COLPOSCOPY

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DISCLOSURES

- No disclosures to report

OBJECTIVES

- Review ASCCP management of abnormal pap smears
- Understand the indications and contraindications for colposcopy evaluation
- Review the steps for performing colposcopy
- Become familiar with common pathology seen on colposcopy evaluation

WHY DO WE DO PAP SMEARS?

- Screening test for cervical cancer
- Early 20th century, cervical cancer was the most common cancer to affect women worldwide and in the US.
- Cervical cancer is still the second leading cause of cancer death in women worldwide.
- Approximately 10,500 new cases occur annually in the US; one third of these lead to death.
- Approximately 45,000 cases of high-grade premalignant disease are detected annually through PAP screening and colposcopy evaluation.

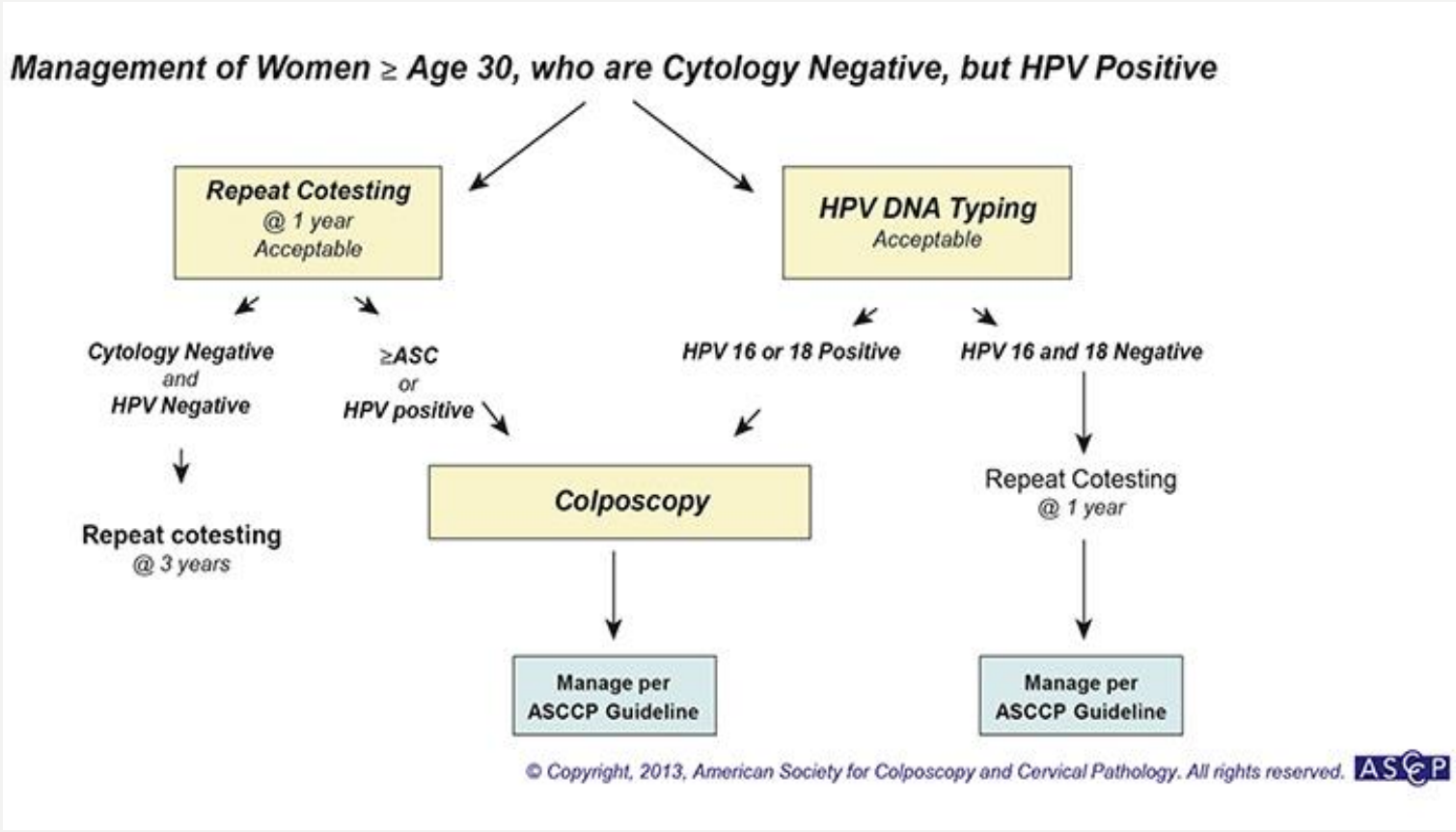
WHO NEEDS A PAP?

US Preventive Services Task Force and AAFP recs*:

- Grade A—women age 21–65 with cytology alone q3yrs *or* women age 30–65 with cytology plus HPV q5yrs
- Grade D—screening in women younger than 21
- Grade D—screening in women older than 65 who have had adequate screening and not otherwise at high risk for cervical cancer
- Grade D—screening in women who have had a hysterectomy with removal of cervix and do not have a hx of CIN2, CIN3, or cervical cancer
- Grade D—screening with HPV, alone or in combo with cytology in women younger than 30

WHY DO WE DO COLPOSCOPY?

- Studies show wide variability in both sensitivity and specificity of screening pap smears. (The clinician may not sample the area of cervical abnormality, or the specimen may not be enough for a pathologist to recognize abnormalities.)
- Colposcopy is a diagnostic procedure to rule in or rule out abnormalities found on screening pap smears.


