

The Proper Use of Additional Mammographic Views

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Additional Views Lexicon – Labeling Codes

- XCCL - Exaggerated craniocaudal lateral
- CV - Cleavage
- ML - Mediolateral
- LM - Lateromedial
- AT - Axillary tail
- TAN - Tangential



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Additional Views Lexicon

- RL - Rolled lateral*
- RM - Rolled medial*
- RS - Rolled superior*
- RI - Rolled inferior*
- FB - Caudocranial

**Very limited use and not needed with DBT*



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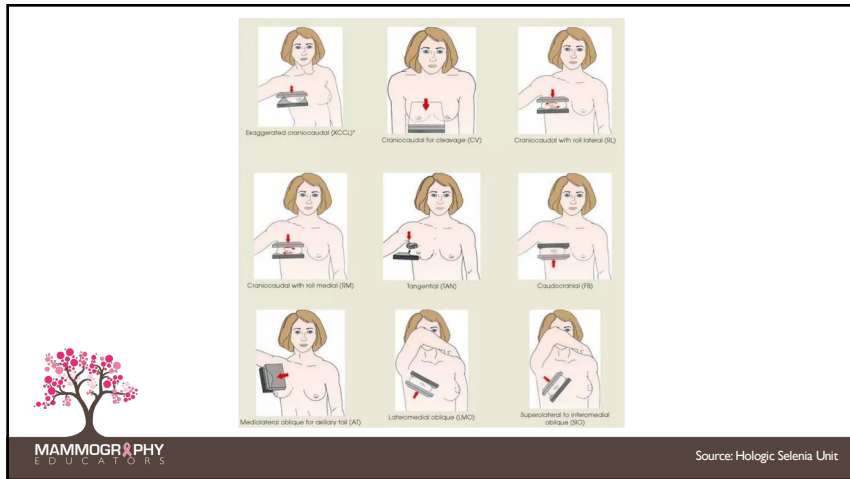
Additional Views Lexicon

- LMO - Lateromedial oblique
- M - Magnification
- ID - Implant displaced
- No label - Spot Compression



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Labeling Codes (Lexicon)

The name of view (labeling code) is always preceded by identification of laterality: i.e., LXCCL or RXCCL.

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Most Commonly Used Additional Views

- XCCL
- CV
- LM/ML

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Why Do We Do Additional Views?

- To show a specific component of the anatomy not seen on standard views
- To provide localization of an area of concern medial/lateral or superior/inferior to the nipple

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OR...

- To show an area of concern in better detail
- To counteract superimposition of structures
- To triangulate a lesion



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Again... commonly used additional views are done to show a specific component of the anatomy not seen on standard views.



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Ask and Answer

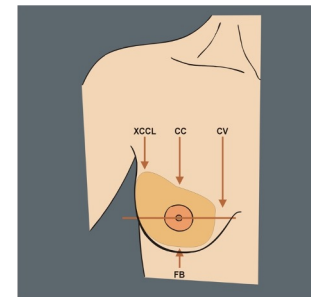
- Which part of the breast do I want to visualize?
- In which projection?
- Which view will accomplish this?



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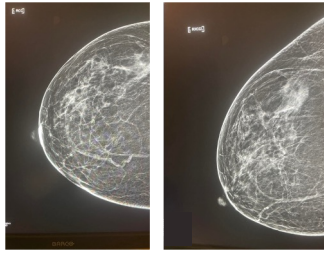
Imaging the Breast in a Transverse or Axial Plane



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XCCL - Exaggerated CC Lateral



Visualization of lateral breast tissue in a CC projection



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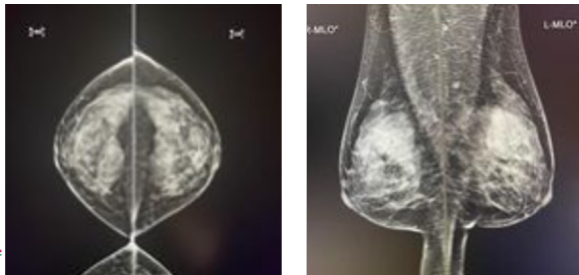
Use of the XCCL

