

# Fine Needle Aspiration Cytology

## DIAGNOSTIC IMPORTANCE

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### Diagnostic Importance of FNAC:

- The purpose of FNAC is to obtain diagnostic material for cytological study from organs that don't shed cells spontaneously.
- FNAC is done for the diagnosis of benign and malignant lesions without surgical intervention.
- FNAC is routinely used to take samples for cytological analysis from palpable breast lesions, enlarged thyroid glands, lymph nodes, salivary glands and any other palpable nodule.
- Advances in radiological imaging has increased the use of aspiration biopsies.
- CT guided and Ultrasound guided biopsies are done for, lung tumors, intra-abdominal masses, liver biopsies, kidney, prostate lesions, gonads, skeletal lesions, bone marrow and tumors in the retroperitoneal areas.
- The method of FNAC was first described in 1930, for the diagnosis of tumors by Martin Ellis.

### Advantages of FNAC

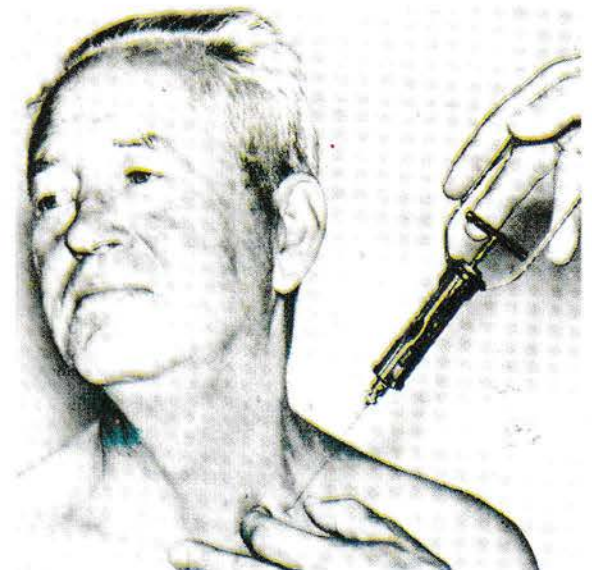
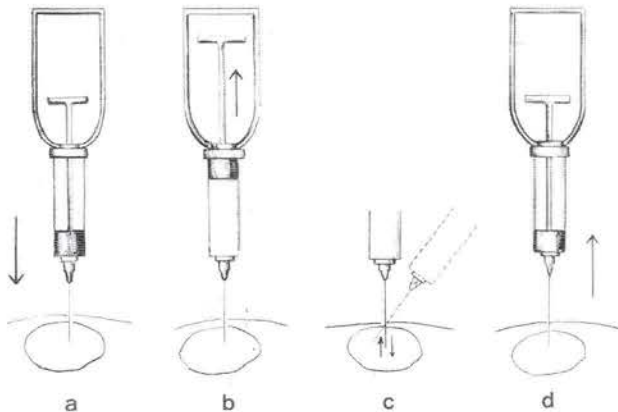
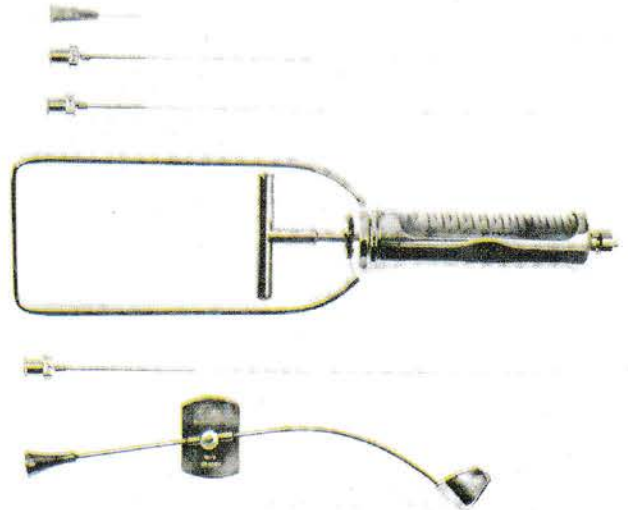
- Principal advantage of this method of diagnosis is, that in most cases no hospitalization or anesthesia is required, as FNAC can be performed as an outdoor procedure. Thorough clinical history should be provided to the pathologist for the successful diagnosis.
- FNAC is a reliable, rapid & inexpensive method of diagnosis of lesions observed on physical examination or detected by CT or Ultrasound.
- Reduced risk of trauma, and minimal admixture of blood in the aspirate.
- Diagnosis of benign or malignant lesions without surgical intervention.