Management of Women ≥ Age 30, who are Cytology Negative, but HPV Positive
Repeat Cotesting
@ 1 year
Acceptable
HPV DNA Typing
Acceptable
Cytology Negative
and
HPV Negative
≥ASC
or
HPV positive
HPV 16 or 18 Positive
HPV 16 and 18 Negative
Repeat cotesting
@ 3 years
Colposcopy
Repeat Cotesting
@ 1 year
Manage per
ASCCP Guideline
Manage per
ASCCP Guideline
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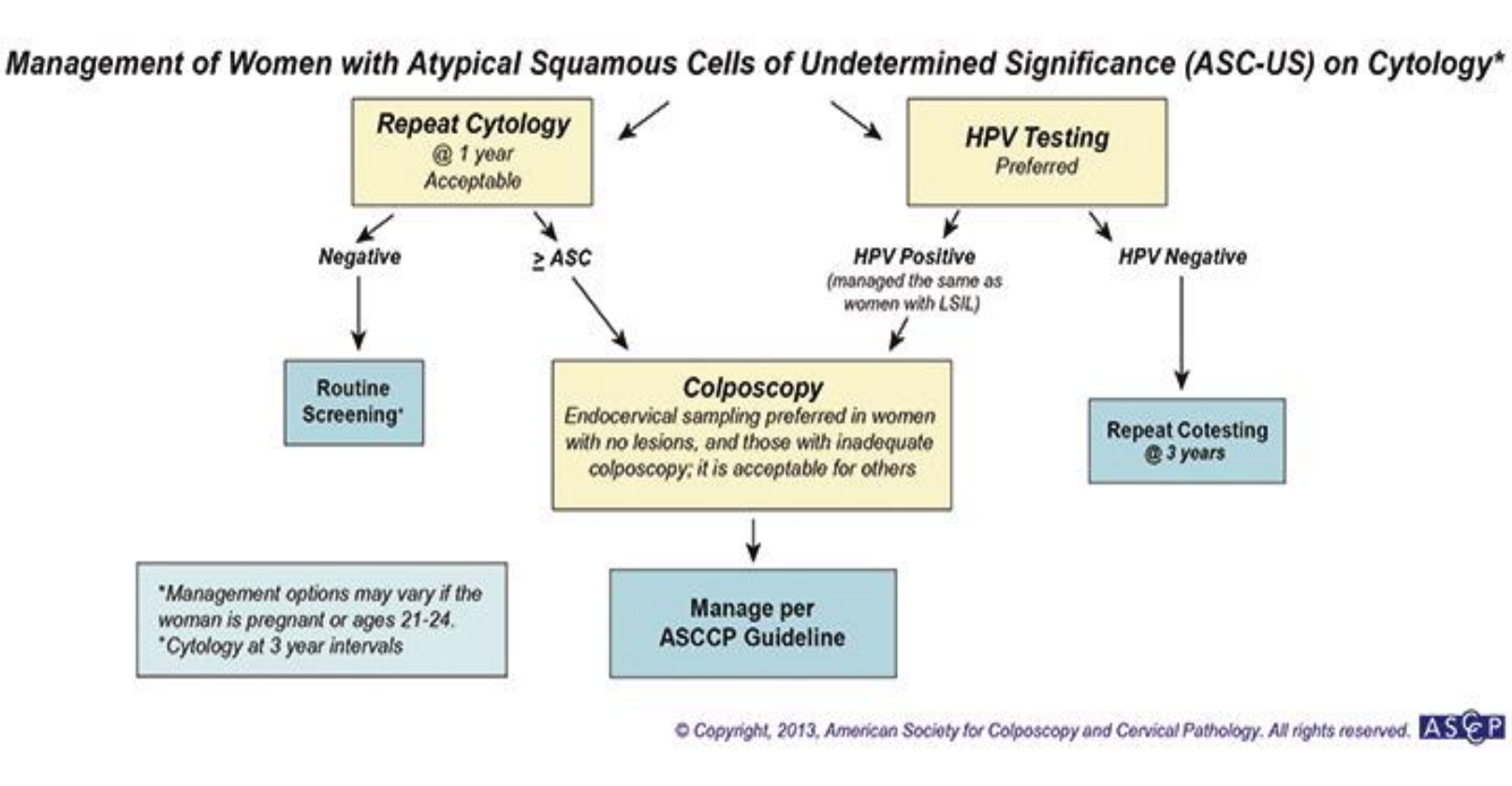
Management of Women with Atypical Squamous Cells of Undetermined Significance (ASC-US) on Cytology*
Repeat Cytology
@ 1 year
Acceptable
HPV Testing
Preferred
Negative
≥ ASC
HPV Positive
(managed the same as women with LSIL)
HPV Negative
Routine Screening*
Colposcopy
Endocervical sampling preferred in women with no lesions, and those with inadequate colposcopy; it is acceptable for others
Repeat Cotesting
@ 3 years
*Management options may vary if the woman is pregnant or ages 21-24.
*Cytology at 3 year intervals
Manage per ASCCP Guideline
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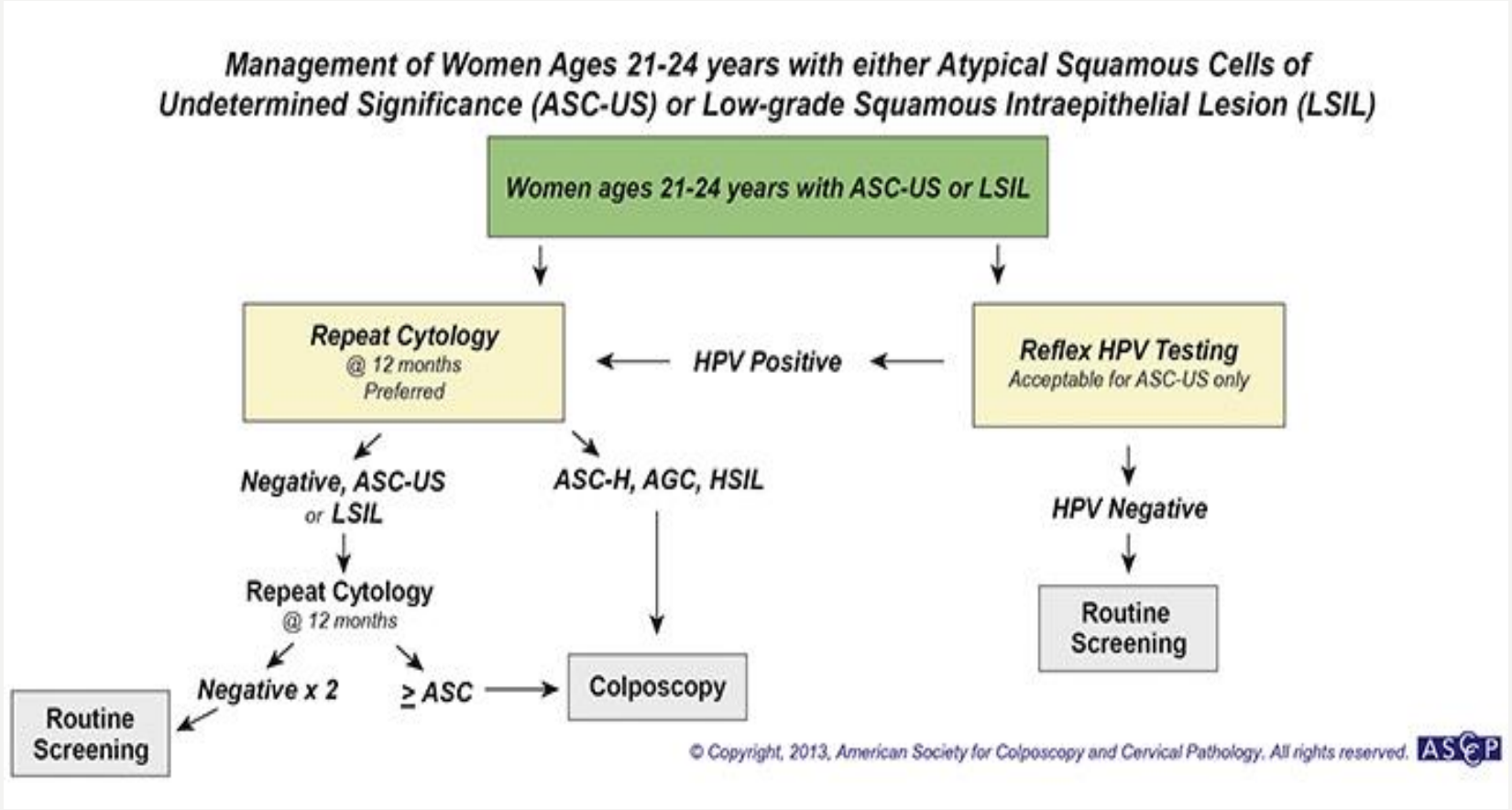
Management of Women Ages 21-24 years with either Atypical Squamous Cells of Undetermined Significance (ASC-US) or Low-grade Squamous Intraepithelial Lesion (LSIL)
Women ages 21-24 years with ASC-US or LSIL
Repeat Cytology
@ 12 months
Preferred
HPV Positive
Reflex HPV Testing
Acceptable for ASC-US only
Negative, ASC-US
or LSIL
ASC-H, AGC, HSIL
HPV Negative
Repeat Cytology
@ 12 months
Routine Screening
Negative x 2
≥ ASC
Colposcopy
Routine Screening
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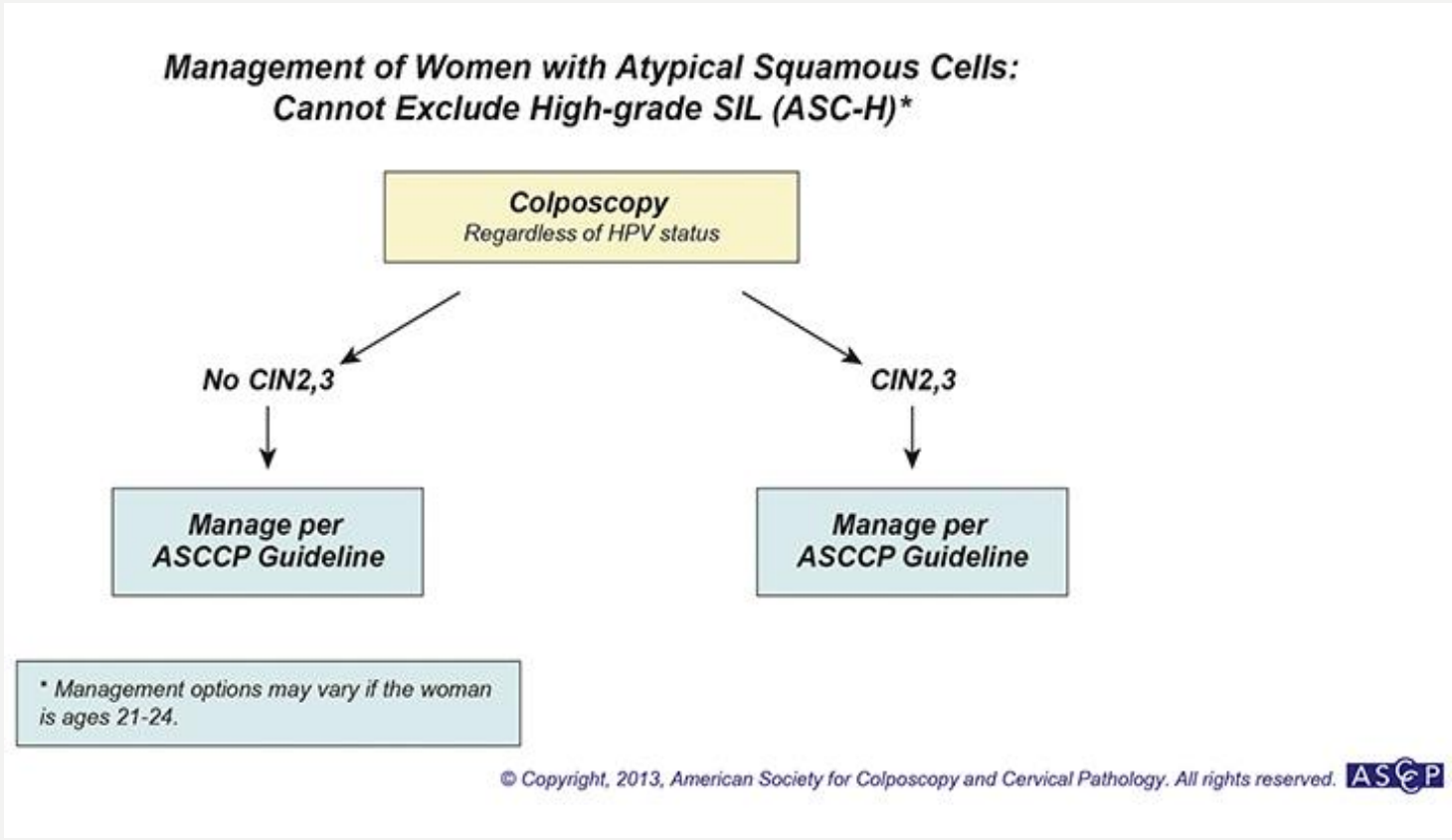
Management of Women with Atypical Squamous Cells:
Cannot Exclude High-grade SIL (ASC-H)*
Colposcopy
Regardless of HPV status
No CIN2,3
CIN2,3
Manage per ASCCP Guideline
Manage per ASCCP Guideline
* Management options may vary if the woman is ages 21-24.
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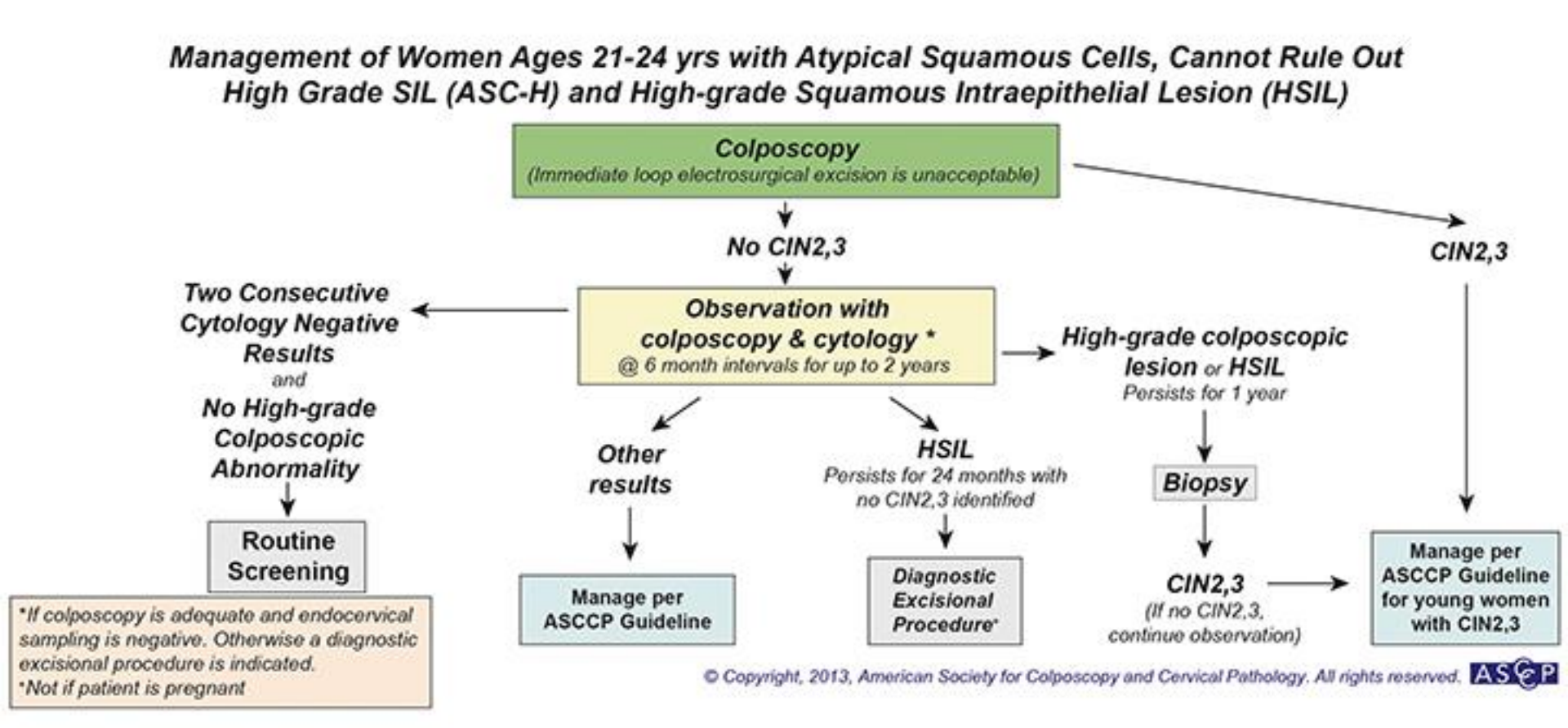
Management of Women Ages 21-24 yrs with Atypical Squamous Cells, Cannot Rule Out High Grade SIL (ASC-H) and High-grade Squamous Intraepithelial Lesion (HSIL)
Colposcopy
(Immediate loop electrosurgical excision is unacceptable)
No CIN2,3
CIN2,3
Two Consecutive Cytology Negative Results
and
No High-grade Colposcopic Abnormality
Observation with colposcopy & cytology *
@ 6 month intervals for up to 2 years
High-grade colposcopic lesion or HSIL
Persists for 1 year
Other results
HSIL
Persists for 24 months with no CIN2,3 identified
Biopsy
Routine Screening
Manage per ASCCP Guideline
Diagnostic Excisional Procedure*
CIN2,3
(If no CIN2,3, continue observation)
Manage per ASCCP Guideline for young women with CIN2,3
*If colposcopy is adequate and endocervical sampling is negative. Otherwise a diagnostic excisional procedure is indicated.
*Not if patient is pregnant
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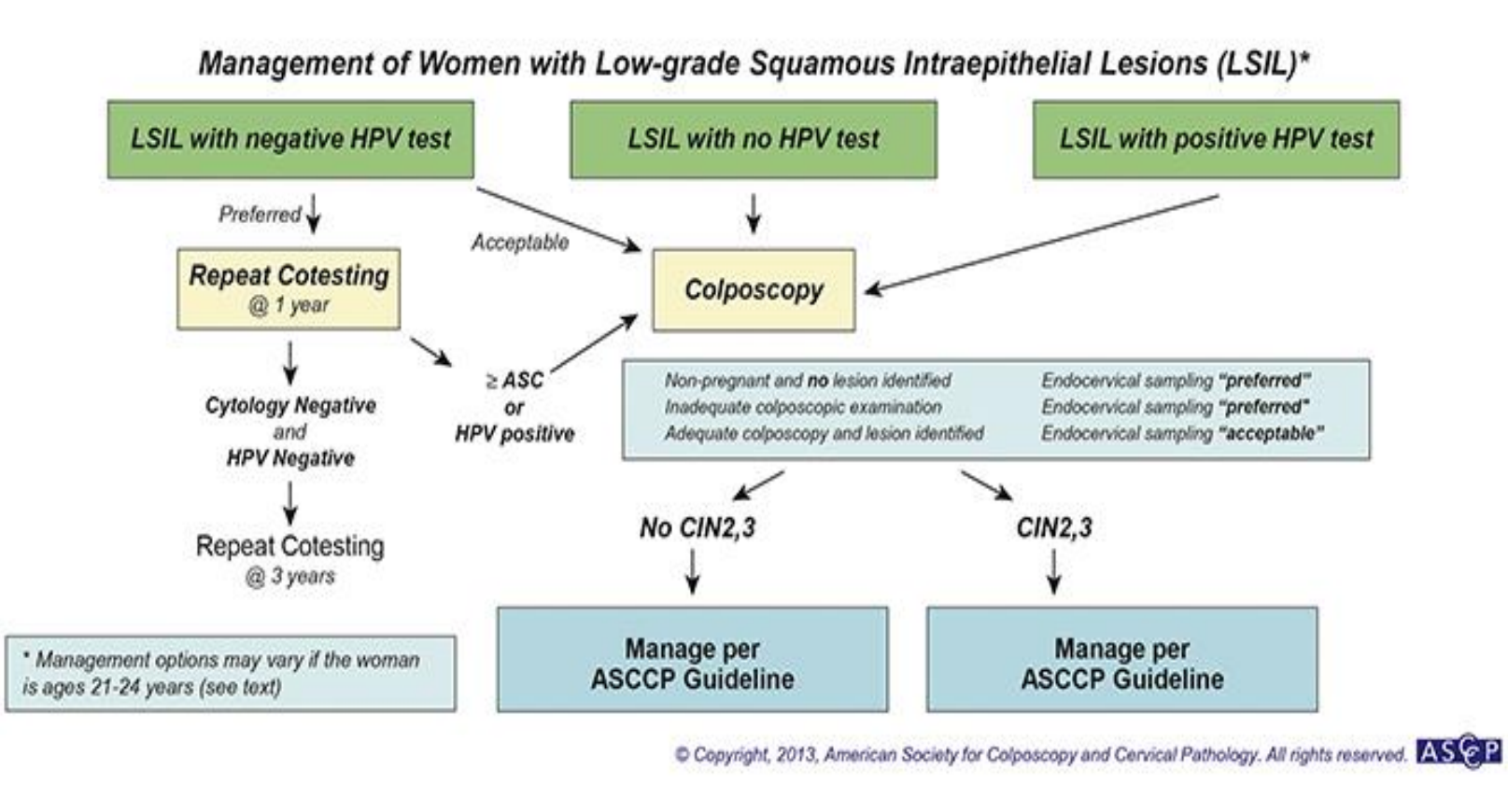
Management of Women with Low-grade Squamous Intraepithelial Lesions (LSIL)*
LSIL with negative HPV test
LSIL with no HPV test
LSIL with positive HPV test
Preferred
Acceptable
Repeat Cotesting
@ 1 year
Colposcopy
Cytology Negative
and
HPV Negative
≥ ASC
or
HPV positive
Non-pregnant and no lesion identified
Endocervical sampling "preferred"
Inadequate colposcopic examination
Endocervical sampling "preferred"
Adequate colposcopy and lesion identified
Endocervical sampling "acceptable"
Repeat Cotesting
@ 3 years
No CIN2,3
CIN2,3
* Management options may vary if the woman is ages 21-24 years (see text)
Manage per ASCCP Guideline
Manage per ASCCP Guideline
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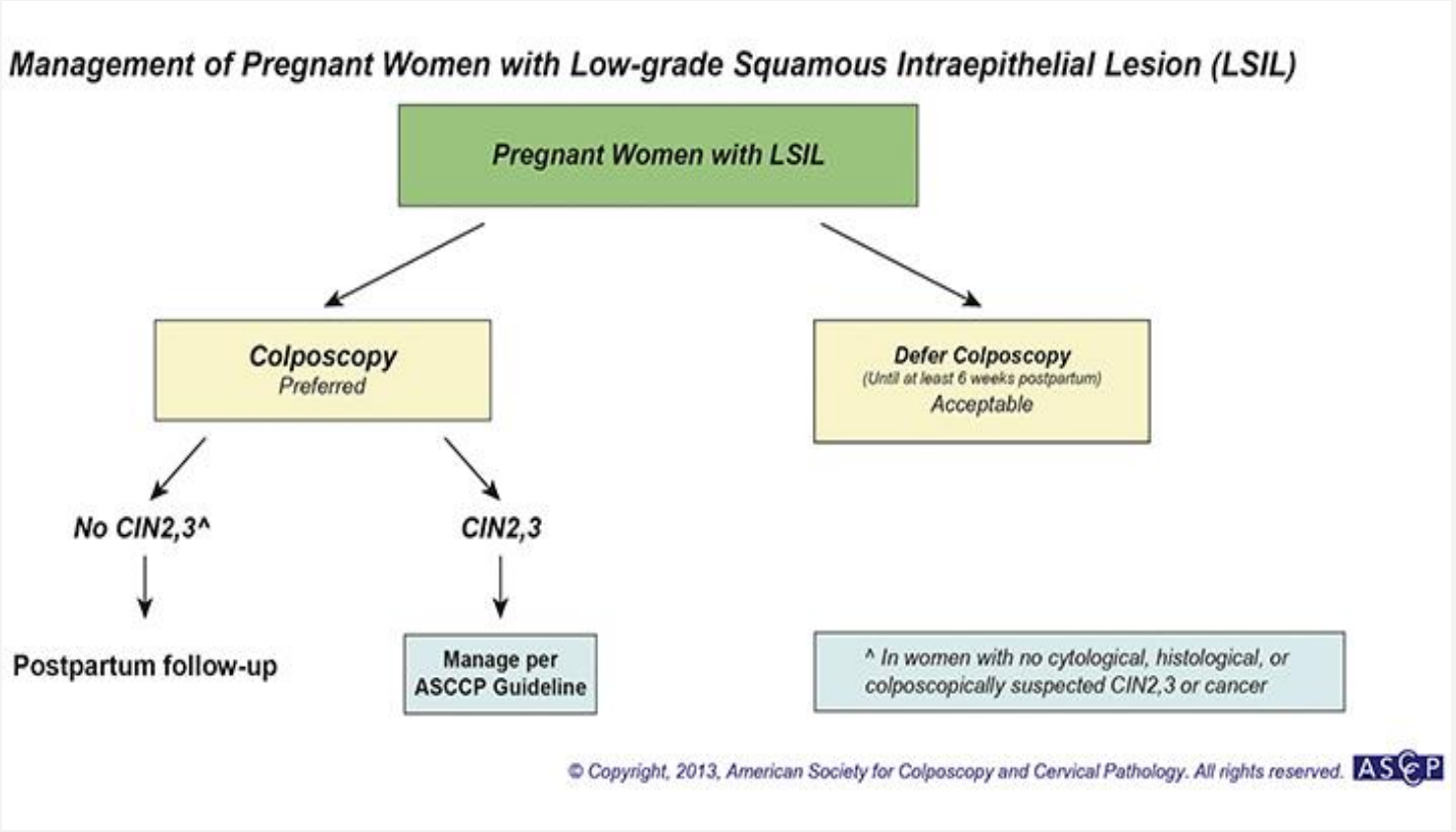
Management of Pregnant Women with Low-grade Squamous Intraepithelial Lesion (LSIL)
Pregnant Women with LSIL
Colposcopy
Preferred
Defer Colposcopy
(Until at least 6 weeks postpartum)
Acceptable
No CIN2,3^
CIN2,3
Postpartum follow-up
Manage per ASCCP Guideline
^ In women with no cytological, histological, or colposcopically suspected CIN2,3 or cancer
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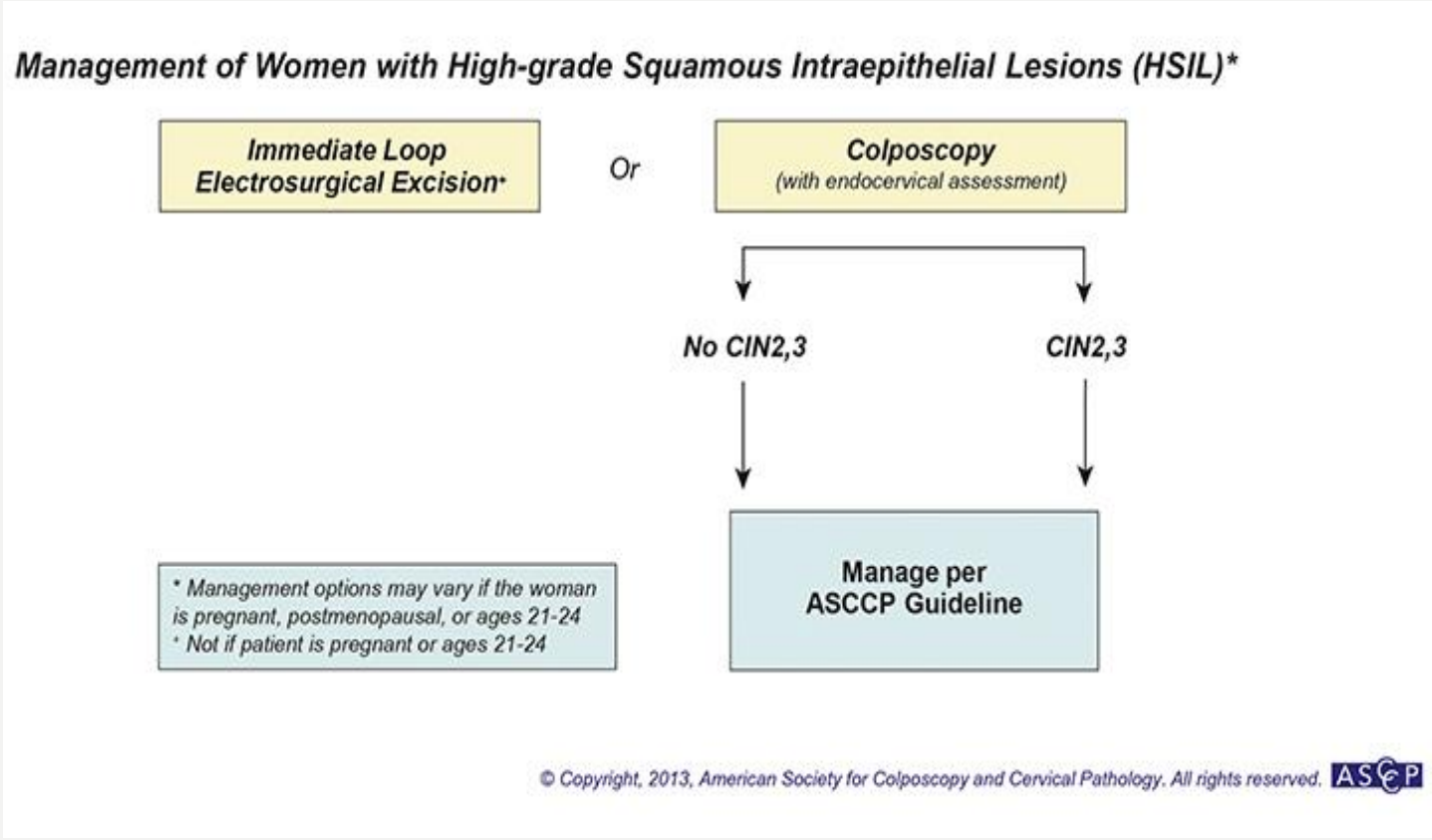
Management of Women with High-grade Squamous Intraepithelial Lesions (HSIL)*
Immediate Loop Electrosurgical Excision*
Or
Colposcopy
(with endocervical assessment)
No CIN2,3
CIN2,3
Manage per ASCCP Guideline
* Management options may vary if the woman is pregnant, postmenopausal, or ages 21-24
* Not if patient is pregnant or ages 21-24
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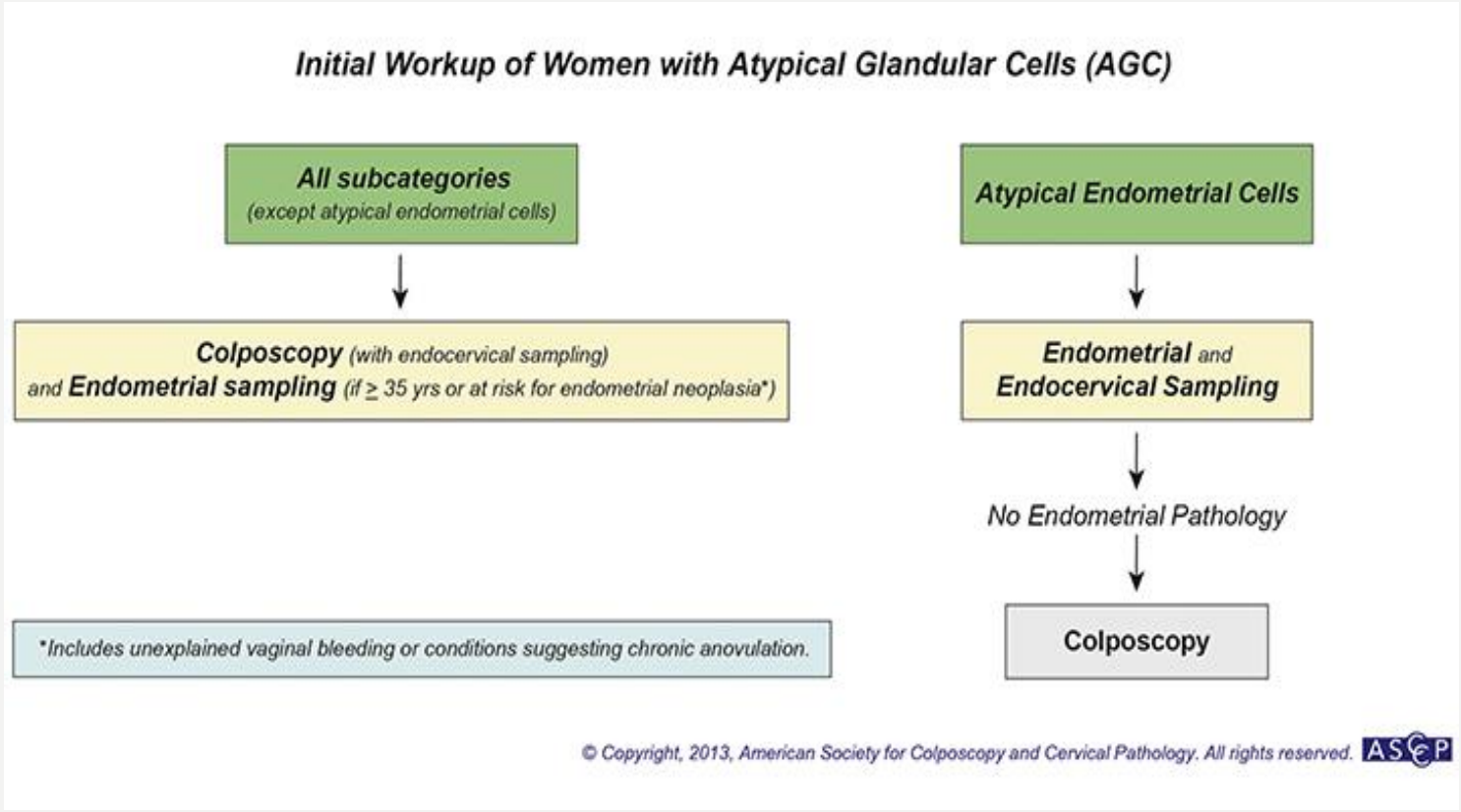
Initial Workup of Women with Atypical Glandular Cells (AGC)
All subcategories
(except atypical endometrial cells)
Colposcopy (with endocervical sampling)
and Endometrial sampling (if ≥ 35 yrs or at risk for endometrial neoplasia*)
*Includes unexplained vaginal bleeding or conditions suggesting chronic anovulation.
Atypical Endometrial Cells
Endometrial and
Endocervical Sampling
No Endometrial Pathology
Colposcopy
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WHAT IS COLPOSCOPY?

