

## The Mediolateral Oblique View

Standards for proper positioning of the MLO view

### REMINDER:

**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

### MLO-mediolateral oblique view

- Offers the best opportunity to visualize the maximum amount of breast tissue in a single view
- Images tissue in the tail of the breast missed on the CC view
- Demonstrates the extreme posterior and upper outer quadrant-however there is distortion of the anterior, central and medial breast tissue

### Positioning Deficiencies

#### MLO View

- Inadequate amount of pectoral muscle (incorrect muscle pattern)
- Sagging
- Poor visualization of posterior tissue (retroglandular fat)
- Skin folds
- Breast positioned too high on receptor
- Portion of breast cut off

### Steps for Positioning MLO View

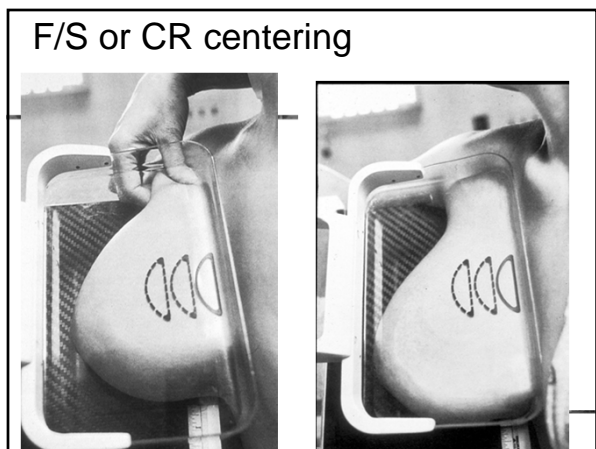
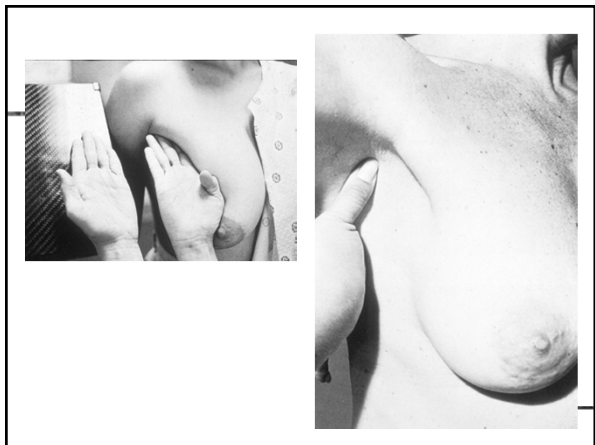
How many are there?

1. Bucky parallel to pectoral muscle
2. Bucky lower than the axilla
3. Breast centered on bucky-(depending on what type of imaging receptor you are using)
4. Hips in front of bucky
5. Place patient on bucky
6. Corner of bucky between the latissimus dorsi muscle and the pectoralis major muscle
7. Arm not on bucky
8. Patient's hand on bar but no death grip with elbow flexed over back of bucky

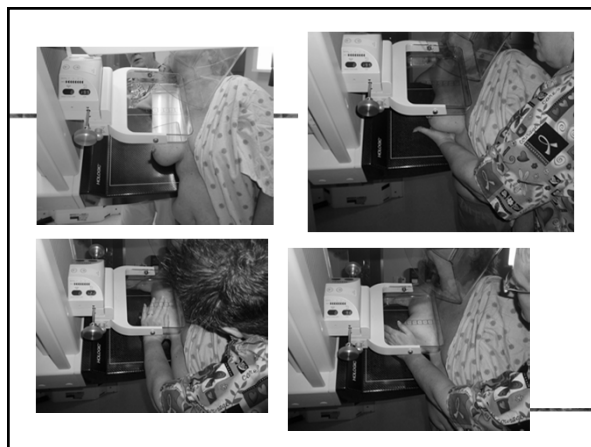
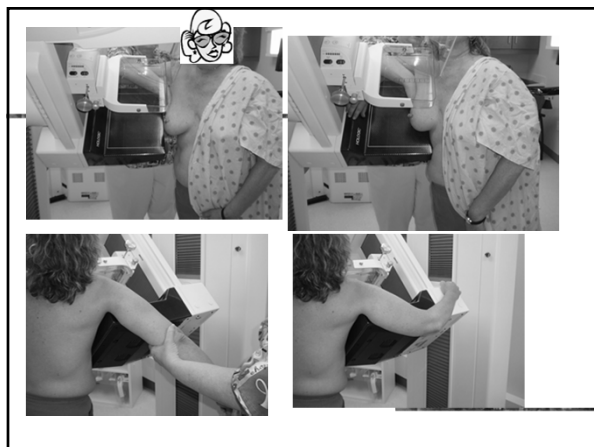
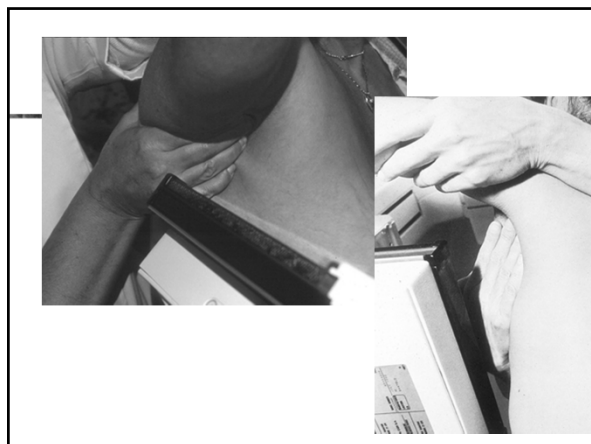
9. Shoulder toward C arm and rotated anterior
10. Mobilize muscle and tissue anterior and medial
11. Muscle pattern wide superiorly with a convex anterior border to the level of the nipple of further
12. Smooth out skin between patient and bucky after mobilizing and placing on bucky
13. Ribs not on bucky
14. Bucky keeps muscle and tissue mobilized
15. No gap between patient and bucky-three finger check

