

COLPOSCOPY

Equipment and procedure

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PERFORMANCE OF COLPOSCOPY

86 articles meta-analysis

Actual sensitivity 87 % - 99 %

Specificity 23 % - 87 %

~ HPV testing

Indications for colposcopy

Evaluation of the woman with abnormal Pap test

**presence of LSIL (TBS=The Bethesda System) /
mild dyskaryosis/borderline nuclear changes
(BSCC=British Society for Clinical Cytology)**

presence of HSIL / moderate to severe dyskaryosis

presence of glandular abnormality

any suggestive of invasive cancer

High risk HPV

With naked eye examination unhealthy Cx-vagina suspicious Ca

Presence of keratinized cells

Persistent unsatisfactory smears

Persistence of inflammatory cells despite adequate treatment

**Contact bleeding, intermenstrual and irregular bloodstained vaginal
discharge, hypertrophied T/Z**

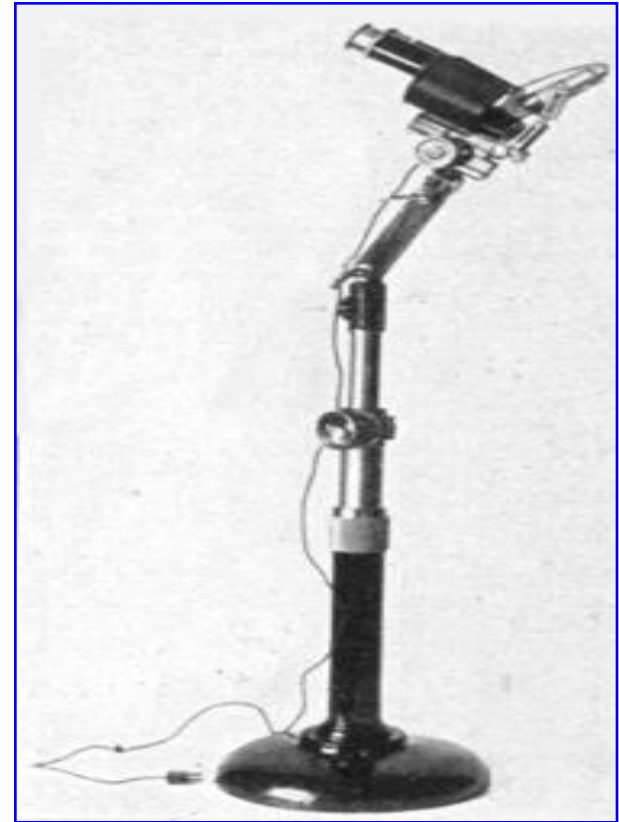
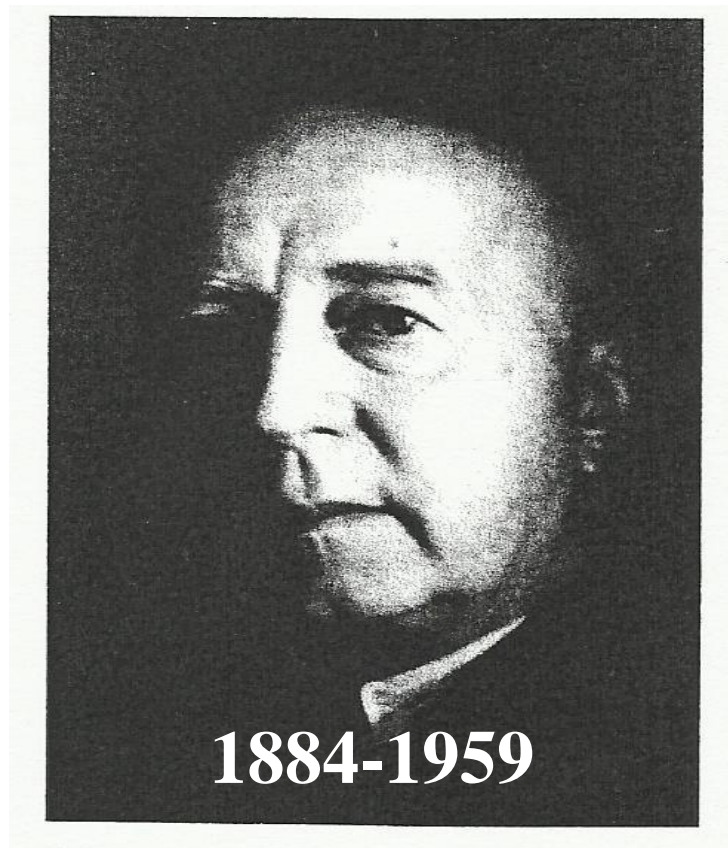
Monitoring of women treated for CIN

Evaluation of women with VIN or VaIN

Hans Hinselmann 1925

in old Greek **Kolpos:** hollow, womb, vagina

Skopos: look at



New colposcopes



Colposcope

- **Magnification**

Range 2-40 x (2 - 15 x)

- **Working distance (focal length)**

**Distance between colposcope and patient
between 200 - 400 mm**

- **Light bulb: Halogen, LED (strong, white light)**

- **Green-filter**

- **Accessories**

– Camera, video,...

Colposcope and Colposcopy room

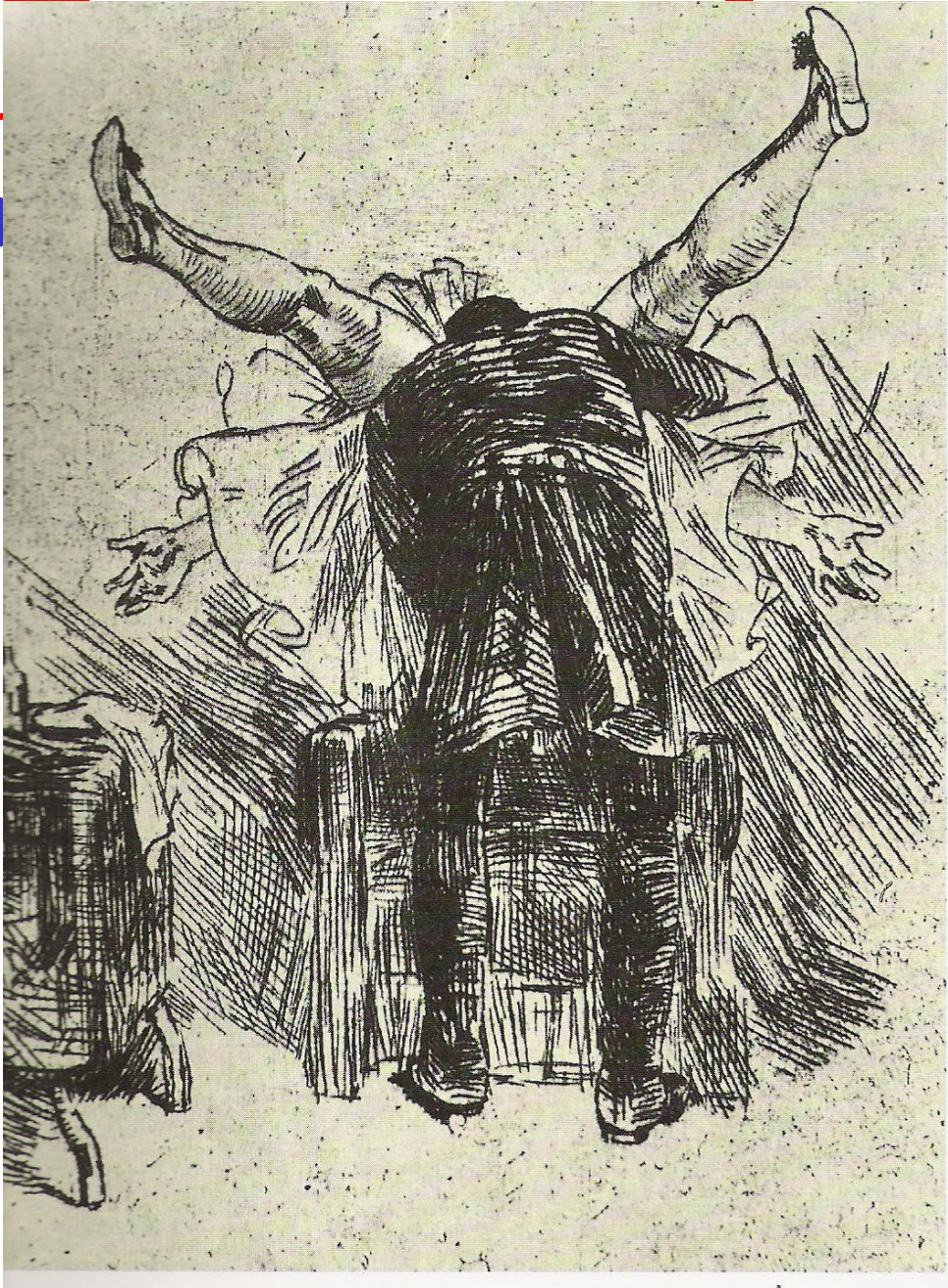


Equipment and Procedure

- **Preparation**
- **Colposcope**
- **Specula**
- **Solutions**
- **Biopsy**
- **Hemostasis**
- **Documentation**

Colposcop

procedure



Inform patient about procedure

Moment of cycle:

Proliferative phase

Treat infections

Treat atrophy

Equipment

Colposcopy tray



Vaginal specula in various sizes

3%-5% acetic acid

Lugol's iodine solution

Cotton-tipped applicators

Large cotton swaps and cotton balls

Endocervical specula

Biopsy forceps

Endocervical curette

Ring forceps

Biopsy specimen containers

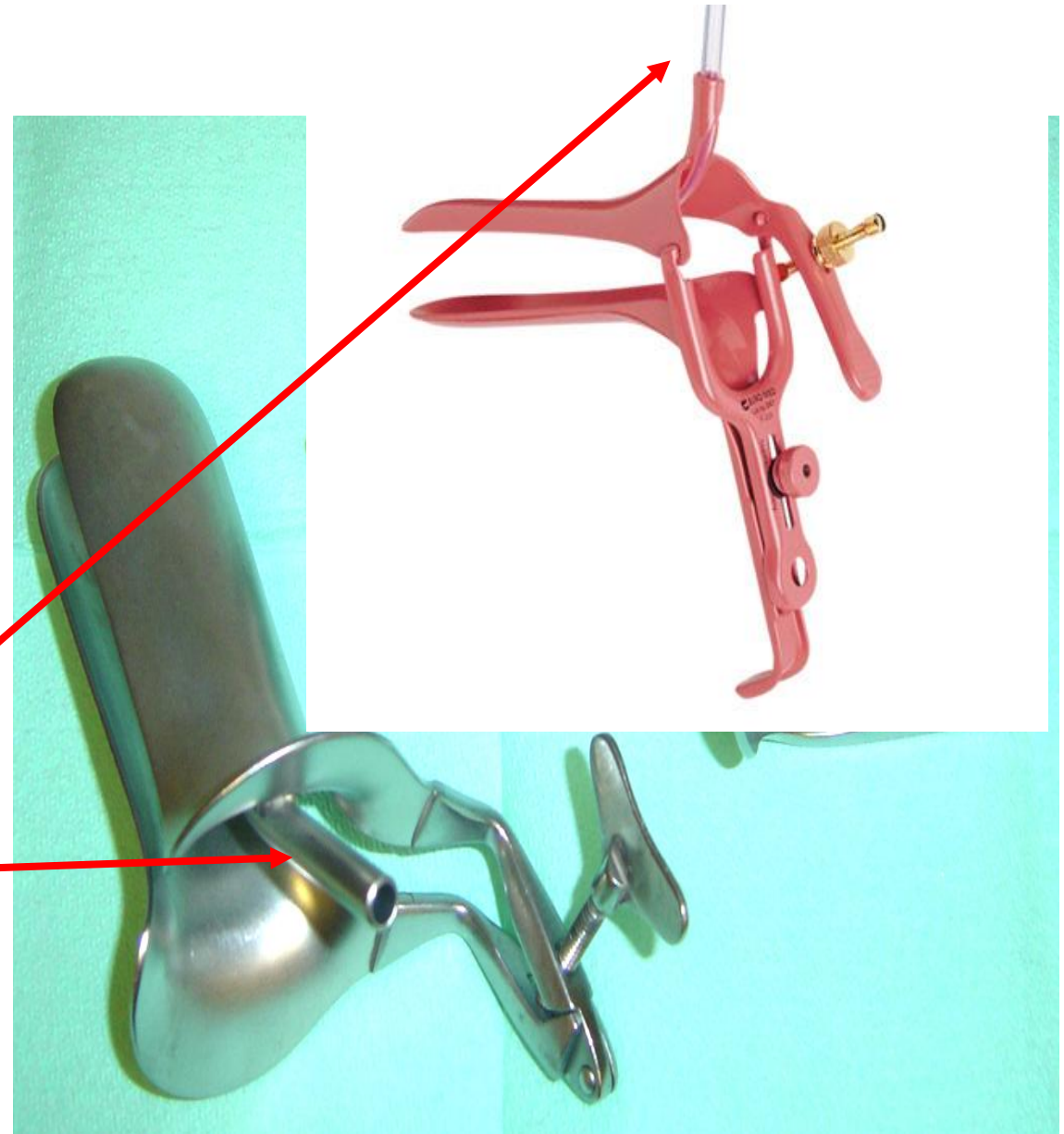
Hemostatic agents

Specula

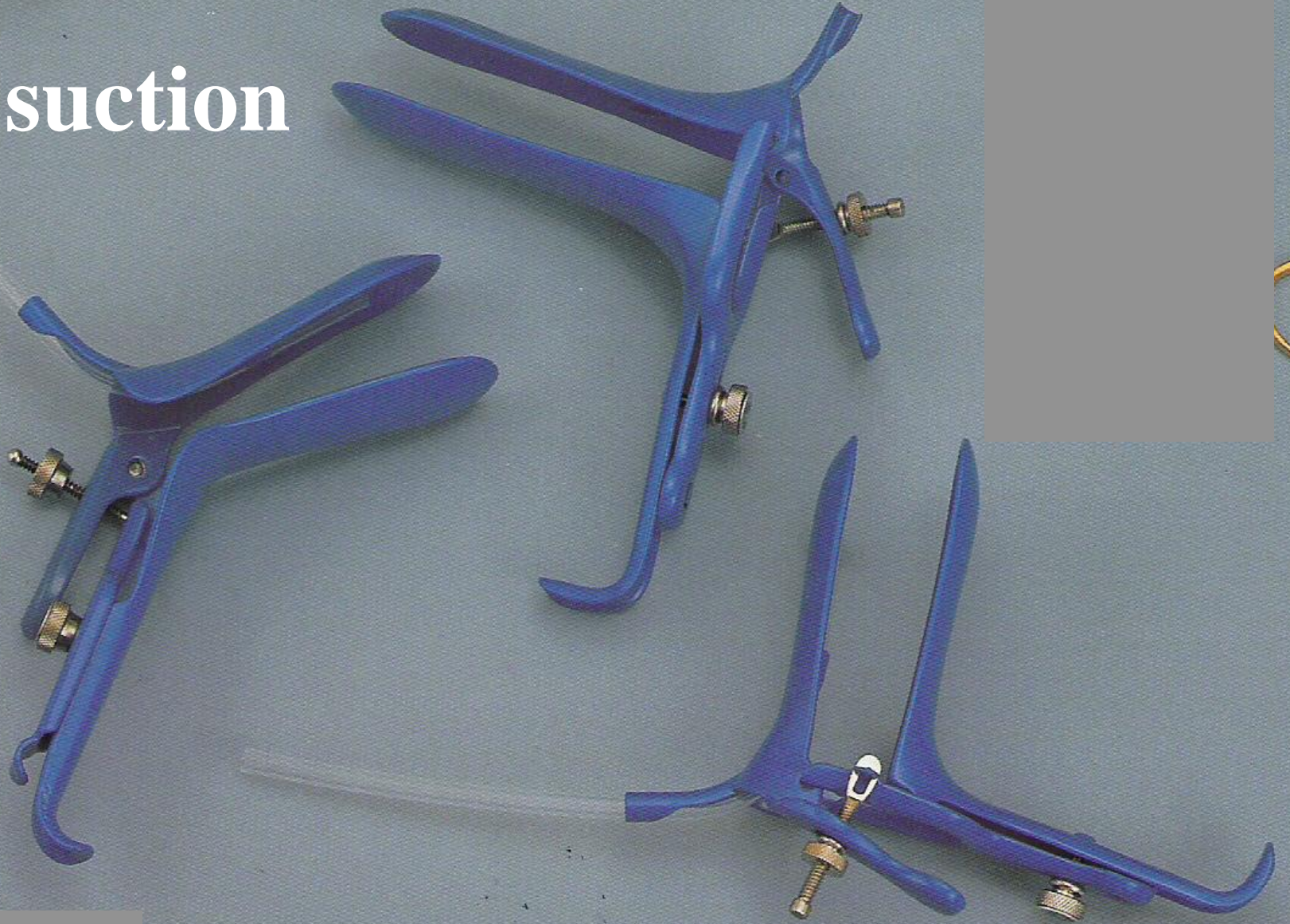
Types:

- Collins
- Cusco
- Graves

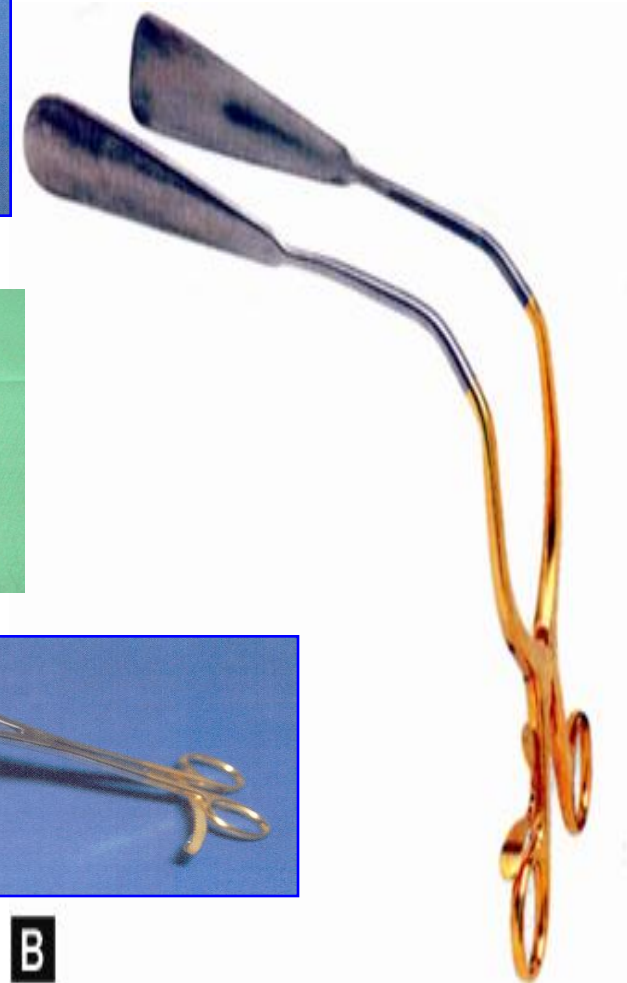
Smoke suction



Smoke suction Coated



Lateral vaginal wall retractors



A

Cer-view™

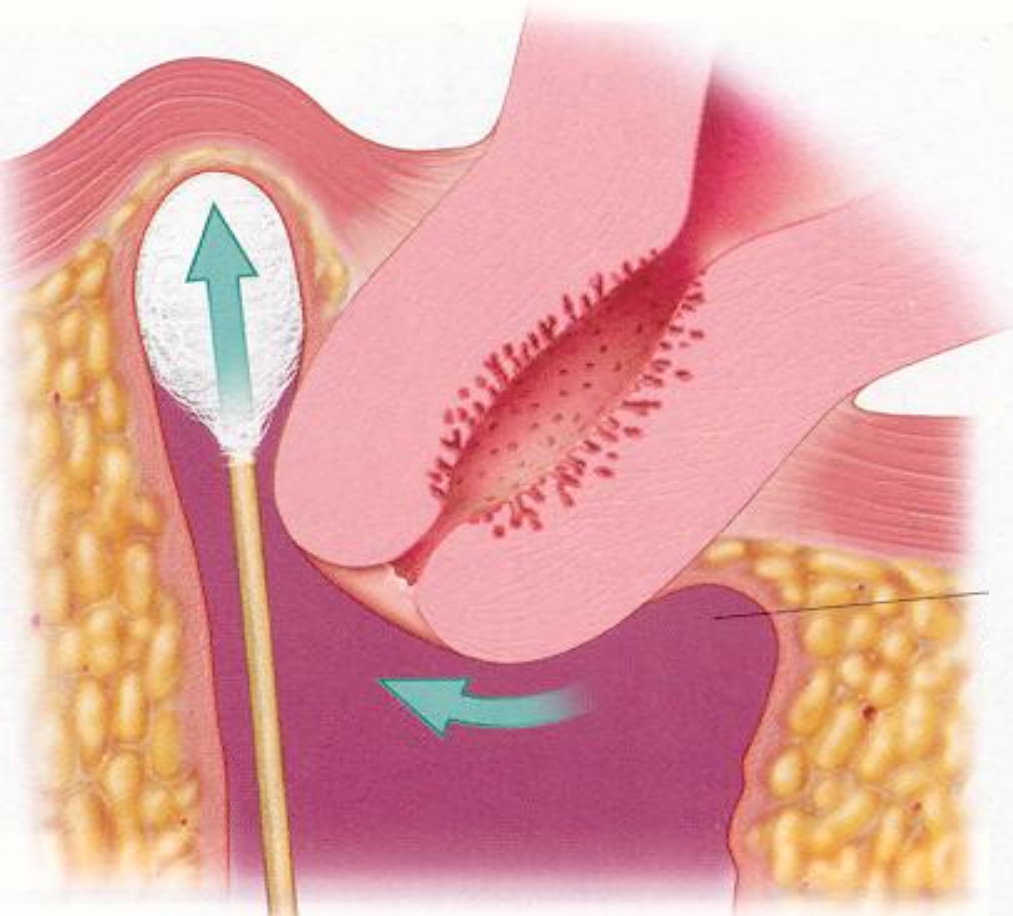
B

Tru-view™

**The right position on a gynecologic cauch
The buttocks should be exactly on the edge of the
table and the arms on the belly or alongside the body.
Ask the woman if she's relaxed and feeling alright**