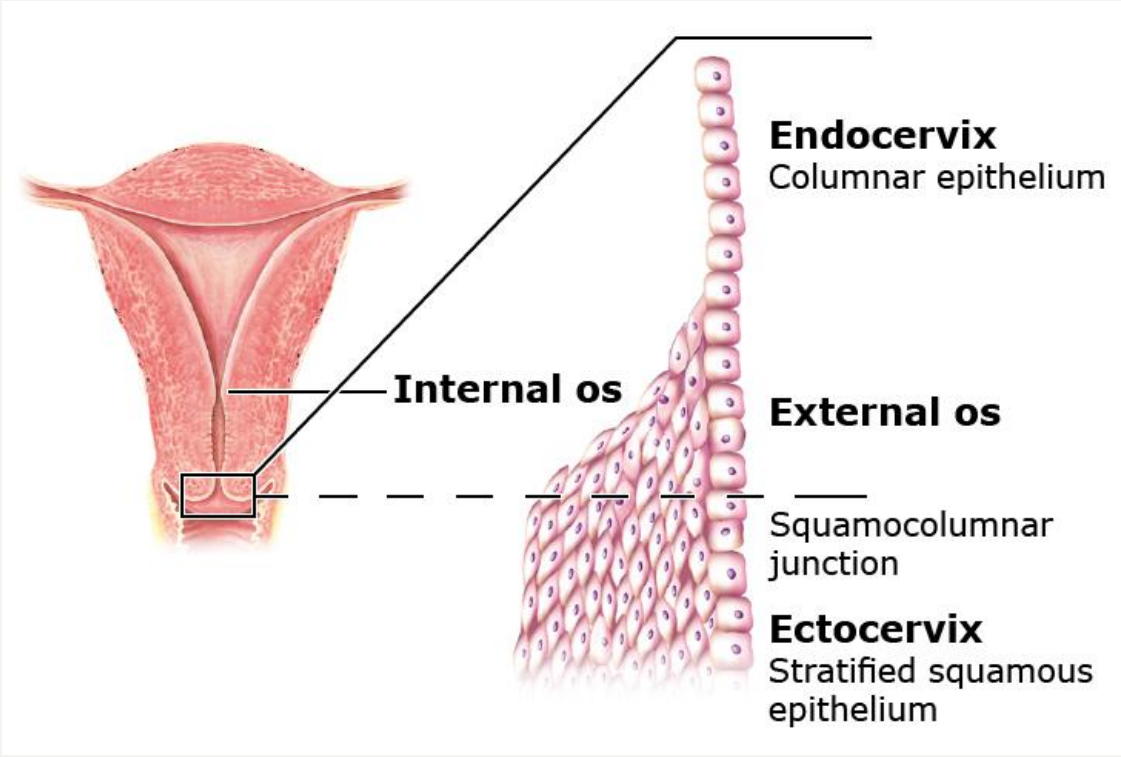
- A colposcope is a dissecting microscope with various magnification lenses and high-powered illumination.
- Malignant and premalignant epithelium have specific characteristics relating to contour, color, and vascular pattern that are recognizable by colposcopy, thus allowing the clinician to recognize abnormal areas and perform visually directed biopsy of suspicious tissue.

