

Positioning Techniques in Mammography

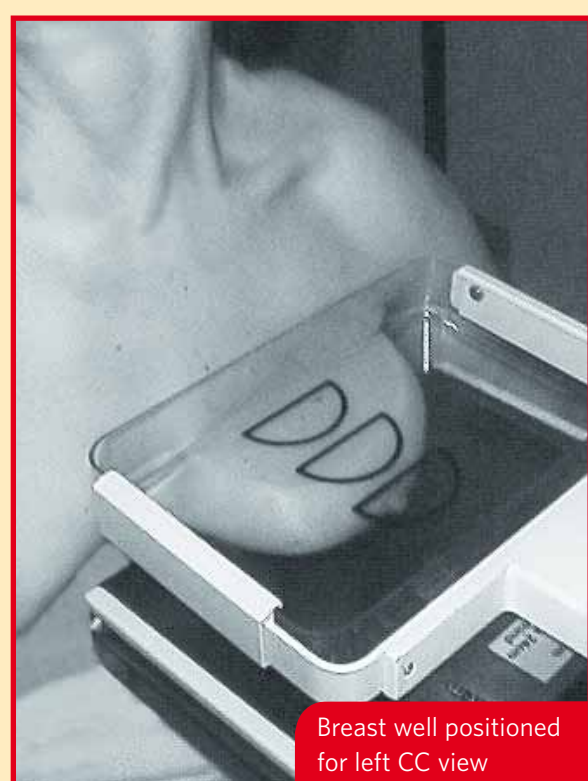
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Common criteria for optimal image quality:

- correct positioning of automatic exposure device
- correct exposure
- correct processing technique
- correct positioning technique
- appropriate compression
- spread breast tissue
- accurate marker and patient information
- symmetrical images
- absence of:
 - skin folds
 - overlying anatomy (e.g. shoulders, breast tissue)
 - movement
 - pre- and post-processing artifacts

