

Mammography Fellowship  
Fundamentals of Mammography  
Part II A Mammography

Positioning and Compression

Positioning the C View

The Advanced Health Education Center

Hints for positioning

- Develop a method
- A certain percentage of patients will need another view to properly image all of the tissue...the percentage will vary
- Gain the patients compliance/cooperation
- Enlist the patient's help, explain the procedure
- Give the patient control
- Listen to your patient

Positioning Challenges

- When positioning...
  - Try not to say "to your right (or left)"
    - Patient's are nervous during their exam and this command tends to confuse and frustrate them.

Positioning Challenges

- When positioning...
  - Instead use "take a sidestep towards me (or away from me)"

- When positioning...
  - Some people are visual learners, or are more receptive to that way of teaching when under stressful situations.
  - Try mimicking your commands for the patient so that they are able to see the direction in which you want them to move.



Compression.....Why?

- Reduces the amount of radiation absorbed by the breast
- Separates overlapping tissue that may "hide" subtle abnormalities
- Can make the difference between finding or missing an early breast cancer

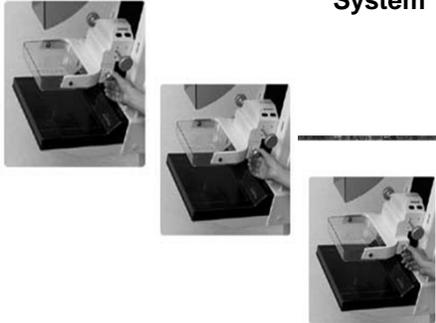
**LoRad Selenia™ FAST Paddle**



Fully Automatic  
Self-Adjusting  
Tilt Paddle



**LoRad Selenia™ Smart Paddle System**



**FAST SMART PADDLE  
COMPRESSION DEVICE**





Provides anterior tilt while maintaining  
compression on posterior tissue

**CC FAST SMART PADDLE**



**The Values of Compression**

- Reduces radiation dose
- Improves image quality:
  - A. Reduction of the breast thickness, which reduces the ratio of scatter-to primary radiation thereby improving subject contrast
  - B. Location of structures in the breast are brought closer to the image receptor, which reduces geometric blurring

- c. The breast is more uniform in thickness, which results in more even penetration and less difference in radiographic density.
- D. Immobilization of the breast reduces blurring caused by motion.
- E. Spreading of the breast tissue reduces superimposition of breast tissue enabling suspicious lesions to be more easily identified.

## Positioning Routine Views

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- Craniocaudal (CC)

Two of the most important principles of breast positioning are:

1. To move the mobile tissue toward fixed tissue.
2. To avoid moving the compression paddle against fixed tissue.

Mobile tissue: Lateral  
Inferior

Fixed tissue: Medial  
Superior



## CC-craniocaudal view

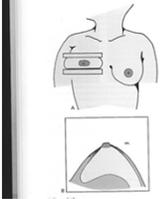
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- To ensure that any tissue that may be missed on the MLO view will be seen on the CC
- Tissue missed on MLO most likely will be medial tissue
- Demonstrate as much of the medial tissue as possible
- Demonstrate as much of the lateral tissue as possible and can be accomplished without excessive exaggeration to the medial or lateral side

## CC-craniocaudal view

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- Best demonstrates the anterior, central, medial and posteromedial portions of the breast but poor at visualizing the lateral breast tissue



## Positioning Deficiencies

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CC View

- Poor visualization of posterior tissue
- Poor visualization of superior tissue
- Not within 1 cm of MLO view
- Excessive exaggeration
- Skin folds

## Steps for Positioning CC View

How many are there?

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1. Technologist standing on medial side of breast being positioned
2. Patients feet straight toward receptor
3. Elevate breast at IMF
4. Elevate receptor-not quite as high as elevated IMF
5. Have patient take 1/2 step back away from receptor
6. Patient looking at technologist

7. Place breast on receptor
8. Have patient lean into receptor as breast is being placed on receptor -chest forward, hips back-inclusion of superior-posterior tissue
9. IMF flush with receptor
10. Bring patients head around side of tube
11. Lateral pull
12. Contralateral breast elevated and placed on receptor making sternum flush with receptor

13. Nipple centered
14. Check for medial air gap
15. Pull breast tissue toward nipple as compression is applied
16. Apply taut compression
17. Compression paddle flush with chest wall
18. Remove any skin folds without removing tissue from image
19. Have patient hold onto bar with opposite arm
20. Check for and remove any shadows from face, shoulder, etc.

