BENIGN AND PREMALIGNANT CONDITIONS OF THE CERVIX

Introduction:

- Transformation zone
- squamocolumnar junction (SCJ)
- cervical metaplasia
- Nabothian follicle

TERMS AND DEFINITIONS:

Dyskaryosis: A cytological term describing the nuclear abnormalities not synonymous with dysplasia

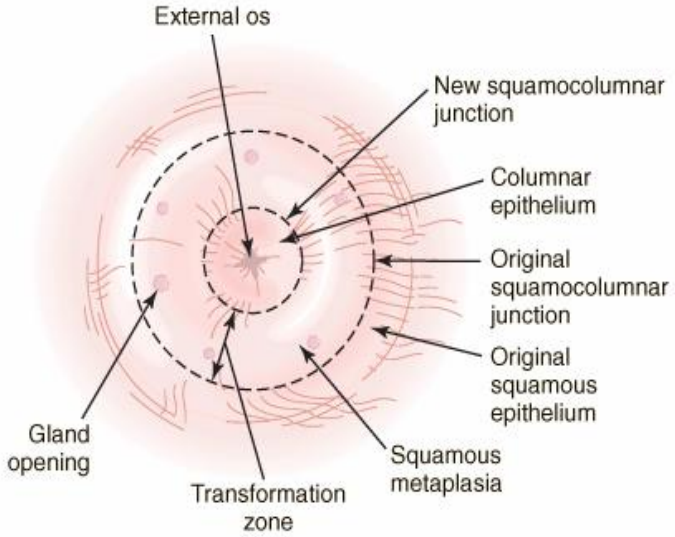
Squamo-columnar junction (SCJ):
Where squamous and columnar tissue meet; this is not fixed, but is affected by metaplasia

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

Dysplasia: A histological term describing architectural abnormalities within tissue

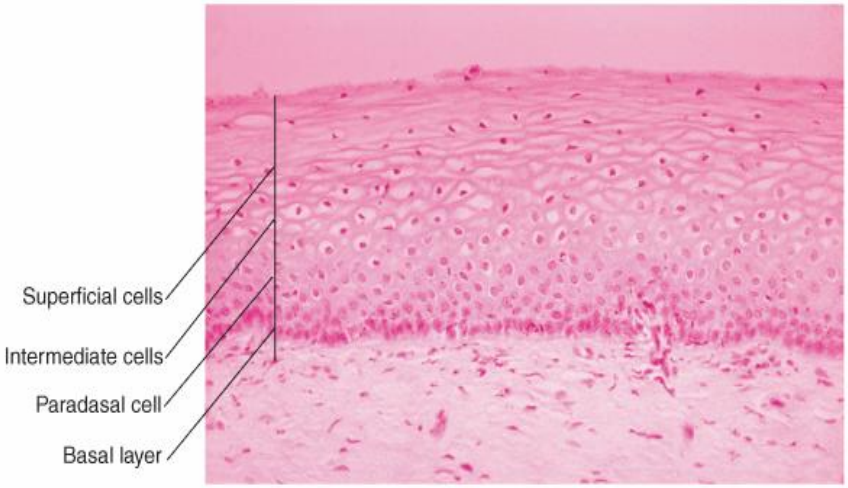
Transformation zone



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 metaplastic squamous epithelium across the tip
- Malignant change is most unusual. However, if these polyps are removed by polypectomy, tissue should be sent for histology.

Normal cervical histology



premalignant cervical conditions (dysplasia)

- 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.

2- Smoking and

3- immune suppression appear to be additional factors which may act as co-agents.

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:

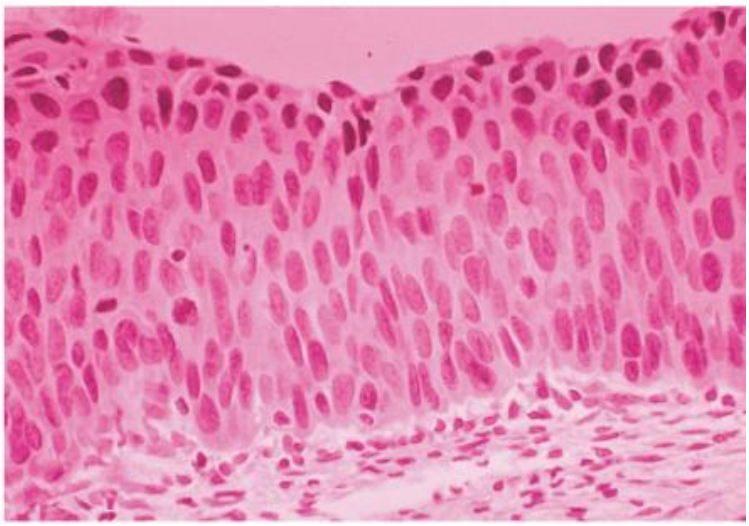
1- CIN I affects only the deepest third of the epithelium from the basal layer upwards, with maturation seen more superficial to that.

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.