- 16. Bring breast out and up
- 17. Nipple in profile
- 18. Patient's feet and hips facing bucky
- 19. Apply taught compression-paddle flush with chest wall
- 20. Pull breast tissue away from chest wall using the fan technique as compression paddle captures the posterior tissue

- 16. Keep breast up with the "the bottom of your thumb"
- 17. Remove air gap at IMF
- 18. Open IMF
- 19. Remove shadows
- 20. Apply final compression



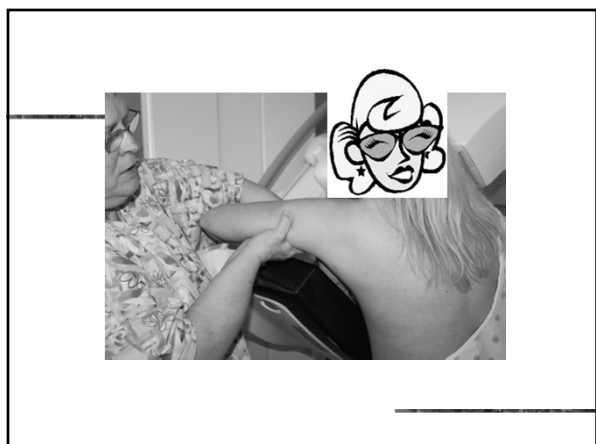
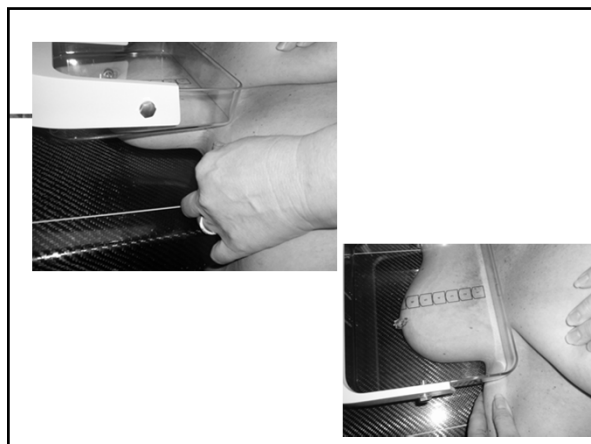
### Digital Receptor -centering