There are consequences for missing any of the steps for successful positioning!  
Let's look at the steps....

### Why Not to Stand on the Lateral Side?

- You cannot properly elevate the breast from the lateral side
- You cannot determine proper elevation from the lateral side
- You cannot see if you have all the medial tissue from the lateral side
- You cannot see if you have a medial air gap from the lateral side

### Why Not to Stand on the Lateral Side?

- You cannot put your arm around the shoulder of the breast you are doing from the lateral side
- You cannot grip the mammographers gully
- You cannot lift the skin of the neck at the mammographers gully to alleviate some of the pulling of the skin

### Why Not to Stand on the Lateral Side?

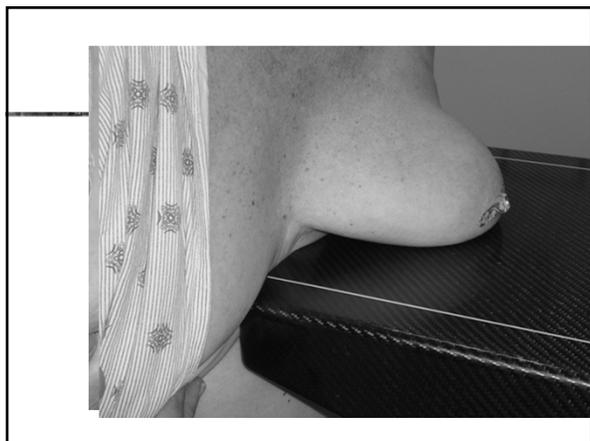
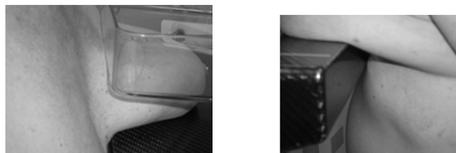
- You cannot see if the sternum is flush with the image receptor from the lateral side
- You cannot determine if the nipple is correctly centered from the lateral side
- You cannot control the patients head from the lateral side

### Why Not to Stand on the Lateral Side?

- You cannot do the hand maneuver correctly from the lateral side
- You cannot do a CC view optimally from the lateral side

### Elevating the Breast -there is a fine line

- Elevating the breast too high- loss of inferior and posterior tissue
- Too low the breast droops-eliminates superior and posterior tissue



### MUSCLE OR ABDOMINAL FOLD?

YOU BE THE JUDGE.....

If it is a fold there will be an air gap anterior to the fold making it look dark or black

If it is muscle you will not see this air anterior to it

### Sandwich Technique ACR



### CC-Some of us are sandwichers





CC average breast - tech # 1



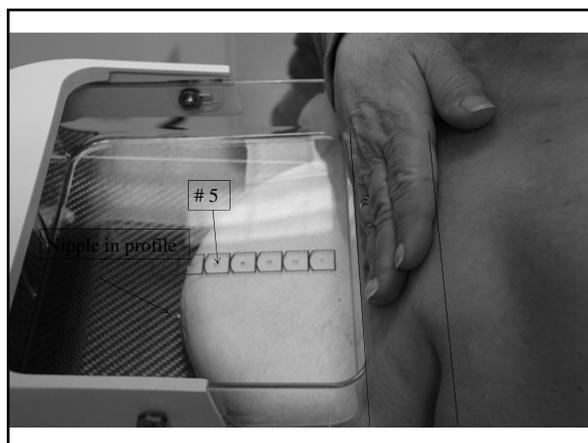
Some of us are scoopers

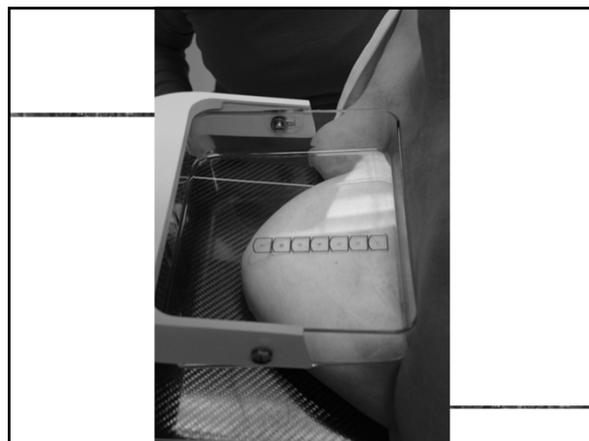
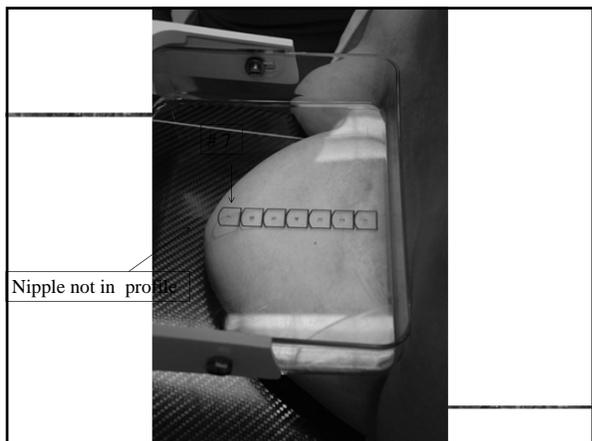