OTHER INDICATIONS FOR COLPOSCOPY

- Abnormal lesion seen or palpated on external genitalia or cervix during pelvic examination.
- Evaluation of a positive screening test for cervical neoplasia other than cervical cytology or HPV testing.
- In conjunction with treatment of cervical neoplasia with laser or other treatment modalities: to ensure that known lesions are completely removed or treated; to detect any other lesions in surrounding areas; and for post treatment surveillance.

CONTRAINDICATIONS TO COLPOSCOPY

- No absolute contraindications to colposcopy.
- Advisable to treat active cervicitis prior to colposcopic examination.
- Anticoagulation or bleeding disorders are not contraindications to colposcopy. Stop ASA/NSAIDs 2–7 days prior to procedure.
- No ECC (endocervical currettage) in pregnancy


Endocervix
Columnar epithelium
Internal os
External os
Squamocolumnar junction
Ectocervix
Stratified squamous epithelium

COLPOSCOPY SKILLS: WHAT DEFINES COMPETENCE

- Colposcopic **accuracy** is defined as the clinical correlation between a colposcopic impression and the histologic report.
- Skills needed to demonstrate proficiency (competence):
  - Visualization:
    - Locate the lesion.
  - Assessment:
    - Assess the severity of the lesion.
  - Sampling:
    - Determine the most severe lesion to biopsy.
  - Correlation:
    - Correlate the colposcopic impression with the cytologic and histologic findings.

INFORMED CONSENT/RISKS

- Pain
- Bleeding
- Infection
- Scar formation
- Missed diagnosis

HISTORY

- Review Pap Smear results
- Hx of DES exposure, current/past hormonal contraceptive use, smoking hx, prior abnormal cytology results and histology results, immunosuppresive conditions or medication, med allergies, iodine allergies

COLPOSCOPY STEPS

- TIME OUT!!
- **Visual inspection** of external genitalia, vaginal walls, and cervix.
- **Visual inspection** with green field filter
- Application of **Acetic Acid**
- Application of **Lugol's Solution** (if needed)
- Cervical **Biopsy and Endocervical Curettage**
- **Hemostasis**

COLPOSCOPY PROCEDURE

- **Pregnancy test** prior to starting
- Ensure all materials and **equipment** are available.
- Have an **assistant.**
- Make sure **Consent Form** is signed and all questions answered.
- Perform **Time Out.**

Colposcopy equipment and supplies

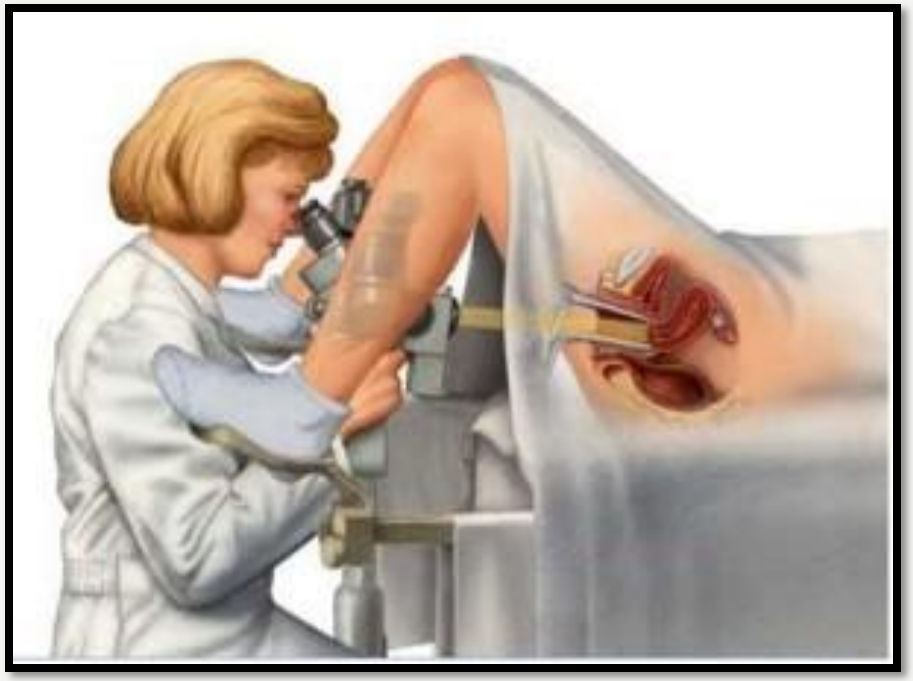
General colposcopy equipment
Colposcope
Speculums (variable sizes)
Cervical punch biopsy instruments
Endocervical curettes
Tenaculum
Endometrial sampling devices
Additional equipment and supplies
Ring or sponge forceps
Needle holder
Long Debakey forceps
Anoscope, clear plastic
Vulvar biopsy supplies (consent form, povidone-iodine, 1 percent lidocaine, small syringe with 27-gauge needle, 3 to 5 mm punch biopsy instruments, suture removal kit, silver nitrate sticks)
Written material
Consent forms
Documentation forms
Post-biopsy instructions
Educational materials

Supplies
Pap test supplies (liquid based cytology or glass slide and fixative, spatula, cytobrush)
3 to 5 percent acetic acid
Schiller's solution
Large and small cotton swabs
Silver nitrate sticks
Monsel's solution
Small histology jars with permanent fixative and labels
Povidone-iodine
1 percent lidocaine (with and without epinephrine)
22-gauge spinal needle and 10-cc syringe
Pantiliners
Suture material
Chux pads

UpToDate®

COLPOSCOPY PROCEDURE

- Once speculum is placed and cervix identified, use colposcope with televised image to direct your visualization and movements.

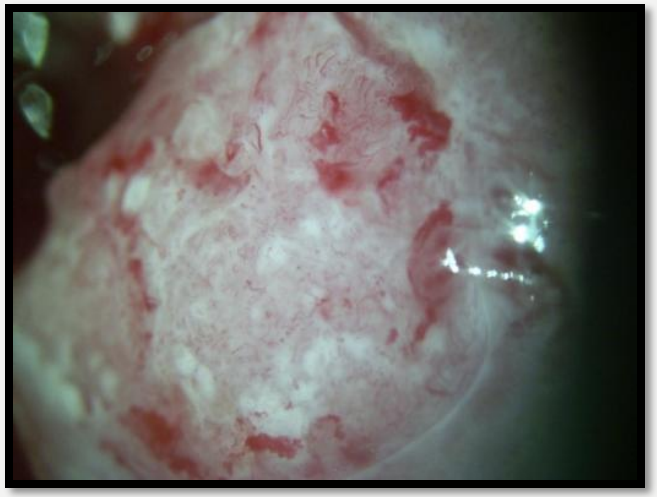


COLPOSCOPY PROCEDURE

- Identify Squamocolumnar Junction/Transformation zone—this is the area of most active cell division and thus the area most likely to have dysplastic lesions.
  - Ectocervix is smooth grey/pink, endocervix is usually darker pink/red and has a cobblestoned appearance.

COLPOSCOPY—GREEN OR BLUE FILTERS

- Use of your green or blue filter on your colposcope will highlight and darken vasculature.
- Corkscrew, thickened (coarse), hairpin, and comma-like vasculature are not normal.
- Abnormal vasculature can also be widely spaced, suddenly change direction, or appear to suddenly terminate.

