



Most Commonly Used Additional Views, Part 2: Minimizing Superimposition and Identifying Location

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Technologists should maintain a solid foundation of knowledge about supplemental images and their purpose. Part 1 of this 3-part series, "Variations of the Craniocaudal View," discussed additional views that can be obtained to maximize visualization of breast tissue in the axial or transverse plane. Those views included the exaggerated craniocaudal (CC) view and the cleavage view. In this article, we discuss options for verifying the location of an abnormality and counteracting superimposition of fibroglandular tissue.

Lateral View

The 90°, or straight, lateral projection can be an extremely useful tool. Mediolateral and lateromedial (LM) views are used to provide superior and inferior orientation to the nipple, visualize the 12-o'clock and 6-o'clock areas of the breast, and localize and evaluate milk of calcium. Lateral views are also alternatives for patients who cannot undergo imaging with the standard mediolateral oblique (MLO) view, such as patients in wheelchairs or on stretchers, patients with difficult body habitus (eg, pectus excavatum/carinatum, limited range of motion, etc), and those with encapsulated implants.

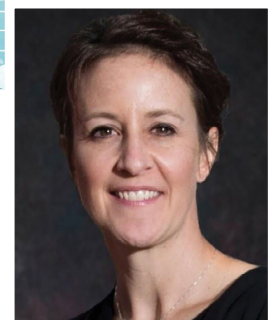
Although either lateral projection may be used, the LM view is recommended unless an area of concern is clearly seen in the lateral portion of the breast on the CC view, in which case it would be important to place the lateral breast closer to the image receptor (IR). Justifications for use of the LM view include the following¹:

- The lateral mobile border of the breast can be used, thus facilitating positioning.
- The contralateral breast does not impede the movement of the compression paddle.
- The maximum amount of medial tissue will be imaged on the LM view if the edge of the IR is offset slightly toward the opposite side of the sternum with the IR pressing against the breast that is not being imaged.
- The LM view puts the medial aspect of the breast closest to the IR, showing the medial breast in greater detail. Positioning of the MLO view shows the lateral breast in better detail; therefore, the LM view can provide the radiologist with better clarification of the medial breast.

- Breast tissue that is missed on the MLO view is most likely in the deep medial posterior area. The LM view gives you a better opportunity to include this area when positioned as described above.

When considering which view to obtain, give careful thought to these points, established guidelines from the department's protocols, and the radiologist's requirements. Consider the following steps when obtaining a straight lateral projection:

1. Position the machine at a 90° angle.
2. The patient should face forward with the arm draped over the machine and the chin resting on the top of the IR. This facilitates relaxation of the pectoralis muscle, which makes positioning easier.
3. For the LM view, it is essential to properly place the IR on the midsternal line. The edge of the IR should be centered on the midsternal line so the width of the IR is pressing into the contralateral breast to assure visualization of deep posterior medial breast tissue (Figures 1 and 2).¹
4. Pull the breast tissue onto the IR, holding the breast up and out upon compression.



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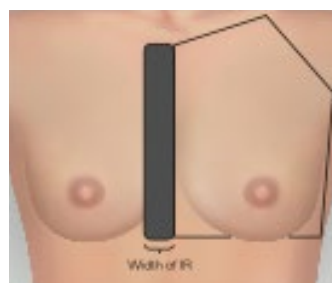


Figure 1. Proper placement of the IR on the midsternal line with the edge of the IR pressing into the contralateral breast.



Figure 2. Improper placement of the IR on the midsternal line with the edge of the IR excluding posterior medial tissue.

Axillary Tail View

The axillary tail view is a supplemental view that isolates the axillary tail in an anteroposterior plane. This view is used only to provide focal compression of the axillary tail and will not provide true orientation to the nipple in the sagittal or axial plane. The edge of the IR is placed along the edge of the chest wall. The tail of the breast is placed under compression, visualizing only lateral tissue (Figure 3). Central tissue should not be included in the field of view (Figure 4). When performing the axillary tail view, technologists can employ the following steps:

1. Determine the angle of the machine on the basis of patient body habitus. The angle should be parallel to the axillary tail of the breast in the anteroposterior plane. The angle is generally 25° to 30°.
2. The patient's arm should be draped behind the top of the IR with the elbow bent and flexed.
3. Pull the axillary tail region of the breast away from the chest wall and onto the IR.
4. Hold the axillary region in place while applying compression.

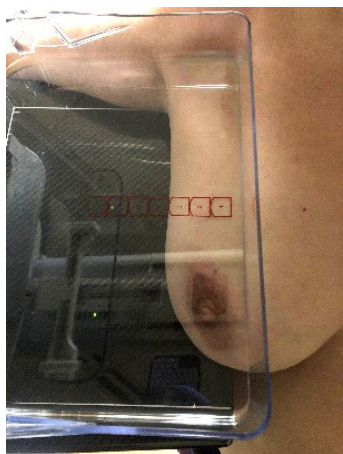


Figure 3. Proper positioning of the axillary tail view with the axillary tail region isolated.