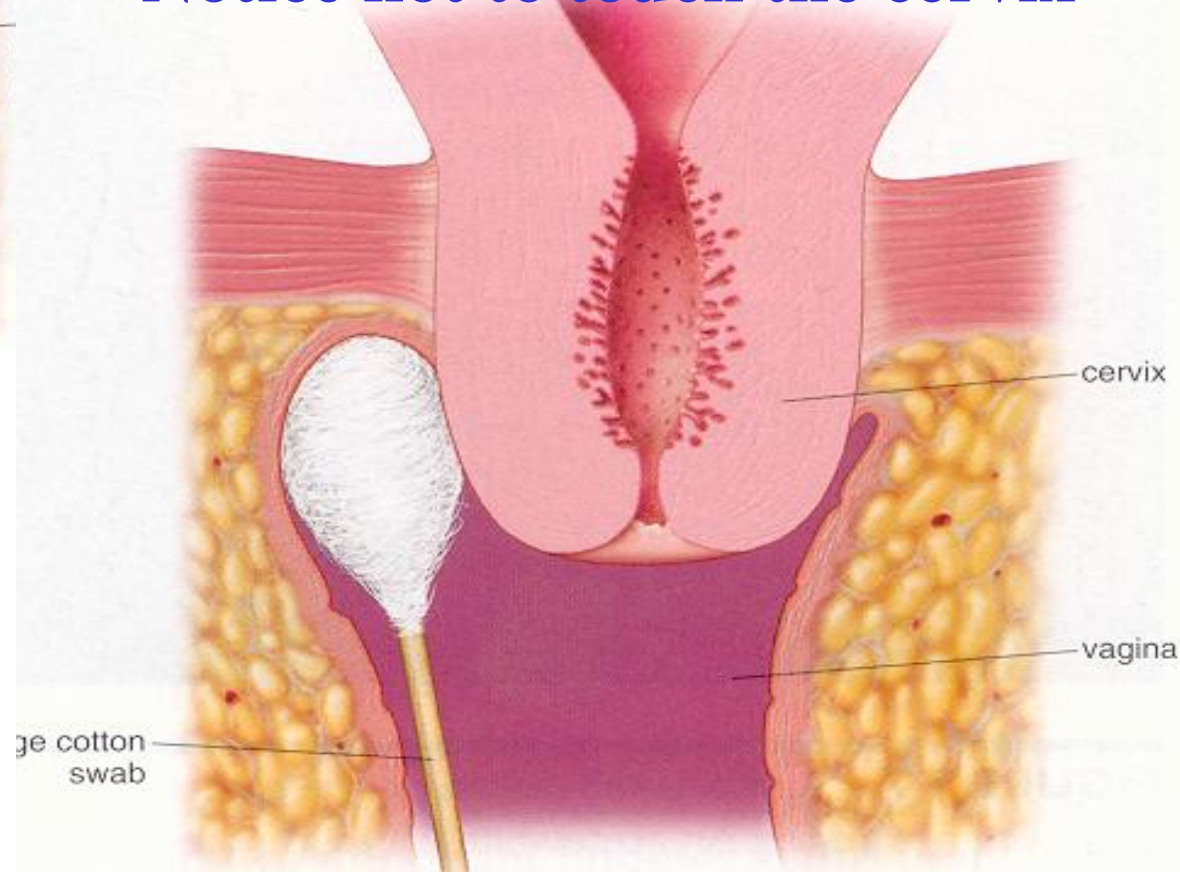




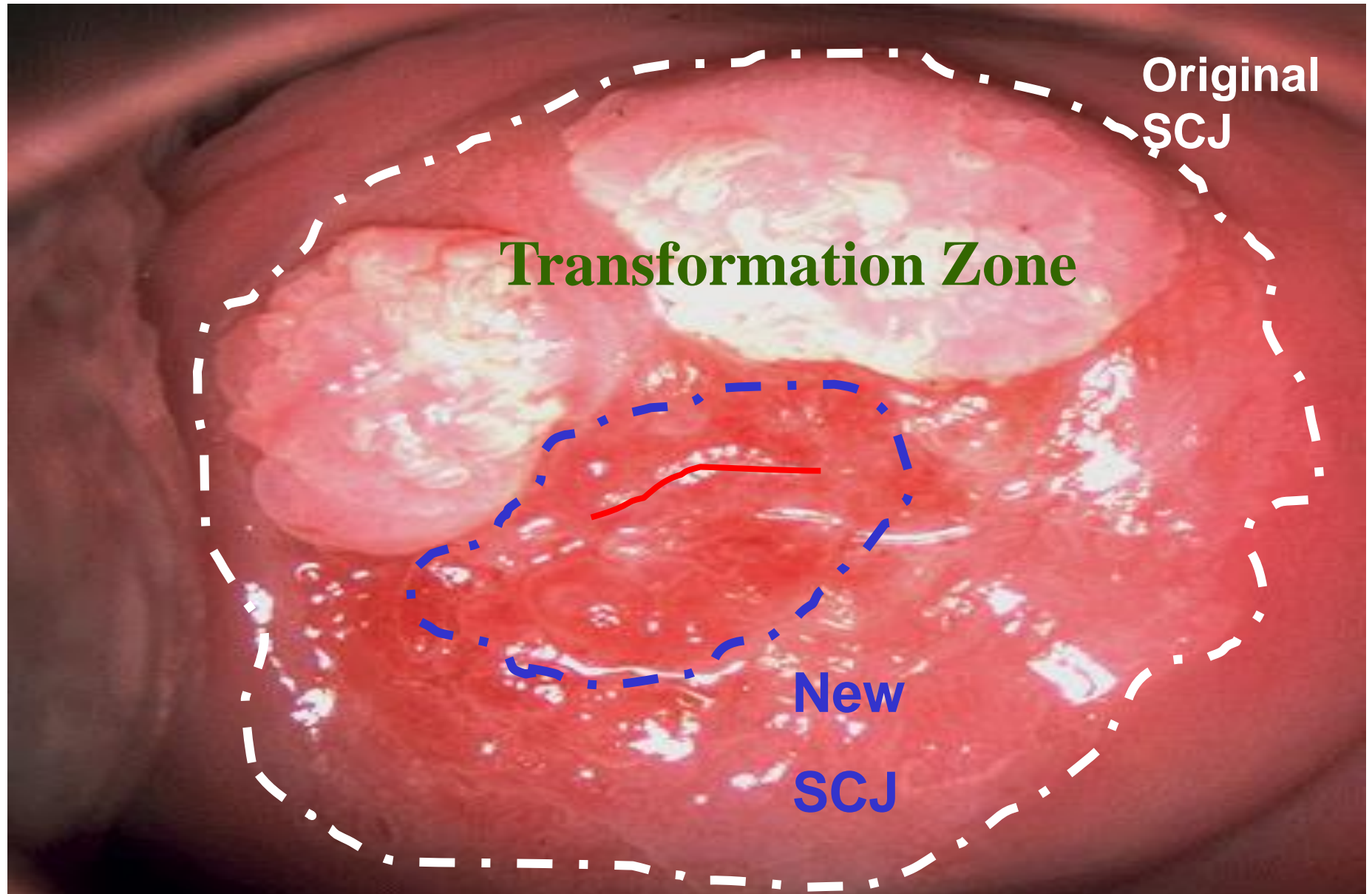


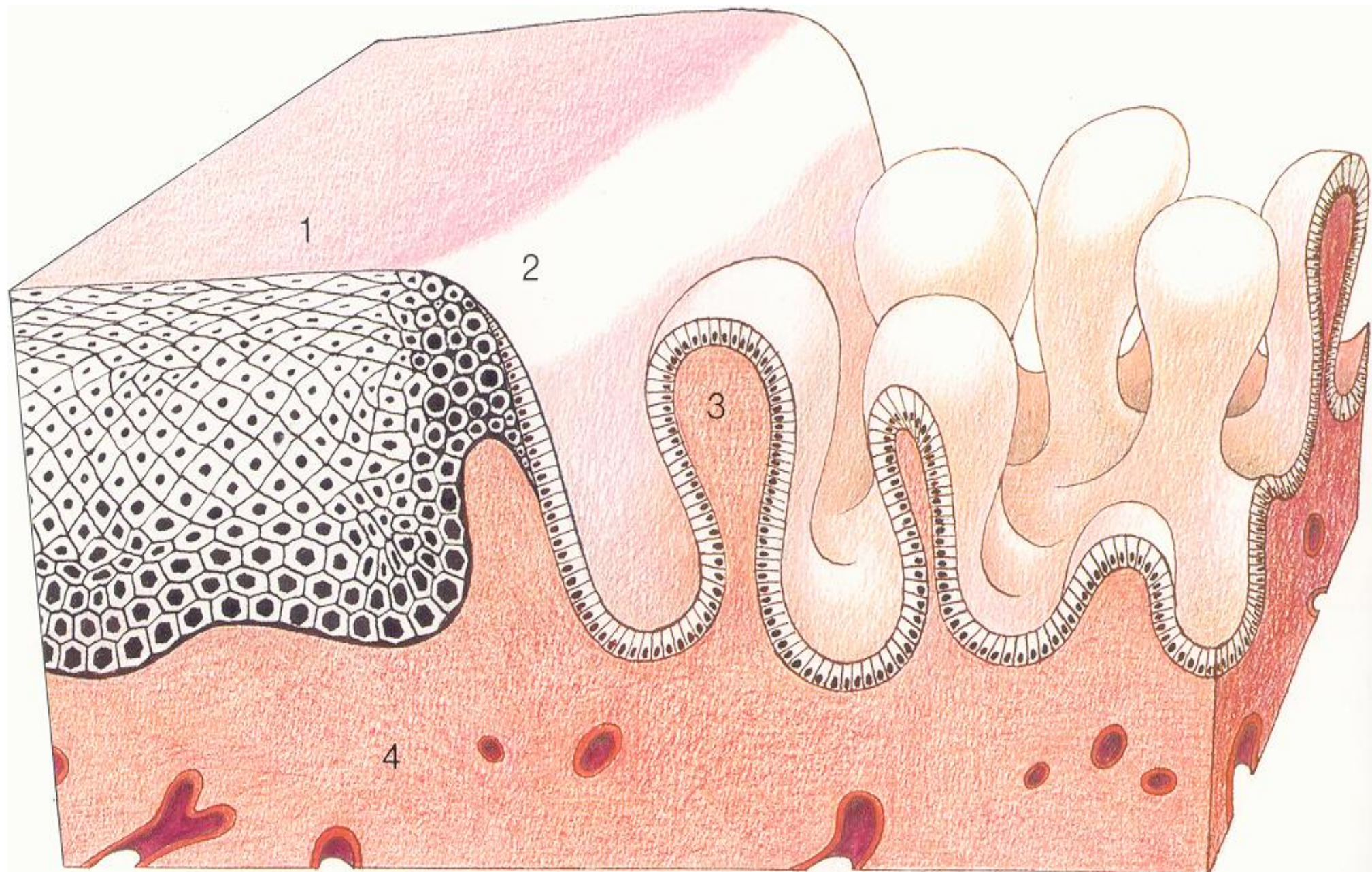
The cervix can be drawn laterally should be moved toward with a cotton swab

Notice not to touch the cervix

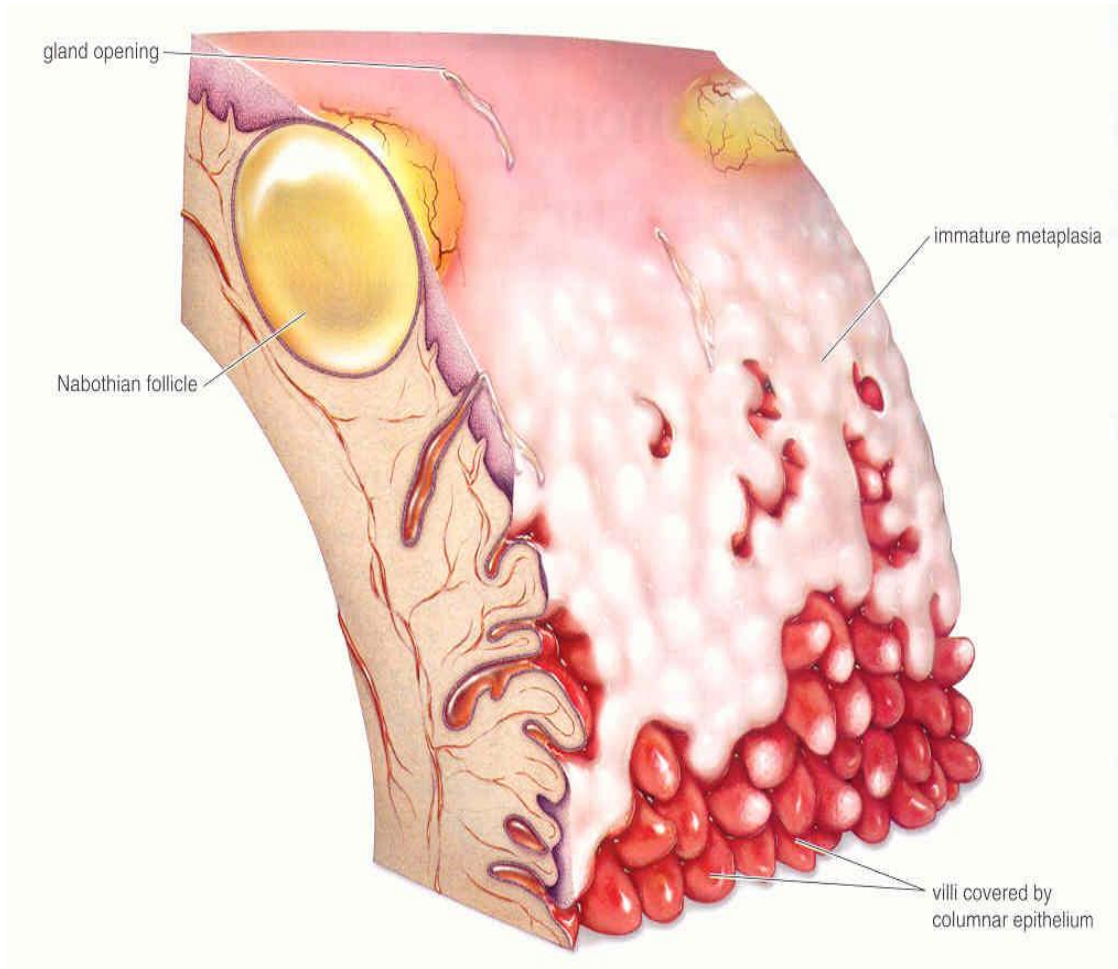


Transformation zone





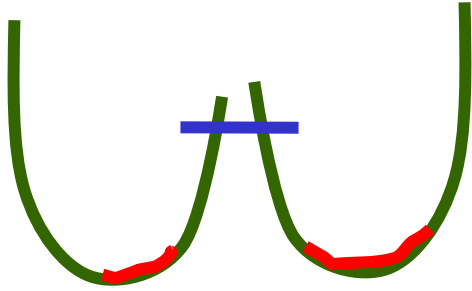
Gland openings



Types of Transformation Zone

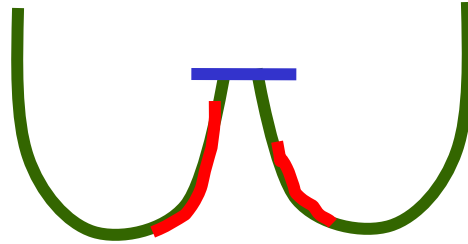
- **Type 1 TZ** completely ectocervical and fully visible and may be small or large
- **Type 2 TZ** has an endocervical component, is fully visible, and may have an ectocervical component that may be small or large
- **Type 3 TZ** has an endocervical component that is not fully visible and may have an ectocervical component that may be small or large

Type I TZ



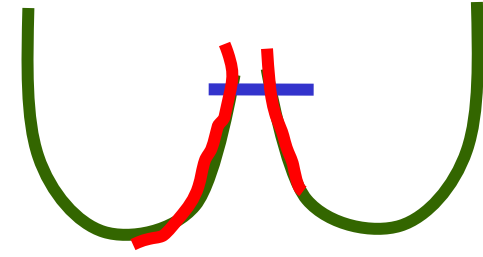
completely
ectocervical
and fully
visible and
may be small
or large

Type II TZ



has an
endocervical
component, is
fully visible, and
may have an
ectocervical
component that
may be small or
large

Type III TZ



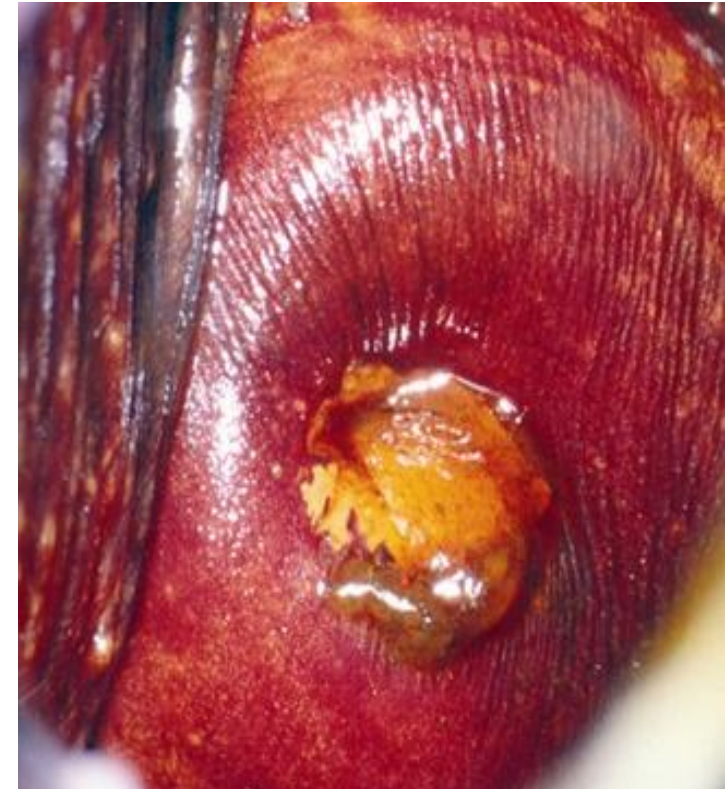
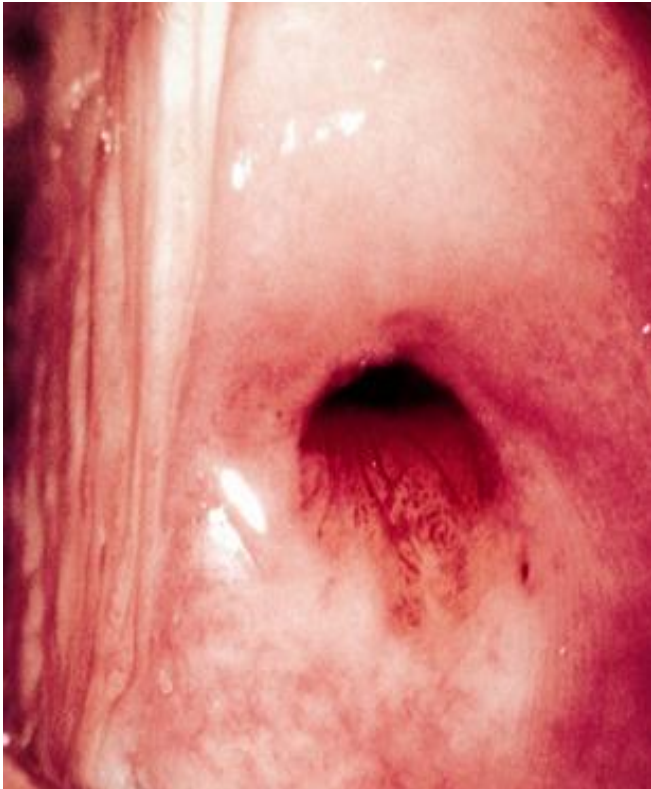
has an
endocervical
component
that is not fully
visible and may
have an
ectocervical
component that
may be small or
large

Type 2 TZ

Cx in a nulliparous woman on day 12 of the menstrual cycle showing a widely open os through which the cervical canal is easily seen

Acetowhitening of columnar epithelium papillae

Effect of iodine staining of the epithelia



Cx with eversion of columnar epithelium due to Cusco's speculum showing fine punctations within columnar epithelium

