

## Additional Mammographic Views

Louise C. Miller, R.T.(R)(M)(ARRT), CRT(M), FSBI, FNCBC  
Director of Education, Mammography Educators



MAMMOGRAPHY  
EDUCATORS

© 2025 Mammography Educators

1

## Additional Views Lexicon

- XCCL – Exaggerated Craniocaudal Lateral
- CV – Cleavage
- LM – Lateromedial
- ML – Mediolateral
- AT – Axillary Tail
- TAN – Tangential



MAMMOGRAPHY  
EDUCATORS

2

## Additional Views Lexicon

- RL – Rolled Lateral
- RM – Rolled Medial
- RS – Rolled Superior
- RI – Rolled Inferior
- FB – Caudocranial



MAMMOGRAPHY  
EDUCATORS

3

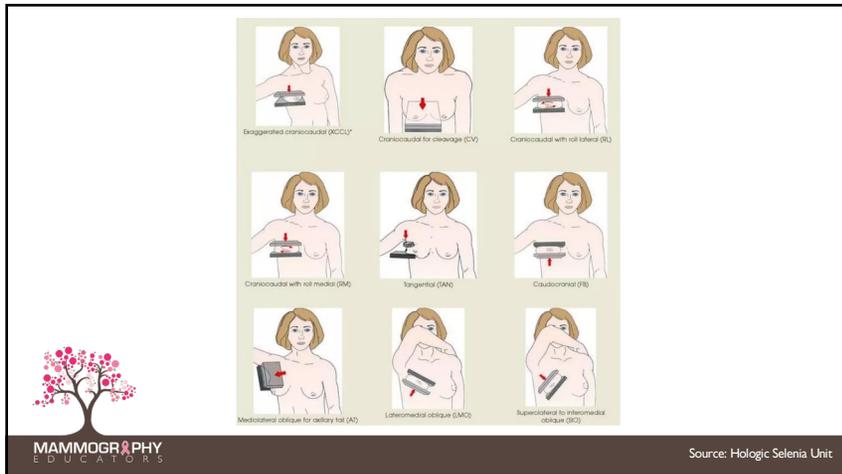
## Additional Views Lexicon

- SIO - Superior Lateral to Inferior Medial Oblique
- LMO – Lateromedial Oblique
- M – Magnification
- ID – Implant Displaced
- *No label:* Spot Compression



MAMMOGRAPHY  
EDUCATORS

4



5

## Labeling Codes (Lexicon)

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

- i.e., LXCCCL or RXCCCL

MAMMOGRAPHY EDUCATORS

6

## Most Commonly Used Additional Views

- XCCL
- CV
- LM/ML

MAMMOGRAPHY EDUCATORS

7

## Why 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

MAMMOGRAPHY EDUCATORS

8

Or...

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



MAMMOGRAPHY  
EDUCATORS

9

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



MAMMOGRAPHY  
EDUCATORS

10

### Ask and Answer

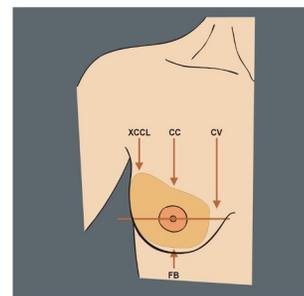
- Which part of the breast do I want to visualize?
- In which projection?
- Which view will accomplish this?



MAMMOGRAPHY  
EDUCATORS

11

### Imaging the Breast in a Transverse or Axial Plane

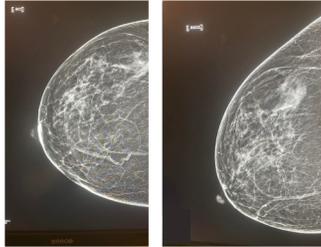


MAMMOGRAPHY  
EDUCATORS

12

## XCCL – Exaggerated Craniocaudal Lateral

Visualization of lateral breast tissue in a CC projection.



