

Lecturer – Miss Theresa Freeman-Wang

Theresa Freeman-Wang is a consultant Gynaecologist at the Whittington Health NHS Trust in London. She is President-Elect of the international society for cervical pathology and colposcopy (IFCPC) and immediate past president of the BS CCP





**The British Association of
Gynaecological Pathologists**



bsccp

The British Society for
Colposcopy and Cervical Pathology

Basic Cervical Histopathology Course

- ☐ **Title: Colposcopy for the colposcopist & histopathologist**
- ☐ **Speaker: Theresa Freeman-Wang**
- ☐ **Affiliations: Whittington Health NHS Trust, BS CCP, IFCPC**
- ☐ **Date: 04/02/2026**



**The British Association of
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Colposcopy and Cervical Pathology

Speaker disclosures

Choose one

☐ **I have the following to disclose:**

I am a medical advisor for Procaire

What we want you to know...



Defining the
abnormality –
recap the TZ

AWE & I₂

Vascular
patterns

IFCPC
terminology and
Swedescore

Hans Hinselmann : the inventor of the colposcope



• 1884-1959

Son of a brewer

PhD- malignant pigmented tumors of the vulva

1921 Prof University of Bonn

1925 General Hospital Altona, Hamburg

Wrote seminal paper on Colposcopy

1930-46 Frauenklinik Altona in Hamburg

Active supporter National Socialism

Experiments at Auschwitz

Prison 1946-49 for forced sterilisations

1956 Member German Society O&G

tiert nach Lexer)). Dazu kommt noch, daß die meist vorhandenen Hautabschürfungen in der Verletzungsgegend, die eine Infektion allenfalls begünstigen, inzwischen zur Abheilung gebracht werden können. Deshalb erscheint das Abwarten in vielen Fällen doch vorteilhafter zu sein, als die sofortige Operation, insbesondere auch deshalb, weil es außer einem geringgradigen Zeitverlust keinerlei Nachteile bringt.

Interessante Beobachtungen aus dem Gebiet der Sehnenregeneration bzw. über das Verhalten von operierten Sehnen wären den pathologischen Anatomen sicher möglich. Da aber die alten Sehnenverletzungen kaum im Zusammenhang mit der Todesursache stehen, entgehen sie meist der Aufmerksamkeit des Sezierenden, obwohl für Chirurgen und Orthopäden gerade solche Befunde auch sehr wissenswert wären. Vielleicht ist es gerade jetzt auf Grund der vielen Muskel- und Sehnenverletzungen des Krieges möglich, hier neue Beobachtungen zu machen.

Verwendete Literatur.

Albrecht: Arch. f. Orthopädi. und Unfallchirurgie 23. Bd. H. 13. 1924. — Bier: D.m.W. 1917 18. — Braus: Anatomie des Menschen, I. Bd., 1922. — Handb. d. prakt. Chir. VI. Bd., 1923. — Maydl: D. Zschr. f. Chir. 1888. — Lexer: Allgem. Chirurgie 1922. — Küttner: D.m.W. 1922. — Saar: Die Sportverletzungen. — Salomon: Arch. f. Chir. 1921. — Schwarz: D. Zschr. f. Chir. Bd. 173. — Wehner: D. Zschr. f. Chir. Bd. 177.

Aus der Frauenklinik der Universität Bonn.
(Direktor: Geh.-Rat von Franqué.)

Verbesserung der Inspektionsmöglichkeiten von Vulva, Vagina und Portio.

Von Prof. Dr. Hans Hinselmann, Oberarzt der Klinik *).

Ausgehend von den Bedürfnissen der Frühdiagnose und der Ätiologie des Portiokarzinoms war ich bestrebt, die Besichtigung der Portio zu verbessern. Von vorhandenen Mitteln bot sich mir zunächst die von Eickensche Stirn-

Zu diesem Zweck habe ich die Leitzsche binokulare Präparierlupe mit einer Beleuchtung versehen lassen. Auf diese Weise kann man bei großem Objektstand und intensiver Beleuchtung Scheide und Portio ablichten und Vergrößerungen von 3,5 an erreichen. Je nach Länge der Scheide und Zugänglichkeit der Portio kann man sie in situ mit Vergrößerungen bis 10,5 bis 30 beobachten. Mit dieser Einrichtung habe ich seit Monaten in zunehmendem Maße gerne gearbeitet. Sie gestattet uns, alle Erkrankungen der Vulva, des Vestibulums, der Scheide und der Portio in einer Weise zu studieren, wie es bisher nicht möglich war.

Die Optik habe ich auf einem Stativ anbringen lassen, das Bewegungen in allen Richtungen gestattet und zu feinsten Einstellungen eine Mikrometerschraube trägt.

Man untersucht im allgemeinen ohne Zedernöl, vereinzelt empfiehlt sich außerdem die Aufhellung mit Zedernöl.

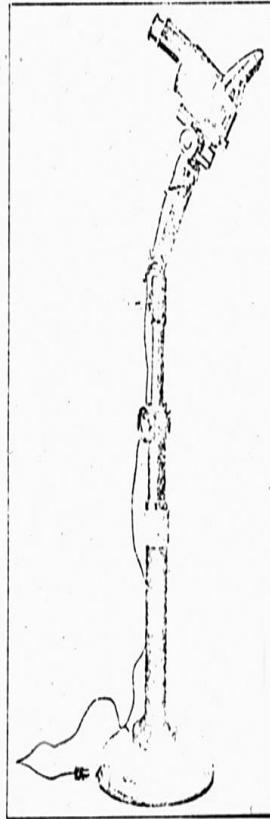


Fig. 2. Kolposkop.

Die Leistungsfähigkeit dieser Methode besteht darin, daß sie uns Veränderungen aller Bestandteile der Haut, der Epidermis, des Bindegewebes und der Gefäße erkennen läßt, die

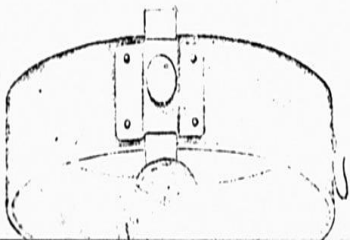
Hans Hinselmann

Key figure in medical history,

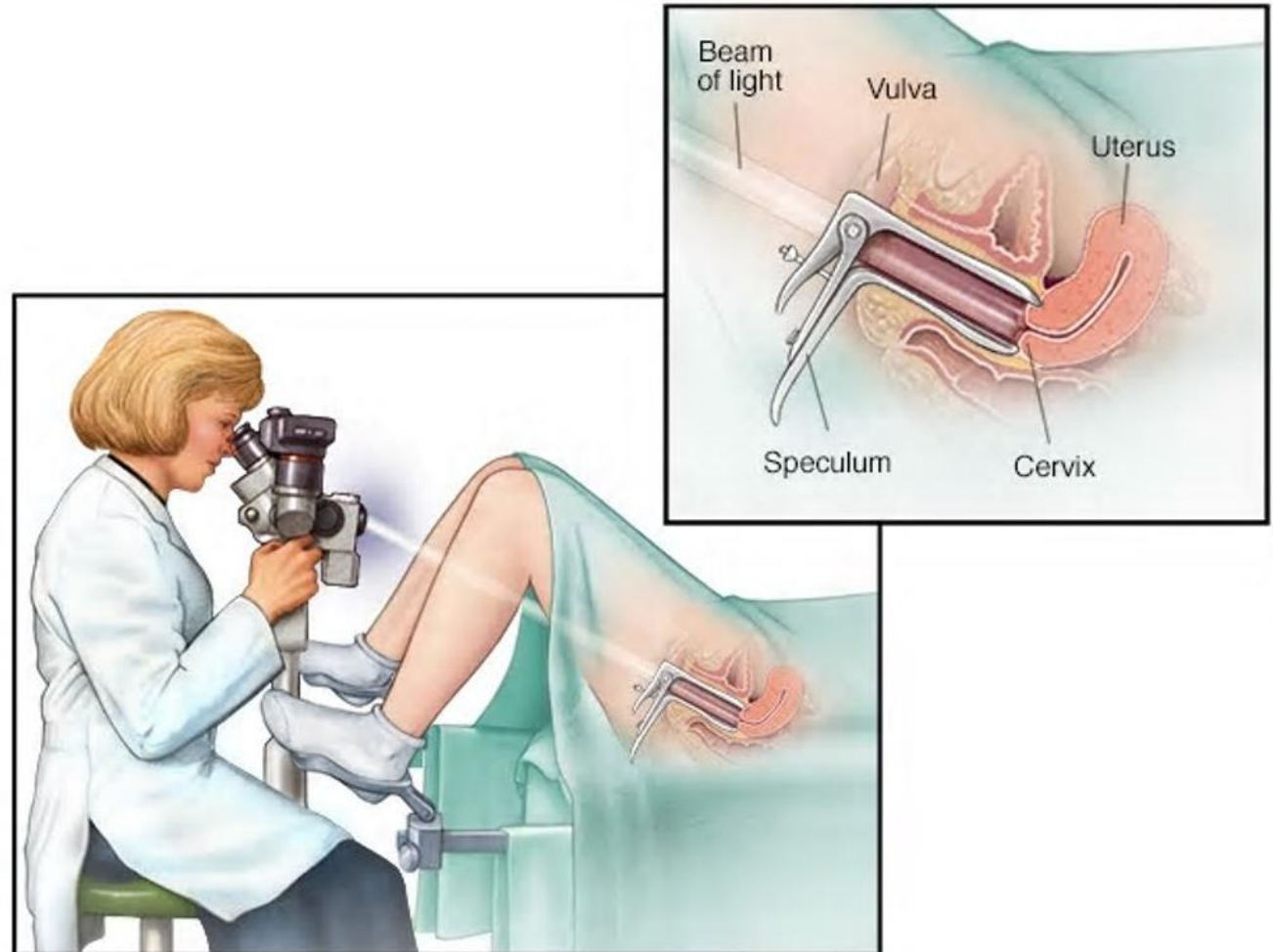
Deserves credit for
the untold number of lives
he has saved

But complicit in the
unbearable suffering inflicted on
Jewish women in Auschwitz's
Block 10

Thus deserves a qualified entry
in the history books



Colposcopy- a procedure to take a closer look at a cervix and vagina using a special instrument called colposcope. This is used to check for pre-cancerous cells or abnormal areas. The instrument can magnify the area between 10 and 40 times and takes photographs of the cervix



Metaplastic squamous epithelium

Abnormal (atypical) epithelium

Vaginal fornix

Original squamous epithelium

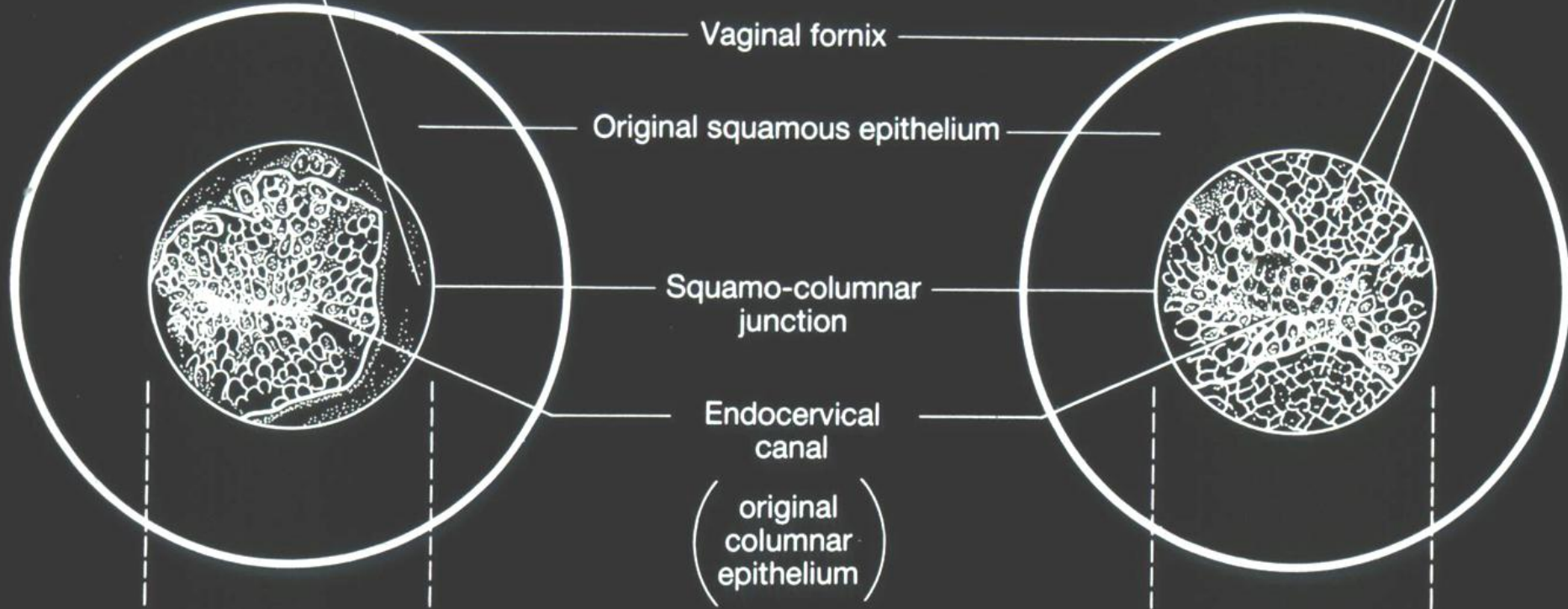
Squamo-columnar junction

Endocervical canal

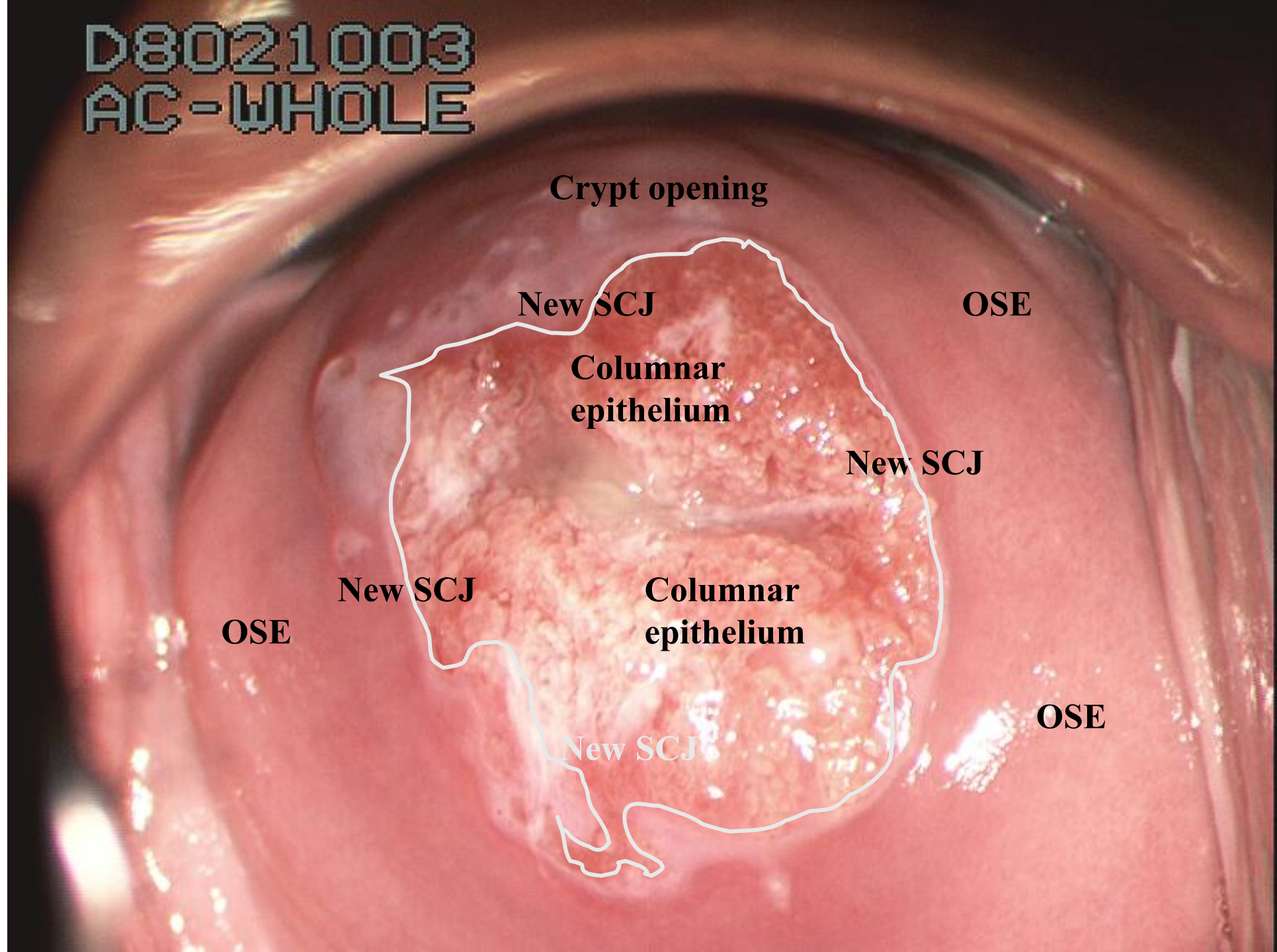
(original columnar epithelium)

Typical (normal) transformation zone

Atypical (abnormal) transformation zone



D8021003
AC-WHOLE



Crypt opening

New SCJ

OSE

Columnar
epithelium

New SCJ

New SCJ

OSE

Columnar
epithelium

OSE

New SCJ



NORMAL COLPOSCOPY

- Normal saline (green filter)

- Acetic Acid (3% or 5%)