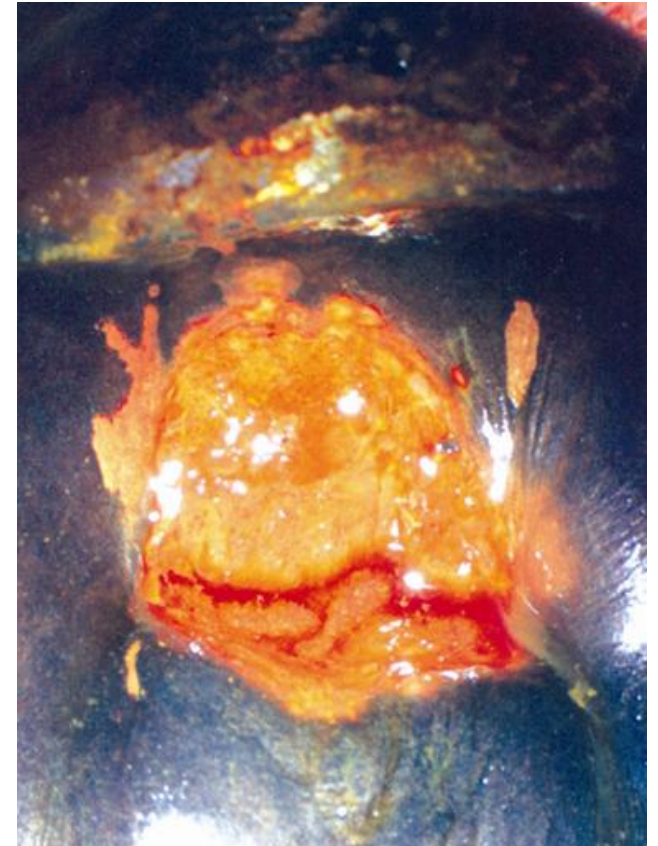


After acetic acid
Fine punctations within metaplastic epithelium



Type 3 T/Z

After iodine staining

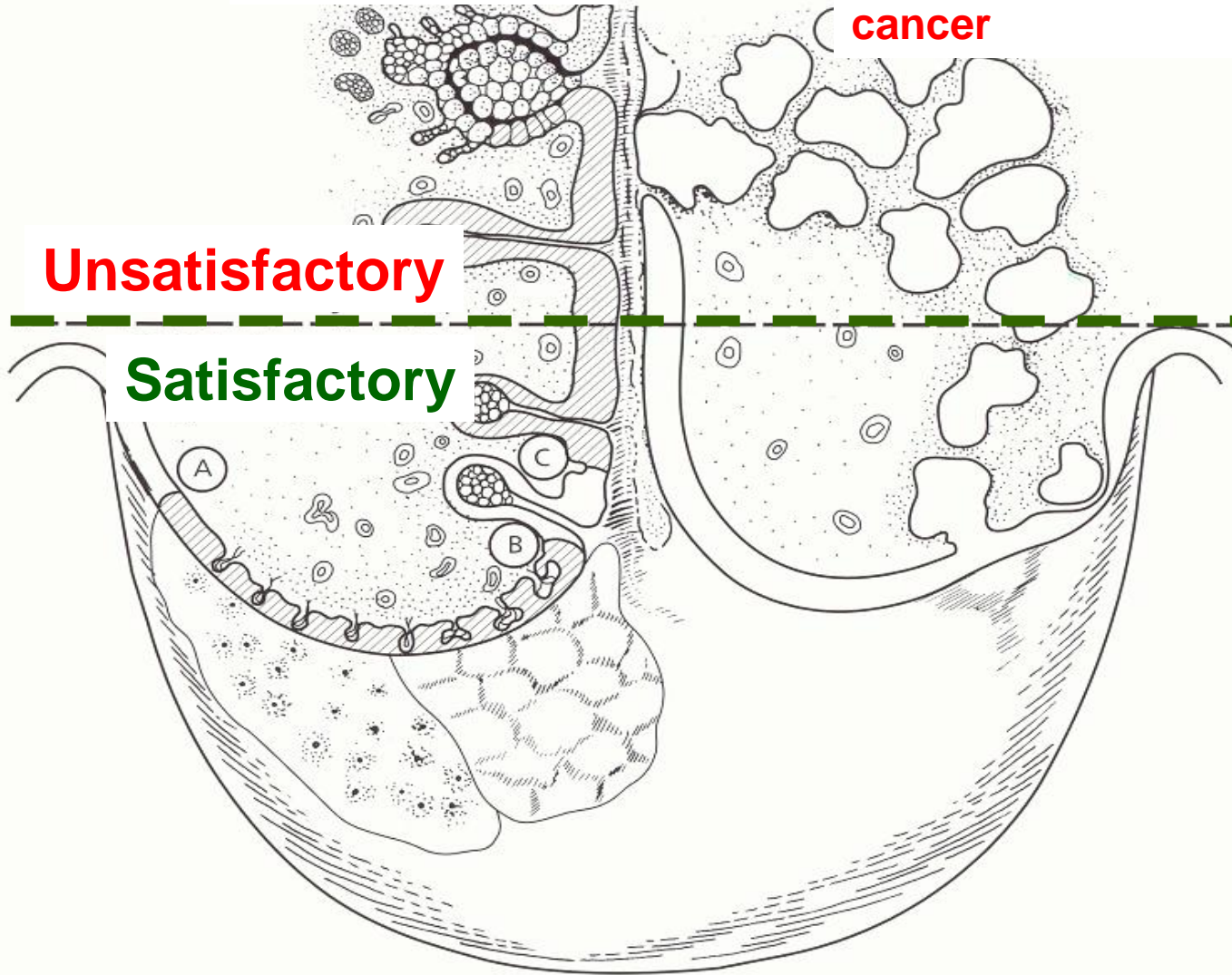


**Mikro ← CIN 3
invasion**

**Endocervical invasive
cancer**

Unsatisfactory

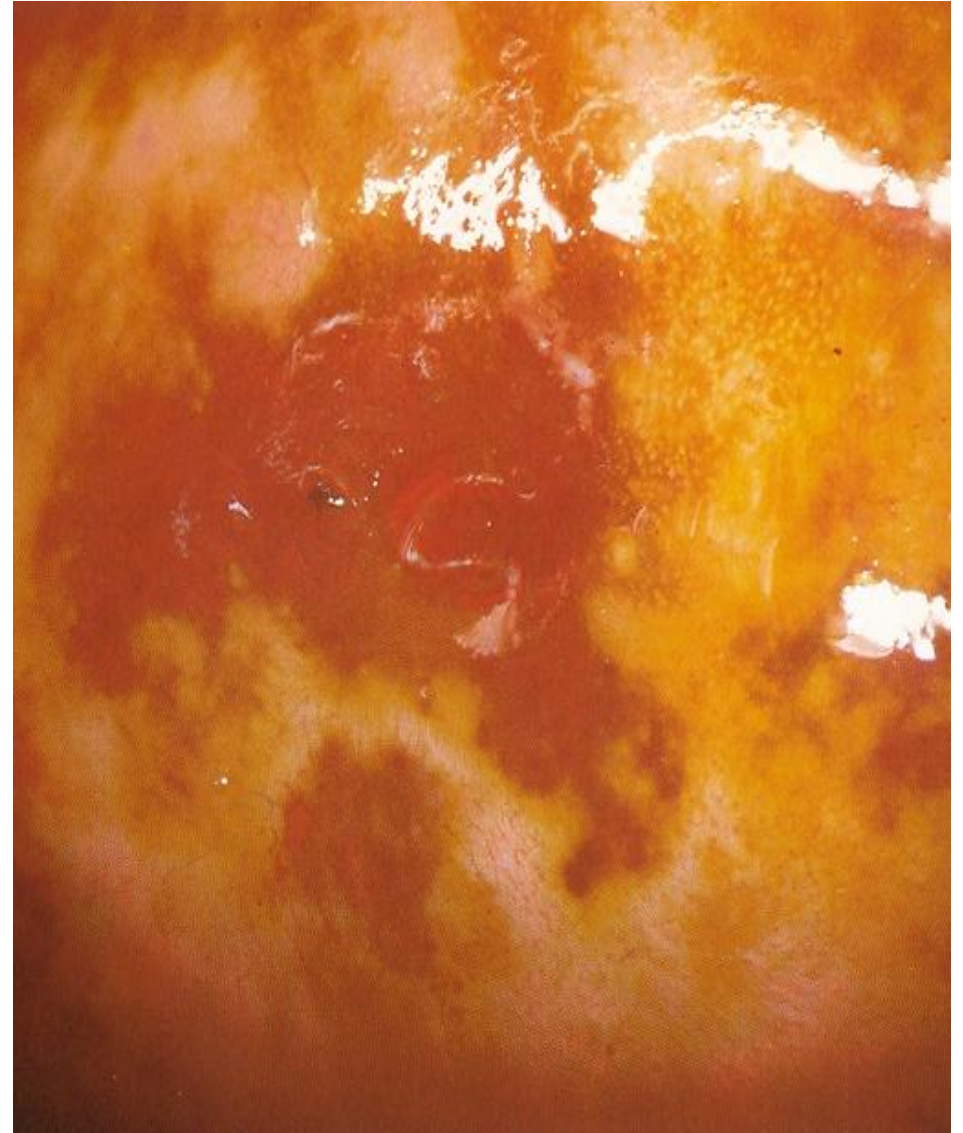
Satisfactory



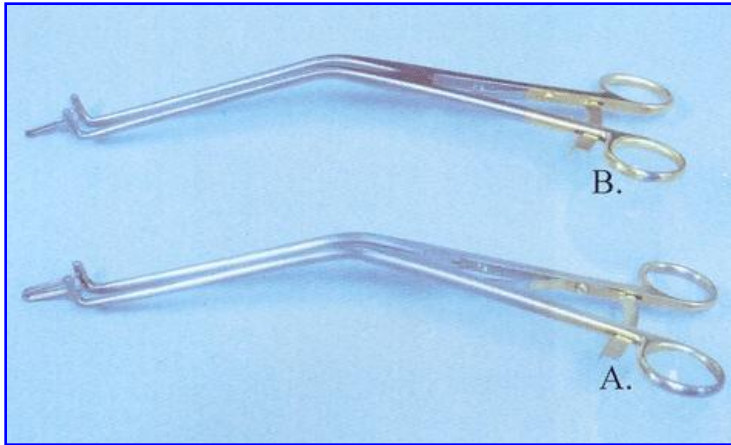
Unsatisfactory colposcopy



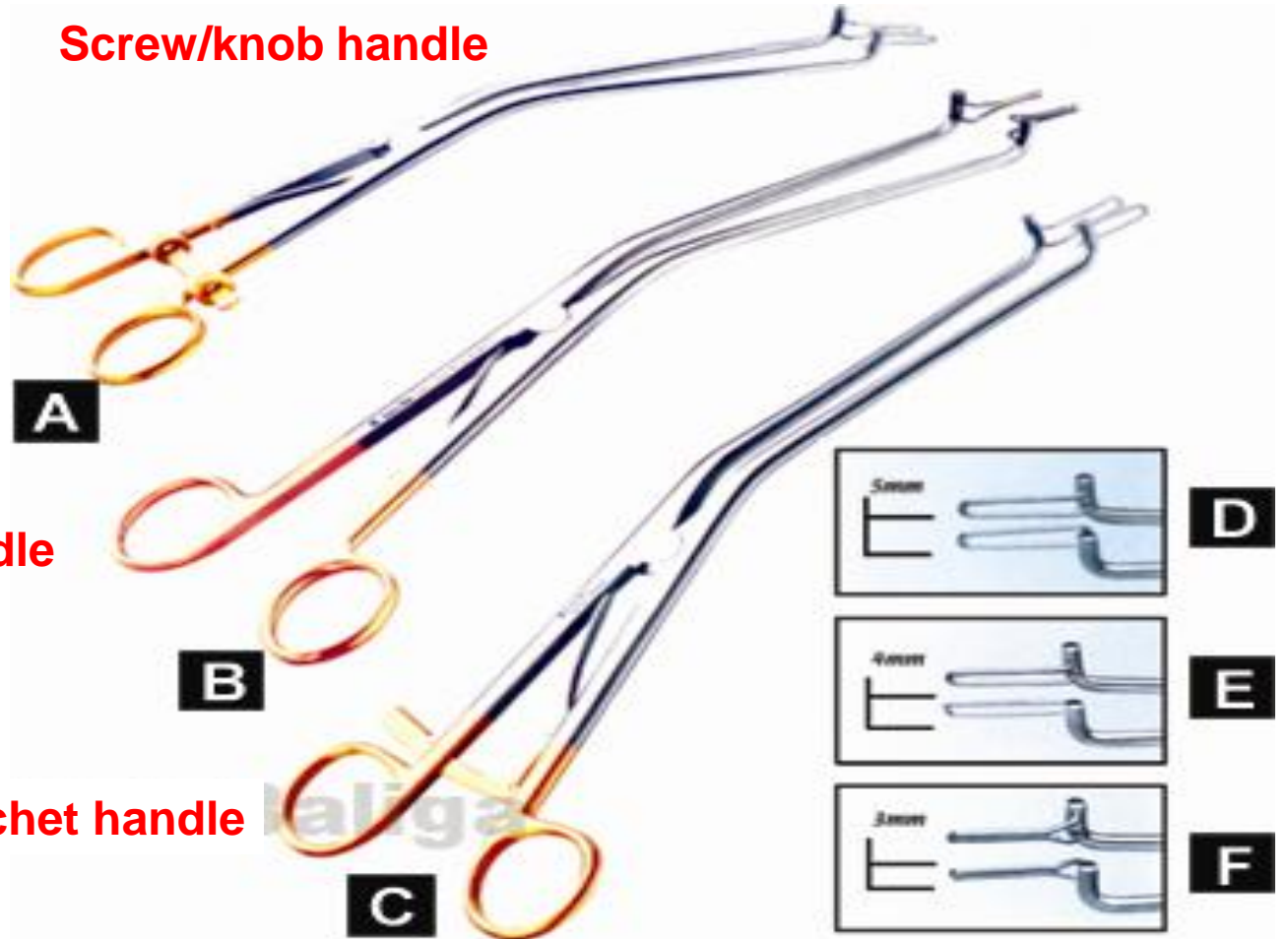
Menopause



Endocervical speculum



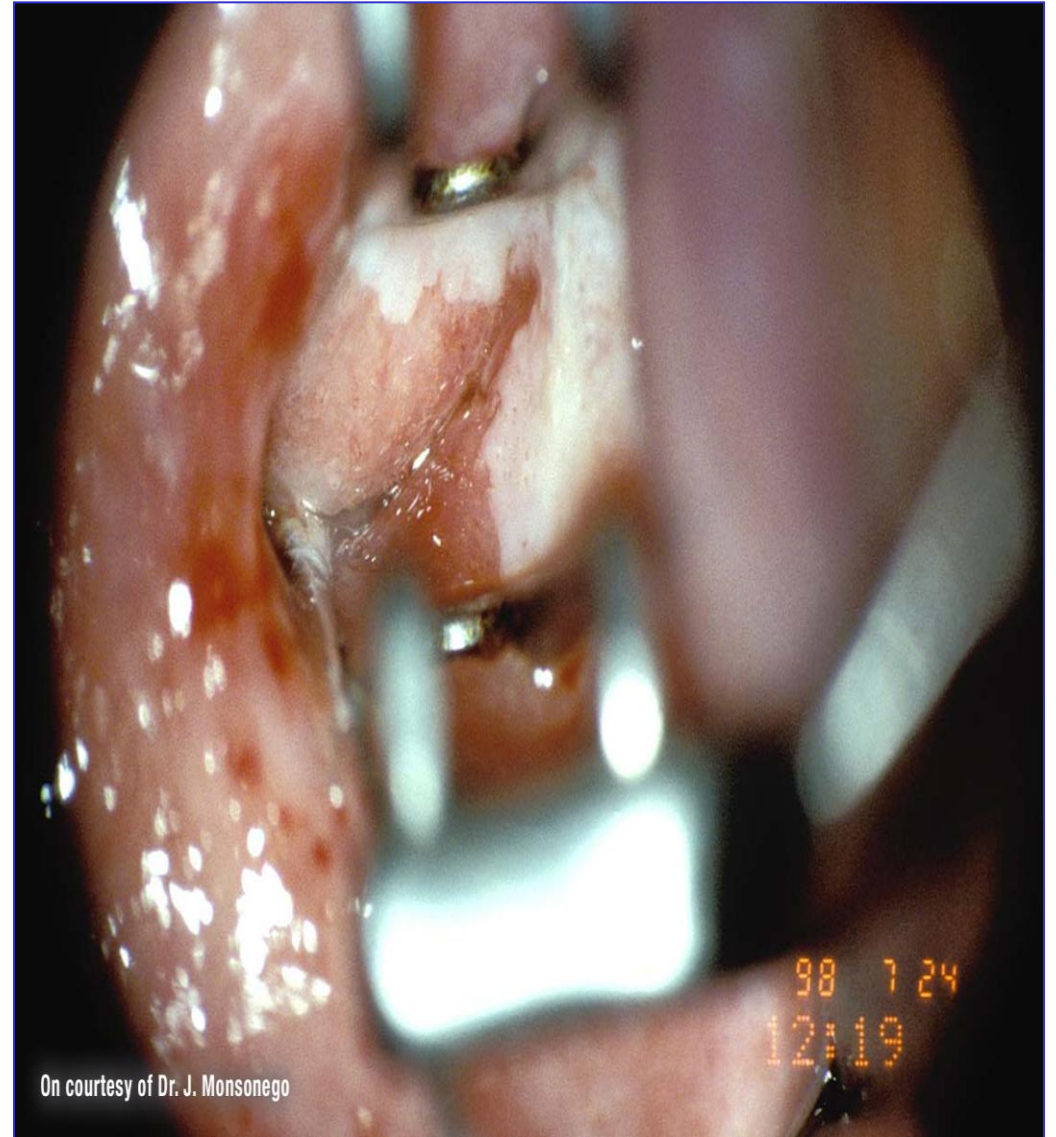
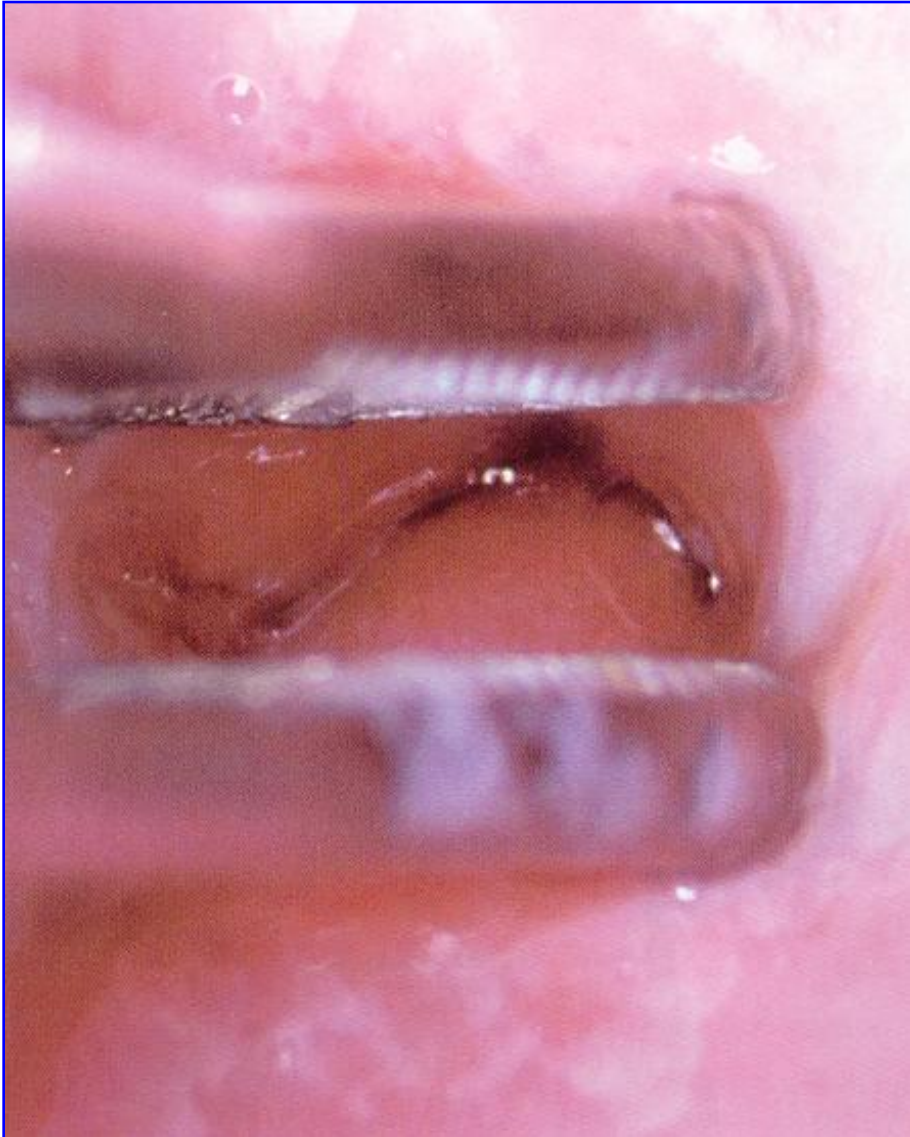
Screw/knob handle



No-lock handle

Standart Ratchet handle

Endocervical speculum



On courtesy of Dr. J. Monsonego

IFCPC International colposcopic terminology

ROME 1990

Normal colposcopic findings

Original squamous epithelium

Columnar epithelium

Normal transformation zone

Abnormal colposcopic findings

Acetowhite epithelium

Flat

Micropapillary / microconvoluted

Punctation Mosaic

Leukoplakia

Iodine negative

Atypical vessels

Colposcopically suspect invasive carcinoma

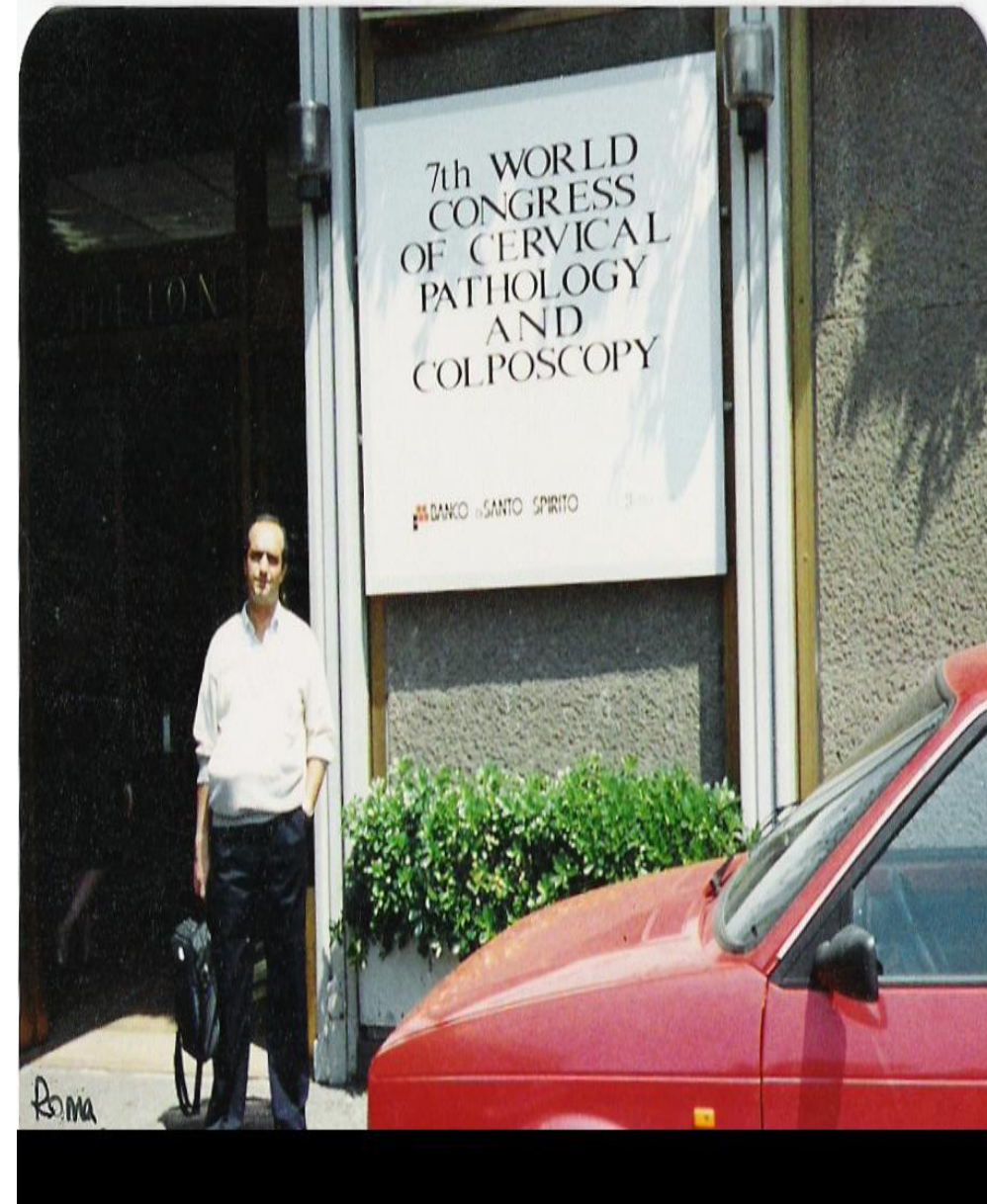
Unsatisfactory colposcopy

SCJ not visible, inflammation, atropy

Miscellaneous

Nonacetowhite micropapillary

surface, exophytic condyloma, ulcer



International Federation for Cervical Pathology and Colposcopy (IFCPC) colposcopic classification 2002

