SCREENING & Prevention of Cervical Cancer

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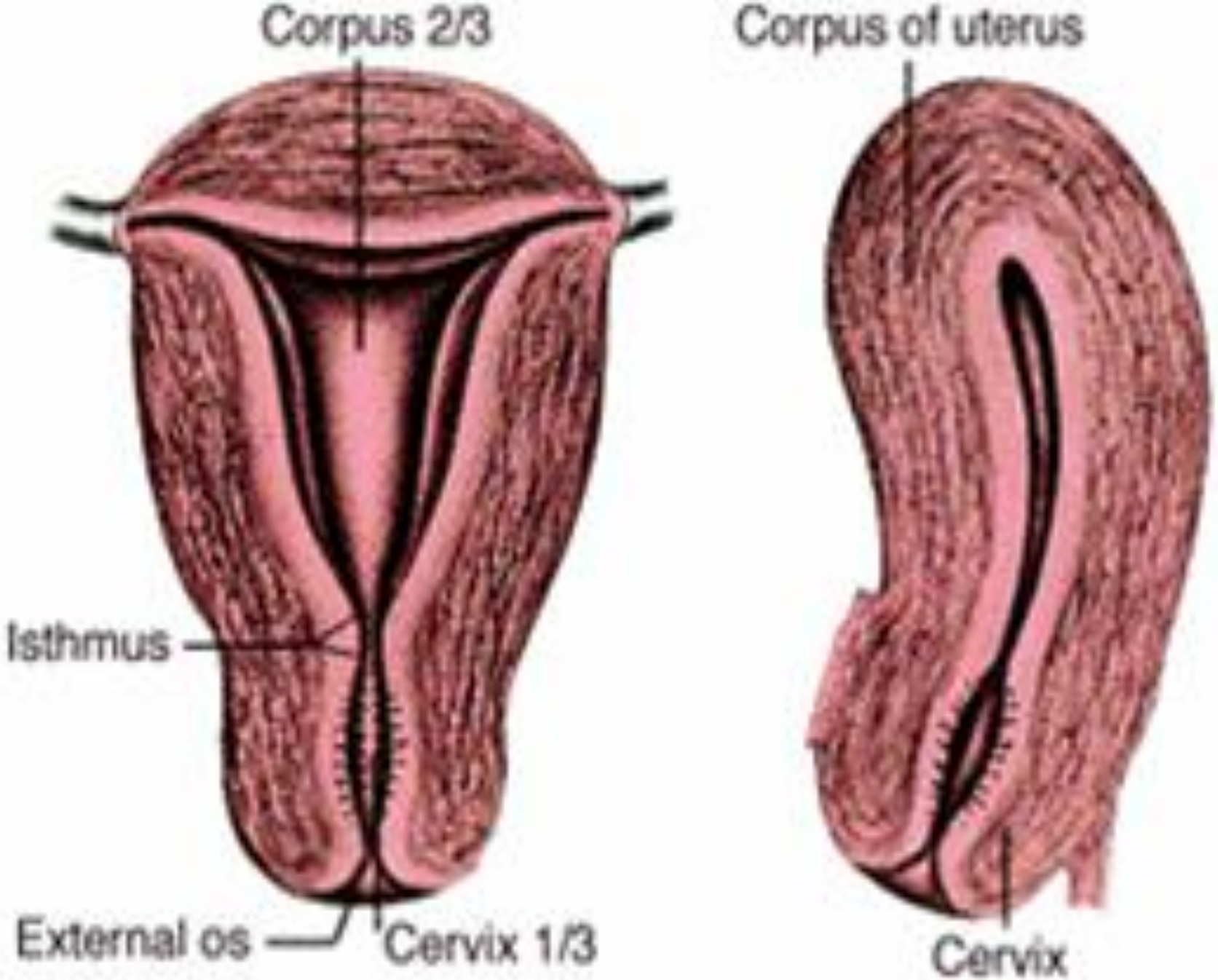


Adult multiparous


cervix
os

- Cervical cancer is one of the most common cancers, accounting for 6% of all malignancies in women.
- Worldwide, cervical cancer is second only to breast cancer in incidence and mortality.
- More than 471,000 new cases are diagnosed each year

Risk Factors

- Strong risk factors for cervical cancer
- **Early age at first intercourse(<16ys)**
- **history of multiple sexual partners**
- **history of genital HPV infection or other STD**
- **prior squamous intraepithelial lesion**

Risk Factors (cont.)

- **Additional risk factors include:**
- active or passive smoking
- Oral contraceptive pills
- Immunodeficiency or HIV positivity
- poor nutrition

Human papiloma Virus

- More than 80 types of HPV are known and some of them are associated with high incidence of cancer cervix e.g. types 16, 18, 34.. And usually cause flat papiloma which could not be seen by naked eye, unlike the benign warty lesions caused by types 6 and 11.

Prevention and Screening Cancer Cervix

- Education regarding risk factors for cervical cancer may lead to behavioral modification resulting in diminished exposure

Origin of cancer cervix

- The squamous cell carcinoma originate at the SCJ .
- The precursor lesion is carcinoma in situ (CIS) which if untreated develop into invasive cancer in 30-70% (over 10-12 years). However, in 10% of cases CIS develop into invasive cancer in less than one year

Cervical Intraepithelial Neoplasia

- The term cervical intraepithelial neoplasia refers to a spectrum of abnormalities of the surface epithelium. The spectrum includes changes in the TZ ranging from CIN I(mild dysplasia) to CIS (carcinoma in situ)

CIN Cytology

- Cytologic aberrations seen in CIN include: hyperchromaticity, abnormal chromatin distribution, increased nuclear to cytoplasmic ratio and nuclear pleomorphisim. These abnormalities may be seen in exofoliated cells in a Pap smear

CIN Histology

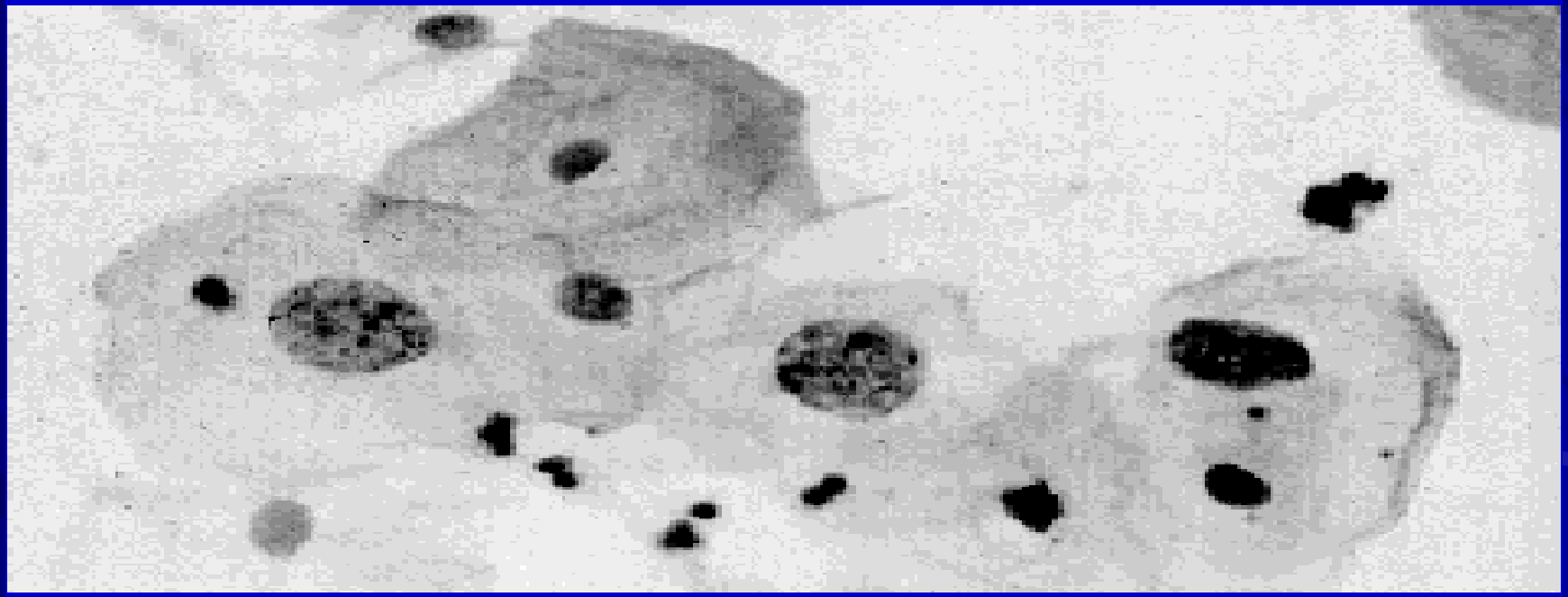
- CIN grading is based upon the proportion of the surface epithelium composed of undifferentiated cells characteristic of the basal layer. Increasing grade is associated with a progressive loss of epithelial maturation