- Lugol's Iodine

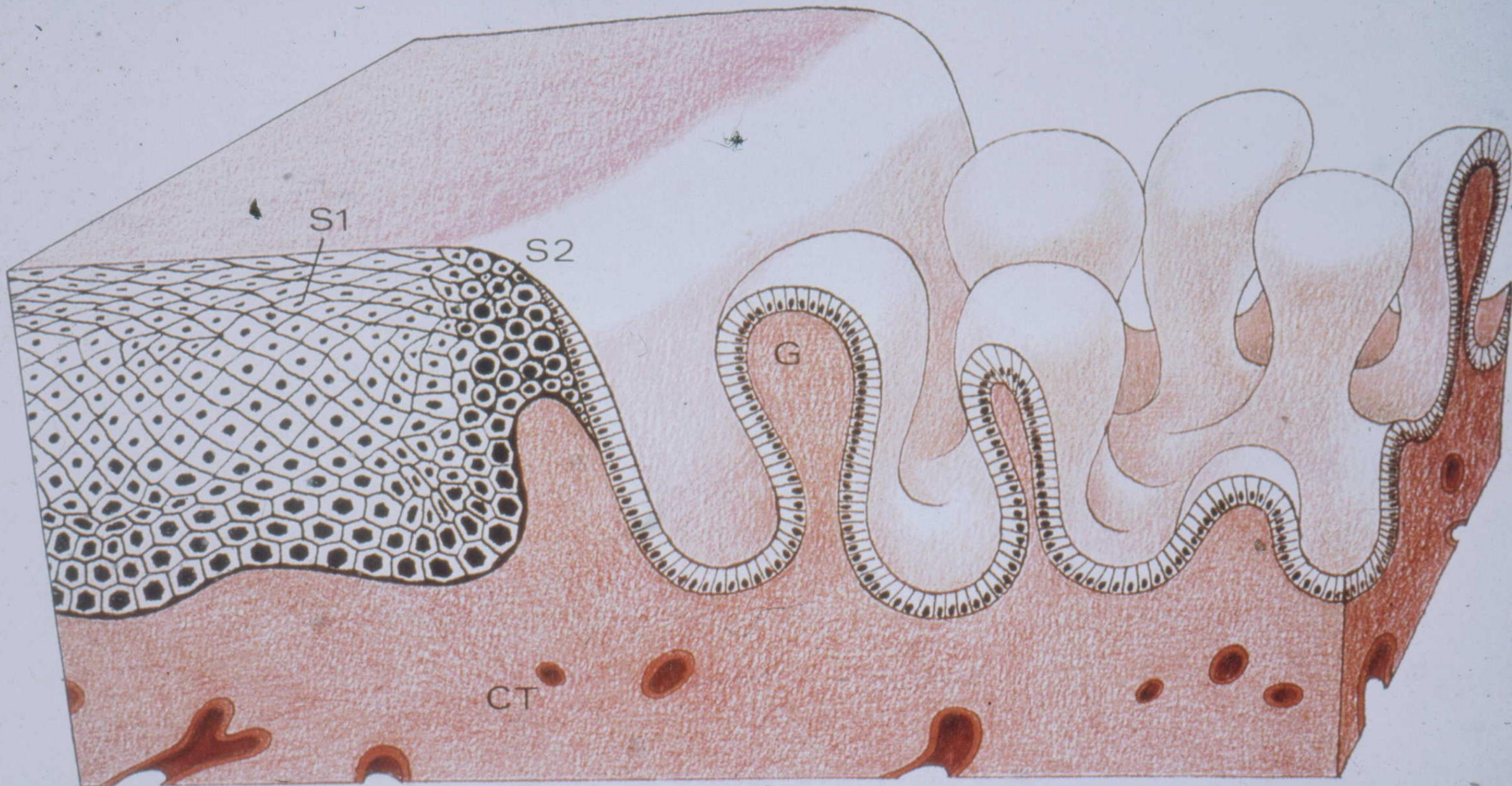


ACETO-WHITE EPITHELIUM

3-5% Acetic acid for 1 minute

- Reflection of increased nuclear density: protein reaction
 - Immature metaplasia
 - CIN
 - HPV



