THE UNIVERSITY OF TENNESSEE HEALTH SCIENCE CENTER

Navigating the Cervix: A Practical Guide to Colposcopic Findings

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Disclosure

I have no financial interests or relationships to disclose

All colposcopy images are from ASCCP Colposcopy course 2017-2025.

Objectives:

01

Outline the key steps in performing a colposcopy.

02

Identify features of low- and high-grade cervical lesions.

03

Apply colposcopic findings to guide biopsy and management.

Historical Background of Colposcopy

🔬 Invention

- Developed in 1925 by Hans Hinselmann in Germany.
- Intended to visually identify and guide biopsy of **precancerous cervical lesions**.

⚠️ Dark Chapter During the Nazi Regime

- Colposcopy was used at Auschwitz by SS physician Dr. Eduard Wirths.
- Prisoner doctors and women were subjected to forced and unethical colposcopic experiments.

⚖️ Post-War Accountability

- Hinselmann was convicted for **Nazi-related sterilization crimes**, though not specifically for colposcopy research.

We recognize colposcopy as a life-saving tool—but we must not forget the lives harmed in its history.

The procedure:

Real time magnified and illuminated visualization of the uterine cervix and upper vagina, specifically the transformation zone

Understanding Colposcopy Procedure

Purpose of Colposcopy

Colposcopy is used to thoroughly examine the cervix, vagina, and vulva for disease indicators to ensure accurate diagnosis.

Role of the Colposcope

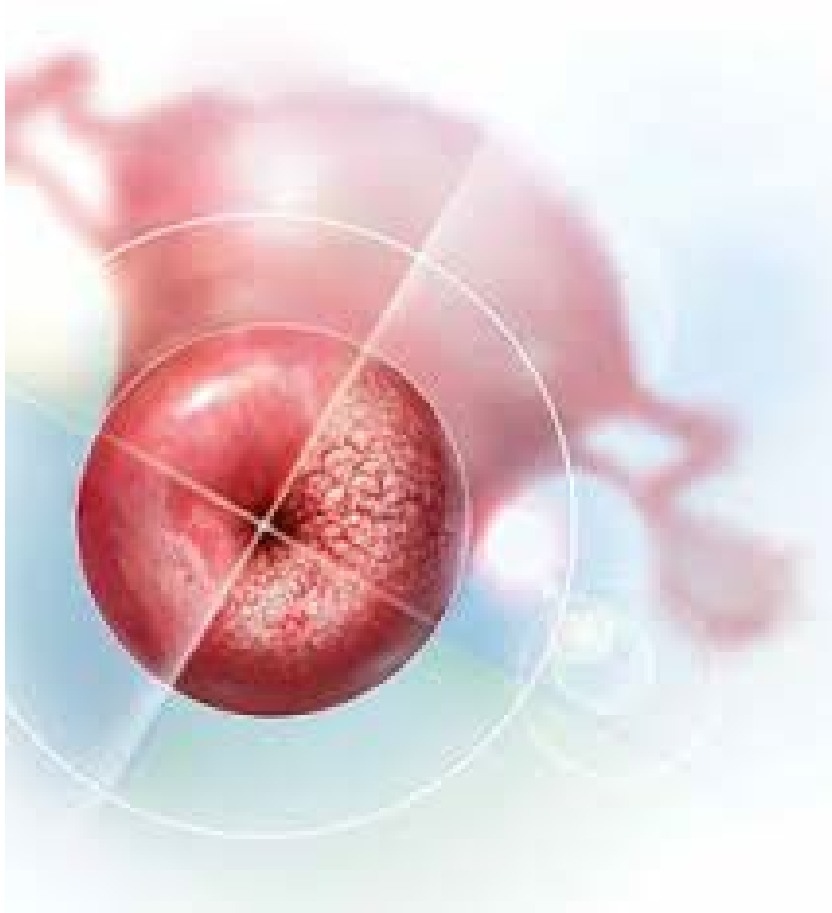
A colposcope magnifies tissues, allowing healthcare providers to spot abnormal areas without discomfort for the patient.

Early Detection and Management

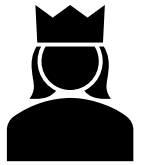
The procedure aids in early detection of cervical cancer and guides biopsies for effective management of potential conditions.

Indications for Colposcopy

- ✓Abnormal Screening Results
- ✓Unclear or inconclusive Pap Results
- ✓Symptoms or signs of cervical cancer
- ✓Follow-up of prior pathologic abnormality
- ✓Presence of a lesion



10 Steps For Colposcopy From Colpo Queen



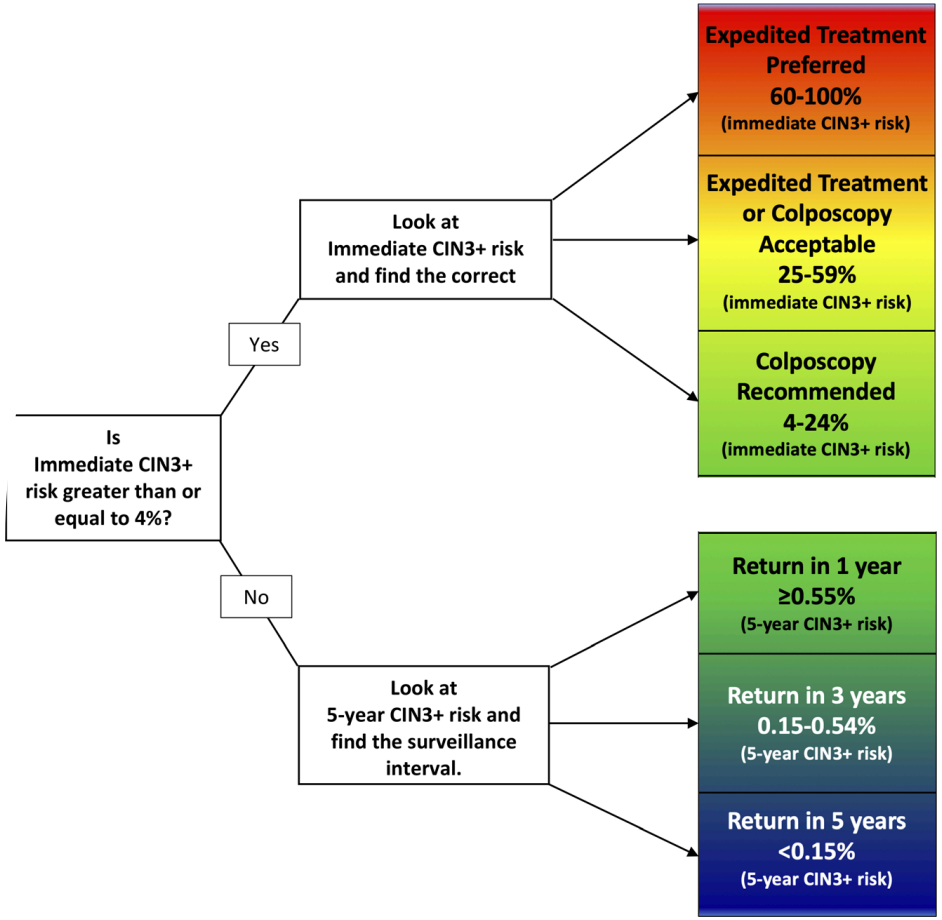
Step 1: Know the Why

2019 ASCCP Risk-Based Management Consensus Guidelines for Abnormal Cervical Cancer Screening

Risk-Based Approach:
Combines current results, screening history, age, and vaccination status to estimate risk—moving beyond just cytology results.

Balanced Decision-Making:
A 4% risk is high enough to warrant biopsy, but low enough to avoid overtreatment in low-risk patients.

Evidence-Based Threshold:
Derived from data modeling over 1.5 million screening episodes, showing that a ≥4% risk justifies colposcopic evaluation.



30-Year-Old with LSIL HR HPV (+)

Pap result: LSIL
HPV: Positive for HR other, 16/18 neg
Vaccination: Incomplete HPV vaccination series
History: Last HPV testing (+) 16/18 neg. Reflex cytology: NILM

- Immediate Risk for CIN 3+ is: **5%**
- Next step: Colposcopy

Pap result: LSIL
HPV: Positive HR other, 16/18 neg
Vaccination: Incomplete HPV vaccination series
History: NILM. HPV neg

- Immediate Risk for CIN 3+ is: **3.8%**
- Next step: HPV based testing in 12 months

Step 2: Set the Stage

Preparing for Colposcopy

Pre-Procedure Guidelines

Patients should avoid intercourse, douching, and vaginal medications 24–48 hours before the procedure for accurate results.

Medical Disclosure

Patients must inform the provider about allergies, medications, or possible pregnancy before the colposcopy.

Emotional Support

Providing emotional support and answering patient questions can reduce anxiety and improve cooperation during the procedure.