- Should be used on a baseline exam when lateral posterior breast tissue is missing on the CC view
- If glandular breast tissue on subsequent screening views is visualized back to the retromammary fat space on the MLO, an XCCL is not needed



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XCCL Required for Baseline, but NOT on Subsequent Screenings



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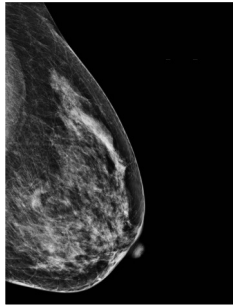
Use of the XCCL

- Should be performed on less than 10% of all patients
- Performed at 0 degrees angulation
- Patient's body should be at 45-degree angle to the IR
- Nipple should be pointing towards the upper corner of the IR



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Muscle or NO muscle?



NO MUSCLE!



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Incorrect

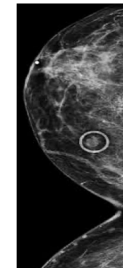


Correct



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CV - Cleavage

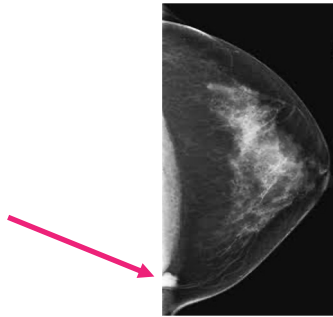


For visualization of medial breast tissue in a CC projection



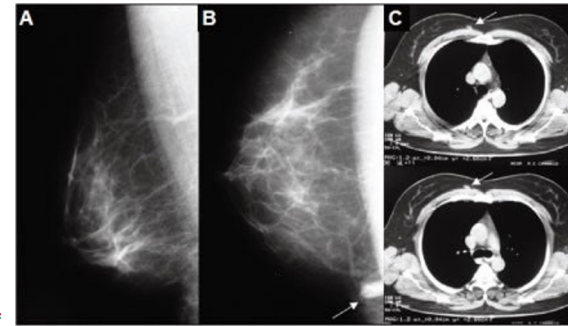
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Sternalis Muscle



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Sternalis Muscle

- Flame-like appearance (similar to an appendix)
- Present in only 7-10% of the population
- Seen medially on a mammogram
- Often misdiagnosed as the insertion of the pectoralis muscle



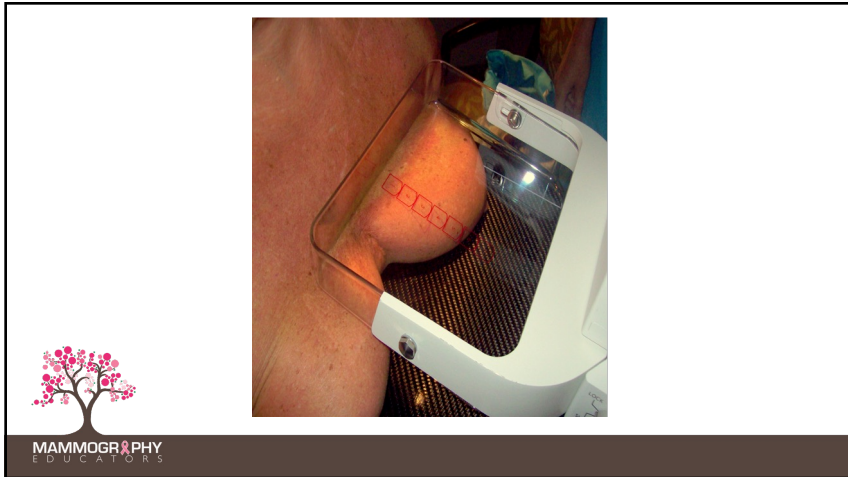
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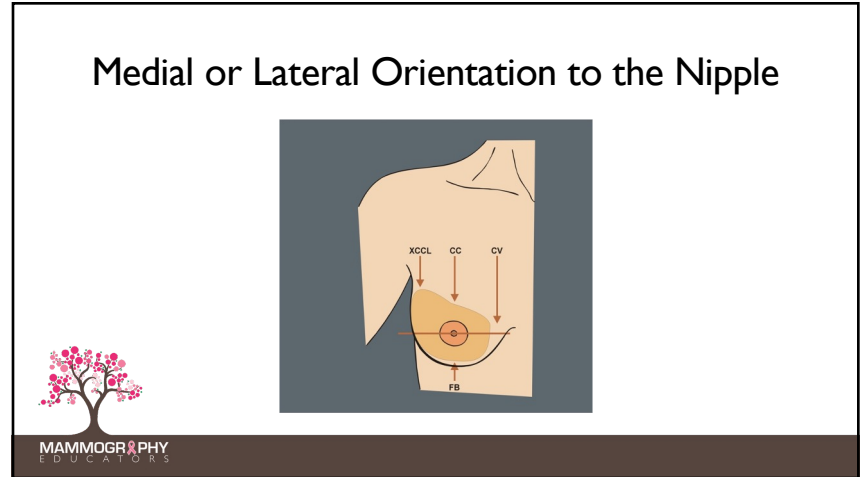


