

PAP SMEAR

❖ INTRODUCTION

- The Papanicolaou test (abbreviated as pap smear) also known as cervical smear is a method of cervical screening used to detect potentially precancerous and cancerous process in the cervix.

[Cervical Screening:- it is the process of detecting and removing abnormal tissue or cells in the cervix before cervical cancer develops.]

- A pap smear is performed by opening the vaginal canal with a speculum then collecting a cells at the outer opening of the cervix at the transformation zone (where the outer squamous cells meet the inner glandular cells).

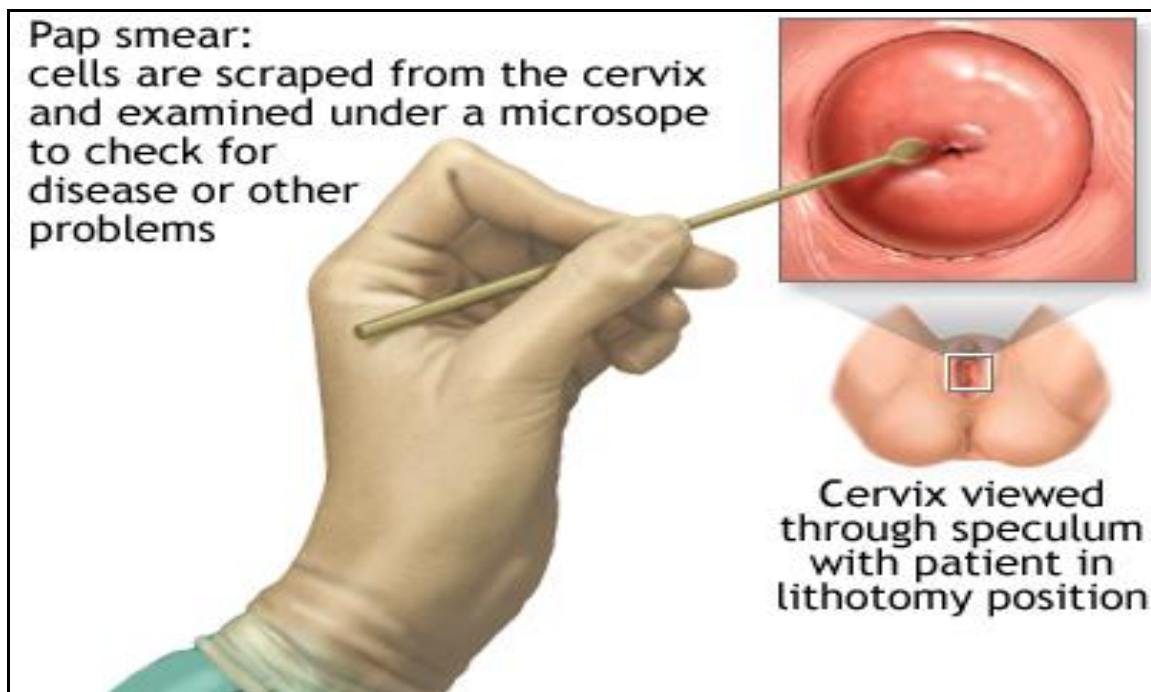


Figure 1 scrapping the cervical cells

❖ **PROCEDURE**

➤ **COLLECTION OF MATERIAL:-**

- The cervix is exposed with Cusco's vaginal speculum without lubricant and prior to bimanual examination.
- Lubricant tend to distort cell morphology.

➤ **CERVICAL SCRAPPING:-**

- A cervical smear is best collected using ayre's spatula or cervical brush. Ayre's spatula made up of wood or plastic. Whole of the squamocolumnar junction has to be scrapped to obtain good smears.
- Accurate application of the spatula to the squamocolumnar epithelial junction throughout it's whole circumference is essential; this means direct vision of a well-exposed cervix.
- A smear is made from the material thus obtained and handled in the same way as described above.
- The ayre's scrape or cervical brush scrape technique is unreliable in picking up endometrial cells but is more efficient than the Papanicolaou method in collecting cervical cells.
- Moreover, the resulting smear can be assessed more easily and more quickly in the laboratory.
- The ayre's spatula occasionally yields an insufficient number of endocervical cells.
- The extended tip spatula with a longer endocervical limb has been found to have a higher rate of satisfactory smears.
- The ayre's spatula can also be combined with the endocervical cytobrush to improve the yields of endocervical cells.