Equipment:

1. Colposcope

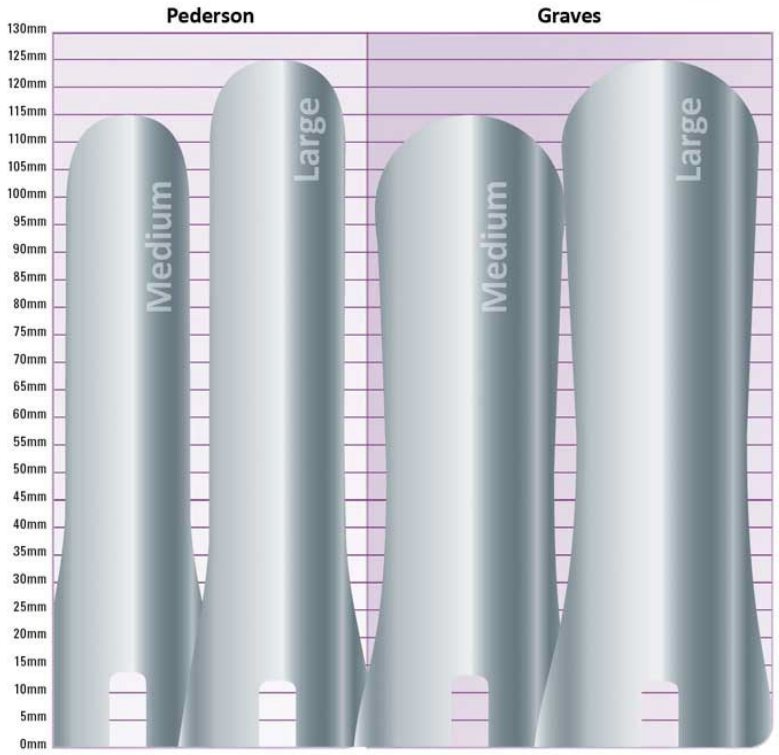
Step 1: Setup Equipment

- Examination table

- Sitting chair/stool

- Light

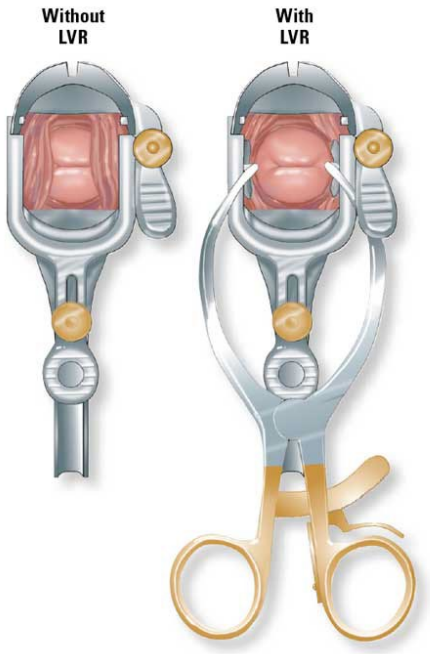
Speculums



- Graves Speculum

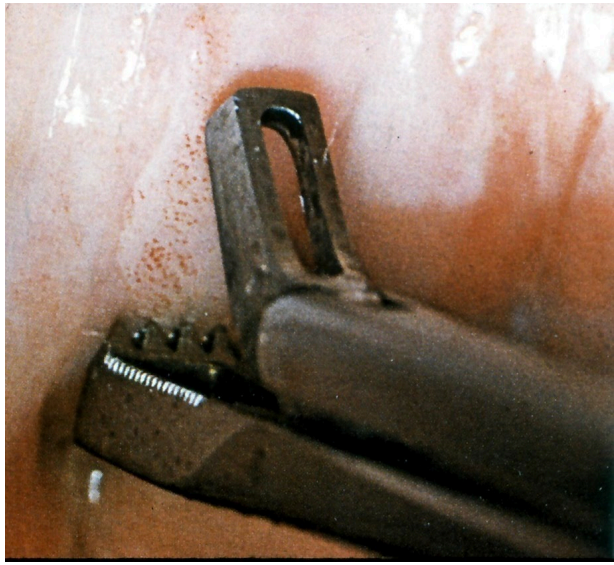
- Pederson Speculum

Lateral size retractors



Endocervical speculum: Kogan

Biopsy Forceps



Instruments

- Endocervical Curette

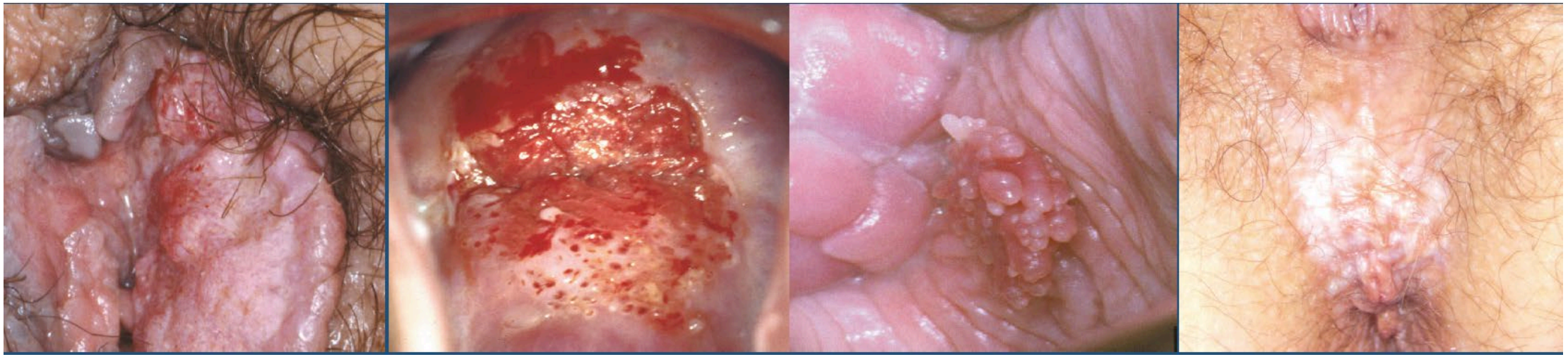
- Cervical hook

Setting up Tray

Solution	Concentration	Purpose
Acetic Acid	3–5%	Highlights abnormal epithelium (acetowhitening) by coagulating nuclear proteins.
Lugol's Iodine	5% iodine, 10% potassium iodide	Stains normal squamous epithelium brown; abnormal areas stay yellow.
Monsel's Solution	20% ferric subsulfate	Hemostatic agent applied after biopsy to control bleeding.
Normal Saline	—	Used initially to inspect cervical anatomy before applying acetic acid.

Step 3: Survey the Landscape

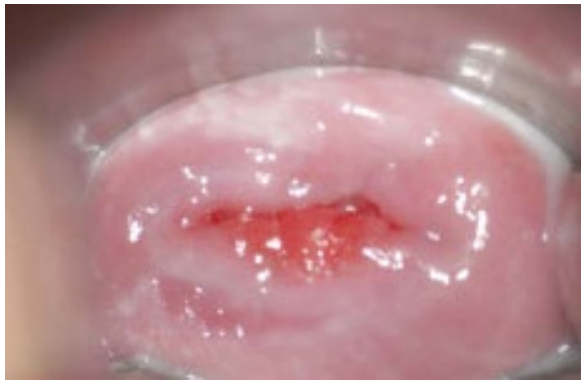
Inspecting Vulva, Vagina then Cervix

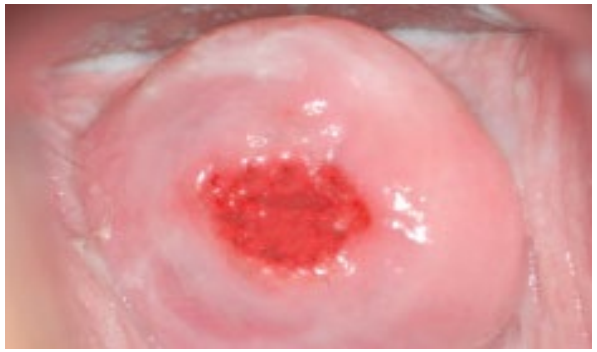


Step 4: Finding the Landmarks

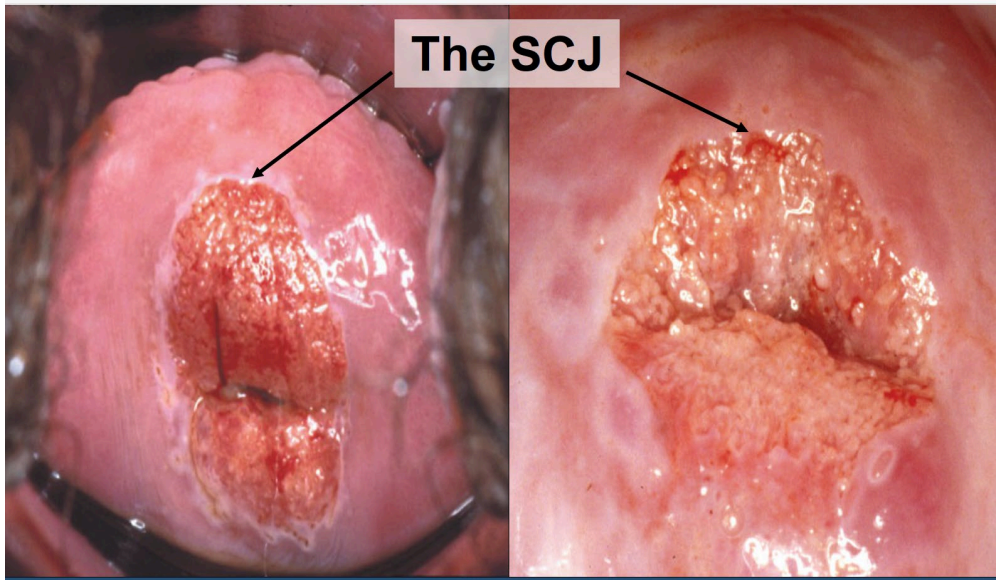
Finding the Cervix and SCJ:

