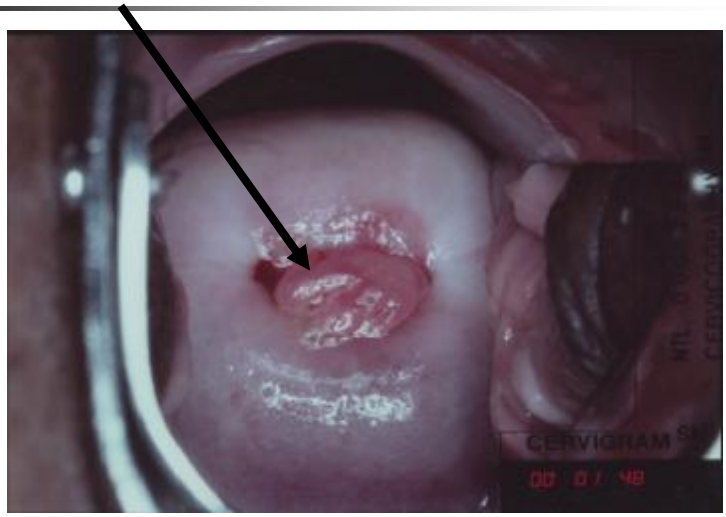
Cervical pathologies - 1

ENDOCERVICAL POLYPS

- endocervical polyps is common and usually increases with age up to the menopause.
- Occasionally these polyps will be symptomatic producing heavy vaginal discharge or bleeding upon coital contact.
- Histology of these polyps consist of columnar epithelium sometimes with squamous metaplasia across its tip
- Malignant change is most unusual. However, if these polyps are removed by polypectomy, tissue should be sent for histology.

Cervical polyp



PREMALIGNANT CONDITIONS OF THE CERVIX

- The disease has a relatively long natural history, and intervention and treatment in the premalignant phase is highly effective.
- The accessibility of the cervix and the availability of a simple test for the presence of pre-malignancy make it suitable for screening.

Terms and explanations:

Squamo-columnar junction (SCJ):

Where squamous and columnar tissue meet; this is not fixed, but is affected by metaplasia

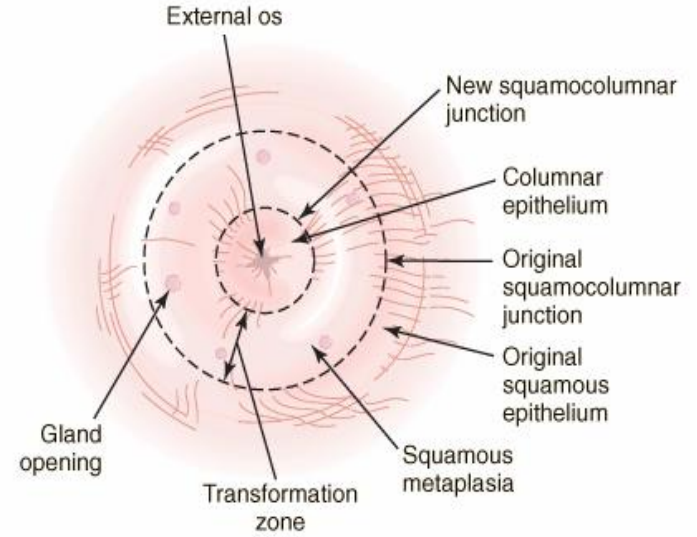
Metaplasia:

A physiological process whereby columnar epithelium is replaced by squamous tissue in response to the acid environment of the vagina

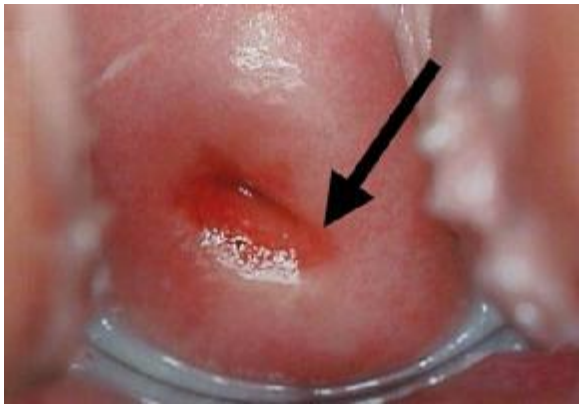
Transformation zone:

That area on the cervix that has undergone metaplasia; it is bounded by the original SCJ and the present SCJ

Transformation zone



Squamo-Columnar Junction



TERMS AND DEFINITIONS:

Dyskaryosis:

A cytological term describing the nuclear abnormalities not synonymous with dysplasia

Dysplasia:

A histological term describing architectural abnormalities within tissue

CIN

Cervical intraepithelial neoplasia, graded 1–3 depending on severity: CIN I, CIN II, CIN III

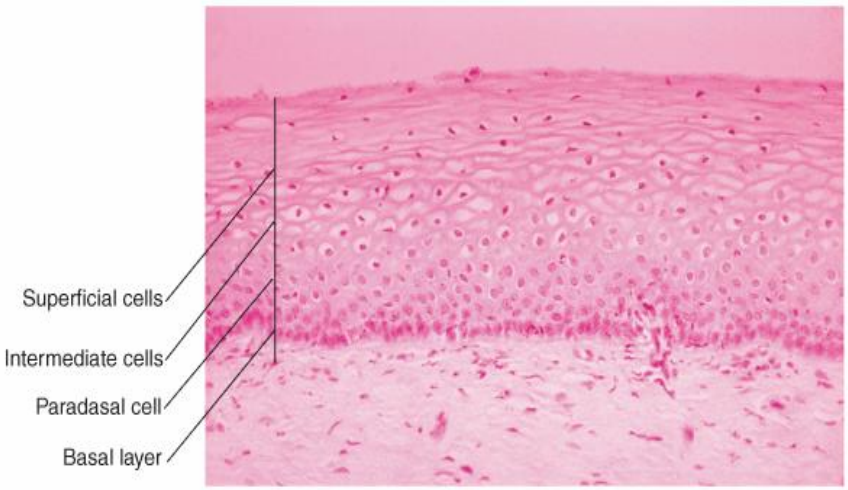
LSIL

Low-grade squamous intraepithelial lesion – Bethesda system grade equating to CIN1

HSIL

High-grade squamous intraepithelial lesion – Bethesda system grade equating to moderate and severe / CIN2 and CIN3

Normal cervical histology



premalignant cervical conditions (dysplasia) CIN

- The process of metaplasia can be disrupted by external influences and can lead to disordered squamous epithelium called dysplastic epithelium.
- Dysplastic epithelium lacks the normal maturation of cells as they move from the basal layer to the superficial layer.
- The nuclei tend to be larger, more variable in size and shape and more actively dividing than in healthy squamous epithelium.

aetiology

1- HPV is implicated in this process, although HPV infection alone does not appear to be sufficient to cause dysplasia,most of infections resolved spontaneously within 2 years.

2- Smoking?? Depressed local immunity

3- immune suppression appear to be additional factors which may act as co-agents, renal transplant and HIV.

HPV infection prevalence

- Genital HPV infection is extremely common with up to 80 per cent of sexually active women being HPV positive at some point during their lifetime, (Islam)
- 90 % of women will clear the infection within two years depend on the host immunity

- With approximately 15 % prevalence of the oncogenic HPV types 16 and 18, 31, 33.
- The majority of HPV infections result in CIN 1 and 60 % of these will regress without the need for treatment, while approximately 10 per cent will progress to high-grade lesions.
- The estimated prevalence of HPV DNA in cervical cancers is 99.7 per cent.

Dysplasias (cervical intraepithelial neoplasia) (CIN):

They are graded as mild, moderate or severe, depending on the degree of cytological atypia and also the thickness of the epithelium involved.