## Basic Equipment of FNAC

- Basic Equipment : Syringe with a well fitted needle. 10-20 cc. disposable syringe is used, length of needle varies with site of biopsy.
- 22-25 gauge, 0.6-10 mm external diam. Disposable needles. 3.8 – 8.8 cm long or 15-20 cm long.
- Alcohol & Betadine skin sponges, for cleaning.
- Sterile gauze pads.
- Microscopic glass slides with frosted ends.
- Vial of balanced salt solution for tissue culture, transport medium.
- Vial containing formalin.
- Alcohol spray fixatives.
- Vial for local anesthesia.

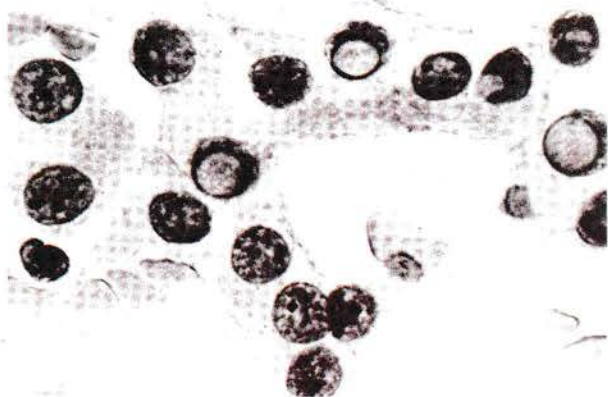
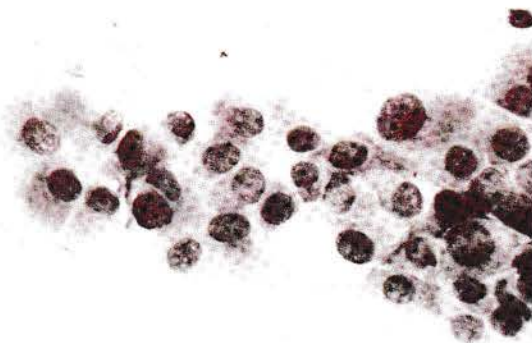
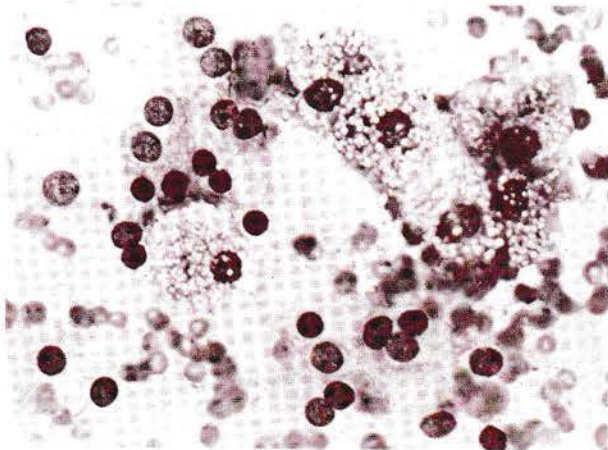
## Technique for FNAC

- Skin is cleaned with an antiseptic & suspected area is fixed with one hand.
- Needle is inserted into the lesion, then the plunger of syringe is retracted, creating negative pressure in the syringe.
- Needle is moved back & forth up to five times and material is aspirated in the syringe.
- Sometimes needle has to be inserted again in the lesion in different area & same procedure is repeated.