Can you visualize the cervix: Y o N

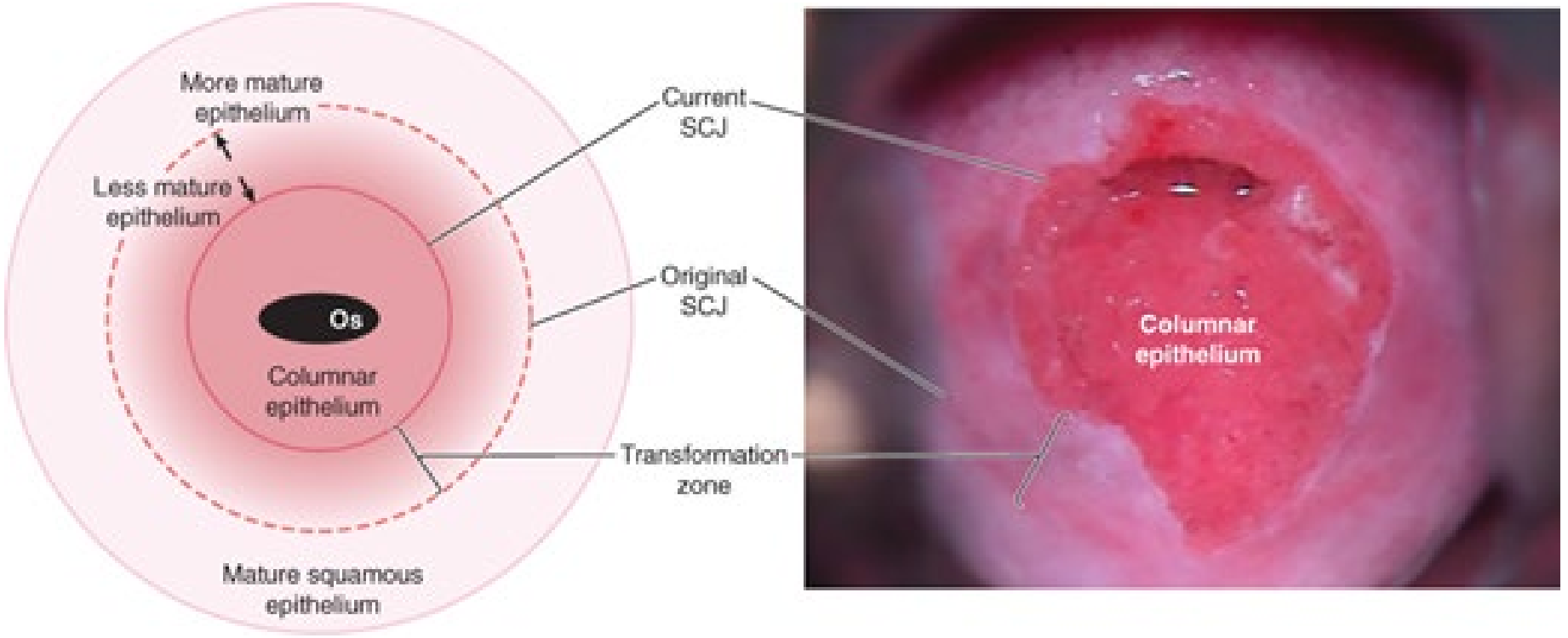




Can you visualize SCJ: Y o N



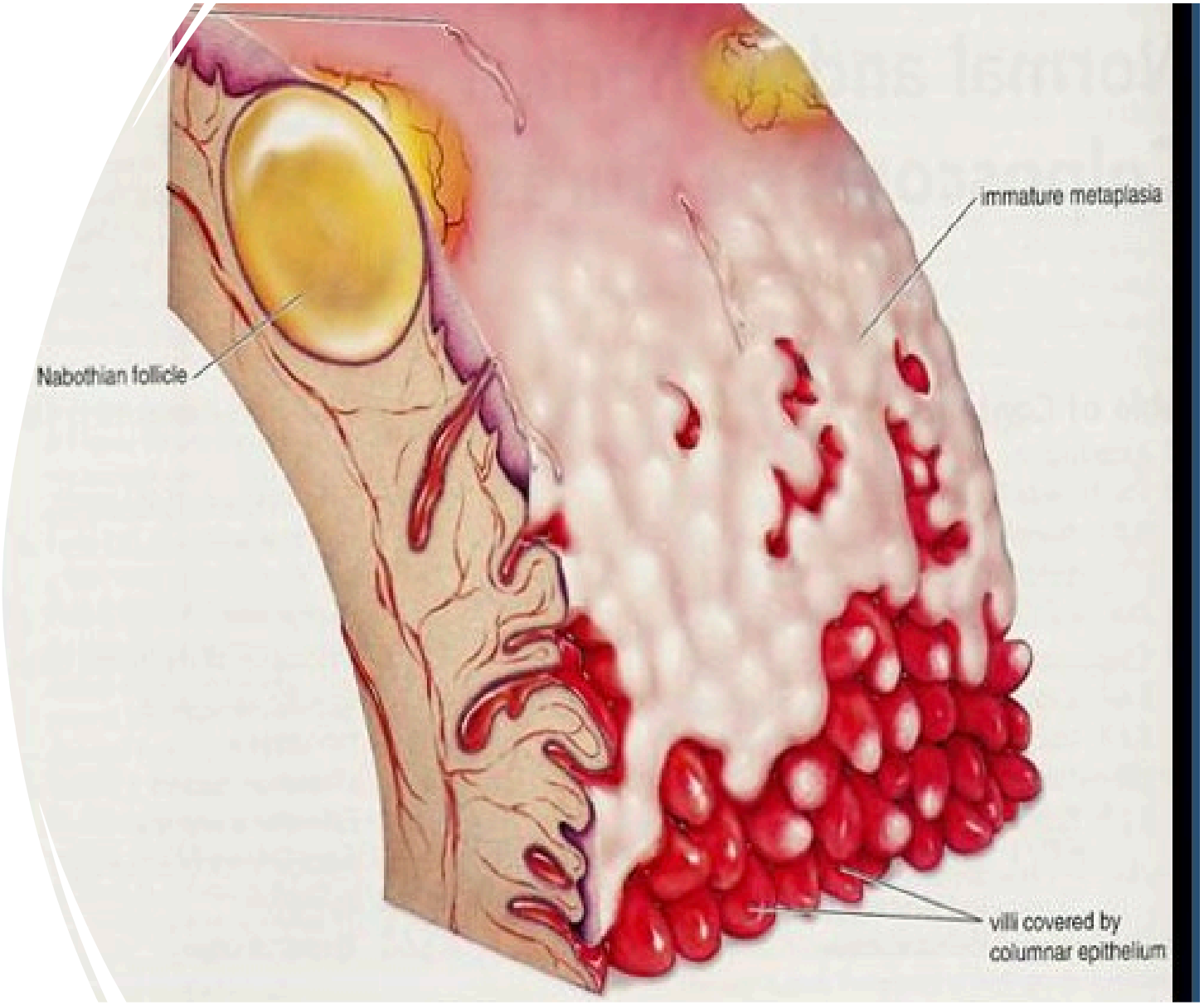
Cervical Landmarks



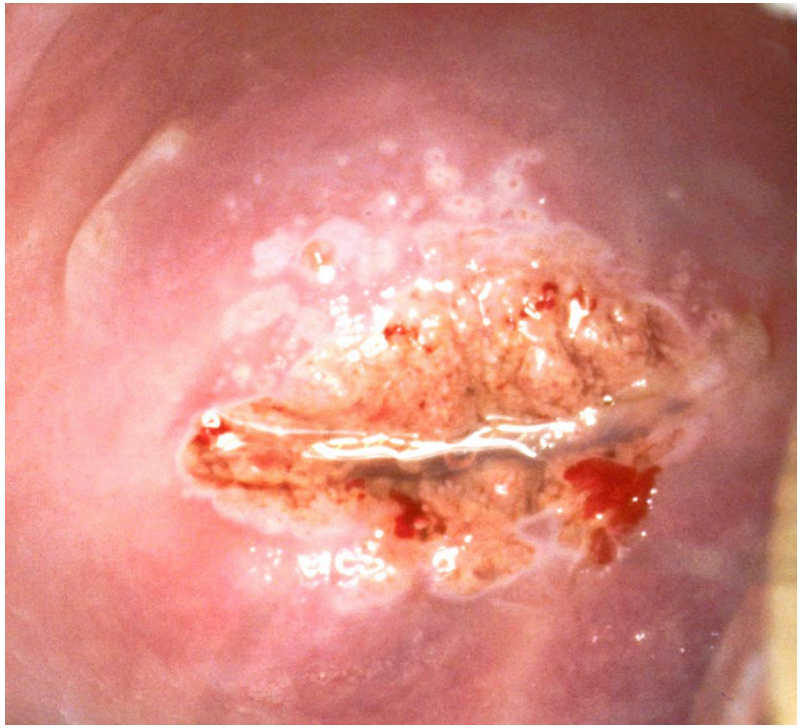
Source: Barbara L. Hoffman, John O. Schorge, Lisa M. Halvorson, Cherine A. Hamid, Marlene M. Corton, Joseph I. Schaffer: Williams Gynecology, 4th Edition