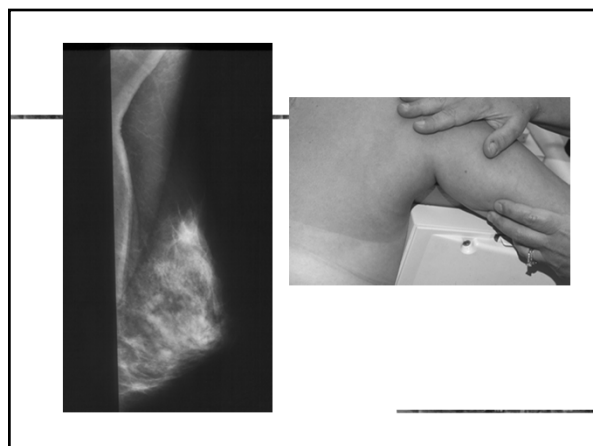
### MLO LARGE BREAST TECH # 1

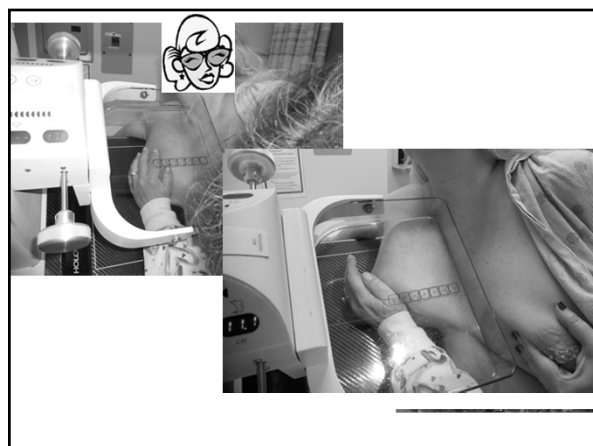
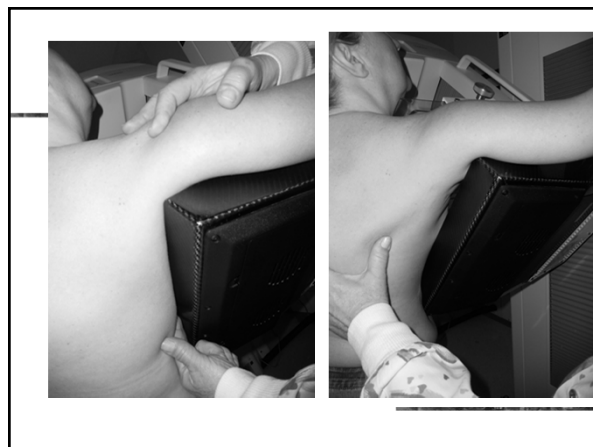
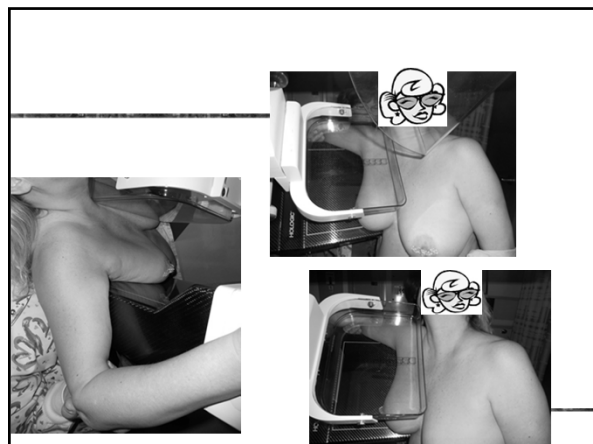


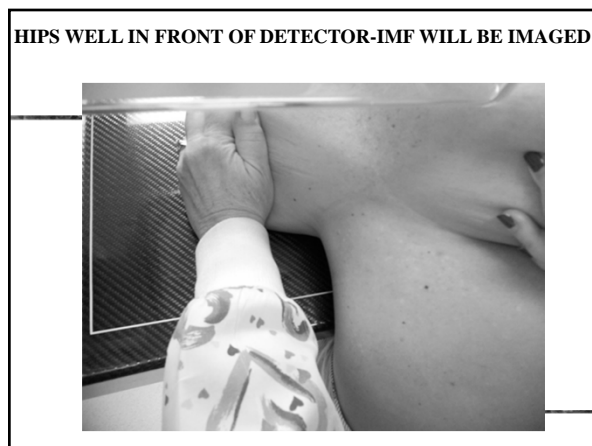
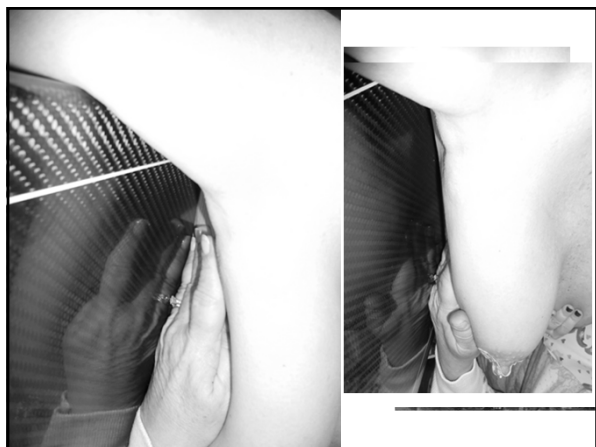
Incorrect hand maneuver MLO View