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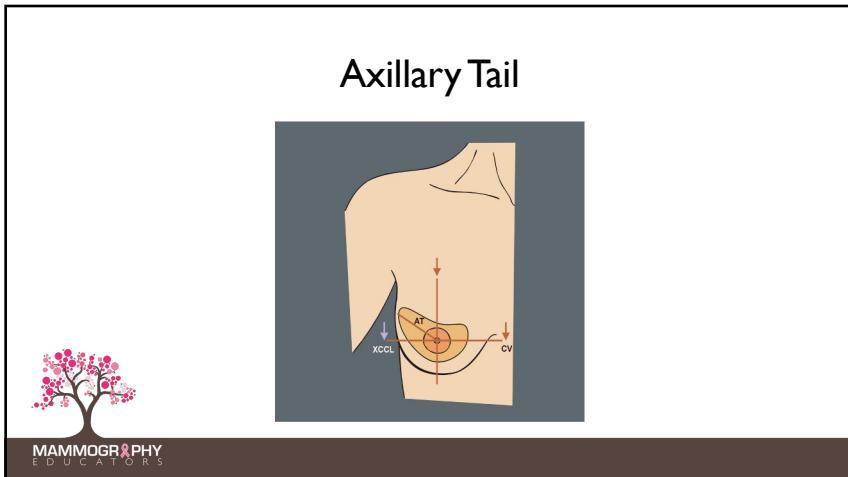
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AT - Axillary Tail

- Angle tube to axillary tail
- Approximately 30 degrees



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AT - Axillary Tail

It is never used to localize a lesion.



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AT - Axillary Tail

- The AT View is used only for focal compression of the axillary tail
- Anterior to posterior orientation and compression



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AT - Axillary Tail

It will not give you true lateral/medial or true superior/inferior orientation to the nipple.



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90-degree (True) Lateral

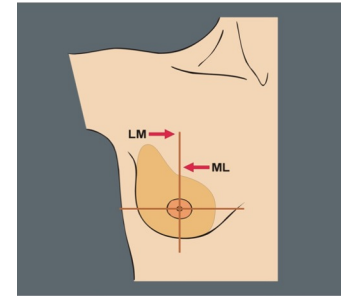
- LM - Lateromedial
- ML - Mediolateral



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Superior or Inferior Orientation to the Nipple (LM or ML)



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Use of the Lateral

- Shows effects of gravity on air fluid levels (Milk of Calcium)
- Used as a “tie breaker” view (to overcome superimposition of structure)
- Visualizes the breast in the sagittal plane (demonstrates an area of concern superior or inferior to the nipple)



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Why do the LM?

- When you did the MLO, you showed the lateral breast in better detail... The LM shows the medial breast in better detail
- Takes advantage of the lateral mobile border of the breast and thus facilitates positioning



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Why do the LM?