Another simpler classification is the bethesda classification (low and high grade)

Carcinoma insitu (CIN III)



Natural history of CIN (Progressive potential of CIN)

- The progressive potential of high-grade lesions or CIN 3 has been calculated to be 18% at 10 years and 36% at 20 years.
- Women with continuing abnormal cytology after initial management of carcinoma in situ of the cervix were almost 25 times more likely to develop invasive carcinoma than women who have normal follow-up cytology.

Cervical screening programmes:

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.

Screening intervals for cervical pathology (in UK)

Age group	(years) Frequency of screening
25	First invitation
25-49	Three yearly
50-64	Five yearly
65+	Only screen those who have not beenscreened sinceage50 or those who have had recent abnormal tests.

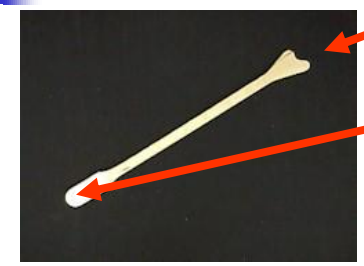
(risk factors for cervical carcinoma and need to be screened)

- 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.

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)
- The sensitivity of cervical cytology is about 50 percent.
- The specificity of cervical cytology is about 92 per cent.

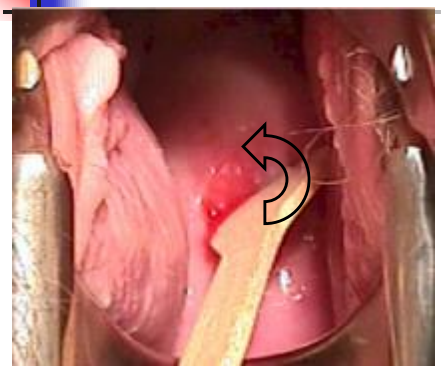
Ayers Spatula



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

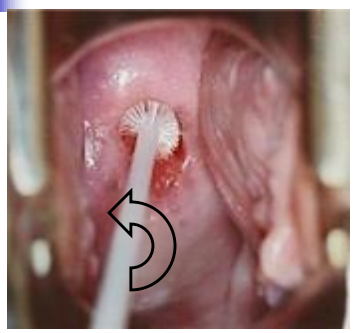
Squamo-Columnar Junction

Sample Cervix (procedure)

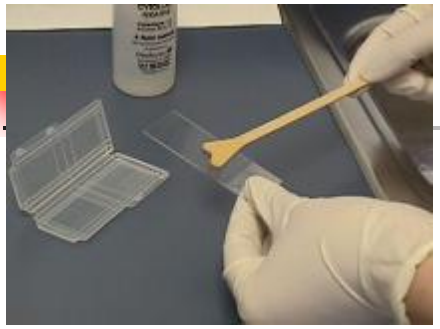


- Use concave end
- Rotate 360 degrees
- Don’t use too much force (bleeding, pain)
- Don’t use too little force (inadequate sample)

Cytobrush

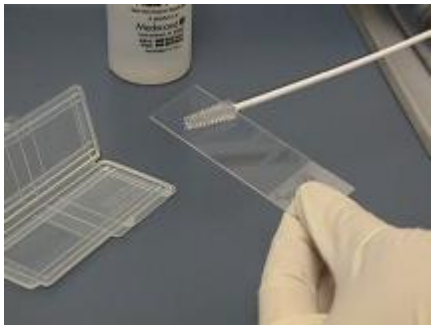


- Insert ~ 2 cm (until brush is fully inside cervical canal)
- Rotate only 180 degrees (otherwise will cause bleeding)



- As thin as possible
- Properly labeled

Spread on glass slides



Fixation of samples with alcohol

Results of pap smears:

- Borderline changes and mild dyskaryosis are very common in young women
- The proportion of moderate dyskaryosis is highest for women aged 20–29 years
- The proportion of severe dyskaryosis is highest in women aged 25–34 years

Management of abnormal cervical smears

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

Interpretation and management plans for different smear grades: للاطلاع رجاءا

Smear result	Interpretation	Management plan
Negative	No cellular abnormalities detected	Routine recall after 3–5 years
Borderline changes	Cellular appearances that cannot be described as normal	Repeat smear in 6–12 months and refer for colposcopy if any abnormality persists
Mild dyskaryosis	Cellular appearance consistent with underlying CIN1	Repeat smear within 6 months and refer for colposcopy if any abnormality persists
Moderate dyskaryosis	Cellular appearance consistent with underlying CIN2	Refer for colposcopy

Interpretation and management plans for different smear grades: للاطلاع رجاءا

Severe dyskaryosis	Cellular appearance consistent with underlying CIN3	Refer for colposcopy
Suspicious of invasive cancer	Possibility of invasive cancer	Refer for colposcopy
Glandular neoplasia	Cellular appearance suggests an abnormality in the endocervical canal or endometrium	Refer for colposcopy and gynaecological assessment
Inadequate	The smear is unable to be interpreted in the laboratory; it may be poorly prepared at the point of collection, obscured by blood or inflammatory cells or may not contain the right type of cells	Repeat the smear; if infection is suspected as the reason for the inadequate smear, treat this first

Colposcopy

Colposcopy is a system of low power magnification, (binocular operating microscope with magnification of between 4 and 25 times). It has been used to examine the cervix in detail to identify CIN and pre-clinical invasive cancer

- The cervix is first examined for abnormal vessel patterns, may be viewed through a green filter which highlights the blood vessels as black lines.
- Application of 3-5 percent acetic acid to the cervix highlights CIN areas as white areas compared to pinkish normal areas

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.