CIN I

- Represents atypical cells with increased nuclear to cytoplasmic ratio and hyperchromatic nuclei present in the lower 1/3 of the epithelial layer from the basement membrane

CIN I

- Cytology

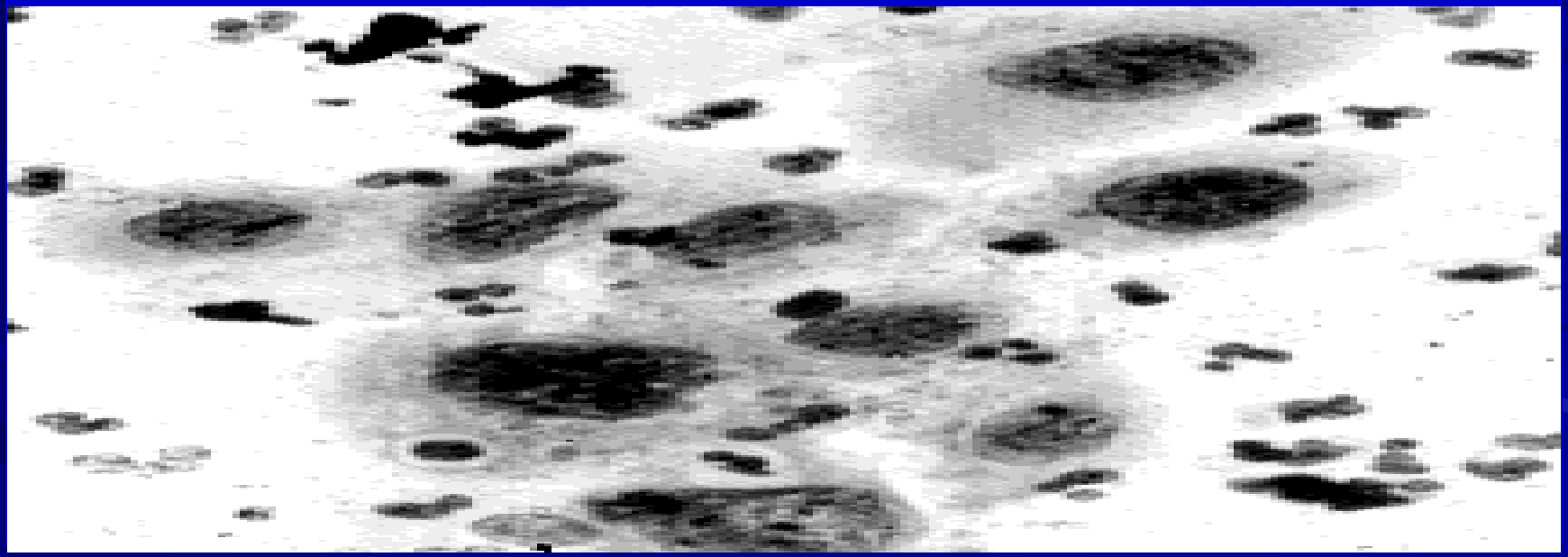


CIN II

- Shows further progression of nuclear abnormalities with greater involvement of the epithelial thickness. In CIN II, immature basaloid cells occupy the lower 2/3 of the epithelium

CIN II

- Cytology



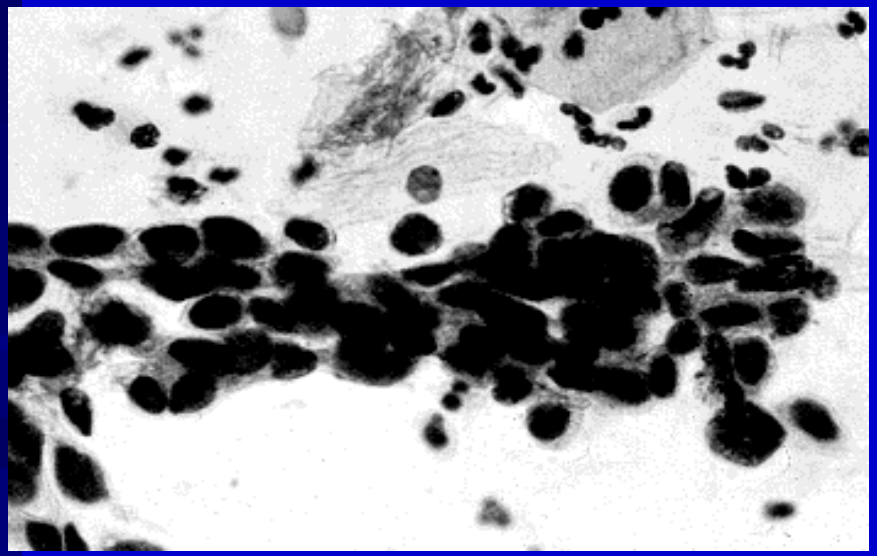
CIN III

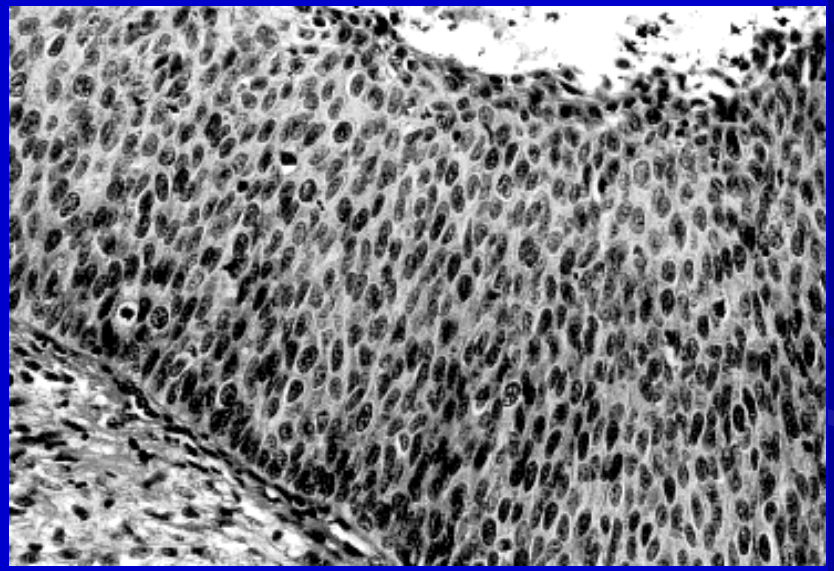
- Represents almost total involvement of the epithelium with only one or two layers of mature cells remaining at the surface. When the entire epithelium is involved, the term carcinoma in situ (CIS) is applied.