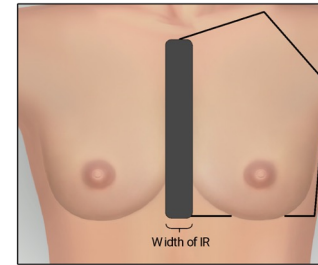
- The posterior medial breast is hardest part of the breast to image and the area most often missed on the MLO
- If done properly, by off-setting the IR into the contralateral breast, you will be able to go deeper against the chest wall
- There is no issue of the contralateral breast impeding the path of the compression paddle



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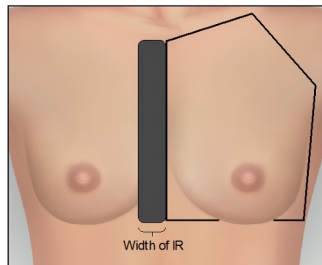
Improperly positioned LM with breasts separated, so the middle of the IR is centered on midsternal line. This excludes deep medial breast tissue on the side you are imaging.



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Properly positioned LM with breasts separated so the *top edge of the IR* is centered on midsternal line and the width of the IR pressing against the contralateral breast.



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ML - Mediolateral

The opposite breast must be pulled back to allow the compression paddle to pass and may therefore eliminate visualization of deep medial breast tissue.



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Additional Views to Facilitate Imaging of Difficult Body Habitus

- LMO
- FB



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LMO - Lateromedial Oblique FB - Caudocranial (From Below)

- Used when a standard MLO or CC is impossible
- Kyphotic patients
- Males with prominent pectoral muscles



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LMO - Lateromedial Oblique

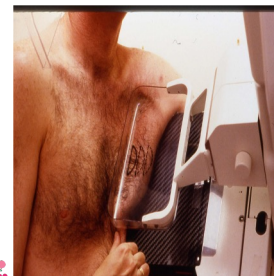
- Degree of angulation should be 90 degrees plus or minus the standard degree of angulation
- Average 45-degree RMLO would be 135 degrees for RLMO



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MLO



LMO



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FB - Caudocranial

- Machine is turned 180 degrees opposite the CC
- Direction of the beam is Caudal to Cranial

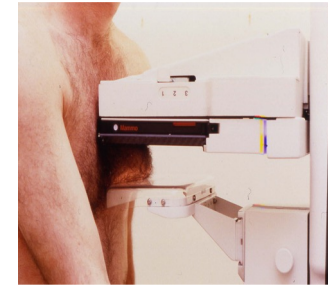


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CC

FB



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Additional Views for Clarification of Areas of Concern

- TAN
- Spot compression
- Spot compression with MAG
- Rolled views



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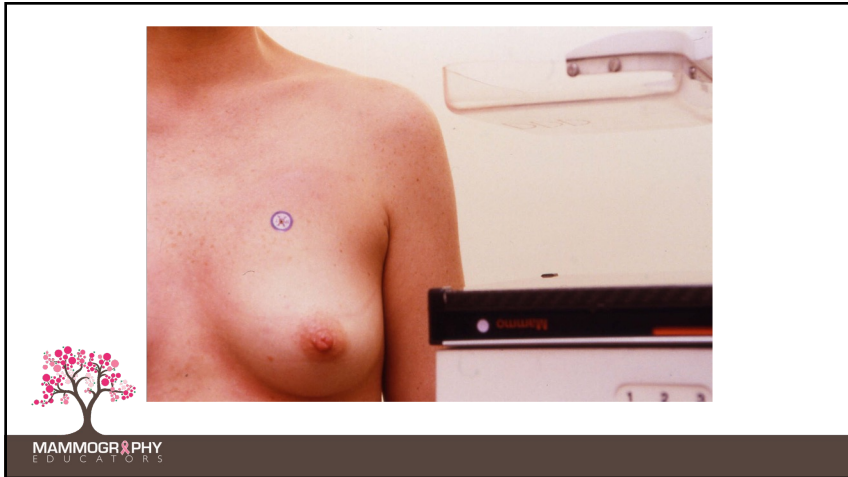
TAN - Tangential View

- To prove the existence of dermal calcifications
- Enhanced visualization of palpable masses that may otherwise be superimposed on glandular breast tissue