13

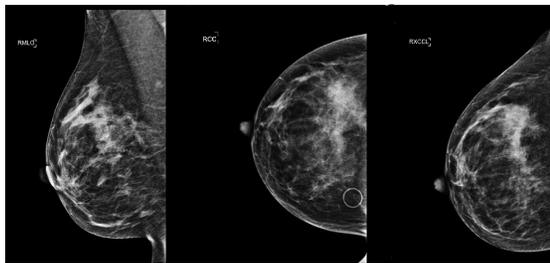
## Use of the XCCL

- 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



14

XCCL is required for baseline, but not on subsequent screenings.



15

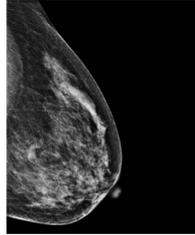
## Use of the XCCL

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



16

Muscle or no muscle?



NO MUSCLE!



17



18

Incorrect



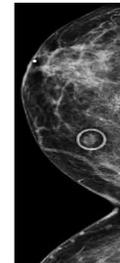
Correct



19

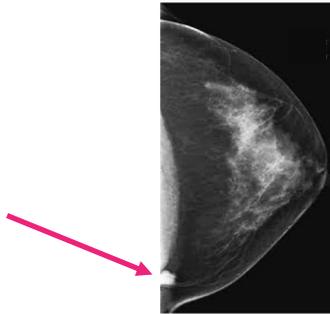
CV – Cleavage

Used for visualization of medial breast tissue in a CC view.

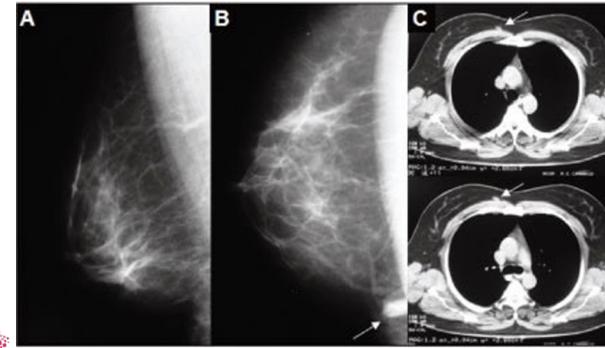


20

## Sternalis Muscle



21



22

## Sternalis Muscle

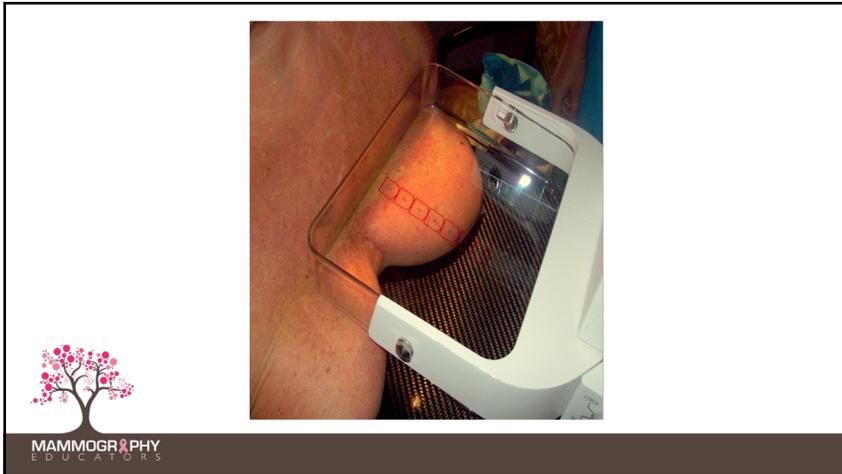
- Flame-like appearance (similar to an appendix)
- Present in only 7-10% of the population
- Seen medially on a mammogram
- Often misdiagnosed as the insertion of the pectoralis muscle