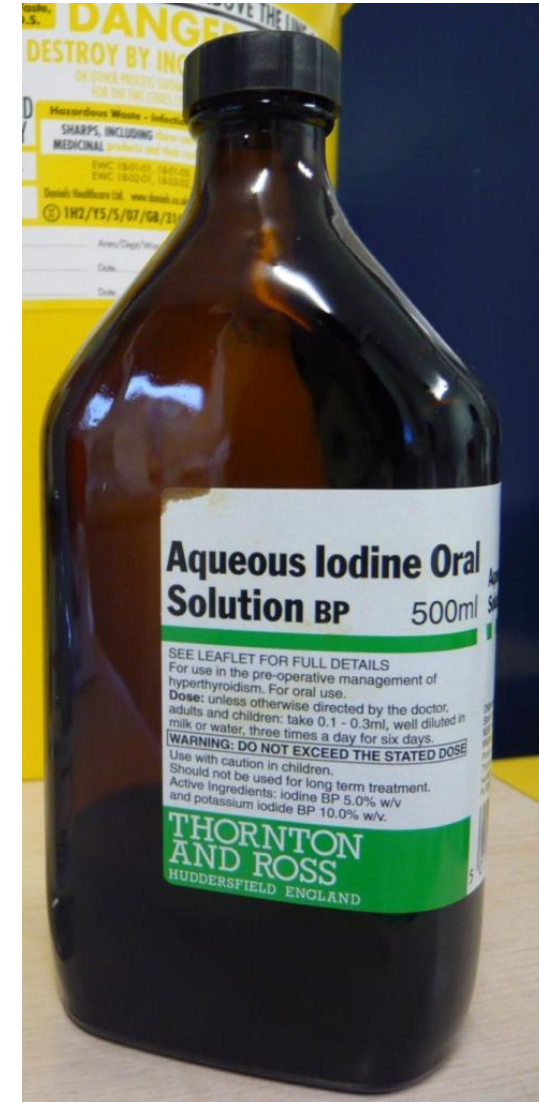


IODINE NEGATIVE EPITHELIUM

Lugol's iodine: Solⁿ of KI+I₂ in water

Areas of increased nuclear density:
glycogen reaction

- Immature metaplasia
- CIN
- HPV
- Atrophia



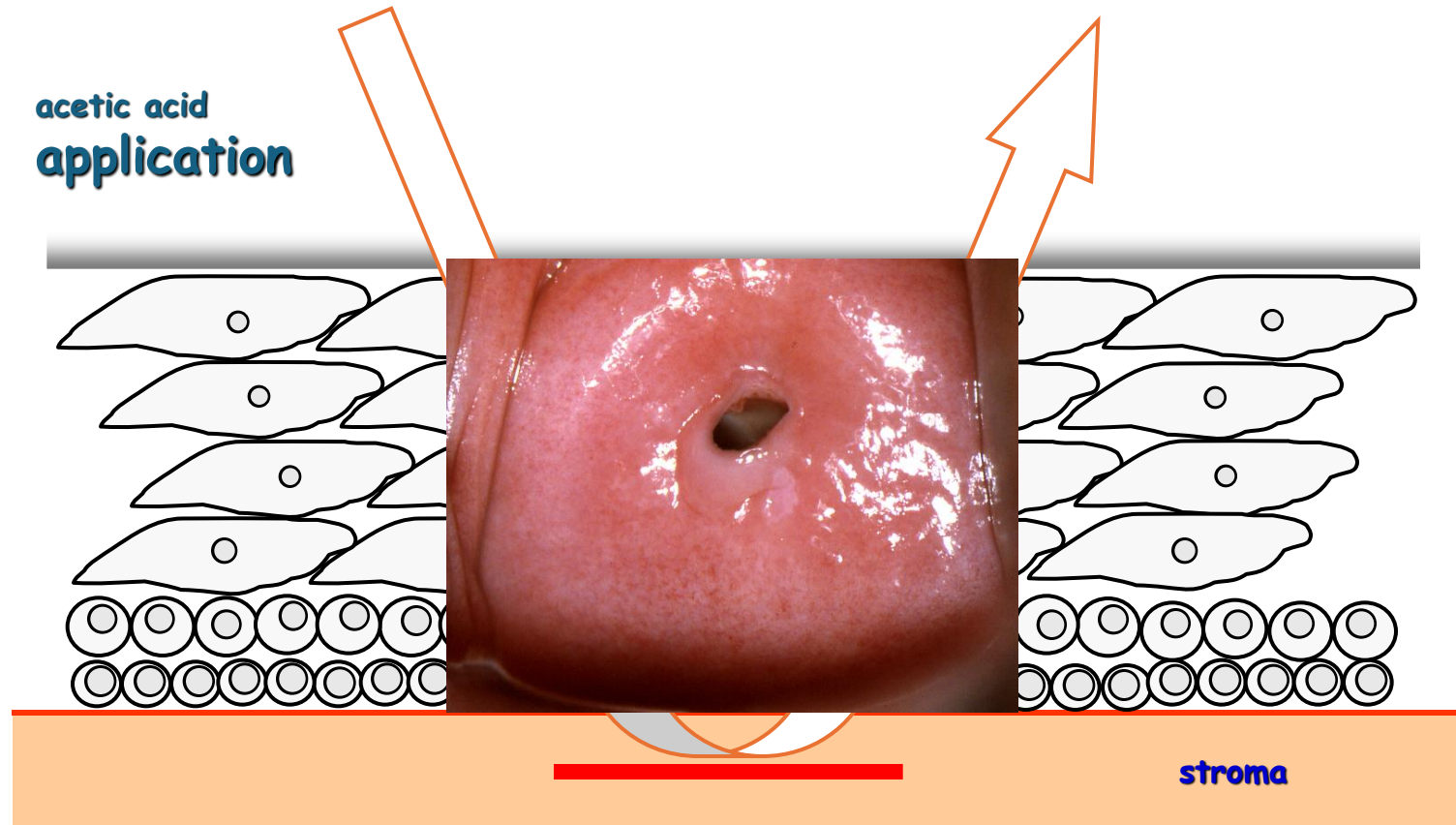


MATURE SQUAMOUS EPITHELIUM

DIRECT light

REFLECTED light from STROMA:
TRANSLUCENT PINK

acetic acid
application





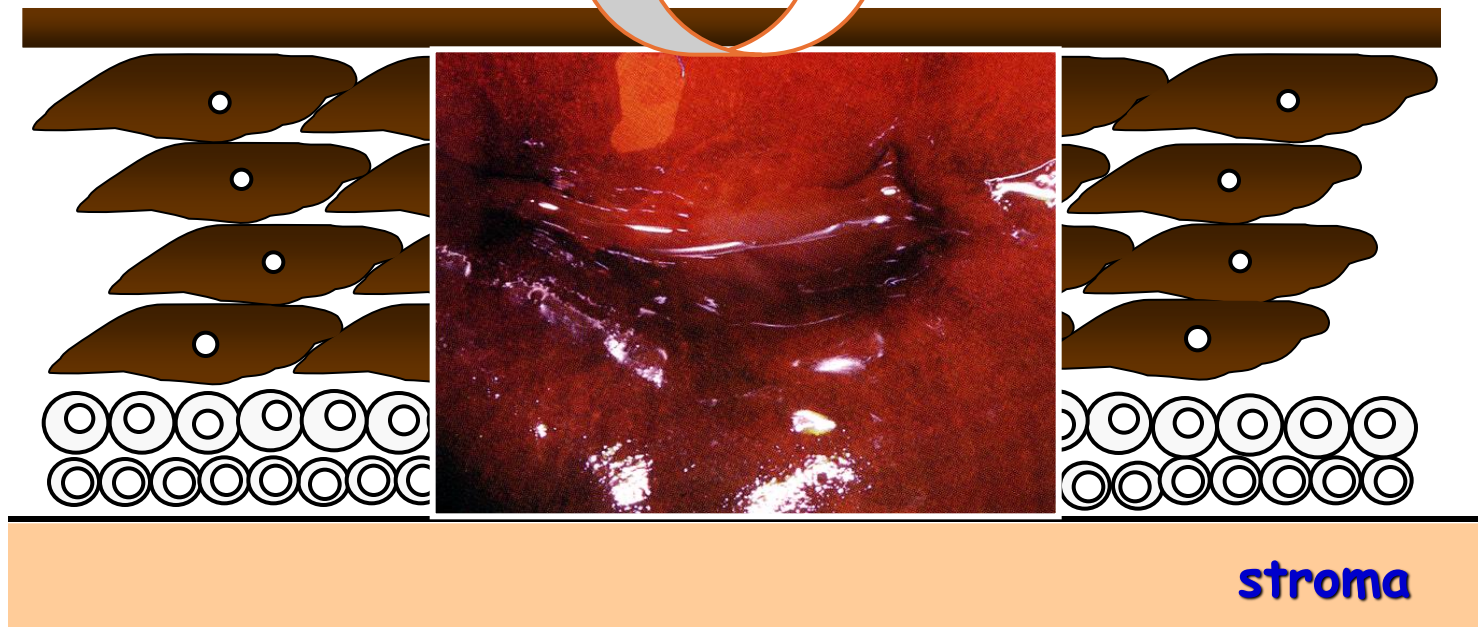
MATURE SQUAMOUS EPITHELIUM

DIRECT light

DEEP BROWN

iodine POSITIVE area

Lugol's iodine application

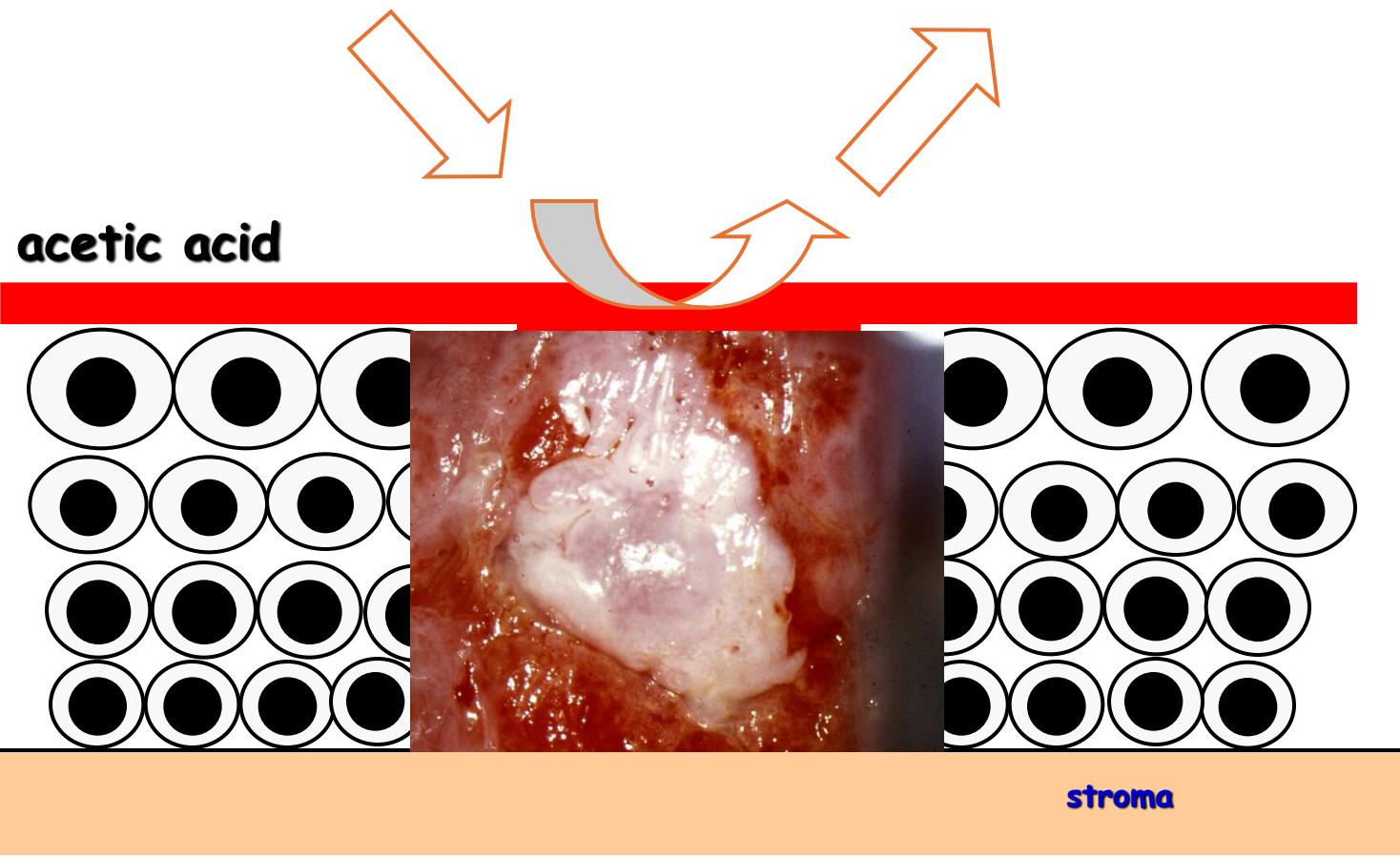




DYSPLASTIC EPITHELIUM

DIRECT light

REFLECTED light from EPITHELIUM:
SNOW WHITE





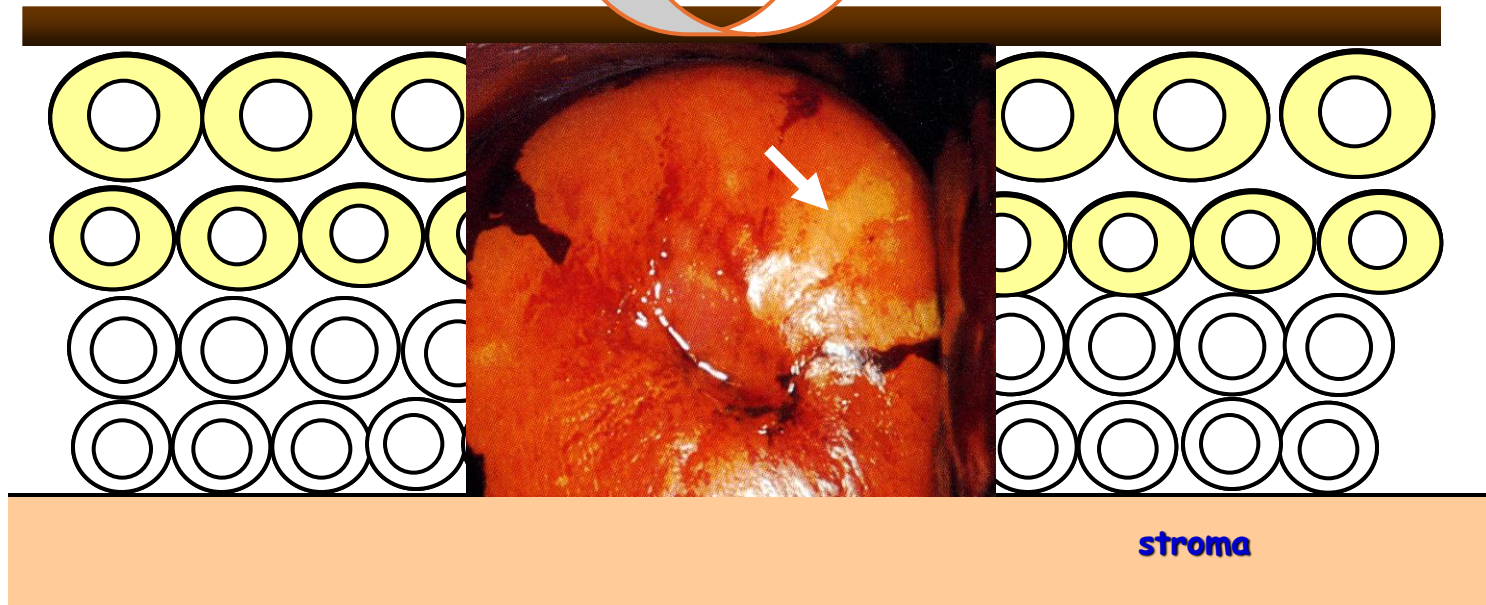
ATYPICAL METAPLASTIC EPITHELIUM

DIRECT light

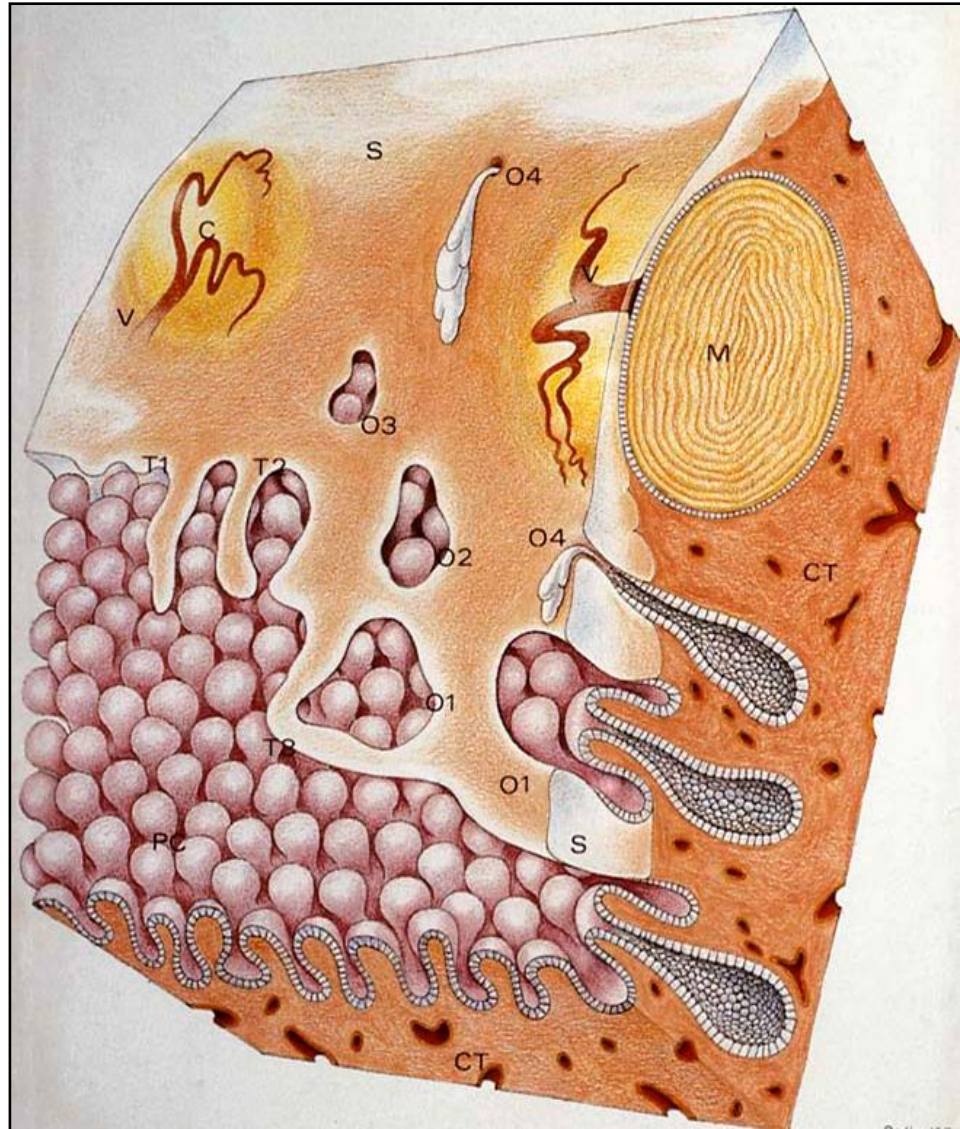
YELLOW staining

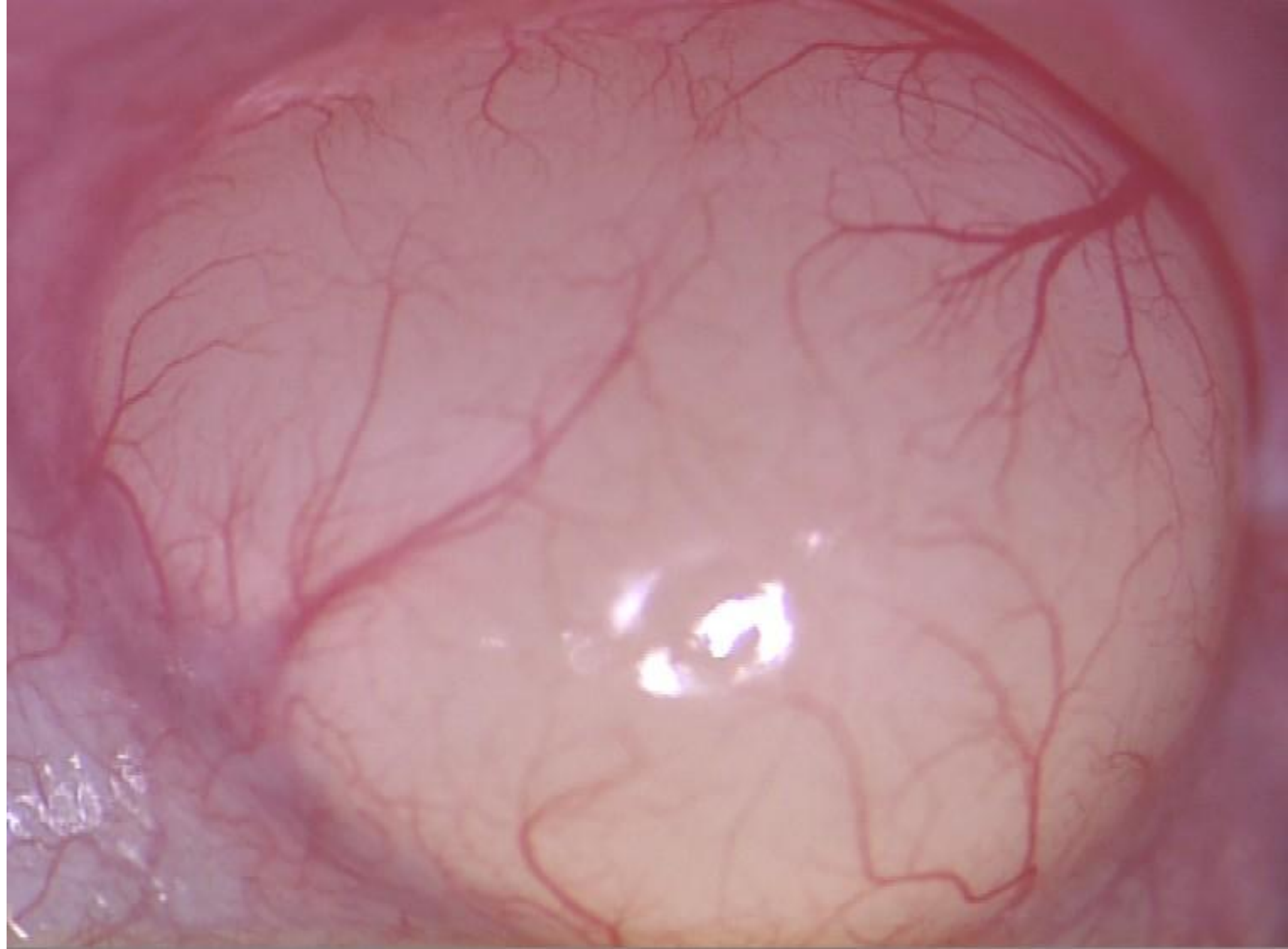
iodine NEGATIVE area

Lugol's iodine application

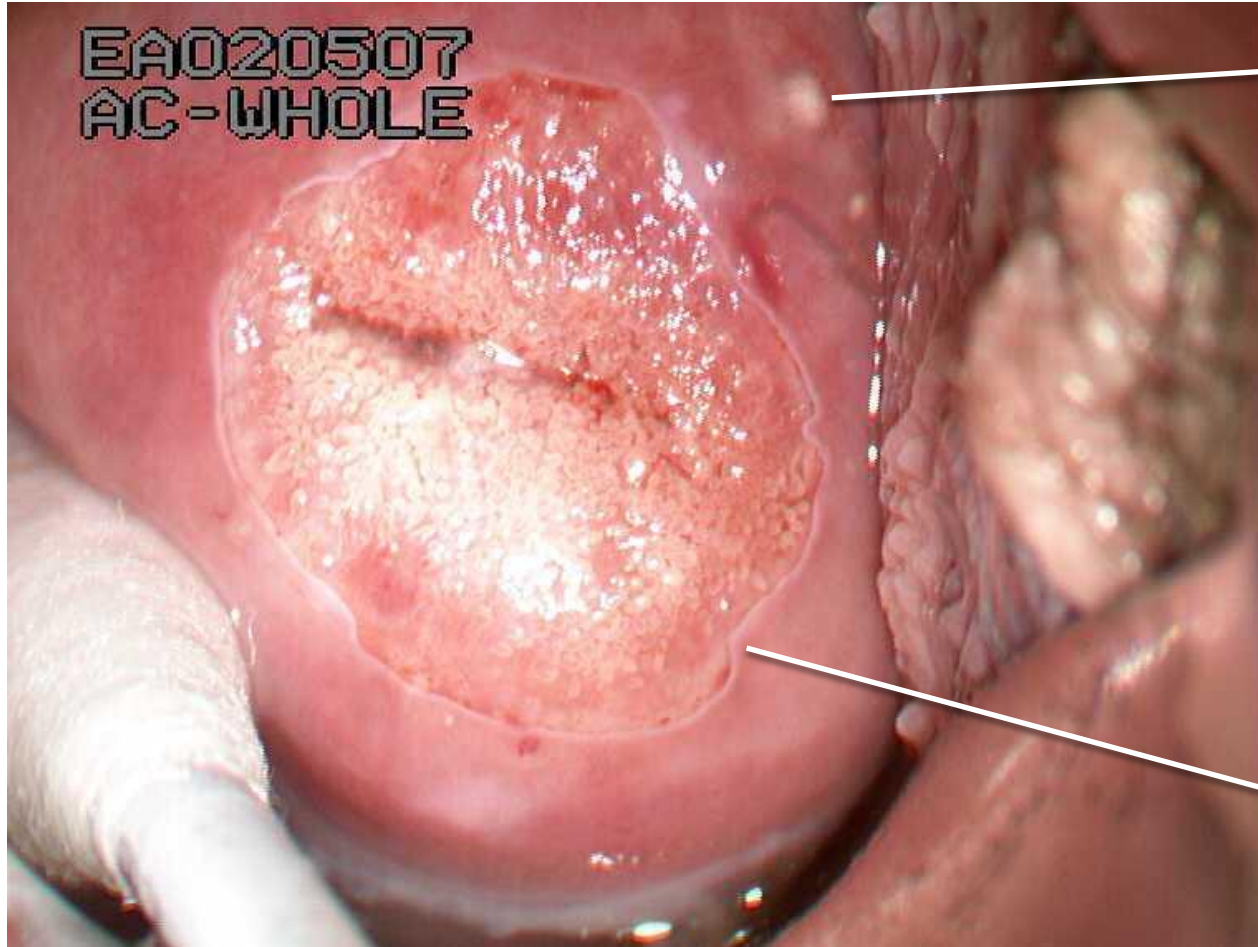


Concept of Gland/Crypt openings & Last Gland





Structured approach to description



Last gland
original SCJ

Adequate

Type 1 TZ

Normal

New SCJ

DOCUMENTATION

- Squamo Columnar Junction
- Site and Size of Lesion
- Biopsy Site
- Feature suggesting severity
 - Abnormal vessels
 - Degree of acetowhite
 - Mosaicism
 - Punctuation
 - Surface contour



WWW.IFCPC.ORG

**Bornstein et al Am J Obstet Gynecol
Vol 120 No 1 July 2012**



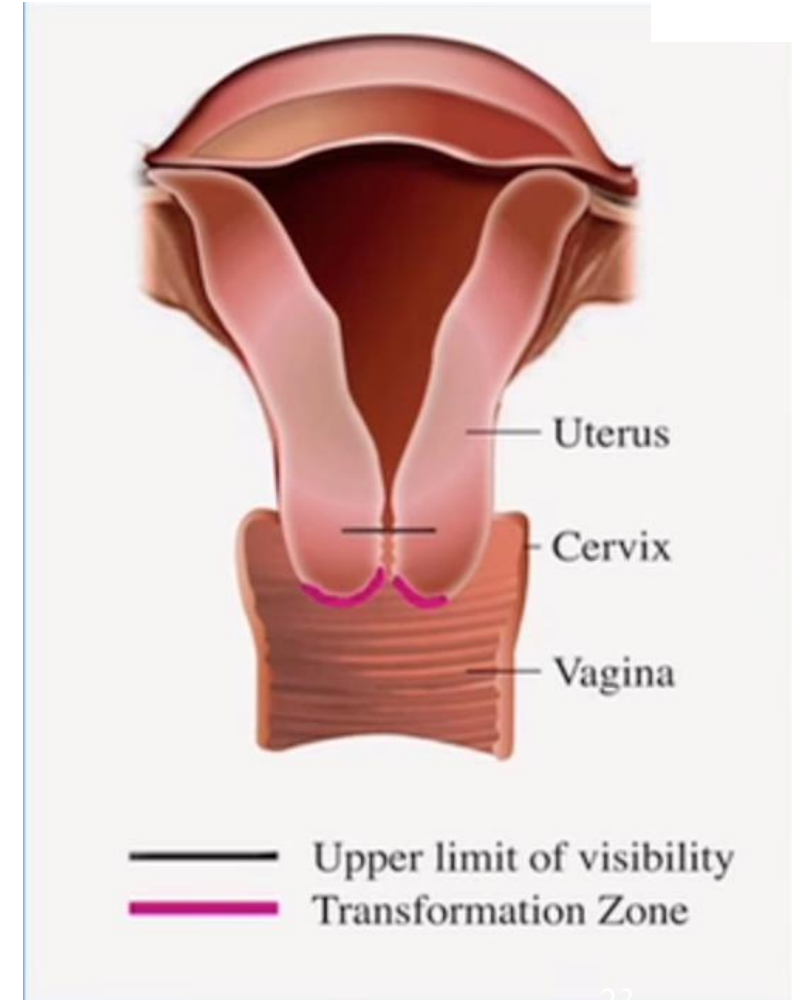
2011 IFCPC colposcopic terminology of the cervix				
Basic definitions		SCJ visualization: complete/partial/none Adequate/inadequate for the reason ... (i.e. : cervix obscured by inflammation, bleeding, scar)		
Normal colposcopic findings		Original squamous epithelium, Columnar epithelium including ectopy, Transformation zone types 1,2,3		Deciduosis in pregnancy , Atrophic epithelium , Nabothian cyst , Gland (crypt) openings
Abnormal colposcopic findings	General principles	Inside or outside the T zone , Number of cervical quadrants the lesion covers , Size of the lesion in percentage of cervix , Lugol's staining (Schiller's test) : stained/non-stained		
	Grade 1 (Minor)	Fine aceto-white epithelium		Fine mosaic, Fine punctation
	Grade 2 (Major)	Dense aceto-white epithelium, Coarse mosaic, Coarse punctuation, Leukoplakia	Sharp border, Exophytic lesion, Inner border sign , Ridge sign	Rapid appearance of acetowhitening, Cuffed gland (crypt) openings
Suspicious for invasion		Atypical vessels, fragile vessels, Irregular surface, Necrosis , Ulceration (necrotic), tumor/gross neoplasm		
Miscellaneous finding		Erosion (traumatic) Inflammation	Endometriosis , Condyloma, Polyp (Ectocervical/ endocervical)	Stenosis, Congenital anomaly, Post treatment consequence



Transformation Zone Classification

Type 1

- Completely ectocervical
- Fully visible
- small or large

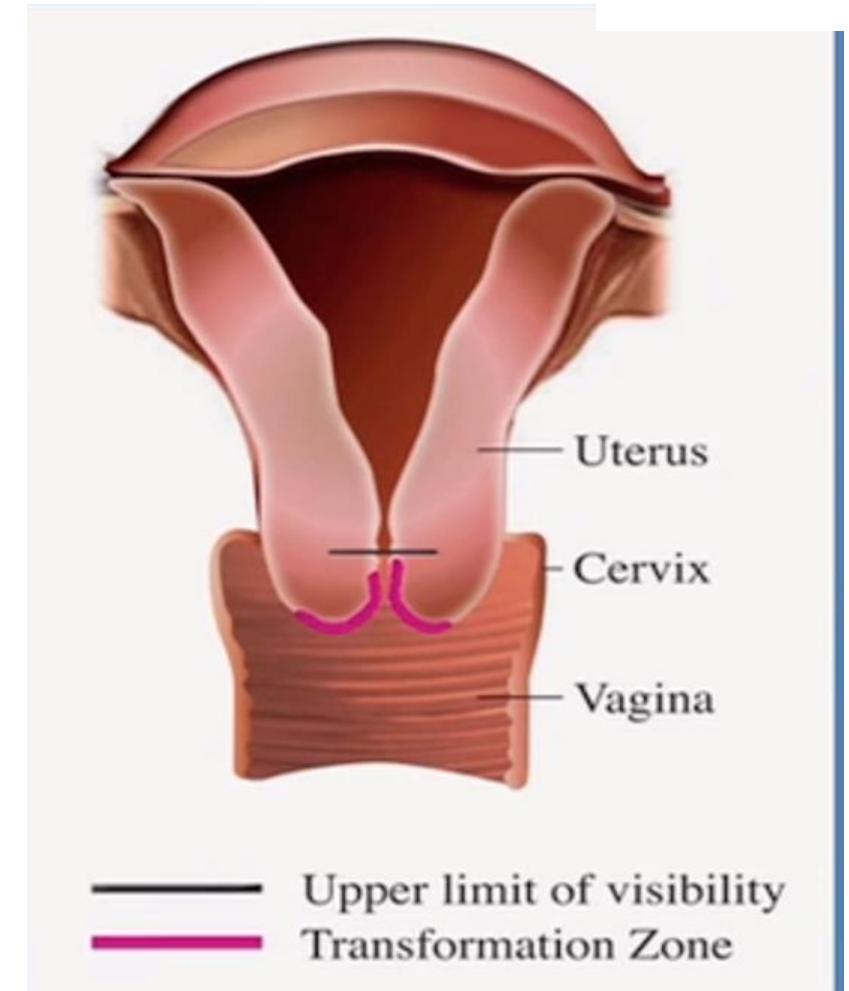
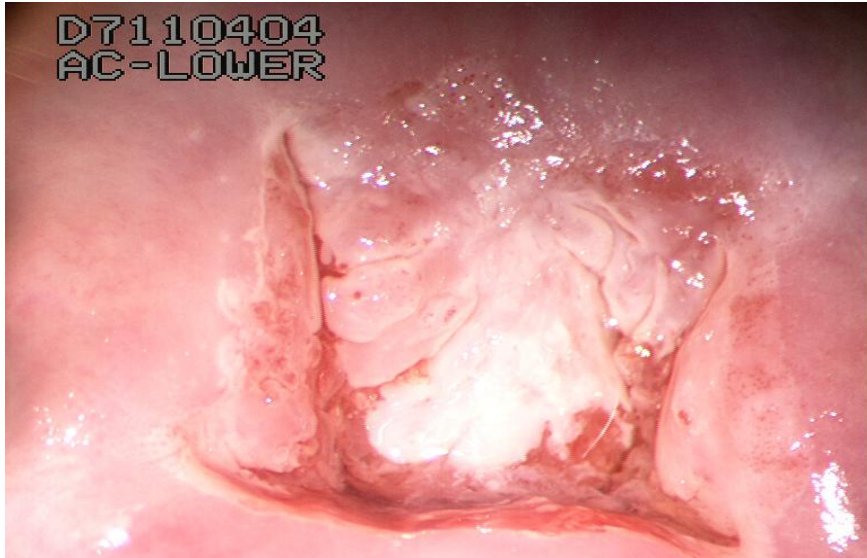


