How to Help Your Technologist

Part 3 – Common Problems with the Craniocaudal View

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This is the last of 3 articles on how to help technologists overcome common positioning problems to produce the best examination possible for the patient.

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As I noted in previous articles, we must remember that regardless of the experience and expertise of the technologist, the "perfect" image cannot be produced 100% of the time.[1,2] Data published in 1993 showed that even after receiving hands-on, standardized positioning training, technologists were able to meet all of the criteria for mediolateral oblique (MLO) and craniocaudal (CC) views only 64% of the time because of differences in body habitus and other patient-related variables.[3] I am looking forward to an updated version of the standardized techniques that were featured in the 1999 ACR manual so that technologists can learn to overcome the challenges inherent in modern equipment.

Common Problems and Solutions for the Craniocaudal View

Problem 1: The depth from the nipple to the posterior edge of the breast tissue on the CC view is not within 1 cm of the posterior nipple line (PNL) measurement on the MLO view. This is also known as the "short CC."

Solutions:

Patient: Face the patient toward the machine with both shoulders, hips, and feet.

Breast: You must pull the breast with both hands. Elevate the breast and the inframammary fold (IMF) so the PNL is perpendicular to the chest wall (Figures 1 and 2).

Equipment: Elevate the image receptor (IR) to the height of the elevated IMF.

Figure 1. Proper elevation of the breast so the PNL is perpendicular to the chest wall (line) and the height of the IR is raised/lowered to the level of the elevated IMF.

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Other suggestions:

- Anchor the breast at the 12 o'clock position with the base of your thumb.
- Lift the contralateral breast up and over the corner of the image receptor.
- Push the patient forward using your hand, elbow, and forearm.

Problem 2: The nipple is not centered or in profile.

Solutions:

Patient: Face the patient toward the machine with both shoulders, hips, and feet.

Breast: Pull the breast forward with 2 hands while centering the breast and nipple on the IR.

Equipment: Elevate the IR to the height of the elevated IMF.

Important Note:

Never sacrifice breast tissue to center the nipple. If the patient has prominent superior, medial, or lateral fullness and the nipple is not centered, note this on the history sheet. Obtain additional views with appropriate labeling as needed to complete the CC examination. ACR criteria require that the nipple be seen in profile in at least 1 of the 2 standard screening views unless there is a possible subareolar mass, in which case a focused nipple-in-profile view can be obtained.

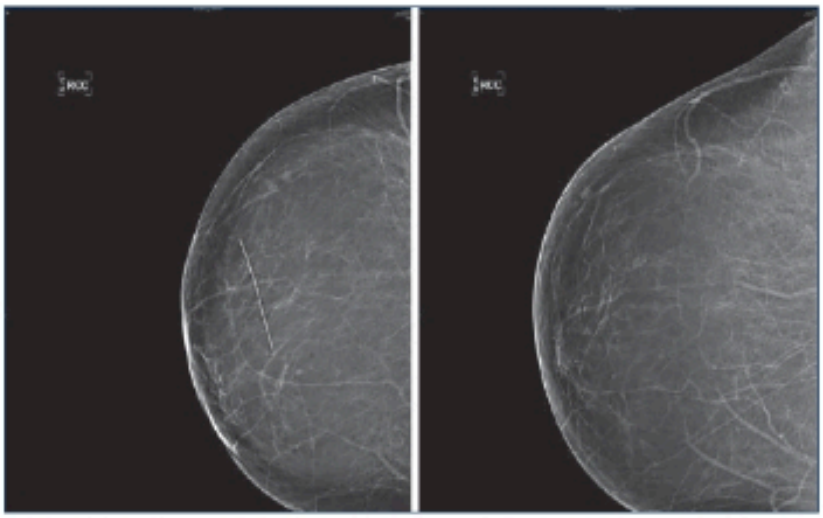

Figure 2. Two CC views from the same patient. The proper technique has been applied to produce the image on the right. This increased the measurement from the nipple to the posterior edge of the breast tissue by 3 cm.