Positioning Challenges



To maintain good ergonomics, keep your thumb in the same plane as the rest of your fingers.







## Challenges

A tip to help get more lateral tissue and better contact in the lateral portion of the breast:

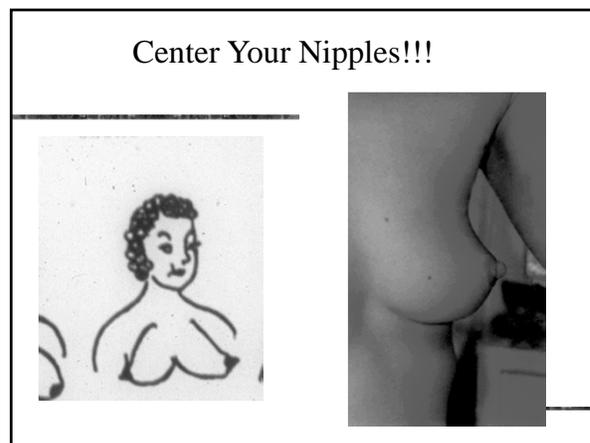
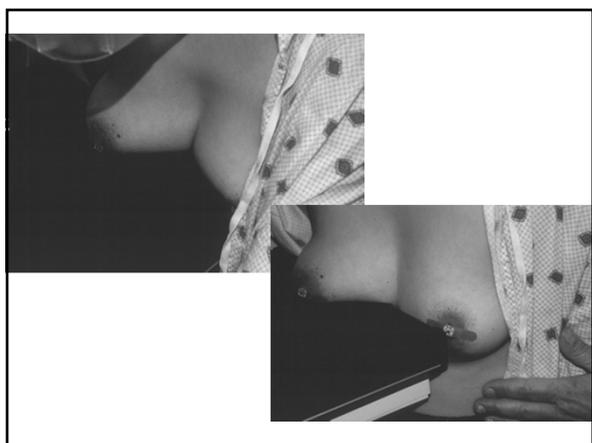
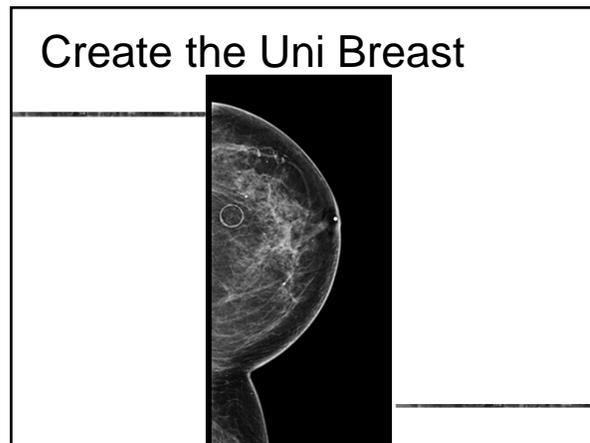
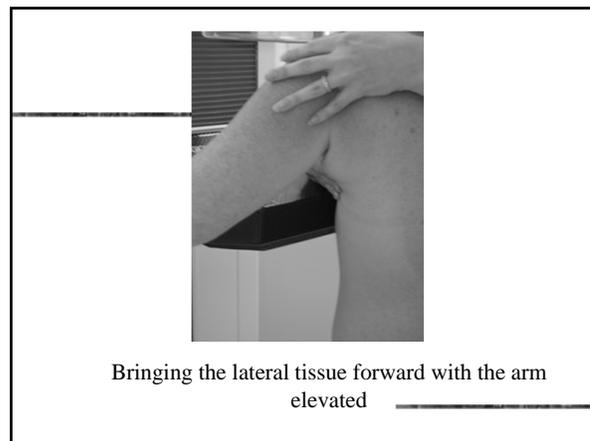
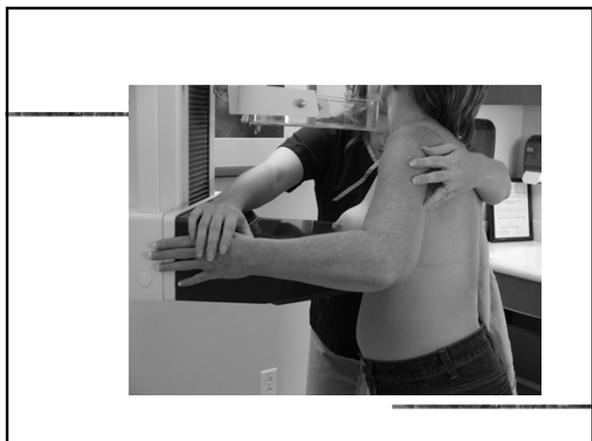
Elevate the ipsilateral arm, bring it slightly forward, bending at the elbow and rest their hand on the corner of the receptor.