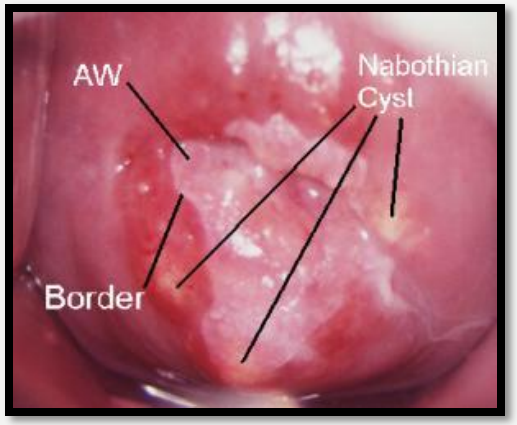


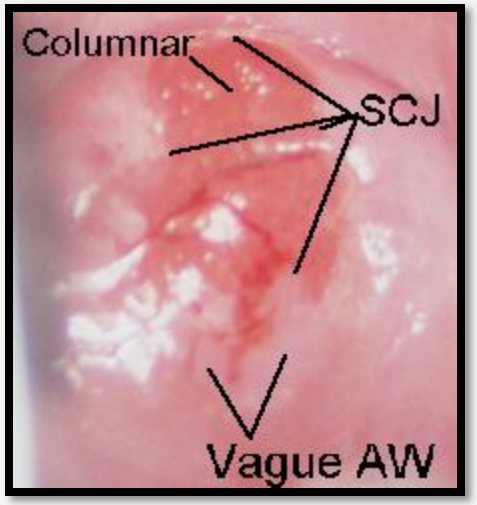
COLPOSCOPY PROCEDURE
WHAT IS ACETOWHITE?

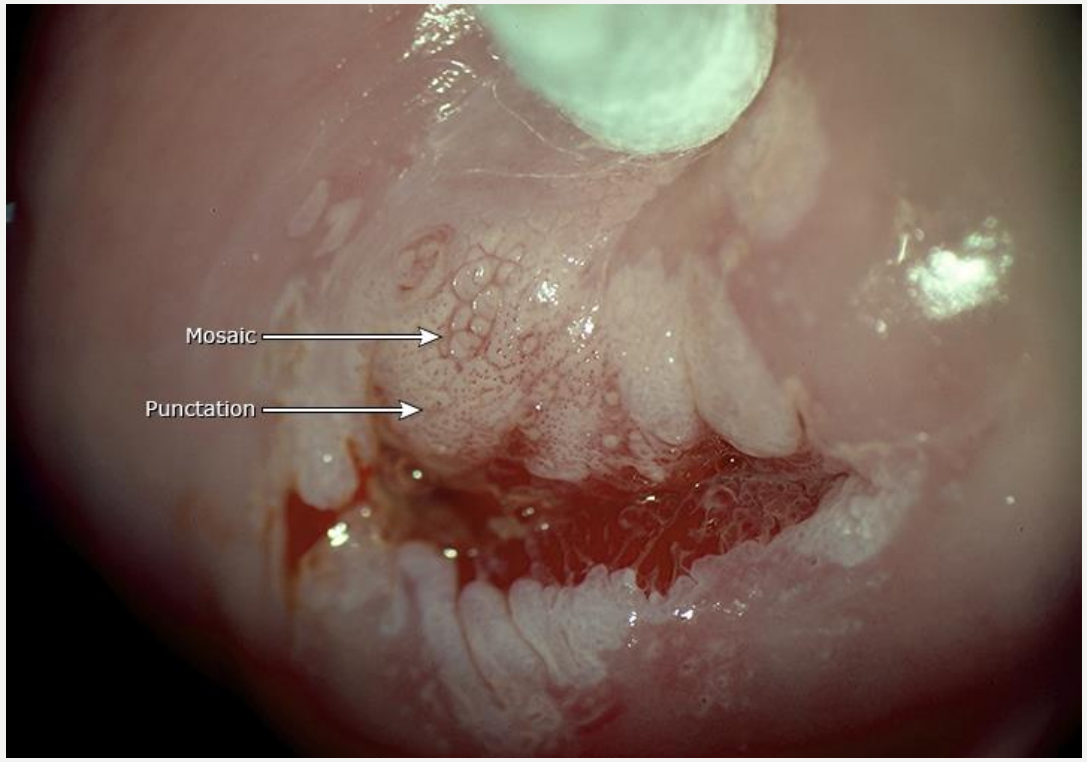
- Apply 3%–5% **acetic acid** (vinegar) to cervix with large cotton swabs.
- After 30–60 seconds, abnormal areas should begin to appear **white** because the acidic solution dehydrates cells so that squamous cells with relatively large or dense nuclei (eg, metaplastic cells, dysplastic cells, cells infected with human papilloma virus) reflect light.
- Vessels and columnar cells are also easier to see when compared with the whiter areas.

COLPOSCOPY PROCEDURE

- Visualize and note any areas of acetowhite changes
- Also note any areas of mosaicism, puncation, or abnormal vascular patterns.
- Use of an endocervical speculum or small q-tip may be needed to fully evert the cervical os for full visualization of the SCJ and any abnormalities.
- Distinct, sharp, and/or rolled borders tend to be more significant abnormalities than vague, wispy borders.



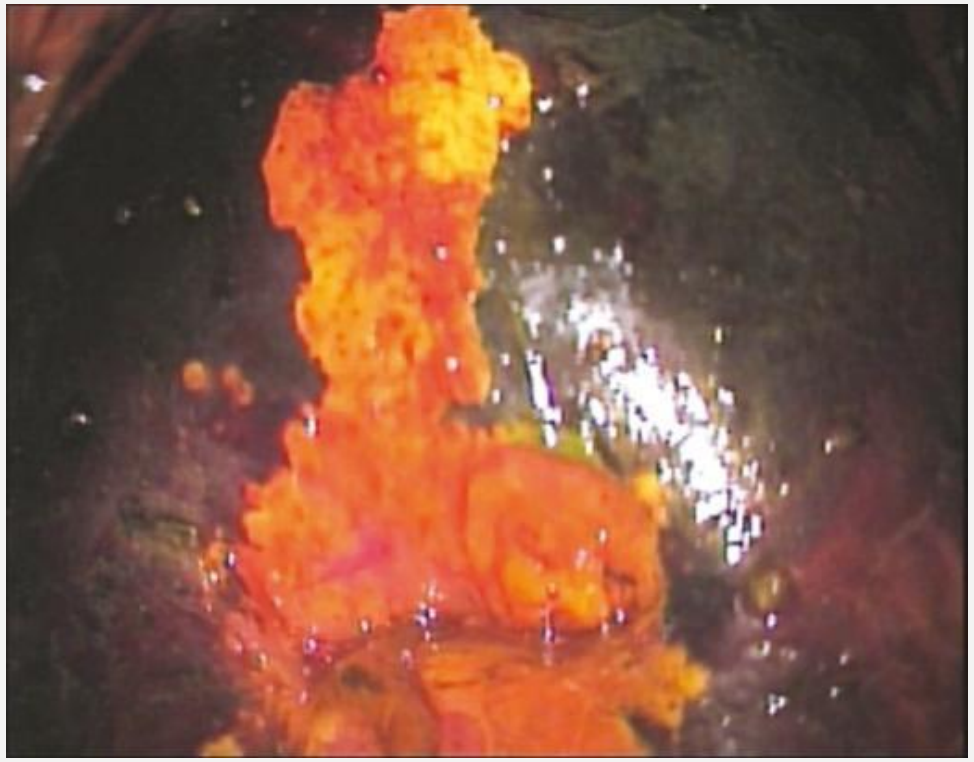



Mosaic
Punctation

COLPOSCOPY APPLICATION OF LUGOL'S SOLUTION

- If no lesions are seen with Acetic Acid, application of Lugol's solution (concentrated Potassium Iodide) can aid in detection of abnormalities.
- Glycogen-containing cells take up Lugol's well, producing a uniform dark brown mahogany color.
- Non-glycogenated cells, such as normal columnar and glandular cells, high-grade lesions, and many low-grade lesions will not take up iodine as well, producing a mustard yellow/variegated appearance.

APPLICATION OF LUGOL'S

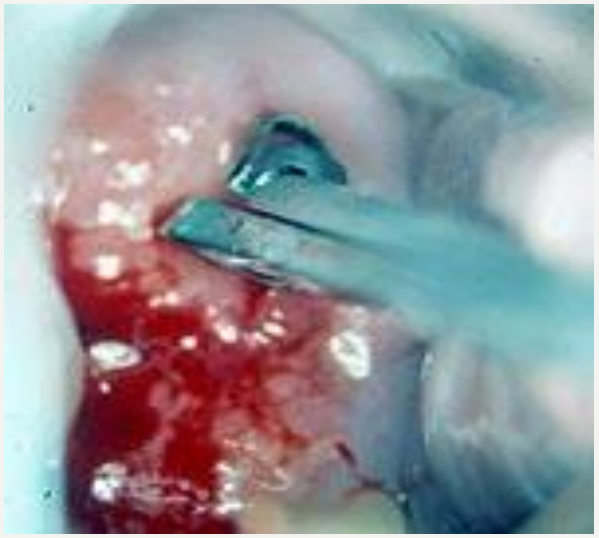


COLPOSCOPY
BIOPSIES

- Local anesthesia can be applied—however, asking the patient to cough at the time of biopsy works just as well.
- Determine area(s) of abnormalities and biopsy using Tischler forceps.
- Take biopsies from inferior to superior to avoid obscuring inferior lesions from bleeding.
- Place each biopsy in a separate, labeled, formalin container.

- This is a an **endocervical biopsy forceps**.
  Note the tooth on the lower jaw. That's to hook into the tissue usually at the transitional zone and then close the jaws.

CERVICAL BIOPSY

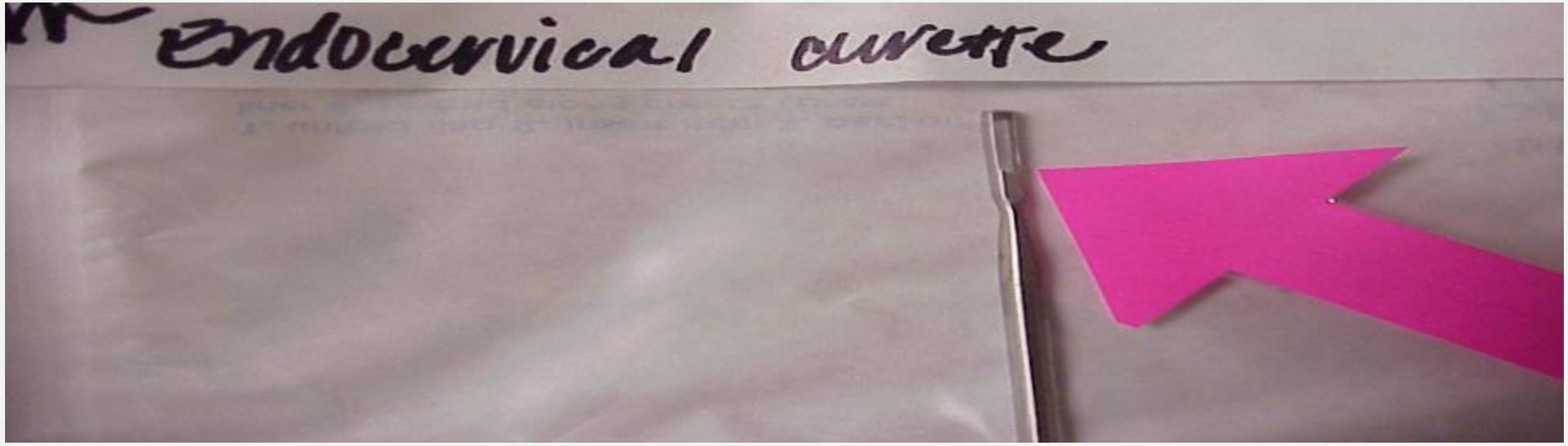


COLPOSCOPY
ECC (ENDOCERVICAL CURRETTAGE)

- Indicated in ASC-H, HSIL, AGC, adenocarcinoma in situ (AIS), ASC-US/LSIL but no visible lesion, and those with an unsatisfactory colposcopic examination.
- Some recommend ECC in all colposcopic examinations to increase sensitivity of results.
- A long currette is used to scrape all four quadrants of the endocervix (rotating in a clockwise fashion). A cytobrush can be used to remove any exfoliated tissue at the os. Any blood or mucous remaining at the os after ECC should be included in the sample.
- Place in separate container, labeled ECC.

ENDOCERVICAL CURETTE

- This is an **endocervical curette**. There is one sharp side to use for scraping and one smooth side.