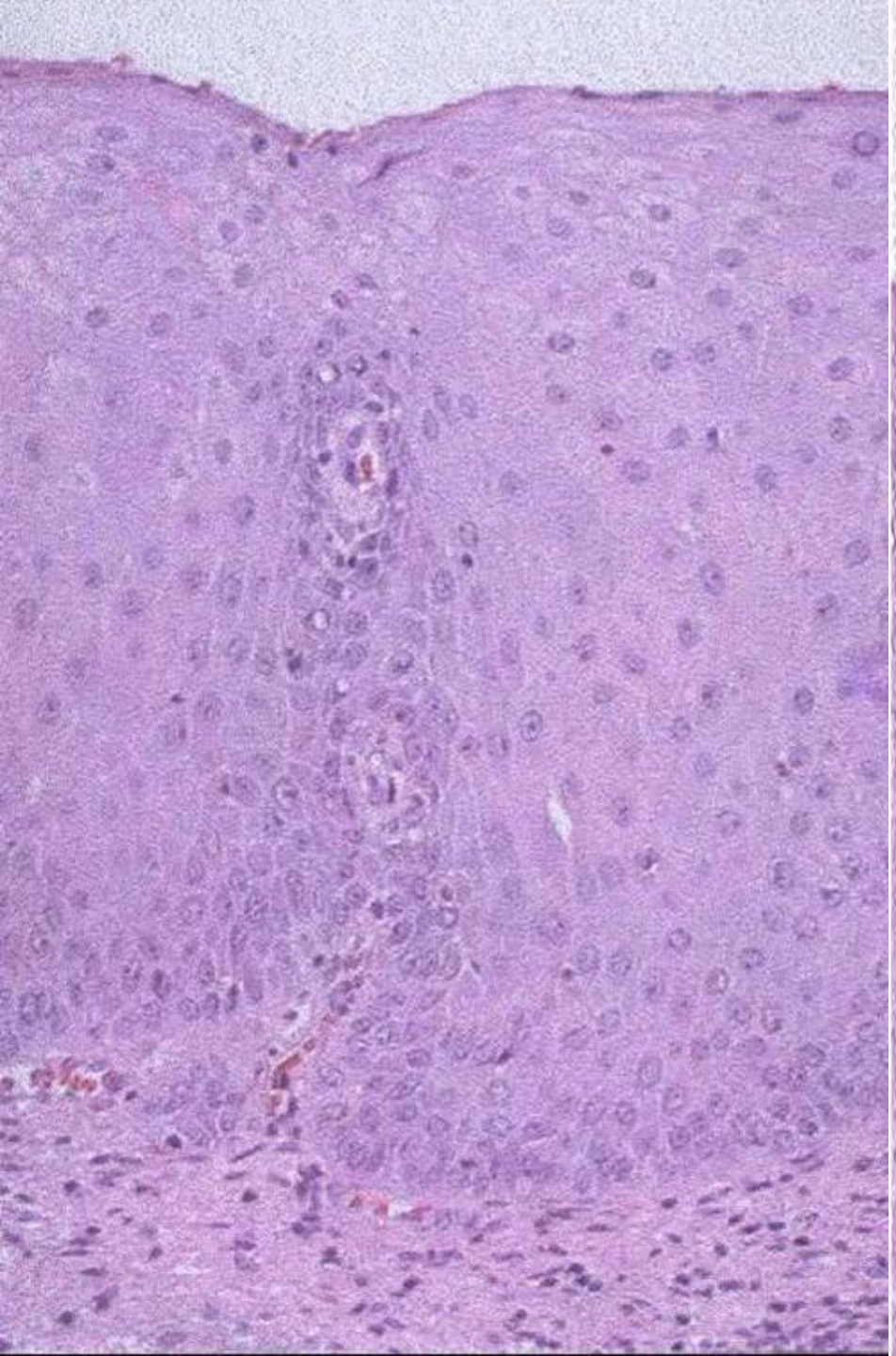
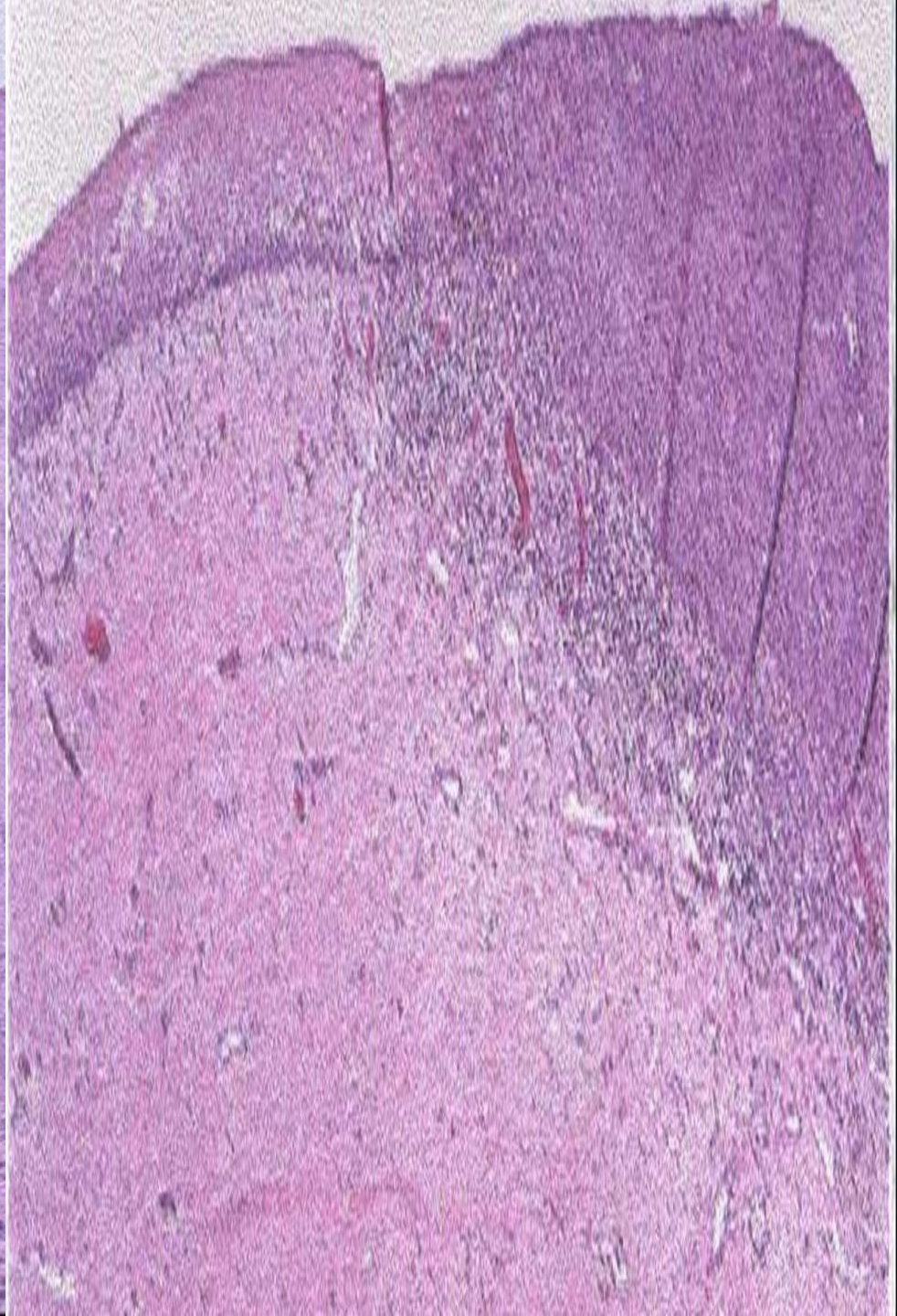
CIN III

