TECHNOLOGISTS' COLUMN

Most Commonly Used Additional Views, Part 1: Variations of the Craniocaudal View

By Dawn Derenburger, RT(R)(M); Robyn Hadley, RT(R)(M)

Dawn Derenburger, RT(R)(M)

Robyn Hadley, RT(R)(M)

Technologists often need to obtain additional images beyond the 4 standard views in a mammographic study. The additional views can help show portions of the breast that are not seen on the standard 4-view mammogram, characterize an area of clinical concern in better detail, or counteract superimposition of structures. In part 1 of this 3-part series, we discuss additional imaging that can be used when visualizing breast tissue in the transverse or axial plane.

Technologists should work with radiologists to obtain the information needed to provide an accurate diagnosis. Radiologists generally provide instruction, either verbal or written (via the mammography reporting system or the patient report), on exactly which additional views are appropriate to acquire the necessary information. However, the technologist must know the orientation of the breast, area of the abnormality, and how to best visualize the abnormality. Technologists must start by asking these questions:

- What area of the breast needs to be visualized?
- In which projection does the area of the abnormality need to be imaged?
- Which view will accomplish this and provide the radiologist with the necessary information?

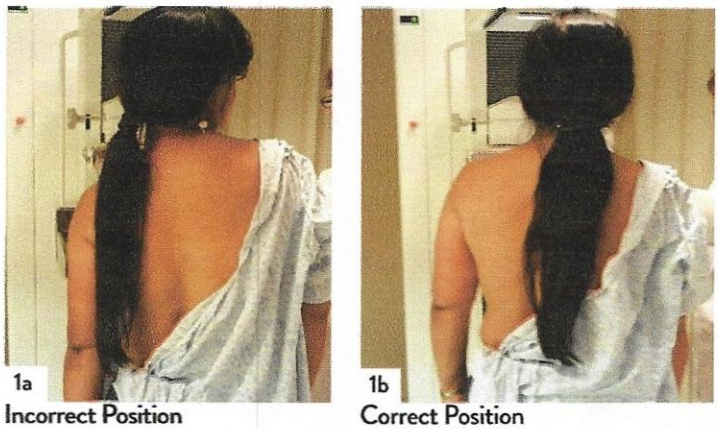
In addition to the craniocaudal (CC) view, the exaggerated CC lateral (XCCL) view and the cleavage view are options for visualization of the breast in the transverse or axial plane.

Exaggerated CC Lateral View

This view is used to aid in visualizing lateral breast tissue that is not included on either the standard CC or mediolateral oblique (MLO) projection. The XCCL view should not be obtained routinely as part of the standard 4-view mammogram. However, there are 2 exceptions. First, when a baseline mammogram is obtained and lateral glandular tissue extends beyond the edge of the image on the CC view, an XCCL view should be included. For baseline examinations, visualization behind the lateral glandular tissue should be evident on both the MLO and the CC views. The second exception is for screening examinations in patients who have subsequent images. Lateral glandular tissue should be visible for those examinations on at least 1 of the 2 standard views, either the MLO or the CC view. If visualization behind the lateral glandular tissue is not evident on either the MLO or the CC view, then an XCCL view should be included as part of the routine imaging. How often should the XCCL view be obtained in screening studies? The available data are limited and outdated. Cardenosa states that XCCL views should be used in less than 10% of all screening studies.[1] More current data are needed, but a reasonable expectation when using full-field digital mammography and digital breast tomosynthesis could be 5% or less. Consider the following when positioning the patient for an XCCL view:

- The patient should be standing upright, the tube should not be angled, and the patient should be turned about 45° with the lateral portion of the breast on the image receptor (Figures 1 and 2).
- The patient should not be leaning (Figure 1).
- The direction of the beam should enter the breast superiorly to inferiorly.
- Visualization of the pectoralis muscle would indicate that the patient was leaning to the side and is not preferable.

If the patient needs further imaging (ultrasound), biopsy, or localization, the technologist must be able to reproduce the orientation of the patient and the breast. This can be done by keeping the gantry at 0° and positioning the patient properly (Figure 3).



1a Incorrect Position

1b Correct Position

Figure 1. Incorrect patient position for the exaggerated craniocaudal lateral (XCCL) view (left panel), with the patient leaning and shoulder dropped. Correct patient position for the XCCL view (right panel), with the patient's shoulders level. Figures 1 through 5 reprinted with permission from Louise Miller.[2]

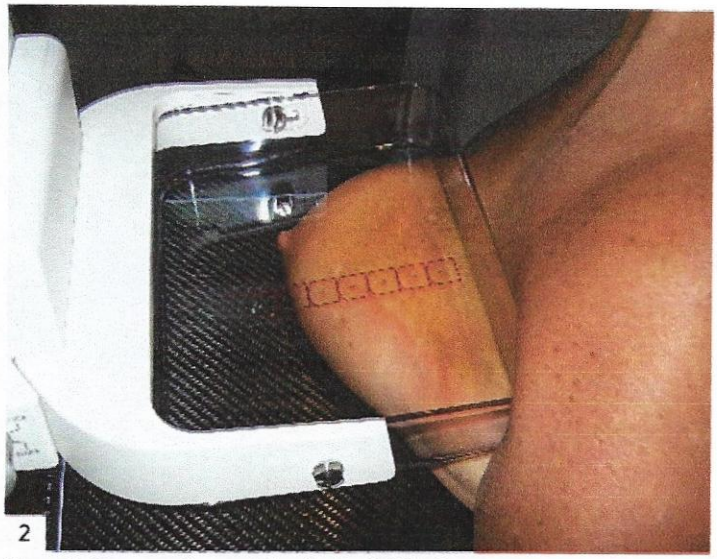


Figure 2. Proper patient position for the XCCL view.