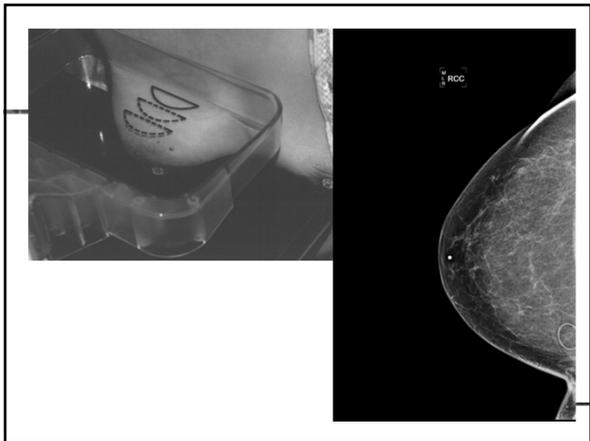
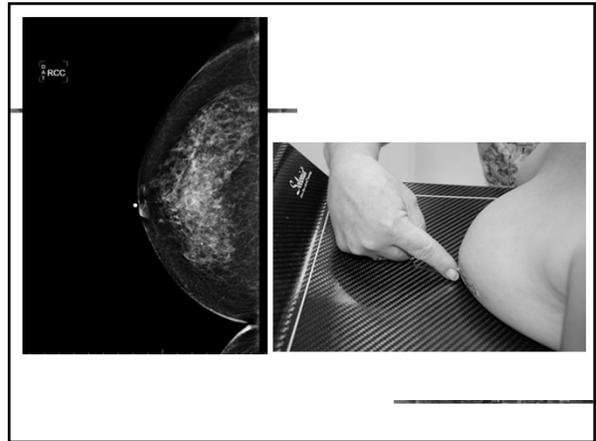
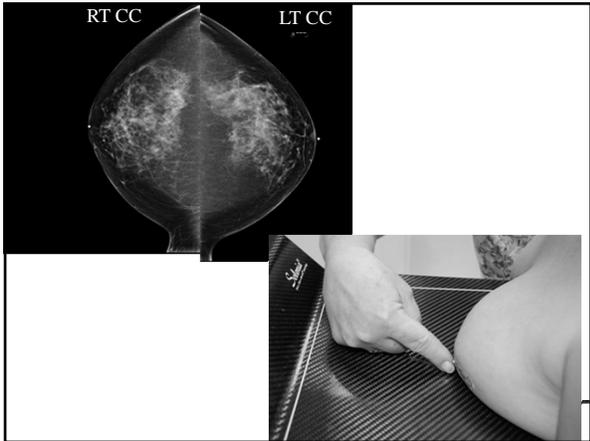
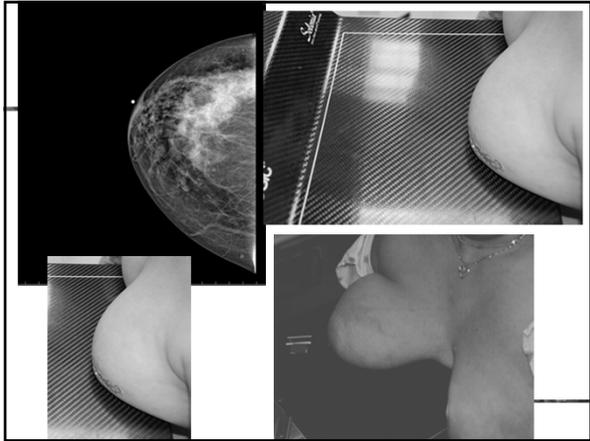
## Positioning Challenges

Works well for women with accessory tissue under the arm to prevent the bulge from occurring and not getting an even, uniform compression over the breast.