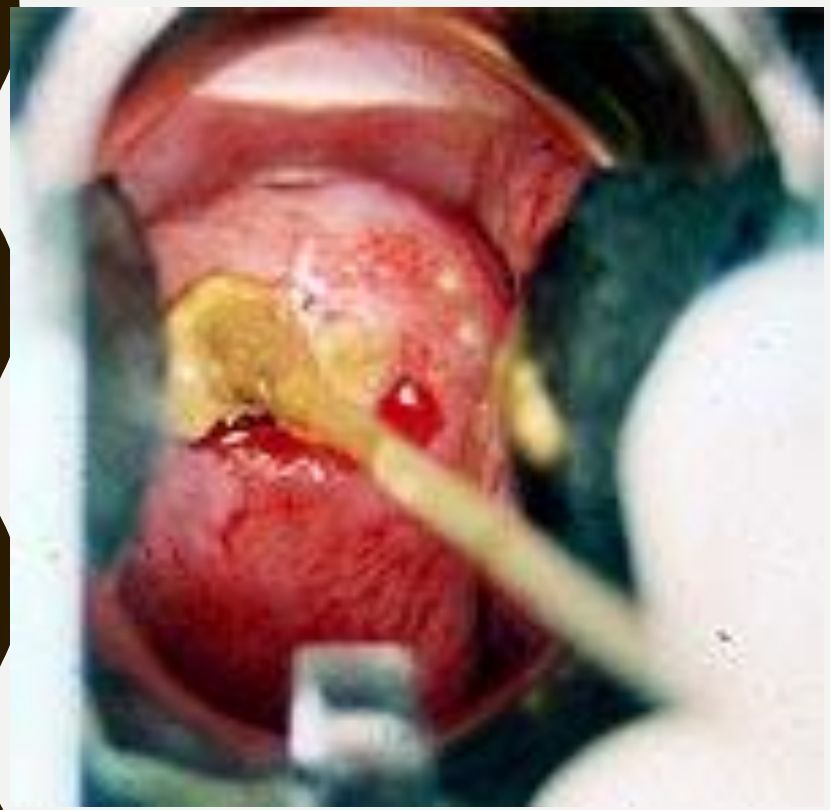
ENDOCERVICAL CURETTAGE

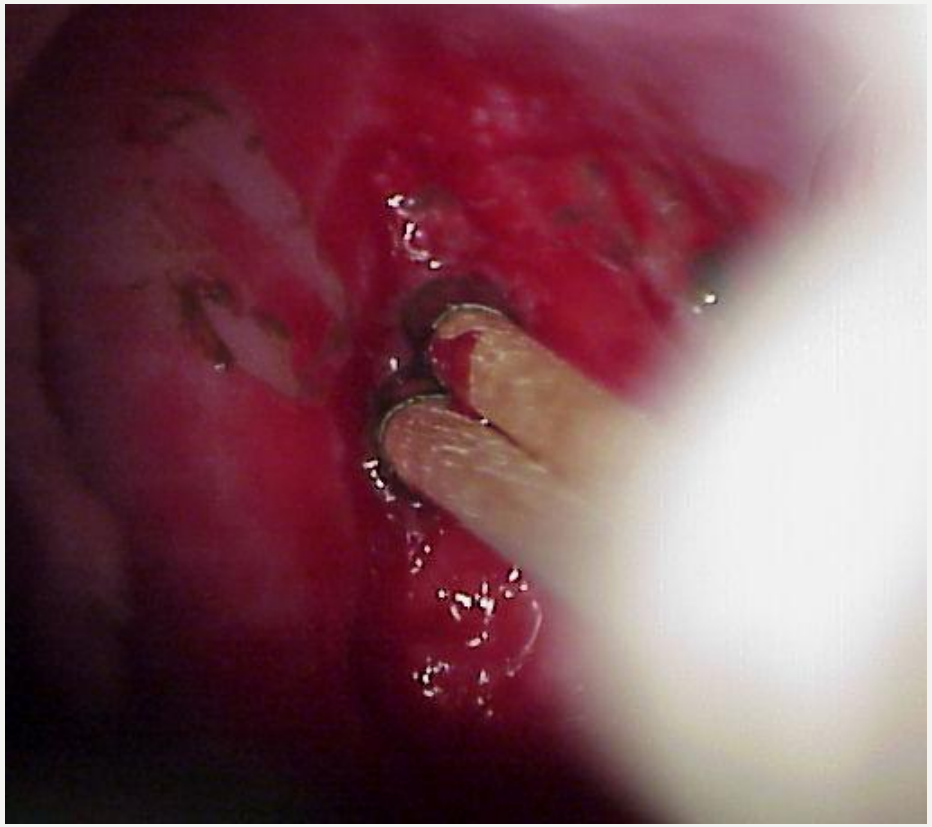
COLPOSCOPY HEMOSTASIS

- Use two silver nitrate sticks together to fill the defect and apply pressure for 10 seconds, or use Monsel's on a large swab, and dab on the bleeding areas. The deeper the biopsy, the more the bleeding. The pathologist only needs 1 millimeter thick of tissue for the diagnosis, so…..

  Try both to see which you like better.

COLPOSCOPY HEMOSTASIS





POST PROCEDURE INSTRUCTIONS

- Nothing in the vagina for 2 weeks
- Call if excessive cramping/bleeding/vomiting/fever/ foul smelling or yellow/ green vaginal discharge
- Use pads/panty liners
- Alert patient that Monsel's will look black and chunky coming out—this is normal discharge after a colpo for about 48 hours
- NSAIDs for cramping

DOCUMENT YOUR FINDINGS

- Draw your findings in the chart: electronic or paper
- The approximate **size** is documented in millimeters.
- The **locations** of abnormalities are noted as on the face of the clock (e.g., at 1:00 or 9:00).
- Document whether adequate or inadequate.
- Take pictures during colposcopy of abnormalities, if possible.

FOLLOW UP

- By phone or in person once results are back
- Should set an appointment for 2 weeks post colpo to follow up on biopsy results
- Follow ASCCP guidelines (www.asccp.org) for f/u paps/colpos/treatment (cryo/cold cone/leep)

COLPOSCOPY EVALUATION REID'S COLPOSCOPIC INDEX (RCI)

- RCI considers four characteristics of premalignant lesions:
  - Lesion margin
  - Color of acetowhitening
  - Vessels within the lesion
  - Iodine staining
- Each category is assigned a value from 0–2
- First three signs are evaluated after acetic acid application.
- Fourth sign evaluated after application of iodine (Lugols solution)

Colpo Sign	0 Points	1 Point	2 Points
Margin	Condyloma Indistinct, feathered border Jagged angular lesion Satellite lesion (AW that extends beyond TZ)	Regular lesions with smooth, straight outlines Sharp peripheral margins	Rolled, peeling edges Internal borders between areas of differing appearance
Color	Shiny, snow-white Indistinct AW, semitransparent rather than opaque	Shiny, off-white Intermediate white	Dull, oyster gray
Vessels	Uniform, fine caliber Randomly arranged with poorly formed patterns Nondilated capillary loops	Absence of surface vessels following acetic acid soaking	Definite punctation or mosaicism. Individual vessels dilated, arranged in sharply demarcated, well-defined patterns
Iodine Staining	Positive iodine uptake Mahogany-brown color	Partial iodine uptake Variegated, tortoise-shell appearance	Negative staining of lesion Mustard yellow appearance
Score	**0-2: HPV or CIN-I** Low grade disease	**3-5: CIN- I or II** Intermediate grade dz	**6-8: CIN-II or III** High grade disease

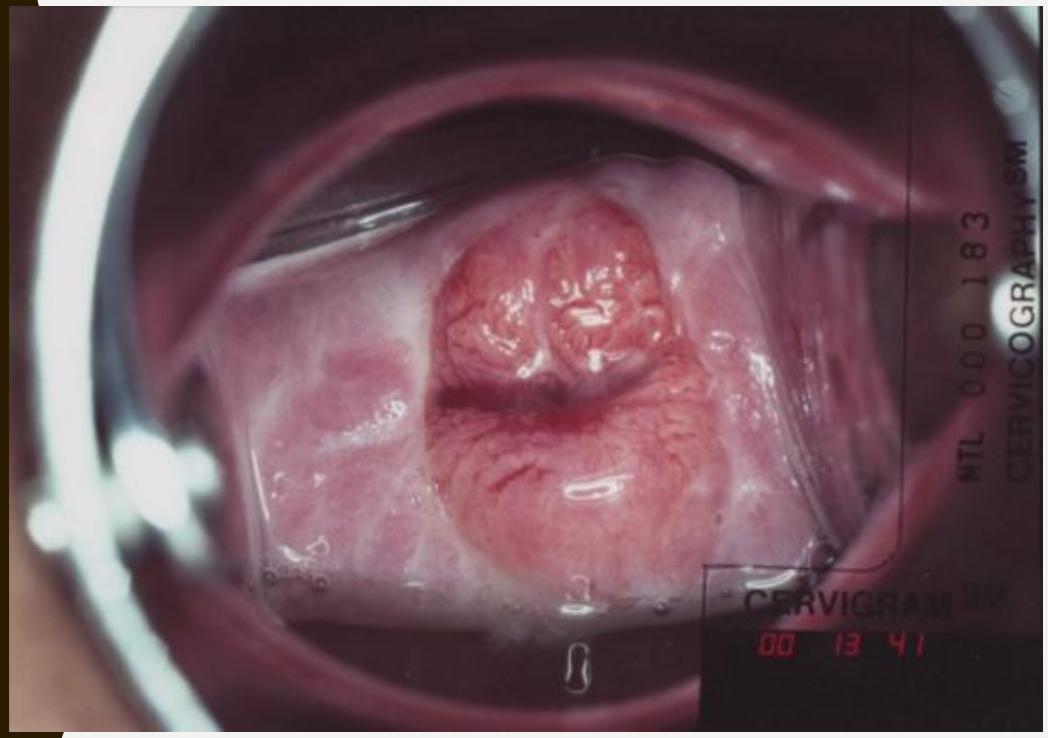
COLPOSCOPY CLINICAL IMPRESSION

- Normal
- HPV Effect
- CIN-I
- CIN-II
- CIN-III
- CIS/Cancer
- Based on:
  - Colposcopic Evaluation
  - Reids Colposcopic Index

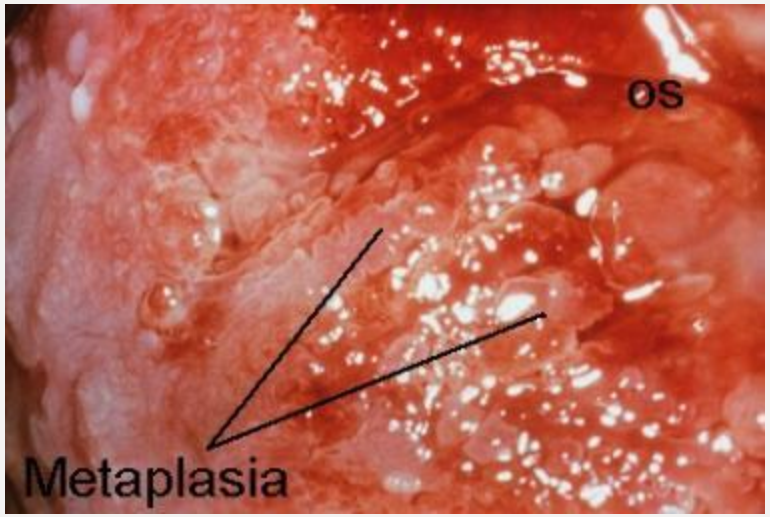
COLPOSCOPY EVALUATION

- **Satisfactory** colpo:
  - Entire SCJ/Transformation Zone is seen
  - Limits of lesion(s) are seen
  - Colposcopic findings agree with histologic findings reported on the cervical biopsy.
  - If local treatment is planned:
    - Endocervical curettage must be negative.
    - Colpo findings should agree with pathology findings.
- **Unsatisfactory** colpo: if above conditions not met.
- If ECC is positive, local treatment (eg, cryo) is contraindicated, and patient should be referred for LEEP (loop electroexcision procedure) or conization.