CIN grades:

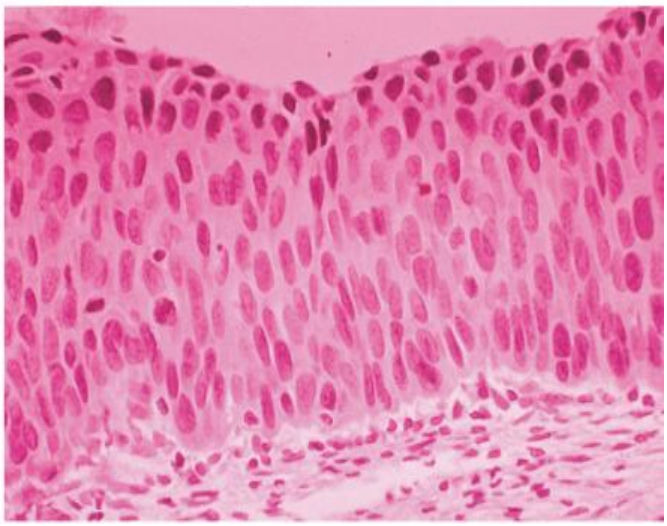
1- CIN I affects only the deepest third of the epithelium from the basal layer upwards, with maturation seen more superficial to that.

2- CIN II affects two-thirds of the thickness of the epithelium,

3- CIN III shows no maturation throughout the full thickness, it is severe dysplasia/ or called carcinoma in situ.

Carcinoma insitu (CIN III)

21000 new cases in UK each year
Peak age 25-29 yrs
If untreated 20-30% Will progress To invasive Cancer over The following 10-20 years



(risk factors for cervical carcinoma and need to be screened)

1- early marriage.
2- multiple sexual partners.
3- liberal sex.
4- young age at 1st pregnancy.
5- high parity.
6- lower socioeconomic status.
7- smoking.
8- immune compromised women

How can we prevent or reduce the high grade disease and cervical cancer?

Cervical screening programs:

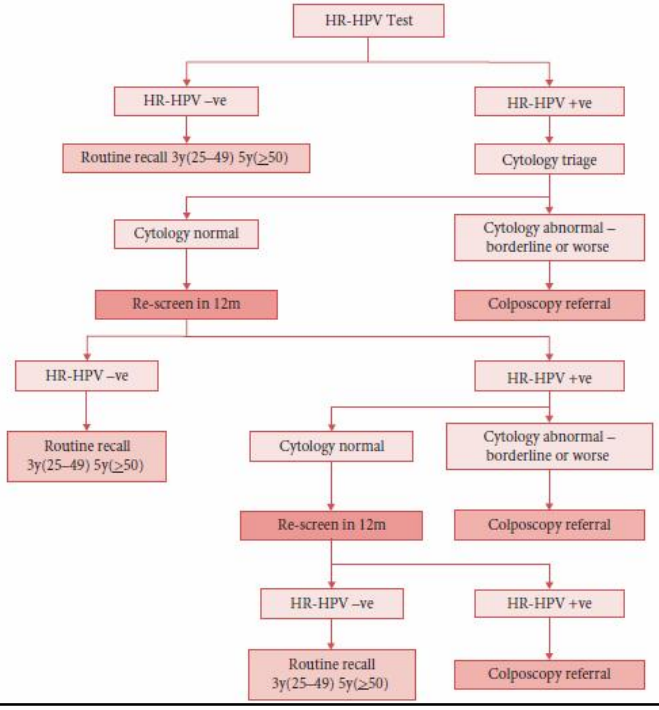
- a screening test is not diagnostic, but identifies a subgroup of the reference population at increased risk of the disease for which further tests should be carried out. Screening is always determined by sensitivity and specificity of screening tests. In this case, the reference population being screened comprises healthy, asymptomatic women.

