Additional Mammographic Views: A Comprehensive Guide

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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

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Additional Views Lexicon

- SIO - Superior lateral to inferior medial oblique
- LMO - Lateromedial oblique
- M - Magnification
- ID - Implant displaced
- No label: Spot Compression

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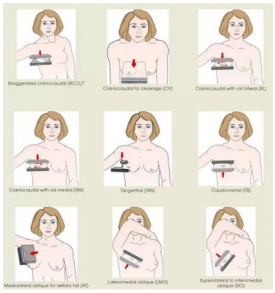

Source: Hologic Selenia Unit

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Labeling Codes (Lexicon)

The name is view (labeling code) is always preceded by identification of laterality

- i.e., LXCCL or RXCCL

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The 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

9

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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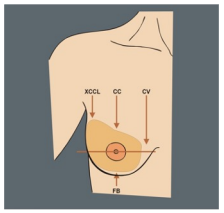
Imaging the Breast in a Transverse or Axial Plane



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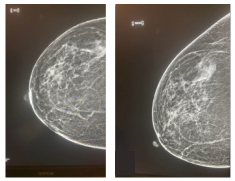
XCCL - Exaggerated CC Lateral

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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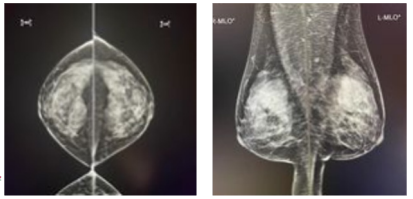
XCCL required for baseline, but not on subsequent screenings



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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 image receptor

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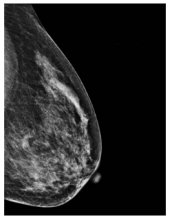
Muscle or NO muscle? NO MUSCLE!



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Incorrect

Correct

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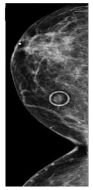
CV - Cleavage

For visualization of medial breast tissue in a CC



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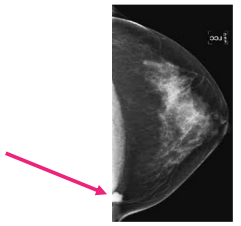
Sternalis Muscle



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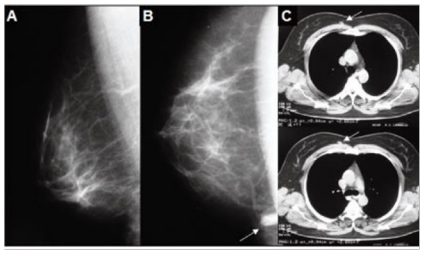

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Sternalis Muscle

- 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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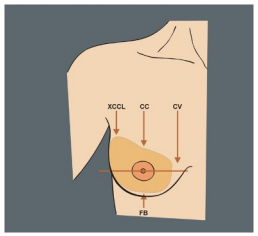
Medial or Lateral Orientation to the Nipple



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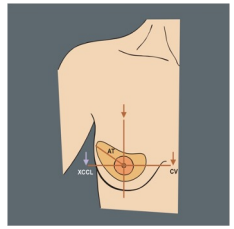
Axillary Tail



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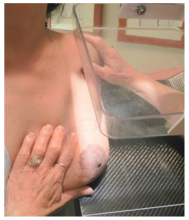
Axillary Tail



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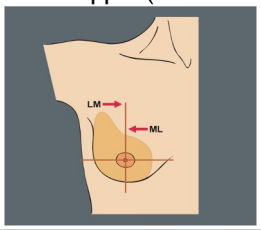
Superior or Inferior Orientation to the Nipple (LM or ML)



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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
- The LM 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

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Why do the LM?

- There is no issue of the contralateral breast impeding the path of the compression paddle

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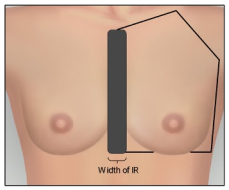
Improperly positioned LM with breasts separated, so the middle of the IR is centered on midsternal line. This excludes deep medial breast tissue on the side you are imaging.



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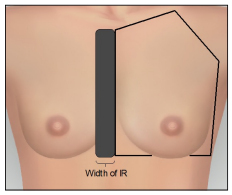
Properly positioned LM with breasts separated so the *top edge of the IR* is centered on midsternal line and the width of the IR pressing against the contralateral breast.