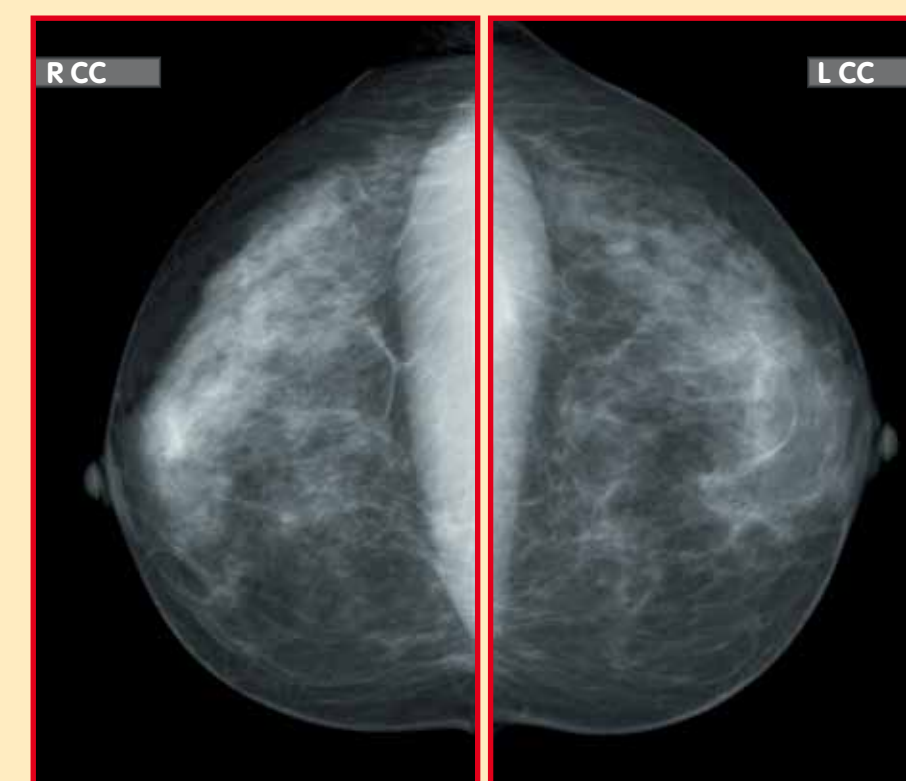
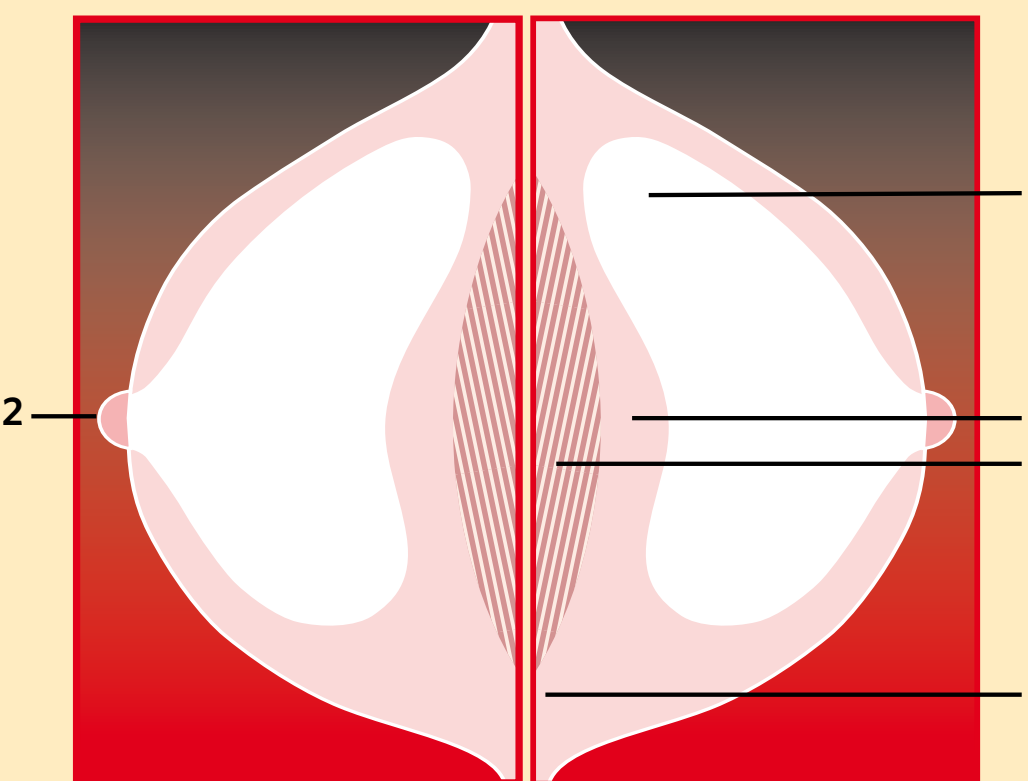
Craniocaudal Projection

The craniocaudal projection (CC) must show the medial part of the breast and as much of the lateral part of the breast as possible. A correctly performed CC projection may show the pectoral muscle on the posterior edge of the breast, indicating that the breast has been positioned as far forward as possible. This is achievable in about 50% of CC images.



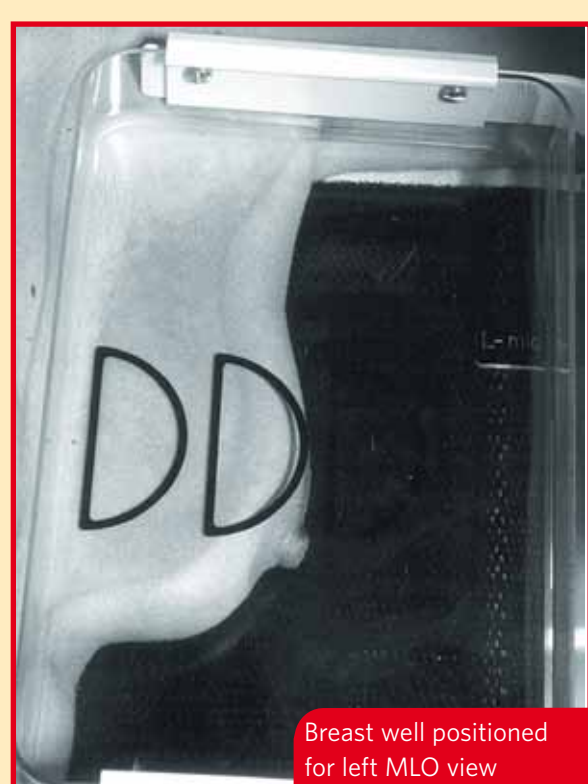
The criteria for an optimal craniocaudal projection require the following to be clearly displayed on the image:

- 1 As much of the lateral part of the breast as possible
- 2 The nipple in profile
- 3 Central part of the retroglanular fat tissue
- 4 If possible, the pectoral muscle shadow on the posterior edge of the breast
- 5 The medial border of the breast



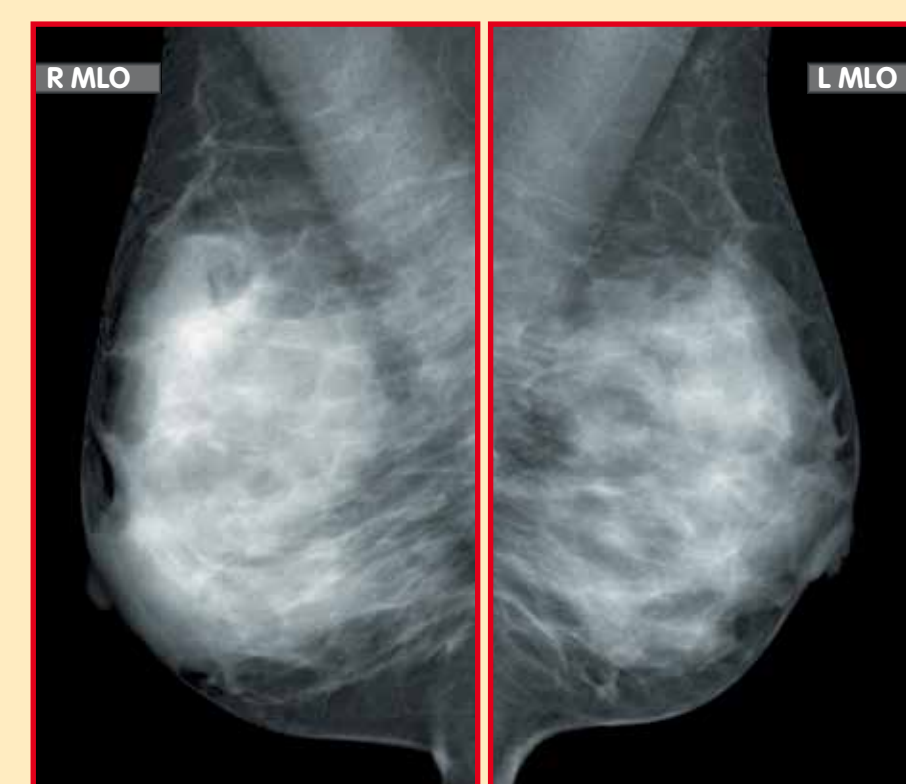
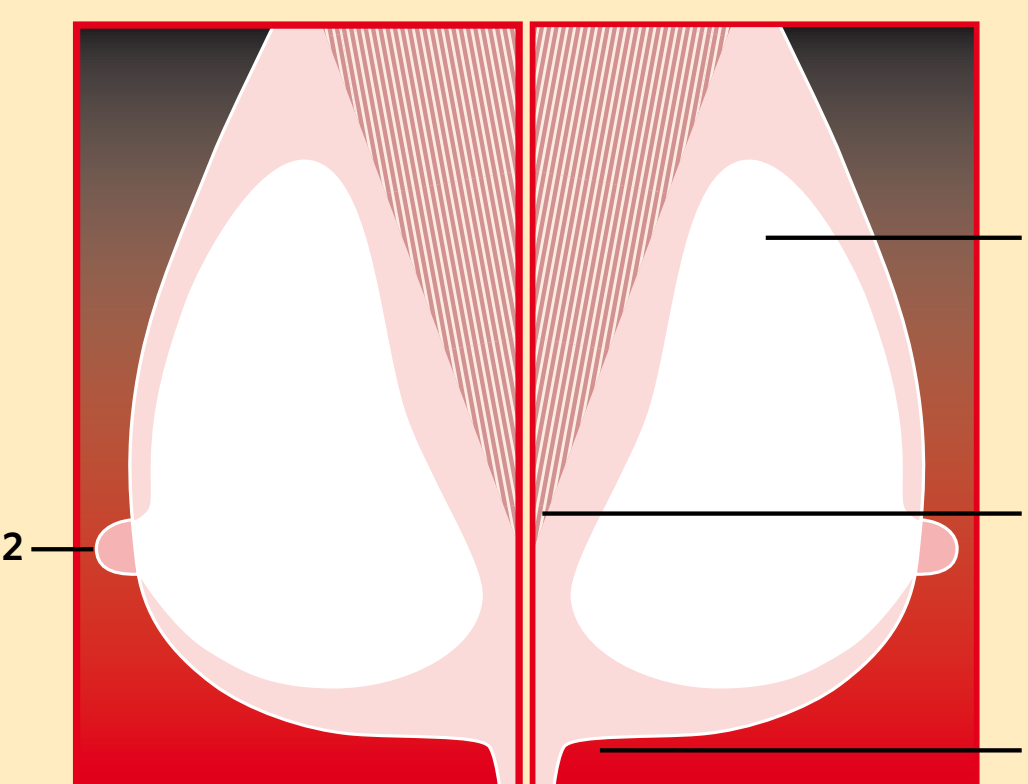
Mediolateral Oblique Projection