Cervical screening programmes

- in underdeveloped countries 75% of the cases of cervical cancer present with an advanced stage, while in the developed countries 75% of the cases present early and cure can be expected.
- the screening program should cover the at-risk population women between the ages of 25 and 64 to offer cervical cytology screening every 3–5 years.

cervical screening programme: HPV primary screening algorithm

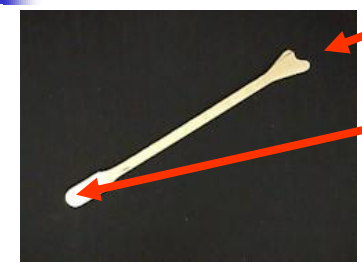
NHS



Screening by cervical cytology (pap smear):

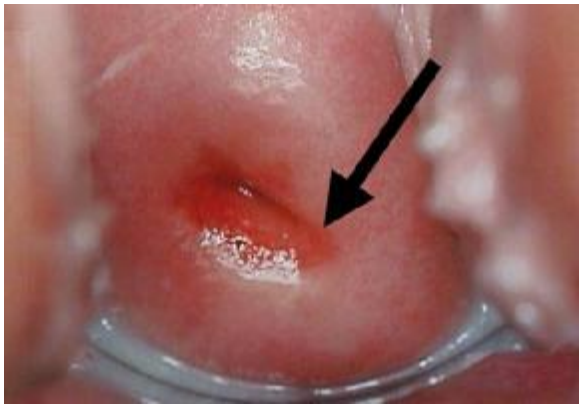
- technique developed by Papanicolaou to collect the cells that had been shed from the skin of the cervix, spread them on a glass slide and stain them using a specially developed technique.
- Exfoliated cells are collected by vaginal wash or by scraping the cervix by a wooden spatula (Eyre's)

Ayers Spatula

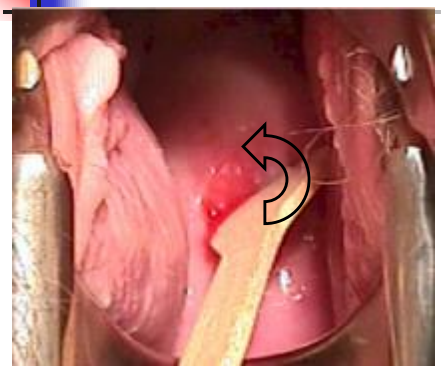


- Concave end to fit the cervix
- Convex end for vaginal wall and vaginal pool scrapings

Squamo-Columnar Junction

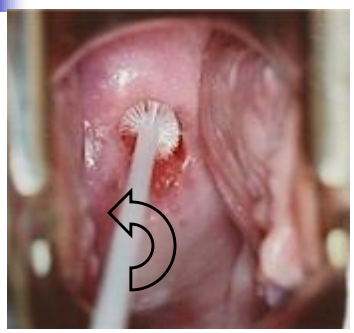


Sample Cervix (procedure)

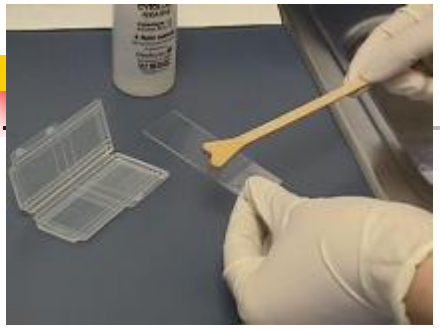


- Use concave end
- Rotate 360 degrees
- Don't use too much force (bleeding, pain)
- Don't use too little force (inadequate sample)

Cytobrush

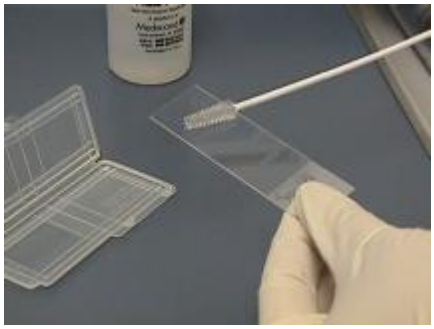


- Insert (until brush is fully inside cervical canal)
- Rotate 3-5 times



- As thin as possible
- Properly labeled

Spread on glass slides



Fixation of samples with alcohol

- the ‘Pap’ smear has been replaced by liquid-based cytology where a small brush is used to sample cells from the transformation zone and the brush head placed in a fixative
- This is then spun down and then the cellular aspect of the specimen examined cytologically.

