Procedure Name: Diagnostic Breast Ultrasound, Unilateral or Bilateral

Updated: 9/14/2016

Indications:
May include but not limited to investigating a palpable mass or axillary abnormality, focal breast pain or symptom, nipple discharge, call back or follow up to mass, asymmetry or distortion seen on mammography and/or second look from MRI abnormality, follow up to prior ultrasound or call back from screening ultrasound.

Patient Preparation:
There is no preparation for this exam.

Equipment Selection and Settings:
The breast preset and a high frequency linear transducer of 10MHz or above should be used. The use of a standoff pad or thick layer of gel may be required for nipple and/or superficial skin lesions. A single focal zone at the area of interest must be used. Depth should be set no deeper than a small portion of muscle/chest wall for reference. Lung should never be included in image.

Harmonics: Refrain from using harmonics in general as it can make a solid mass look cystic.

The use of harmonics is appropriate:

- When evaluating a potential lymph node
- When trying to distinguish fat lobule from possible mass
- When second look ultrasound after MRI shows no abnormality correlating to MRI
- Harmonic images should always be in addition to general images.

Patient Position:

1. The patient should be flat on their back with the ipsilateral arm raised above the patient's head to spread out the breast tissue.
2. If the lateral breast is being scanned, the patient should be propped up on an angle using a wedge.
3. If the medial breast is being scanned, the patient should be flat on their back.

Imaging:

1. SCANNING
    - Scan in transverse and longitudinal to keep consistency throughout sonographers and radiologists (When performing a screening breast ultrasound, TRANS and LONG ensures full evaluation of the breast).
    - Radial and Antiradial annotations should only be used if a positive finding has its largest dimension in one of those planes.
2. ANNOTATION
    - All images should be labeled as to right or left
    - The orientation of the transducer in two orthogonal planes
    - Location using the clock face notation
    - Distance from the nipple
    - If palpable, annotate image palp per patient/doctor

Images needed according to finding/symptom

1) Positive Finding

- At least two images in two orthogonal planes without calipers
- At least two images in two orthogonal planes with calipers (extra image in RAD or ARAD if the abnormality has its greatest dimension in that plane)
- **The AP measurement must always be taken perpendicular to the longest dimension**
- One image with color and/or power Doppler to assess blood flow
- Window shot to prove other areas of breast were evaluated, especially with suspicious lesions to evaluate for satellite lesions

a) Multiple simple cyst
    - Image demonstrating multiple cysts
    - Measure largest cyst according to positive finding protocol

b) Follow up to prior ultrasound
    - Stay consistent in image sequence and annotations from prior exam.

c) Call back from screening ultrasound
    - Follow positive findings protocol as stated above

d) Axillary abnormal lymph nodes
    - Measure lymph node in at least 2 orthogonal planes with and without calipers
    - If cortex is visible, measure cortex **(3-4mm and above is abnormal)**
    - Consider scanning upper outer quadrant of breast if mammogram is negative for the mass (i.e. metastatic lymph node of unknown origin)
    - Scan contralateral axilla for abnormal lymph nodes for comparison, free of charge to patient
    - For patients of Dr. H. King, image of more than one abnormal lymph node for possible exclusion of sentinel node and annotate like a breast lesion with distance from nipple

2) **Negative Findings**
    a) Palpable Breast or Axillary Abnormality
        - Two images in the exact location of palpable abnormality in two orthogonal planes
        - One image of window (e.g. 12:00-3:00)

    b) Focal pain or Breast Symptom
        - Two images in the exact location of pain/symptom in two orthogonal planes
        - One image of window (e.g. 12:00 – 3:00)
    c) Call back/follow up to mass, asymmetry or distortion seen on mammogram
        - Two images in the exact location of interest from mammogram in two orthogonal planes, annotated with o'clock and distance from nipple
        - One image of window (e.g. 12:00 – 3:00)
    d) Second look from MRI
        - Two images in the exact location of interest in two orthogonal planes annotated with the o'clock and distance from nipple
        - One image of window (e.g. 12:00 – 3:00)
        - One image with harmonics
3) Nipple Discharge
    a) Positive
        - Annotate clock face of nipple with retroareolar or periareolar
        - Two orthogonal planes with and without calipers
        - Color/power Doppler image
        - Additional rolled nipple view as needed
    b) Negative
        - Retroareolar view in two orthogonal planes
        - Color/power Doppler view
        - Additional rolled nipple view as needed