You can use it on the majority of patients, to better image the breast.

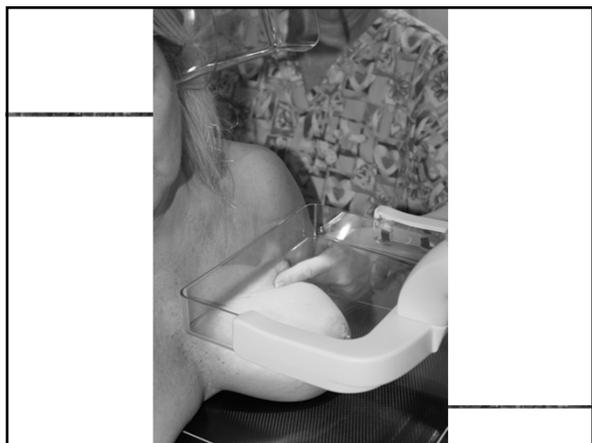
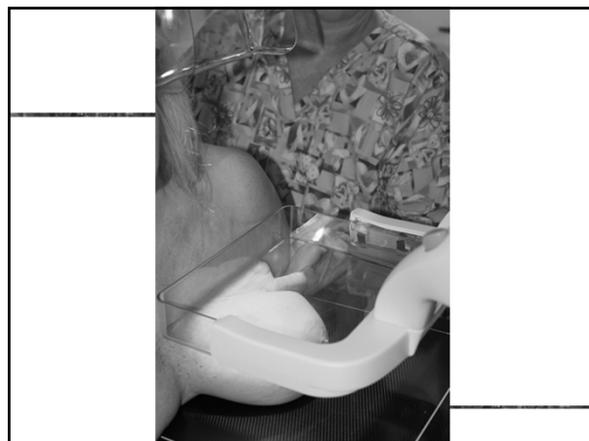
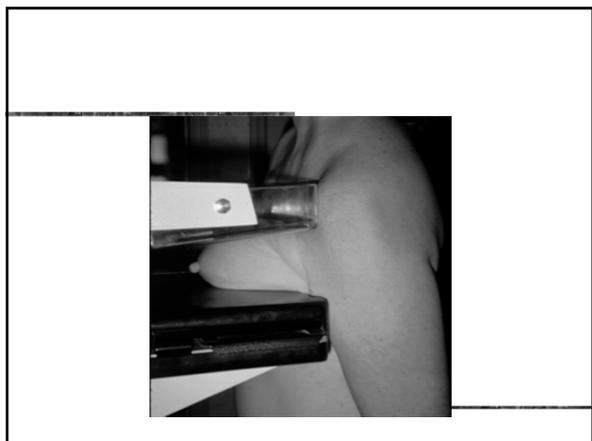
- Try this...everyone
  - Grab the pectoralis major and the lateral portion of your breast, (as if you were going to position yourself) with your arm by your side, hand externally rotated.
  - Now raise your arm just in front of you, bending at the elbow slightly.
  - Did you feel the muscle give way and flatten against the chest wall, and the breast tissue become more pliable?
  - Now place you arm back down by your side.
  - Did you feel the muscle bulge and tighten?