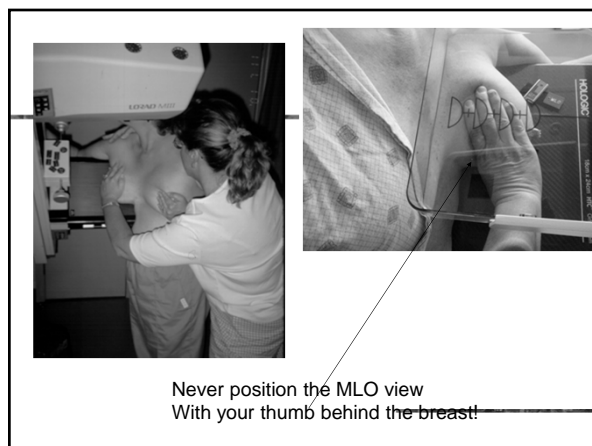


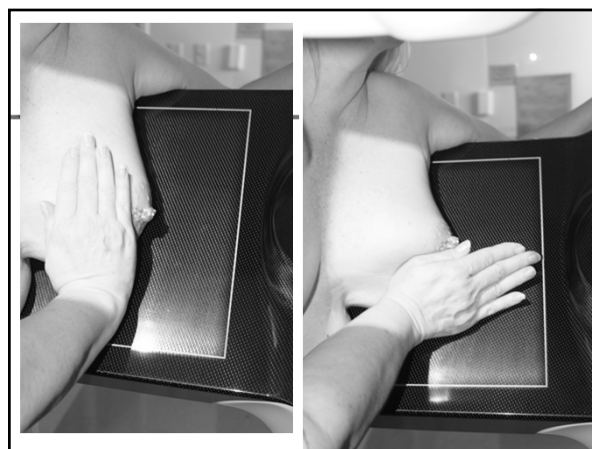
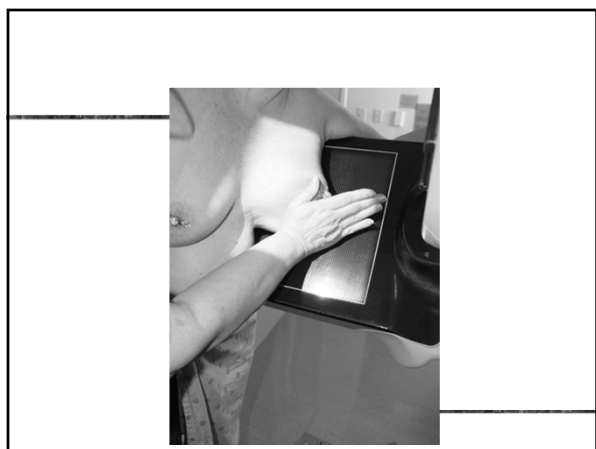
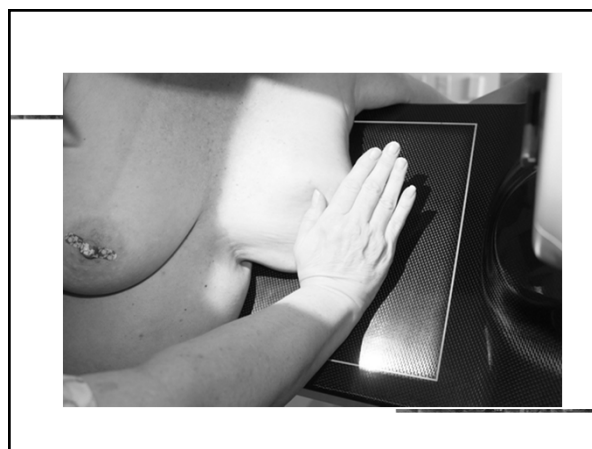
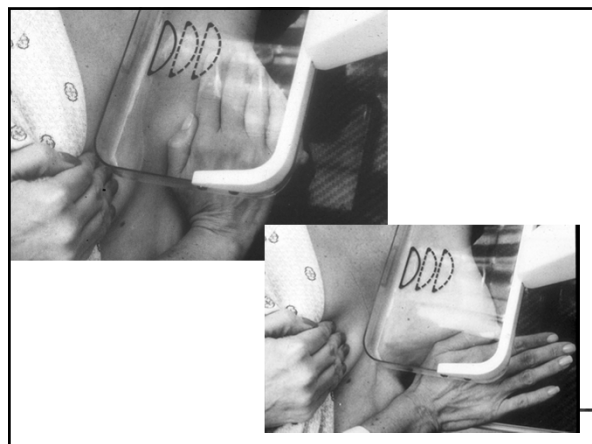




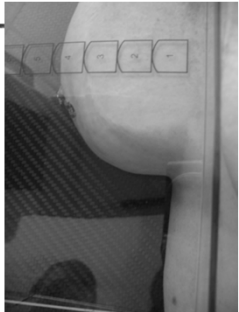









### Positioning Challenges



MLO must demonstrate the IMF

### Positioning Challenges



Bend patient's ipsilateral knee to relax the chest/body


### Lesson from my student Danielle Positioning g

I also have the patient take in a breath and blow it all the way out.

When you do this it helps relax the chest, giving you better access to the posterior medial tissue.

More effective than saying the word "relax". Patient's do not respond kindly when asking them to relax during a mammogram!

### Positioning Challenges

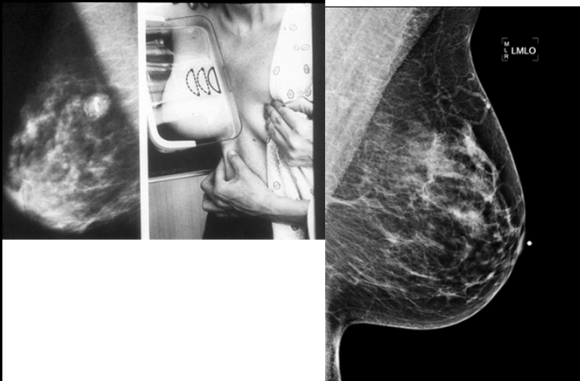
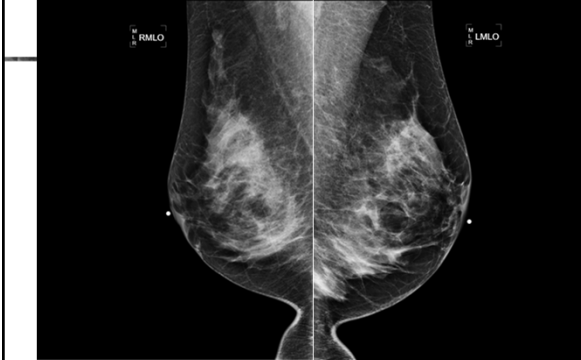