Transformation Zone Classification



Type 2

- has endocervical component
- Fully visible
- may have ectocervical component which may be small or large

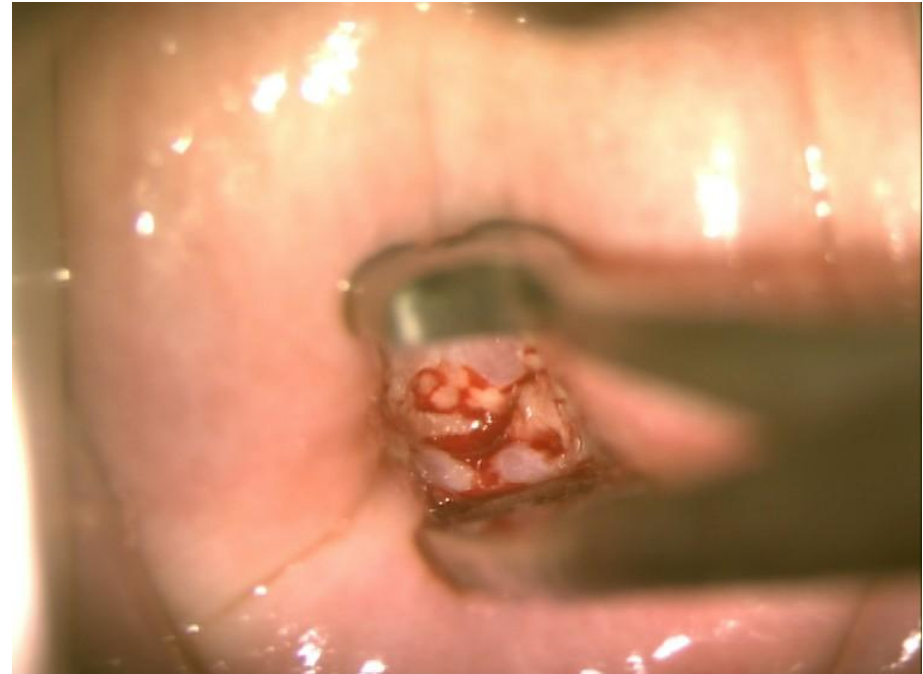




Type 2 TZ:

New SCJ is in canal
But fully visible

May need assistance for
full view

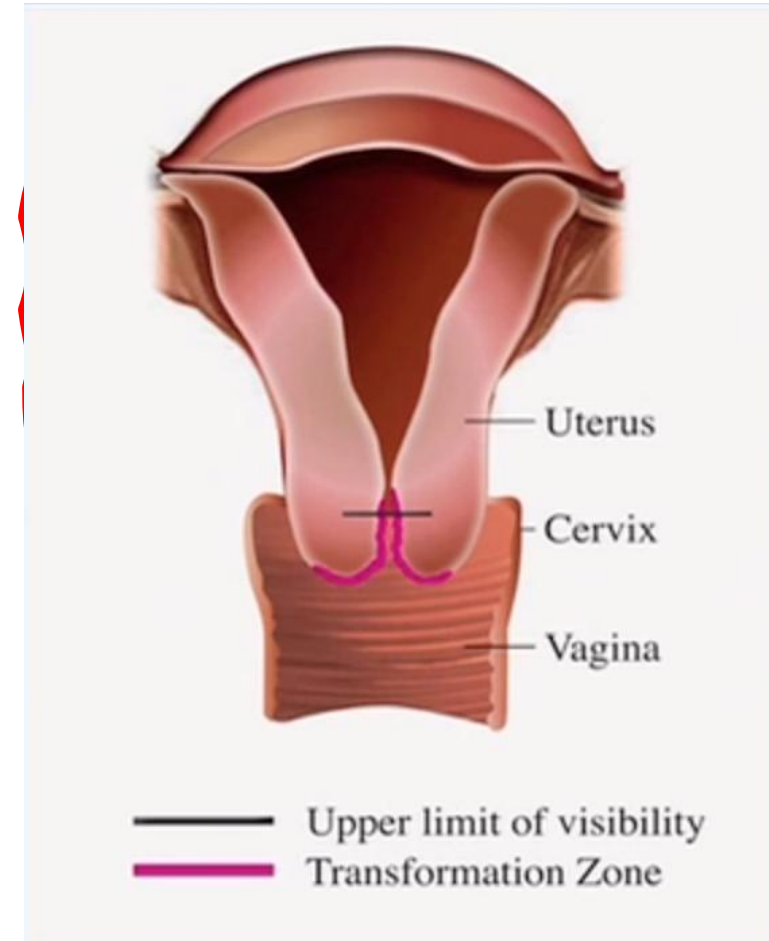


Transformation Zone Classification



Type 3

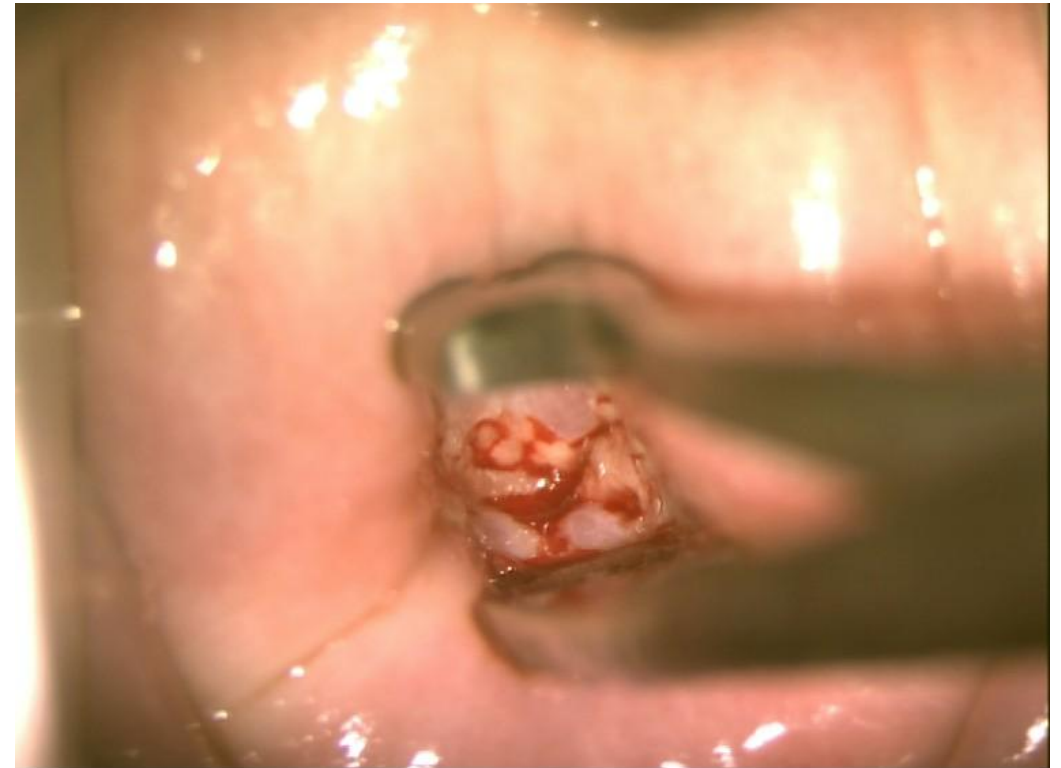
- has endocervical component
- is not fully visible
- may have ectocervical component which may be small or large





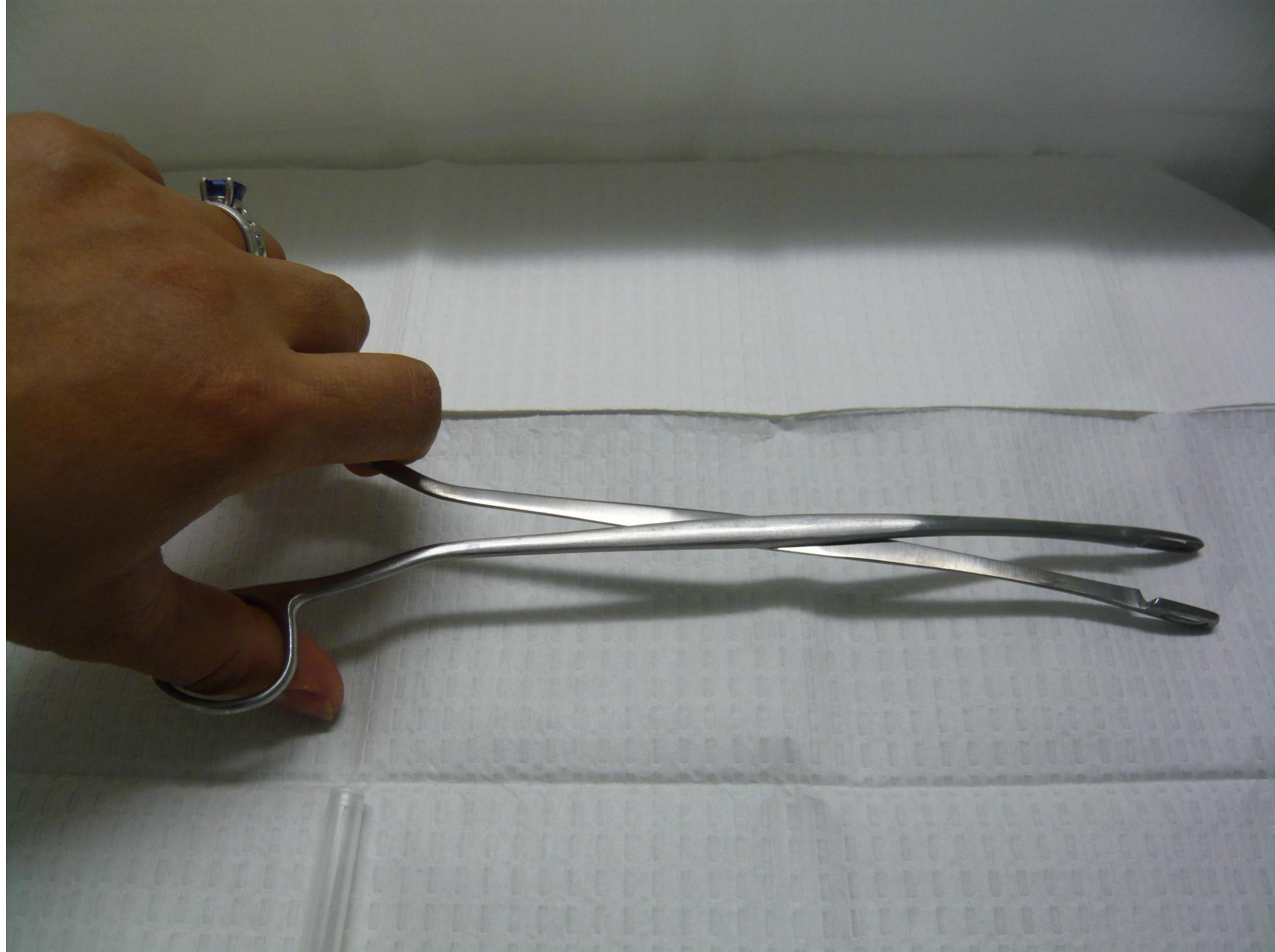
Difficulties

- **Identifying the SCJ**
 - Kogan's Forceps
 - Desjardin's forceps
 - Cotton buds
 - Oestrogen preparation



Kogans forceps





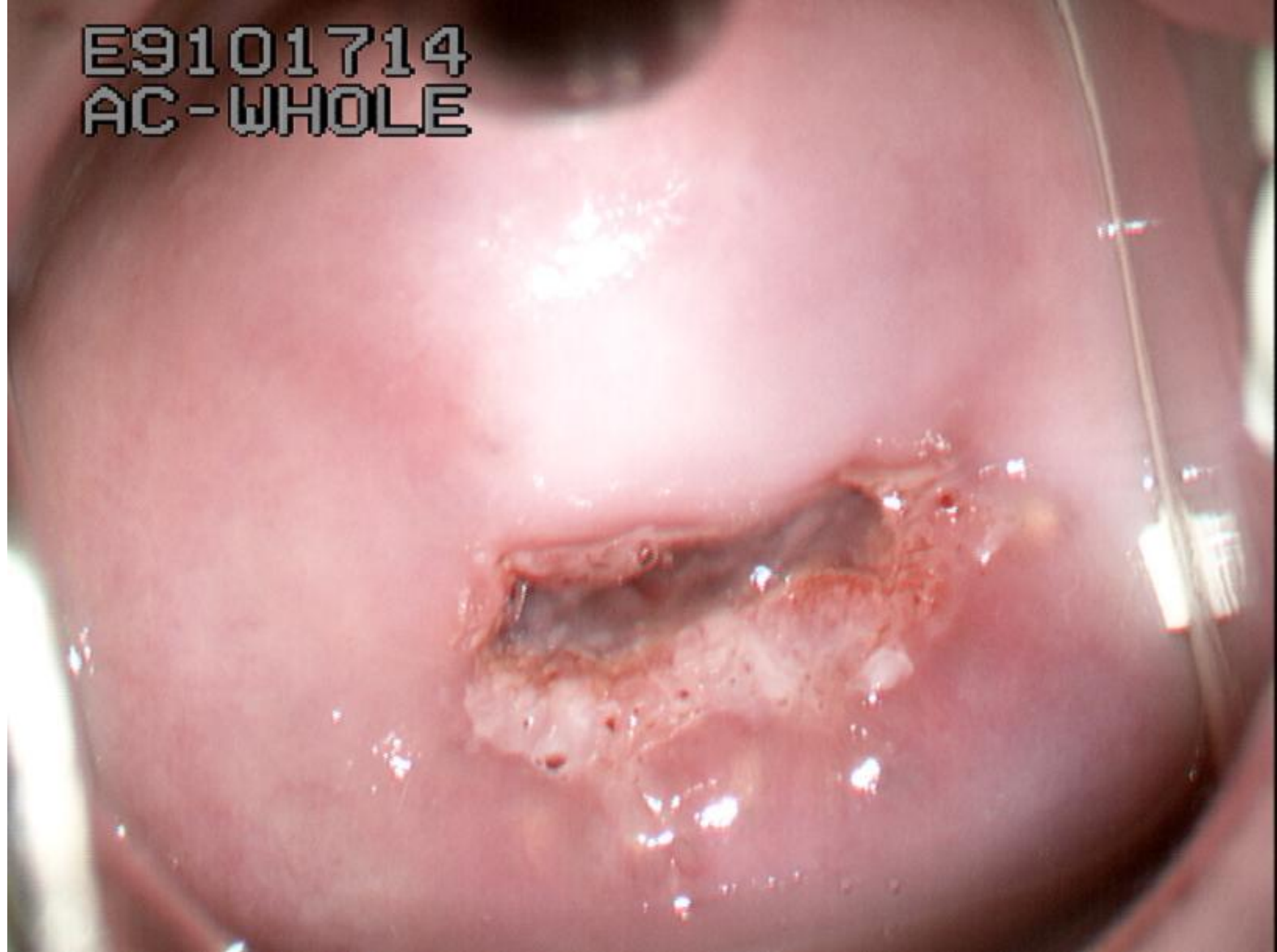
Ensuring an adequate view – Retraction of Vaginal Walls



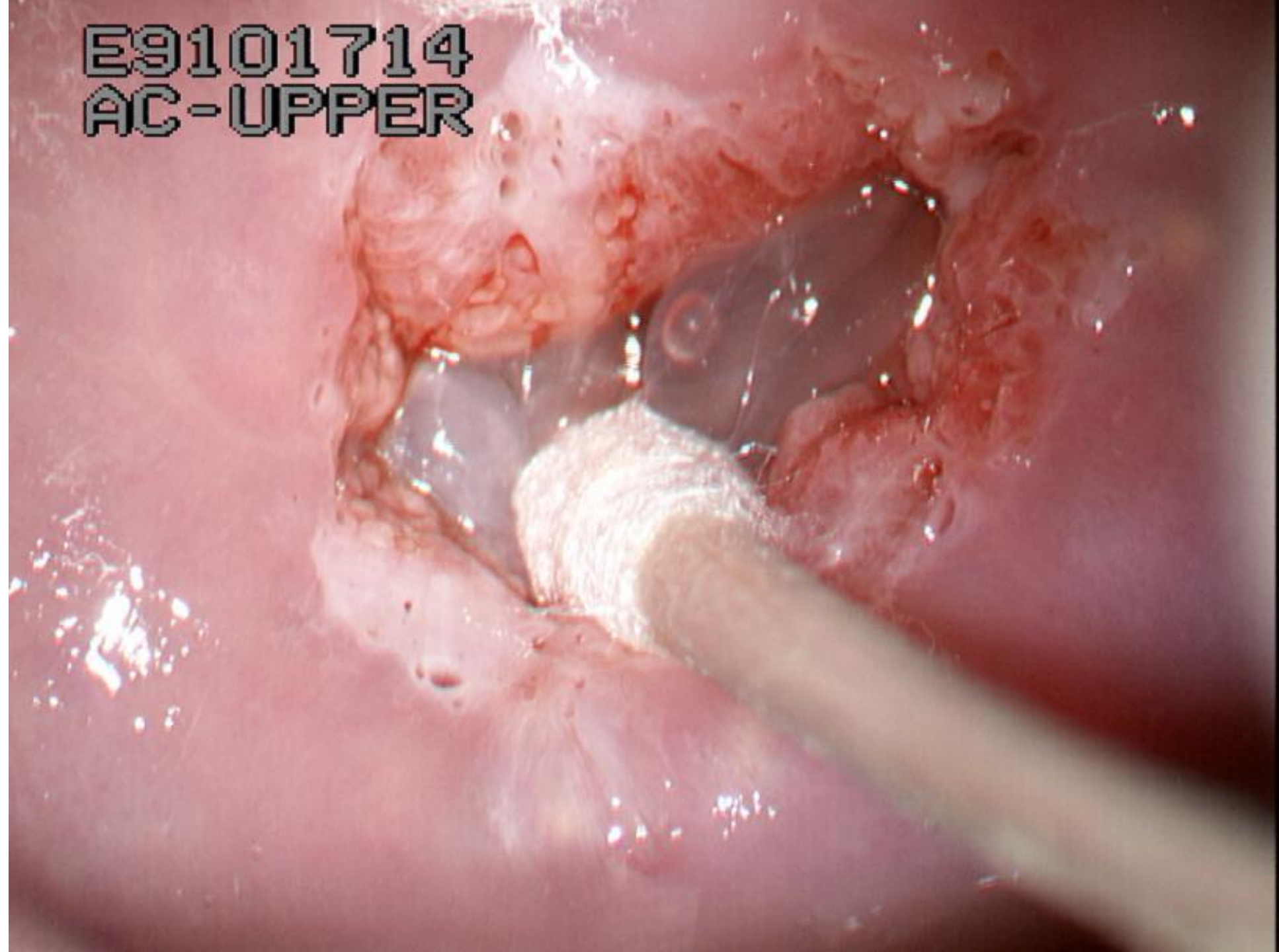




E9101714
AC-WHOLE



E9101714
AC-UPPER





Positive predictors of High-Grade disease:

Atypical vessels- 62.5%

Coarse punctation 53.8%

Coarse Mosaicism

Hammes et al JLGT 2007 11(3). 158-65



Size of cervical lesions



- Kierkegaard 1995: lesion size has independent predictive value
- Ferris 2005: Size of cervical lesions correlates directly with the severity of disease.
- Hopman et al. 1995 reported an inter-observer agreement rate of 68% when evaluating colposcopic photographs for lesion size.
- Hammes 2007: Lesions >50% of cervix had higher probability for high-grade lesion / carcinoma (OR, 3.45).