The mediolateral oblique projection (MLO) is the best view to image all of the breast tissue and the pectoral muscle. The X-ray tube should be rotated in a 45-degree angle for most women, so that the cassette is parallel to the pectoral muscle. The angle may need to be adjusted to the individual woman, particularly in tall, slim, short, or heavyset women.



The criteria for an optimal mediolateral oblique projection require the following to be clearly displayed on the image:

- 1 The entire breast tissue
- 2 The nipple in profile
- 3 The pectoral muscle extending to or below the nipple line
- 4 The inframammary angle



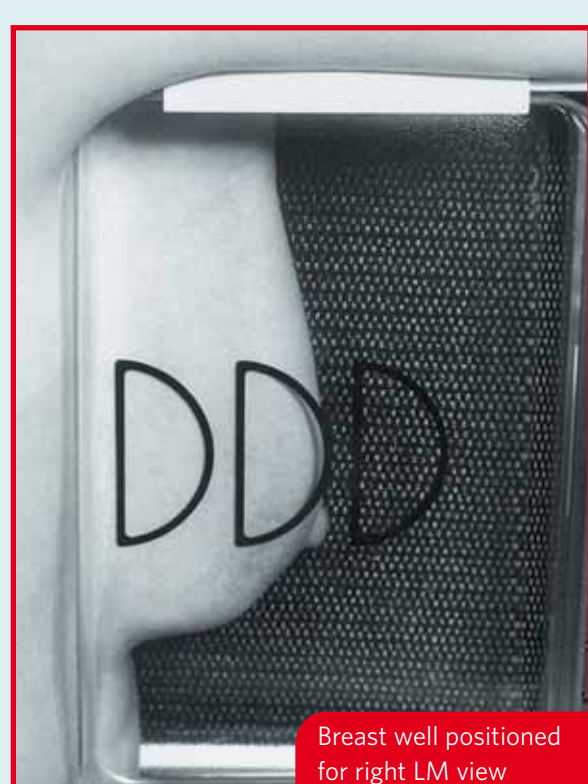
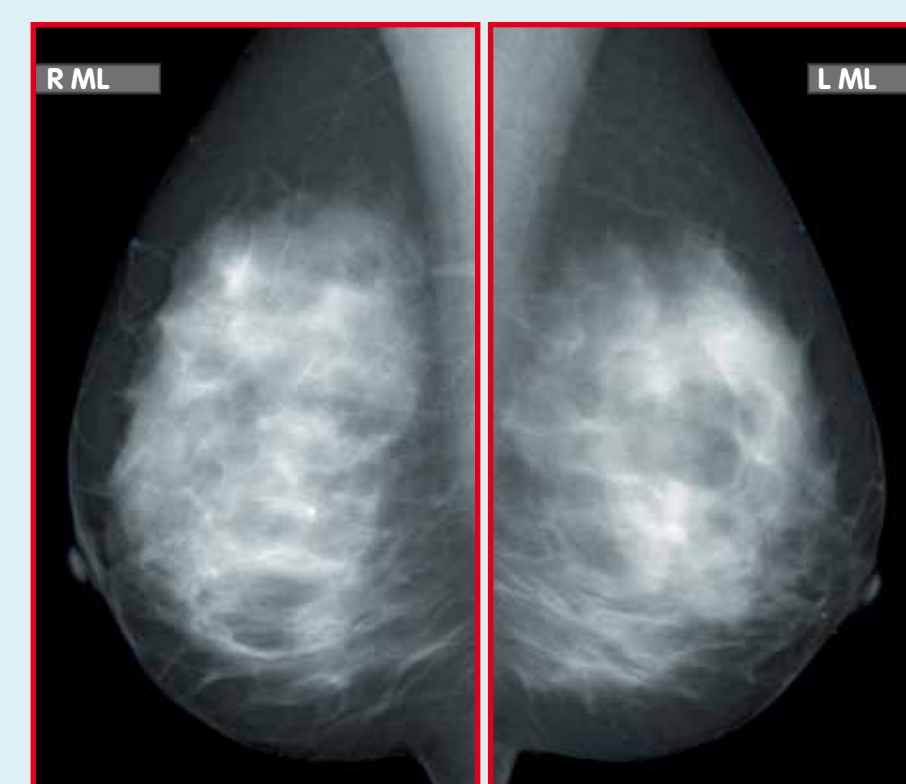
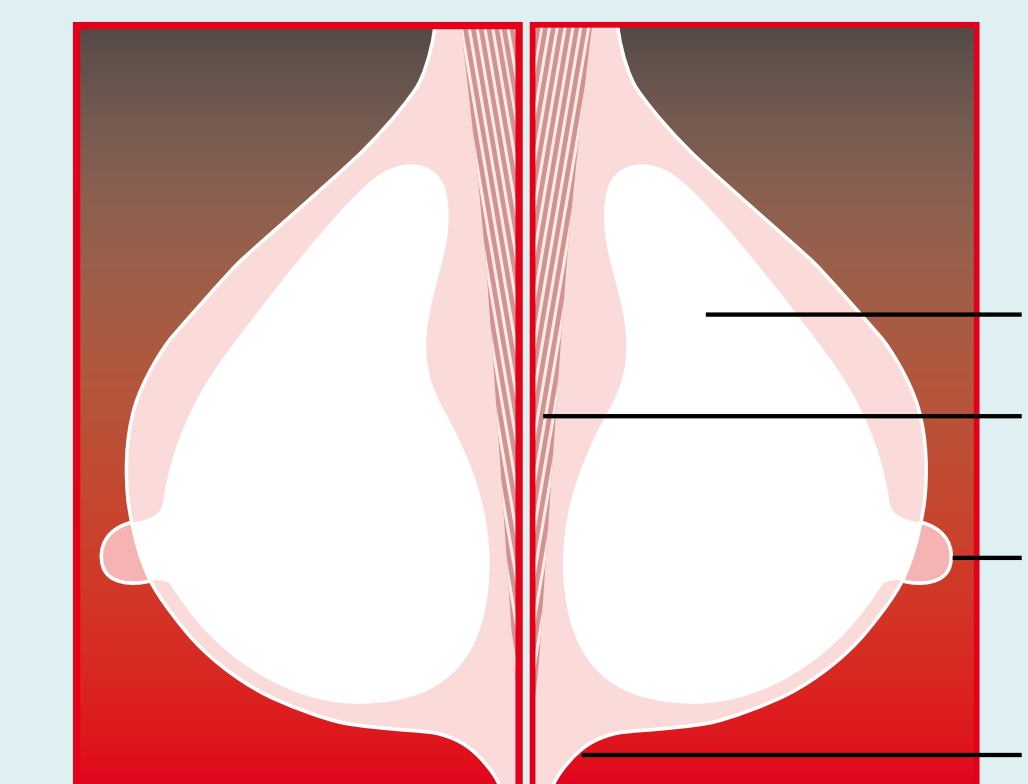
Lateral Projections (mediolateral/lateromedial)