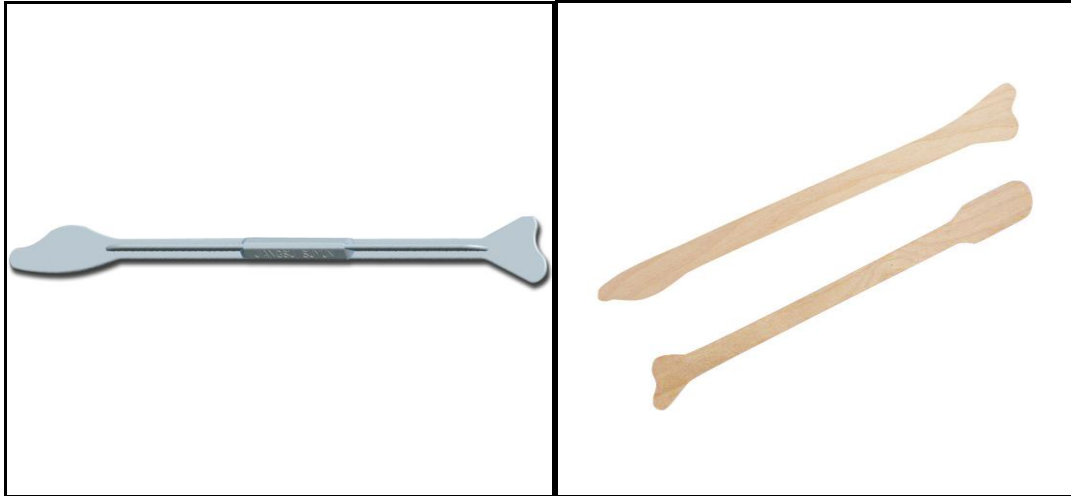


Figure 2 (A) plastic ayre's spatula

Figure 2 (B) wooden ayre's spatula

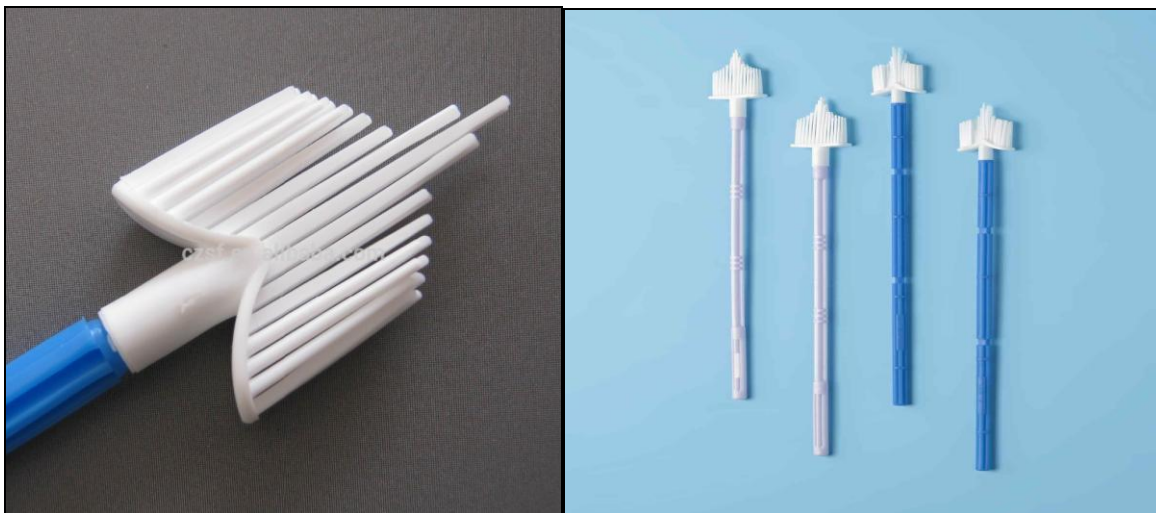


Figure 3. cervical brush to obtain cervical cells

➤ **VAGINAL POOL ASPIRATION**

- The exfoliated cells accumulated in the vaginal pool in the posterior fornix is collected either using a glass pipette about 15 cm long and 0.5 cm in diameter with a strong rubber bulb at one end or by a swab stick.

➤ **INTRA CERVICAL AND INTRAUTERINE ASPIRATION TECHNIQUES**

- These are not for routine screening purpose but for the investigation of women suspected on clinical grounds of harbouring malignant disease within the cavity of the uterus.
- The collection of the endometrial cells on rotating brushes and other gadgets is now supplanted by endometrial lavage under negative pressure.
- Indeed it is potentially dangerous to insert into the cavity of the uterus any instrument if there is a possibility of corporeal cancer or pyometra.
- Suction curettage by the vabra aspirator is an effective method of obtaining endometrial tissues using a negative pressure.
- The endometrial biopsy curette used for the investigation of patients with infertility
- Aseptic techniques are essential but these can be applied without anaesthesia and without the need to admit the patient to hospital.
- The suction aspiration of this type carries an accuracy rate of 90 percent in the diagnosis of endometrial carcinoma and can sometimes reveal a growth missed by conventional diagnostic curettage.

➤ **FIXATION AND STAINING:-**

- The principle of the staining is to achieve clear nuclear definition and to define cytoplasmic colouration.
- The material so collected should be immediately spread over a microscopic slide and at once put into the fixative agent called ethyle alcohol before drying.

- After fixing for about 30 min, the slide is taken out, air dried and sent to the laboratory with proper identification.
- The slide so sent is stained either with Papanicolaou method and examined by a trained cytologist.
- Indeed cyto pathologist and cytotechnologist are vital for the success of any screening programme.