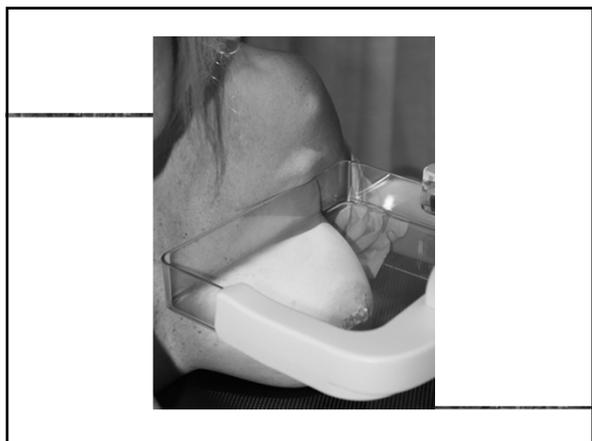




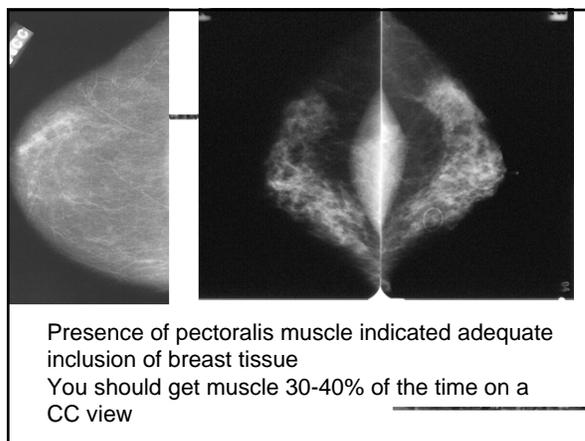
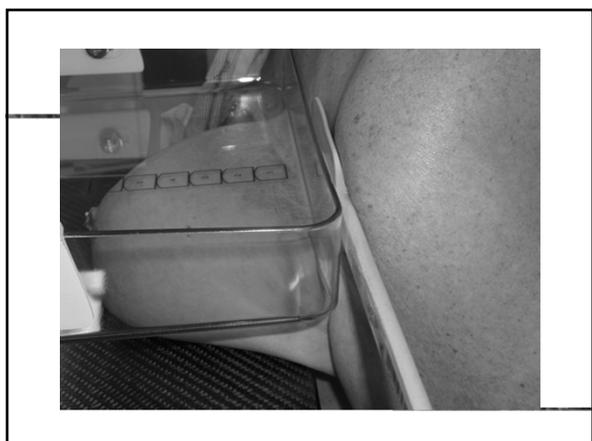
**NIPPLE PROFILE**

- REQUIRED IN ONE VIEW
- NOT ALWAYS POSSIBLE AT THE SAME TIME INCLUDING MAXIMAL BREAST TISSUE





**PUTTING THE SPATULA TO  
WORK TO HOLD BACK THE  
SHOULDER SHADOW ON A  
WELL DONE CC VIEW**



Presence of pectoralis muscle indicated adequate inclusion of breast tissue  
You should get muscle 30-40% of the time on a CC view

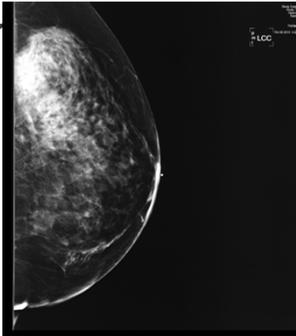
BE CAREFUL OF LARGE BREAST AND LARGE ARM WHEN PATIENT HOLDS ON WITH OPPOSITE ARM DO NOT LET THE BREAST GET PUSHED INTO THE ONE YOU ARE IMAGING



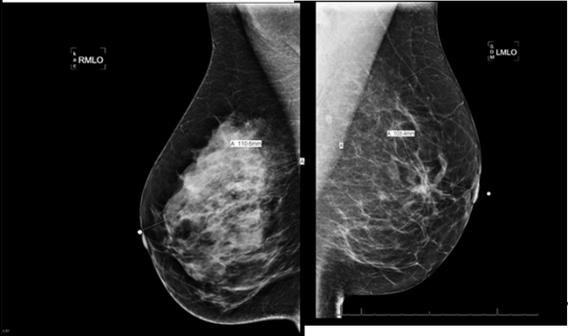

### CC Checklist

- Is all of the medial tissue visualized?
- Is the nipple centered on the image?
- Does the posterior nipple line (PNL) measure to within 1 centimeter of the MLO?
- Can you see the pectoral muscle?

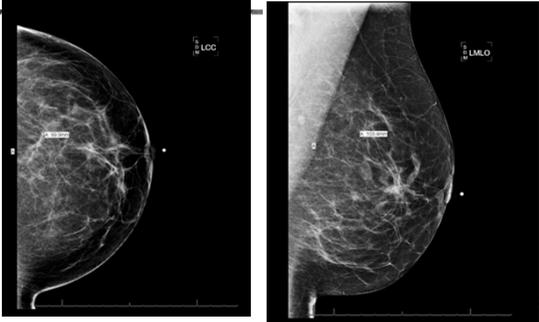
Is all of the medial tissue visualized?