- Cytology

Histology

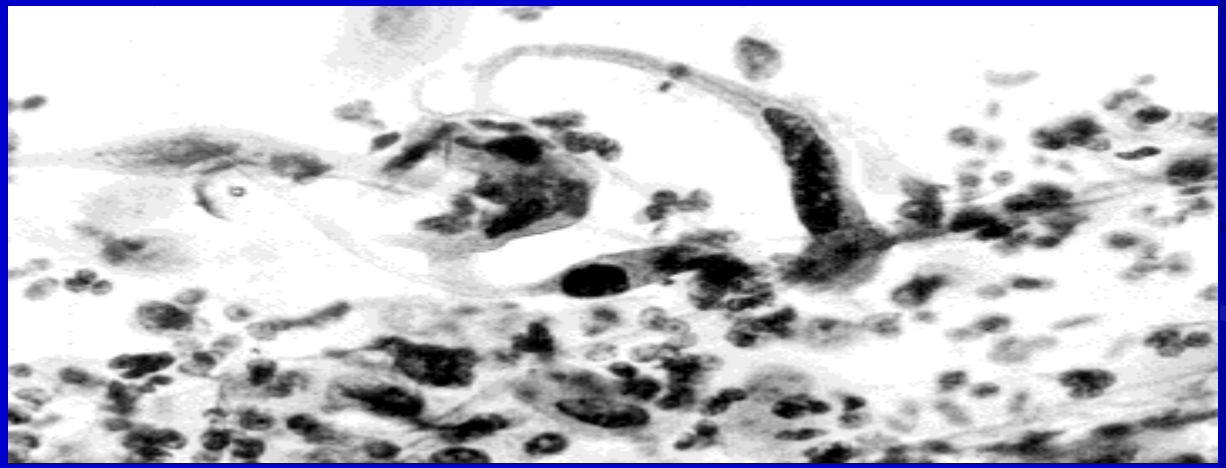




Invasive Cervical Cancer

- With all levels of CIN the basement membrane of the epithelium remains intact. Once the membrane is violated, invasive cancer is diagnosed



Pap Test

- The Pap test was introduced as a cervical screening test in 1943 by George Papanicolaou for whom it is named.
- It is a way to examine cells collected from the cervix and vagina.
- This test can show the presence of infection, inflammation, abnormal cells, or cancer.

How is a Pap test done?

- A Pap test is simple, quick, painless.
- While a woman lies on an examination table, the clinician inserts a speculum into her vagina to open it.
- To do the test, a sample of cells is taken from in and around the cervix with a wooden scraper and placed on a glass slide and rinsed in liquid fixative and sent to a laboratory for examination.

WHO Should Have Pap test

- Women who are or have been sexually active should have Pap tests and physical examination regularly every 3 years. There is no known upper age at which Pap tests cease to be effective.
- Women who have had hysterectomy for treatment of a precancerous or cancerous condition should have the end of the vaginal canal sampled for abnormal changes.