- An abnormal smear can show cells in different degrees of maturity (dyskaryosis).
- cells can be classified as low grade (mild dyskaryosis and borderline change) or high grade (moderate and severe dyskaryosis)

- The sensitivity of the cervical smear in picking up women with CIN is around 70 %; however, as there is slow progression for most women with CIN to cancer, if a lesion is missed then this should be picked up on a subsequent smear.

- Liquid based cytology reduces the proportion of inadequate smears and increases the detection of true dyskaryosis.

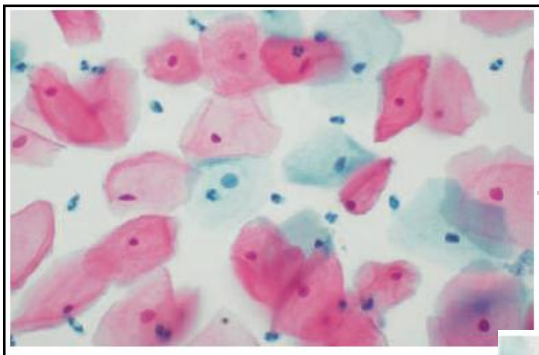


Figure 14.3 Liquid-based cytology – normal cytology.

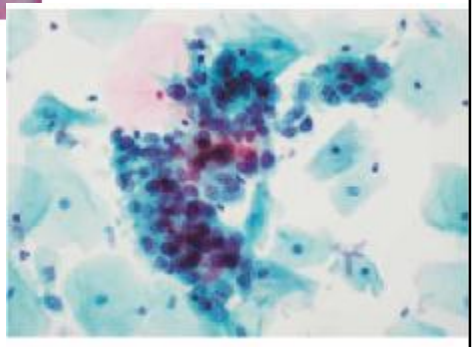


Figure 14.4 Liquid-based cytology – severe dyskaryosis.

Management of abnormal cervical smears

Ideally all women with abnormal cervical cytology should have colposcopic assessment.

- It was shown that the percentage of women found with high-grade CIN after a mild dyskaryotic smear is about 40 %.

Colposcopy

Colposcopy is a system of low power magnification, (binocular operating microscope with magnification of between 5 and 20 times). It has been used to examine the cervix in detail to identify CIN and pre-clinical invasive cancer

colposcope

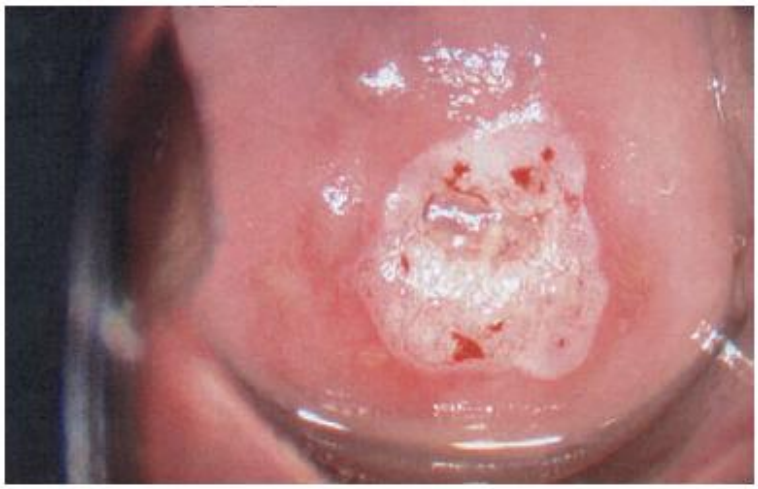
- The cervix is first examined at low magnification (×4–6).
- A saline-soaked cotton-wool ball is then applied, which moistens the epithelium, allowing the underlying blood vessels to be examined under higher magnification (preferably ×16 or more).