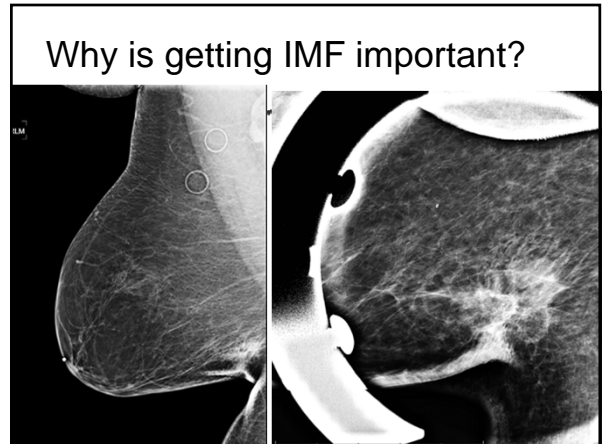
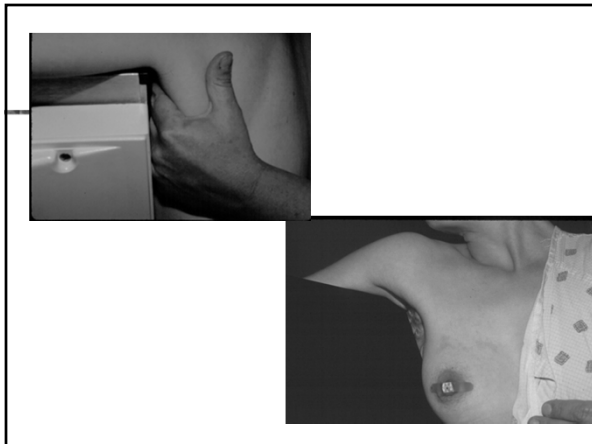
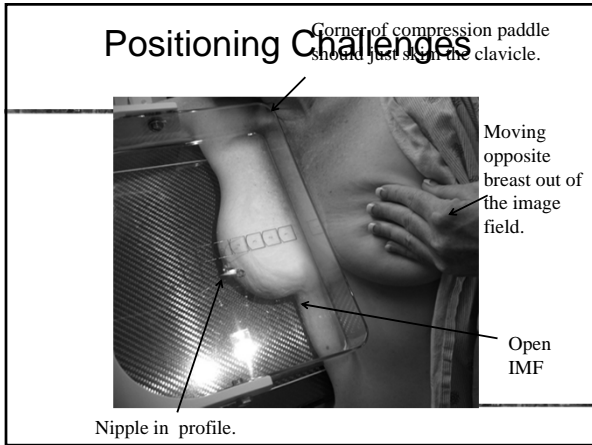
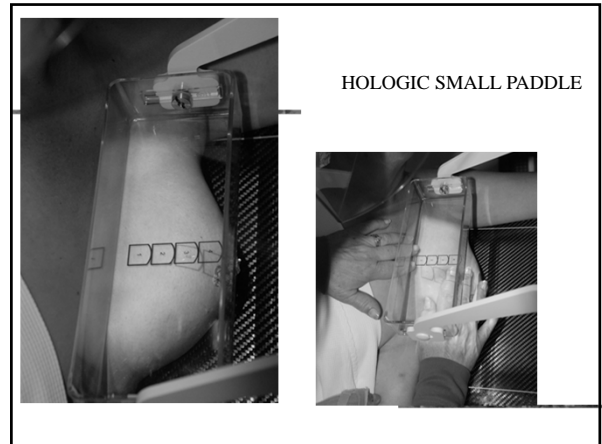
Corner of compression paddle should just skim the clavicle.

Moving opposite breast out of the image field.

Open IMF

Nipple in profile.



### To Sag or Not to Sag

Determining if a breast is sagging is not done by the level of the nipple.

On a long tail breast which is typically fixed to the chest wall and does not elevate (mobilize) at the IMF very much the nipple will be low because that is where it is located anatomically

### To Sag or Not to Sag

Determining if a breast is sagging is not done by the level of the nipple.

An average tail or short tail or long tail breast has a completely different shape

It will mobilize at the IMF and the breast tissue can be pulled out and up away from the chest wall while applying compression

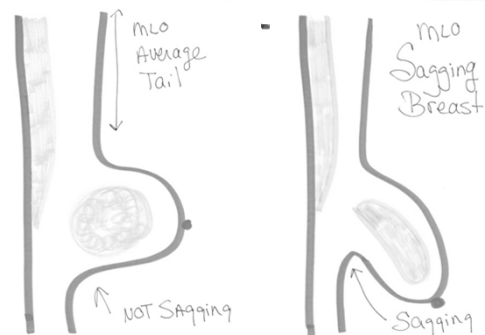
### To Sag or Not to Sag

This changes the location of the nipple depending on if the breast is sagging at the IMF or not.

Judging sagging is done at the IMF...is it out and open (perpendicular to the chest wall) or is there a fold causing an air gap and sagging at the IMF?