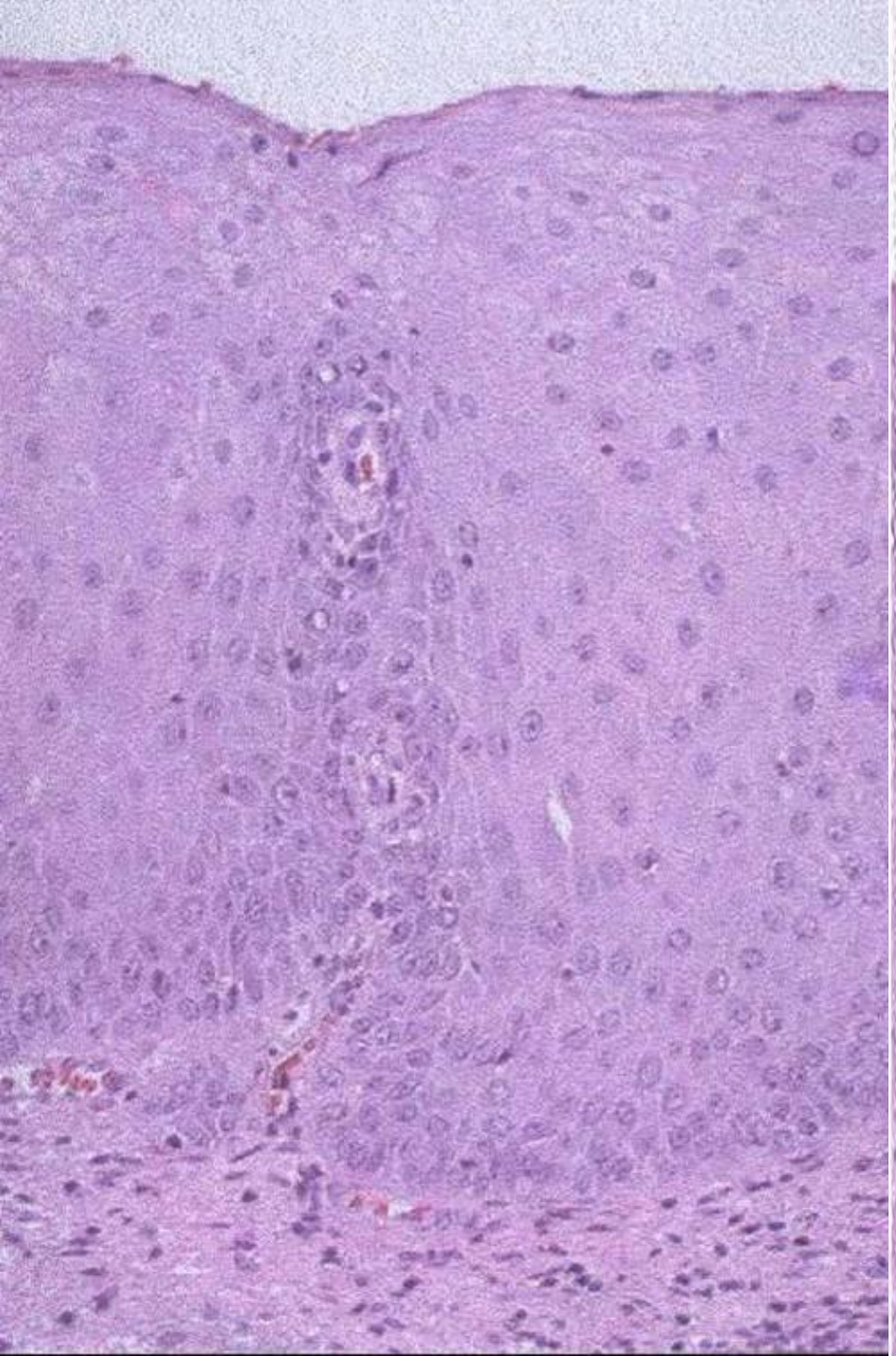
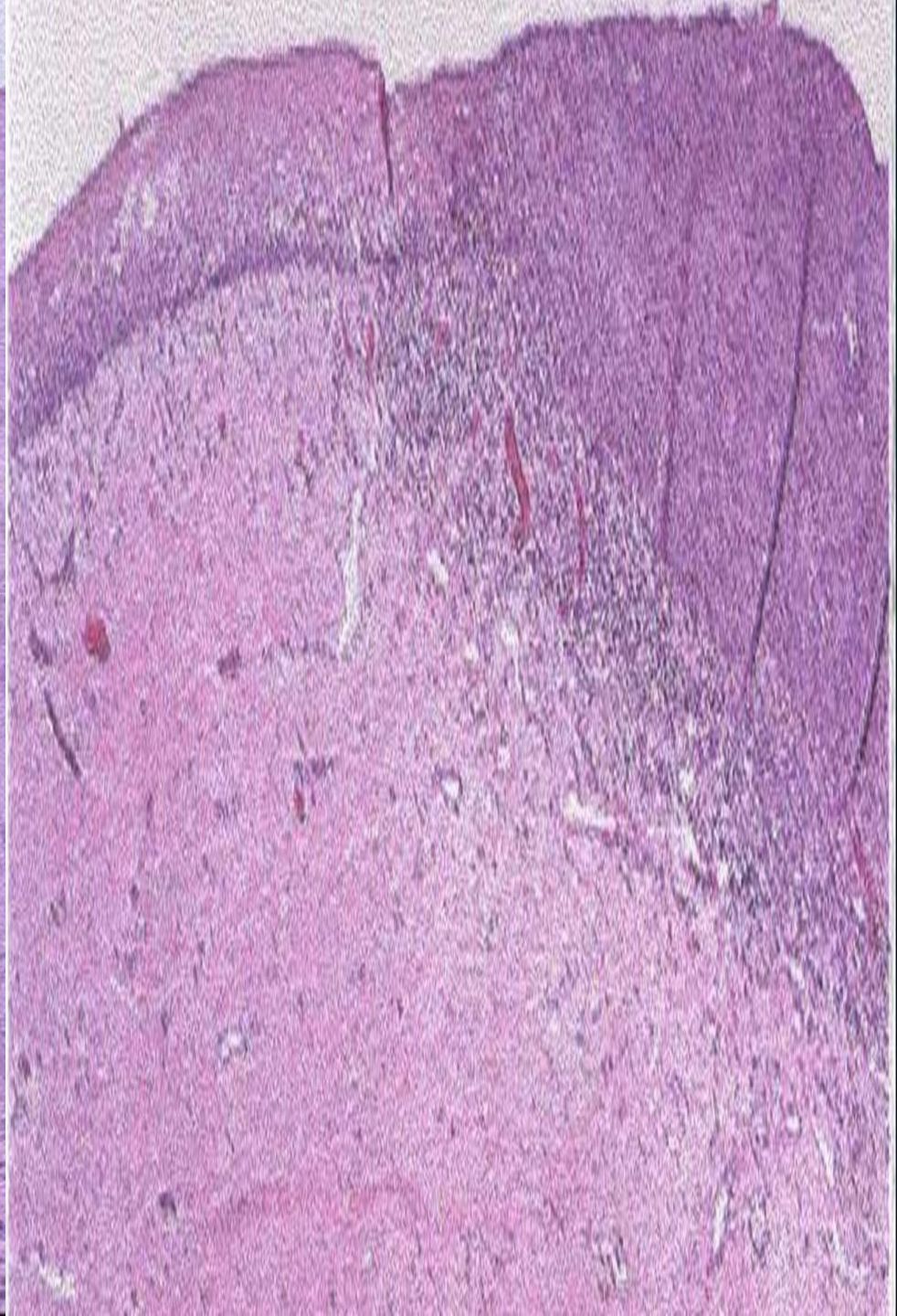
When Should Pap Test be done?

- A woman should have this test when she is not menstruating; the best time is between 10 and 20 days after the first day of the menstrual period.
- For about 2 days before a Pap test, she should avoid douching, or using vaginal medicines or spermicidal foams, creams or jellies. These may wash away or hide abnormal cells.

terms used for abnormal test

- Mild dysplasia may be classified as low-grade SIL or CIN I
- Moderate dysplasia may be classified as high-grade SIL or CIN II
- Severe dysplasia may be classified as high-grade SIL or CIN III
- Carcinoma in situ may be classified as high-grade SIL or CIN III

M.P. Normal SQ.Epith

False positive and False negative Test

- A false positive Pap test occurs when a specimen is called abnormal but the cells are actually normal.
- A False negative Pap test occurs when a specimen is called normal but the woman has a lesion. It is at least 20%. This means that biopsy is imperative for visible lesions.

Methods to Improve Accuracy of Pap smear

- 1.Perform a Pap smear when the patient is in the proliferative phase.
- 2.The patient should avoid intercourse or intravaginal products/douches for 24-48 hours before examination
- 3.Use no lubricant prior to the test
- 4.Have cytobrush, spatula, slide and other supplies on hand before exam.

Methods to Improve Accuracy of Pap smear(cont.)

- 5.Rotate the Ayers spatula through a 360-degree arc over the SCJ and avoid excessive pressure
- 6.Collect the endocervical specimen using cytobrush or saline-moistened cotton swab and apply it to the same slide
- 7.Rapidly apply fixative to the slide, if spry used hold it 10 inches from the slide

Impact of cervical cancer screening on mortality

- Mortality from cervical cancer has decreased in several large populations following the introduction of well-run screening programs.
- Data from several large Scandinavian studies show sharp reduction in incidence and mortality. Iceland reduced mortality by 80% over 20 years, Finland and Sweden reduced their mortality by 50% and 34% respectively

Impact of cervical cancer screening on mortality

- Reduction in incidence and mortality seem to be proportional to the intensity of screening efforts.
- The Scandinavian countries with the highest rates of screening activity reported greater reductions in mortality than those countries with lower rates of screening

Impact of screening for cervical cancer on mortality

- Case-control studies have found that the risk of developing invasive cancer is 3-10 times greater in women who have not been screened.
- Risk also increases with longer duration following the last normal Pap smear, or similarly, with decreasing frequency of screening.
- Screening every 3 years give 91% protection rate.