23



24



25

### Medial or Lateral Orientation to the Nipple



26

### AT – Axillary Tail



27

### AT – Axillary Tail



28

## AT – Axillary Tail

- Angle tube to axillary tail
- Approximately 30 degrees



MAMMOGRAPHY  
EDUCATORS

29

## AT – Axillary Tail

***It is never used to localize a lesion.***



MAMMOGRAPHY  
EDUCATORS

30

## AT – Axillary Tail

- Only used for focal compression of the axillary tail
- Anterior to posterior orientation and compression



MAMMOGRAPHY  
EDUCATORS

31

## AT – Axillary Tail

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



MAMMOGRAPHY  
EDUCATORS

32

## 90-Degree (True) Lateral

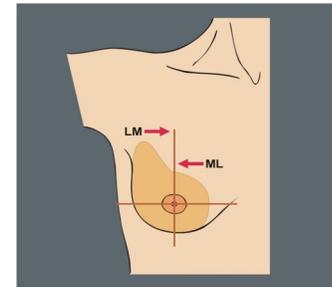
- LM – Lateromedial
- ML – Mediolateral



MAMMOGRAPHY  
EDUCATORS

33

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



MAMMOGRAPHY  
EDUCATORS

34

## 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 AOC superior or inferior to the nipple)



MAMMOGRAPHY  
EDUCATORS

35

## 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, thus facilitates positioning



MAMMOGRAPHY  
EDUCATORS

36

## Why do the LM?

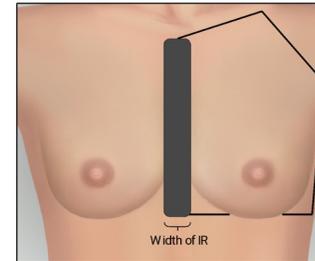
- The posterior medial breast is hardest part of the breast to image and the area most often missed on the MLO.
- If done properly, by off-setting the IR into the contralateral breast, you will be able to go deeper against the chest wall.
- There is no issue of the contralateral breast impeding the path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



MAMMOGRAPHY  
EDUCATORS

37

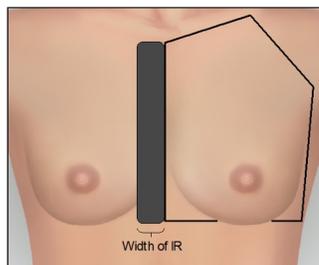
**Improperly** positioned LM with breasts separated, so the middle of the IR is centered on midsternal line. This excludes deep medial breast tissue on the side you are imaging.



MAMMOGRAPHY  
EDUCATORS

38

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

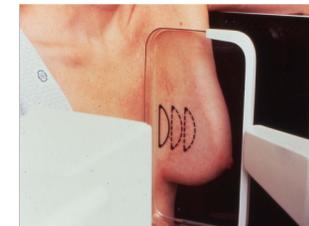


MAMMOGRAPHY  
EDUCATORS

39

## 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.



MAMMOGRAPHY  
EDUCATORS

40

## Additional Views for Clarification of AOC

- TAN
- Spot Compression
- Spot Compression with Magnification
- Rolled Views



MAMMOGRAPHY  
EDUCATORS

41

## TAN – Tangential View

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



MAMMOGRAPHY  
EDUCATORS

42

## Localization for Verification of Skin Calcifications

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



MAMMOGRAPHY  
EDUCATORS

43

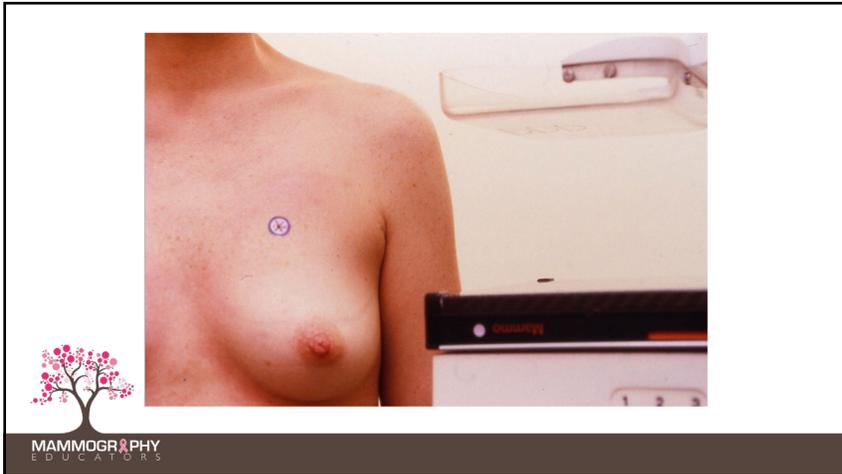
## Localization for Verification of Skin Calcifications

