

CURRENT METHODS IN IMAGE GUIDED BREAST BIOPSY

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April 24, 2004

OBJECTIVES

- Review development of current techniques
- Discuss stereotactic breast biopsy
- Discuss US guided breast biopsy

OBJECTIVES

- Introduce MRI guided biopsy
- Introduce vacuum-assisted biopsy devices

ALONG THE WAY...

- Emphasize the importance of concordance between biopsy results and expected diagnosis
- Review breast biopsy results at Victoria General Hospital breast centre
- Discuss the role of the radiologist in directing and managing image guided biopsies

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IMAGE GUIDED BREAST BIOPSY

- Developed as alternative to fine wire guided excision biopsy

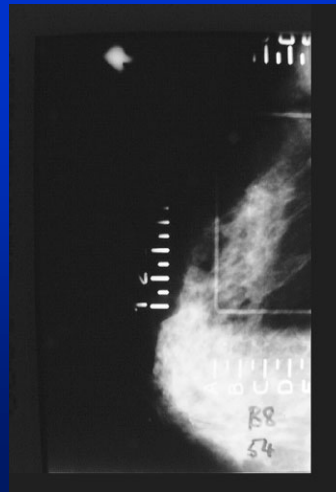
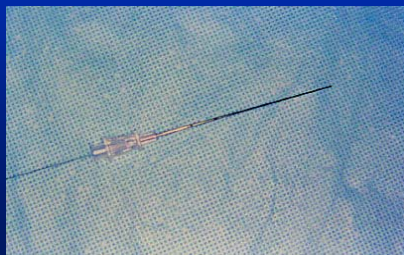
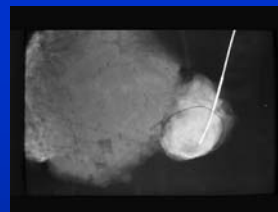


IMAGE GUIDED BREAST BIOPSY



- Traditional wire guided excision biopsy cancer rates 20-30%

IMAGE GUIDED BREAST BIOPSY

- Accurate and reliable
- Decreased patient morbidity
- Cost effective
- *Used for abnormal imaging findings, not palpable abnormalities*

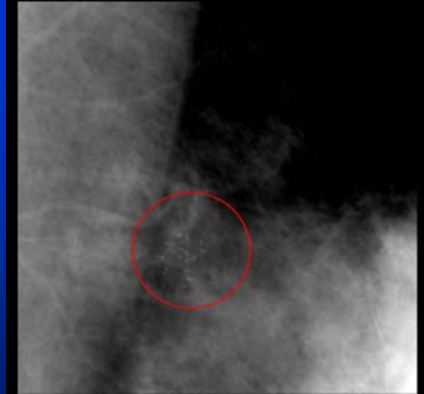
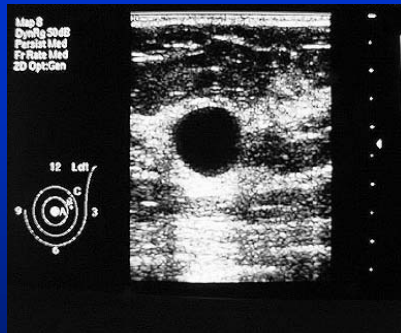


IMAGE GUIDED BREAST BIOPSY

- Fine needle aspirate – cytology
- Core biopsy - histology



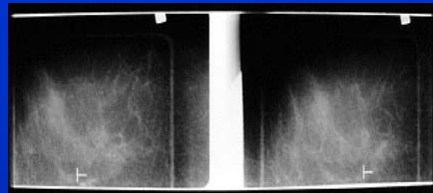
IMAGE GUIDED BREAST BIOPSY



- Not every lesion that can be biopsied, should be biopsied
- Radiologist determines which lesion needs biopsy, and appropriate method

STEREOTACTIC BREAST BIOPSY

- Computer determines depth from 2 images obtained at different angulations
- Now used almost exclusively for microcalcifications