Figure 4. Improper positioning of the axillary tail view with central tissues included.

Tangential Views

Tangential views can be used for 2 purposes: to verify the existence of dermal calcifications and to minimize superimposition of dense glandular tissue when imaging palpable abnormalities. Although digital breast tomosynthesis has decreased the need for tangential views, this technique is useful for placing dermal calcifications or a palpable abnormality over the subcutaneous fat, allowing visualization of the abnormality.²

Before the tangential view is obtained, skin localization must be performed to find the location of the suspected dermal calcifications or area of interest. Consider the following technique:

1. Review the CC and MLO screening views to determine in which quadrant the target is located.
2. Choose the appropriate view that will position the biopsy paddle closest to the area of concern (Figure 5).
3. Before positioning the patient, set the machine so the automatic compression release feature is off. The patient must remain in compression until the location is identified.
4. Using the fenestrated biopsy paddle with alphanumeric coordinates, position the fenestrated portion of the paddle over the approximate location of the calcifications. Be certain the proper skin surface is closest to the paddle window (Figure 5).
5. Take an exposure.
6. Using the alphanumeric coordinates, mark the location of the area of concern with a BB and release the compression (Figure 6).
7. Visualize an imaginary line from the BB to the nipple. Mound the breast tissue along this line with the nipple at one end and the marker at the other, placing the marker tangential to the x-ray beam (Figure 7).
8. Rotate the gantry so the IR is parallel to this line. The patient or the breast may also be turned or rotated to create the same alignment. This positioning is comparable to a nipple-in-profile view, but this approach demonstrates the BB in profile.

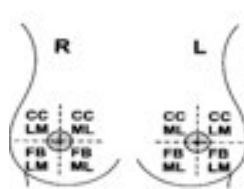


Figure 5. Breast localization map.



Figure 6. Fenestrated biopsy paddle with numeric coordinates used to localize the area of concern and a BB marker placed on the patient's skin.



Figure 7. Breast tissue mounded along the imaginary line drawn from the marker to the nipple, placing the area of concern tangential to the x-ray beam.

Rolled Views

Rolled views can be obtained to distinguish between a true abnormality and superimposition of structures or to determine the location of an abnormality seen only on the CC view. By rolling the superior portion of the breast in the CC projection, clarification of superimposed glandular tissues can be achieved. The labeling code for the rolled view refers to the direction in which the superior tissue is rolled. For example, a rolled CC view of the right breast with the top of the breast rolled medially is labeled right CC rolled medially (RCCRM). A rolled

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- Implementation of same-day care programs that consolidate breast imaging services, which can reduce access-related barriers associated with return visits
- Development of multidisciplinary health navigation systems that help guide patients through their breast care experience, which can improve patient retention and reduce delays in care

Multiple targeted efforts along the breast cancer continuum from disease prevention to treatment will be required to decrease breast cancer mortality rates among all demographic groups. I expand more on this topic in my article titled “Closing the Gap: Disparities in Breast Cancer Mortality among African American Women.”¹¹

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CC view of the right breast with the top of the breast rolled laterally is labeled right CC rolled laterally (RCCRL). If an abnormality disappears on the rolled view, it was likely superimposed tissue. If the abnormality persists on the rolled view, it could represent an area of concern that requires further investigation. To locate an abnormality seen only on the CC view as superior or inferior, compare the rolled view with the standard CC view. Focus on the direction in which the abnormality has moved. For example, when a CCRM view is obtained and the area of concern moves laterally, the finding is in the inferior aspect of the breast. When a CCRL view is obtained and the area of concern moves medially, the abnormality is in the superior aspect of the breast.

Follow these steps to obtain rolled CC views:

1. Place the breast onto the IR in the CC projection.
2. For a CCRM view, roll the superior aspect of the breast medially and the inferior aspect laterally. For a CCRL view, roll the superior aspect of the breast laterally and the inferior aspect medially.
3. Hold the breast in this rolled position while applying compression.

The CCRM view has advantages over the CCRL view. First, because the standard CC view is obtained with the technologist standing on the medial side of the patient, the CCRM view makes it easier for the technologist to remove the hand while applying compression. Second, the lateral border of the breast is mobile, so the tissue easy to move medially. Third, most glandular tissue and breast cancers are located in the upper outer quadrant of the breast, so rolling the superior aspect of the breast could superimpose an abnormality over additional dense glandular tissue.² However, the exception would be an area of concern that is located in the far lateral aspect on the original CC view, in which case a CCRL view would be more beneficial than a CCRM view.

By using knowledge of these supplemental views, technologists can help radiologists answer important questions necessary to confirm a patient’s outcome. In the third and final part of this series, we will discuss positioning techniques for additional imaging that is beneficial for radiologists in making a final determination of findings.

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