Abnormal vascular pattern



Punctuation

Mosaic

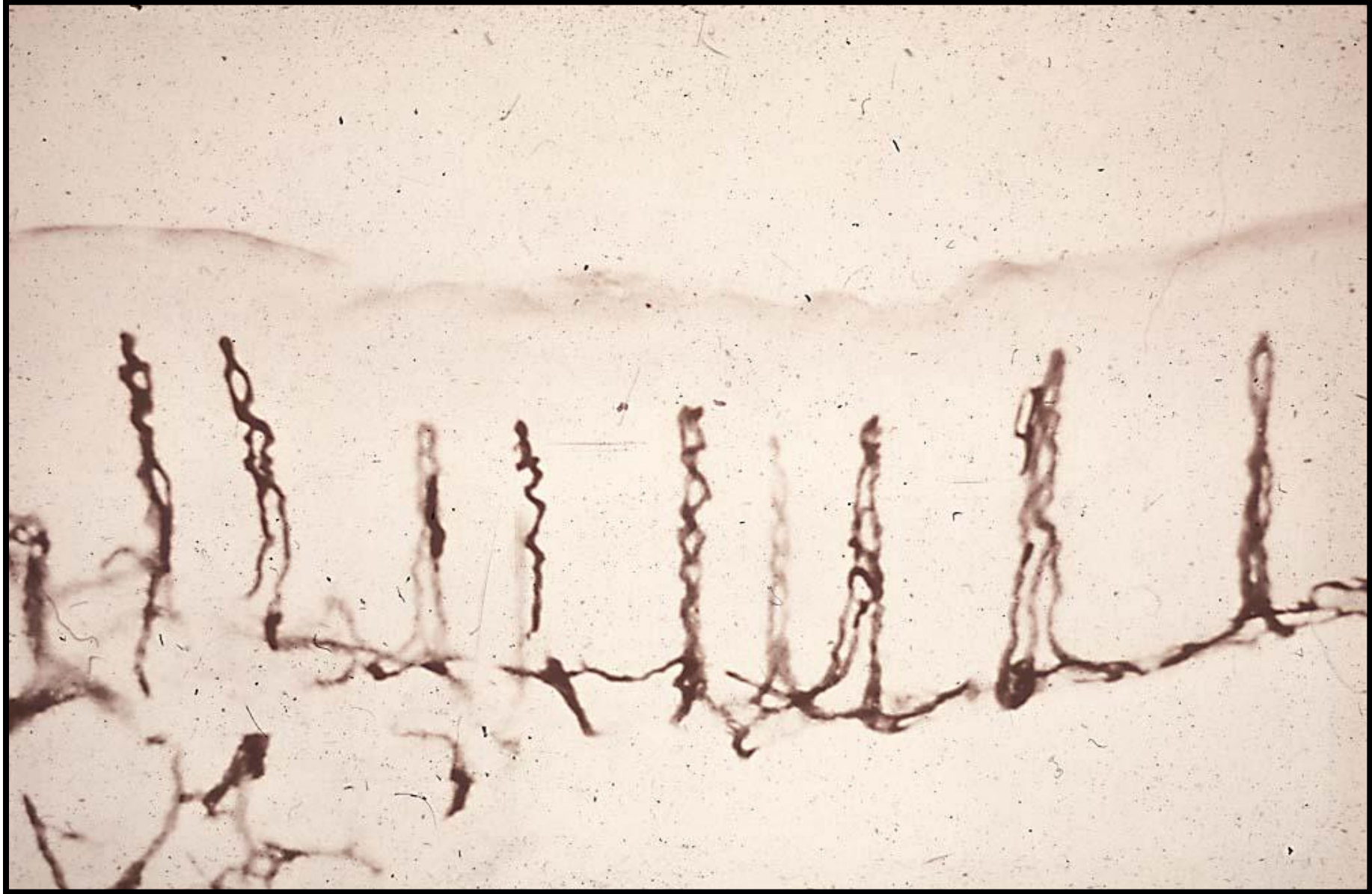
Abnormal Vessels

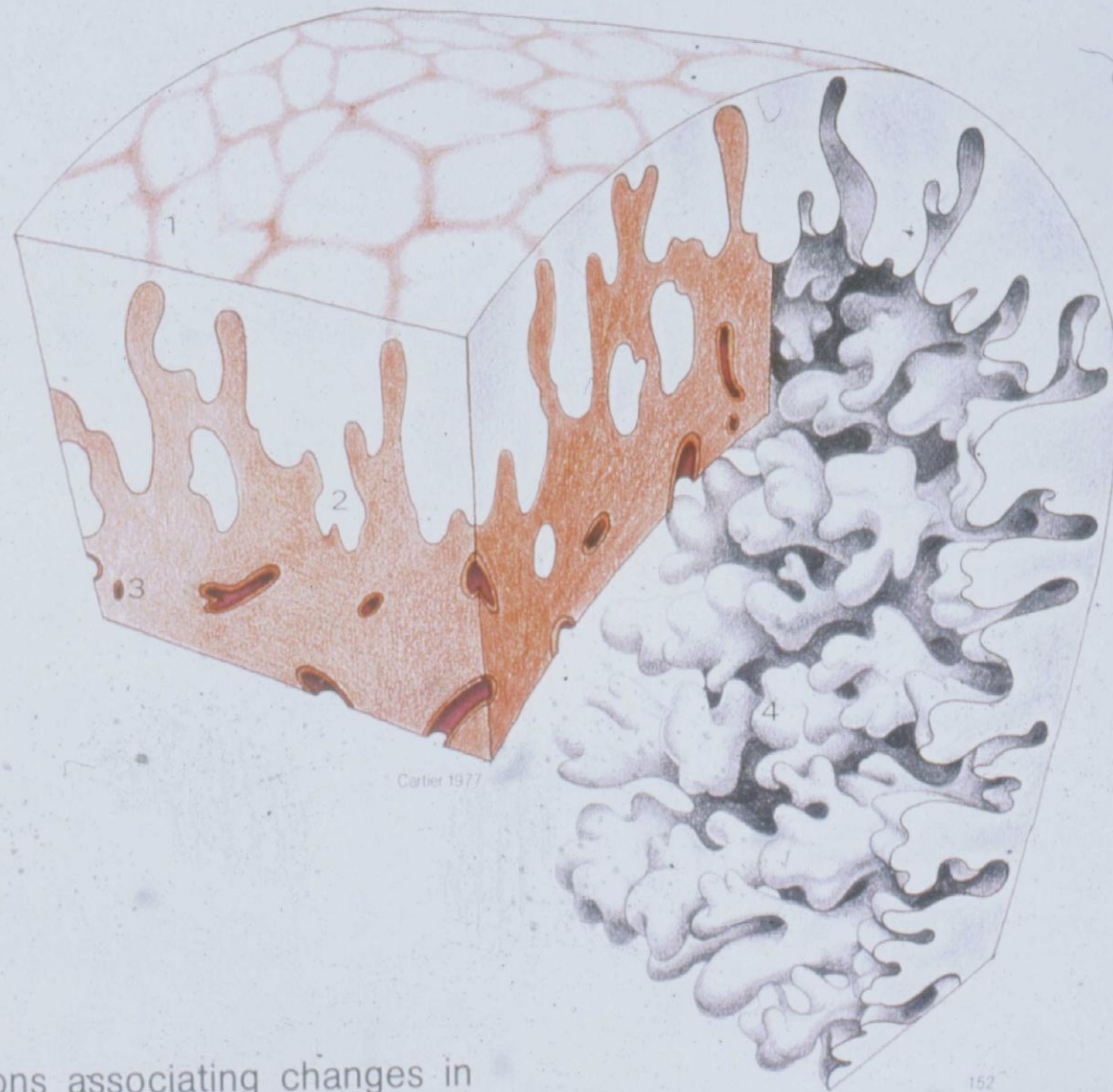
- Loops
- Corkscrews
- “Pollarded vessels”



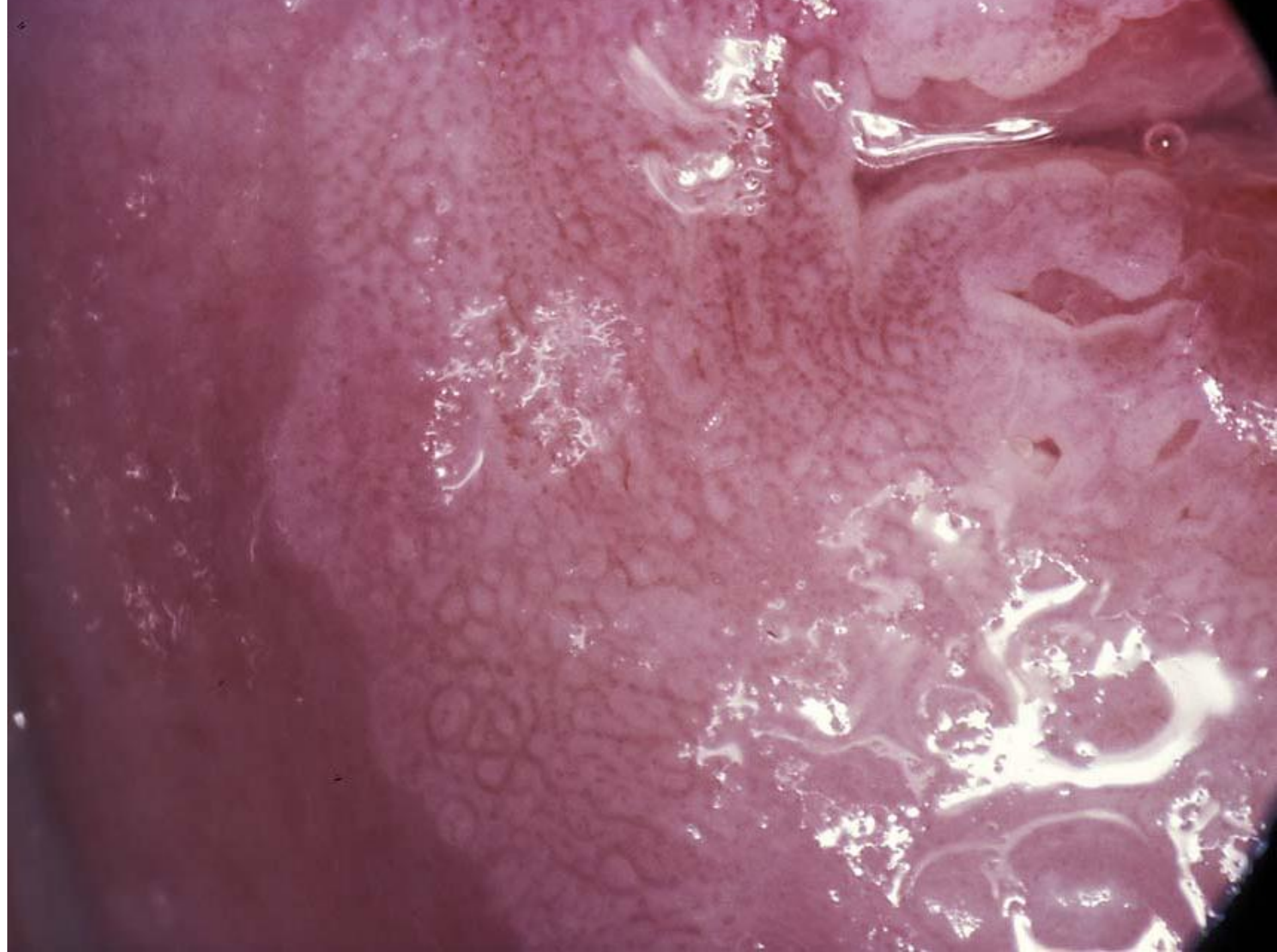
C8061510
IODINE







lesions associating changes in the structure of the squamous epithelium with changes in its thickness and its relationship with the connective tissue and glands



EA013022
AC-UPPER

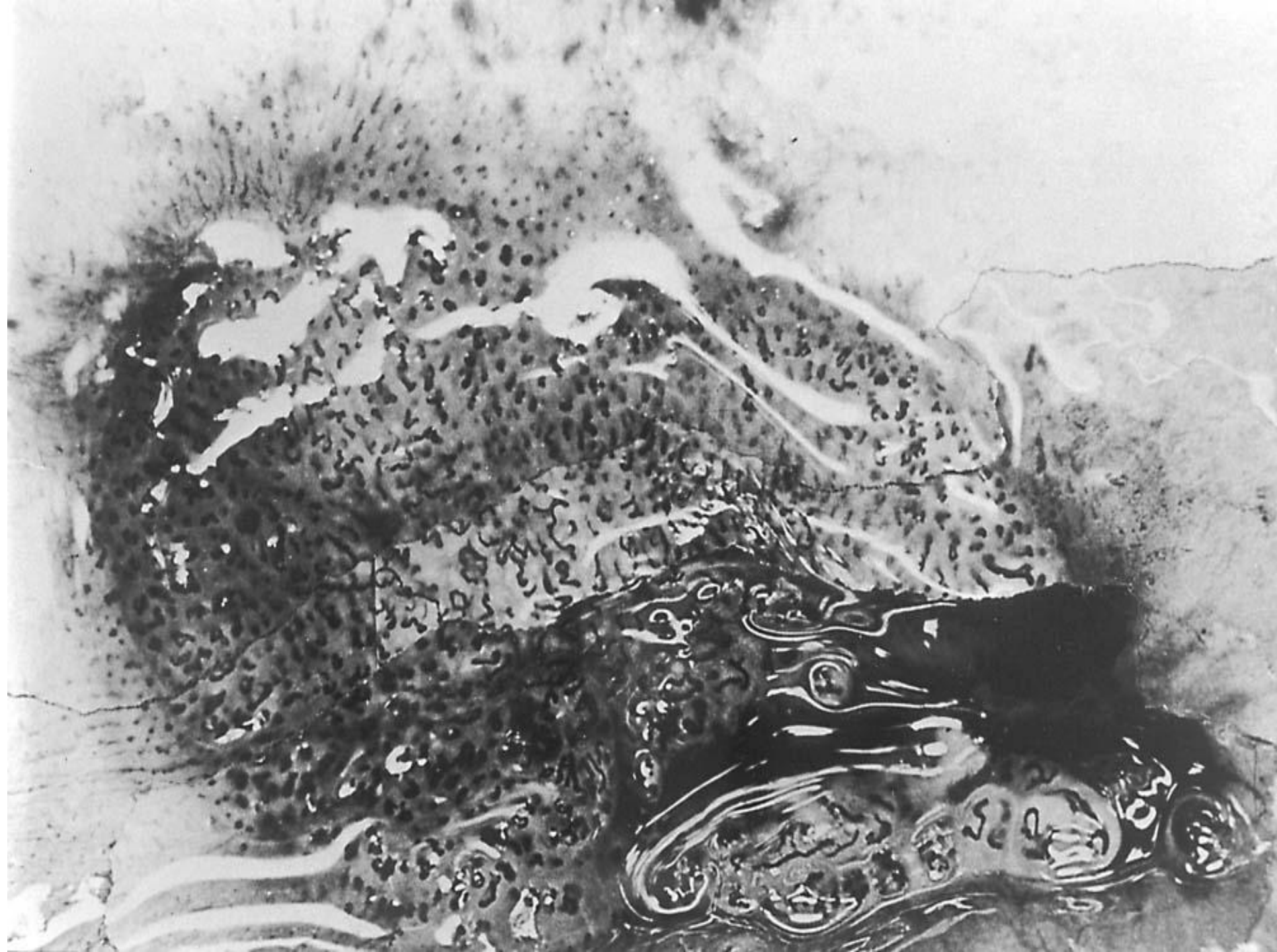




Atypical vessels

A focal abnormal colposcopic pattern in which the blood vessel pattern appears not as punctation or mosaic or as the finely branching capillaries of a normal epithelium, but rather as irregular vessels with an abrupt and interrupted course appearing as commas, corkscrew capillaries, or spaghetti-like forms.