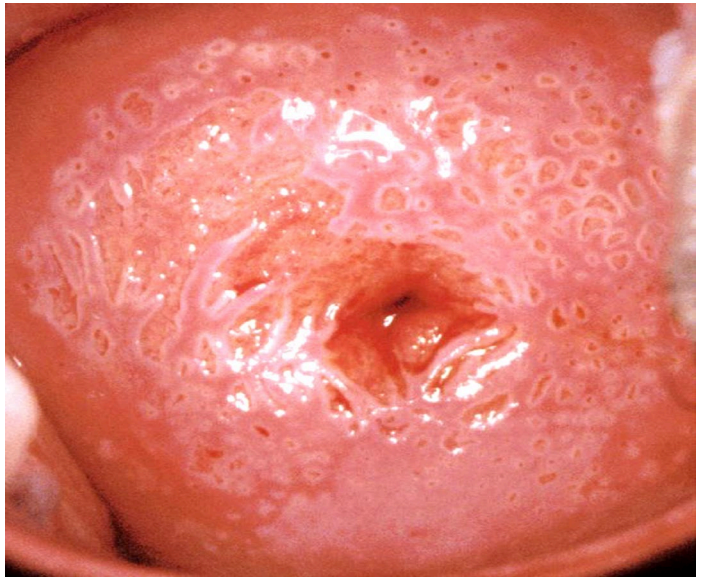
TZ components

- Immature metaplasia
- Nabothian cyst
- Cleft openings



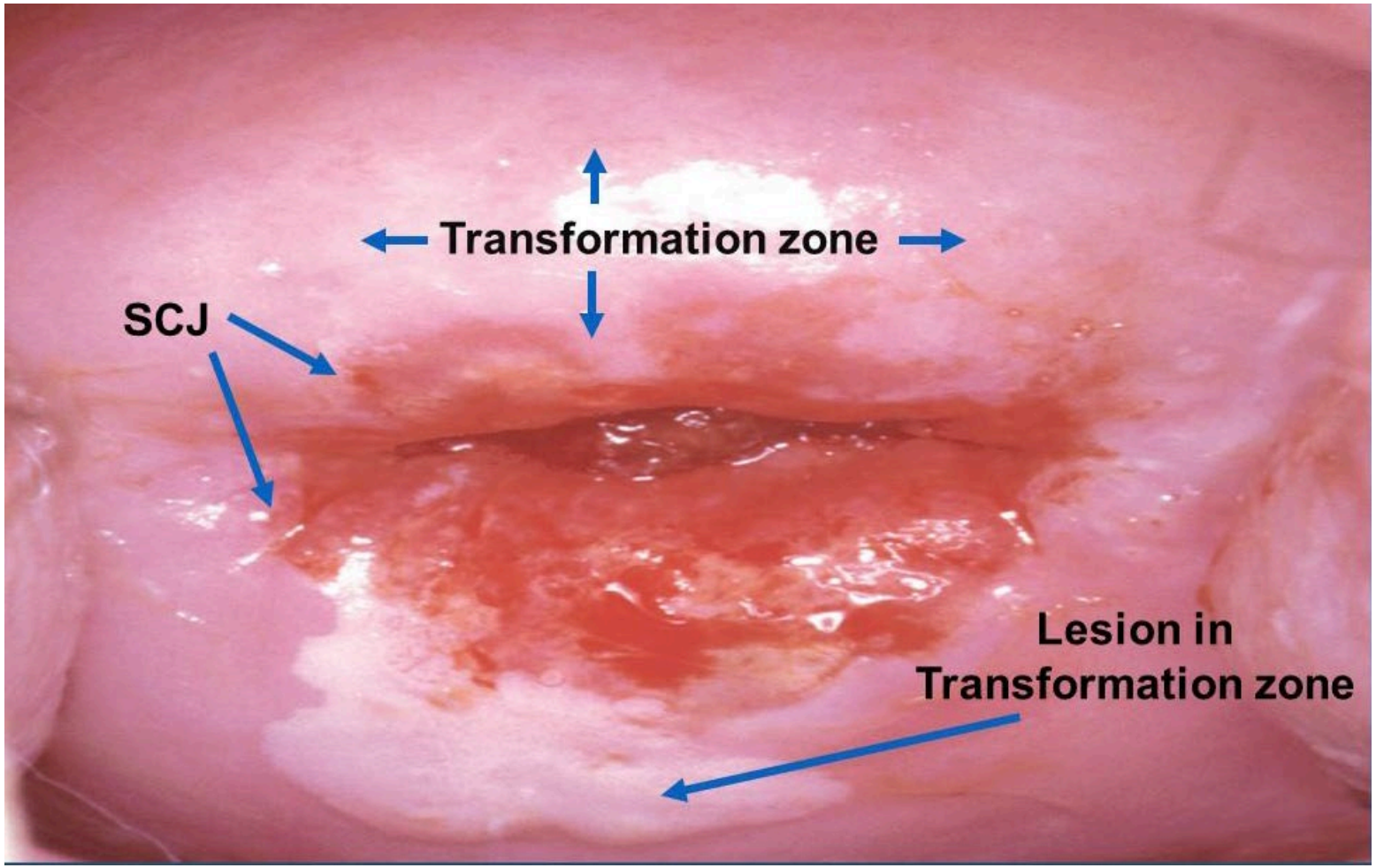
Metaplasia





- **Metaplasia**: replacement from one cellular type to another

Squamous-columnar junction , TZ and Dysplasia



Step 5: Apply Acetic Acid Like a Boss

And wait…

Step 6: Recognize the clues

Colposcopic lesion characteristics

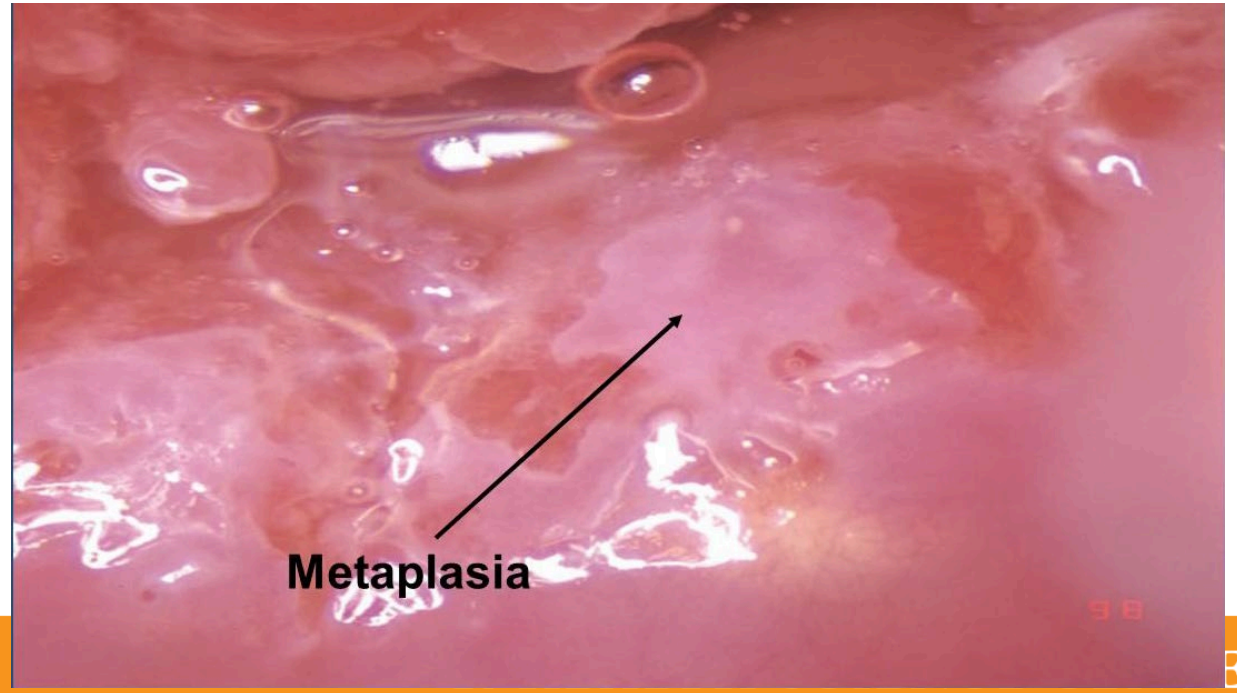
Most Likely Grade	Color	Vessel	Margin	Surface contours
Normal	Pink translucent	Fine, Lacy Normal branching	Normal T zone	flat
LSIL	White, shiny Snowy white	None, fine PN, fine MO, orderly	Diffuse, feathery flocculated, geographic	Flat, micro-Papillary, macropapillary
HSIL	Dull white	Dilated, irregular, increased intracapillary distance	Straight, internal margins	"Pasted on", peeling
Cancer	Gray, yellow	Atypical, bizarre	Ulcer	Nodular, ulcer