I. Normal colposcopic findings

Original squamous epithelium

Columnar epithelium

Normal transformation zone

II. Abnormal colposcopic findings

Flat acetowhite epithelium

Dense acetowhite epithelium *

Fine punctation

Course punctation*

Fine mosaic

Course mosaic*

Iodine partial positiv

Iodine negativity*

Atypical vessels*

***Major changes**

III. Colposcopic features suggestive invasive carcinoma

IV. Unsatisfactory colposcopy SCJ or cervix not visible, severe inflammation, severe atrophy, trauma

V. Miscellaneous findings: Condylomata, Keratosis, Erosion, Inflammation, Atrophy, Deciduous, Polyps.



The new IFCPC Nomenclature



International Federation for Cervical Pathology and Colposcopy
Internationale Federation für Zervixpathologie und Kolposkopie
Federación Internacional de Patología Cervical y Colposcopia
Fédération Internationale de Pathologie Cervicale et Colposcopie

2011 IFCPC Nomenclature¹

Accepted in Rio World Congress, July 5, 2011

Nomenclature Committee chairman: Jacob Bornstein MD



International Federation for Cervical Pathology and Colposcopy
Internationale Federation für Zervixpathologie und Kolposkopie
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Fédération Internationale de Pathologie Cervicale et Colposcopie

2011 IFCPC Nomenclature¹

Accepted in Rio World Congress, July 5, 2011

Nomenclature Committee chairman: Jacob Bornstein MD

2011 IFCPC colposcopic terminology of the cervix ¹	
General assessment	<ul style="list-style-type: none">• Adequate/inadequate for the reason ... (i.e.: cervix obscured by inflammation, bleeding, scar)• Squamo-columnar Junction visibility: completely visible, partially visible, not visible• Transformation zone types 1,2,3
Normal colposcopic findings	Original squamous epithelium: <ul style="list-style-type: none">• Mature• Atrophic Columnar epithelium <ul style="list-style-type: none">• Ectopy Metaplastic squamous epithelium <ul style="list-style-type: none">• Nabothian cysts• Crypt (gland) openings Deciduous in pregnancy

Abnormal colposcopic findings	General principles	Location of the lesion: Inside or outside the T-zone, Location of the lesion by clock position Size of the lesion: Number of cervical quadrants the lesion covers, Size of the lesion in percentage of cervix,	
	Grade 1 (Minor)	Thin aceto-white epithelium Irregular, geographic border	Fine mosaic, Fine punctation
	Grade 2 (Major)	Dense aceto-white epithelium, Rapid appearance of acetowhitening, <u>Cuffed crypt (gland) openings</u>	Coarse mosaic, Coarse punctuation, Sharp border, Inner border sign, Ridge sign
	Non specific	Leukoplakia (keratosis, hyperkeratosis), Erosion Lugol's staining (Schiller's test): stained/non-stained	
Suspicious for invasion		Atypical vessels Additional signs: Fragile vessels, Irregular surface, Exophytic lesion, Necrosis, Ulceration (necrotic), tumor/gross neoplasm	
Miscellaneous finding		Congenital transformation zone, Condyloma, Polyp (Ectocervical/ endocervical) Inflammation,	Stenosis, Congenital anomaly, Post treatment consequence, Endometriosis

¹ Bornstein J, Bentley J, Bosze P, Girardi F, Haefner H, Menton M, Perrotta M, Prendiville W, Russell P, Sideri M, Strander B, Torne A, Walker P. 2011 IFCCPC colposcopic nomenclature. In preparation for publication

Solutions

- **Saline**
- **Acetic acid: 3-5 %**
 - **Glacial acetic acid 3-5 ml + distilled water 97-95 ml**
- **Lugol**
 - **Potassium iodide 10 g + distilled water 100 ml**
 - **Add slowly 5 g of iodine crystals when shaking**
 - **Store in brown bottle**



E9102401
AC-WHOLE

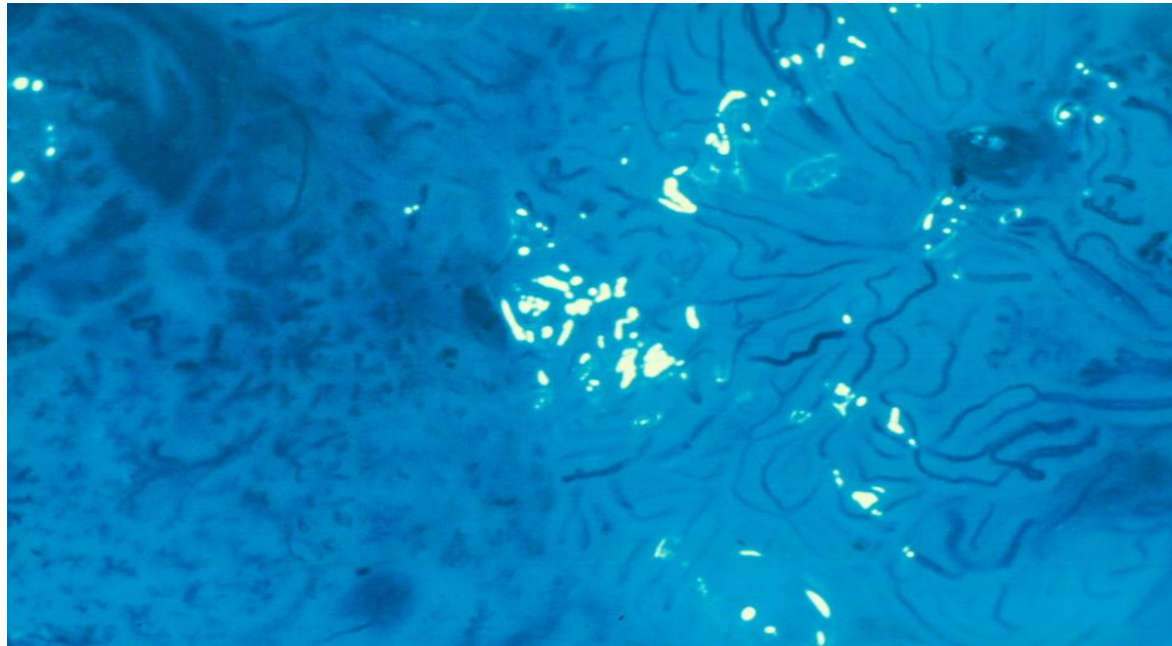


E9102401
AC-UPPER



Saline

- **Used to clean the cervix**
 - **Good view on vascular pattern**
 - **Green filter before using Acetic Acid:
swelling of epithelium**



Acetic acid (1)

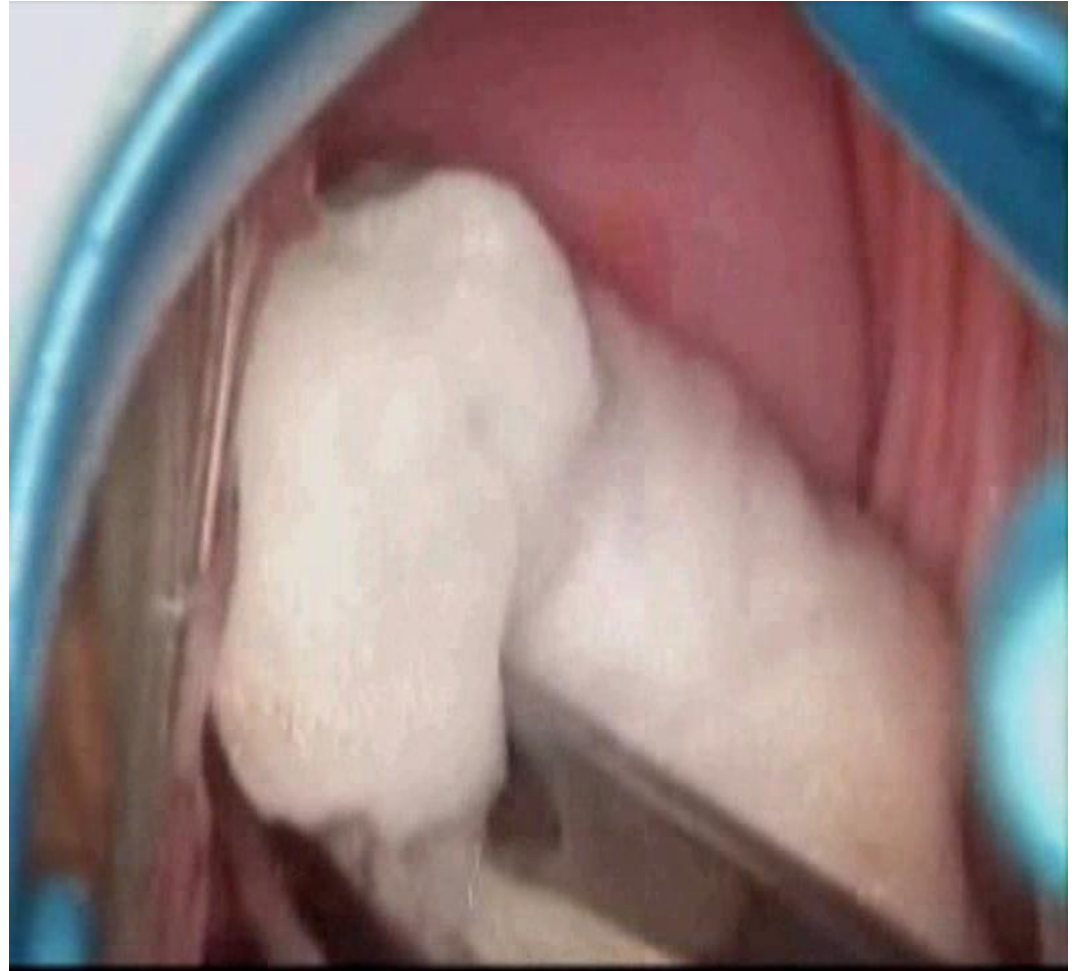
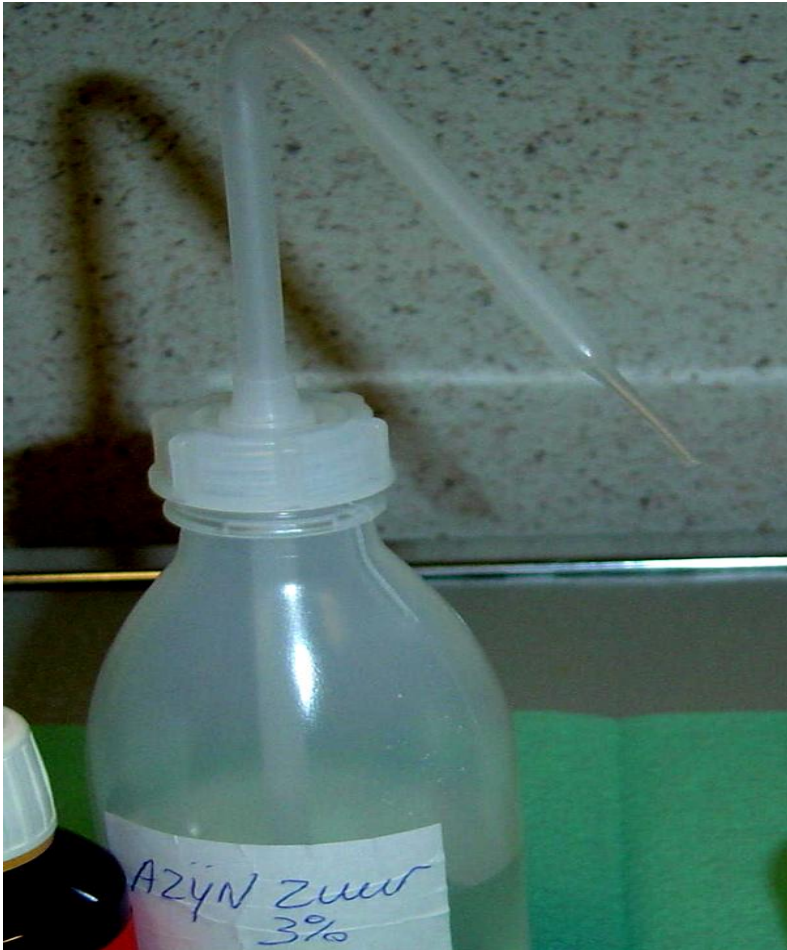
Use after first inspection

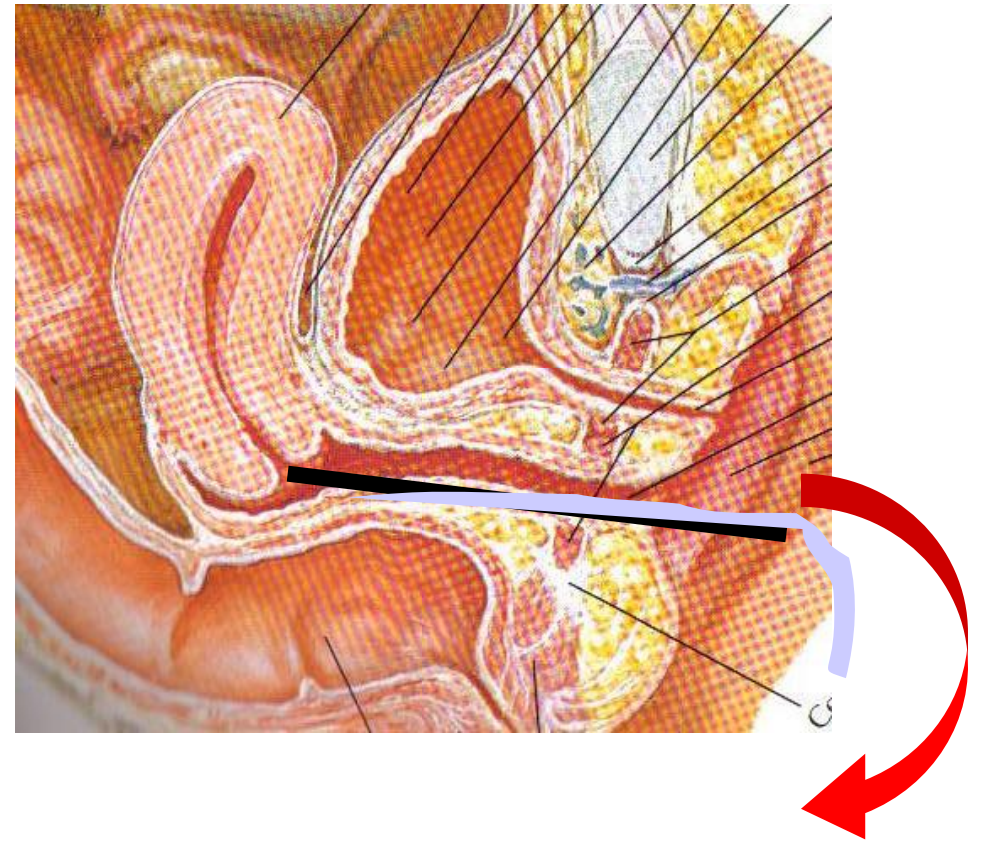
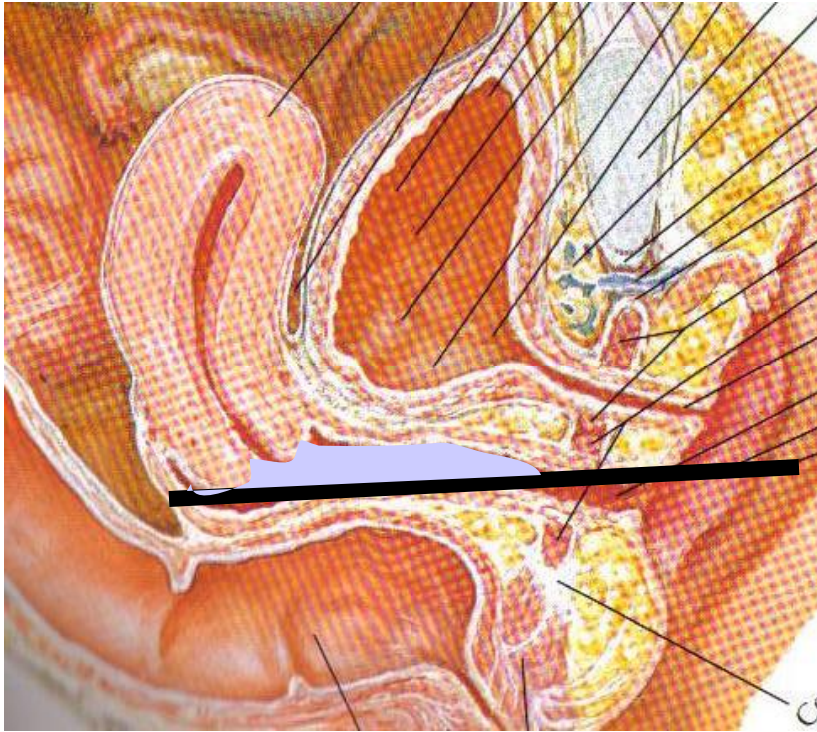
3 %: ideal for cervix and vagina

5 %: more appropriate for vulva

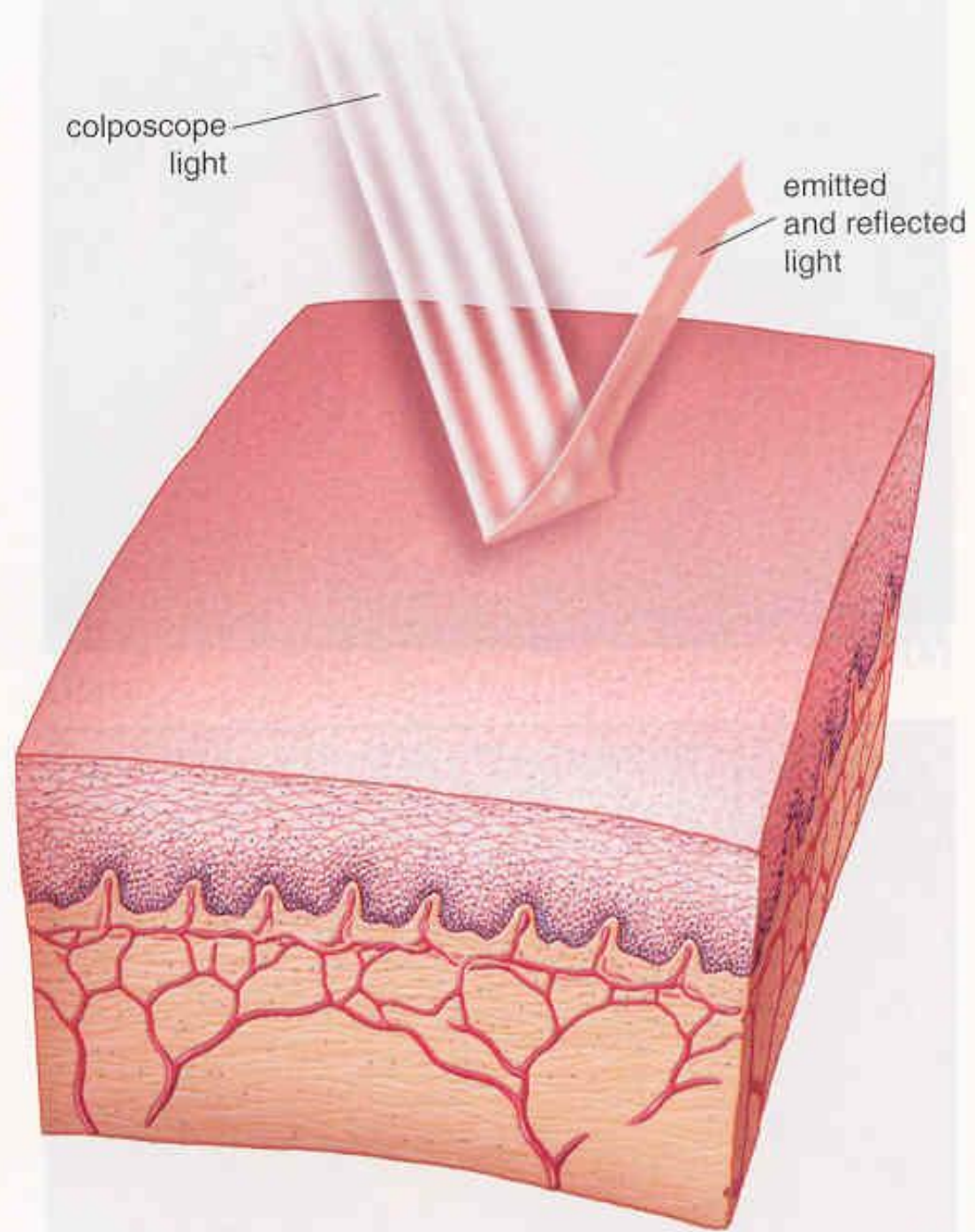
- Apply acetic acid and leave it for 30-60 seconds**
- Repeat if necessary**

« Keep it wet »





Let the acetic acid 'flow away' (tilt speculum)

