

# Biopsy

Dr.mohamad habash

## Definition

Retrieval of part or all of tissue or organ for histological evaluation to ascertain future management.

# Indications

- 1-Determine tissue diagnosis where clinical diagnosis is in doubt e.g. Tru-cut liver biopsy for cirrhosis of unknown etiology.
- 2-Determine whether the tumor is benign or malignant.
- 3-Ascertain the degree of differentiation (grade).
- 4-Ascertain extent of spread of disease (stage) e.g. sentinel LN biopsy in melanoma
- 5-Determine the tissue of origin
- 6-Determine different therapeutic pathways e.g. LN biopsy in lymphoma
- 7-Surgical resection margins provide critical information e.g. complete excision of the lesion (clearance of the margins)

# Types of biopsy

## 1) Cytological biopsy

☐ **FNAC**

☐ **Exfoliative cytology**

☐ **Brush cytology**

☐ **Fluid spin cytology**

## 2) Histological biopsy

### Incisional biopsy

☐ **Core biopsy**

☐ **Curettage**

☐ **Open incisional biopsy**

☐ **Frozen section biopsy**

### Excisional biopsy

# Fine needle aspiration cytology

## Uses:

- \* *Directly into a lump e.g. thyroid lump FNA*
- \* *Under U/S control e.g. breast lump FNA*
- \* *Under CT guidance e.g. liver lesion FNA*

## Advantages

Simple and minimally invasive

Cheap

Rapid result

Easily repeatable

Highly accurate for the diagnosis of a palpable mass or radio graphically visible lesion, false positive results are rare.

## Disadvantages

Gives cytological, but not architectural histology

Potential for spread of malignant cells

Sample may be insufficient, or only blood may be aspirated

May alter morphology of lesion for subsequent imaging

Depends on expertise of cytologist- may be operator dependent

**Exfoliative cytology** Cancer cells are shed from the surface of neoplasms arising in epithelial surfaces these cells can be sampled then smeared on a slide and examined for cytology, such as slide imprints from nipple in Paget's disease, cervical cytology or sputum cytology.

**Brush cytology** By collecting exfoliated cells using a brush, from intraluminal lesions .

Uses

- Endoscopically for GI lesions
- At ERCP for biliary or pancreatic lesions
- Bronchoscopically for pulmonary or bronchial lesions



**Fluid spin cytology** Used for pleural fluid, ascetic fluid, bronchoscopically for sputum and finally for urine, the latter is especially useful in monitoring patients with known urothelial tumors.

**Core biopsy** Uses a circular cutting device to retrieve a core of tissue, either manually or with a trigger device (Tru-cut<sup>®</sup>, Bioptigun<sup>®</sup>).

As FNA may be direct, U/S or CT controlled. *Useful for breast, liver and LN biopsy.*

## Advantages

- Simple, easily repeatable
- Provides a core of tissue for architectural and cytological evaluation

## Disadvantages

- ☒ Insufficient sample.
- ☒ May cause bleeding.
- ☒ May be painful or distressing to patient.
- ☒ Potential for spread of malignant cells.
- ☒ May alter morphology of lesion for subsequent imaging.

## Incisional biopsy

In incisional biopsies, only a portion or wedge of the lesion is sampled, and therefore the procedure is strictly of diagnostic nature.

### Advantages

May be performed endoscopically , laparoscopically or open.

May be useful when other biopsy techniques have failed.

Performed when the lesion is too big or too fixed to allow complete excision

Some can still be performed under local anesthesia in an out-patient setting

**Frozen section** Is where fresh tissue (in *&dry container without formalin*) is sent for rapid histological assessment (in 10-15 min), during the course of an operative procedure. The tissue is frozen in liquid nitrogen then rapidly sectioned and examined, and the result phoned back to the theatre.

### **Uses**

- \* *Assess operability e.g. to examine LNs in pancreaticoduodenectomy*
- \* *Localize tissues e.g. parathyroid glands*
- \* *Assess tumor margins*
- \* *Assess malignant status where pre-operative diagnosis is in doubt and more radical surgery may be required.*

### **Disadvantages**

- ⓧ Operator and histologist dependent*
- ⓧ Occasional false positive and false negatives*
- ⓧ May delay surgical procedure*

## Excisional biopsy

*In excisional biopsies, the entire lesion is removed, usually with a rim of normal tissue (safety margin), and therefore the procedure serves both diagnostic and therapeutic function. The decision whether to perform an incisional or an excisional biopsy depends primarily on the size, of the lesion; the smaller it is, the more logical to take it out completely when first encountered. Skin and superficial lesions are usually managed by excision too. Resectional biopsy may involve lobectomy, hemicolectomy or thyroidectomy.*

*Thank you*