Abnormal colposcopic findings are:

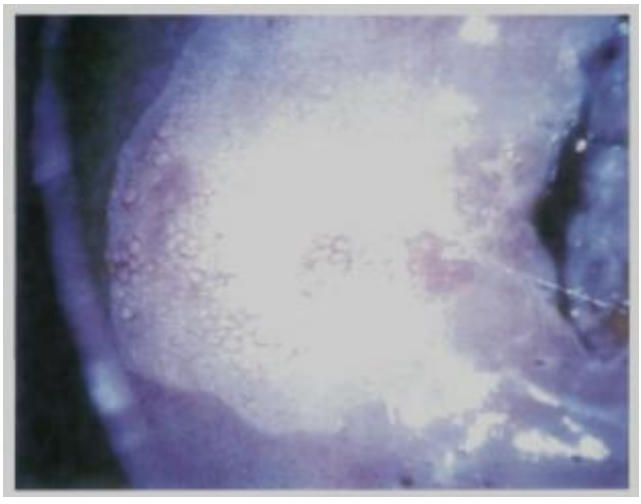
1-Acetowhite epithelium

2-abnormal subepithelial capillary pattern

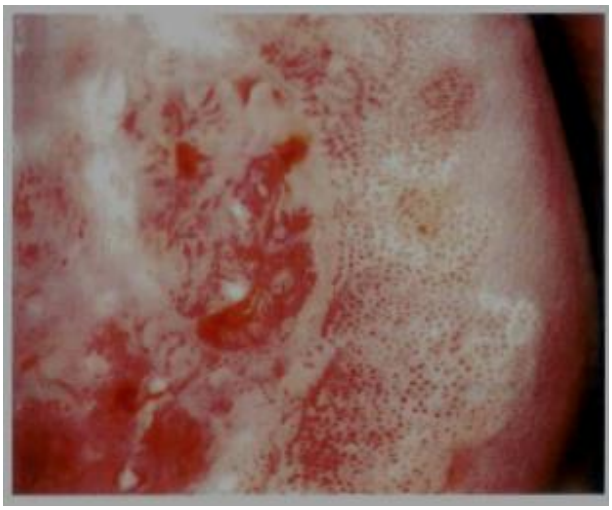
*mosaicism and punctation are features of CIN.

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

abnormal vascular pattern by colposcope



abnormal vascular pattern by colposcope



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
- There are now two commercially available 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.

TREATMENT OF CIN

two main methods of treatment are:

1- ablative techniques

2- excisional techniques

The success of treatment is usually defined as negative cytology six months following intervention

the ablative and excisional methods achieve cure (or success) rates of 90–98%

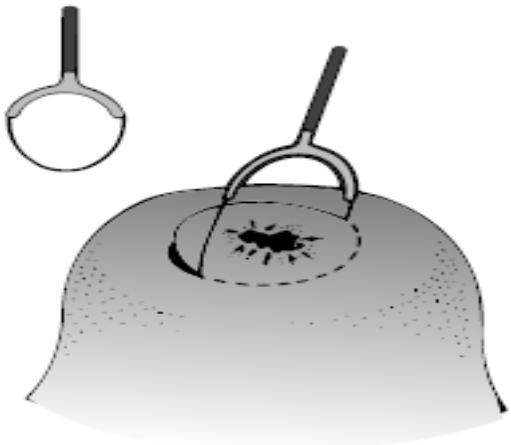
TREATMENT OF CIN

Excisional techniques	Ablative techniques
LLETZ – removal of the transformation zone using an electrodiathermy loop; requires local or general anaesthesia	**Radical electrodiathermy** – burning the transformation zone; usually requires general anaesthesia
Laser cone – removal of the transformation zone using the laser; requires local or general anaesthesia	**Cold coagulation** – destroying the transformation zone by applying a probe heated to 100–120°C; usually requires local anaesthesia
Knife cone biopsy – taking a cone with a knife; usually requires general anaesthesia	**Cryocautery** – freezing the tissue; does not require any anaesthesia
Hysterectomy – may be suitable if the woman has other gynaecological problems	**Laser** – vaporizing the tissue; requires local or general anaesthesia

Depth of destruction:

- The depth of destruction of any local treatment modality is important.
- Ablation to a depth of 5–8 mm has been recommended for erradication of the disease.

LLETZ



TREATMENT FAILURES

- The primary objective of treating women with CIN is to prevent invasive cervical cancer.
- women who have been treated for CIN need long-term follow-up.
- Colposcopic assessment is technically more difficult in those that have undergone previous treatment