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

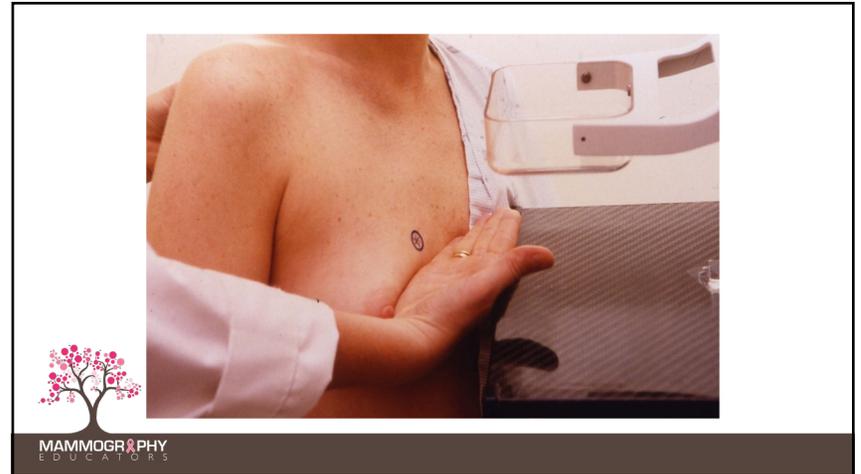


MAMMOGRAPHY  
EDUCATORS

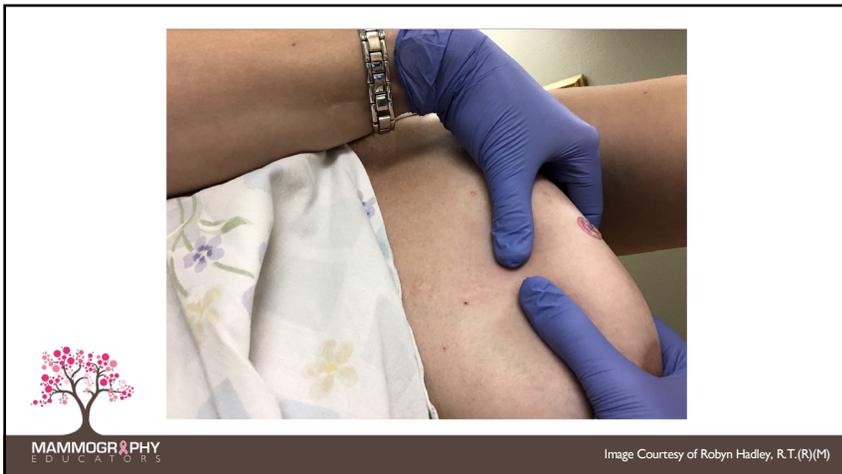
44



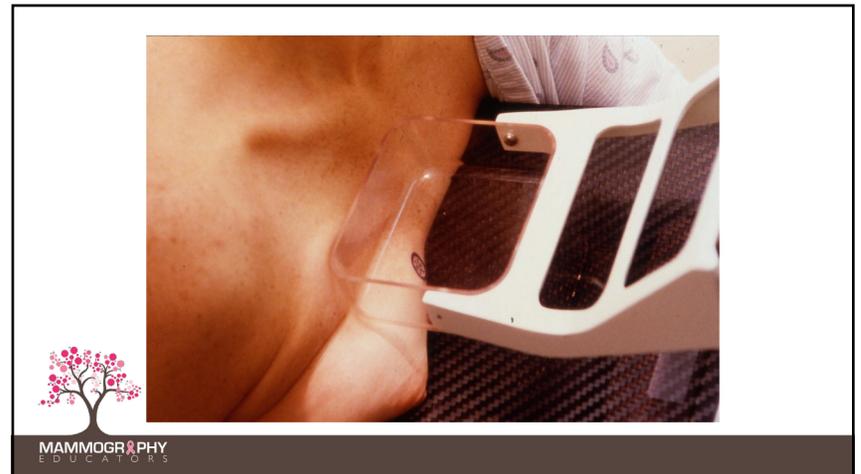
45



46



47



48

## Spot Compression Paddles



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

49

## Square vs. Round Paddle



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

50

## Spot Compression with Magnification



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

51

## Square vs. Round Paddle

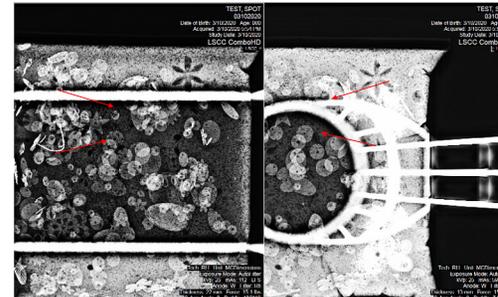
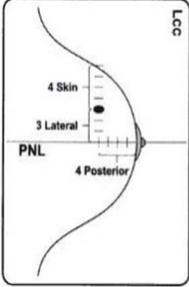


Image Courtesy of Robyn Hadley, R.T.(R)(M)