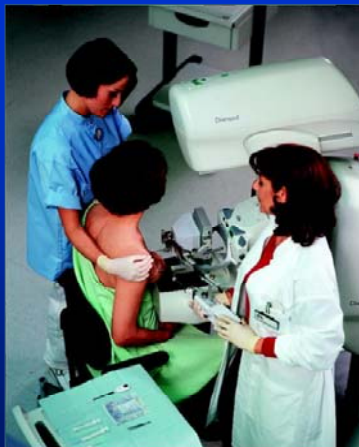


STEREOTACTIC BREAST BIOPSY

- Stereotactic add on to standard mammography machine



STEREOTACTIC BREAST BIOPSY



- Advantages: cost, space, efficiency
- Disadvantages: access to some calcifications limited, vasovagal episodes

STEREOTACTIC BREAST BIOPSY



- Prone stereotactic table
- Advantages: improved access to micros in all locations, patient comfort
- Disadvantages: cost, space, efficiency

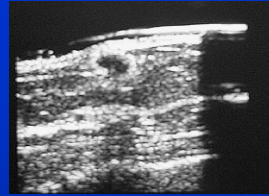
STEREOTACTIC BREAST BIOPSY

- Accuracy depends on showing representative micros on specimen X-ray
- Histology must be correlated with imaging
- ***If biopsy results do not match expectation, follow up!***



US GUIDED BREAST BIOPSY

- US initially limited to cyst vs. solid
- Improved resolution has increased sensitivity and *specificity*



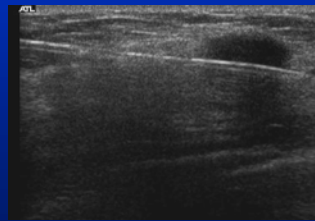
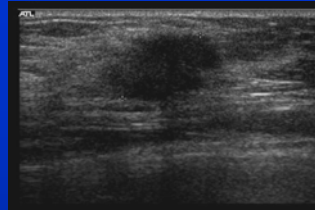
US GUIDED BREAST BIOPSY



- Advantages:
improved resolution
allows accurate
biopsy of lesions to
3mm
- Fast, comfortable,
real-time confirmation
of needle position

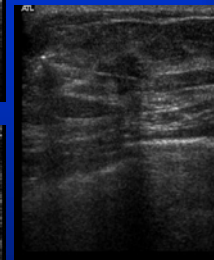
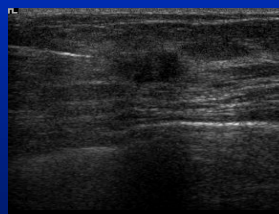
US GUIDED BREAST BIOPSY

- Accuracy determined by operator
- Histology must be correlated with imaging.
- ***If biopsy results do not match expectation, follow up!***