COLPOSCOPE

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Colposcope

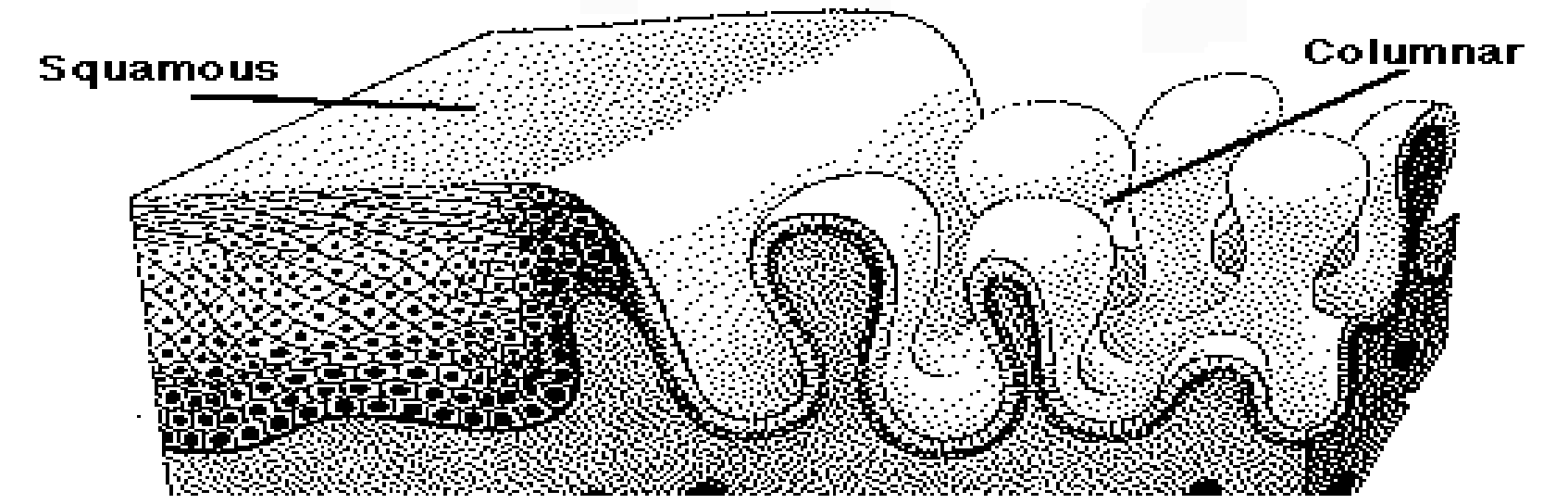
- The colposcope is a binocular, low-magnification (7x to 30x) microscope with light source which is used to visualize the cervix, vagina and vulva.The goal in the evaluation of the lesions is to exclude the possibility of malignancy.Satisfactory colposcpies are those in which the lesion and the SCJ can be seen in entirety

TERMINOLOGY

- SQUAMOCOLUMNAR JUNCTION
- morphologically there are two types of SCJ
- The original SCJ is the border where the original squamous epithelium meets the outermost limit of the developing TZ. The present SCJ is the innermost border where the maturing squamous metaplasia meets the columnar epithelium

Squamocolumnar junction

- Squamous epithelium to the left and columnar epithelium to right.

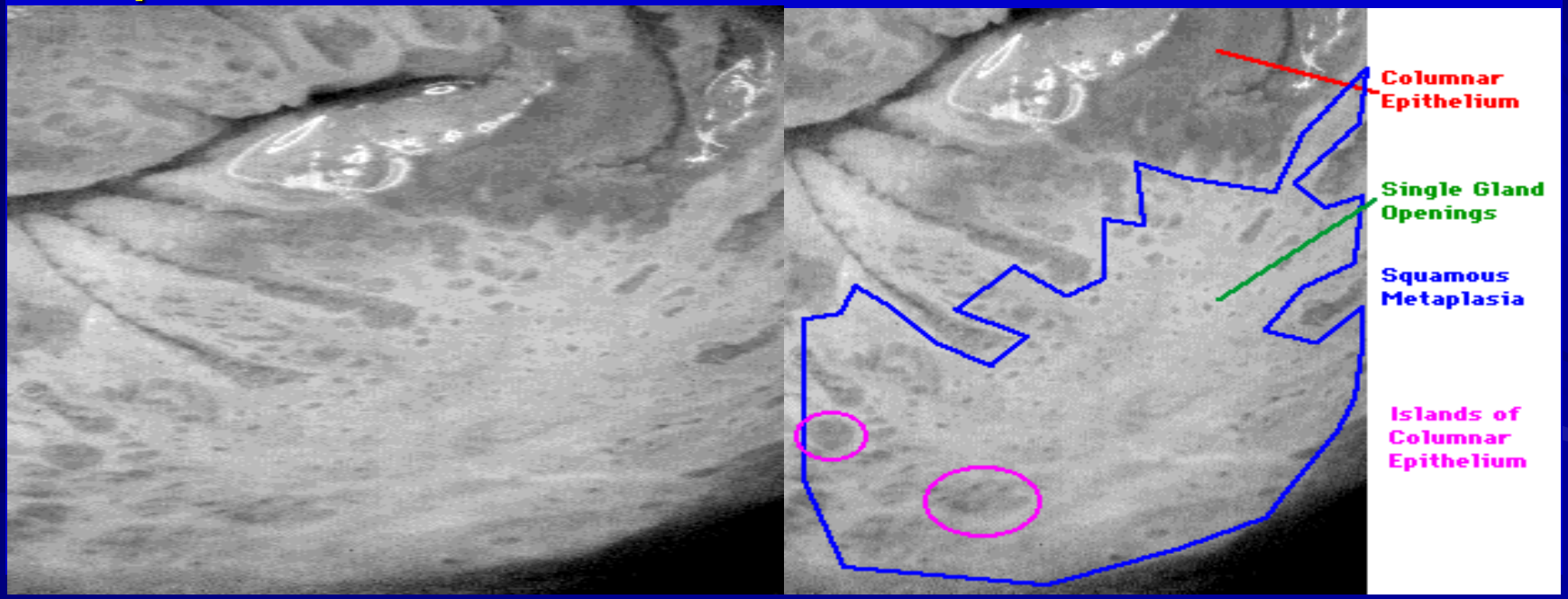


Transformation Zone TZ

- It is the area of actively maturing epithelium between the present SCJ and the original squamous epithelium. It is composed of intermingling of squamous and columnar epithelium. Squamous metaplasia, islands of columnar epithelium, gland openings and nabothian cysts may be identified. The precise location of TZ varies in relation to exo- and endocervix

Transformation zone

- TZ with gland opening,sq.metaplasia,columnar epithelium



Nabothian Cysts

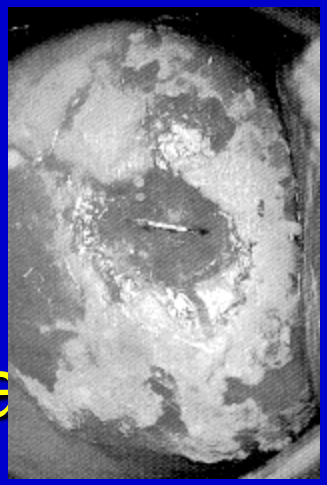
- Are inclusions or entrapments of mucous from secreting columnar villae under the developing squamous epithelial surface

Squamous Metaplasia

- The normal physiologic process by which columnar epithelium evolves into squamous epithelium.The outermost border is the original SCJ while the innermost border is the present SCJ.Histologically, in the early stages of this process, immature squamous cells push up columnar cells.Columnar epithelium later become degenerted and replaced by mature squamous epithelium

Leukoplakia

- Refers to a white plaque visible without magnification and without application of acetic acid.
- It is usually elevated from
- surrounding surfaces with a
- sharp border and Lugol's nonsta
- Histologically. .hyperkeratosis



Atrophy

- Atrophic changes result from low estrogen levels characteristic of the menopausal patient.The appearance is that of a typically smooth and thin epithelium. This result in blood vessels being more readily visible and truma easily incurred.these changes are reversible by estrogen.It can result in changes that mimic high-grade abnormalities.