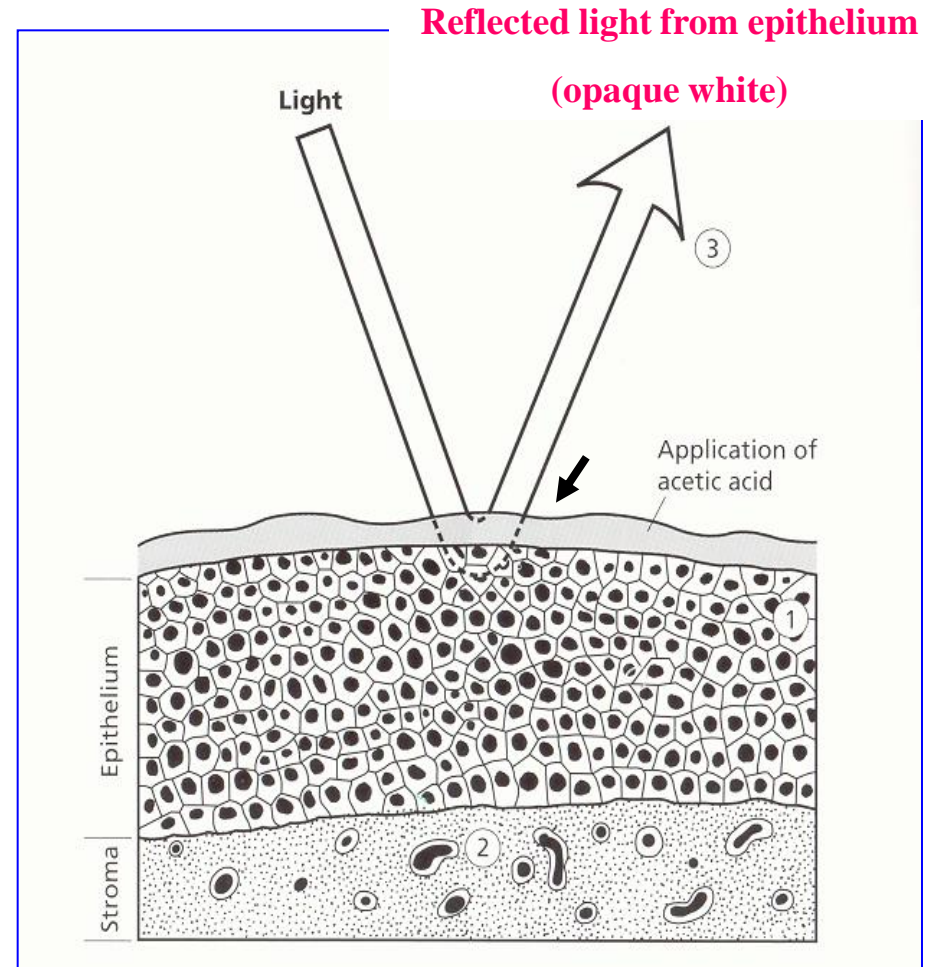
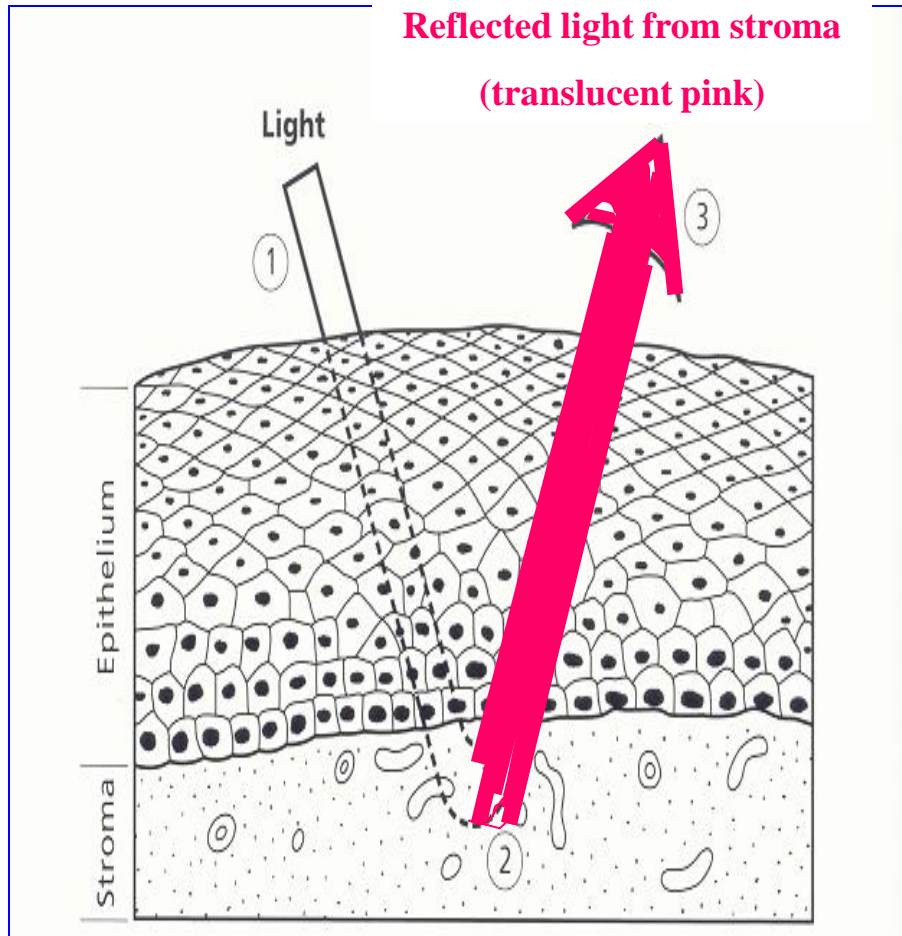


Aceto white changes

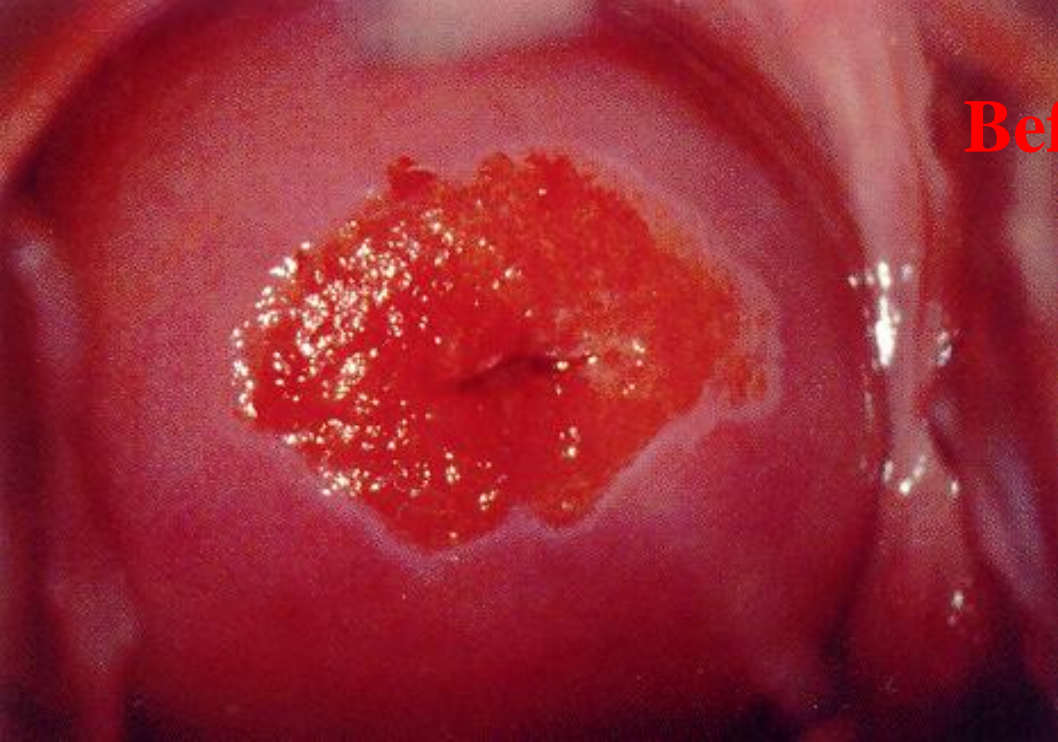


**reversible
coagulation or
precipitation of
the nuclear
proteins and
cytokeratins**

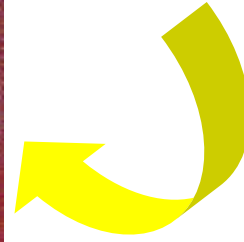
Normal and Atypical epithelium



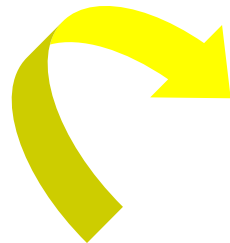
- **Increased nuclear proteins:**
 - **immature squamous metaplasia**
 - **congenital transformation zone**
 - **in healing and regenerating epithelium
(associated with inflammation)**
 - **Condyloma HPV infection**
 - **CIN**
 - **Adenocarcinoma in situ**
 - **Adenocarcinoma**
 - **Invasive squamous carcinoma**



Before 3% acetic acid application

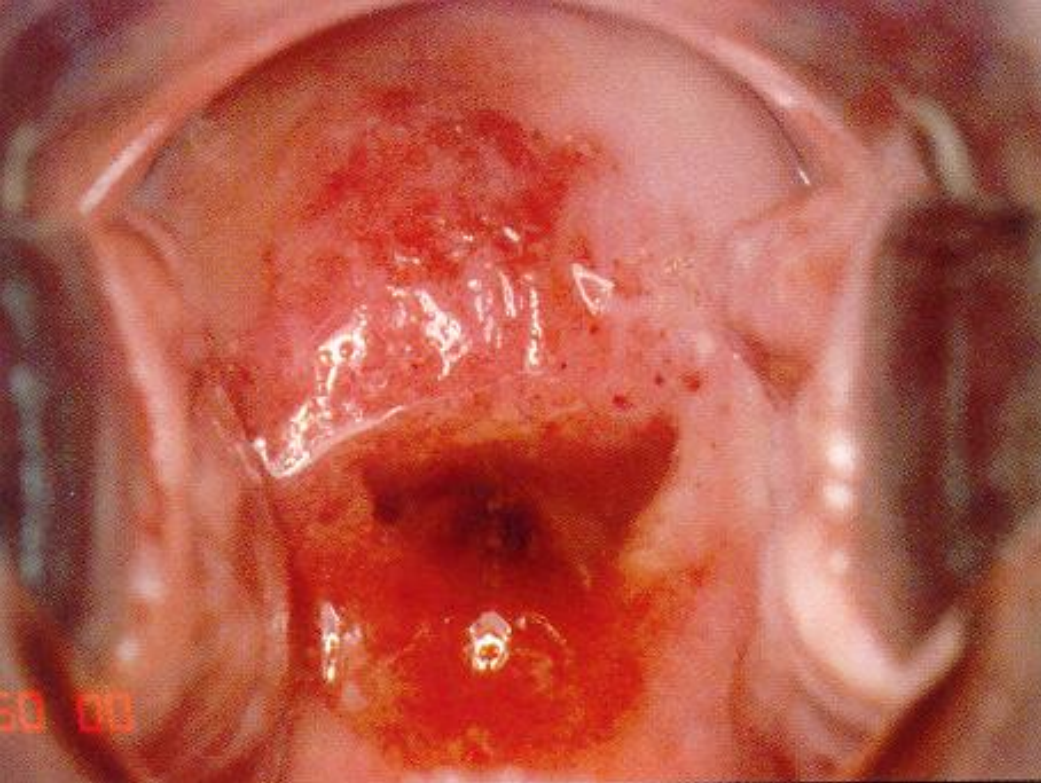


Columnar epithelium

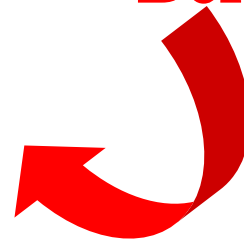


After 3% acetic acid application

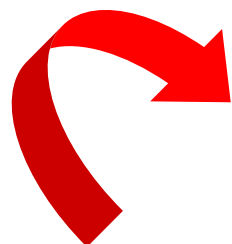




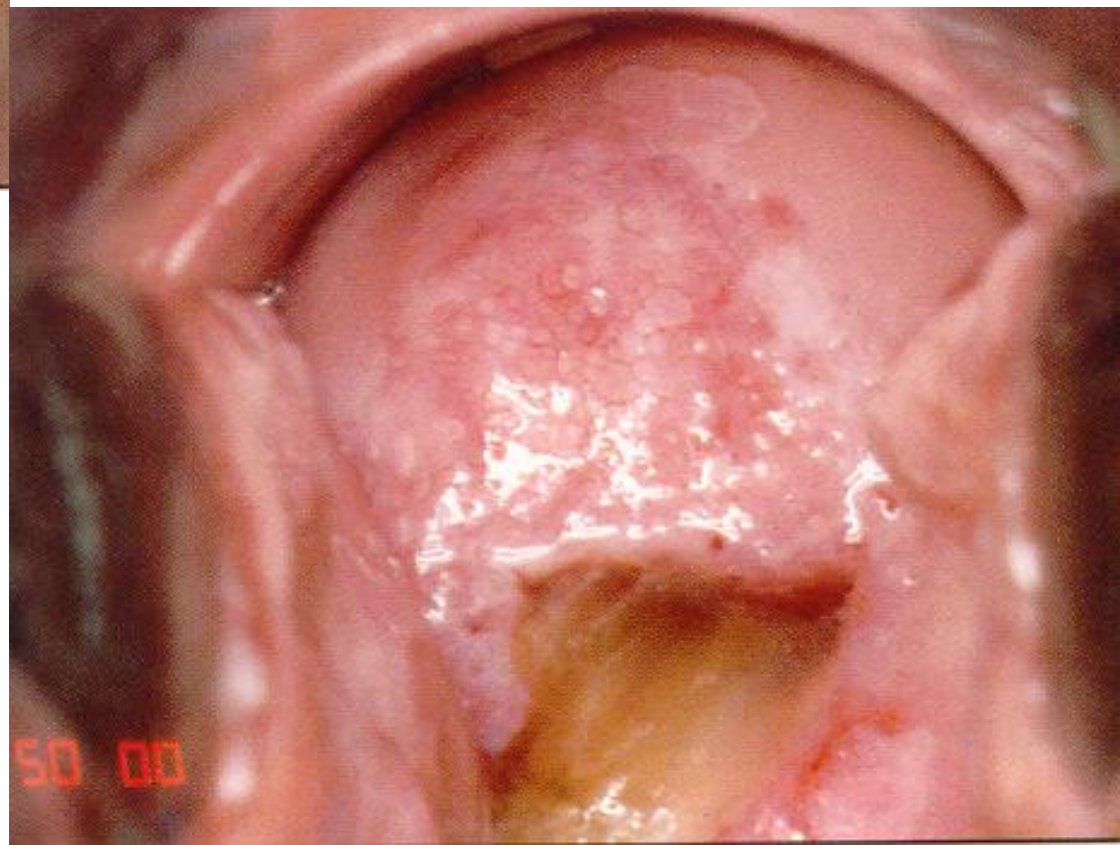
Before Acetic acid



CIN 3

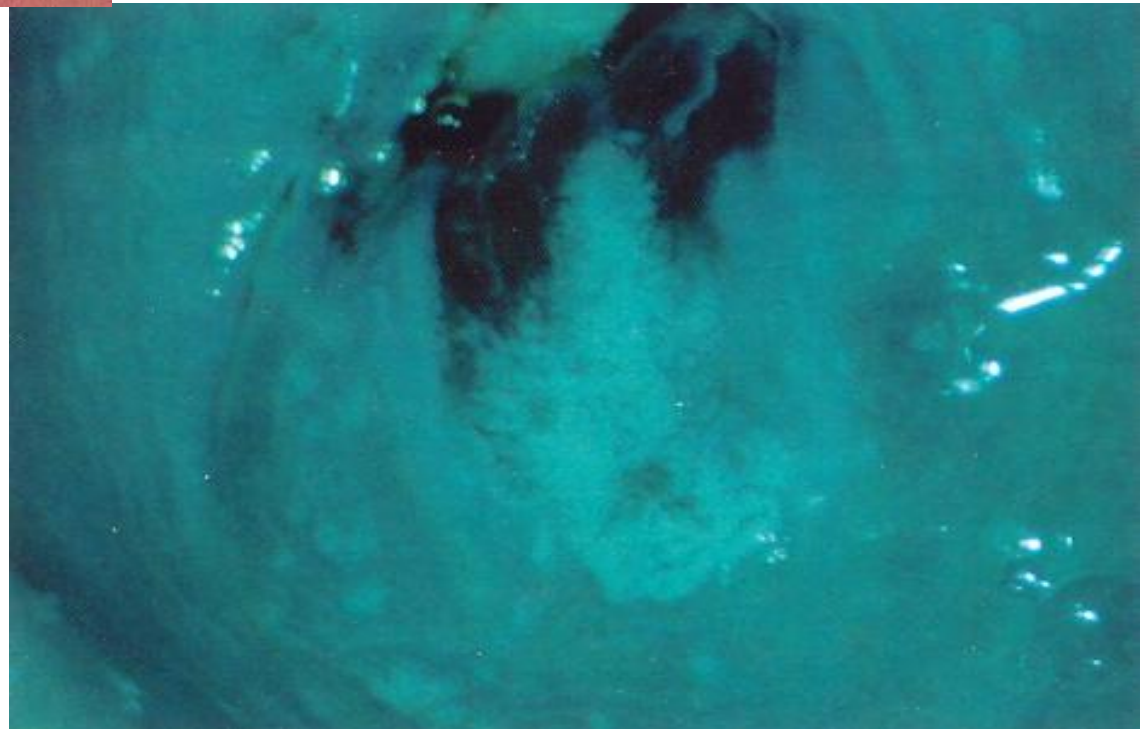


After acetic acid



Green Filter

**A cervical lesion of the
posterior cervical lip
after 3% acetic acid
application
and with
the green filter**

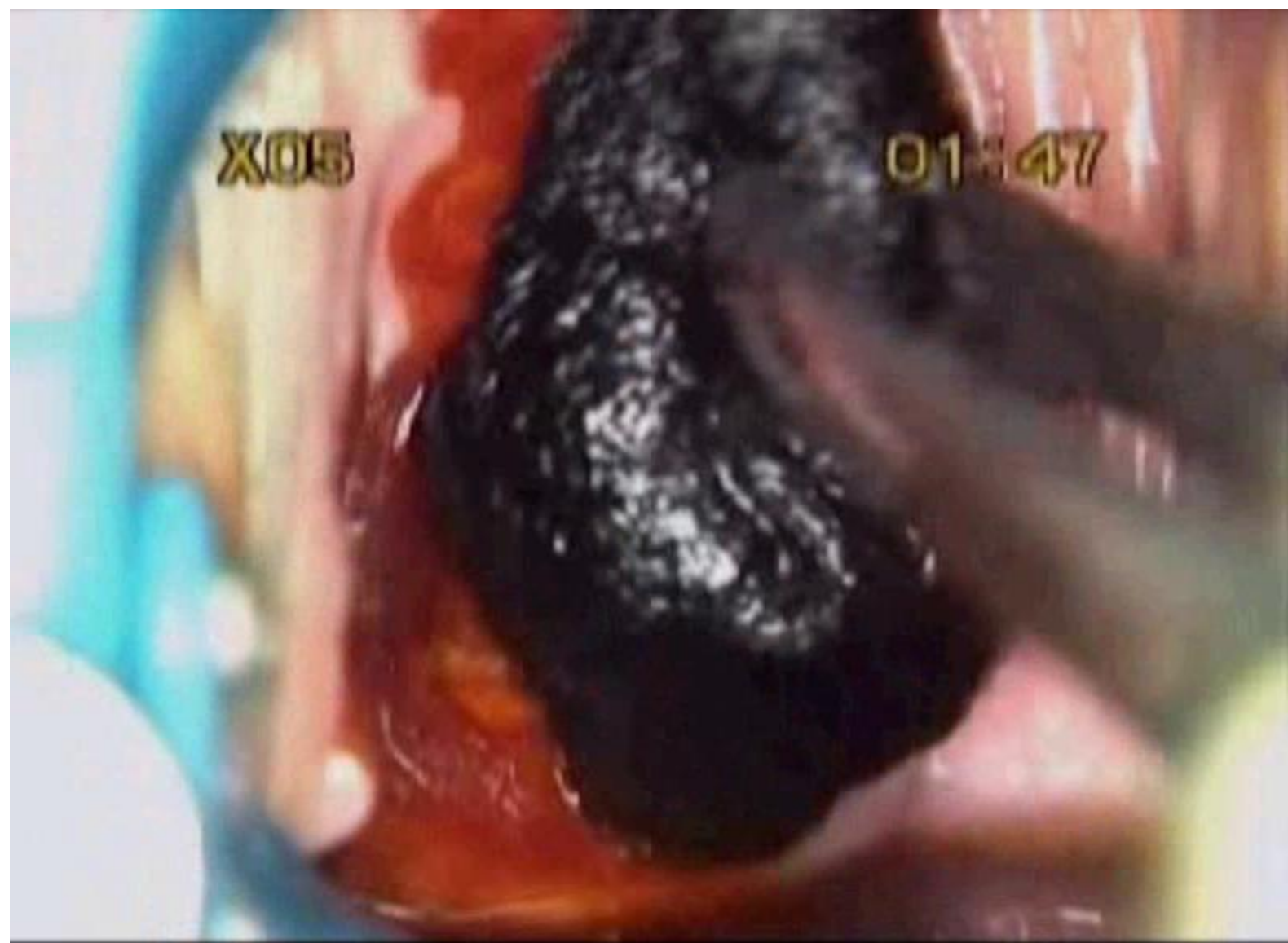


Lugol

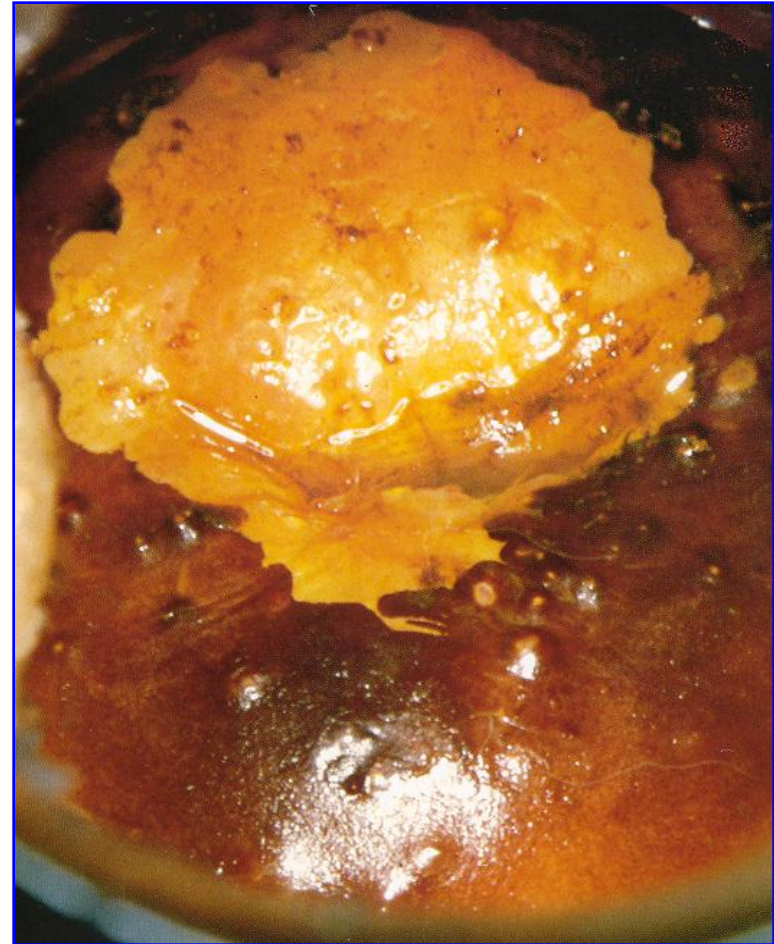
Schiller's iodine test



- Iodine is glycophilic
 - original and newly formed mature squamous metaplastic epithelium is glycogenated
 - CIN and invasive cancer contain little or no glycogen
 - Immature squamous metaplastic epithelium contains also little or no glycogen



CIN 3



Lugol (2)

- **False positivity is high**
- **Time consuming process**
- **Use at the end of the colposcopy, before biopsy**