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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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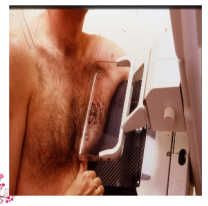
MLO



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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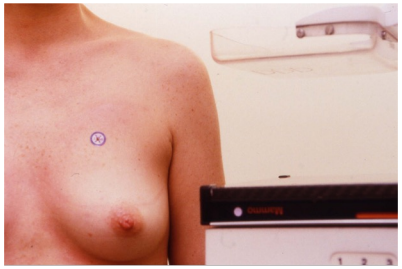

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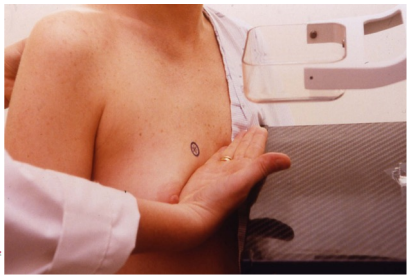

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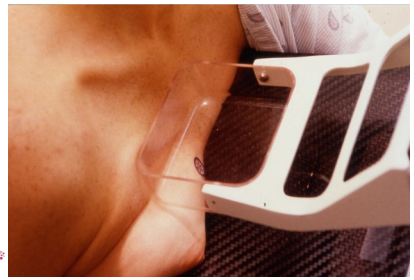

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Localization for Verification of Skin Calcifications

- Decreased with use of DBT
- Set up as 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 biopsy paddle is closest to the area in question

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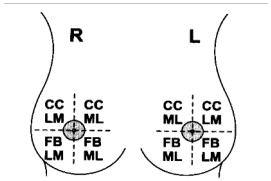
Tangential Views for the Verification of Skin Calcifications



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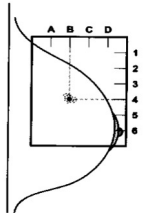
Tangential Views for the Verification of Skin Calcifications



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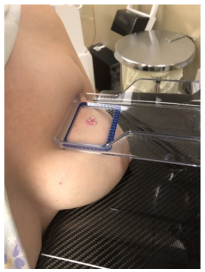

Image Courtesy of Robyn Hadley, R.T.(R)(M)

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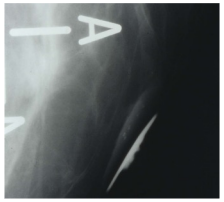
Tangential Views for the Verification of Skin Calcifications



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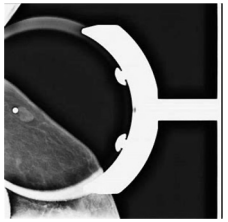
Spot Compression with/without Magnification



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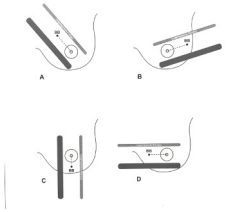
All Would be Labeled LTAN



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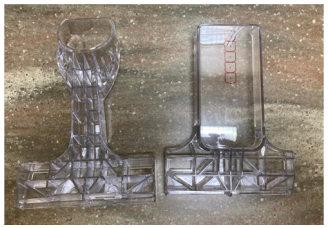
Spot Compression Paddles



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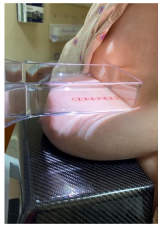
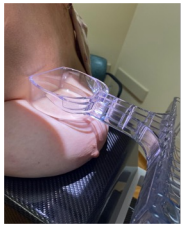
Square vs Round Paddle





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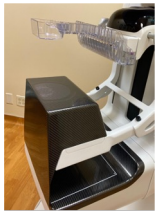
Spot Compression with Magnification



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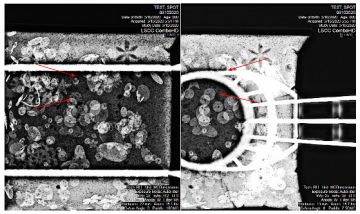
Square vs Round Paddle



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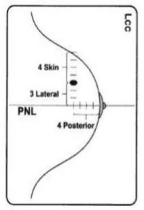