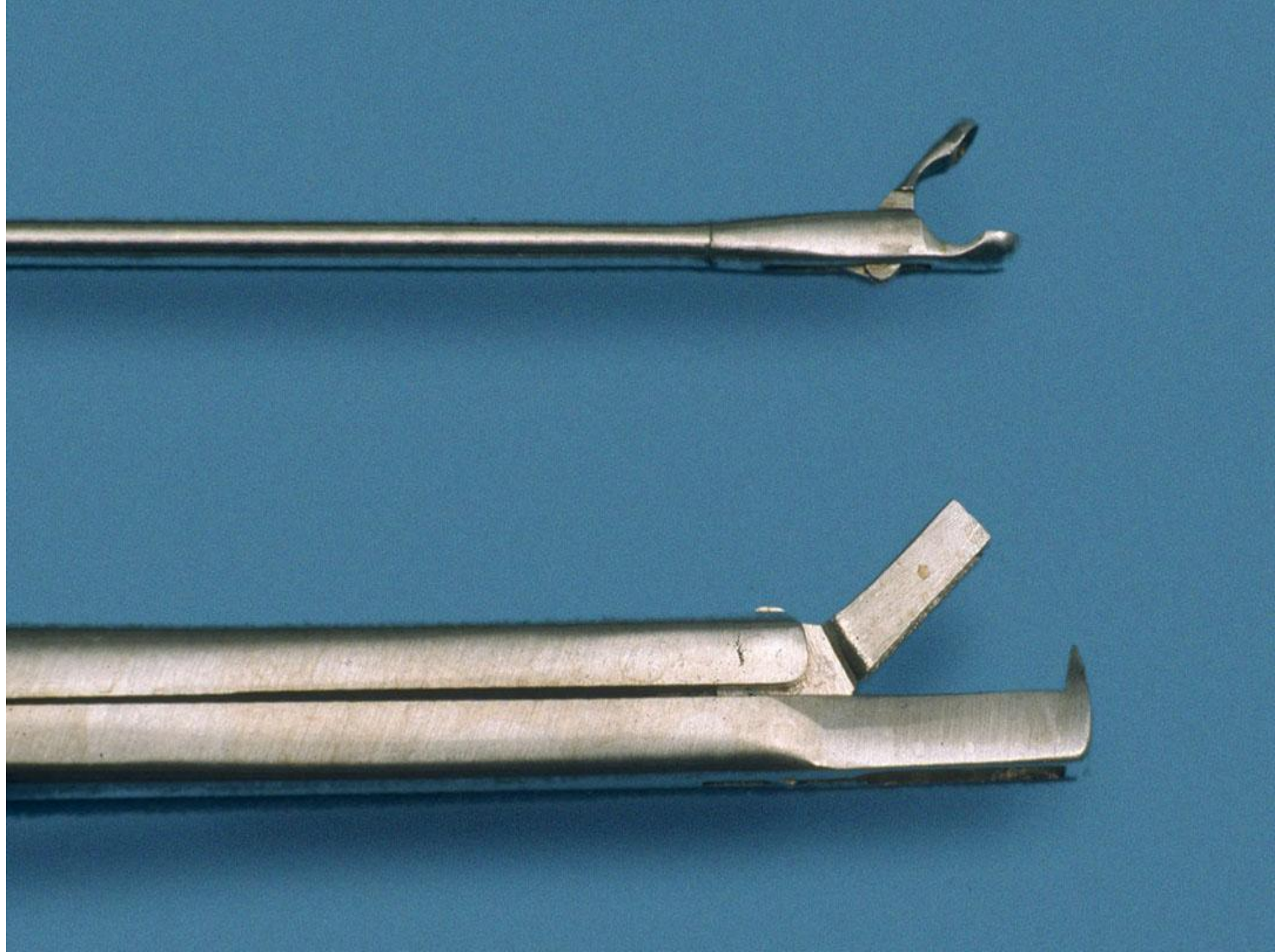


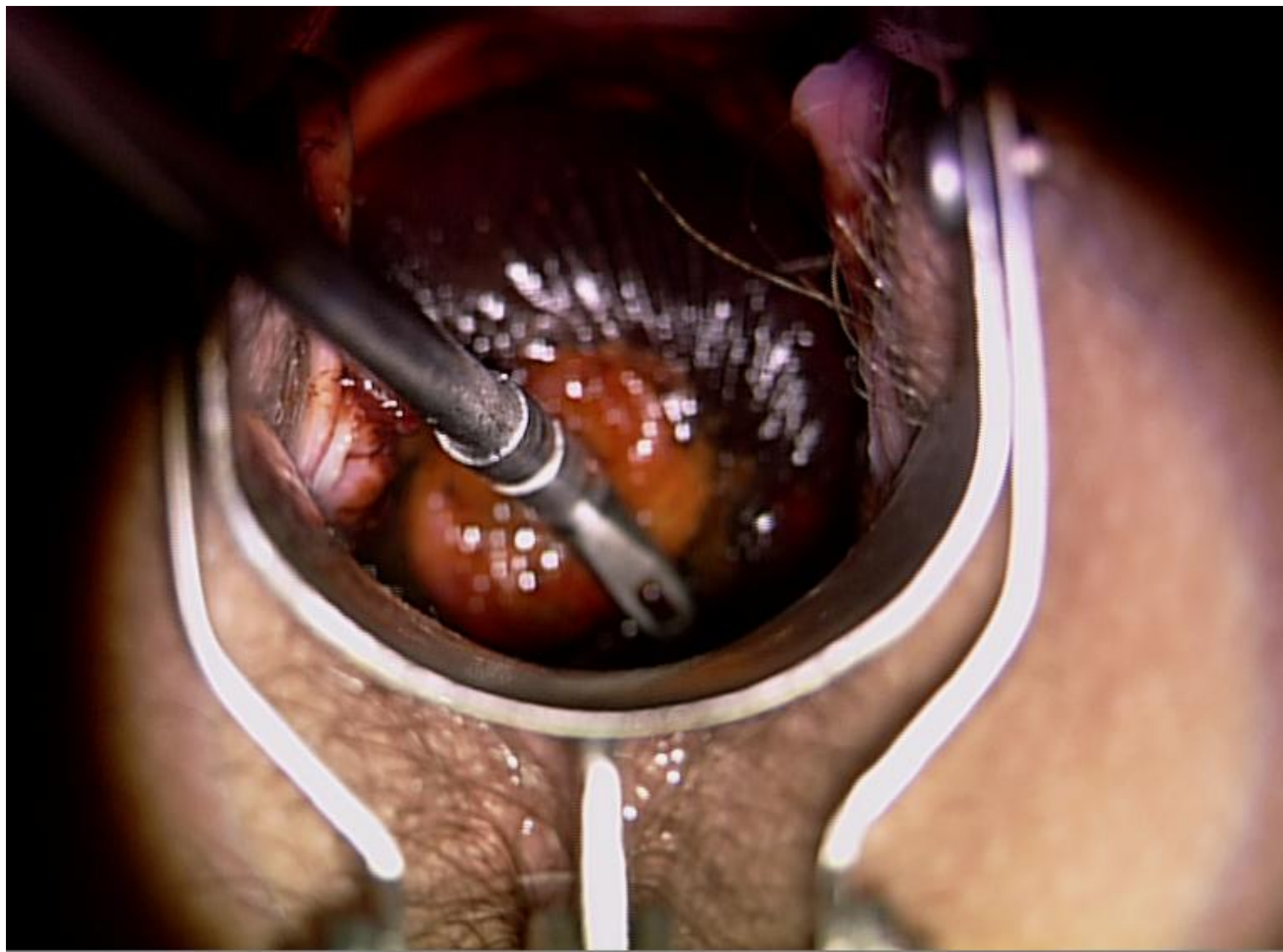
C8101205
AC-UPPER



Taking a biopsy







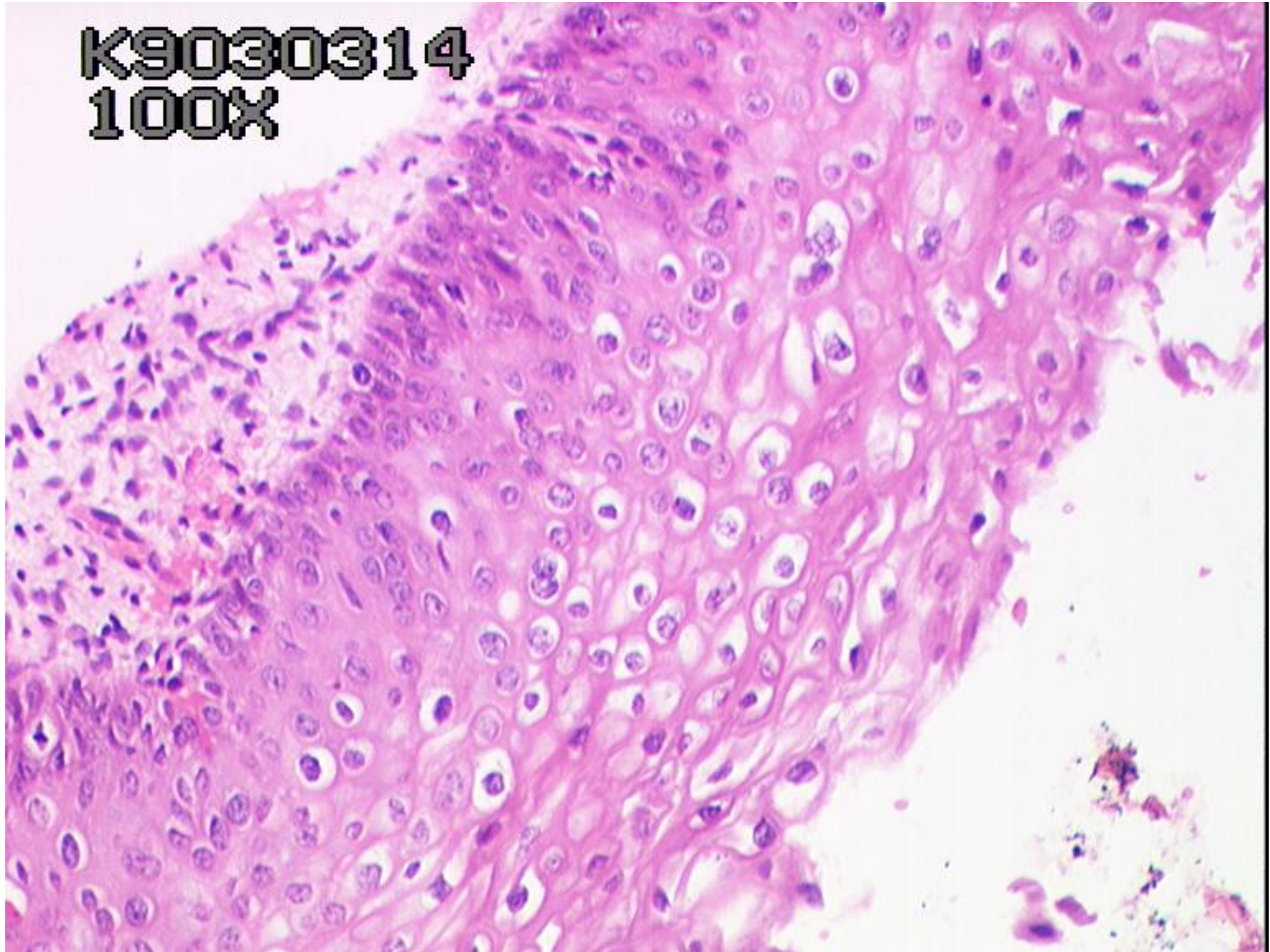
Haemostasis

Silver nitrate sticks





K9030314
100X



Standardising Colposcopy: The Swedescore



score ≥ 5 defines all High-grade lesions

	0	1	2	Score
Aceto uptake	0 or transparent	Shady, milk	Distinct, stearin	
Margins and surface	0 el diffuse	Sharp but irregular, jagged, "geographical". Satellites	Sharp and even, difference in surface level incl. "cuffing"	
Vessels	Fine, regular	Absent	Coarse or atypical vessels	
Lesion size	<5 mm	5-15 mm or 2 quadrants	> 15 mm or 3-4 quadrants or endocervically undefined	
Iodine staining	Brown	Faintly or patchy yellow	Distinct yellow	
			Total score	