This fold prevents adequate compression

### To Sag or Not to Sag



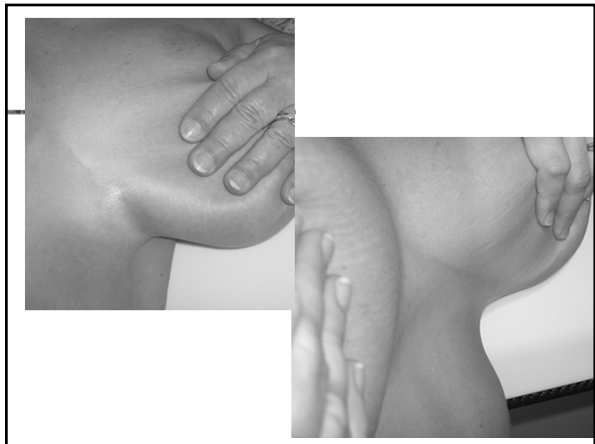
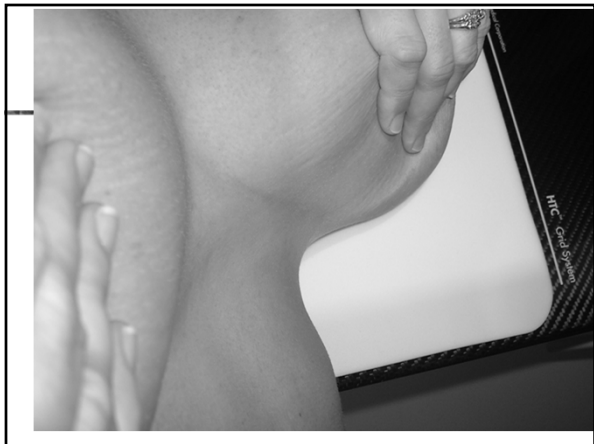
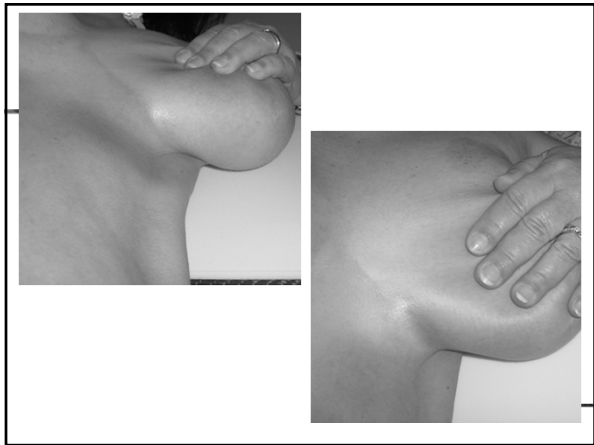
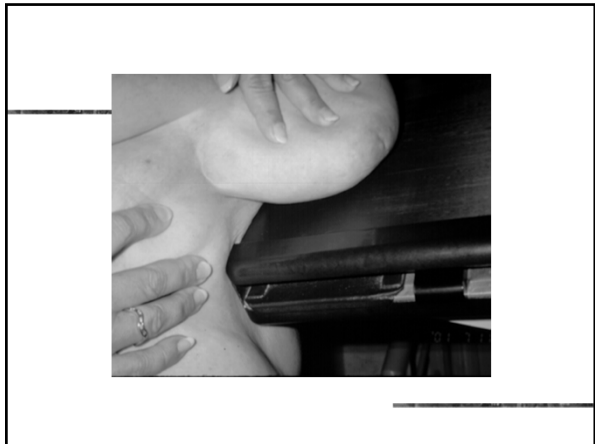
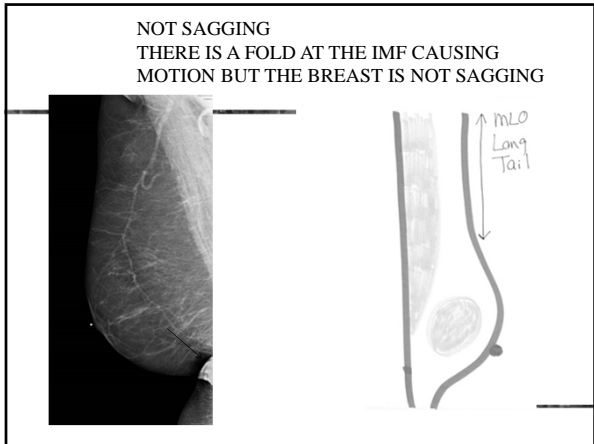
### To Sag or Not to Sag