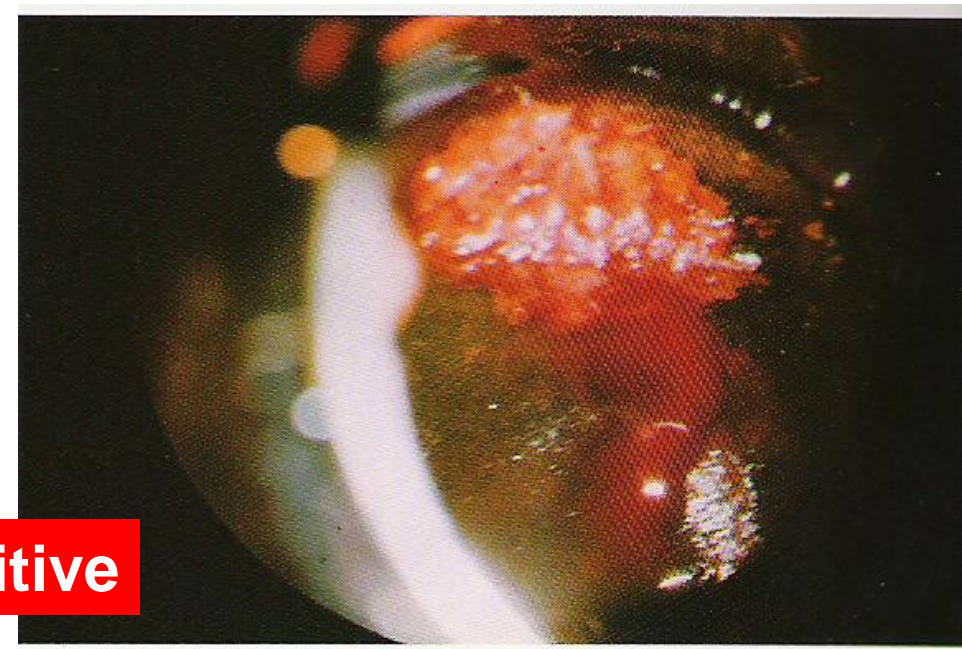
May help in delineating the anatomical extent of abnormal areas much more clearly

(before conization or LEEP)



Acetic acid

Smear: L SIL
Colposcopy: CIN II



Schiller positive

SPECIFIC COLPOSCOPIC FEATURES

**Degree of
acetowhiteness**

Margins

Surface contour

Vascular pattern

CIN 1

Slight shiny; semitransparent

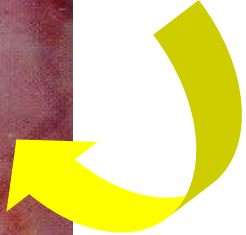


CIN 3

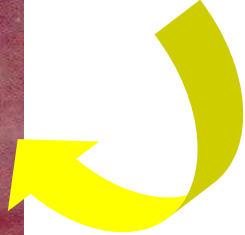
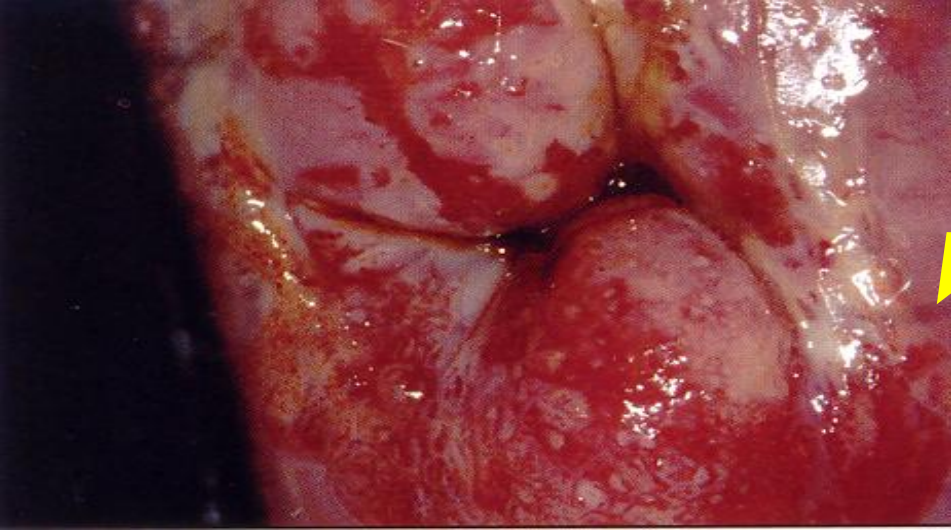
Very dense white; oyster white



After 1 minutes of acetic acid application

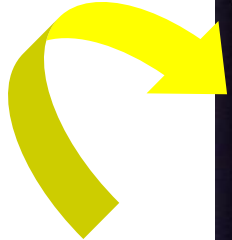
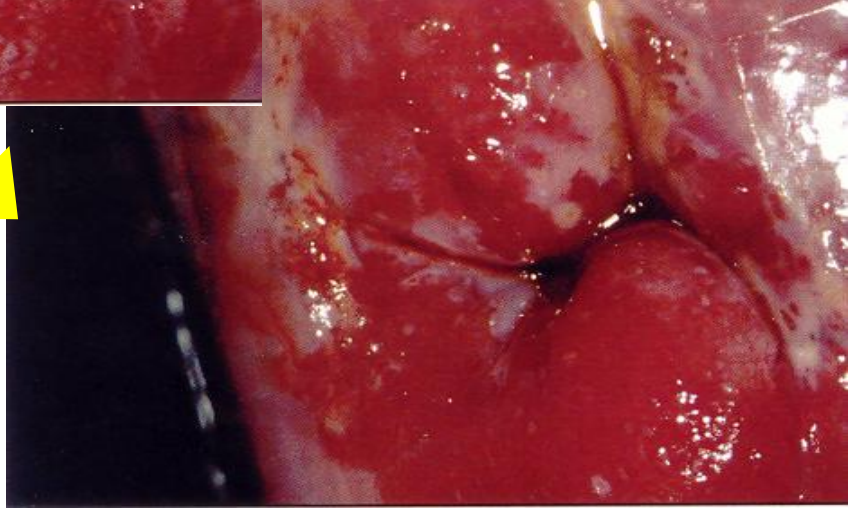


After 3 minutes



CIN 3

After 5 minutes



MARGINS

Sharpness

Shape

Thickness of the border

Presence of internal margins

LOW-GRADE/MINOR LESIONS

Irregular

Feathered

Angular

Geographic

Indistinct

Satellite lesions

**Exophytic micropapilliferous
condyloma-like lesions**

L SIL



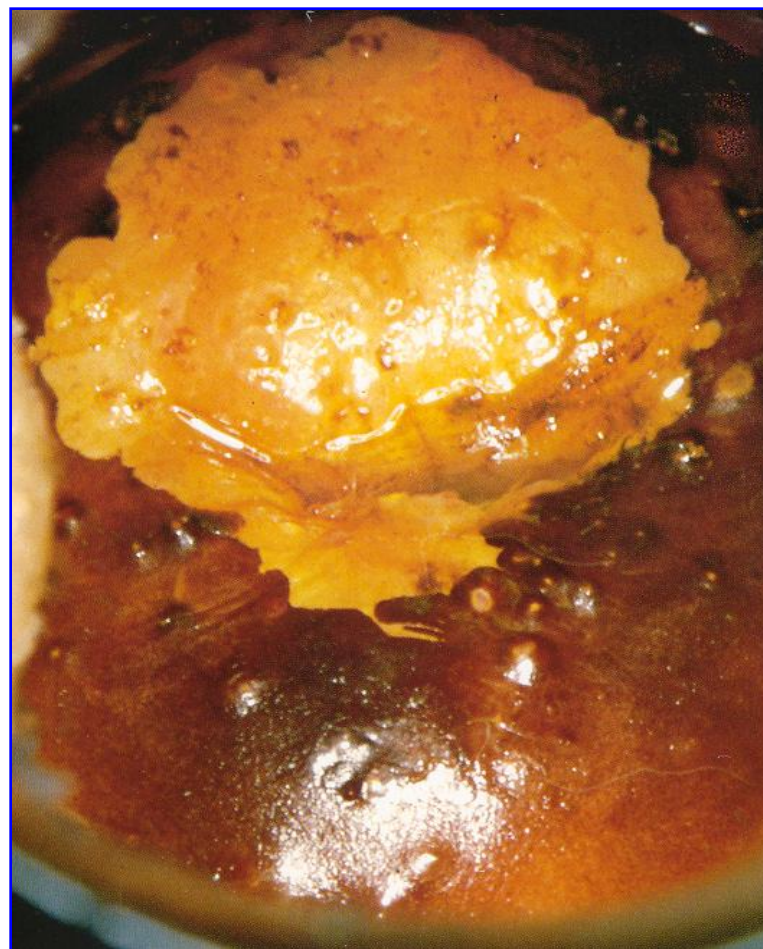
SEVERE/HIGH GRADE ABNORMALITIES

Distinct raised edge

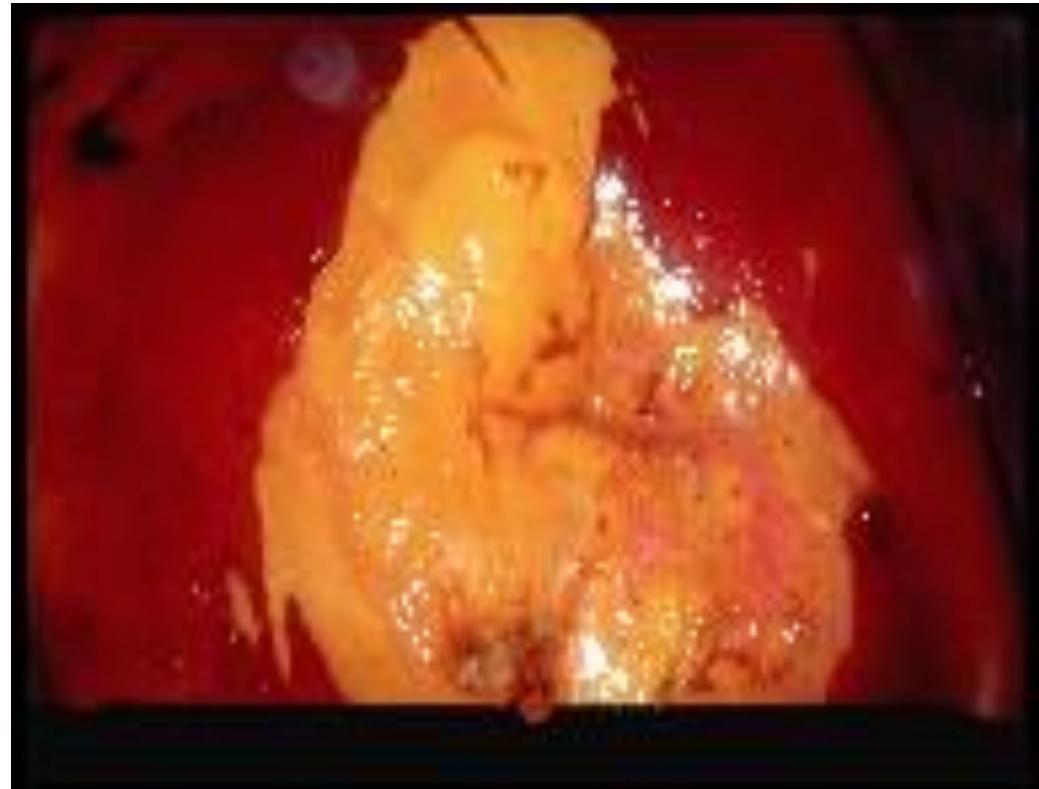
**Within larger low-grade
lesion:**

**internal margin or
demarcation**

CIN-3



H SIL CIN-2



SURFACE CONTOUR

Smooth

Papillary

Nodular

Uneven

Ulcerated



Smooth surface **CIN I**



Green filter; Nodularity

Bx: Invasive Cx Ca

VASCULAR PATTERNS

Punctuation

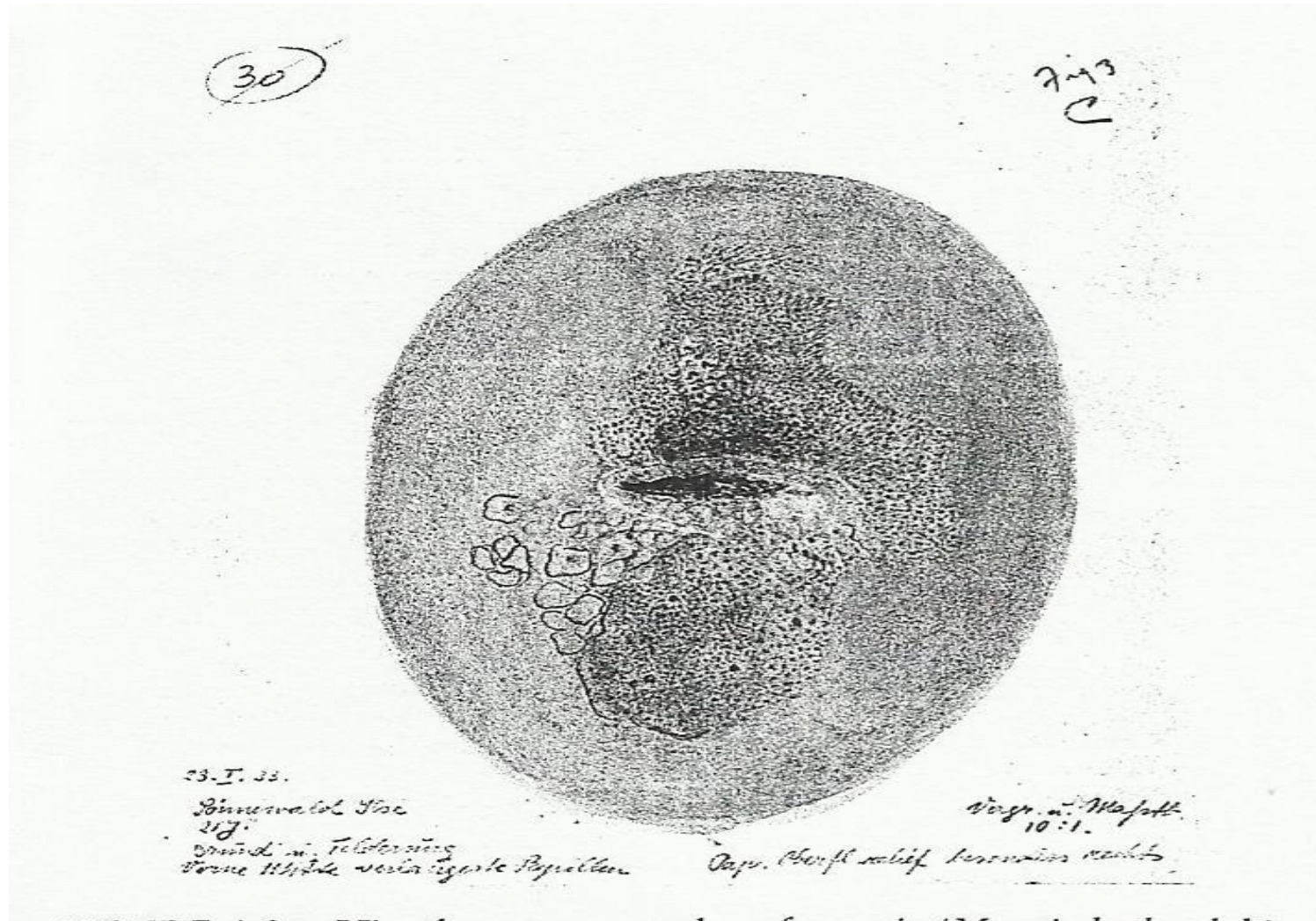
Mosaic

Atypical vessels

Intercapillary distance

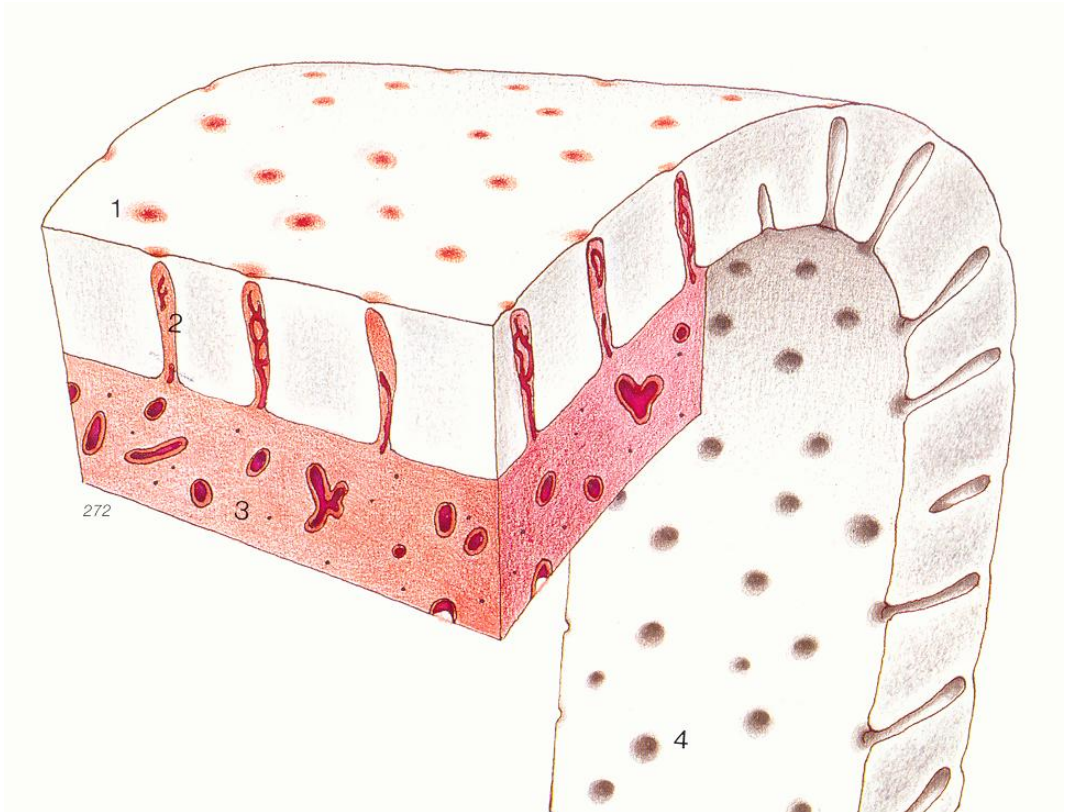
Punctuation

Mosaic



Hinselmann watercolor of mosaic (Mosaic leukoplakia or Felderung) and punctuation (Ground leukoplakia or Leukoplakiegrund)

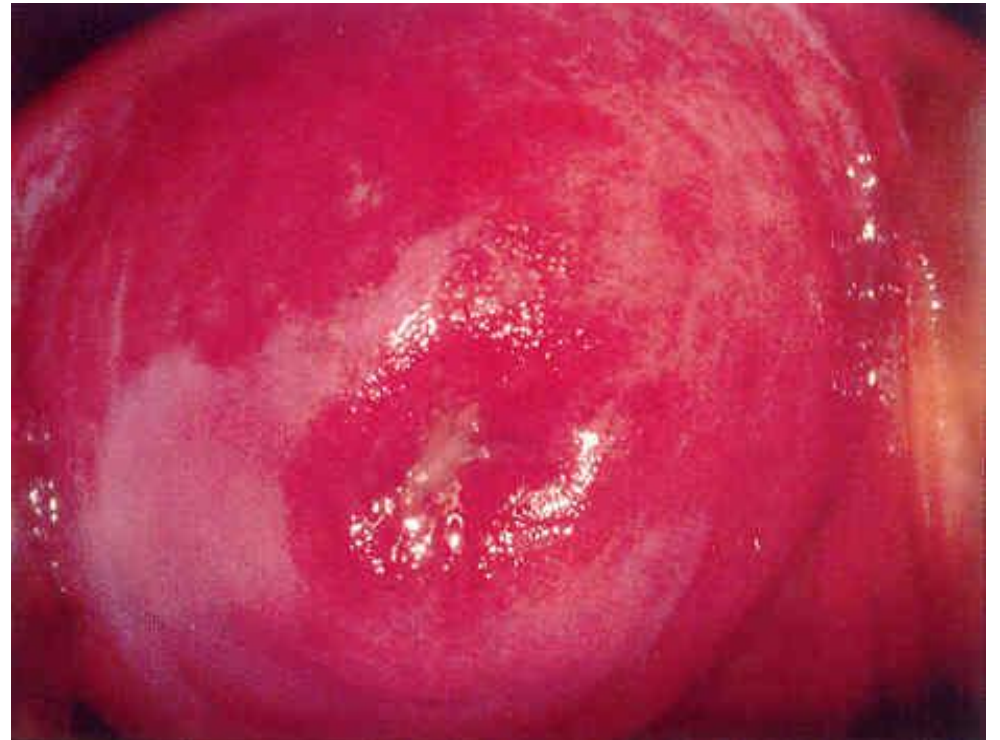
Punctation





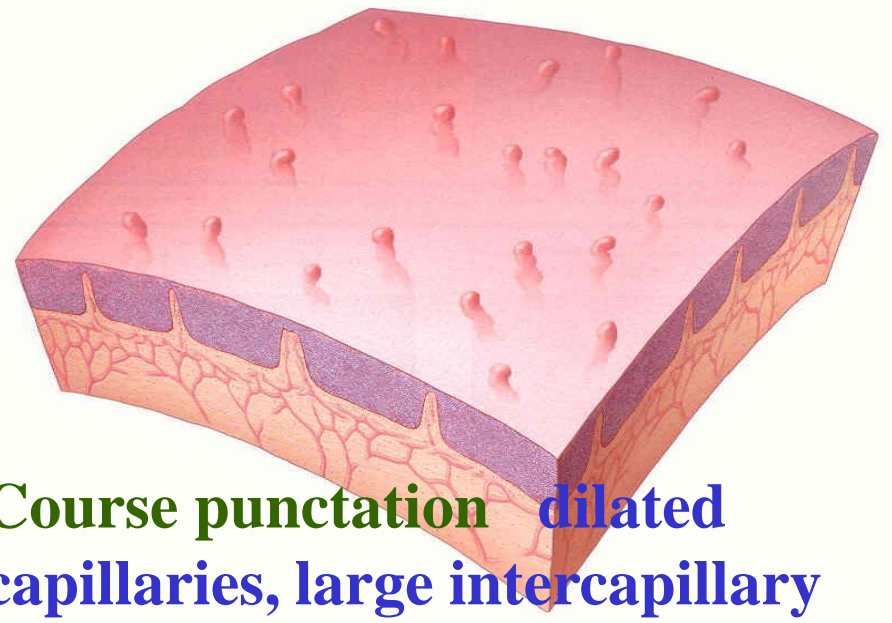
**Diffuse punctation on
vagina and cervix**