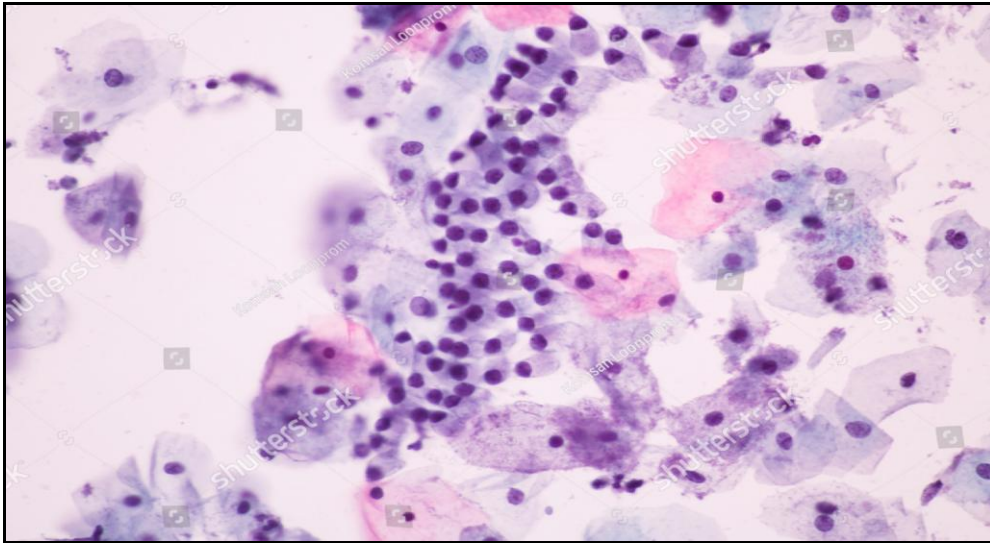


Figure 4. Normal cervical cells arrangement without cancer

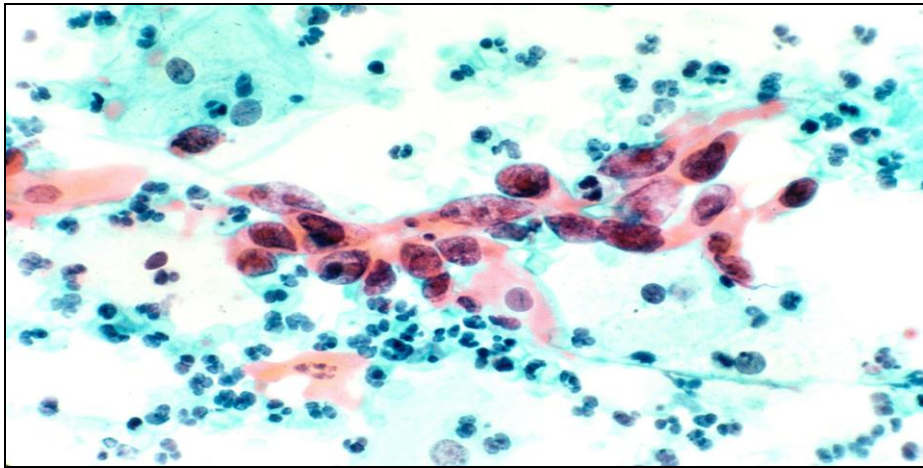


Figure 5. Squamous cervical carcinoma in situ; obtained by pap smear

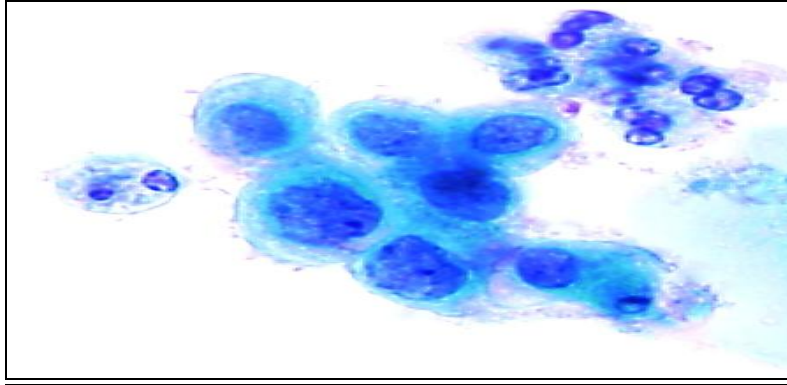


Figure 6. severe dyskeratosis found in pap smear

PAPANICOLAOU'S GRADING

Group I	Normal
Group II	Presence of borderline atypical cells - probably due to infection, No evidence of malignancy.
Group III	Cells suspicious of malignancy
Group IV	Presence of few malignant cells
Group V	Presence of large number of malignant cells.

- Reporting systems on the grading basis is replaced by some with two remarks only
 1. Normal
 2. Abnormal
- Abnormal smear indicates the presence of a lesion either CIN and or papilloma virus infection or invasive malignancy.

❖ TYPES OF SCREENING:-

1. CONVENTIONAL PAP:-

- In this, samples are smeared directly onto a microscope slide after collection.

2. LIQUID BASED CYTOLOGY:-

- The sample of epithelial cells is taken from transitional zone; the squamo-columnar junction of the cervix, between the ecto and endocervix.
- Liquid based cytology often uses an arrow shaped brush, rather than the conventional spatula.
- The cells taken are suspended in a bottle of preservatives for transport to the laboratory where using pap stains, it is analysed.