52



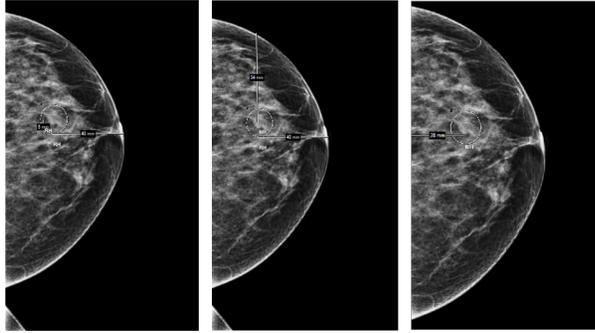
Lcc

### Spot/Mag Measurements

RIGHT	LEFT
CC MLO LM ML	
4 POSTERIOR / ANTERIOR	
3 MED / LAT	SUP / INF
4 SKIN	

MAMMOGRAPHY EDUCATORS

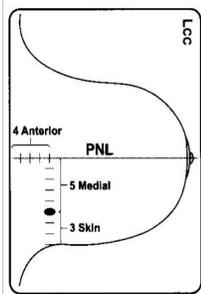
53



MAMMOGRAPHY EDUCATORS

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

54



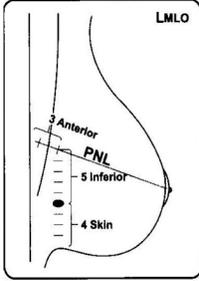
Lcc

### Spot/Mag Measurements

RIGHT	LEFT
CC MLO LM ML	
POSTERIOR / ANTERIOR 4	
5 MED / LAT	SUP / INF
3 SKIN	

MAMMOGRAPHY EDUCATORS

55



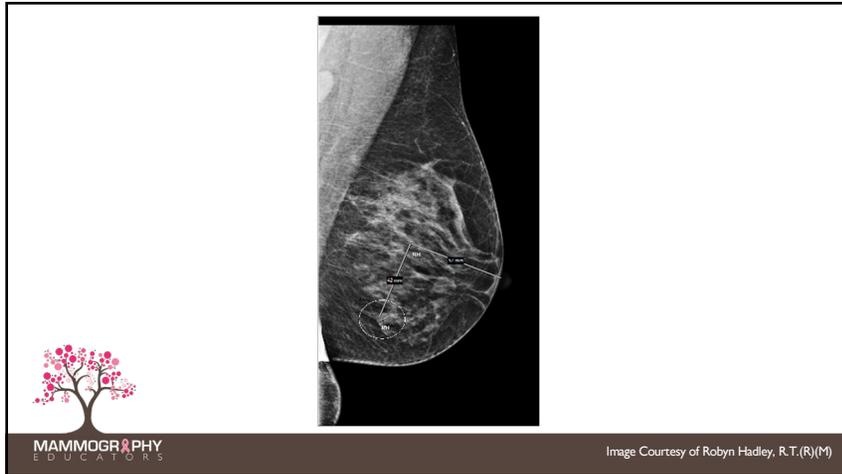
LMLO

### Spot/Mag Measurements

RIGHT	LEFT
CC MLO LM ML	
POSTERIOR / ANTERIOR 3	
MED / LAT	SUP / INF 5
SKIN 4	

MAMMOGRAPHY EDUCATORS

56



57

## Remember...

- You must stimulate 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.

MAMMOGRAPHY EDUCATORS

58

## 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

MAMMOGRAPHY EDUCATORS

59

## 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

MAMMOGRAPHY EDUCATORS

60

## Imaging of Augmented Breasts

### 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 techniques (patients without implants) should be used
- Patient can be positioned from behind (tech standing and/or patient seated)



MAMMOGRAPHY  
EDUCATORS

61

## Half Paddle

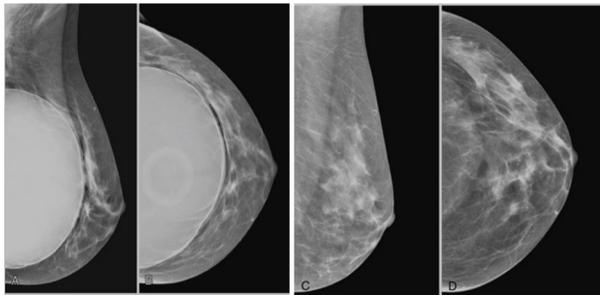


MAMMOGRAPHY  
EDUCATORS

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

62

## Imaging of Augmented Breasts



MAMMOGRAPHY  
