BREAST BIOPSY: BEYOND THE BASICS

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OBJECTIVES

• After attending this workshop, the participant will be able to recommend various efficacious biopsy plans for different clinical and imaging scenarios.
• OVERVIEW
• STEREOTACTIC BIOPSY
• US GUIDED BIOPSY
• MRI BIOPSY
• STEREOTACTIC 3D BIOPSY
Stereotactic guidance

• Difficult to visualize lesions: ?correct target
  – Faint calcifications, focal asymmetry with lower density
  – Position patient in needle localization mammography grid in the chosen approach (lateral, medial, superior)
  – Place a radiopaque marker over suspected lesion to improve odds of visualization under stereotactic guidance
Stereotactic guidance

- Small or faint, difficult to visualize lesions
- Balance between amount of anesthetics and lesion visualization
LOOK AND FEEL THE SPECIMEN!
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Stereotactic guidance

- Target correctly
  - Recognize X, Y and Z errors
  - Lesion deviated to the side if probe is pushed in or even after the probe is fired
  - Sample lesion based on post fire stereo images
  - If necessary, retarget and reposition
Stereotactic guidance

- Larger calcifications in patients with denser fibro glandular tissues or fatty replaced tissues
  - Use larger sampling biopsy devices
  - Retarget and refire biopsy device inside breast
  - Manual manipulation of outer breast tissues to ‘force’ calcifications in the biopsy chamber
Stereotactic guidance

- Deep, posterior lesions
  - Less than maximum compression
  - Usually best visualized on lateral or MLO
  - Changing the tube angulation
  - Arm through hole technique, target on scout
  - Add-on stereotactic biopsy device
  - Maximal patient cooperation
  - More difficult in patients with thick breasts
Stereotactic guidance
• Superficial lesions
  – Perform larger skin wheal
  – Variable aperture sleeve
  – Petite needle
  – Push VAB until skin covers notch
  – Manual manipulation of outer breast tissues to achieve better vacuum
Stereotactic guidance

- Inadequate breast thickness, negative stroke margins (less than 3cm)
  - Less than maximum compression: increase risks of lesion movement, bleeding
  - Perform larger skin wheal
  - Bolstering: apply opposing compression of outer breast tissues to increase breast thickness
  - Use petite needle
  - Use of lateral arm extension
Ultrasound guidance

- Faster procedure, esp. for multiple targets
- Target lesion along a radial plane
- Allow for assessment of lymph node status
- Mammogram-US-MRI correlation-?correct target
  - Lesion size, appearance, location based on clock position, distance from nipple, depth, surrounding tissues
Ultrasound guidance

- Dense fibroglanular tissues (esp. with VAB)
  - Choose approach of least resistance
  - Hydro-dissection with lidocaine
  - Fire needle to create a path
  - Co-axial technique
  - Lift subcutaneous tissues at incision site to loosen Cooper ligaments
Ultrasound guidance

- Spring loaded tru-cut (14G): confirm needle inside target by rotating probe 90 deg
  - Dense and/or mobile lesions: devices allowing for firing inner needle first and then firing the outer sheath
Ultrasound guidance

- Thin breasts, breasts with implants
  - Inject more lidocaine to increase tissue depth
  - Minimal compression with transducer
  - Lift subcutaneous tissues at incision site to loosen Cooper ligaments
  - Rotate needle to advance to target
– Masses visible on ultrasound
– Calcifications:
  • Highly suspicious, >3cm, dense fibroductal tissues: ultrasound to detect sonographically visible mass, decrease underestimation rate
  • Patients not amenable/difficulty with stereotactic biopsy—over weight limit, with breast implants, thin breasts, posterior lesions, subareolar lesions...
• Lesions seen on MRI (targeted/2nd look US)
• Ultrasound correlation 46-57%
• Masses 50-65%
• Non-mass like enhancements (subtle on US) 12-32%
• Sonographic correlate significantly higher positive biopsy rate
  » Abe H AJR 2010;194(2):370-7
  » Demartini WB AJR 2009;192:1128-1134
  » Meissnitzer M AJR 2009;193:1025-1029
• Lesions seen on MRI (targeted/2\textsuperscript{nd} look US)
• Increasing size, BIRADS 5, rim enhancing masses, clumped enhancement in non-masses
• Sonographically occult lesions 22% malignant
• 10/80 benign concordant US guided biopsies, the sonographic correlate does not correspond at F/U MRI (5 malignancies)
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