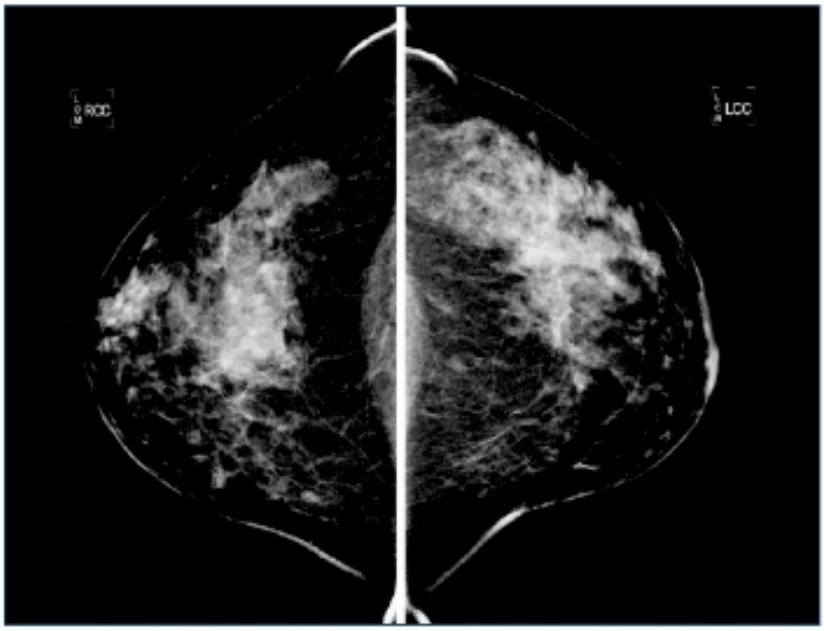

Figure 3. Some portion of the left posterior lateral breast tissue is excluded from the image.

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Problem 3: Lateral and posterior glandular breast tissue is missing (Figure 3).

Solutions:

Patient: Face the patient toward the machine with both shoulders, hips, and feet.

Breast: Pull the breast forward, paying special attention to the lateral breast tissue (which is mobile) while applying compression (Figure 4).

Equipment: Elevate the IR to the height of the elevated IMF.

Figure 4. The mobile lateral tissue is pulled into the image. The IR is raised to the level of the elevated IMF.

Problem 4: Compression is inadequate or variable from side to side and/or view to view (Figure 5).

Solutions:

Patient/breast: Work with the patient to obtain appropriate compression. If the patient has extreme tenderness or other conditions that prohibit adequate compression, note this on the history sheet.

Equipment: Compare compression force when positioning and compressing the breast. The force should not vary more than 10% from side to side.