Inflammation

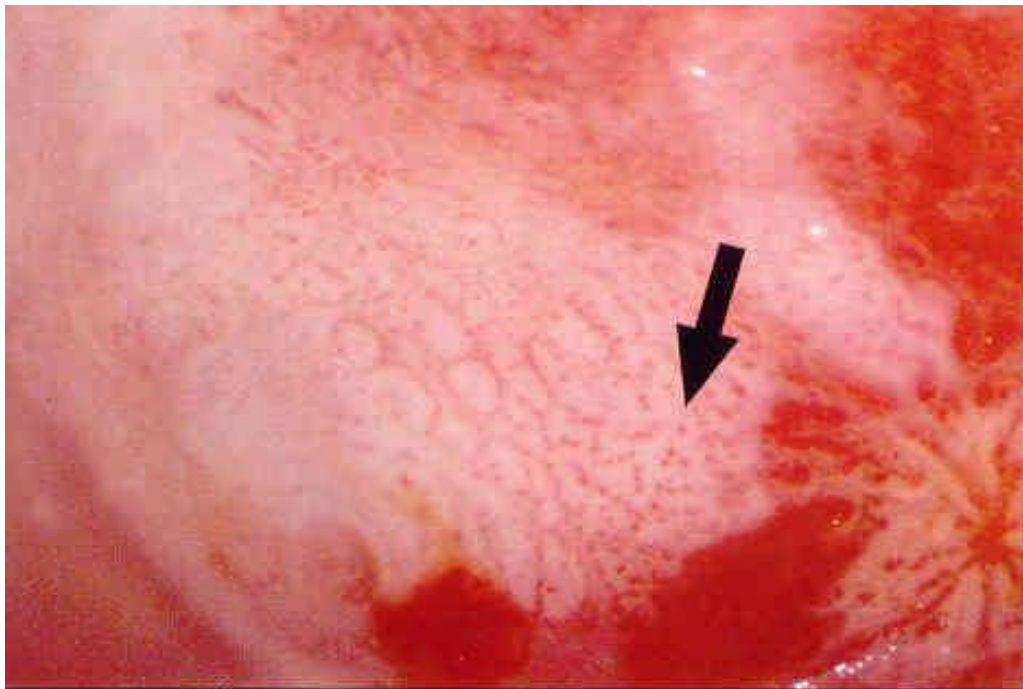




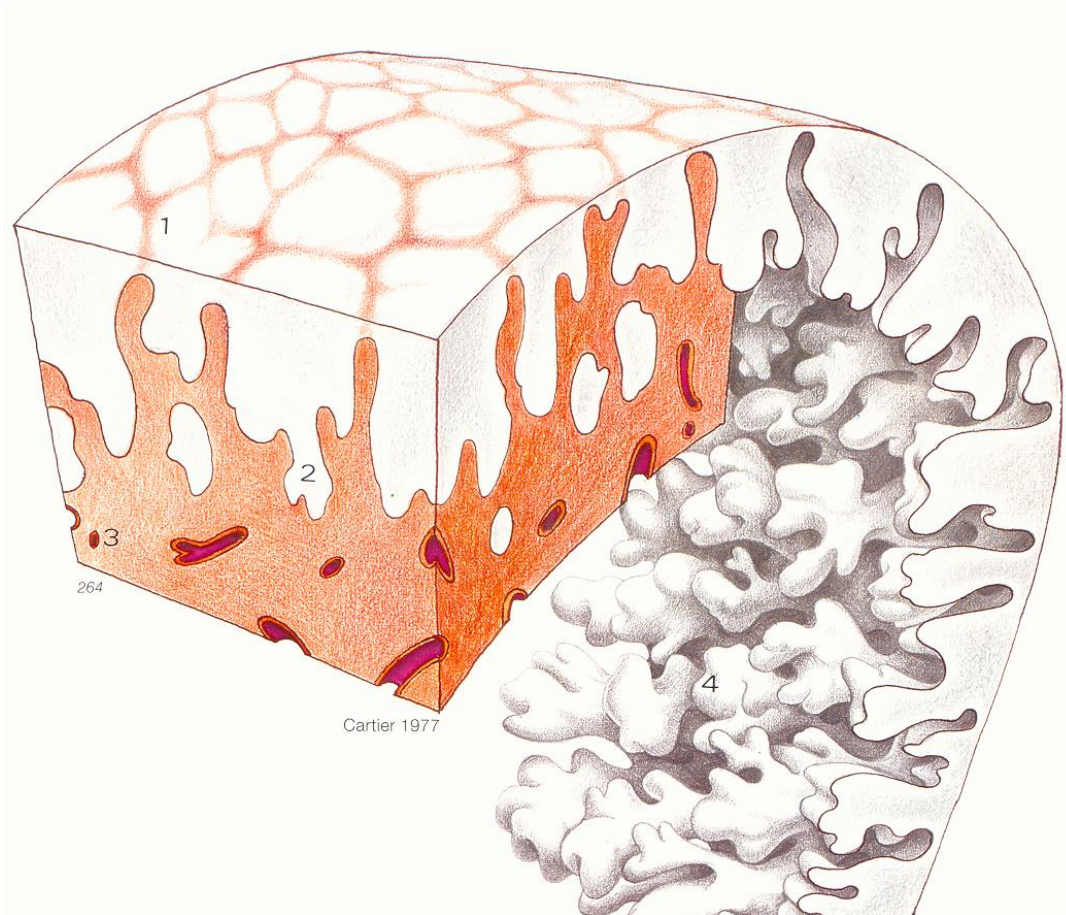
Fine punctation uniform CIN 1



Coarse punctation dilated capillaries, large intercapillary distance CIN 3

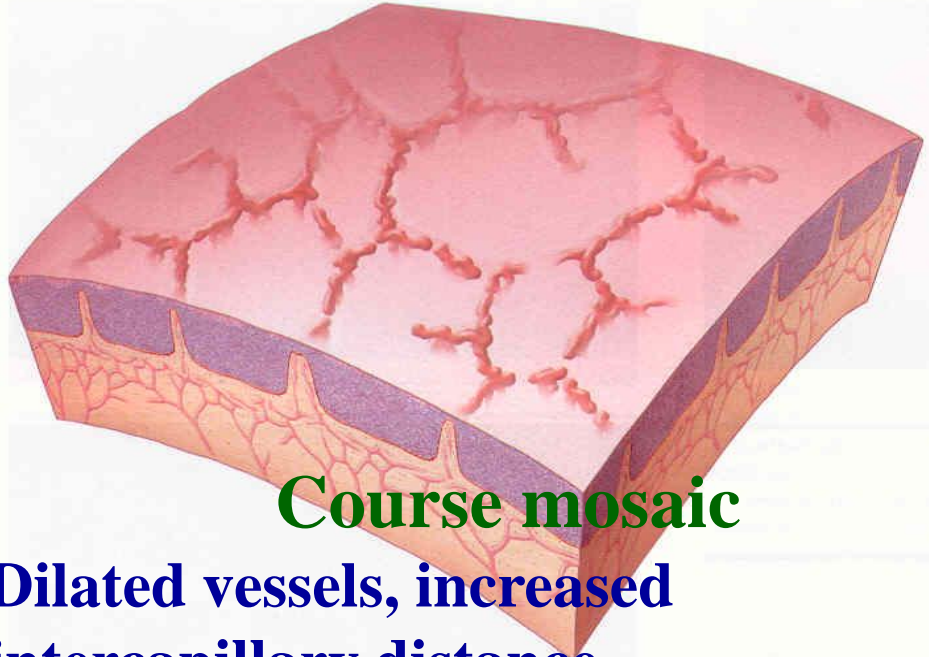


Mosaic





Fine mosaic
Immature metaplasia or CIN 1



Course mosaic
Dilated vessels, increased intercapillary distance
More irregular pattern CIN 3



ATYPICAL VESSELS

Terminal vessels, irregularities in

shape

course

density

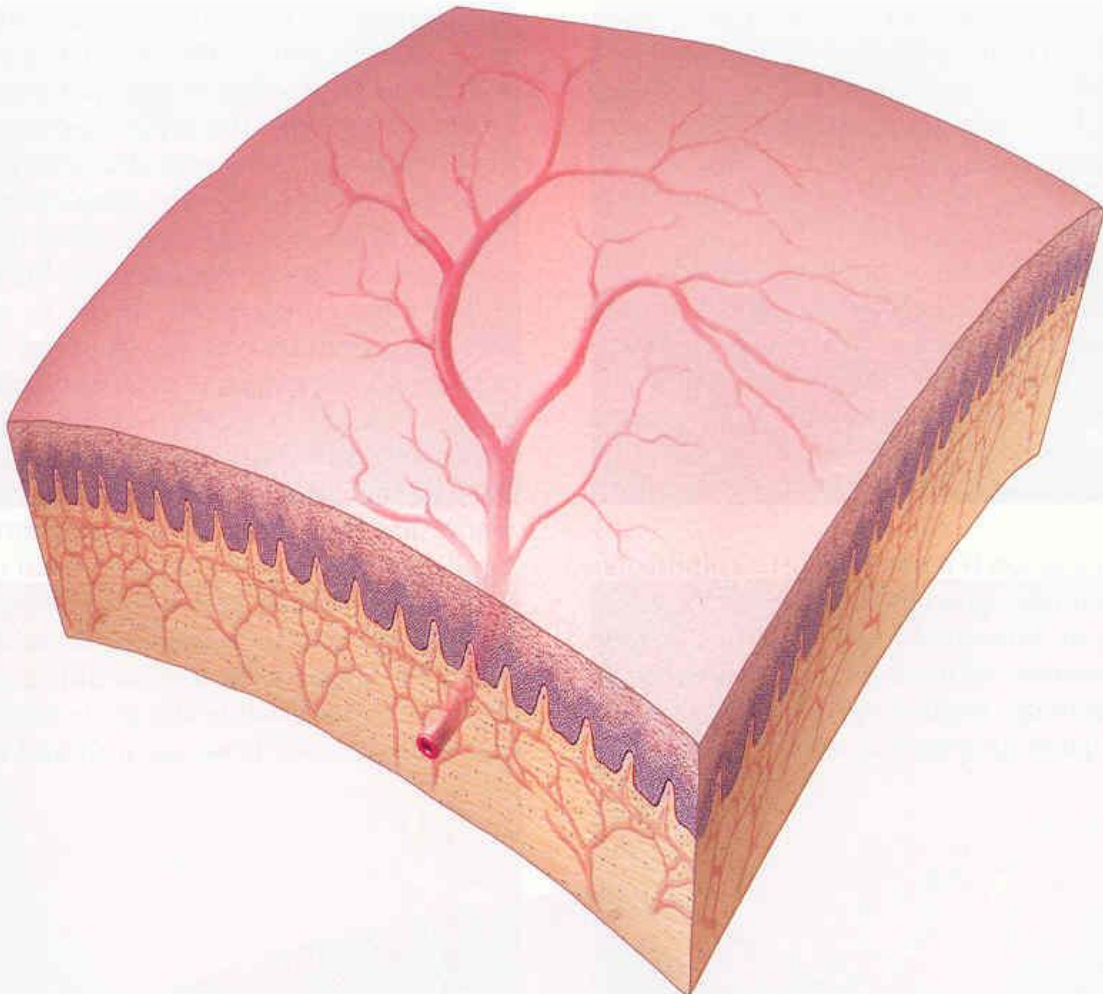
caliber

spatial arrangement

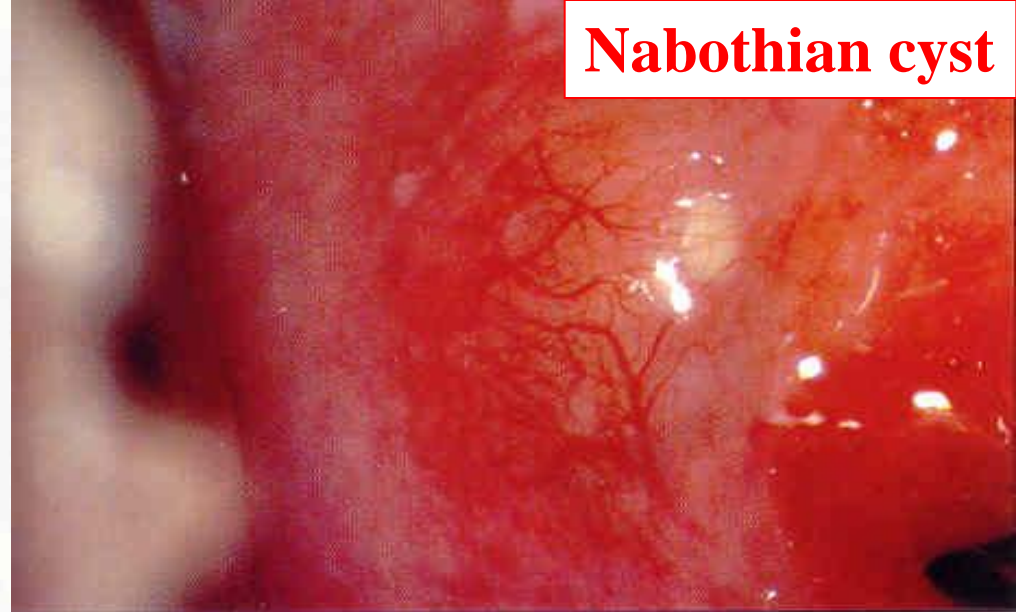
Intercapillary distance is larger

Atypical vessels and histologic diagnosis

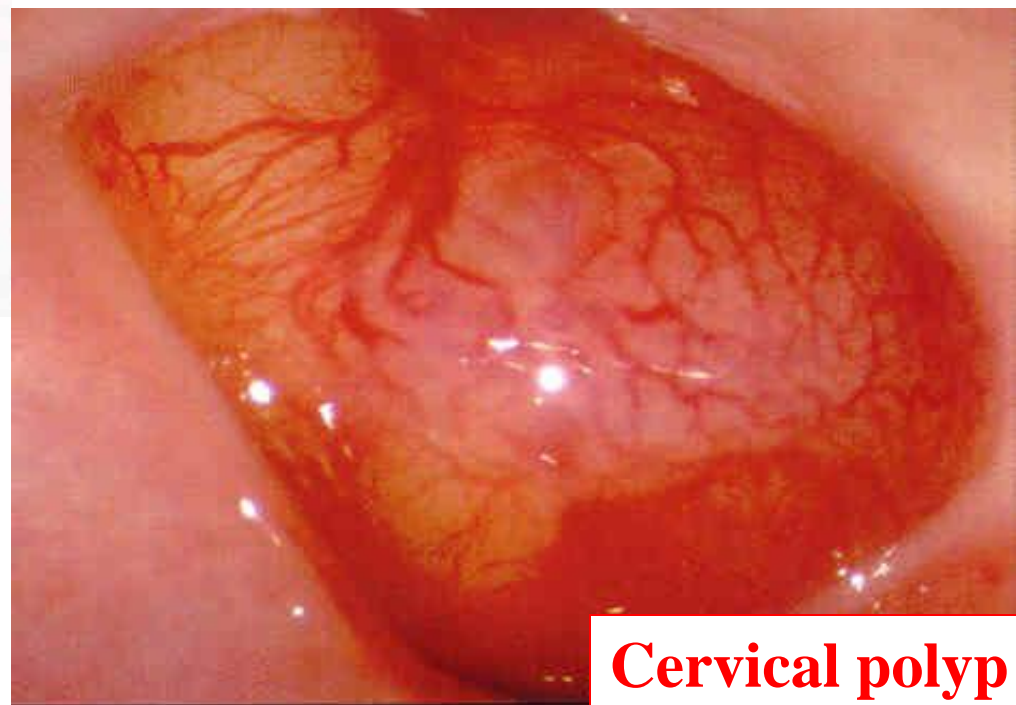
<u>Histologic diagnosis</u>	<u>Atypical vessels %</u>
Benign lesions	0.6
Dysplasia	0.7
Carcinoma in situ	16.7
Early invasive carcinoma	76.9
Invasive carcinoma	96.6



**Normal vessels like a tree
large to thin**



Nabothian cyst



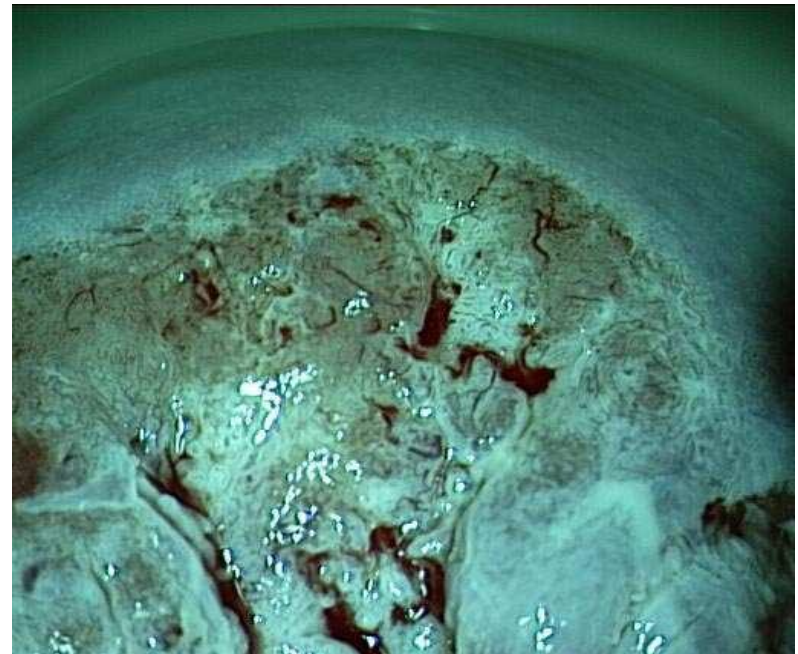
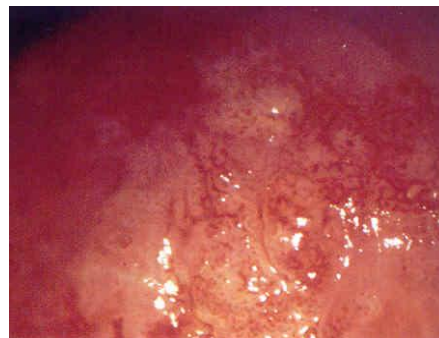
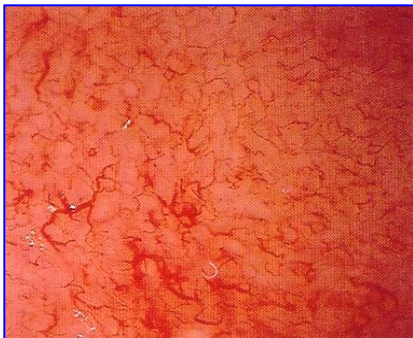
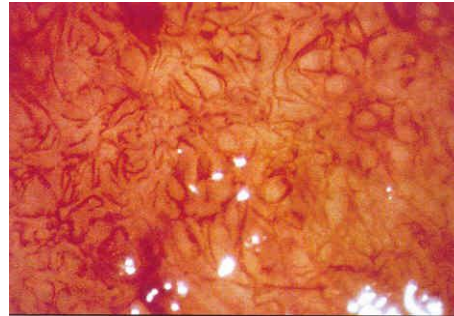
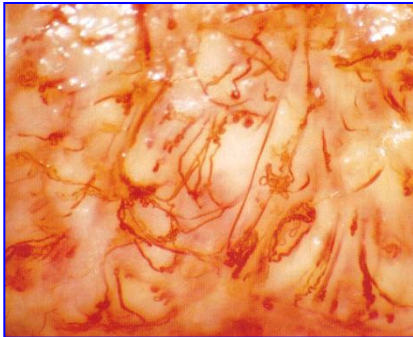
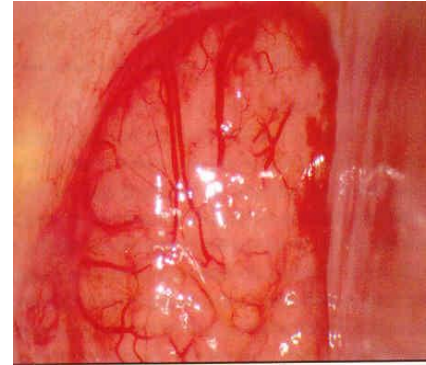
Cervical polyp