Descriptors during Colposcopy: **Color**

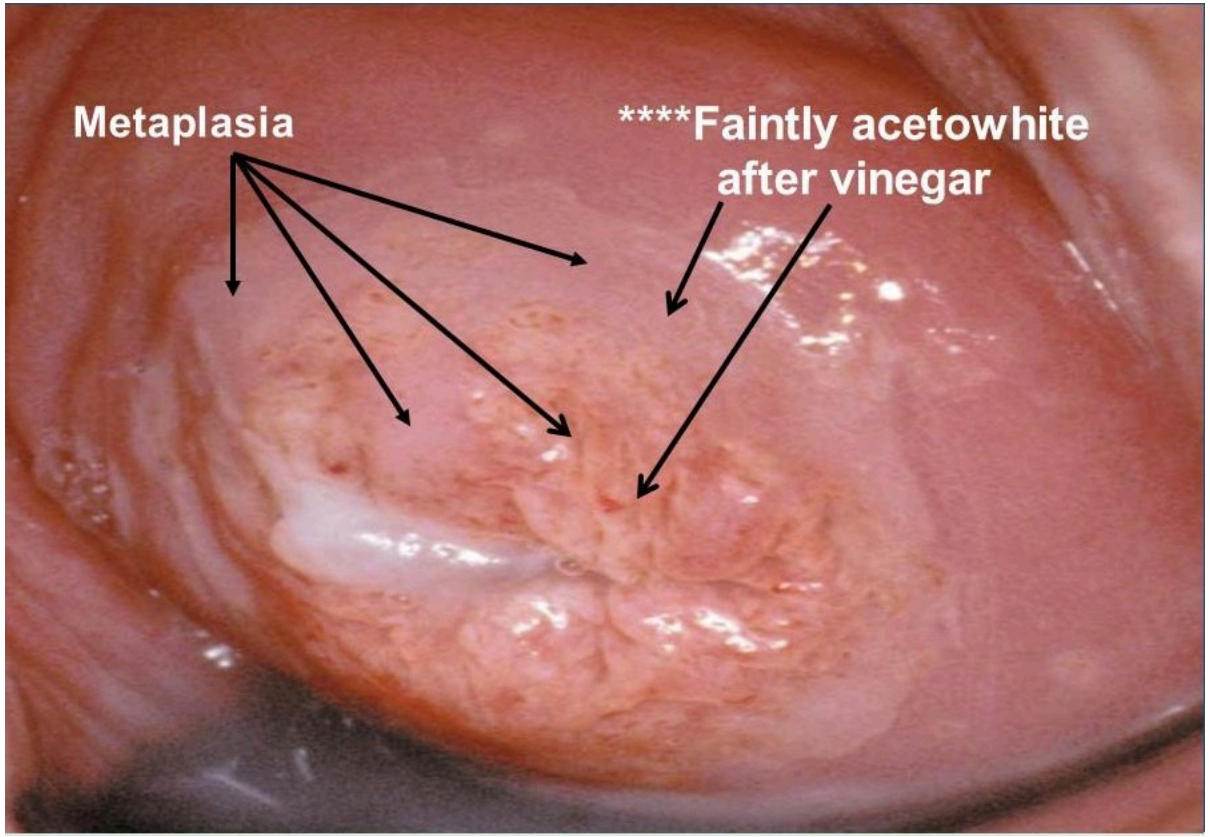
AWE: Acetowhite epithelium

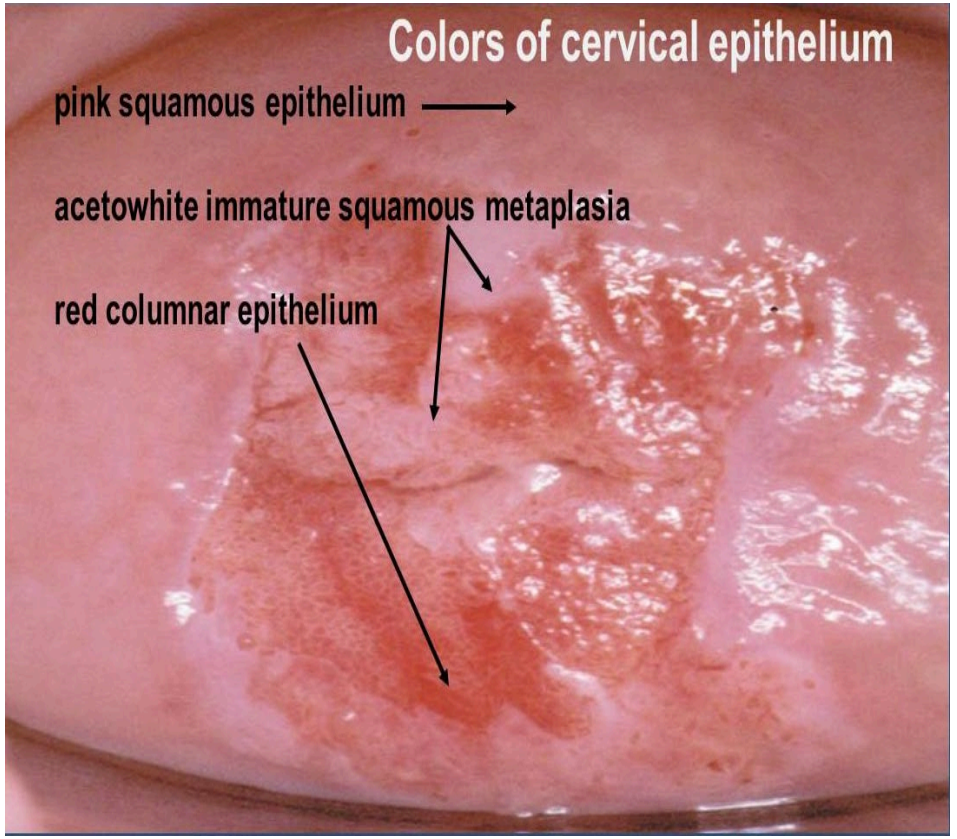
Whiteness:

Translucent: Metaplasia



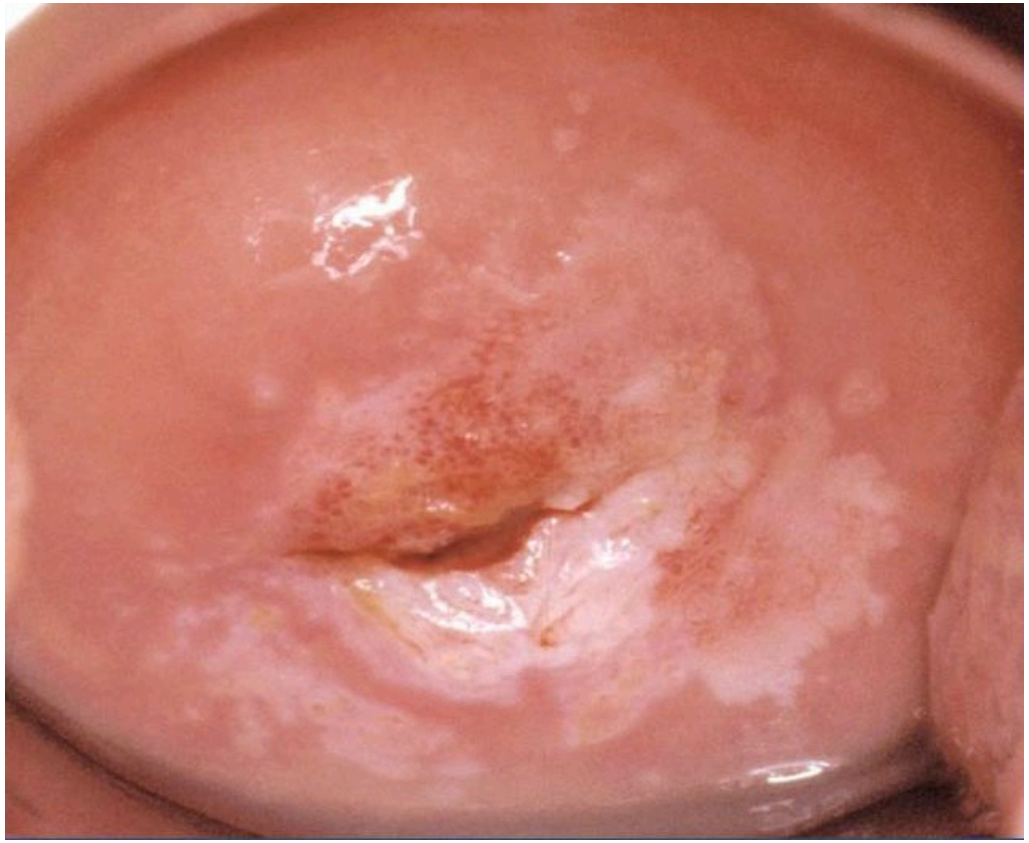
Color: Pearly, faints away → Metaplasia



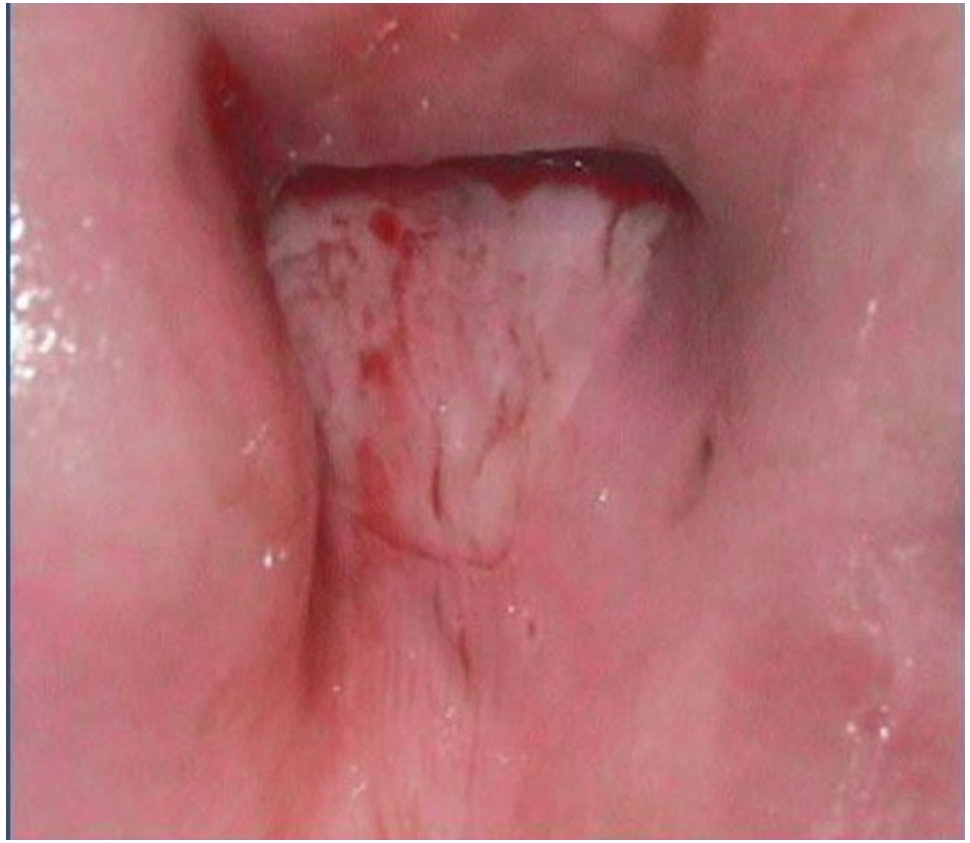


Color: Opaque

Borders: Geographic vs straight

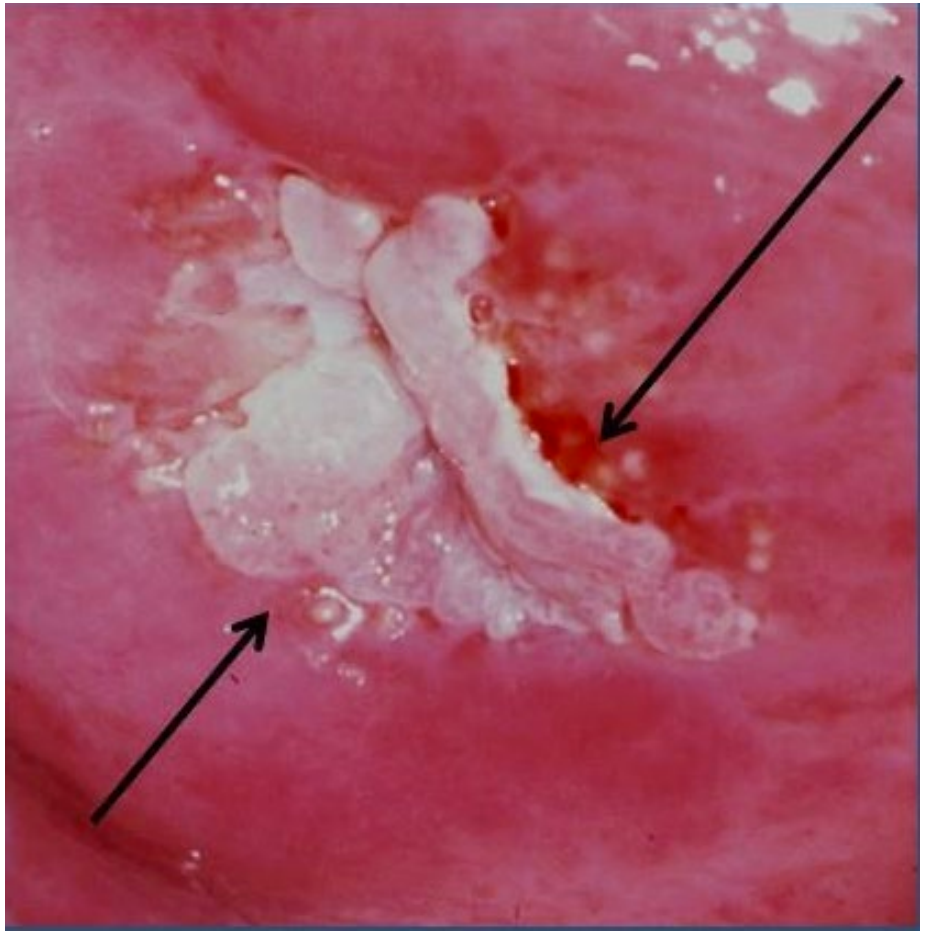


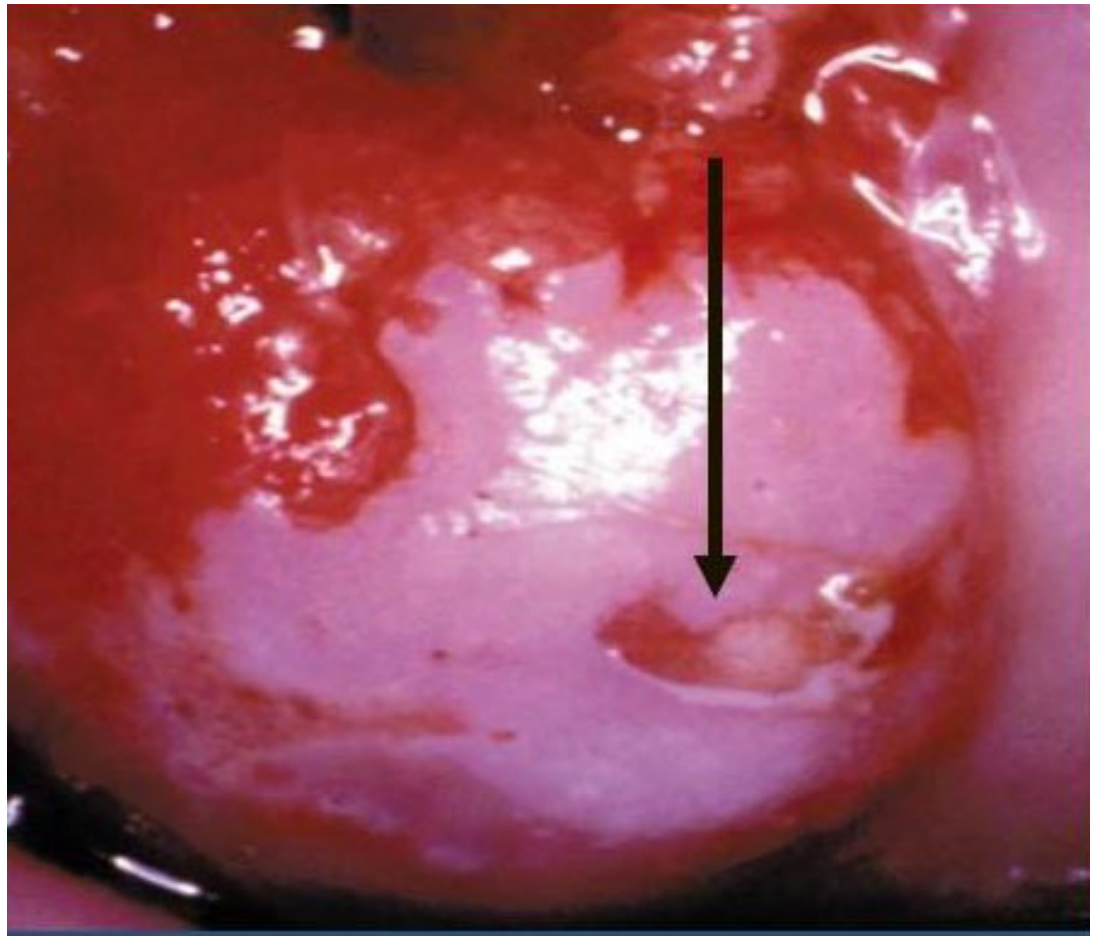
LSIL



HSIL

Contour and edges





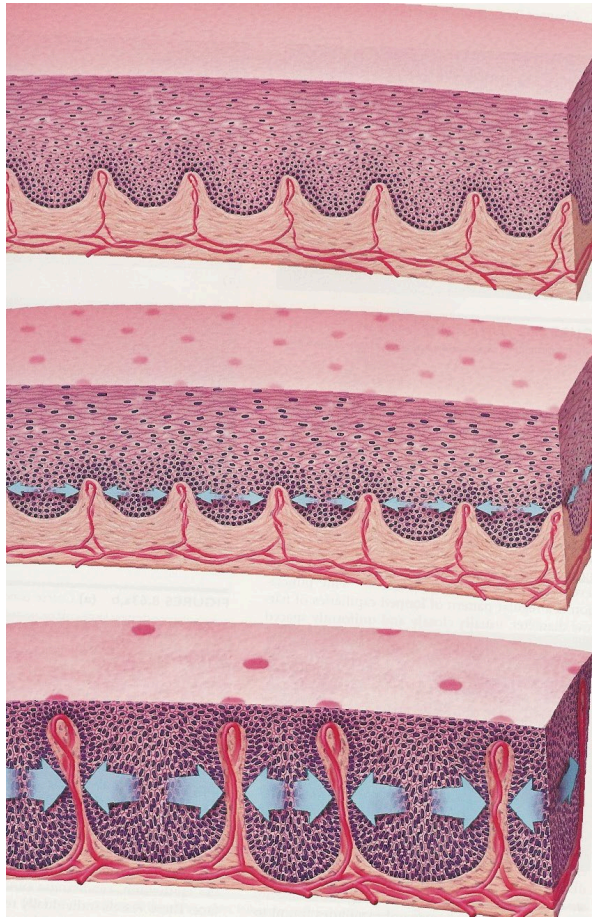
Vascular Changes: Punctuation

Normal fine loop capillaries – No neoplastic process

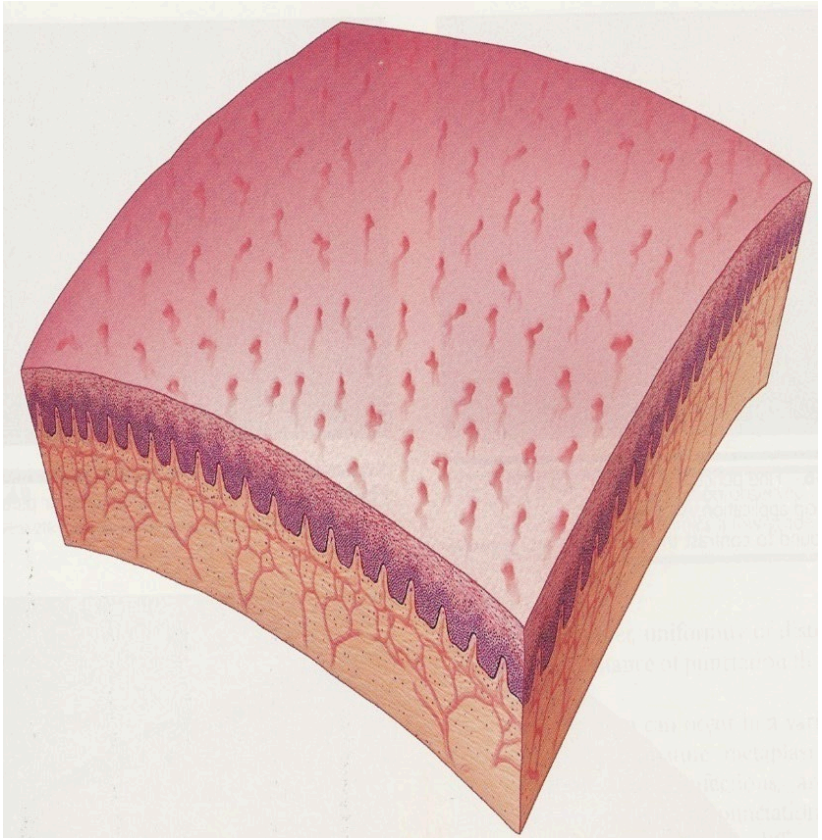
Neoplastic cells exert pressure on capillaries. Vascular occlusion causes vessels to dilate