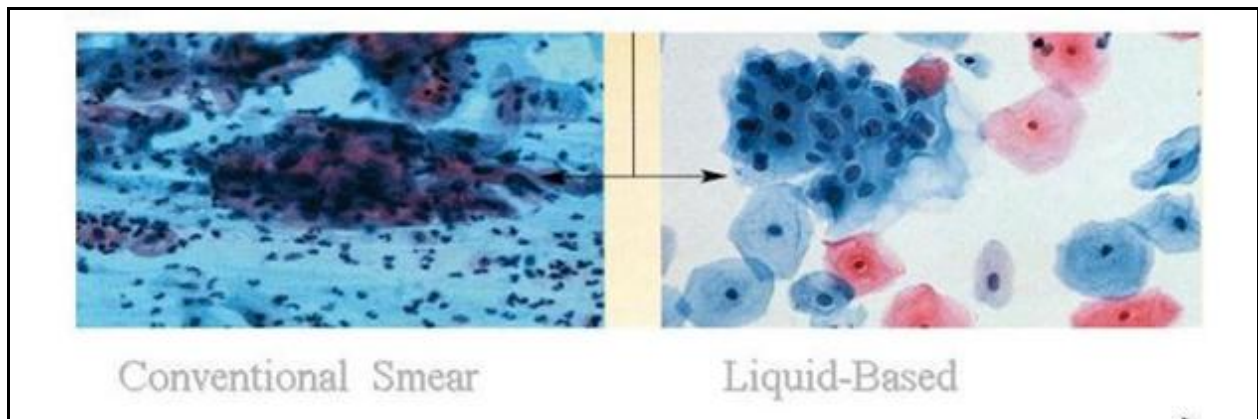


Figure 3 conventional and liquid based cytology

❖ **INTERVALS:-**

- All sexually active women should be screened starting from the age of 21 years or after 3 years of vaginal sex up to the age of 70.
- screening should be yearly till the age of 30. Thereafter, it should be done at an interval of every two to three years.
- After three consecutive yearly negative smears (ACOG 2003).
- The high risk group should be screened with HPV DNA testing combined with cytology.
- The negative predictive value of one negative HPV DNA test and two negative cytology tests are almost 100%.
- When both the tests are negative, screening interval may be increased to 6 years.

❖ **BENIFITS:-**

- The objective of screening is to reduce the incidence and mortality from cervical cancer.
- Pap smear test has been effective reducing the incidence of cervical cancer by 80% and mortality by 70%.
- as a result of pap smear , more and more pre invasive carcinoma is detected.
- Opportunistic screening done by a trained staff is effective when follow up is maintained.

❖ **INDICATIONS:-**

- The pap test is indicated to screen for malignant and premalignant lesions of the cervix.
- According to research, recommended age is 18 or onset of sexually activeness.
- Pap smear is best indicated in cervical screening.
- It is also indicated in **cyto hormonal study**.

- **The exfoliative cell cytology** is used in follow up cases of carcinoma cervix treated either by surgery or radiotherapy.
- The pap smear is also indicated in **sex chromatin** study
 - In this the materials are from scrapping of buccal mucosa and to be stained with papanicolaou stain.
 - The presence of bar body in more than 25% cells is diagnostic of female sex.
- **Aspirated ascitic, cystic or pleural fluid** is subjected to papanicolaou stain for evidence of malignant cells.

REFERENCE BOOKS

DC DUTTA'S TEXTBOOK OF GYNECOLOGY

- BY HIRALAL KONAR
- 7th EDITION(30TH JUNE 2016)
- PUBLISHERS: JAYPEE BROTHERS
- LANGUAGE: ENGLISH

SHAW'S TEXTBOOK OF GYNAECOLOGY

- BY HAWKINS & BOURNE
- 15TH EDITION
- PUBLISHER: ELSEVIER
- LANGUAGE: ENGLISH

JEFFCOATE'S PRINCIPLE OF GYNAECOLOGY

- BY PRATAP KUMAR & NARENDRA MALHOTRA
- 7TH EDITION
- PUBLISHER: JAYPEE BROTHERS
- LANGUAGE: ENGLISH

WEB ADRESSES

1. <https://bit.ly/2IHbhPZ>
2. <https://bit.ly/2MA6en0>