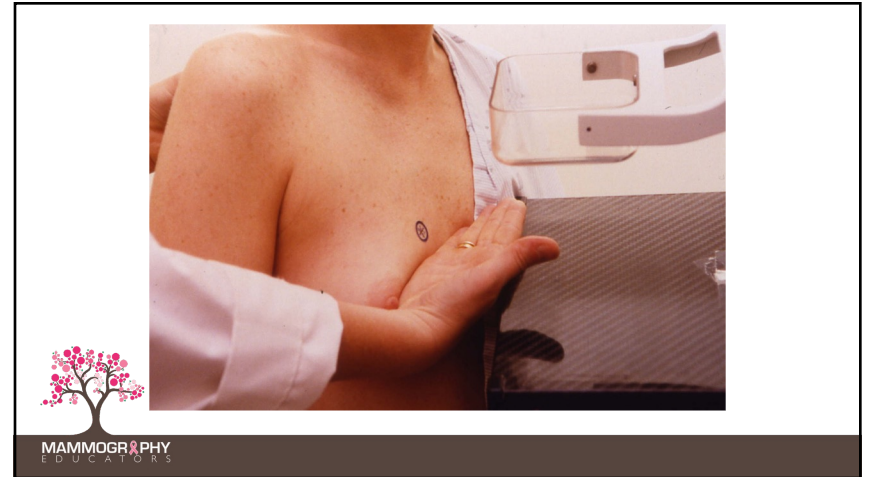


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Localization for Verification of Skin Calcifications

- Decreased with use of DBT
- Set up the same as a needle localization
- Determine which quadrant the calcifications are located



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Localization for Verification of Skin Calcifications

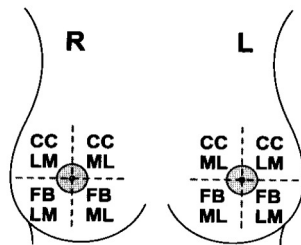
- Use biopsy paddle
- Select direction of approach so that the window of localization paddle is closest to the area in question



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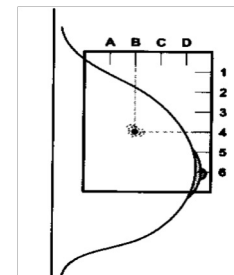
Tangential Views for the Verification of Skin Calcifications



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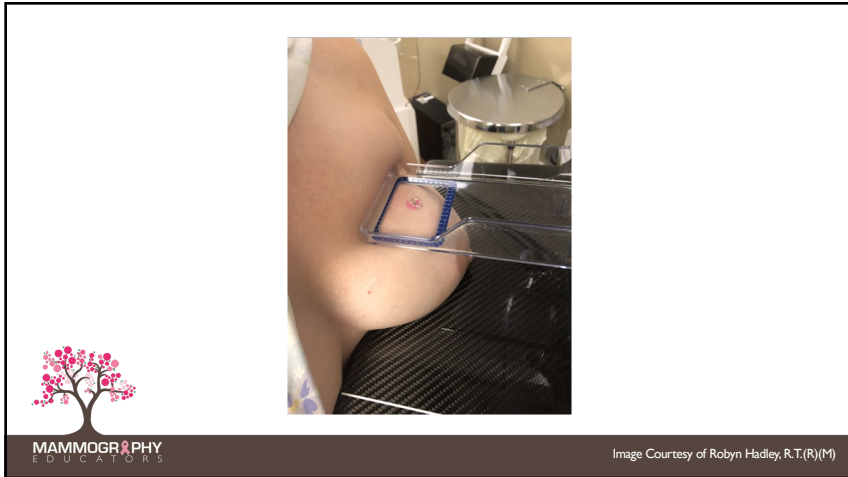
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Tangential Views for the Verification of Skin Calcifications