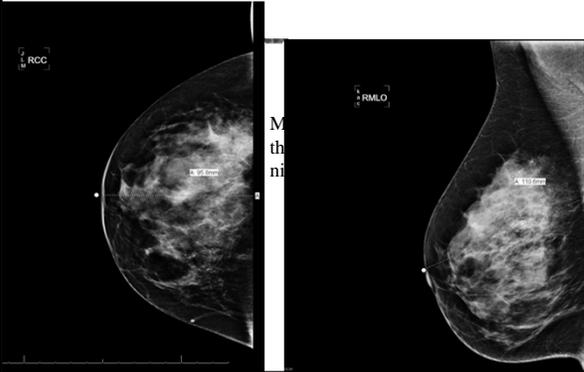
### Muscle to the level of the nipple Muscle Convex vs Concave



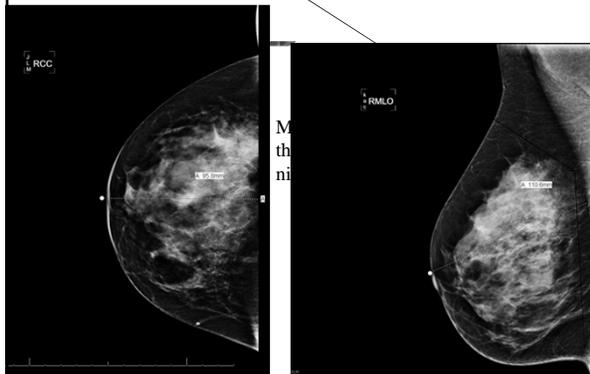
### Posterior Nipple Line-CC



### Posterior Nipple Line-MLO



## Retroglandular fat on CC??



## Positioning Dilemmas on the CC View

- Posterior nipple line on CC measures less than 1 cm of the MLO
  - With the patient standing at least a hands-distance away from the bucky, elevate IMF to maximum height, align height of bucky slightly lower than the elevated IMF.
  - Place the breast on the bucky making sure the compression paddle makes contact with the superior tissue under the clavicle.

## Positioning Dilemmas on the CC View

- Lean the patient forward with head along side of tube.
- Keep your fingers in the "mammographers gully" away from the head of the humerus.
- Keep patients shoulder relaxed-tell her to slough not relax this will work better.
- Say to yourself..."central, medial, lateral, lean"



## Positioning Dilemmas on the CC View

- Skin reflection of cleavage of medial aspect of breast not seen
  - Rotate the patient to place her sternum flush against the chest wall edge of the bucky.
  - Drape the opposite breast over the corner of the bucky.
  - Have patient hold onto the handlebar with the contralateral hand
  - Check for "gaps" between the medial aspect of the breast and the bucky.

## Positioning Dilemmas on the CC View

- Retroglandular fat not seen
  - Lift and pull the lateral tissue that is past the chest wall edge of the bucky forward.
  - Keep patient's shoulder relaxed tell her to slough.
  - Externally rotate patient's humerus with the arm resting along side their side. Do not push shoulder down toward bucky.
  - If glandular tissue is still missing do an exaggerated CC.

## Positioning Dilemmas on the CC View

- Lateral skin folds seen.
  - Smooth out laterally; do the "finger roll".
  - Do not pull fold out superiorly. Do not abduct the patient's arm.
  - If a small remains, leave it there, then do an exaggerated CC view.

### Positioning Dilemmas on the CC View

- Nipple is not centered
  - If nipple is exaggerated medially, rotate patient to place sternum flush with edge of bucky.
  - If nipple is exaggerated laterally, lift and pull lateral, posterior tissue forward.

### Digital Detector Clinical Applications



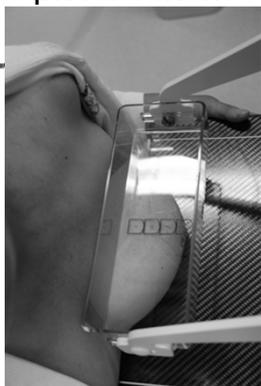
### Hologic Detector White Lines



### White line Hologic lateral



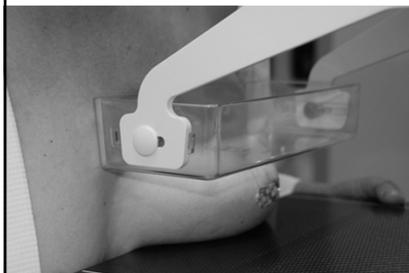
### CC small paddle-photo taken from above