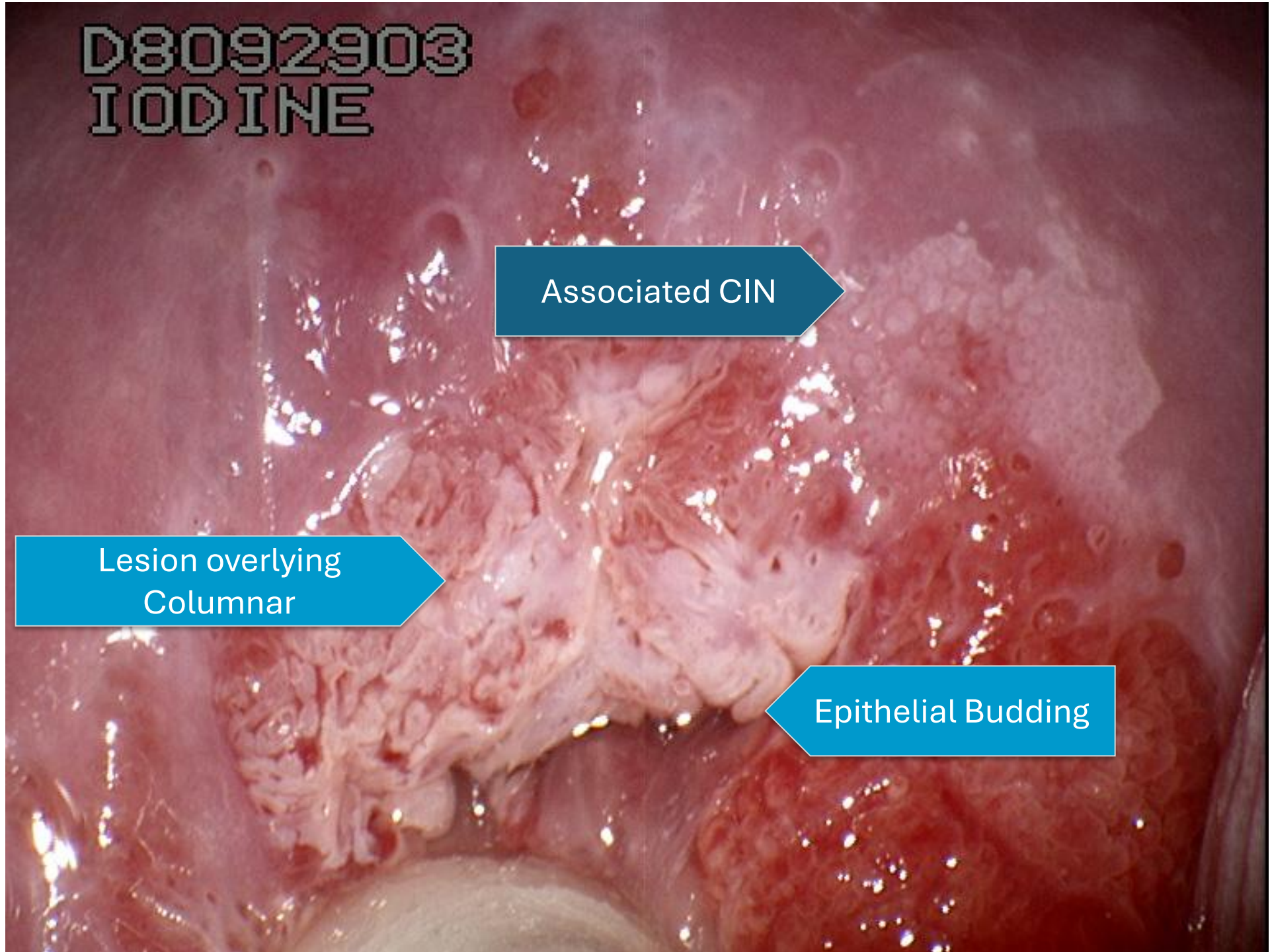
Glandular abnormality

D8092903
IODINE

Associated CIN

Lesion overlying
Columnar

Epithelial Budding

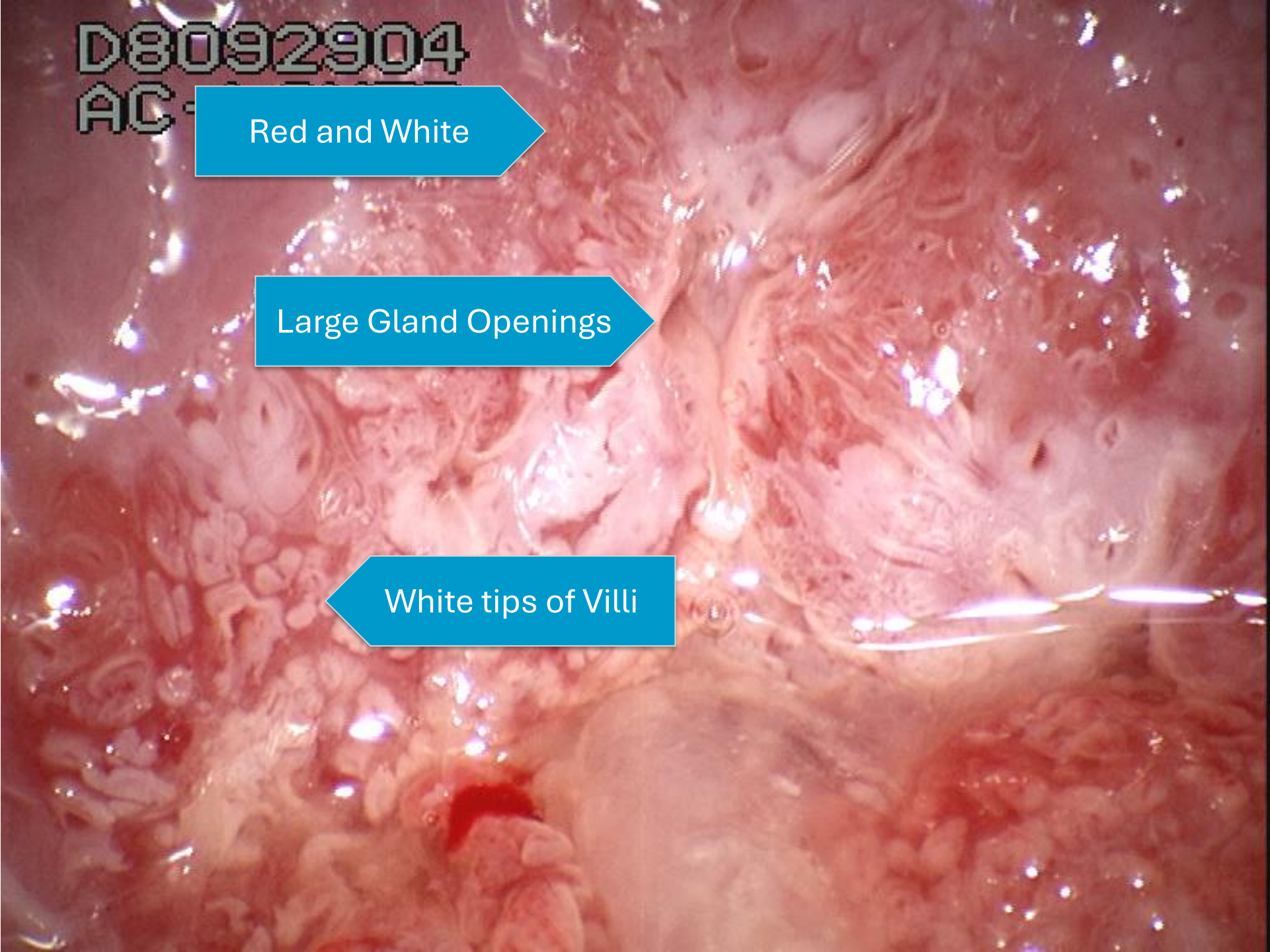


D8092904
AC-

Red and White

Large Gland Openings

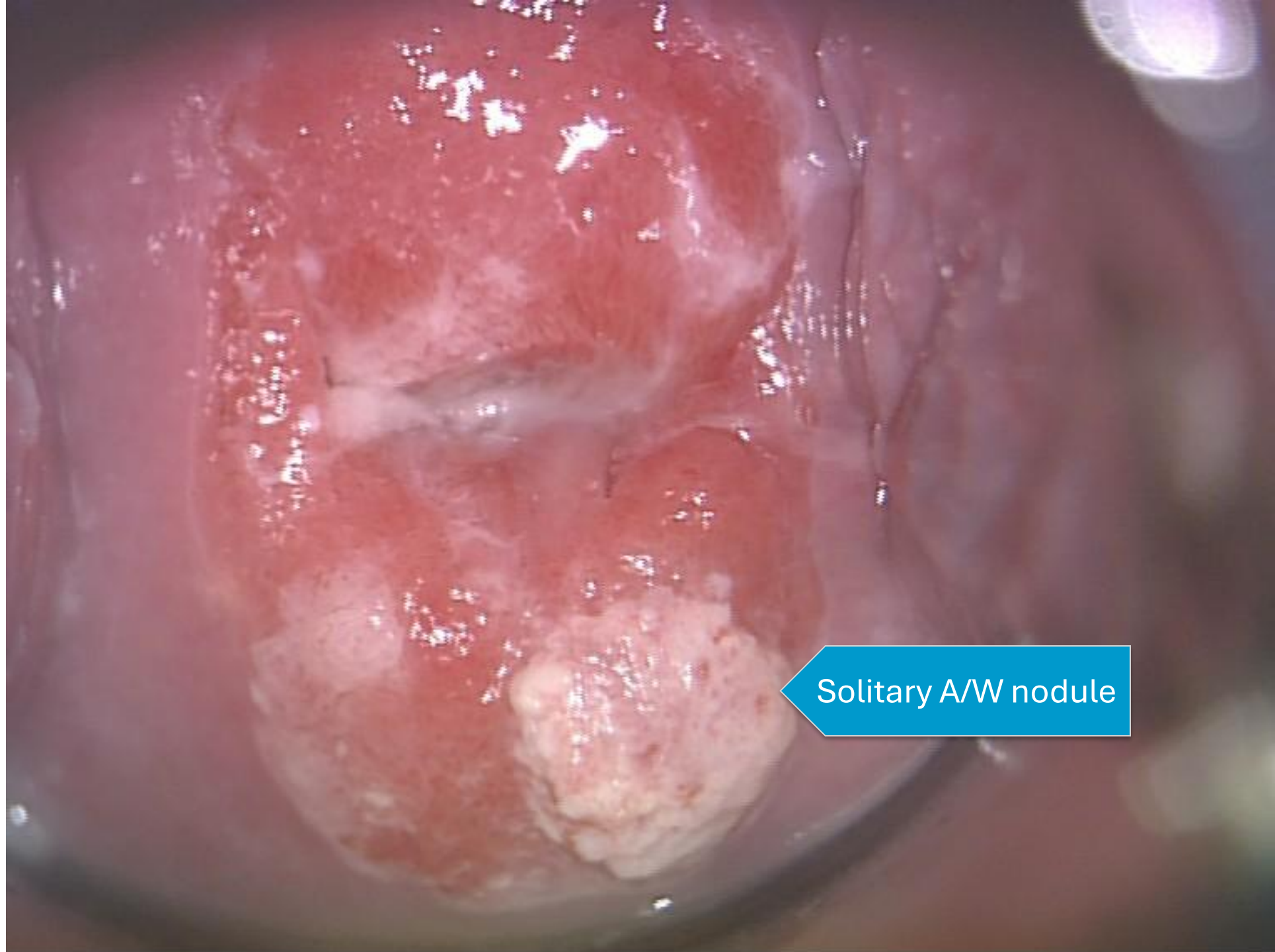
White tips of Villi



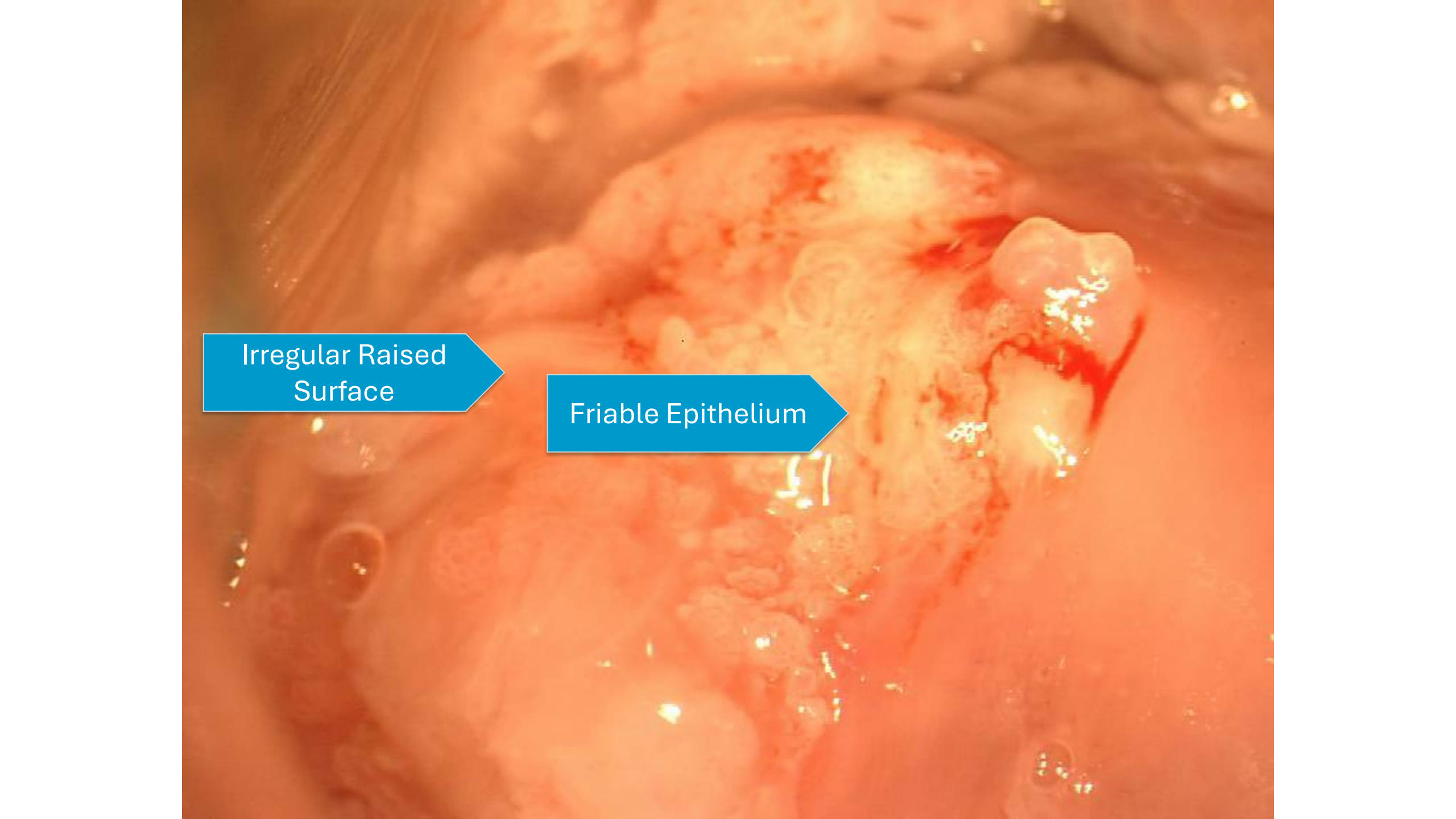
D8092904
AC-UPPER



At colposcopy always consider possibility of skip lesions



Solitary A/W nodule

An endoscopic view of a mucosal surface featuring a prominent, raised, and irregular polypoid lesion. The lesion has a yellowish-white, friable epithelial surface with visible vascular patterns. Two blue arrows with white text point to specific features: 'Irregular Raised Surface' points to the overall shape of the lesion, and 'Friable Epithelium' points to the delicate, easily bleeding surface of the polypoid part.

Irregular Raised
Surface

Friable Epithelium



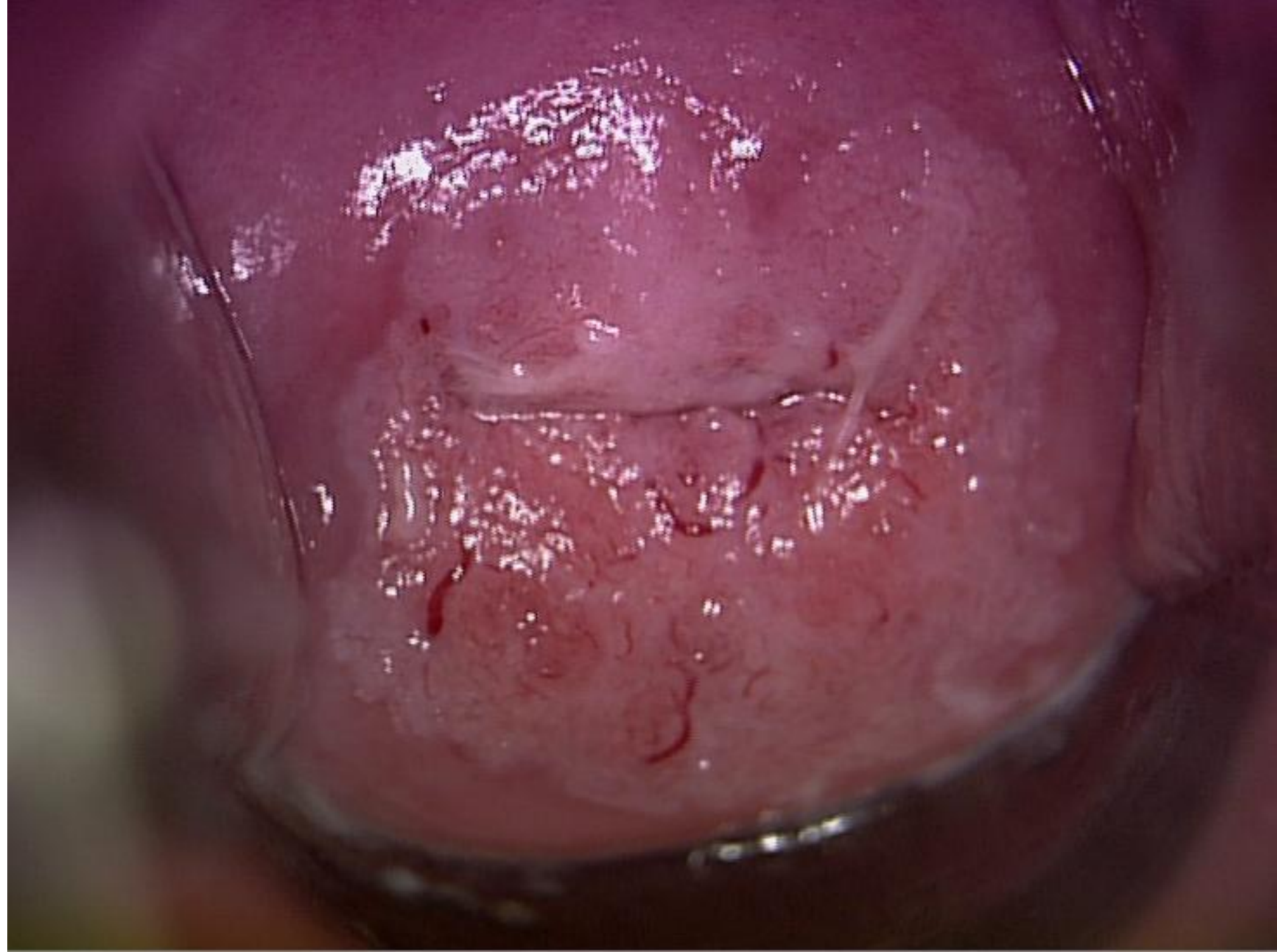
Colposcopic features suggestive of ***invasive cancer***

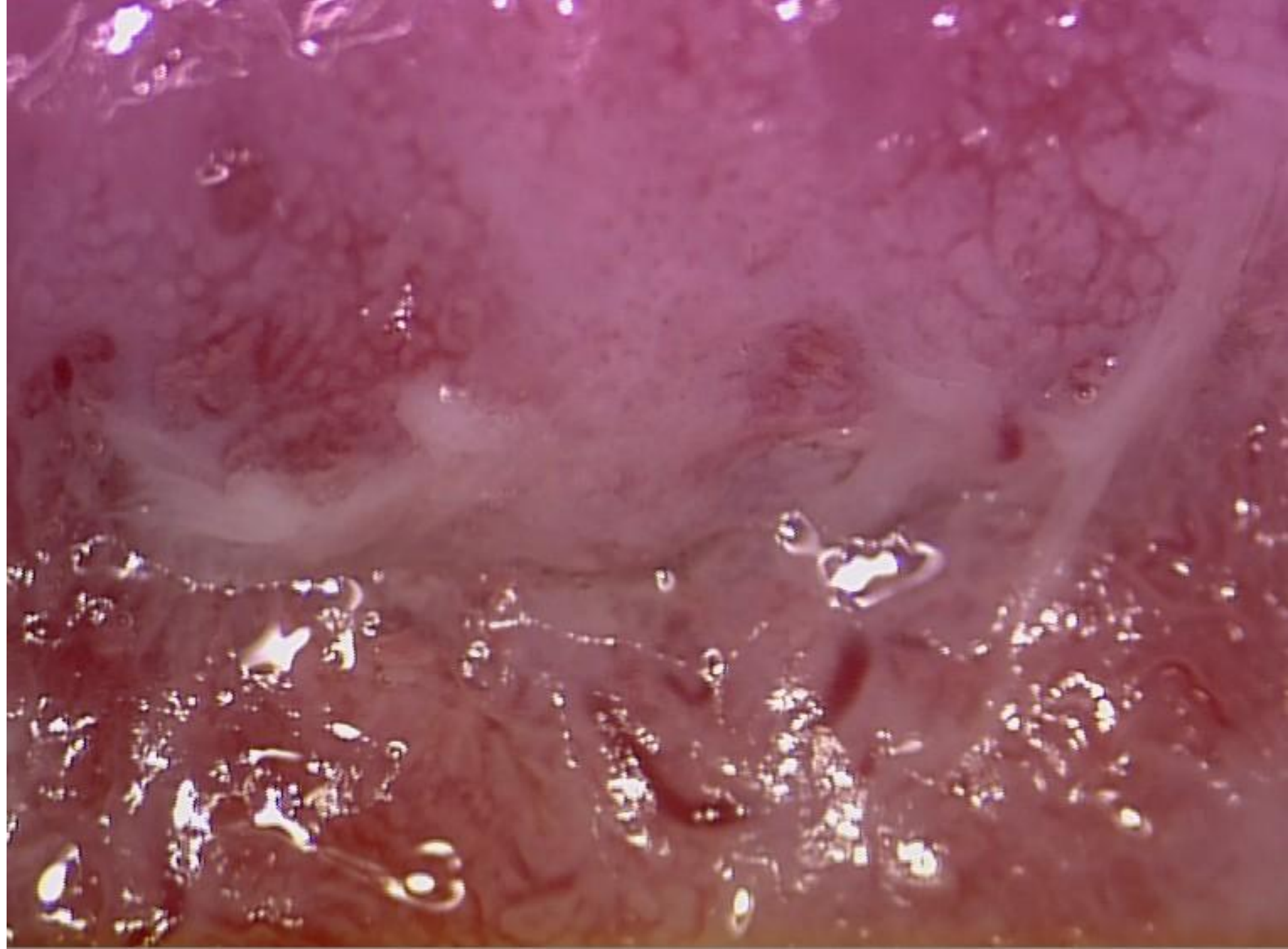
A. Irregular surface. Erosion or Ulceration