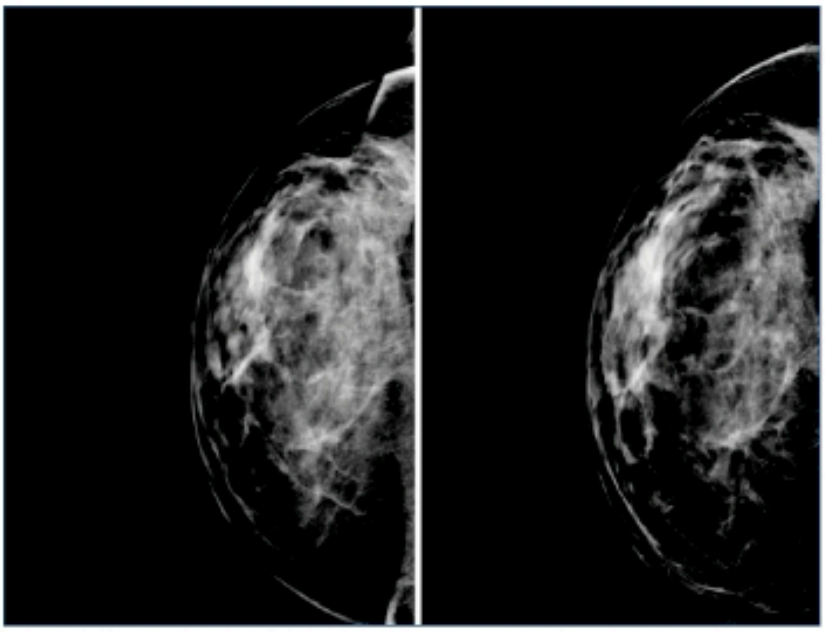

Figure 5. The figure on the left shows poor separation of structures due to inadequate compression. The image was repeated on the right using proper compression to better visualize breast tissue.

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Problem 5: Skin folds and bright spots produced by attenuation of the beam look similar.

Modified standardized positioning techniques increase the amount of posterior breast tissue on the CC view. Unfortunately, this is a common location of fat folds, especially in the lateral aspect of the breast, where the axillary fat pad may superimpose onto the images. Make every attempt to have the patient pull her shoulder back to eliminate the folds. However, never sacrifice breast tissue to remove skin folds. If the fold compromises evaluation of this area of the breast, obtain an additional view. Also, remember that these areas can often be evaluated on the monitor by adjusting the window and level of the image.

Sometimes a fold is not a fold. A bright spot on the image can be created when a long segment of skin perpendicular to the IR attenuates the beam (Figure 6). This bright spot looks like a fold but is really an artifact produced by the digital processing algorithm and therefore cannot be eliminated.

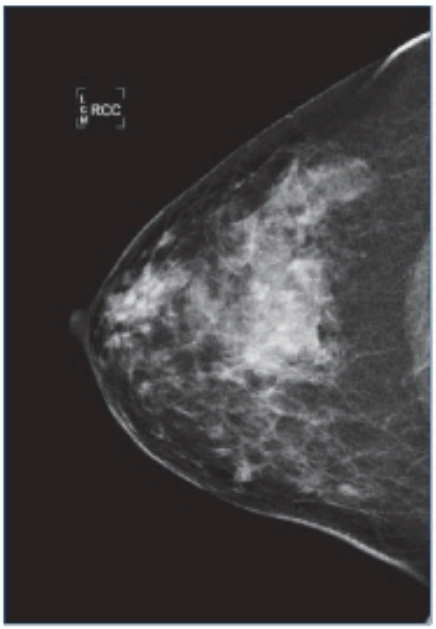

Figure 6. Attenuation of the beam, as shown here, is usually seen in the posterior medial or posterior lateral breast on the CC view because the skin is thicker at the chest wall.

Solutions:

Patient: Face the patient toward the machine with both shoulders, hips, and feet.

Breast: Pull the breast forward, starting at the chest wall. If you see folds, use a finger or two to try to eliminate them. Do not pull breast tissue out from underneath the compression paddle.

Equipment: Elevate the IR to the height of the elevated IMF.

I hope this series of articles on problem-solving for the MLO and CC views will be helpful to radiologists and technologists alike. With the new EQUIP (Enhancing Quality Through the Inspection Process) initiative for the Mammography Quality Standards Act, both parties will be required to document a review of clinical images and possible corrective actions. These suggestions can serve as a resource for problem-solving.◆

REFERENCES

1. Miller LC. Common problems with the mediolateral oblique: how to help your technologist. Part 1 – the inframammary fold: how to improve visualization and reduce skin/fat folds in the inframammary fold. *SBI News*. 2016;(4):16-17.
2. Miller LC. Common problems with the mediolateral oblique: how to help your technologist. Part 2 – not enough pectoralis and the sagging breast. *SBI News*. 2017;(4):12-13.
3. Bassett LW, Hirbawi IA, DeBruhl N, Hayes MK. Mammographic positioning: evaluation from the view box. *Radiology*. 1993;188(3):803-806.