NORMAL CERVIX



NORMAL CERVIX



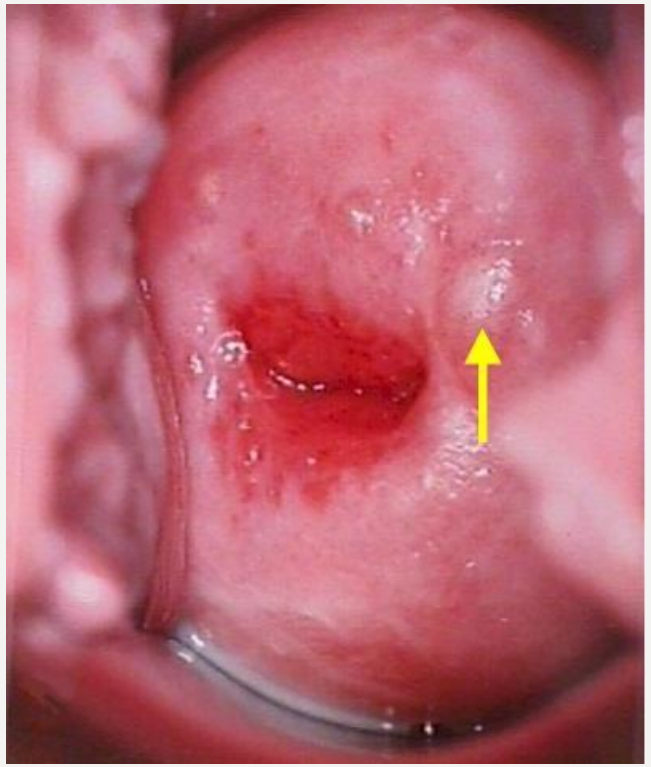
- Squamous Metaplasia
  - Metaplasia is a normal transformation from one mature cell type (columnar) to a second mature type (squamous).
  - Metaplasia usually seen in the lower 1/3 of the EC.
  - Factors that cause metaplasia may include environmental conditions, mechanical irritation, chronic inflammation, pH changes or changes in sex steroid hormone balance.

ECTROPION

- Eversion of the uterine cervix
- Caused by columnar epithelium everting onto a portion of the cervix
- Often bleeds easily, common cause of intermenstrual spotting in adolescent or pregnant women

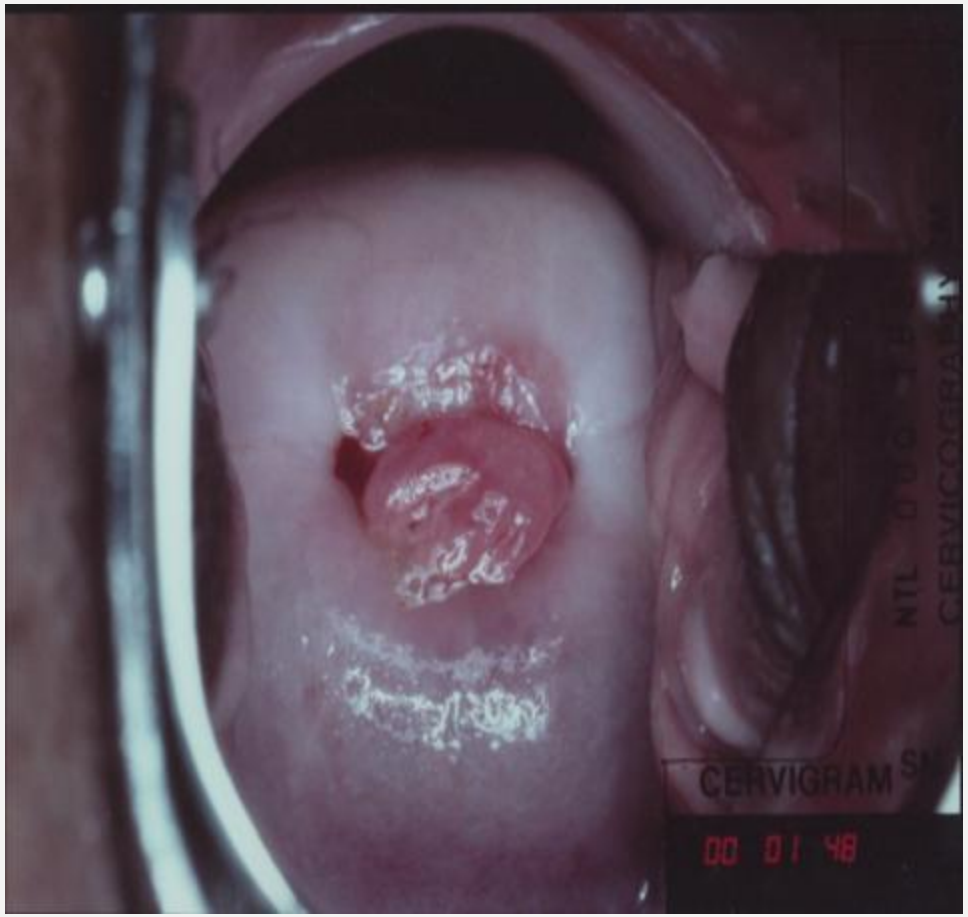
NABOTHIAN CYSTS

- Nabothian cysts form when the secretions from functional glandular epithelium become trapped below the surface of the skin.
- This can occur because of:
  - Normal deep infolding of the endocervical epithelium
  - When squamous ectocervical epithelium covers over the mucous-producing endocervical epithelium (squamous metaplasia)
  - More commonly after childbirth and sometimes occurs concomitantly with cervicitis



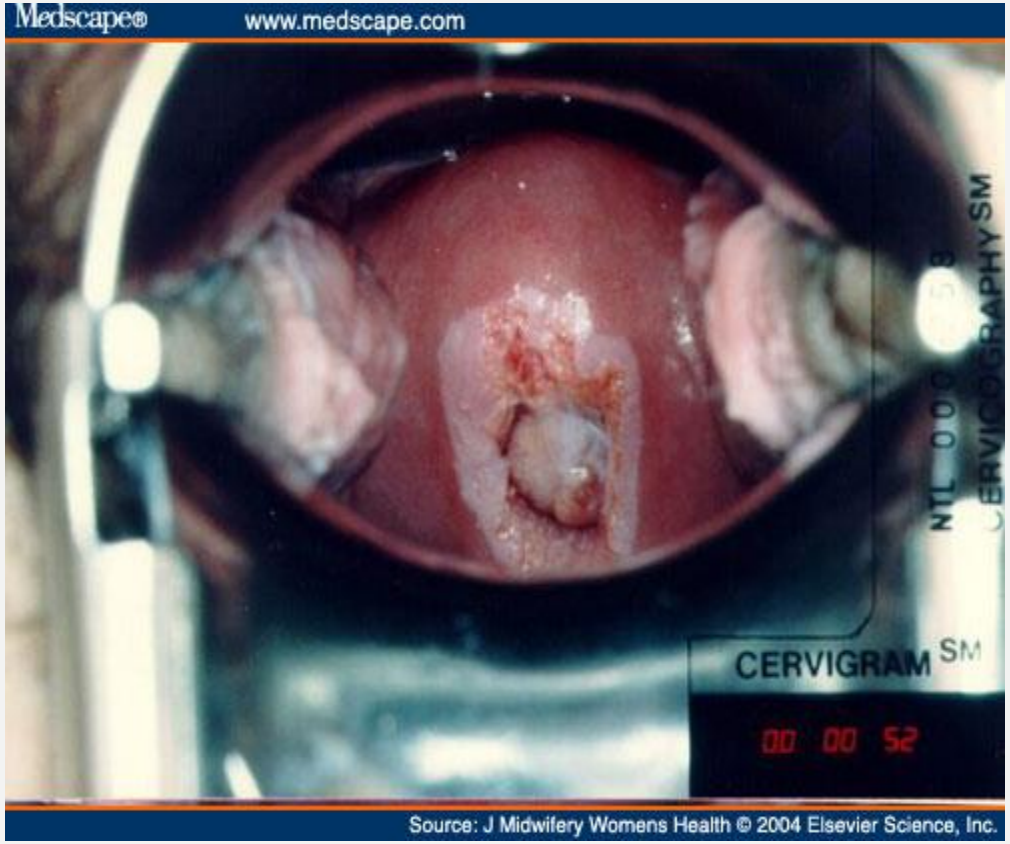
CERVICAL POLYP

- Etiology is not well understood.
- Associated with:
  - inflammation of the cervix.
  - May result from an abnormal response to the female hormone estrogen.
- Cervical polyps are relatively common.
  There are two types of cervical polyps:
  - Ectocervical **polyps** develop from the outer surface layer cells of the cervix. They are more common in postmenopausal women.
  - Endocervical polyps develop from cervical glands inside the cervical canal. Most cervical polyps are endocervical polyps and are more common in premenopausal women

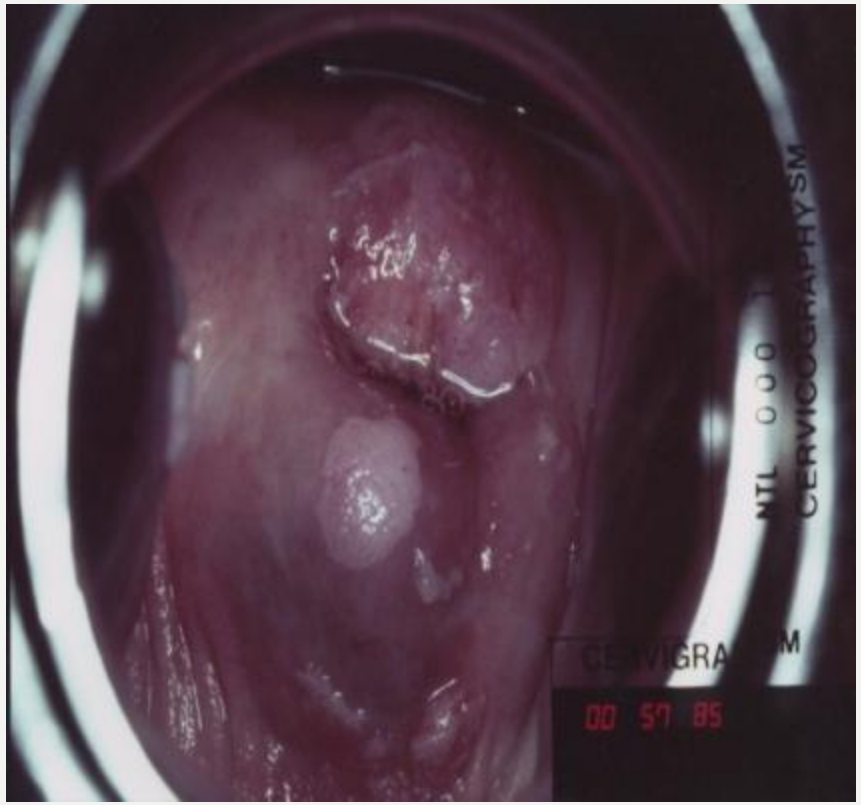


CERVICAL POLYP

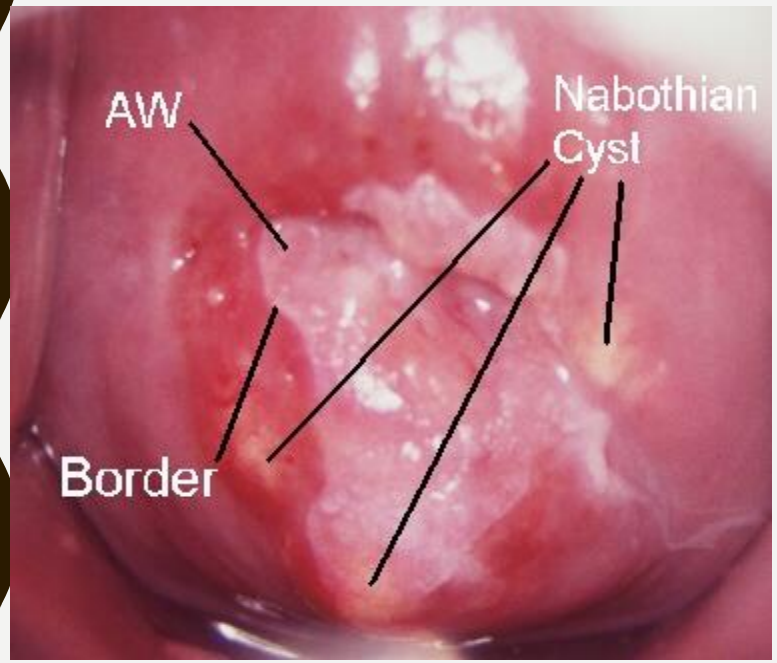
- Polyps are usually cherry-red to reddish-purple or grayish-white.
- Vary in size and often look like bulbs on thin stems.
- Cervical polyps are usually not cancerous (benign) and can occur alone or in groups.
- Most polyps are small, about 1 centimeter to 2 centimeters long.
- Because rare types of cancerous conditions can look like polyps, all polyps should be removed and examined for signs of cancer.