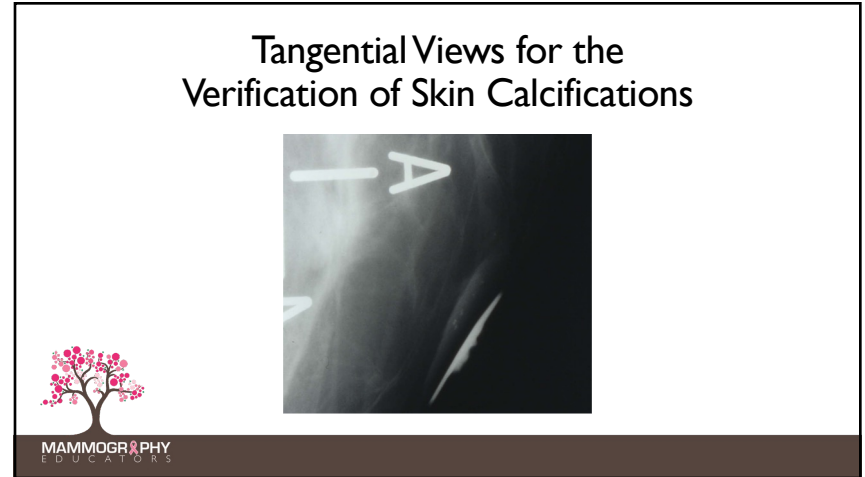


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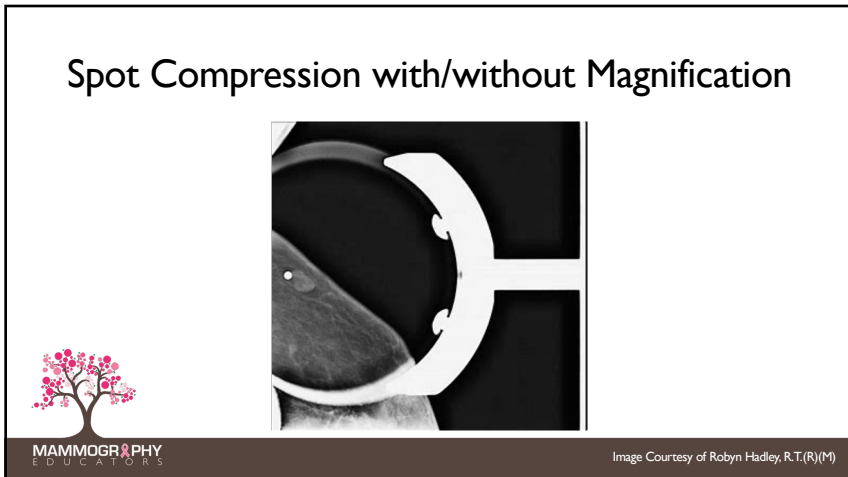
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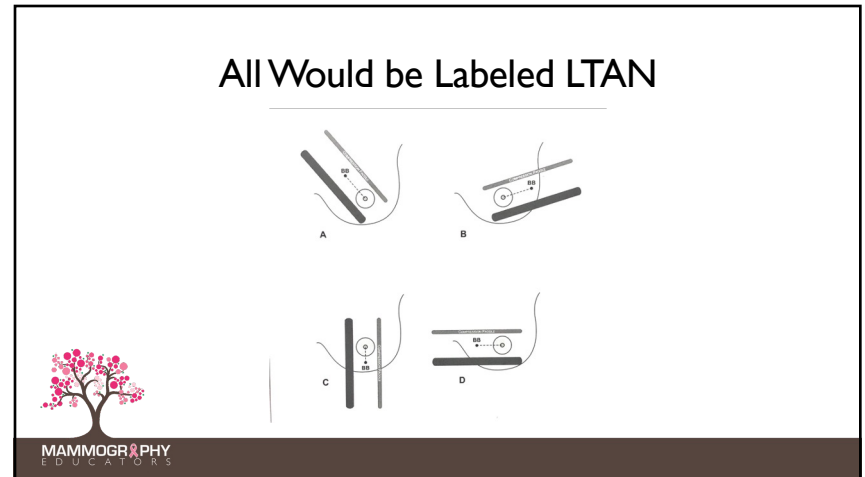
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Spot Compression Paddles