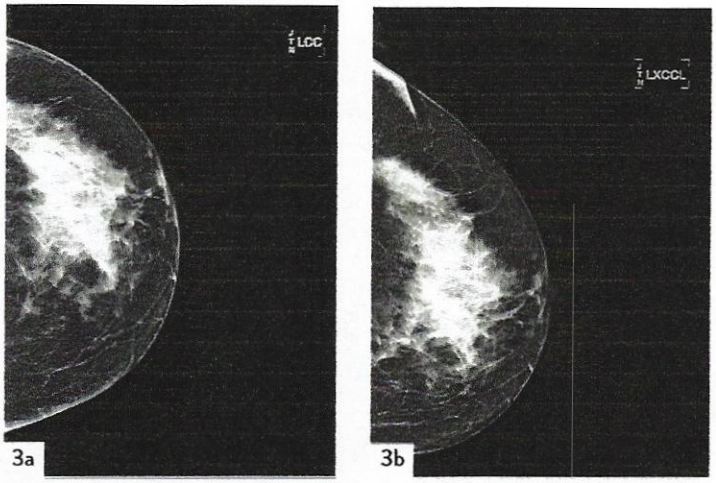


Figure 3. Craniocaudal view (left) and properly positioned XCCL view (right).

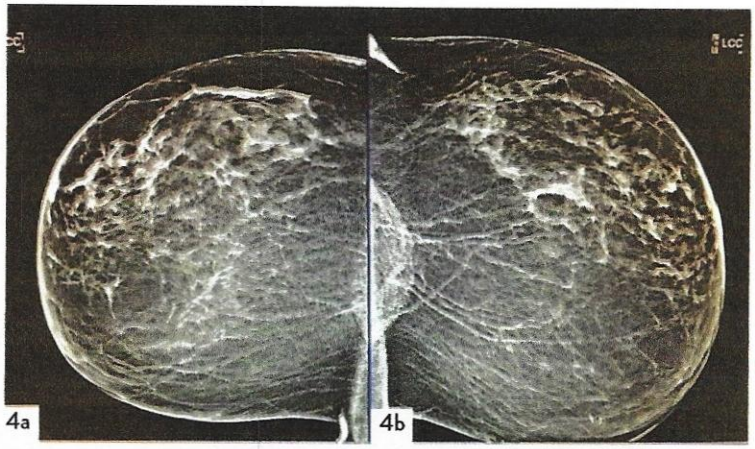


Figure 4. Standard bilateral craniocaudal views with exclusion of medial tissue of the left breast (right panel).

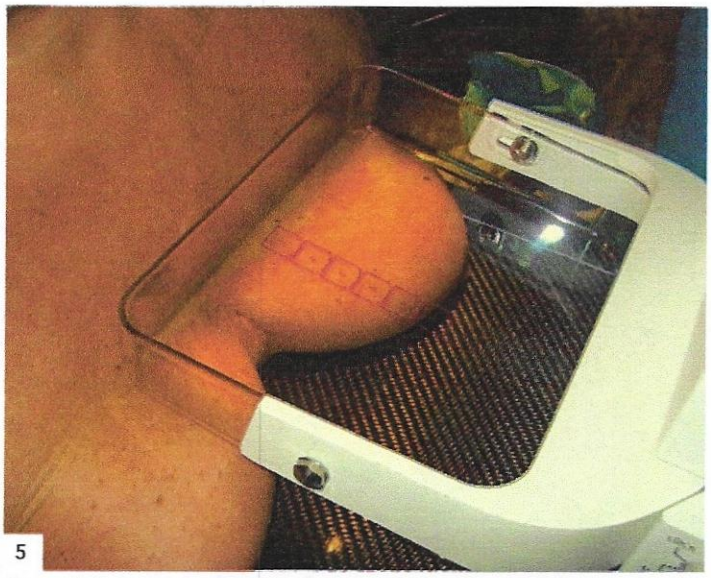


Figure 5. Proper patient position for the cleavage view.

Cleavage View

The cleavage view can be used to demonstrate deep medial breast tissue in the CC projection. Both breasts are in the field of view for this projection, allowing visualization of tissues adjacent to the sternum. This view is also helpful for including medial tissue of patients with large breasts in whom the medial aspect of the breast is excluded in the standard CC image, requiring mosaic or tiling of the breast (Figure 4). Consider the following points when performing the cleavage view:

- The patient should be placed in the CC position but moved slightly off center, accentuating the medial aspect of the breast of interest (Figure 5).
- The technologist can stand behind or on the medial side of the breast of interest.
- Both breasts are lifted onto the image receptor so most of the side of interest is under the compression paddle (Figure 5).
- The technologist must consider technical factors. Underexposure can be avoided by placing the breast of interest directly over the sensor cell (Figure 5).

Tomosynthesis, equipment changes, and department-specific protocols require consideration of new variables for additional imaging. Technologists must be aware of the basic principles and options available to aid the radiologist in finding a definitive diagnosis.

References

1. Cardenosa G. *Breast Imaging Companion.* Philadelphia, PA: Lippincott-Raven; 1997.
2. Miller LC. Commonly used additional views. In: Miller LC. *Mammography Positioning Guidebook.* 2nd ed. Mammography Educators; 2015:37-42.