The straight lateral projection (ML/LM) is performed as an additional view in order to localize the exact position of a lesion. Both the mediolateral and the lateromedial projection show less breast tissue and pectoral muscle than the mediolateral oblique projection. The lateral view is used whenever it is necessary to take two images that are perpendicular to each other (e.g. for lesion needle localization).



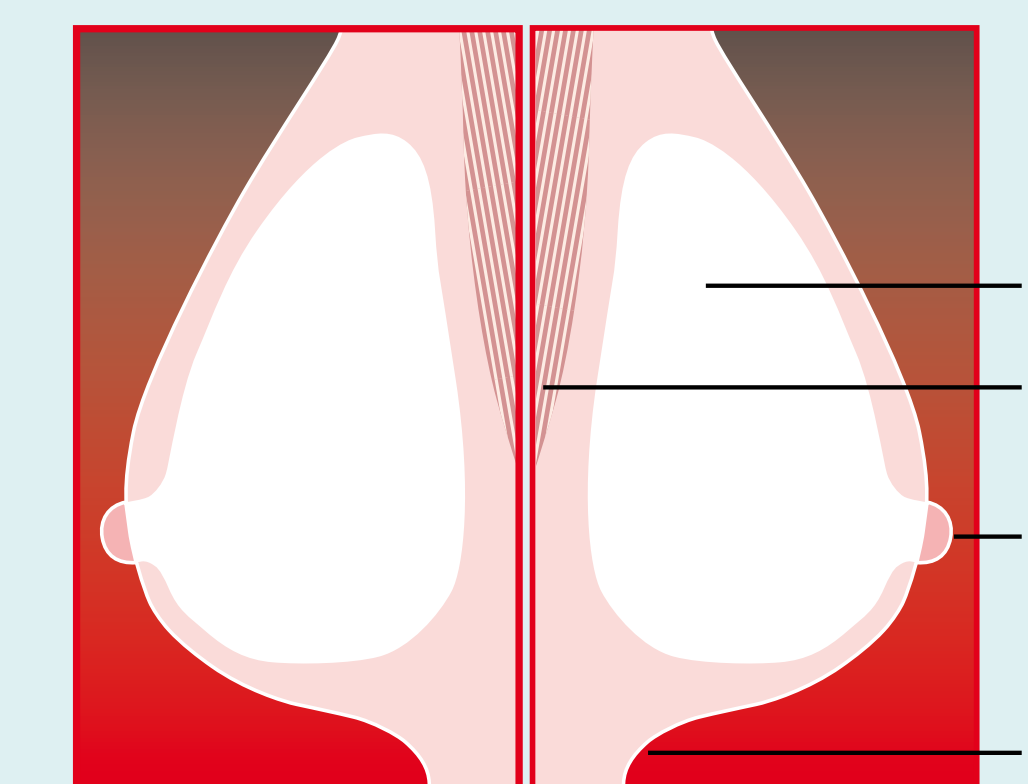
The criteria for an optimal mediolateral projection require the following to be clearly displayed on the image:

- Criteria ML:
- 1 The majority of the breast tissue
 - 2 The pectoral muscle is visible
 - 3 The nipple in profile
 - 4 The inframammary angle



The criteria for an optimal lateromedial projection require the following to be clearly displayed on the image:

- Criteria LM:
- 1 The majority of the breast tissue
 - 2 The pectoral muscle is visible
 - 3 The nipple in profile
 - 4 The inframammary angle



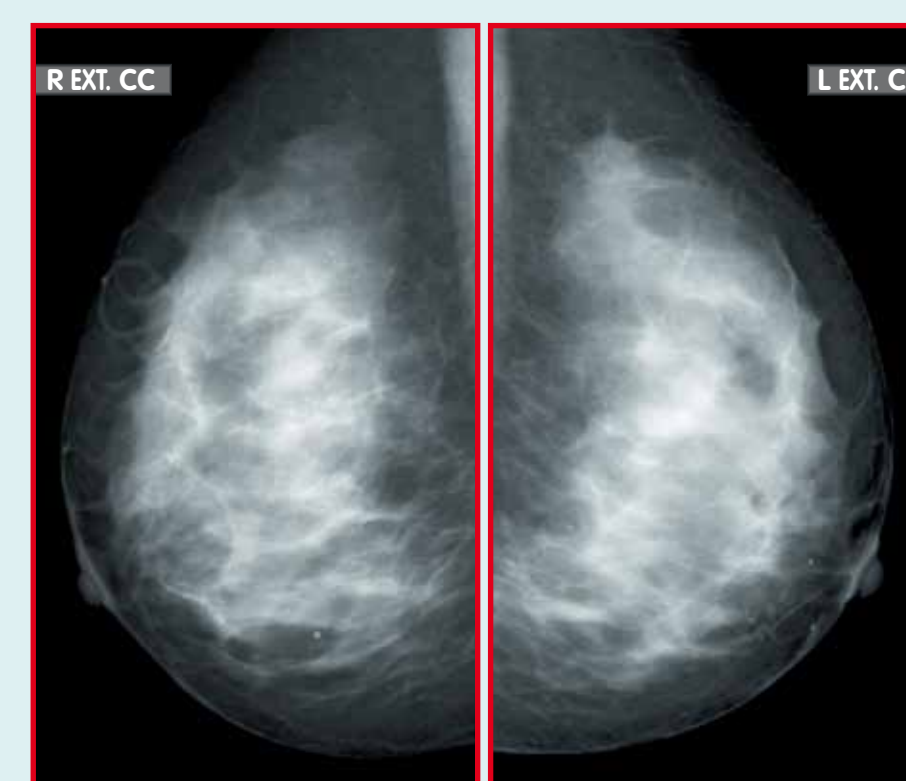
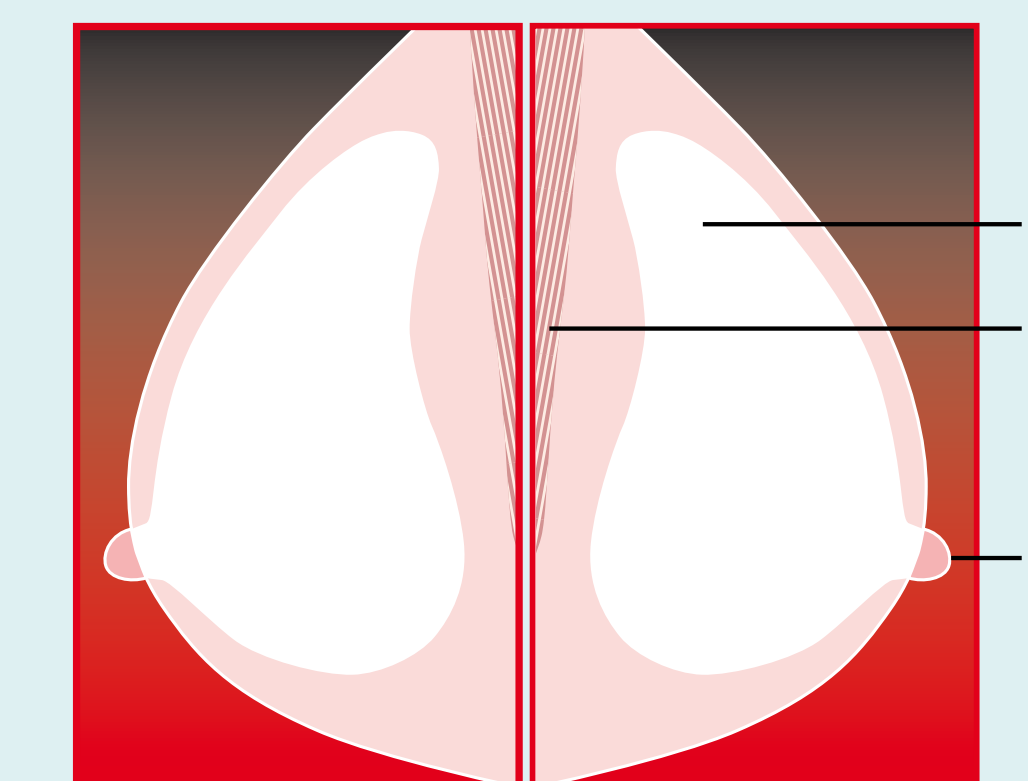
Extended Craniocaudal Projection („Cleopatra View“)