Blocks of neoplastic cells grow. Vessels displaced outward and some occluded

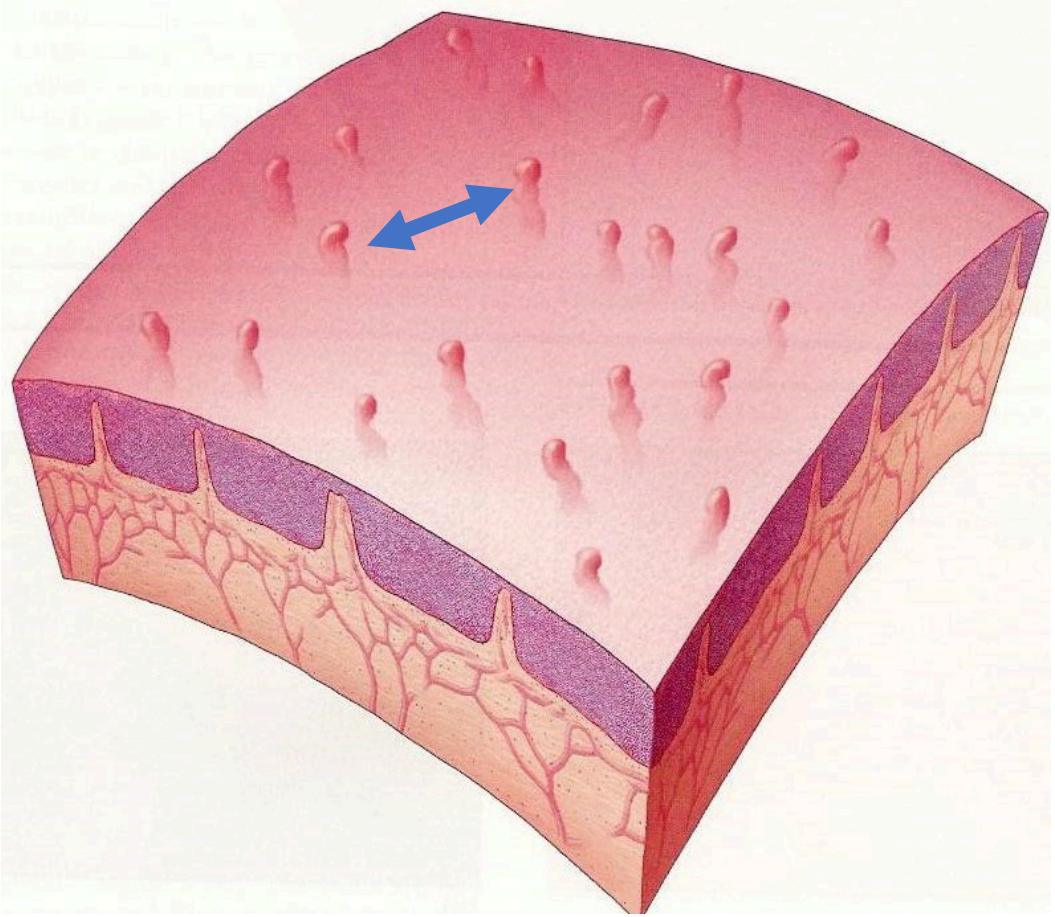
Intercapillary distance increases



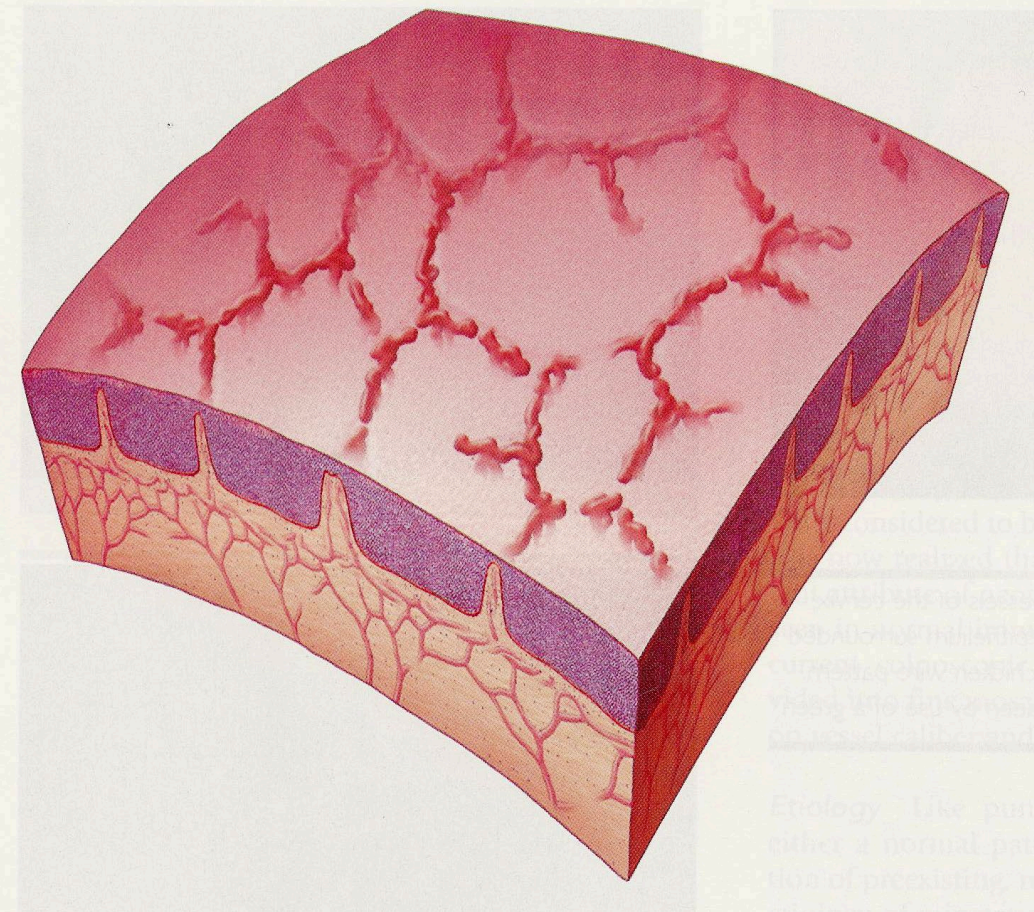
Fine Punctuation



Coarse Punctuation

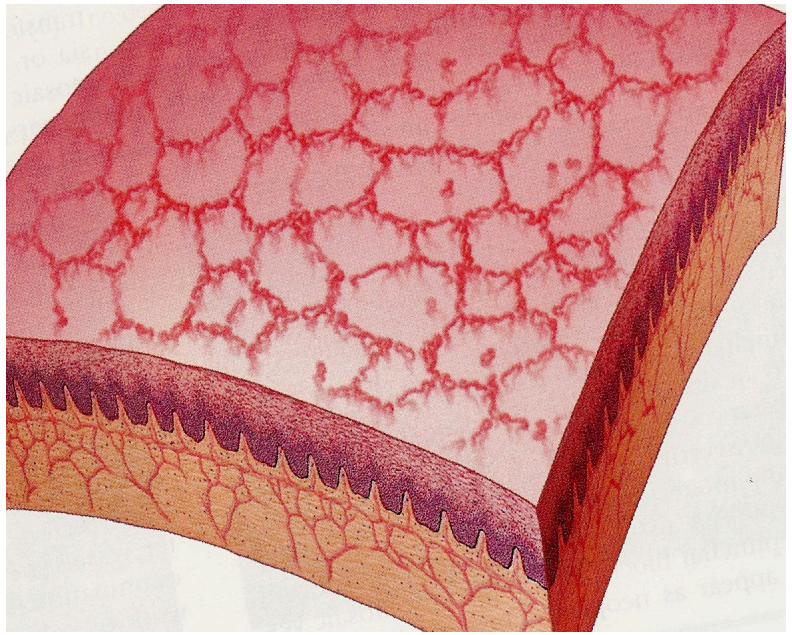


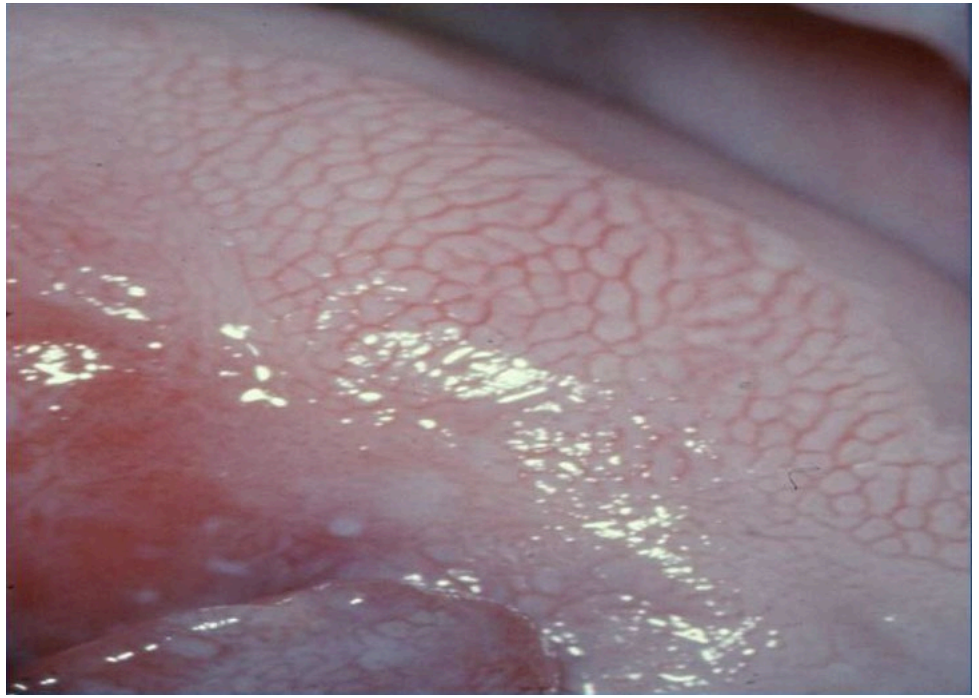
Coarse Mosaicism



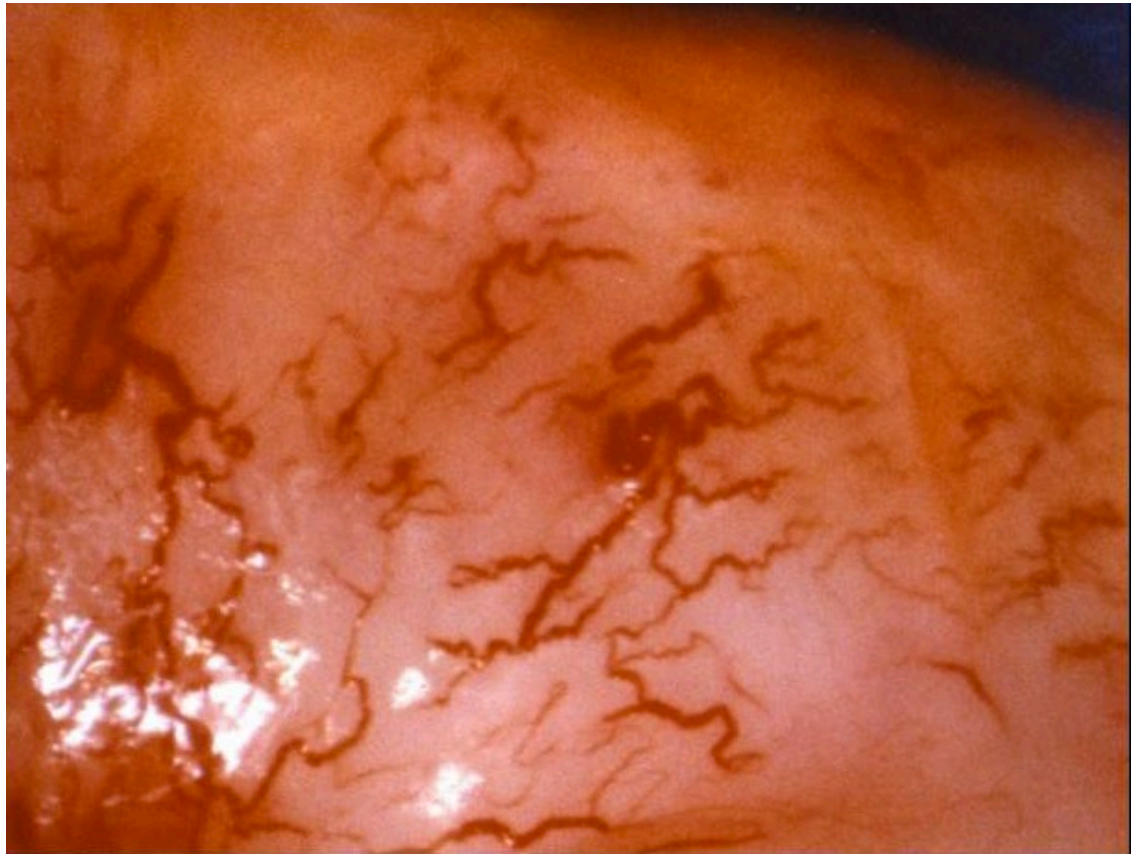
Source: Barbara L. Hoffman, John O. Schorge, Lisa M. Halvorson, Cherine A. Hamid, Marlene M. Corton, Joseph I. Schaffer: *Williams Gynecology*, 4th Edition