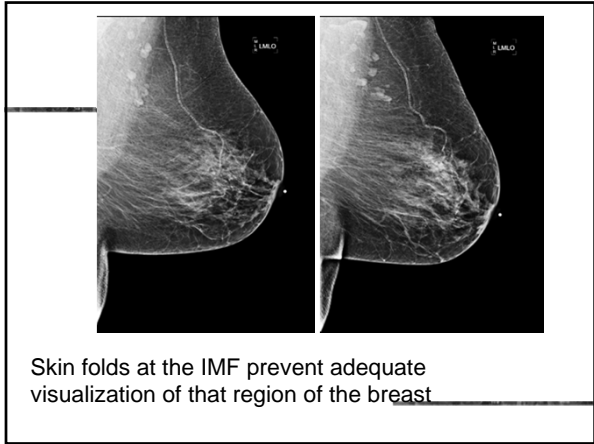


### To Sag or Not to Sag

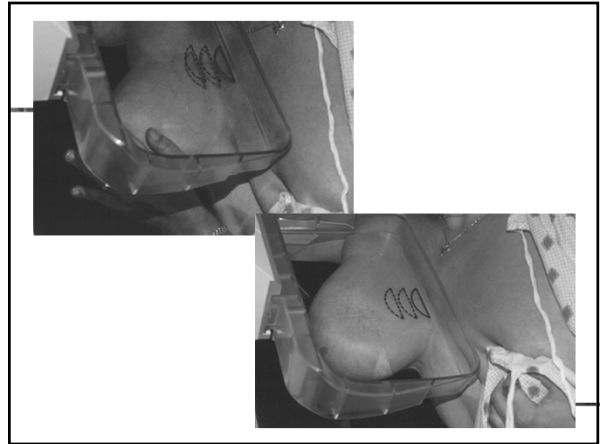
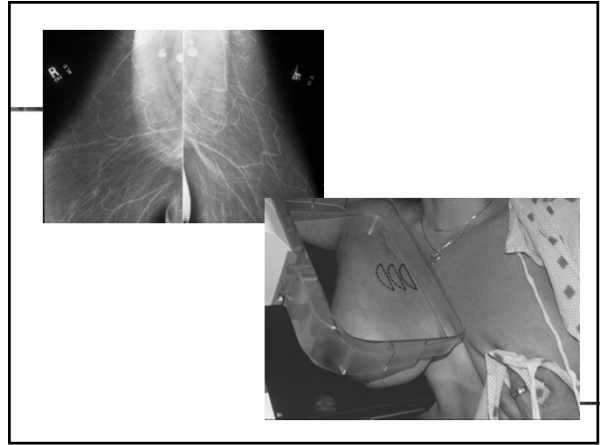
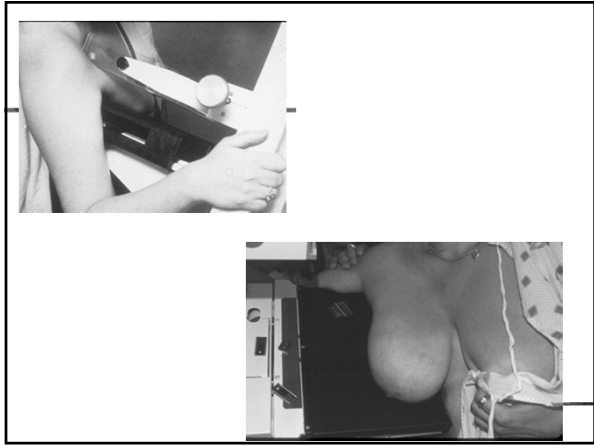








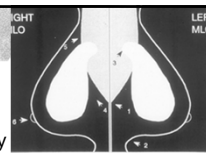
Skin folds at the IMF prevent adequate visualization of that region of the breast



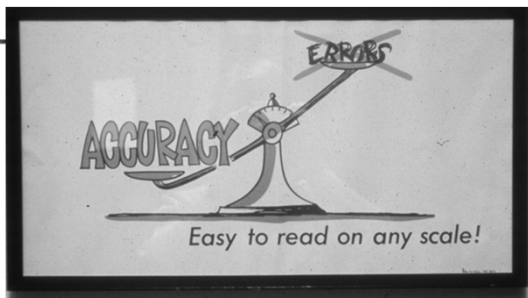
### MLO AVERAGE BREAST TECH # 3



### MLO Checklist



- Is the pectoral muscle wide superiorly with a convex anterior border?  
A convex margin is preferable to a concave margin.
- Does the pectoral muscle extend to or below the posterior nipple line?  
This can be achieved in more than 80% of women
- Are the deep and superficial tissues well separated?
- Is the inframammary fold open?

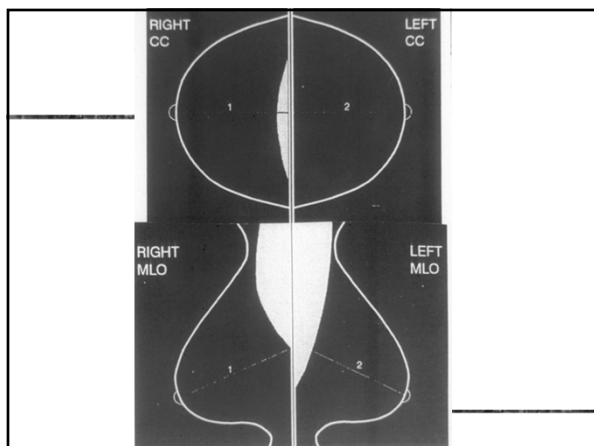


### Posterior Nipple Line

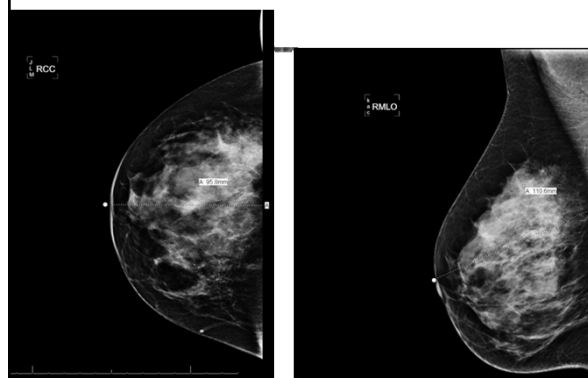
For the CC view it is the distance (in centimeters) from the nipple-skin junction to the back of the image (regardless of whether pectoral muscle is included).

