Breast cancer is the most common malignancy of women in most western countries including Thailand and other developing countries. According to the World Health Organization 521,000 died of breast cancer in 2012. In Thailand Breast Cancer is the most common malignancy found in women (37.5%) follow by cervical cancer (14.4%) and colorectal cancer (9.6%) (1).

Early Diagnosis of breast cancer is the most importance factor that improve patient prognosis. Mammography has been proven in various randomized control trial as an effective screening tool for breast cancer. However, with the increasing of various breast surgical procedures such as breast augmentation, reduction mammoplasty and reconstruction, it may result in more challenging in surveillance and screening of the breast cancer. Imaging appearances of breast augmentation and other surgical altered breast are diverse. Understanding and familiar with the spectrum of imaging findings in the surgical altered breast may require to prevent image misinterpretation and which can result in delay diagnosis of malignancy and detection of locoregional recurrence.

Keywords: Mammogram; breast augmentation; reduction mammoplasty; breast cancer; breast reconstruction

Min-Review Article

The surgically altered breast: imaging technique and findings

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Abstract: Early diagnosis of breast cancer is the most importance factor that improve patient prognosis. Mammography has been proven in various randomized control trial as an effective screening tool for breast cancer. However, with the increasing of various breast surgical procedures such as breast augmentation, reduction mammoplasty and reconstruction, it may result in more challenging in surveillance and screening of the breast cancer. Imaging appearances of breast augmentation and other surgical altered breast are diverse. Understanding and familiar with the spectrum of imaging findings in the surgical altered breast may require to prevent image misinterpretation and which can result in delay diagnosis of malignancy and detection of locoregional recurrence.

Keywords: Mammogram; breast augmentation; reduction mammoplasty; breast cancer; breast reconstruction

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Breast augmentation

Regular mammography screening after breast implant is recommended at interval appropriate for the woman’s age. Special views called implant-displaced (ID) views have been developed to better visualize the breast tissue anterior to a silicone breast implant.

For silicone gel and saline implant, there are numerous changes that can potentially occur after implant placement such as implant deformity, herniation or rupture of implant. The presence of silicone outside the implant is a clear proof of implant rupture visible on mammography. In general, MRI seems to be the best imaging modality to evaluating implant (Figures 1-4).
Mammoplasty

Preoperative mammography for all women undergoing reduction mammoplasty is important to detect a lesion that requires further investigation or removal at the time of the reduction procedure.

Characteristic mammographic changes have been reported after reduction mammoplasty. Regardless of the exact type of reduction procedure performed, the changes reflect the removal and repositioning of breast tissue and the nipple-areolar complex (6) (Figure 5).

The common mammographic findings include:
(I) Alteration of breast contour;
(II) Elevation of the nipple;
(III) Displacement of breast parenchyma;
(IV) Architectural distortion;
(V) Skin thickening;
(VI) Retroareolar fibrotic band;
(VII) Disruption of subareolar ducts;
(VIII) Fat necrosis.
Conservatively treated breast

In order to evaluate the treatment options the patient will undergo preoperative imaging. An intraoperative specimen radiography is useful to assessing adequacy of tumor resection and extention of calcification at the time the patient is in the operating room.

A post-operative imaging evaluation is then performed to look for residual tumor, calcification or tumor recurrence. The early diagnosis of recurrence is extremely importance because early detection of the recurrent tumor leads to improved survival likelihood (7) (Figure 6).

For post surgical altered breast, it is helpful to have a mammogram performed 6-12 months after surgery to re-establish baseline findings.

It should be remembered that both benign and malignant processes can coexist in the treated breast. When it is not possible to determine whether the findings are due to carcinoma, fibrosis or other benign processes, biopsy should be performed.

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