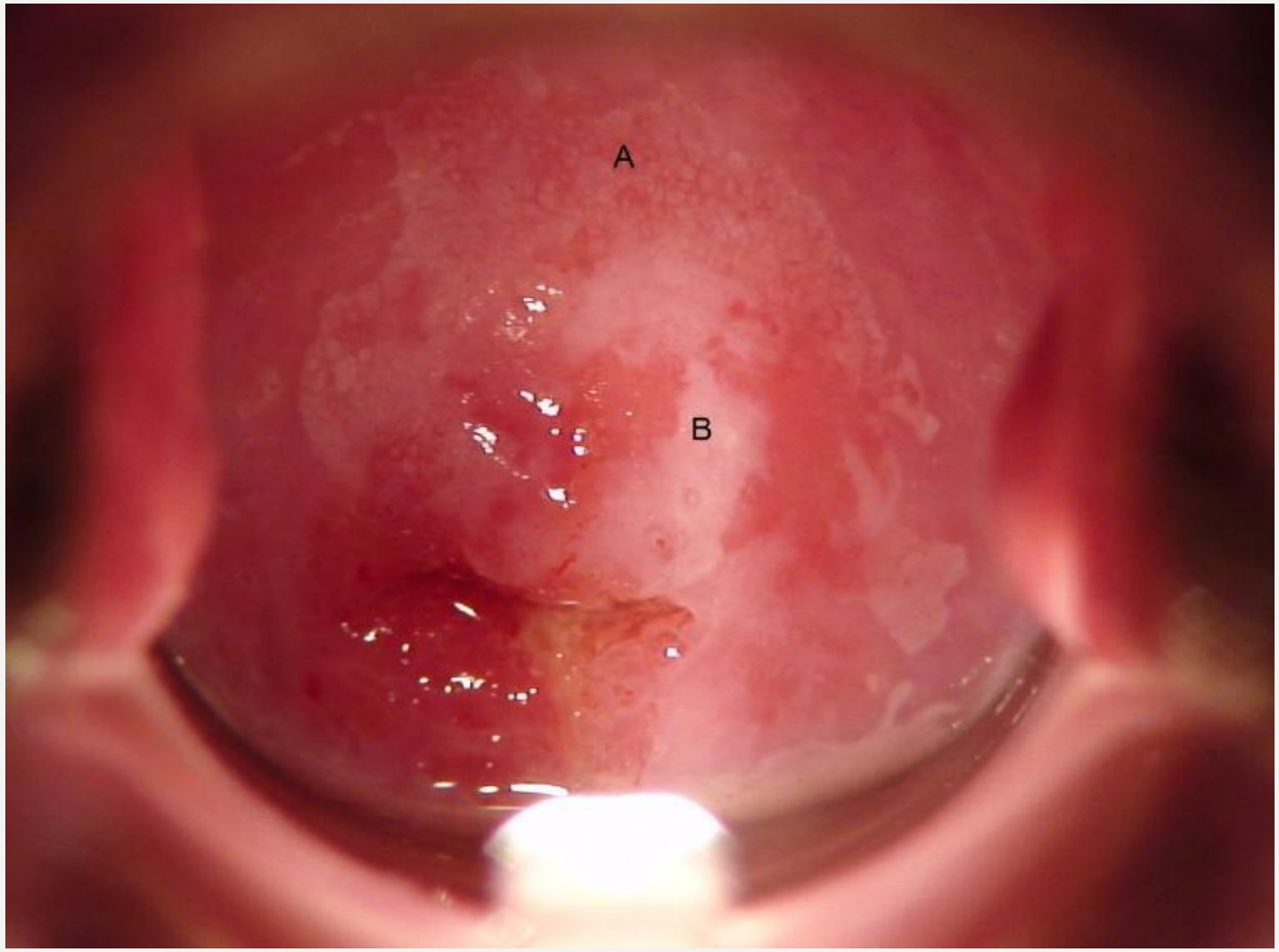


HUMAN PAPILLOMA VIRUS



ACETOWHITE CHANGES





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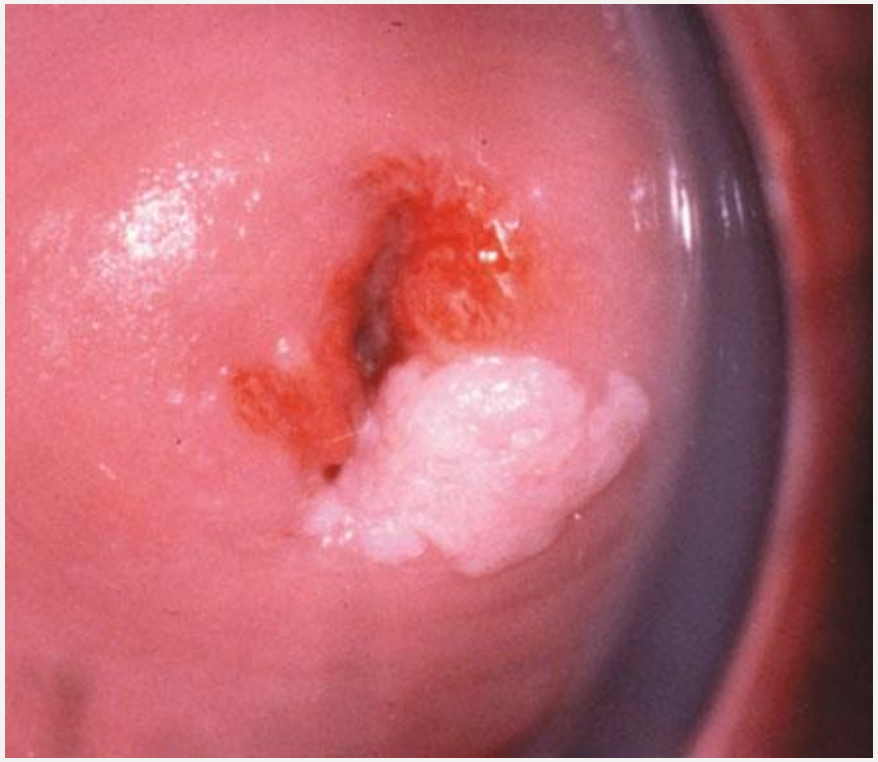
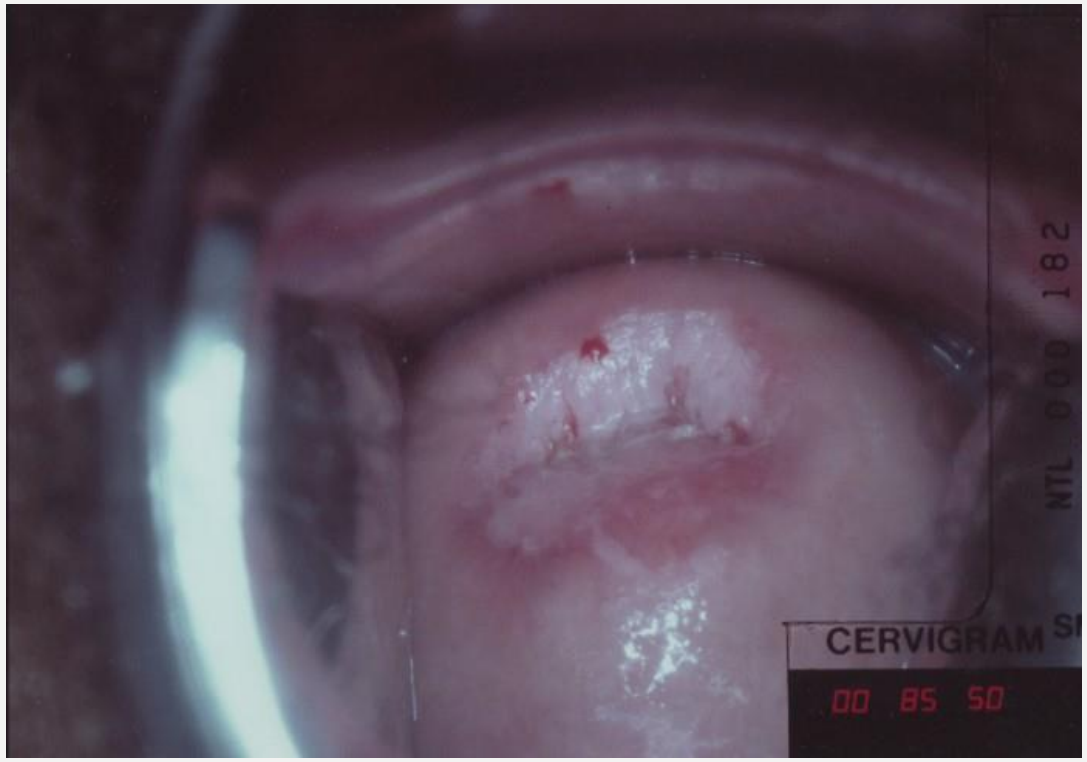
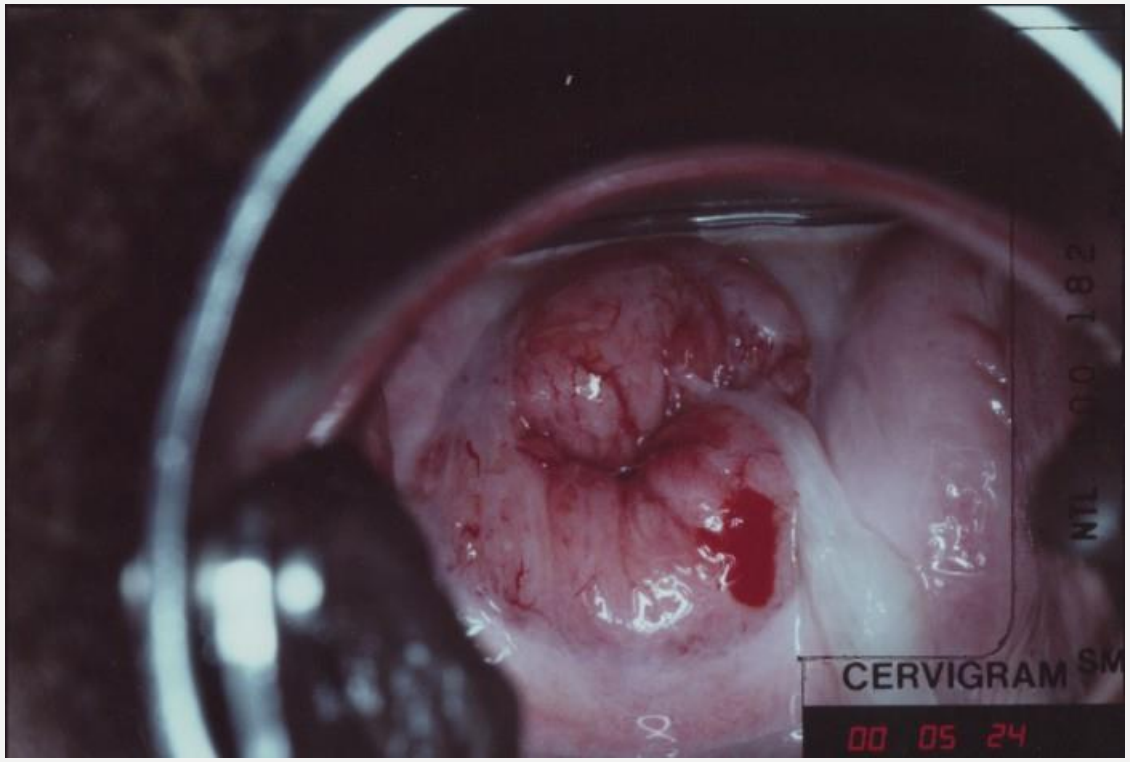


LEUKOPLAKIA



ABNORMAL VESSELS



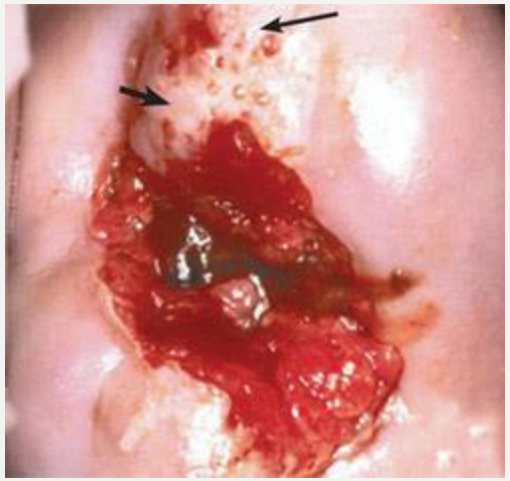
MOSAICISM

mosaic major

CERVIX POST LUGOL'S APPLICATION

- Healthy cells are the darker color
- Abnormal cells are the mustard color

EROSION



PUNCTATION

CERVICAL CANCER

COLPOSCOPY STEPS

- TIME OUT!!
- **Visual inspection** of external genitalia, vaginal walls, and cervix.
- **Visual inspection with** green field filter
- Application of **Acetic Acid**
- Application of **Lugol's Solution** (if needed)
- Cervical **Biopsy and Endocervical Curettage**
- **Hemostasis**

REFERENCES

- ASCCP Colposcopy Standards: Role of Colposcopy, Benefits, Potential Harms, and Terminology for Colposcopic Practice. Journal of Lower Genital Tract Disease.
- American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology Screening Guidelines for Prevention and Early Detection of Cervical Cancer. Journal of Lower Genital Tract Disease.
- Pfenninger and Fowlers Procedures for Primary Care 3rd edition, Ch 137 Colposcopic Examination.