For the MLO view it is the distance from the nipple-skin junction to the pectoral muscle or the back of the image, whichever comes first.

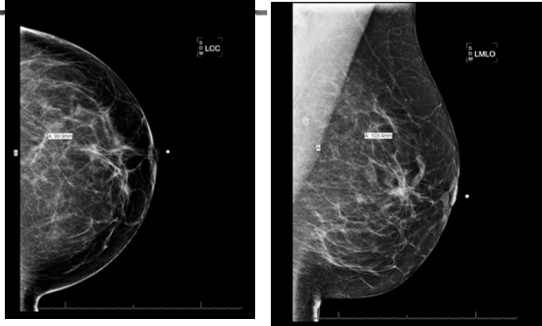
The posterior nipple line is drawn along the nipple axis on the MLO view.



### Posterior Nipple Line-MLO



## Posterior Nipple Line-CC



## Positioning Dilemmas on the MLO View

- Pectoral muscle does not reach nipple line
  - Rotate bucky parallel to muscle; make sure the arm is not rotated or elevated or more than slightly abducted when assessing the angle of the muscle.
  - Move muscle anteriorly and medially; make sure your hand is behind the breast and muscle with your fingers in the axilla. Do not "sling" the breast.

## Positioning Dilemmas on the MLO View

- Superior aspect of muscle is narrow
  - Adjust height of bucky to relaxed axilla
  - Position corner of bucky in posterior to axilla, in front of latissimus.
  - Stretch arm over the top of the bucky moving the head of the humerus toward the center of the bucky.
  - Perform the "3 finger check". Place your fingers in the patient's axilla against the ribs behind the muscle. Check that your fingers do not go past the chest wall edge of the bucky

## Positioning Dilemmas on the MLO View

- Keep shoulder relaxed not elevated.
- Patient's arm should be relaxed with the elbow flexed behind the bucky. Her hand can rest on the handle bar but no death grip.

## Positioning Dilemmas on the MLO View

- Muscle is not convex
  - Move muscle anteriorly and medially. Keep your hand against the rib cage; do not "sling" the breast.
  - With your hand against the rib cage, place the mobilized muscle and breast against the edge of the bucky.

## Positioning Dilemmas on the MLO View

- One for the posterior aspect of the breast and
- Another for the anterior breast
- The anterior compression view can be done at the same degree of obliquity or in a lateral projection

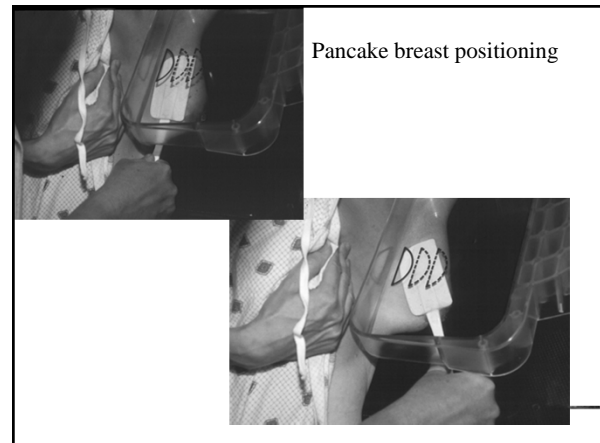
## Positioning Dilemmas on the MLO View

- Glandular tissue "running off" film
  - Make sure the angle is correct
  - Make sure to move breast tissue anteriorly and medially
- Place the mobilized breast against the edge of the bucky; the edge of the bucky will replace your hand in maintaining the breast in the mobilized position
- Position IMF in front of bucky
- Run your hand along the patient's back where it comes in contact with the bucky.

## Positioning Dilemmas on the MLO View

- Posterior skin folds seen
  - Make sure the edge of the bucky is holding the breast and muscle forward.
  - Pull tissue straight out from the bucky; do not push up.
  - Wait until the compression paddle passes the sternum before completing the rotation of the patient toward the mammography unit.
  - If axillary skin folds seen, smooth skin folds out anteriorly. If this does not work, decrease the angle by 10-15° (as long as the patient can bend back to keep the pectoral muscle in line with the bucky). Reposition stretching the arm forward to the center of the bucky.

## Mosaic Imaging



## 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!

## Variable Image Quality Between Centers

- We must all follow the standards for positioning so that our studies are comparable
- Subtle changes in the architecture of the tissue can mean breast cancer
- We can change the way the tissue is arranged in the breast with improper positioning

## Close Doesn't Count

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A mammogram can be anything from a blurry image to a detailed map of breast structures”

G.W.Eklund, M.D.

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## Whatever it takes.....

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- Follow the standards for positioning to produce studies that are comparable
  - Don't leave the cancer in the room
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## High Quality Mammography

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Bad mammography cannot be perceived without the knowledge of good mammography

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