Vacuum Assisted Biopsies: Technique, Indications, Pitfalls

Christopher Comstock M.D.
Department of Radiology
Memorial Sloan-Kettering Cancer Center

Advantages of Percutaneous Core Needle Biopsy

• Definitive diagnosis
• Decreased number of unnecessary surgical biopsies (time, cost, scarring)
• Facilitates patient’s treatment decisions
• Single-step surgery
• Evaluation of multi-centric/multi-focal sites

Ultrasound guided CNB

• Biopsy method of choice for breast masses
• Real-time sampling
• Comfortable position for the patient
• Allows access to all areas of the breast

Stereotactic Core Biopsy Technique

Stereotactic Core Biopsy

• Mostly used to biopsy microcalcifications
• Specimen radiograph of core samples to confirm sampling of targeted calcifications
• Vacuum assisted biopsy most commonly used to improve sampling and decrease biopsy time

Prone Tables
Add-on Units

DBT Guided Add-on Biopsy Unit

Targeting

Establish Accurate Targeting

Needle relative to lesion

Appearance on stereo pair

+15° Targeting

Appearance on stereo pair

Establish Accurate Targeting
Lesion obscured by lidocaine

Technical considerations
- Stroke Margin (need ~ 2.5 cm compressed breast tissue thickness)
- Pre and Post-fire images
- Calcifications in at least one core minimum

Pitfalls
- Negative “stroke margin”
- Superficial lesions
- Subtle calcifications seen on FFDM but not seen on stereo images
- Subtle lesions not seen on both stereo images
- Posterior lesions
- Lesions obscured by lidocaine

Stereotactic Biopsy: Pitfalls
- Try to position the breast to exactly match the mammographic view that the lesion was seen on.
“Arm Through Method”

Case 1

Skin Calcifications
Pitfalls

- No calcifications seen in cores on specimen x-ray
- Calcifications in cores on the x-ray but no calcifications seen by the pathologist

No calcifications in cores on specimen x-ray

- Should not be considered representative of the suspicious calcifications
- Need to obtain at least one calcification from targeted cluster

No calcifications seen by pathologist

Paraffin Blocks
Polarized Light – Calcium Oxalate

US - Mammographic Correlation

Discordant
Further ultrasound showed a second lesion at 8:00

Ultrasound Guided Vacuum-assisted Core Biopsy

Vacuum-assisted Core Biopsy
- Manually advanced into lesion
- Multiple samples
- 12-8 gauge

Vacuum-assisted Core Biopsy

Why do vacuum assisted large core biopsy instead of 14 ga Tru-cut?
Ultrasound Guided Vacuum-assisted Core Biopsy: Potential Indications

- Small lesions
- Symptomatic masses
- Potential Papillomas?
- Potential FA vs Phyloides tumor
- Complex masses (intra-cystic)
- Enlarging mass with prior benign needle bx diagnosis?

How would you biopsy this?

1) US-guided 14 GA spring-loaded core
2) US-guided vacuum-assisted core
3) US-guided FNA biopsy
4) Surgical excisional biopsy

Example
How would you biopsy this?

1) US-guided 14 GA spring-loaded core
2) US-guided vacuum-assisted core
3) Stereotactic core biopsy
4) Surgical excisional biopsy

Post US vacuum-assisted core Bx films

Example

Known CA Left Breast
BIRADS 4 Lesion Right Breast

How would you biopsy this?
1) US-guided 14 GA spring-loaded core
2) US-guided vacuum-assisted core
3) MR-guided core biopsy
4) Surgical excisional biopsy

MRI-Guided Breast Biopsy

Pitfalls in Lesion Localization: MR
- US correlate identified for 23-89% of MR lesions
  - More frequently for enhancing masses
519 suspicious MRI detected lesions

Presumed US correlate in 56%:
- Mass: 62%
  - >1 cm, rim enhancement
  - NME: 31%

On f/u imaging after benign concordant biopsy, 10/80 biopsied lesions found not to correspond

5/9 MR bx positive for CA

Differences in positioning
- Positioned prone for MR

With arm raised and oblique positioning, lateral lesions may migrate even higher

Perform 6 month follow up MRI for all benign results from biopsy of MRI correlate on ultrasound
Medial versus Lateral Approach

Medial Approach

Automated Targeting Programs

Medial Lesions

Medial Approach
What if lesion is lesion suspicious on targeting scan?

• Proceed with biopsy!
• Do delayed scanning
• Release compression

Follow up

• 12 month follow up MRI for lesions found on MR and biopsied under MR or US with concordant pathology
• 6 month follow up MR for benign non-specific pathology and low suspicion findings on MRI
• Excision for discordant biopsy results
### MSKCC: Management Recommendations of High Risk Lesions on CNB

<table>
<thead>
<tr>
<th>High Risk Lesion</th>
<th>Management Recommendation</th>
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<tbody>
<tr>
<td>ADH or FEA</td>
<td>Excision</td>
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<tr>
<td>Lobular Neoplasia:</td>
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<tr>
<td>- ALH</td>
<td>Follow</td>
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<tr>
<td>- classic LCIS</td>
<td>Follow</td>
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<tr>
<td>- pleomorphic LCIS</td>
<td>Excision</td>
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<tr>
<td>Radial Scar Radial Sclerosing Lesion</td>
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<tr>
<td>Benign Papilloma</td>
<td>Excision or follow</td>
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<td>Microscopic Radial Scar and Papilloma</td>
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