- A green filter may be used as it makes the capillaries visible more clearly.
- The shapes of the capillaries are studied and the intercapillary distances estimated

Application of 3-5 percent acetic acid to the cervix highlights CIN areas as white areas compared to pinkish normal areas

(dehydration of cytoplasm or denaturation of nuclear protein)??

Cervix with acetic acid aceto-white region



Schiller's test

- the application of Lugol's iodine solution to the ectocervix. The normal squamous epithelium will stain dark brown because it contains abundant glycogen, whereas columnar epithelium, abnormal squamous epithelium and immature normal squamous epithelium will not stain brown (called Schiller positive)

Abnormal colposcopic findings are: (very important)

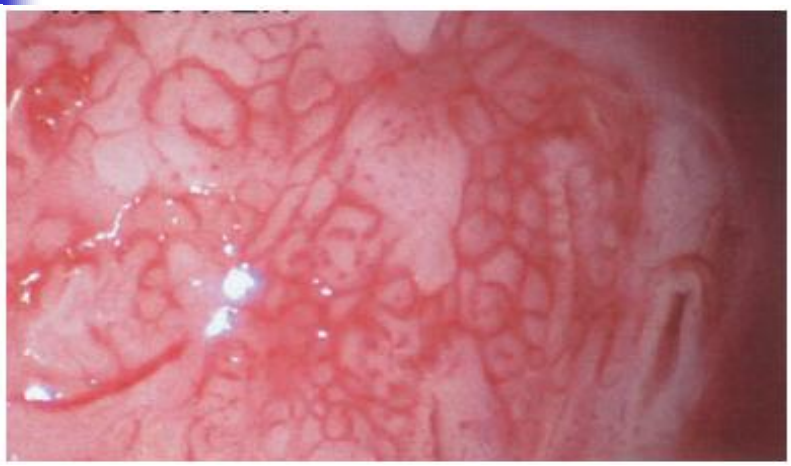
1-Acetowhite epithelium

2-abnormal subepithelial capillary pattern

*mosaicism and punctation are features of CIN.

*Abnormal branching vessel Bezarre shape vessels are suggestive of micro invasive carcinoma.

Cervix with cervical intraepithelial neoplasia (CIN) and new vessels.



Follow up of treated women

Frequency of follow up for treated women

- High-risk follow up: Women treated with high-grade disease (CIN2, CIN3, cGIN) require 6–12-month follow- up cytology and annual smears for the subsequent nine years at least, before returning to three to fiveyearly smears.

Follow up of treated women

- Low-risk follow up: Women treated for low-grade disease require 6-, 12- and 24-month follow-up cytology. If all are negative, then the patient may be discharged to three to five-yearly routine screening cytology.

Follow up of untreated women

- Women referred with a smear of mild dyskaryosis or less who have a low-grade lesion on colposcopsy may be treated or followed up at six-monthly intervals in the colposcopy clinic.
- If the lesion has not resolved within two years of referral, at least a biopsy is indicated.

Follow up of untreated women

- the positive predictive value for distinguishing low- from high-grade lesions is only 57 per cent.
- Therefore, follow up is warranted as a result of the inherent poor colposcopic discrimination between high- and low-grade lesions

HPV vaccination (to prevent cervical cancer)

- up to 70 per cent of cervical cancers are the result of infections caused by either HPV16 or 18, there is an expectation that a vaccination programme, if systematically applied, will result in a significant reduction of invasive and pre-invasive disease
- Two types of vaccines, directed against HPV 6, 11, 16 and 18.
- both types of vaccine effectively increase specific IgG, reduce or eliminate HPV infection, and effectively eliminate pre-invasive disease.