Acetic Acid

- Acetic acid 3%-5% dissolves mucous and accentuates atypical areas (white epithelium,punctation,mosiac and atypical vessels)by inducing intracellular dehydration and coagulation of protein. This effect peaks approximately 2 minutes after application and fades within 5 minutes. Therfore, repeated applications is rquired

Lugol's Iodine

- Lugol's solution is composed of Iodine and potassium iodide in water. It stains the glycogen in mature squamous epithelium a dark brown color. Consequently, areas devoid of glycogen such as immature squamous epithelium, columnar epithelium, erosion and neoplasia will be non-staining
- non-staining is called Schiller's positive

Methods of Colposcopic Examination

- Classical or Extended Colposcopy
- The cervix and vagina are first examined at magnification of 7x or 10x following which excess mucus is removed from the cervix
- Acetic acid 3% to 5% is applied by cotton swab.Abnormal epithelium appear as thick white (acteo-white)
- Schiller iodine test may be applied

The Saline Technique

- This depends entirely on the visualization of various vessel patterns .
- After exposing the cervix saline is used to remove mucous and then a green filter and high magnification is used..in this way the red capillaries appear darked and stand out more clearly

Diagnostic criteria for Colposcopy

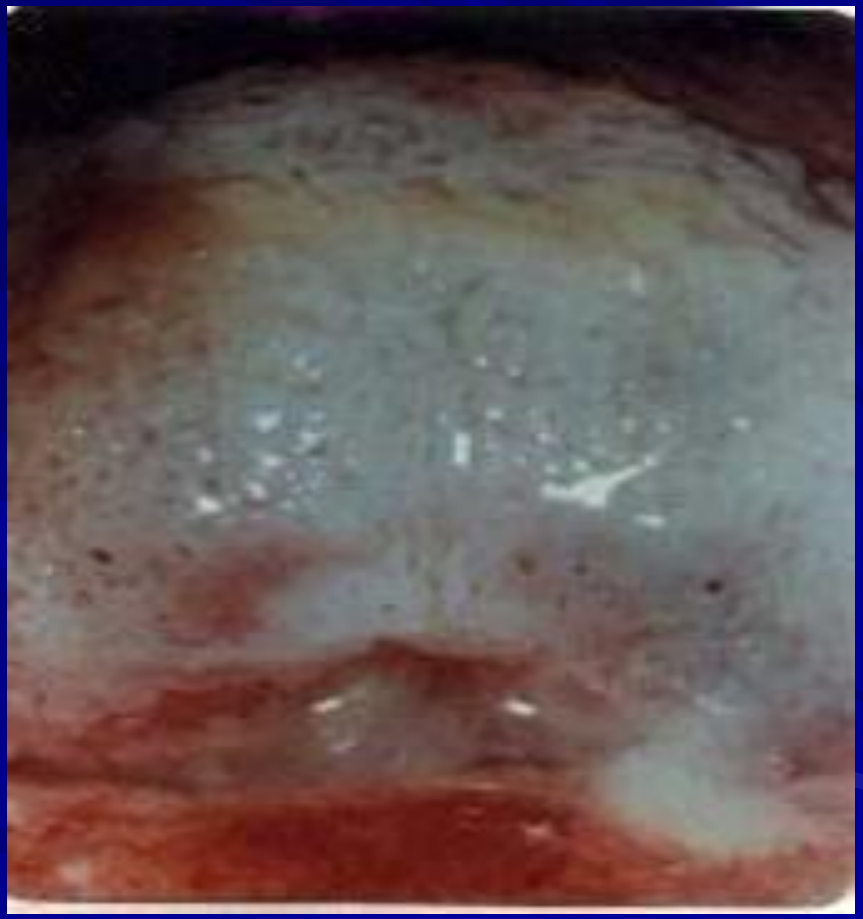
- In its simplest form colposcopy is the recognition of aceto-white epithelium but benign conditions can produce aceto-white epithelium so the colposcopist must be aware of the other features which suggest underlying abnormalities.

Colposcopic Diagnosis (cont.)

- Features which suggest abnormality are:
- 1.The subepithelial vascular pattern
- 2.Intercapillary distance
- 3.Color tone differences at the junction of normal and abnormal epithelium
- 4Surface pattern
- 5.Sharp line of demarcation bet.different types of epithelium

Aceto-white epithelium

- Acetic acid causes some swelling of epithelium particularly columnar epithelium and abnormal epithelium