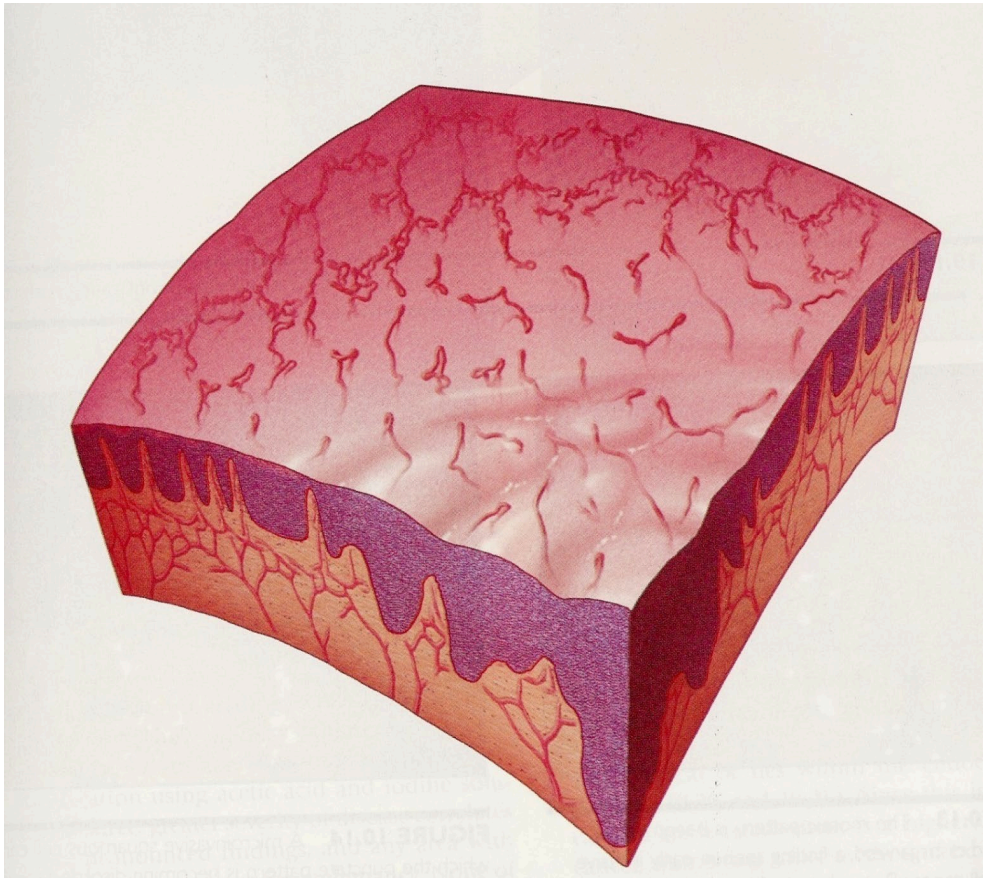
Fine Mosaicism





Vascular Changes: atypical vessels

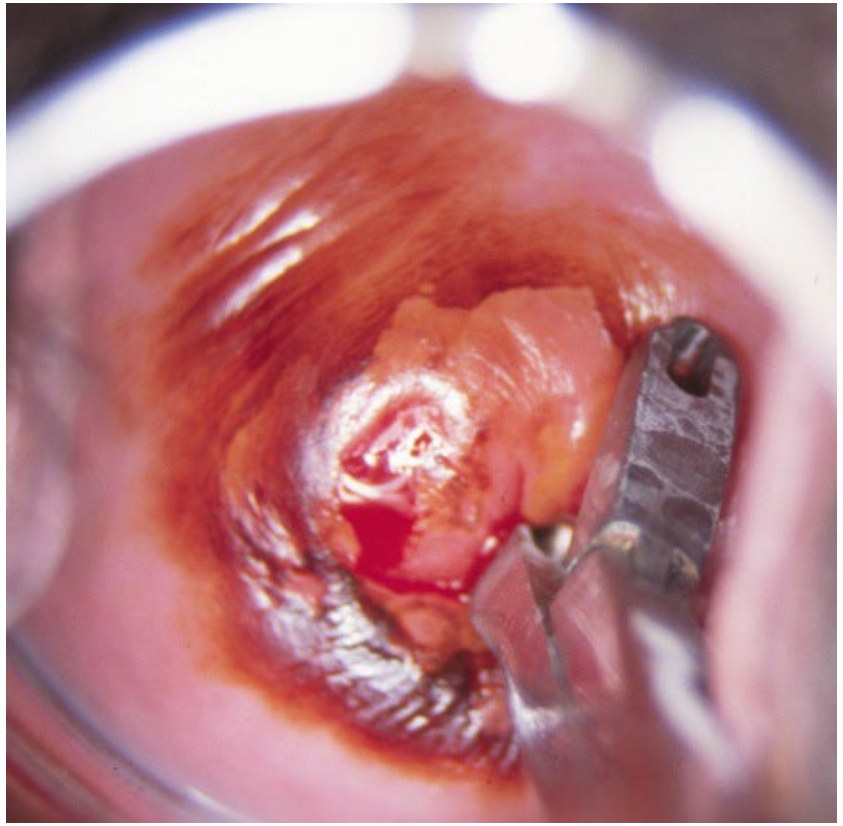




Step 7: Use Lugol's Iodine Wisely

Step 8: Biopsy Smart, Not Blind

Biopsy Strategy Matters:



Wentzensen et al., JCO 2015

Objective

To evaluate how taking **multiple lesion-directed biopsies** improves detection of high-grade cervical lesions (HSIL) during colposcopy.

Methods

690 women referred to colposcopy after abnormal screening.

Up to **4 directed biopsies** were taken from distinct acetowhite areas.

A **random biopsy** was added if <4 lesion-directed areas were available.

HSIL detection across increasing number of biopsies was measured.

Key Findings

Sensitivity increased with each additional biopsy:

- **1 biopsy**: 60.6%
- **2 biopsies**: 85.6%
- **3 biopsies**: 95.6%

ECC Y or N

RECOMMENDED:

1. High-grade cytology (HSIL, ASC-H, AGC, carcinoma)
2. HPV 16 or 18 positivity
3. Positive p16/Ki-67 dual stain
4. History of treatment for cervical precancer
5. Considering observation of CIN2
6. SCJ not fully visualized (Type 3 transformation zone)
7. Age ≥40 years
8. Acceptable for all nonpregnant patients undergoing colposcopy

OMITTED:

1. Pregnancy (ECC is contraindicated)
2. Planned excisional procedure (e.g., LEEP)
3. Stenotic canal preventing device insertion
4. Nulliparous patients under 30 with ASCUS or LSIL cytology

Step 9: Documentation

Category	Features/criteria	Details
General assessment	Visualization of the cervix	Fully visualized/not fully visualized
	Visualization of the SCJ	Fully visualized/not fully visualized
Acetowhite changes	Any degree of whitening after application of 3%–5% acetic acid	Yes/no
Normal colposcopic findings	Original squamous epithelium: mature, atrophic	
	Columnar epithelium	
	Ectopy/ectropion	
	Metaplastic squamous epithelium	
	Nabothian cysts	
	Crypt (gland) openings	
	Deciduosis in pregnancy	
	Submucosal branching vessels	
Abnormal colposcopic findings	Lesion(s) present (acetowhite or other)	Yes/no
	Location of each lesion	• Clock position • At the SCJ (yes/no) • Lesion visualized (fully/not fully) • Satellite lesion
	Size of each lesion	• No. cervical quadrants the lesion involves • Percentage of surface area of TZ occupied by the lesion
	Low-grade features	Acetowhite • Thin/translucent • Rapidly fading Acetowhite • Fine mosaic • Fine punctuation Acetowhite • Irregular/geographic border Acetowhite • Condylomatous/raised/papillary • Flat
	High-grade features	Acetowhite • Thick/dense • Rapidly appearing/slowly fading • Cuffed crypt (gland) openings • Variegated red and white Acetowhite • Coarse mosaic • Coarse punctuation Acetowhite • Sharp border • Inner border sign (internal margin) • Ridge sign • Peeling edges Contour • Flat Fused papillae
	Suspicious for invasive cancer	• Atypical vessels • Irregular surface • Exophytic lesion • Necrosis • Ulceration • Tumor or gross neoplasm • May not be acetowhite
	Other (nonspecific)	• Leukoplakia • Erosion • Contact bleeding • Friable tissue
	Lugol's staining	• Not used • Stained • Partially stained • Nonstained
Miscellaneous findings	Polyp (ectocervical or endocervical)	
	Inflammation	
	Stenosis	
	Congenital TZ	
	Congenital anomaly	
	Post-treatment consequence (scarring)	
Colposcopic impression (highest grade)	Normal/benign	
	Low grade	
	High grade	
	Cancer	

SCJ, squamocolumnar junction; TZ, transformation zone.

Journal of Lower Genital Tract Disease21

Step 10: Plan the next move

TREAT

REFER

REASSURE

Summary :10 steps for Standardized colposcopy

Step 1: Know the Why	Indications + emphasize pre-visit history & context
Step 2: Set the Stage	Pre-procedure prep + setup tray + emotional readiness
Step 3: Survey the Landscape	Vulva/vaginal inspection + positioning tips
Step 4: Finding the Landmarks	Visualize cervix, SCJ; transformation zone
Step 5: Apply Acetic Acid Like a Boss	Wait & watch — show timing images
Step 6: Recognize the Clues	Acetowhite, punctuation, mosaic, vessels
Step 7: Use Lugol's Wisely	Glandular suspicion, margins
Step 8: Biopsy Smart, Not Blind	Target worst areas, TZ3 = ECC
Step 9: Document Like It Matters	Diagram, images, clear descriptors
Step 10: Plan the Next Move	Use ASCCP guidance — treat, refer, reassure

Colposcopy is more than a procedure — it's a moment of prevention. Every careful observation, every biopsy, every act of follow-up has the power to interrupt cancer before it begins. In your hands, colposcopy becomes a life-saving too

Questions?