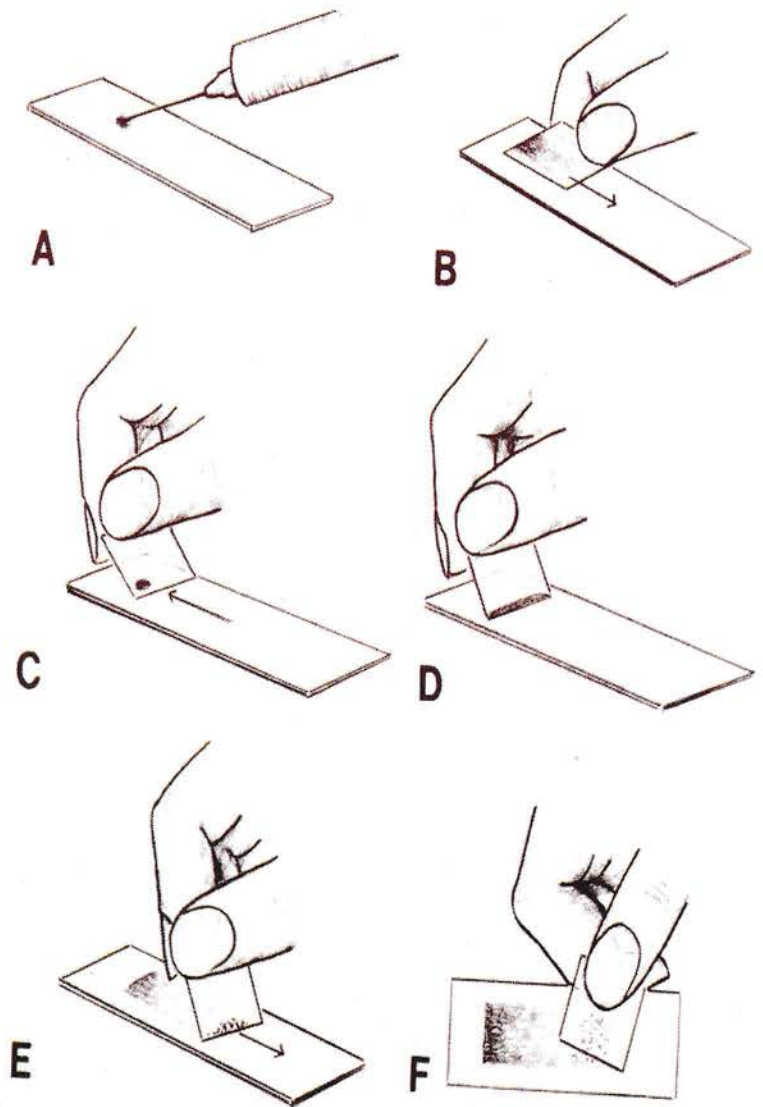


## Preparation of Smears:

- Smears are prepared by putting the material in the needle on the glass slides, on one slide and it is spread with a thick cover slip or glass slide.
- Fix it with alcohol, while it is still wet and stain with H & E.
- Air dried smears are stained by Giemsa's Method or Papinacolue Method ( PAP ).
- Nuclear details are of paramount importance in the aspiration cytology & 80 % aspirated cells should be viable.