Spot/Mag Measurements

RIGHT LEFT

CC MLO LM ML

4 POSTERIOR / ANTERIOR

3 MED / LAT SUP / INF

4 SKIN

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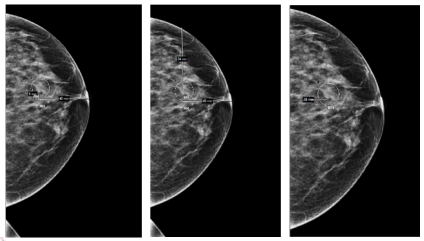

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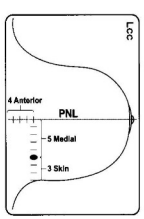

Spot/Mag Measurements

RIGHT LEFT

CC MLO LM ML

POSTERIOR / ANTERIOR 4

5 MED / LAT SUP / INF

3 SKIN

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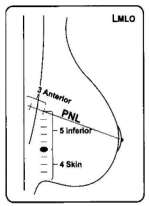

Spot/Mag Measurements

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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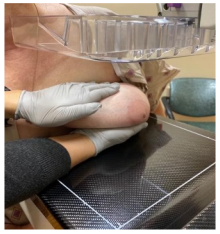
LCCRM – Left CC Rolled Medial



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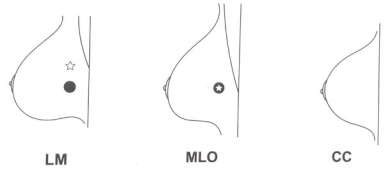
Lateral Used to Overcome Superimposition



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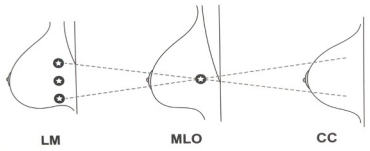
Lateral Used for Lesion Location



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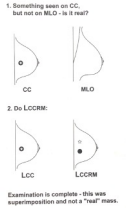
Roll View to Overcome Superimposition



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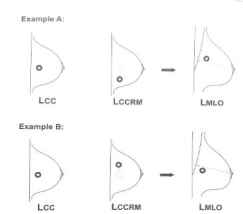
Roll View for Lesion Location



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Imaging of Augmented Breasts

- CCs 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

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Imaging of Augmented Breasts: Full Implant Views

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

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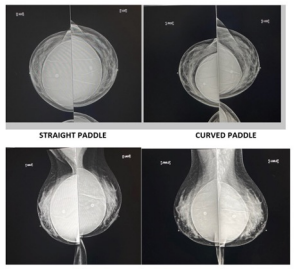

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Imaging of Augmented Breasts: ID Views

- 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
- 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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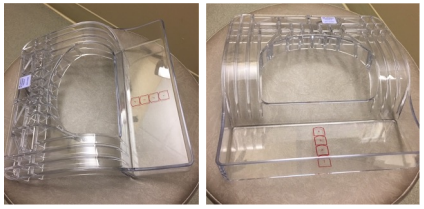
Half Paddle



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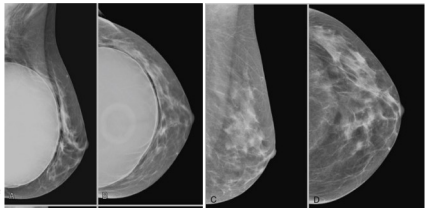
Imaging of Augmented Breasts



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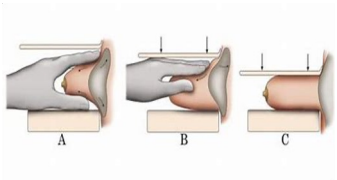
ID – Implant Displaced



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Source: leberaldictionary.com

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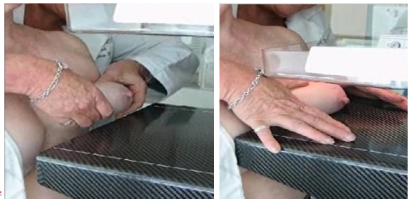
Working from Behind for CCID Views



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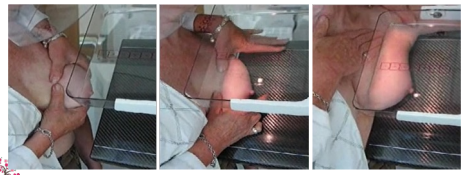
Working from Behind for MLOID Views



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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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