EDUCATORS

63

## Working from Behind for CCID Views



MAMMOGRAPHY  
EDUCATORS

64

## Working from Behind for MLOID Views



MAMMOGRAPHY  
EDUCATORS

65

## Conclusion

### Additional views:

- Helpful in identifying true location of areas of concern
- Used for diagnostic workups
- Can provide valuable information to aid in diagnosis of breast cancer



MAMMOGRAPHY  
EDUCATORS

66

## References

- Miller, L. C., RTRM. (2015). *Mammography Positioning Guidebook*. CA: Mammography Educators.
- Miller, L. C., R.R.(R)(M)(ARRT), Lehmann, T. L., B.S. R.T. (R)(M)(ARRT). (2020). *Image Quality & Positioning Problem-Solving for Breast Imagers: Meeting EQUIP Standards* (1st ed.). San Diego, California: Mammography Educators.
- Long, S. M., Miller, L. C., Botsoo, M. A., & Martin, L. L. (2010). *Handbook of Mammography* (5th ed.). Edmonton: Mammography Consulting Services.
- 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-define-structures-and-clarify-presence-of-abnormalities/>



MAMMOGRAPHY  
EDUCATORS

67

*Thank You!*

### Services we offer, include:

- Onsite Positioning Training
- Assistance with Accreditation & Inspection
- Live Webinars and Conferences
- On-Demand Continuing Education

For questions or more information:

619-663-8269

[mammographyeducators.com](https://mammographyeducators.com)

[info@mammographyeducators.com](mailto:info@mammographyeducators.com)



MAMMOGRAPHY  
EDUCATORS

68