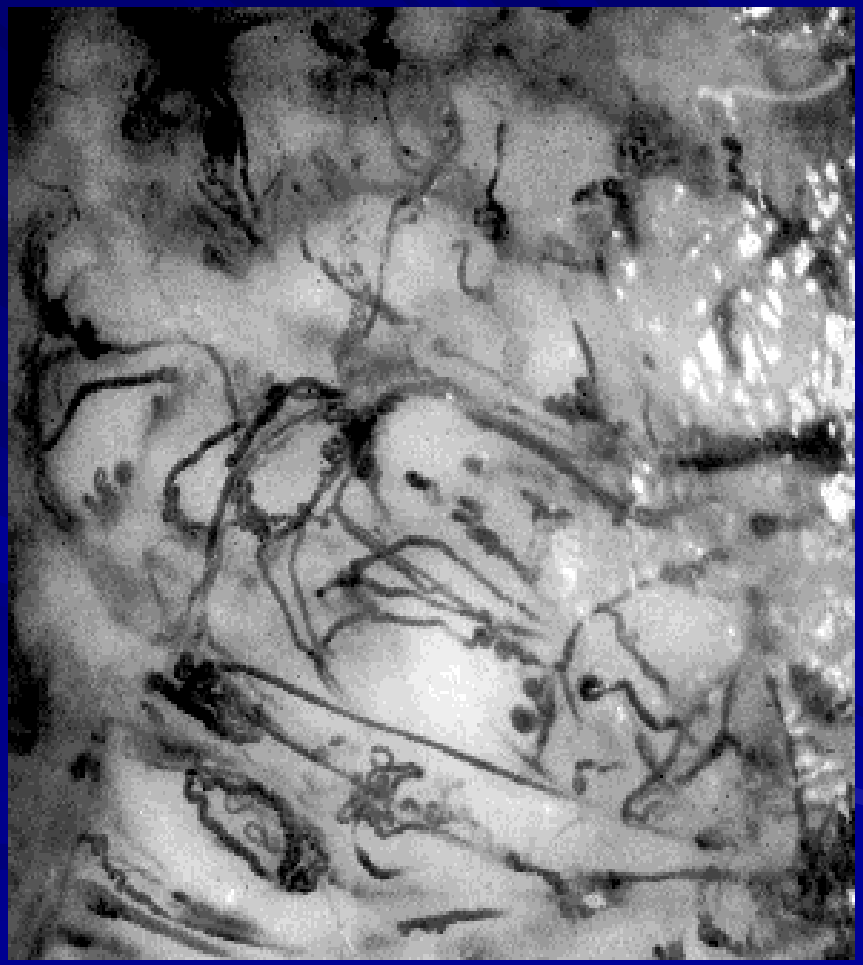


Vascular abnormality

- Atypical vessels

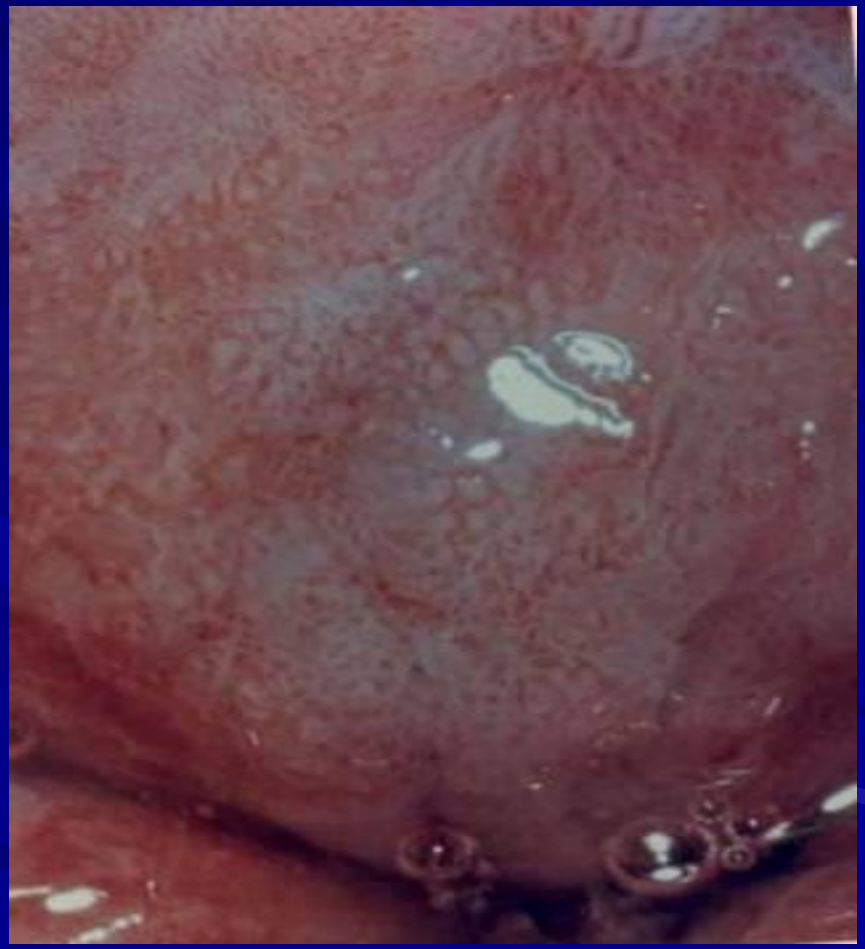
  this vascular growth is not symmetric and is often associated with progressively smaller

  blood vessels



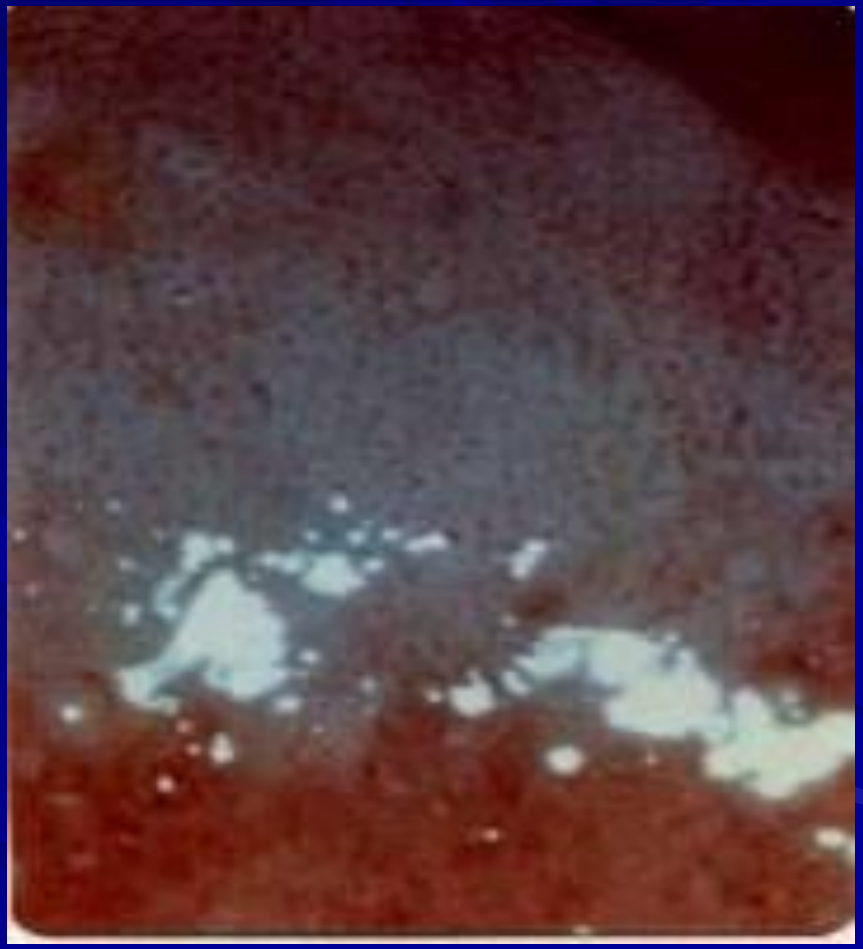
Vascular Abnormality

- Mosaic
- A vascular change of interconnecting vessels resulting in cobble-stone or honey-comb surface.
- This is usually seen with CIN and mandates biopsy



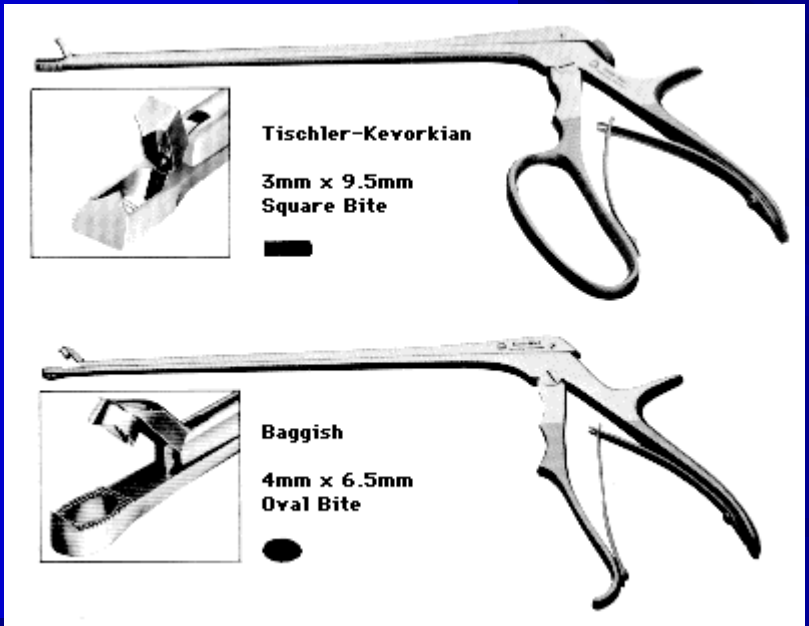
Vascular Abnormality

- Punctation
- It is a zone of red dots representing stromal papillae and blood vessel loops reaching to the surface epithelium.
- When this pattern is identified
- biopsy is indicated .



Biopsy Forceps

- Used for punch biopsy from abnormal area



Endocervical speculum

- Endocervical speculum allow visualization of the inner bored of a lesion