Medical Imaging Standard Operating Procedure
UW Health

Title: Mammography Indications and Views

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Approvals:

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Goal: To describe the standardized indications and views for mammography. These standardized views will be performed by the technologists and presented to radiologists for each case. Additional views may be added at the discretion of the technologists (for adequate standard coverage of the breast(s)) and the radiologists as needed.

The Standard Operating Procedures (SOPs) are meant as a framework for the best practices in the care of our patients to standardize and coordinate care across locations. They are guidelines and can be modified, if necessary, in individual situations based on the clinical judgment of the radiologist, if it is determined to be in the best interest of the patient.

Standardized use of radiopaque markers:

- Site(s) of clinical concern: BB marker(s)
- Skin lesion(s): Skin lesion marker(s)
- Excisional biopsy or lumpectomy scar(s)/incision(s): Scar marker(s)
- Markers should be used for 2D and Digital Breast Tomosynthesis (DBT) images

SCREENING MAMMOGRAPHY:

I. Screening Mammography (Asymptomatic patients):

- Bilateral CC and MLO
  1. 2D only
  OR
  2. DBT plus synthesized mammography (C-view)

- IF Additional views are needed to complete standard breast coverage (exaggerated lateral or medial, axillary tail, cleavage views, etc.) ***should be 2D (not DBT)***
- In Tiled breast, the view with most breast tissue coverage should be DBT, additional views to compete breast tissue coverage should be 2D.

II. Screening Mammography (Asymptomatic patients with Implants):

2D only:

- Bilateral CC and MLO-Implant in-field views
- Bilateral CC and MLO -Implant displaced views (CCID, MLOID)

DBT:

1. Bilateral CC and MLO- **Implant displaced views** (CCID, MLOID) should be ***DBT plus synthesized mammography (C-view)***
2. Bilateral CC and MLO- **Implant in-field views** (CC, MLO) should be ***2D only***

III. Transgender Screening (if indicated, same views as standard screening mammography), indications (Brown et al. "ACR Appropriateness Criteria® transgender breast cancer screening." *Journal of the American College of Radiology* 18.11 (2021): S502-S515.):

a) Transgender Women (M→F)-[Transfeminine]

- ≥ 40 years old with past or current hormone use: Screening mammography may be appropriate if the patient has history of estrogen and progestin use for ≥ 5 years and otherwise average for breast cancer risk
- < 40 years old if high risk for breast cancer (patient with personal history of breast cancer or chest irradiation at 10 to 30 years of age, patient with genetic predisposition to breast cancer, patient with family history of breast or ovarian cancer, and untested patient with first-degree relative with genetic predisposition to breast cancer) Screening mammography is usually appropriate
- No hormone use (or less than 5 years) at any age, average risk for breast cancer : Routine screening mammography is usually not appropriate.

b) Transgender Men (F→M)[Transmasculine]

- Underwent reduction mammoplasty or no top surgery: Standard guidelines for screening mammography in cisgender women (average risk versus high risk)
- Post-bilateral mastectomy (top surgery): Screening mammography not recommended

DIAGNOSTIC MAMMOGRAPHY

Guiding Principles:

1. The overall goal of a diagnostic breast imaging work-up is to come to a definitive diagnosis in a timely and accurate manner, striving to uphold a standard of clear communication with minimal ambiguity at all phases of diagnosis. These principles are best achieved when the full work-up is done by a single radiologist in one visit, if possible. Patients who are recommended for diagnostic ultrasound to follow a mammographic work-up should be offered same day appointment as much as possible. It should be the exception and in very limited situations a diagnostic work-up (MG and US) would be performed on two separate days and should only happen if the patient declines to stay.
2. If the full work-up cannot be achieved in one visit, clear management recommendations based on contingencies of future imaging is important for clear communication and timely patient care. This should be a rare exception to our standard practice.
3. Any Additional views outside of the stated diagnostic views, to complete standard breast coverage (e.g.: exaggerated, axillary tail, cleavage), should be done as 2D