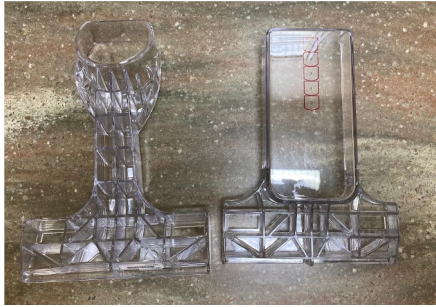


Image Courtesy of Robyn Hadley, R.T.(R)(M)

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Square vs Round Paddle

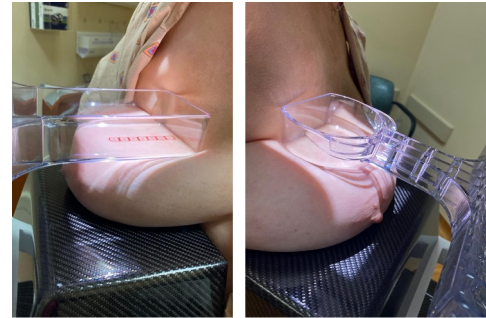


Image Courtesy of Robyn Hadley, R.T.(R)(M)

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Spot Compression with Magnification



Image Courtesy of Robyn Hadley, R.T.(R)(M)

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Square vs Round Paddle

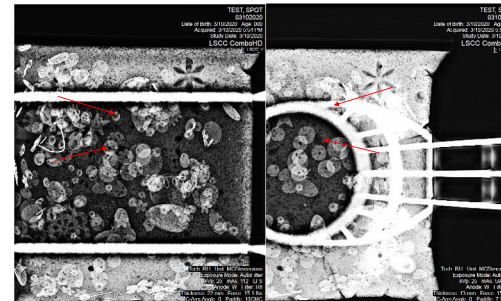


Image Courtesy of Robyn Hadley, R.T.(R)(M)

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Spot/Mag Measurements

RIGHT LEFT

CC MLO LM ML

4 POSTERIOR / ANTERIOR

3 MED / LAT SUP / INF

4 SKIN

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Spot/Mag Measurements

RIGHT LEFT

CC MLO LM ML

POSTERIOR / ANTERIOR 4

5 MED / LAT SUP / INF

3 SKIN

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Spot/Mag Measurements

RIGHT LEFT

CC MLO LM ML

POSTERIOR / ANTERIOR 3

MED / LAT SUP / INF 5

SKIN 4

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Remember...

- You must simulate compression when making measurements on the breast
- Mark the center of the target area with a surgical marker so you can make appropriate corrections on subsequent images, if needed

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Remember...

- **Roll views** - Used to overcome superimposition of structures by changing the orientation of the beam to the breast
- **Lateral views** - Used to overcome superimposition of structures by changing the orientation of the breast to the beam



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Rolled Views

- RCCRM - Right CC superior breast rolled medial
- RCCRL - Right CC superior breast rolled lateral



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LCCRM - Left CC Rolled Medial

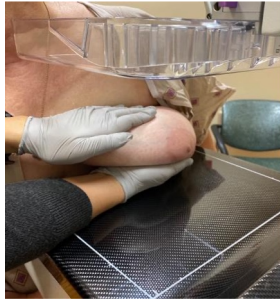
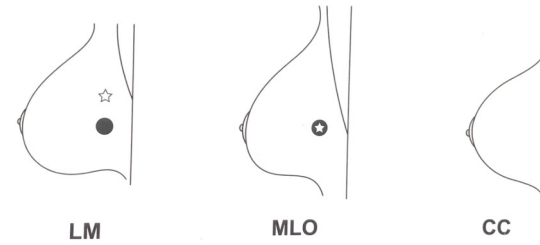


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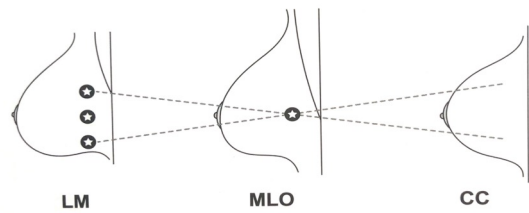
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Lateral Used to Overcome Superimposition



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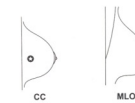
Lateral Used for Lesion Location



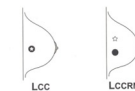
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Roll View to Overcome Superimposition

1. Something seen on CC, but not on MLO - is it real?



2. Do LCCRM:

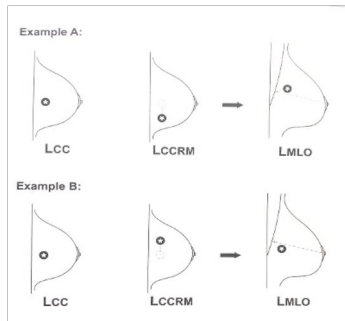


Examination is complete - this was superimposition and not a "real" mass.