Microscopic views of different smears



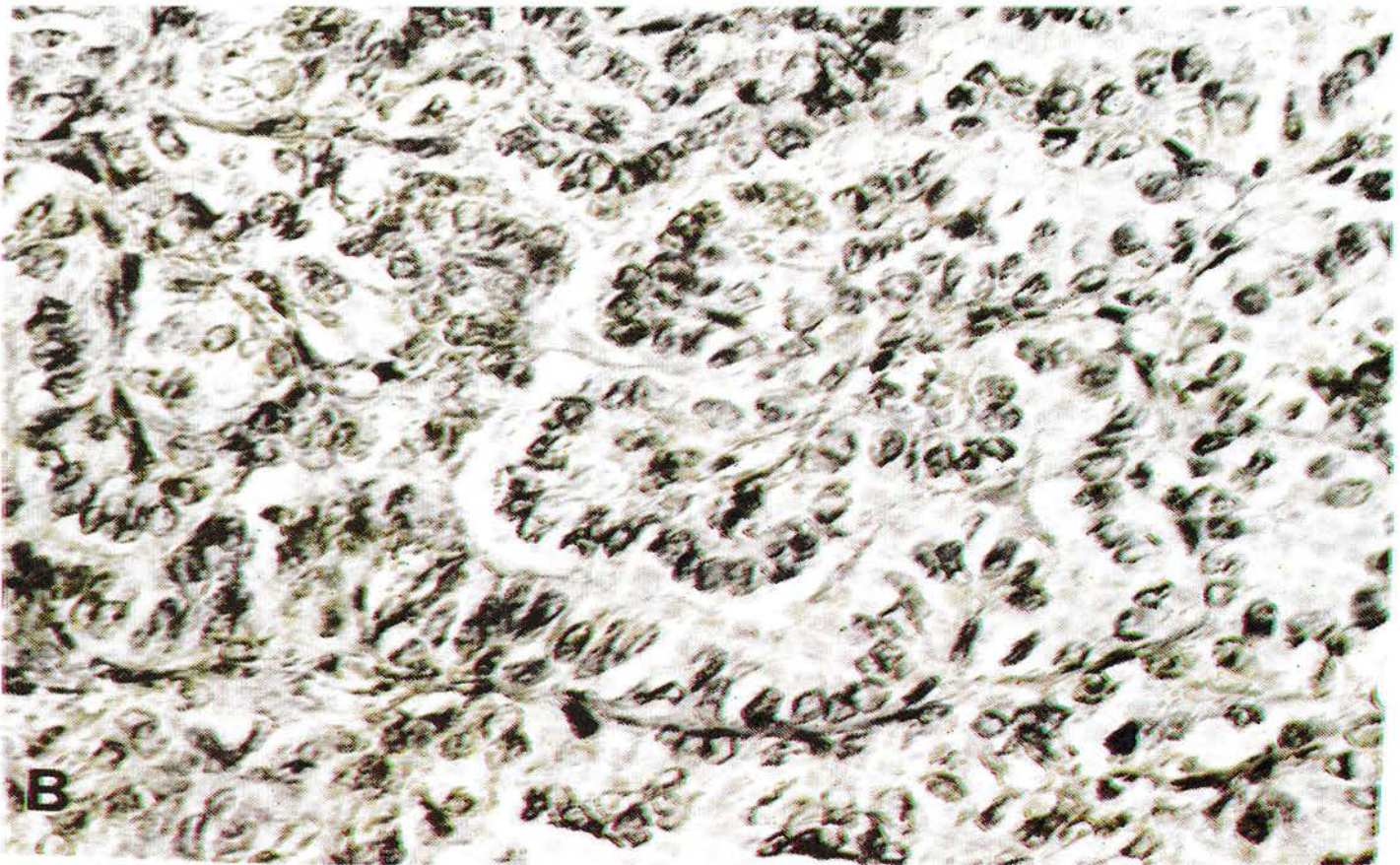
Technique of smear preparation

## Complications:

- Traumatic complications are infrequent & are of minor degree e.g. a hematoma forms at the site of aspiration.
- Pneumothorax in aspiration biopsy of lung can occur. Lung re-expands in few days.
- Infections are very rare, in intra-abdominal & trans abdominal needle biopsies.
- Dissemination of tumor cells or cell cluster via the needle track is very rare.
- Dissemination of tumor cells, via blood & lymphatic following FNAC is uncommon.

## Conclusions:

- Aspiration cytology is an integral part of modern diagnosis, obviating surgical intervention in many cases and giving pre-operative information.
- Technique is simple, but skill of the pathologist is crucial to the utility of this method.



Microscopic view of smear