This extended CC-view is a supplementary view for better imaging of the lateral part of the breast, especially the axillary tail. This projection is used to show a lesion seen high in the axillary tail on the mediolateral oblique view, but not visible on a craniocaudal view.



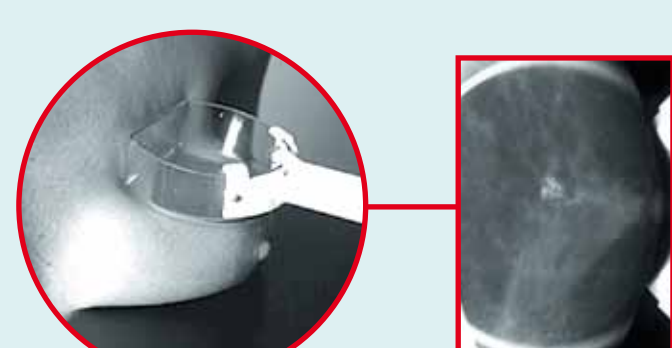
The criteria for an optimal extended craniocaudal projection require the following to be clearly displayed on the image:

- 1 The most lateral part of the breast including the axillary tail
- 2 The pectoral muscle in the lateral part of the breast
- 3 The nipple in profile

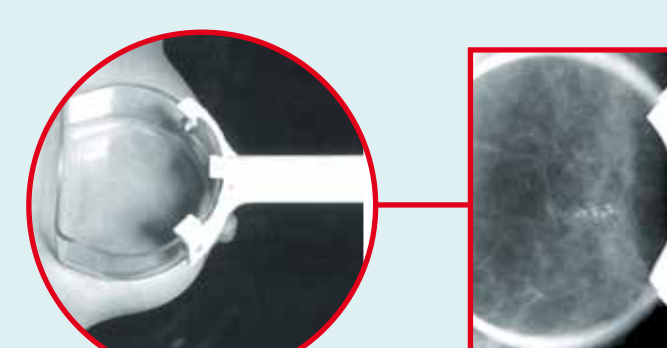


Spot and Magnification Views

Spot and magnification views are performed in order to obtain more detail of a lesion. A special small compression device is used to achieve better compression in the area of interest. Spot magnification views are performed in two different projections. They are especially used for better visualization of microcalcifications.



CC Spot Magnification View



MLO Spot Magnification View