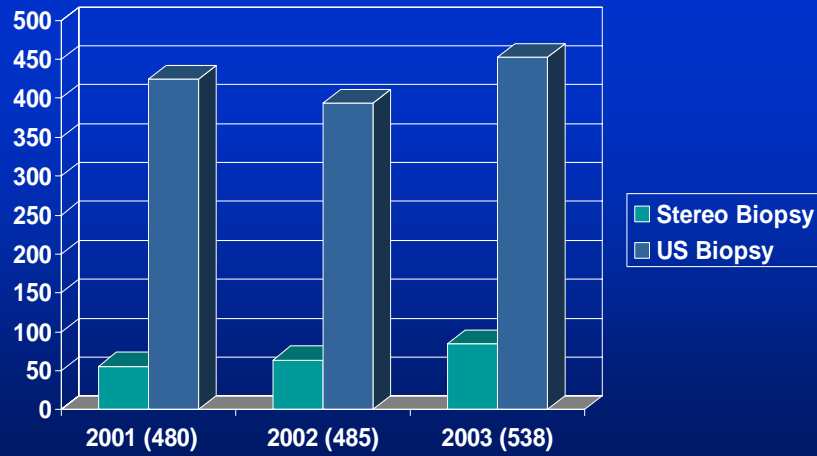


US GUIDED BREAST BIOPSY

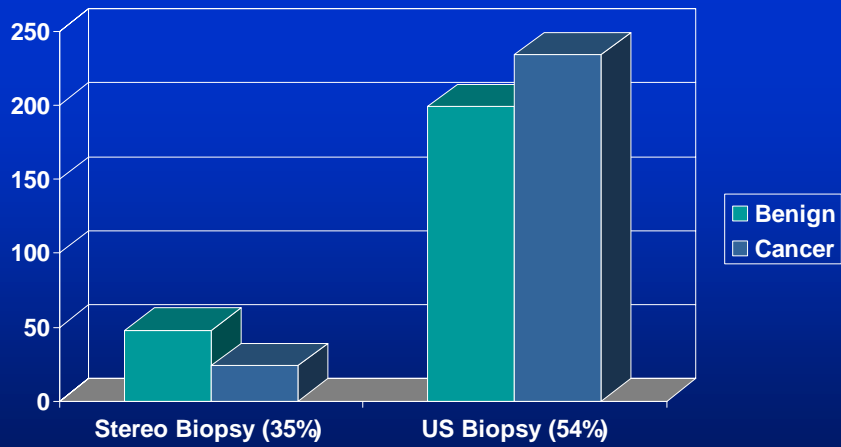
- Most commonly performed image guided breast biopsy
- Accurate and reliable when performed by experienced operator



BREAST BIOPSY STATISTICS: VICTORIA GENERAL HOSPITAL



BREAST BIOPSY STATISTICS: VGH 2003



BREAST BIOPSY STATISTICS: VGH 2003

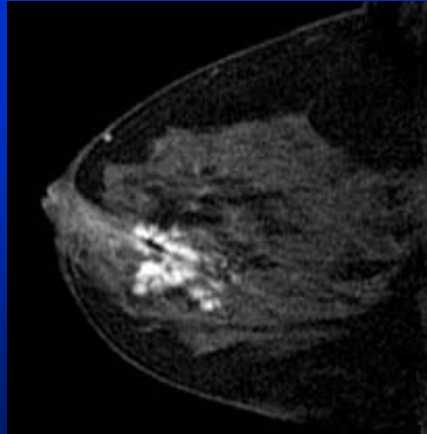
- Non-diagnostic biopsies:
 - Stereo 1/85 **1%**
 - US 4/453 **0.8%**
- Non concordant biopsies:
 - Stereo 19/85 **22%**
 - US 56/453 **12%**

MRI GUIDED BREAST BIOPSY

- Expanding role of MRI in breast imaging
- Increased sensitivity, decreased specificity
- Most lesions can be localized with US

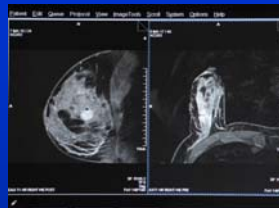


MRI GUIDED BREAST BIOPSY



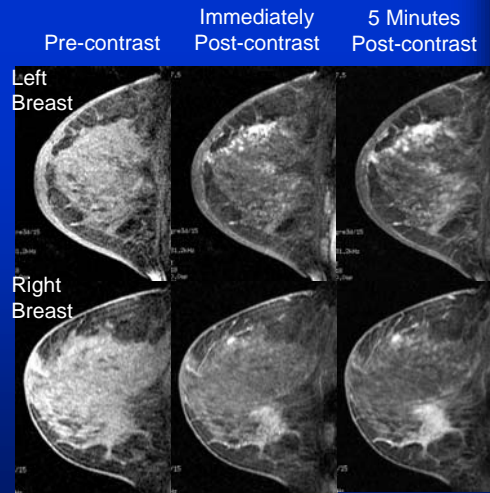
- Indications : search for occult primary, screen in high risk – dense breasts, assess for multifocal disease.
- Need to be able to biopsy MRI detected lesion

MRI GUIDED BREAST BIOPSY



MRI GUIDED BREAST BIOPSY

- Advantages: allows biopsy of lesion only seen at MRI
- Disadvantages: cost, time, patient comfort, accuracy
- Difficult to confirm accurate biopsy, difficult to correlate histology with imaging.



VACUUM-ASSISTED BREAST BIOPSY

- Developed to increase yield for histology
- Automated vacuum-assisted core biopsies, needle size 9-12 Fr



VACUUM-ASSISTED BREAST BIOPSY

- Placement guided by mammography (stereotactic), US or MRI



VACUUM-ASSISTED BREAST BIOPSY



VACUUM-ASSISTED BREAST BIOPSY

- Advantages: large sample size, single needle placement
- Disadvantages: cost (\$20,000/yr at VGH), time, trauma



SUMMARY

- Accurate and reliable breast biopsy can be performed using stereotactic, US or MRI guidance
- All biopsy results must be correlated with imaging. ***If results are not concordant - follow up!***
- Radiologist should be responsible for initiating, performing and auditing results of image guided breast biopsy

US GUIDED BREAST BIOPSY