I. Diagnostic Mammography (Symptomatic patients):

a) New palpable mass (lump, thickening) or focal pain
   a. Age < 30y
      1. Ultrasound first

b. Age ≥ 30y: BB on location indicated by patient or physician
    i. If baseline exam, then perform as bilateral diagnostic mammogram
        1. Full field DBT CC, DBT MLO, DBT ML
        2. DBT spot CC, DBT spot MLO
    ii. < 6mo since last mammogram
        1. DBT spot CC, DBT spot MLO, DBT ML
        2. Additional full field views based on radiologist discretion after initial images are acquired (If patient's last mammogram was 2D only, then full field DBT CC and DBT ML. If patient's last mammogram was DBT, then only do full field DBT ML)
    iii. ≥ 6mo since last mammogram
        1. Full field DBT CC, DBT MLO, DBT ML
        2. DBT spot CC, DBT spot MLO
    iv. Followed by ultrasound, however ultrasound may be waived at radiologist discretion, i.e. entirely fatty breast, and diffuse pain

b) New suspicious nipple discharge (defined as unilateral spontaneous discharge that is bloody or serous. Unilateral or bilateral milky white discharge is not an indication for imaging work-up.
    a. Age < 30y
        i. Ultrasound
    b. Age ≥ 30y
        i. < 6mo since last mammo:
            1. Retro-areolar 2D spot magnification CC, 2D spot magnification ML to identify calcifications, full field DBT ML
        ii. ≥ 6mo since last mammogram
            1. full field DBT CC , full field DBT MLO, full field DBT ML
            2. Retro-areolar 2D spot magnification CC, 2D spot magnification ML to identify calcifications
        iii. Followed by ultrasound in the sub-areolar region +/- any additional areas of concerns based on mammographic evaluation

II. Diagnostic Mammography (Recalls from Screening, BI-RADS 0):

a) Calcifications
    a. 2D Mag CC, 2D Mag ML (mags are 1.8 as standard)
    b. full field 2D ML
b) Masses/ Architectural distortion /focal asymmetries on **2 views** (irrespective of screening study):
    a. DBT full field ML
    b. DBT spot compression views in CC and MLO projection
    c. Ultrasound to follow, if finding persists
c) Masses/Asymmetries/Architectural distortion on **1 view** only
    a. Seen on CC only
        i. If screening exam was 2D (not DBT), then repeat full field DBT CC
        ii. Full field DBT ML, DBT CC spot compression
        iii. Optional views at Radiologist discretion (e.g.: 2D rolled lateral and rolled medial CC)
    b. Seen on MLO only
        i. If screening exam was 2D (not DBT), then repeat full field DBT MLO
        ii. Full field DBT ML, DBT MLO spot compression
        iii. Optional views at Radiologist discretion (e.g.: 2D rolled lateral CC, rolled medial CC, stepped obliques)
    c. Ultrasound to follow if finding persists
d) Diagnostic evaluation for axillary lymphadenopathy on screening exam:
    a. Start with targeted ultrasound of the axilla in question.
    b. Diagnostic mammography views may be obtained based on radiologist discretion.

III. Diagnostic Mammography (BI-RADS 3 – Follow-up: Unilateral at 6 mo, bilateral at 12* and 24* mo – the 12 and 24 mo DxM could revert to screening if follow-up imaging confirms a benign finding)

- **This includes diagnostic mammography post core biopsy for ARS or benign core needle biopsies where surgical excision is not performed. The need and timing of follow-up imaging is determined at the time of radiologic-pathologic correlation, and is assessed on a case-by-case basis and dictated in the biopsy report addendum.**

a) Calcifications:
   - **At 6 months:**
     a. Full field 2D ML
     b. 2D Mag CC, 2D Mag ML
   - **At 12 and 24 months (include contralateral screening views)**
     a. Imaging of calcifications side : (2D Mag CC, 2D Mag ML+ full field DBT ML)
     b. Bilateral full field DBT CC and DBT MLO

b) Masses/Focal asymmetries
   - **At 6, 12, 24 months:**
     a. DBT spots (CC, MLO)
     b. Full field DBT CC, full field DBT MLO, full field DBT ML
   - **At 12, 24 months**: Add contralateral full field DBT CC, full field DBT MLO