### CC small paddle chest wall



### CC small paddle



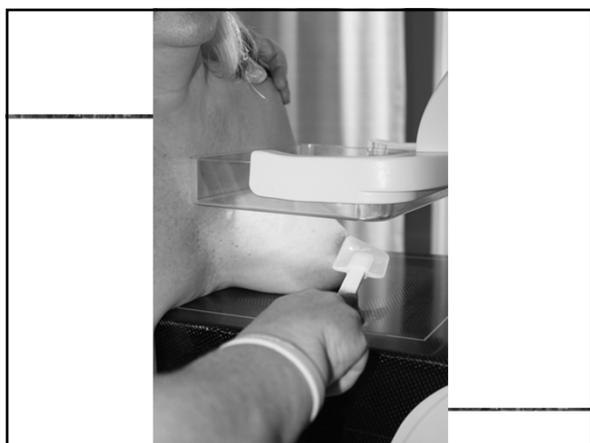
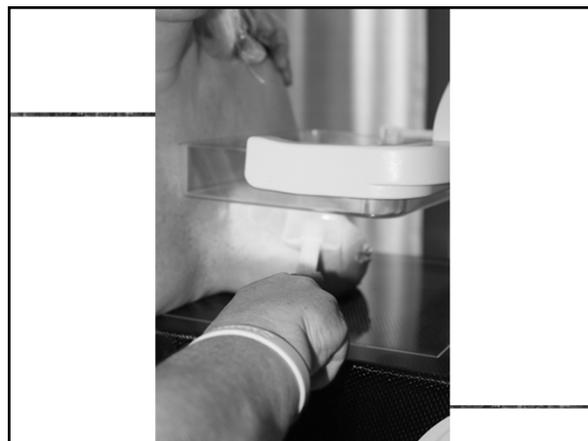
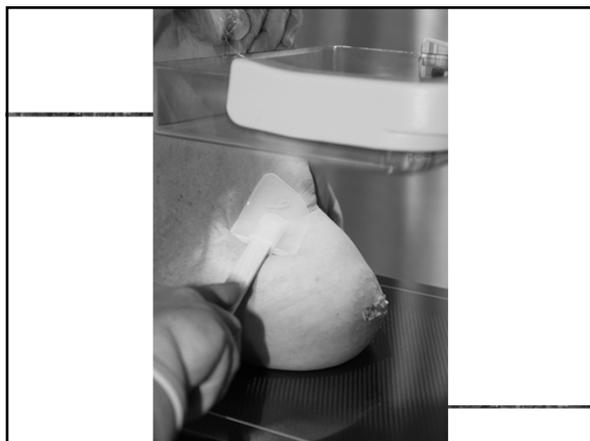
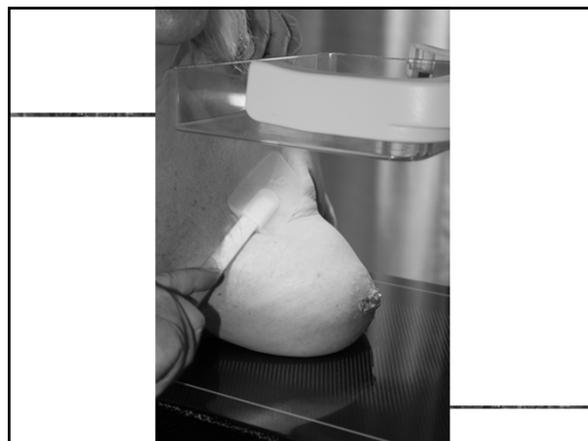
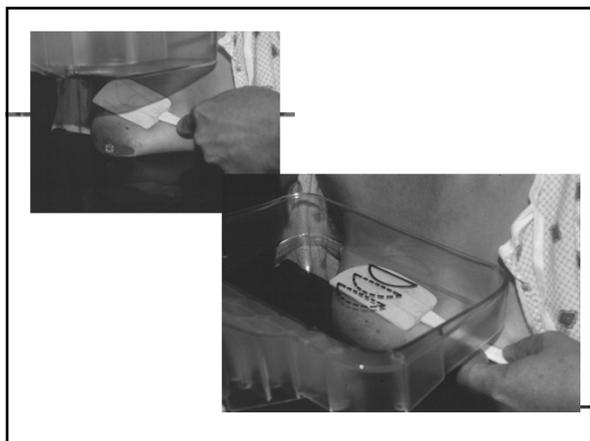
### Positioning on Flat Plate Detectors with large field of view

- Tilt paddles for anterior compression ??
- Laterally shifting paddles for using small FOV on MLO's..??
- Non shifting paddles on large detectors..??
- Direct digital detectors are thicker than bucky's you are used to..??

### Mosaic Imaging



**PUTTING THE SPATULA TO WORK FOR THE VERY THIN BREAST**



### Bottom Line!

- Capture missing tissue no matter what
- Don't stress out-do more views if necessary
- Do not get an attitude and give yourself permission to do a bad job!
- Remember...no matter how many mammograms you've done that day, your patient is receiving her first and only mammogram of the year. Treat her as someone special. Someone love her, she is someone's somebody!