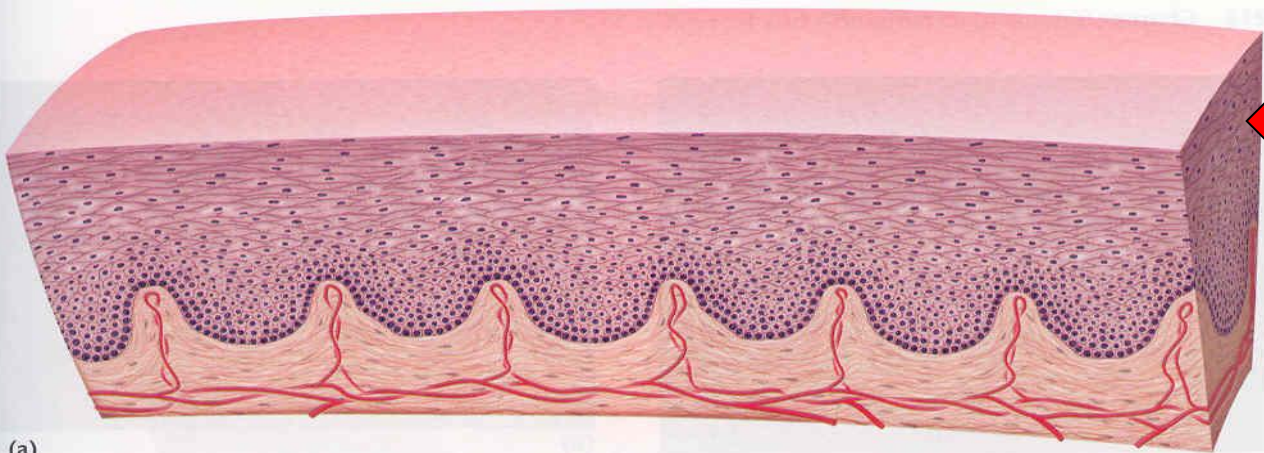
Atypical vessels

Glomeruloid hairpin, Commas, Corkscrew,

Waste paper, Spaghetti form

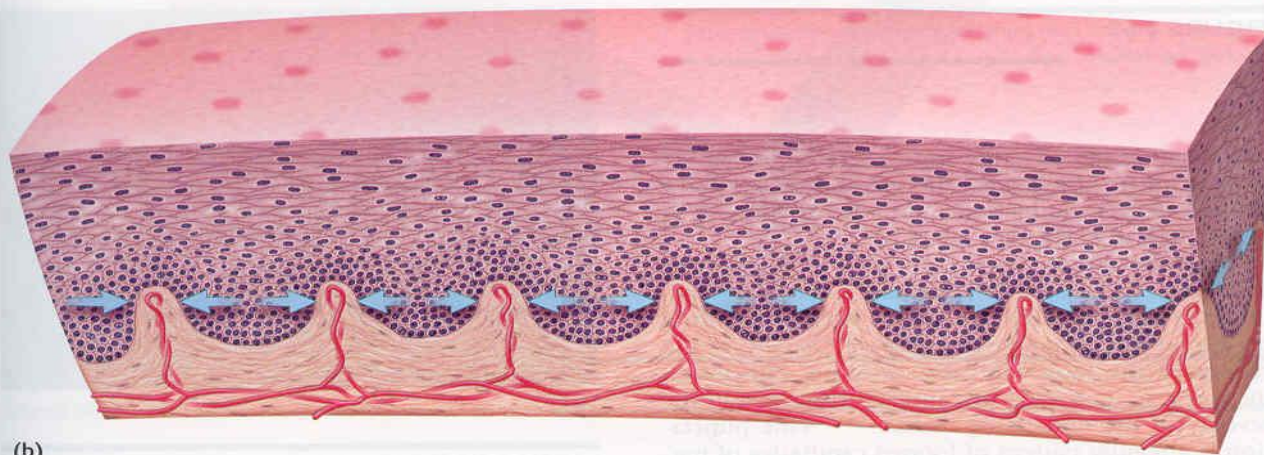
Tendrils, Waste-thread





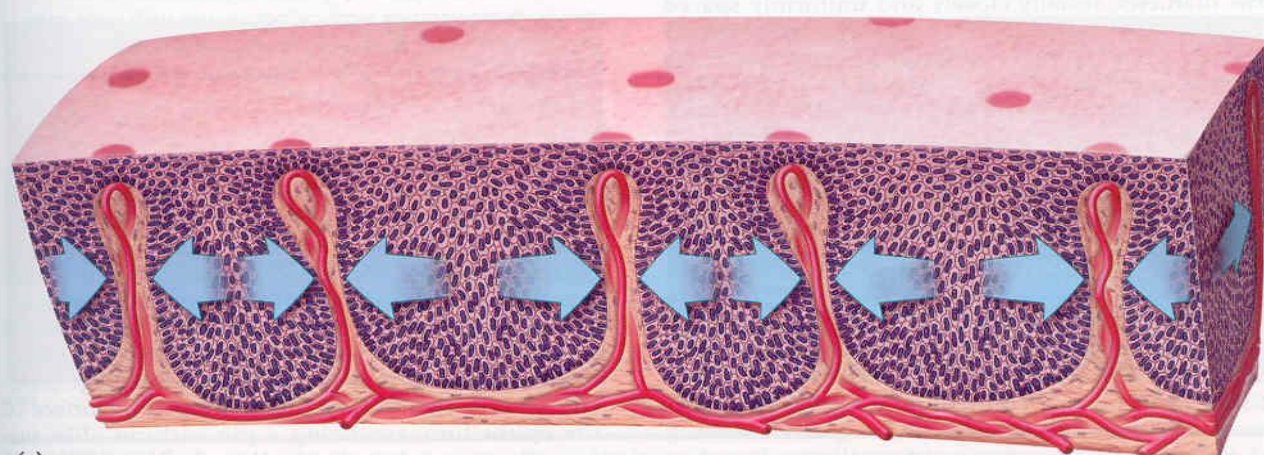
**Normal fine
caliber capillary**

(a)



CIN1

(b)

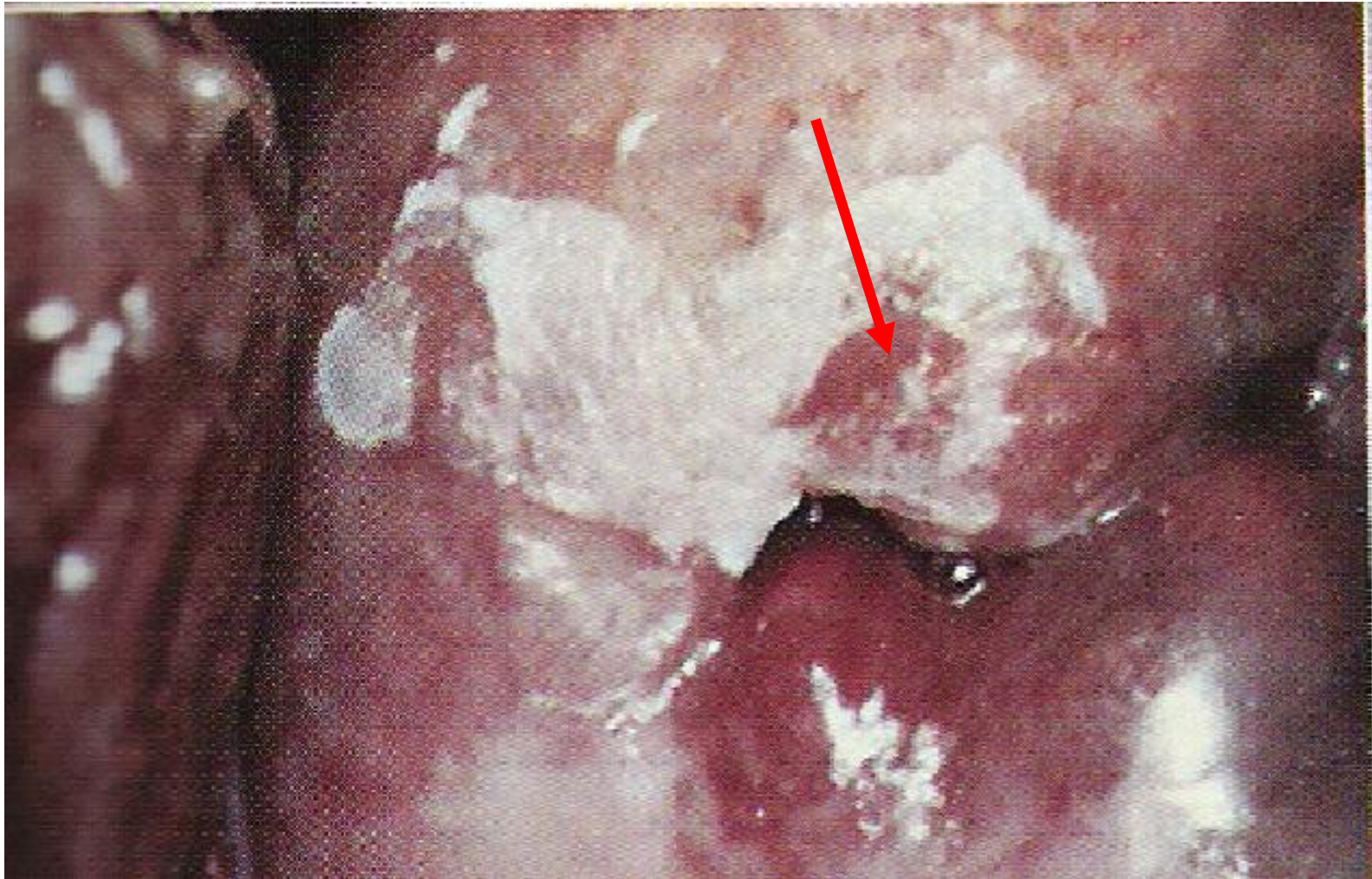


CIN3

(c)

keratosis (formerly leukoplakia)





keratosis Bx: CIN 3

GRADING OF ABNORMAL COLPOSCOPIC FINDINGS

Coppleson and co workers

Grade 1 (insignificant, not suspicious)

acetowhite epithelium,

usually shiny or semitransparent,

borders not necessarily sharp,

with or without fine-caliber vessels,

often with ill-defined patterns,

absence of atypical vessels,

small intercapillary distance

metaplastic epithelium

(immature, mature, acanthotic);

SPI; CIN 1

GRADING OF ABNORMAL COLPOSCOPIC FINDINGS

Coppleson and co workers

Grade 2 (significant, suspicious)

acetowhite epithelium with greater opacity

with sharp borders,

with or without dilated-caliber, regularly

shaped vessels,

absence of atypical vessels,

usually increased intercapillary distance

CIN 2; CIN 3

GRADING OF ABNORMAL COLPOSCOPIC FINDINGS

Coppleson and co workers

Grade 3 (highly significant, highly suspicious)

very white or gray opaque epithelium with sharp borders,

dilated-caliber, irregularly shaped, often coiled, occasional atypical vessels,

increased but variable intercapillary distance,

irregular surface contour- microexophytic epithelium

CIN 3 ; early invasion

THE COMBINED COLPOSCOPIC INDEX

Colposcopic

sign	Zero point	1 Point	2 Points
Margin	<p>Condylomatous or micropapillary contour</p> <p>Indistinct acetowhitening</p> <p>Flocculated or feathered margins, Angular, jagging lesions</p> <p>Satellite lesions and acetowhitening that extends beyond T/Z</p>	<p>Regular lesions with smooth, straight outlines</p>	<p>Rolled, peeling edges</p> <p>Internal demarcations between areas of differing appearance</p>
Color	<p>Shiny, snow white color</p> <p>Indistinct acetowhitening</p>	<p>Intermediate shade (shiny grey)</p>	<p>Dull, oyster white</p>
Vessels	<p>Fine-caliber vessels, poorly formed patterns</p> <p>Condylomatous or micropapillary lesions</p>	<p>Absent vessels</p>	<p>Definite punctation or mosaicism</p>
Iodine	<p>Positive iodine staining</p> <p>Minor iodine negativity</p>	<p>Partial iodine uptake</p>	<p>Negative staining of significant lesion</p>

0-2: SPI or CIN1

3-5: CIN I-II

6-8: CIN II-III Aneuploid lesions

THE MODIFIED REID COLPOSCOPIC INDEX

Colposcopic

sign	Zero point	1 Point	2 Points
Color	Low intensity , indistinct, transparent acetowhitening Acetowhitening beyond T/Z Pure snow-white color with intense surface shine	Intermediate shade- gray-white color and shiny surface	Dull,oyster -white Gray
Margin & surface	Microcondylomatous or micropapillary contour Flat lesions with indistinct borders Feathered or finely scalloped margins Angular,jagged lesions Satellite lesions beyond T/Z	Regular shaped lesions with smooth, straight outlines	Rolled,peeling edges Internal demarcations between areas of differing appearance
Vessels	Fine/uniform caliber vessels, Poorly formed patterns of punctuation and/or mosaic Vessels beyond T/Z Fine vessels within condylomatous or micropapillary lesions	Absent vessels	Well-defined coarse punctuation or mosaic, sharply demarcated
Iodine	Positive iodine staining mahogany brown	Partial iodine uptake tortoise shell	Negative staining mustard yellow

0-2: LSIL - HPV /atypia 3-4: Overlap 5-8: HSIL

Swede Score

Sign	A	B	C
Aceto	0 or transparent	Shady, milky	Distinct
Margin status	0 or diffuse	Sharp but irregular, jagged, geographical	Sharp and even, difference in surface level including cuffing
Vessel pattern	Fine regular	Absent	Coarse or atypical vessels
<u>Lesion size</u>	<5mm	5 – 15mm Or two quadrants	>15mm or 3 – 4 quadrants or endocervically undefined
Iodine staining	Brown	Faintly or patchily yellow	Distinct yellow
Final score	0	1	2

GOLD STANDART

in the diagnosis of cervical precancer



**COLPOSCOPY
ASSOCIATED BIOPSY**

Biopsy

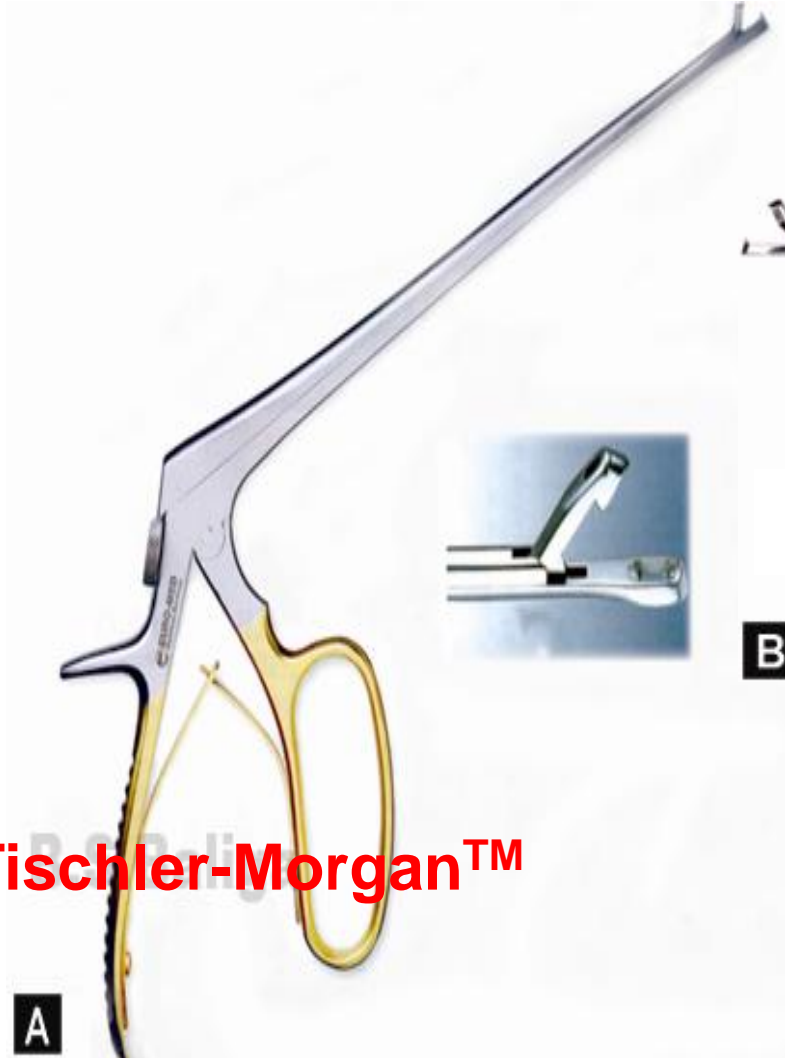


- **When?**
 - When in doubt / to confirm view
- **Where?**
 - Most relevant spot
 - Transformation zone
- **How**
 - Firm bite

Avoid small biopsy

It should contain stromal tissue

Cervical punch biopsy forceps



Tischler-Morgan™

Euro-Med® rotating handle

Townsend™ rotating handle

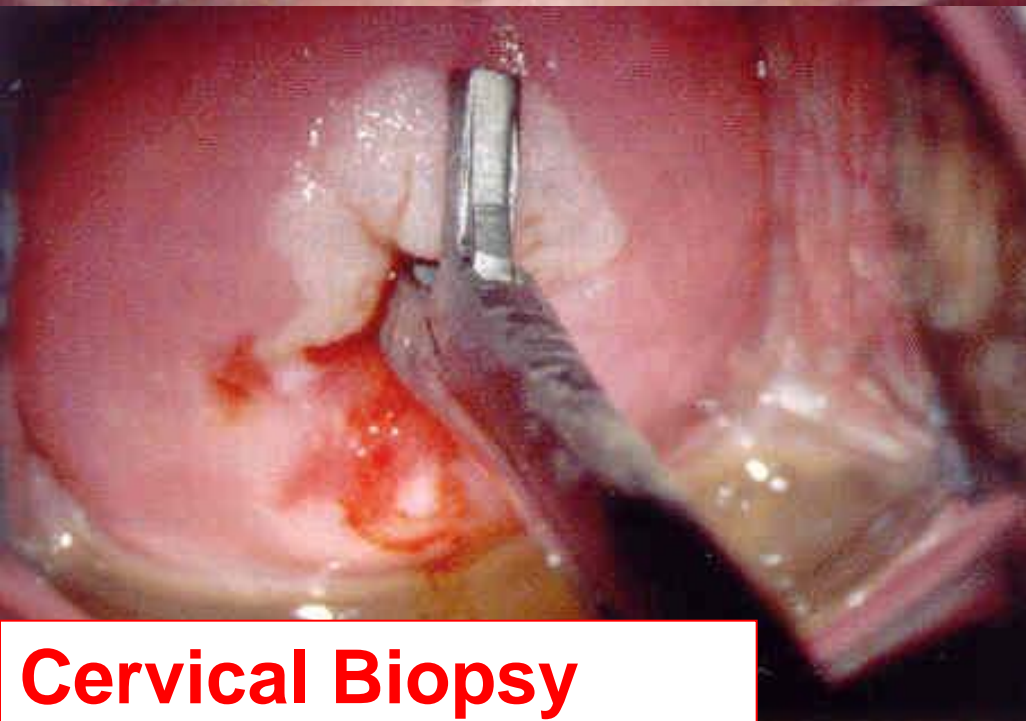


Kevorkian-Younge





**Acetowhite
epithelium**



Cervical Biopsy



Hemostasis

- Do nothing waiting,
- Compression
- Silver nitrate (stick)
- Monsel
- Suture



Monssel

:

Ferric sulfate base: 15 g

**Ferrous sulfate powder a few
grains /**

Sterile water for mixing: 10 ml

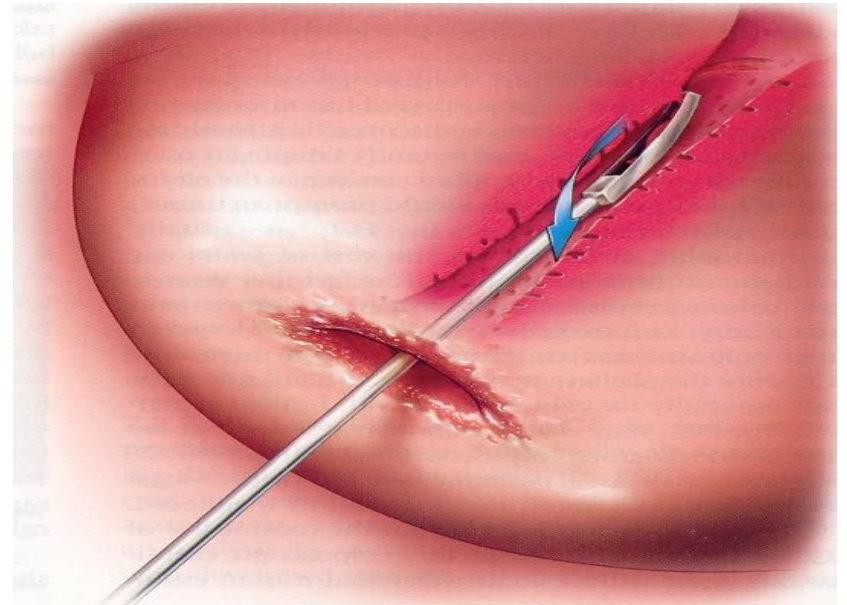
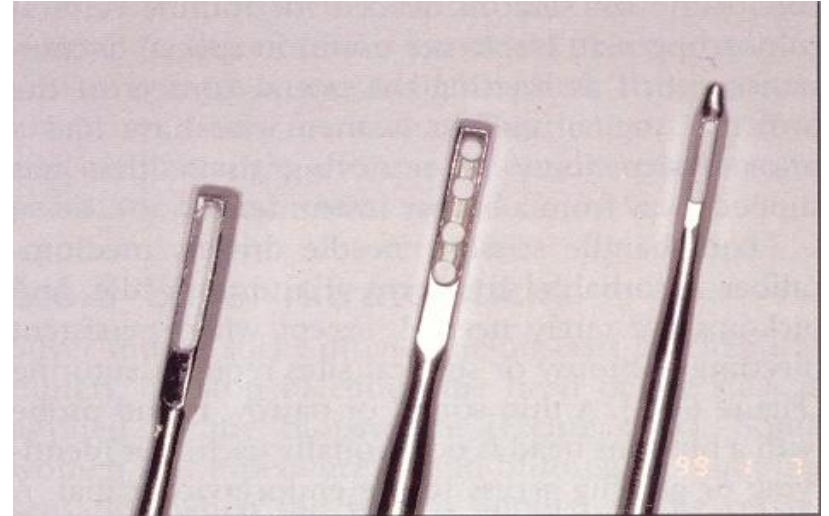
Glycerol starch 12 g

Endocervical curettes

Towsend™



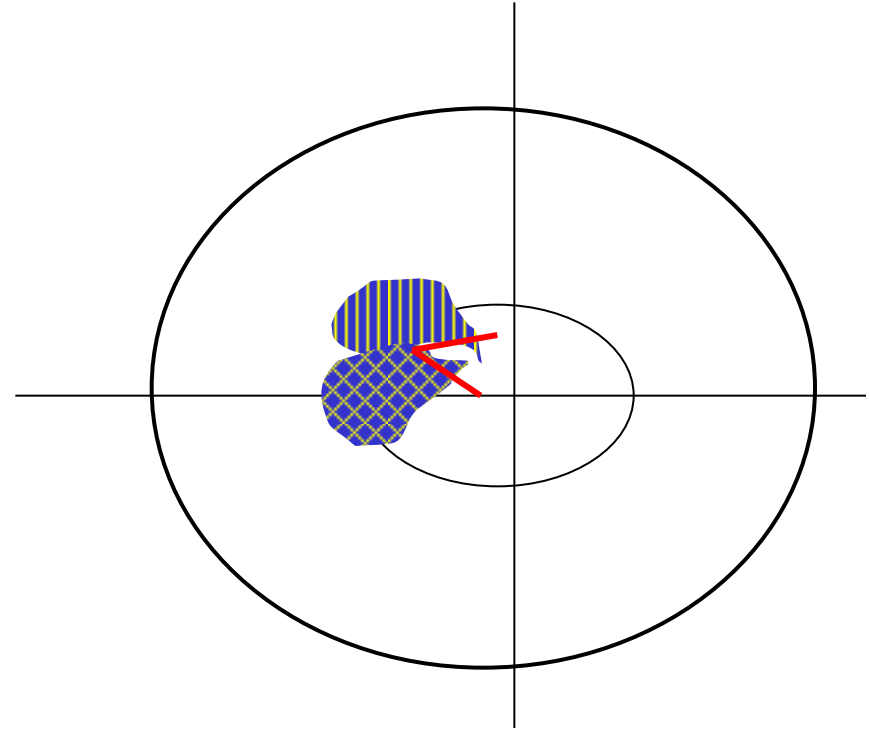
Kevorkian Collector™



Documentation

- **Colpogram**

- **Satisfactory/unsatisfactory**
- **Description of findings**
- **Location of biopsies**



- **Integration of cytology/colposcopy/pathology**

- **Delineation of treatment and follow-up**
- **Inform patient and referring doctor**



Thank you!!!!



1881-193∞

Bizimlesin
Sonsuza dek...



EUROPEAN FEDERATION FOR COLPOSCOPY
AND PATHOLOGY OF THE LOWER GENITAL TRACT

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**Turkish Society for Colposcopy
and Cervical Pathology**

ORGANIZATION SECRETARIAT



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