Routine screening	Essentially 0%
2	Benign	Routine screening	Essentially 0%
3	Probably Benign	Short interval-follow-up (6 month) or continued	>0 % but ≤ 2%
4	Suspicious	Tissue diagnosis	4a. low suspicion for malignancy (>2% to ≤ 10%) 4b. moderate suspicion for malignancy (>10% to ≤ 50%) 4c. high suspicion for malignancy (>50% to <95%)
5	Highly suggestive of malignancy	Tissue diagnosis	≥95%
6	Known biopsy-proven	Surgical excision when clinical appropriate	n/a

BIRADS - To bring a uniformity in reporting.

## → USG breast

- High frequency > 5 mHz
- Linear probe
- 

## Benign

Fibroadenoma - oval



- well defined capsule
- Iso echogenic
- Acoustic enhancement

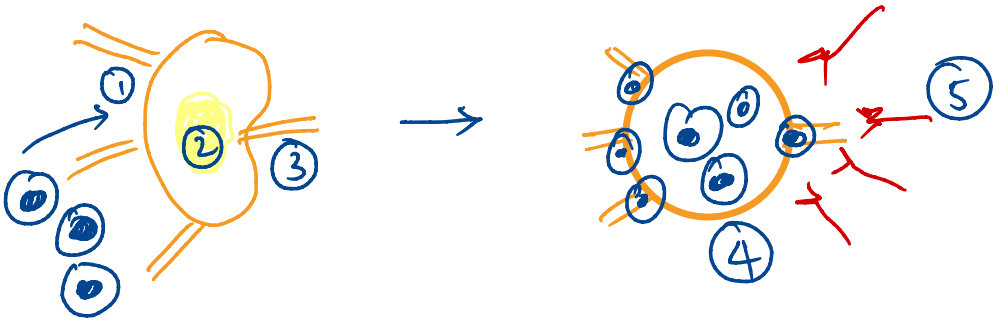
## Malignant

- Taller than wide
- Hypo echogenic
- Irregular margin
- Acoustic shadowing.



Black.

# USC axilla - malignant : Node



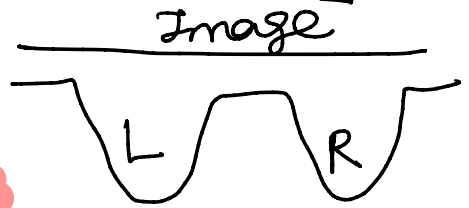
- ① Capsular invasion - Halo sign
- ② Effacement of cortex  $\downarrow$  Hypoechoic  
Effacement of medulla  $\downarrow$  Center  
 $\angle 3\text{mm}$
- ③ Hilum invasion - Loss of fatty hilum
- ④ LN enlargement - Shape change from reniform to spherical.
- ⑤ Hypervascular

## → Elastography:

- For BIRADS 3 and 4a lesions
  - Look at colour & k Pascals
    - ↓
    - more Red
    - more Benign
  - ↓
  - Rigidity of lesion
- 
- TSUBUKA elasticity score 1-5

## → MRI Breast

- > 1.5 Tesla
- Gadolinium contrast
- Post contrast phase sequence within 4 minutes
- Breast coil. [ Patient in prone position ]
- fat saturated image
- **Malignant on MRI**
  - Irregular / spiculated margin
  - Rim enhancement
  - Heterogeneous enhancement.



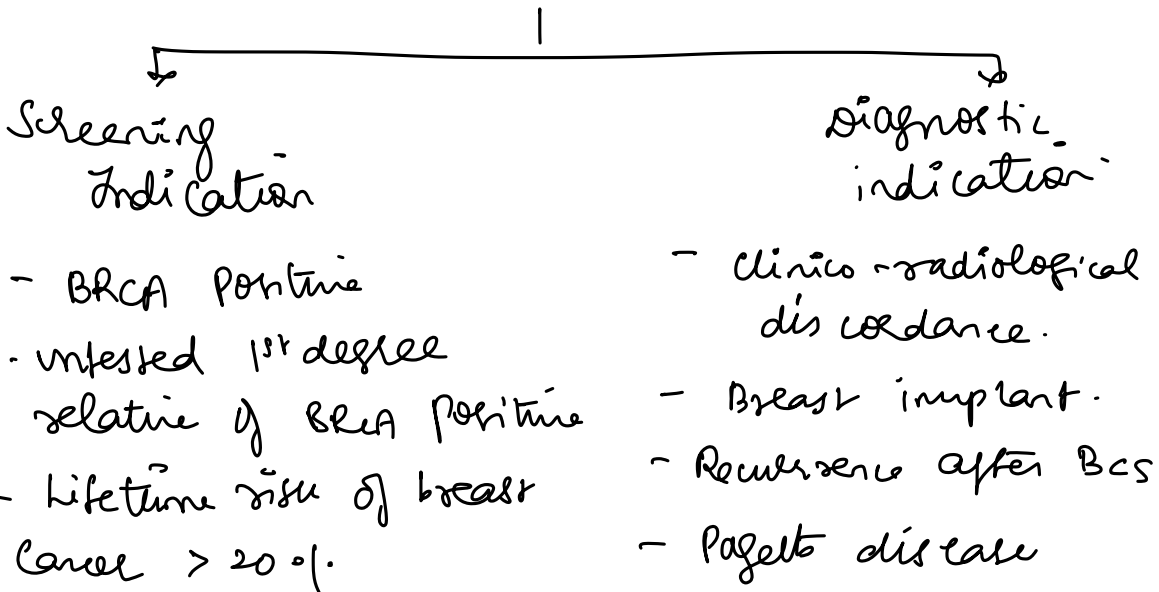
→ Time intensity curves over 4 mins  
after contrast

Type 1 - Slow rise Benign

Type 2 - Rapid rise & plateau

Type 3 - Rapid rise & Rapid fall  
malignant

→ MRI Breast Indication



## → Indications of PET-CT in Breast

- metastatic workup in locally advanced CA Breast.
- Bone scan → more sensitive only for osteoblastic mets.
- Standard Sp for PET/CT to identify bone mets is more for PET/CT than IECT / Bone scan.
- PET/CT misses
  - ┌ Lobular carcinoma
  - └ Brain mets in TNBC.