FINE NEEDLE ASPIRATION CYTOLOGY AND TRUE CUT BIOPSY OF THE BREAST. PROS AND CONS

FNAC

- Fine needle aspiration cytology (FNAC) is regarded as a minimally invasive, cost-effective technique with high diagnostic accuracy
- It is safe, gives rapid reporting, and demonstrates high sensitivity and specificity for the diagnosis of malignancy
- The technique requires little equipment, causes minimal discomfort to the patients, is an outpatient procedure, and reduces bed occupancy and the incidence of additional surgical explorations.
- An aspiration can be performed during a routine doctor’s office or clinic visit or at the patient’s bedside.
- In the clinical practice FNAC forms part of the triple assessment of breast lesions: clinical, imaging, and morphology. It is relatively easy to perform and does not require high-tech equipment; costs are lower than core needle biopsy (CNB) and substantially lower than open biopsy.

CORE NEEDLE BIOPSY

- Core needle biopsy is a percutaneous procedure that involves removing small samples of breast tissue using a hollow large-core needle, usually gauge 14 or 16.
- Palpable lesions may be biopsied manually by fixing the lesion with one hand, and both palpable and non-palpable lesions may be biopsied under stereotactic mammography or ultrasound image guidance.
- As a single sample is obtained each time the device is inserted, multiple insertions are needed to obtain sufficient breast tissue for diagnosis.
- Vacuum-assisted biopsy, on the other hand, is a procedure that relies on stereotactic mammography or ultrasound imaging using a gauge 11 core needle. It allows for the removal of multiple tissue samples by vacuum aspiration and unlike core needle biopsies, only requires a single insertion of the special biopsy probe into the breast through a small nick made into the skin.

- Both FNAC and CNB can be performed as an outpatient procedure with little significant negative cosmetic effects.
- The decision to perform either FNAC or CNB should be based on a given set of clinical/radiologic/ pathologic findings, thus allowing one to take advantage of the benefits that both procedures have to offer.

ADVANTAGES OF FNAC OVER CNB

- Greater mobility of the needle during aspiration allowing an increased area of sampling (CNB obtains tissue in one plane only).
- Greater sensitivity of the physical nature (palpation) of the lesion and therefore better needle localization.
- Better evaluation of the texture of the lesion during the aspiration, which helps to determine the need for additional needle passes and diagnosis. For example, gritty, rubbery, or “fatty” resistance feelings suggest possibilities of carcinoma, fibroadenoma, and fat necrosis, respectively.
- Ability to immediately and accurately assess the adequacy of the specimen obtained, avoiding unnecessary repetition of the procedure and reducing time for diagnosis by the immediate identification of an inadequate aspirate.
- Processing time is significantly less when compared to both paraffin embedding and frozen section processing of needle biopsies, thereby permitting a more timely immediate assessment and handling of a larger number of patients.
- Shorter time for final diagnosis.

DISADVANTAGES OF FNAC WHEN COMPARED TO CNB

- Limited tissue available for ancillary studies and research endeavors (paraffin embedded, cutting needle cores of tissue can yield hundreds of slides for analysis, whereas the average aspirate might have between four and ten slides).
- Low cellular yield due to the nature of the lesion, despite the performance of an appropriate aspiration, for example, desmoplastic stroma, in some types of carcinomas.
- Difficulty in classifying proliferative lesions that have a degree of atypia but lack unequivocal features of malignancy.
- Inability to distinguish in situ versus invasive carcinoma, a significant drawback when neoadjuvant chemotherapy or sentinel lymph node biopsy is considered.
- High rate of insufficiency when aspirating microcalcifications or other non-palpable lesions under imaging guidance due to a paucity of epithelial tissue present. As a result, there is a general agreement that microcalcifications should be assessed by CNB and not by FNAC.
- Less familiarity/experience among pathologists. Maybe this is one of the main reasons to replace FNAC by CNB. In many centers, pathologists are more comfortable with histology not trained adequately to read cytological slides and as a result are more. This is one of the main reasons responsible for the decline of breast FNAC.

COMPARISON OF (FNA) AND CORE BIOPSY, FOCUSING ON SENSITIVITY, SPECIFICITY, AND PREDICTIVE VALUES:

- High specificity means that when FNA indicates benign results, it is often correct. However, false negatives can occur.
- A negative FNA result generally suggests a low likelihood of malignancy, but the risk of false negatives is present.
- A positive FNA result indicates a high likelihood of malignancy, but some false positives can occur.
- Core biopsy is effective in confirming benign lesions, reducing the chances of false positives.
- A positive core biopsy result strongly indicates malignancy, with a lower chance of false positives.
- A negative result suggests a low risk of malignancy, but some false negatives can still occur.

	FNA	Core Biopsy
Sensitivity	70-90%	85-98%
Specificity	80-95%	90-98%
Positive Predictive Value (PPV)	75-90%	>90%
Negative Predictive Value (NPV)	90-95%	90-95%

FNAC EQUIPMENTS

CORE BIOPSY NEEDLE

- Thank You