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Roll View for Lesion Location



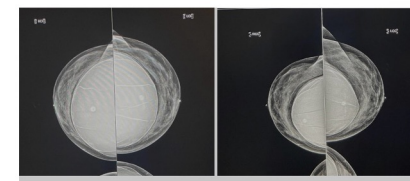
Imaging of Augmented Breasts

- CC views of each breast with implants in place
- MLO views of each breast with implants in place
- CCID views of each breast with implant displaced
- MLOID views of each breast with implant displaced



Imaging of Augmented Breasts: Full Implant Views

- Should be done with only enough compression to immobilize the breast to prevent motion un-sharpness
- Curved paddle can be used (if available)
- Appropriate technique (usually manual) should be used



STRAIGHT PADDLE

CURVED PADDLE



Imaging of Augmented Breasts: ID Views

- ID views (depending on implant mobility) can be performed with taut compression
- Half paddle can be used for patients with small amount of natural breast tissue



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Imaging of Augmented Breasts: ID Views

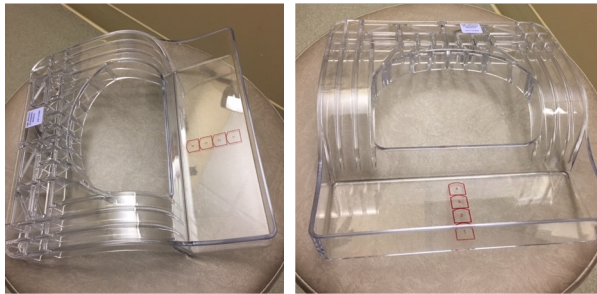
- Appropriate technique (used for patients without implants) should be used
- Patient can be positioned from behind (with tech standing and/or patient seated)



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Half Paddle

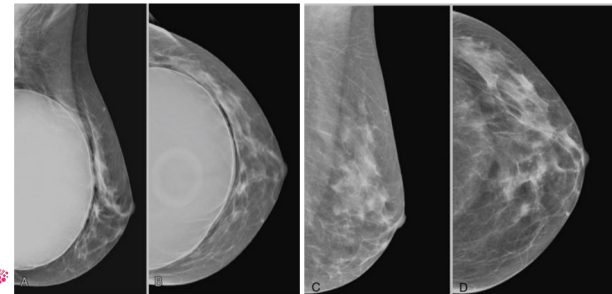


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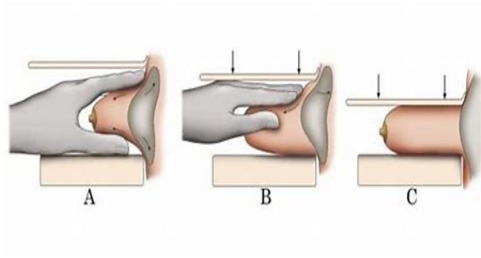
Imaging of Augmented Breasts



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ID - Implant Displaced



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Source: leberaldictionary.com

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Working from behind for CCID Views



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Working from behind for MLOID Views



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Conclusion

- Additional views are helpful in identifying true location of areas of concern
- They are used for diagnostic work-ups
- Can provide valuable information to aid in diagnosis of breast cancer



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References

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Derenberger, Dawn, Hadley, Robyn. "Most Commonly Used Additional Views, Part 3: Defining Structures and Clarifying Presence of Abnormalities." SBI News Issue 1, 2021. <https://mammographyeducation.com/most-commonly-used-additional-views-part-3-defining-structures-and-clarifying-presence-of-abnormalities/>



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