IV. Diagnostic Mammography (Post benign core needle/surgical excisional biopsy):
Refer to BI-RADS 3 imaging views

V. Diagnostic Mammography (Post-lumpectomy): First follow-up post-lumpectomy (one time imaging at 6 – 12 mo), then routine screening mammography:

a) Scar marker on lumpectomy scar
b) Post-lumpectomy, pre-radiation mammogram (< 6 months from lumpectomy) to evaluate residual calcifications, etc. is determined on a case-by-case basis by surgon/oncologist and is not routine
c) First post-lumpectomy diagnostic mammogram: DBT CC, DBT MLO, 2D Mag CC, 2D Mag ML of lumpectomy site
d) After first post-lumpectomy diagnostic mammogram, patient should return to routine screening mammography, if benign (BI-RADS 2)

VI. Diagnostic Mammography for follow up of neoadjuvant therapy cases:

a) DBT CC, DBT ML and DBT MLO full field of side with known malignancy
b) Additional views according to the original imaging finding on diagnostic work-up:
   a. 2D CC & 2D ML spot magnification views over known malignancy site if calcifications
   b. DBT CC & MLO spot compression views over known malignancy site if masses, architectural distortion or focal asymmetry

SPECIAL CLINICAL SCENARIOS:

I. Mastectomy:

a. Screening:

a) Contralateral CC, MLO for screening (preferably DBT)
b) Additional views to complete standard breast coverage (exaggerated, axillary tail, cleavage) should be in 2D
c) No mammogram on mastectomy side. Occasionally, in very specific clinical scenarios (subcutaneous, nipple-sparing mastectomy, to confirm residual native breast tissue AND **specifically requested by clinician), standard views may be obtained *only* after confirmation with radiologist.**
   a. 2D CC, MLO

b. Diagnostic for clinical findings:

d) Non-mastectomy side: per protocol for clinical finding
e) Mastectomy side:
   a. Without reconstruction:

i. Ultrasound only

b. Mastectomy side with reconstruction:
   i. Implant reconstruction:
      1. Ultrasound first
      2. Optional: BB and full field 2D CC and MLO views only if requested by rad
   ii. Autologus (flap) reconstruction
      1. Diagnostic mammography first: BB and full field 2D CC and MLO views
      2. Ultrasound to follow

II. Male Patients:

a. Diagnostic:

a) BB on lump/site of clinical concern if present
b) Bilateral 2D CC, 2D MLO

b. Screening:

c) Screening DBT CC and DBT MLO may be a considered if patient is asymptomatic and a known breast cancer survivor or specific high-risk profile. There are no ACR or NCCN guidelines for male breast screening in these populations, but screening can be performed at clinical discretion.

III. Pregnant Female with New Clinical Concern:

Pregnant patients who present with clinical signs or symptoms (pain, lump, thickening, suspicious unilateral nipple discharge:

a. Initial evaluation with ultrasound irrespective of age.

b. Additional mammographic evaluation is based on radiologist's discretion and is reserved for highly suspicious imaging findings. Abdominal shielding is not required, however may be obtained at patient's request (will include citation).

IV. Lactating Female with New Clinical Concern:

- Lactating patients who present with clinical signs or symptoms (pain, lump, thickening, suspicious unilateral nipple discharge should follow the imaging protocol outlined in bullet point I (see above).
- Patients should breast feed or pump within 30 min prior to imaging.

V. POST PROCEDURE IMAGING:

- After any procedure where a clip was placed, DBT CC and ML views of the affected side is obtained in post ultrasound biopsies or stereotactic biopsies of masses/architectural distortion/asymetries. 2D CC and ML views are obtained after biopsy of calcifications, for MRI guided biopsies, and for Elucent clip placements. (additional views may be obtained on radiologist discretion)
- After clips are placed in the axillary lymph nodes, a single view over the axilla to document clip placement and location.
- If there is a cyst aspiration with a mass evident on mammography and the cyst resolves on aspiration, DBT CC and ML views of the affected side may be obtained.
- If the cyst aspiration is for therapeutic reasons (ie. pain), then no post mammogram is necessary
- If the patient is < 30y, and a biopsy is performed with a marker being placed, then no mammogram is needed following the procedure for one of two reasons:
   1. She had no mammogram in the initial work-up
   2. The marker is clearly seen at the time of ultrasound placement