B. Dense Acetowhite Change.

C. Wide Irregular Punctation and Mosaic.

D. Abnormal Vessels.





E9060614
AC-WHOLE

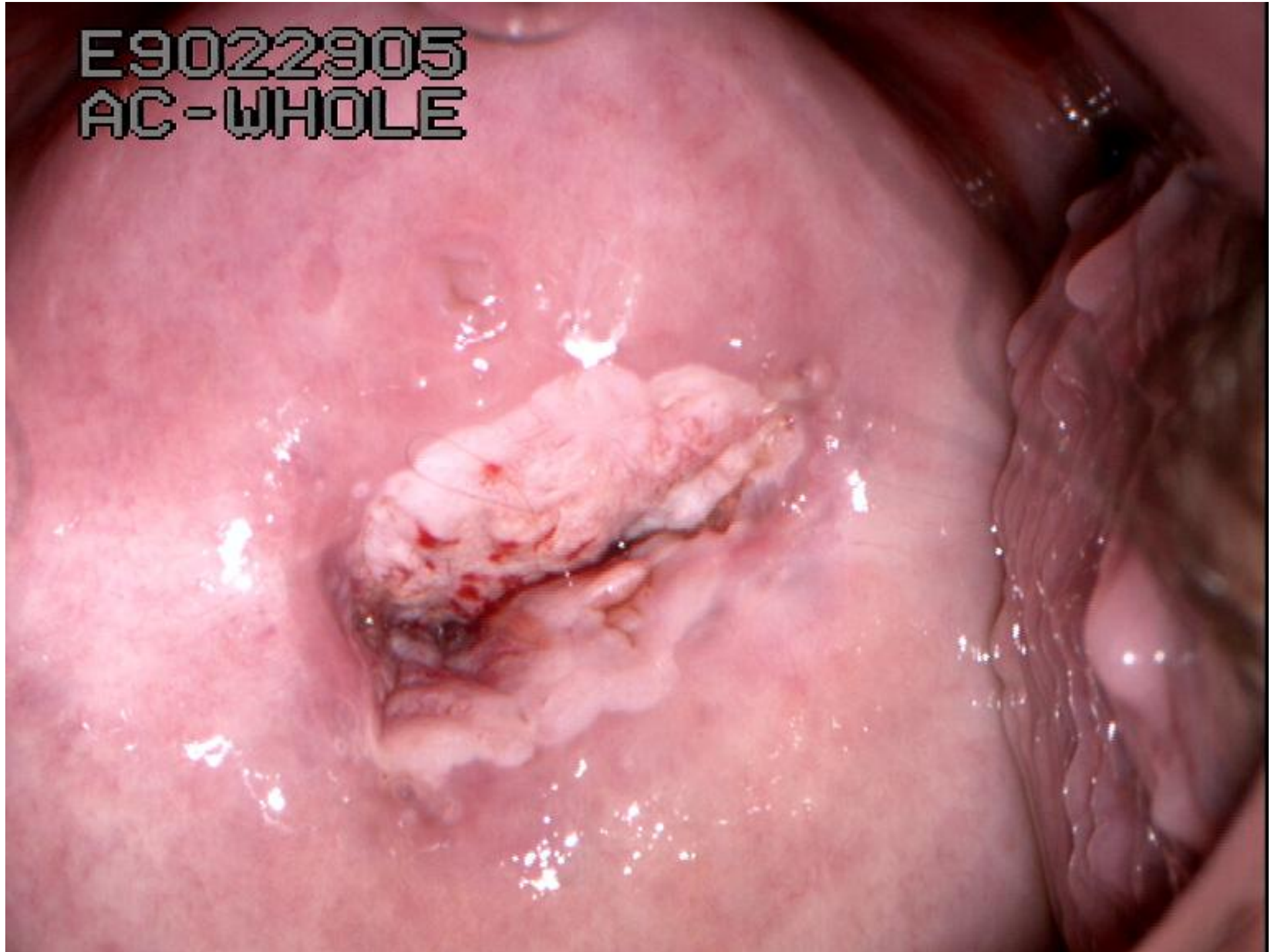
Large volume lesion



E9060614
AC-LOWER



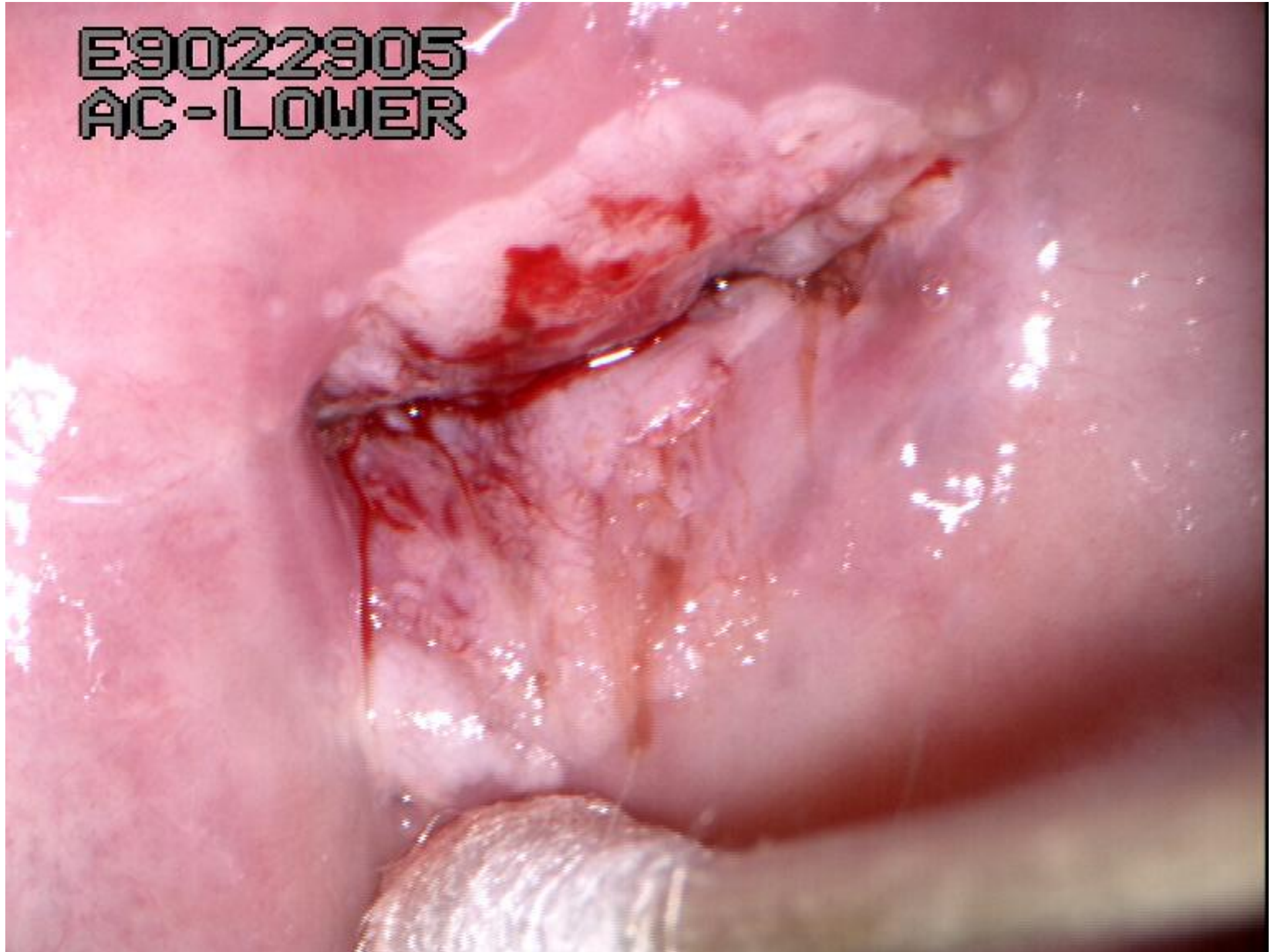
E9022905
AC-WHOLE

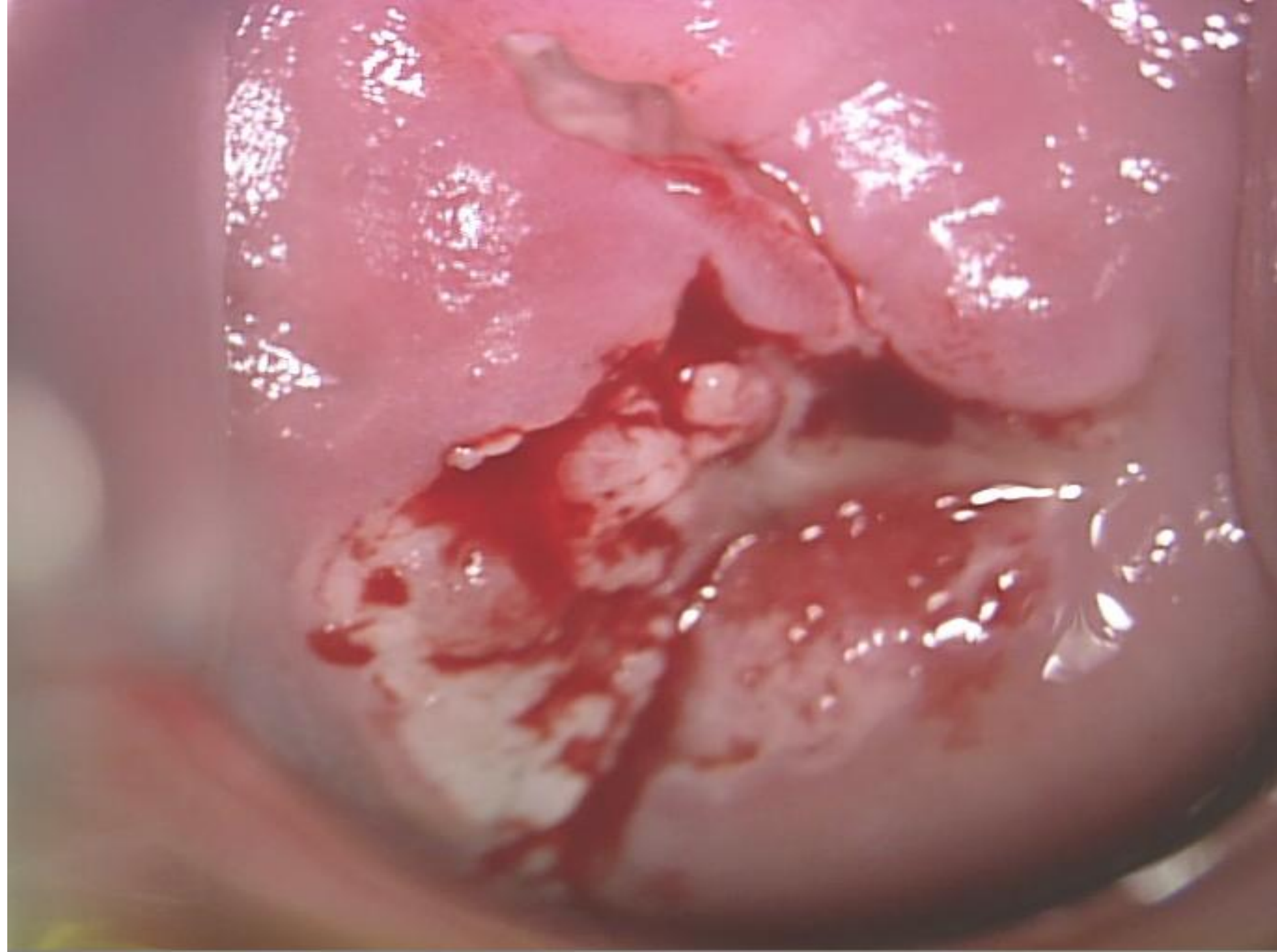


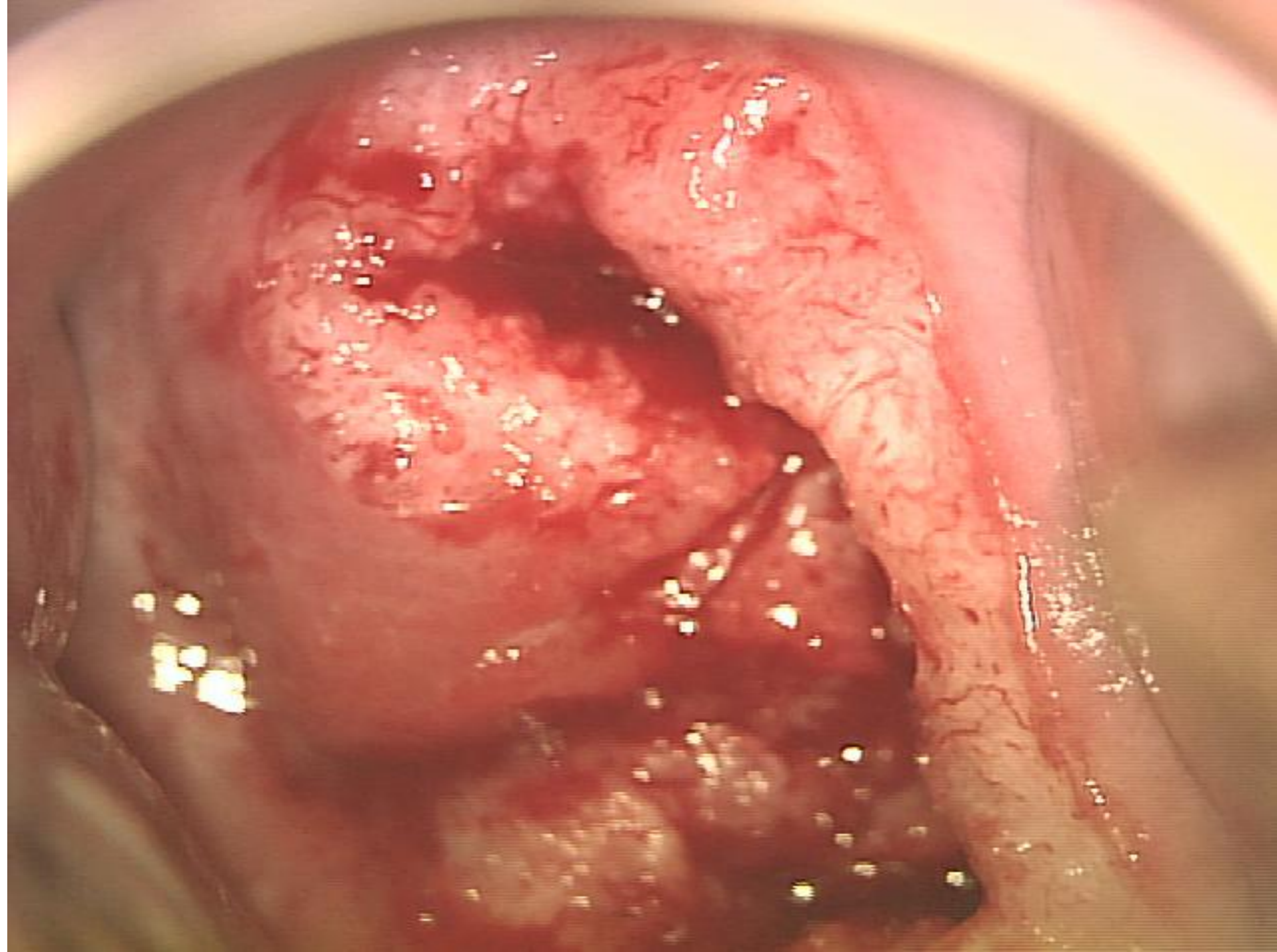
E9022905
AC-UPPER



E9022905
AC-LOWER







Aims of treatment

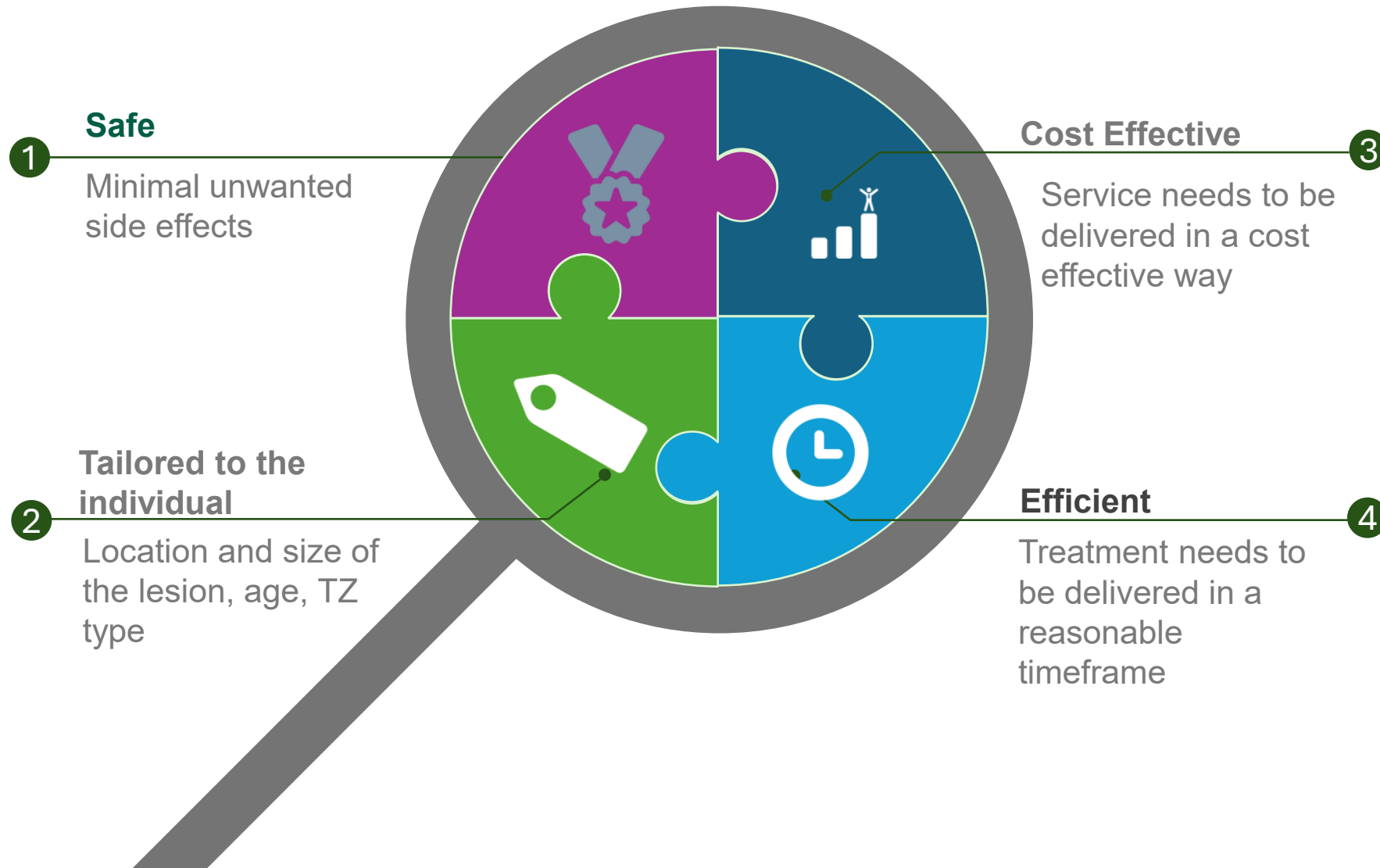
**Prevent
invasive cancer
of the cervix**

**Prevent
persistence of
CIN**

**Minimum of
harm to
woman**



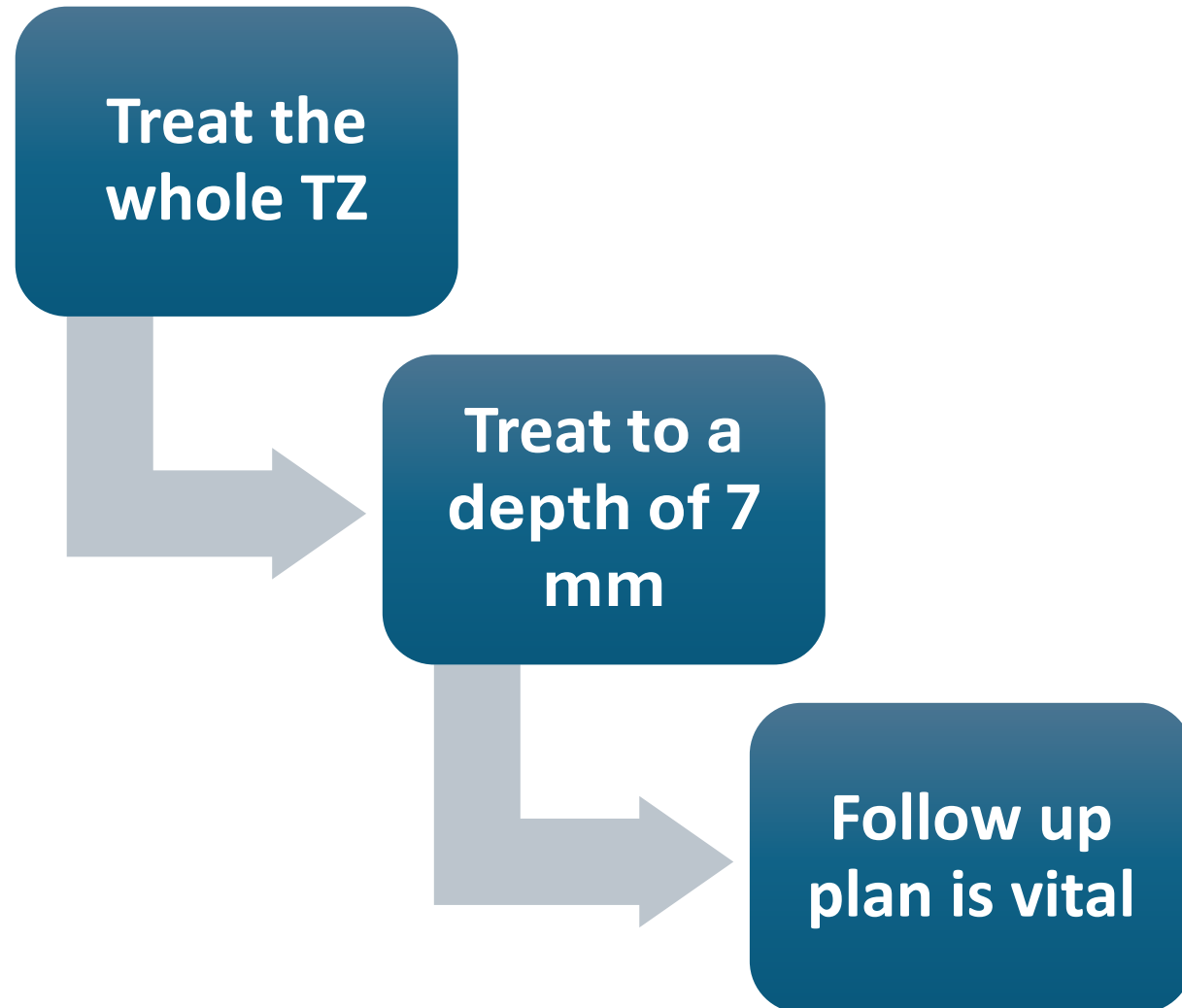
Ideal treatment



Methods for treating CIN

Ablative	Excisional
Electrocautery	LLETZ
Cold/thermal Coagulation	Cold Knife excision
<i>(Electrocoagulation Diathermy)</i>	Laser /NETZ /SWETZ excision
Cryotherapy (LG only)	Hysterectomy
Laser Vaporization	

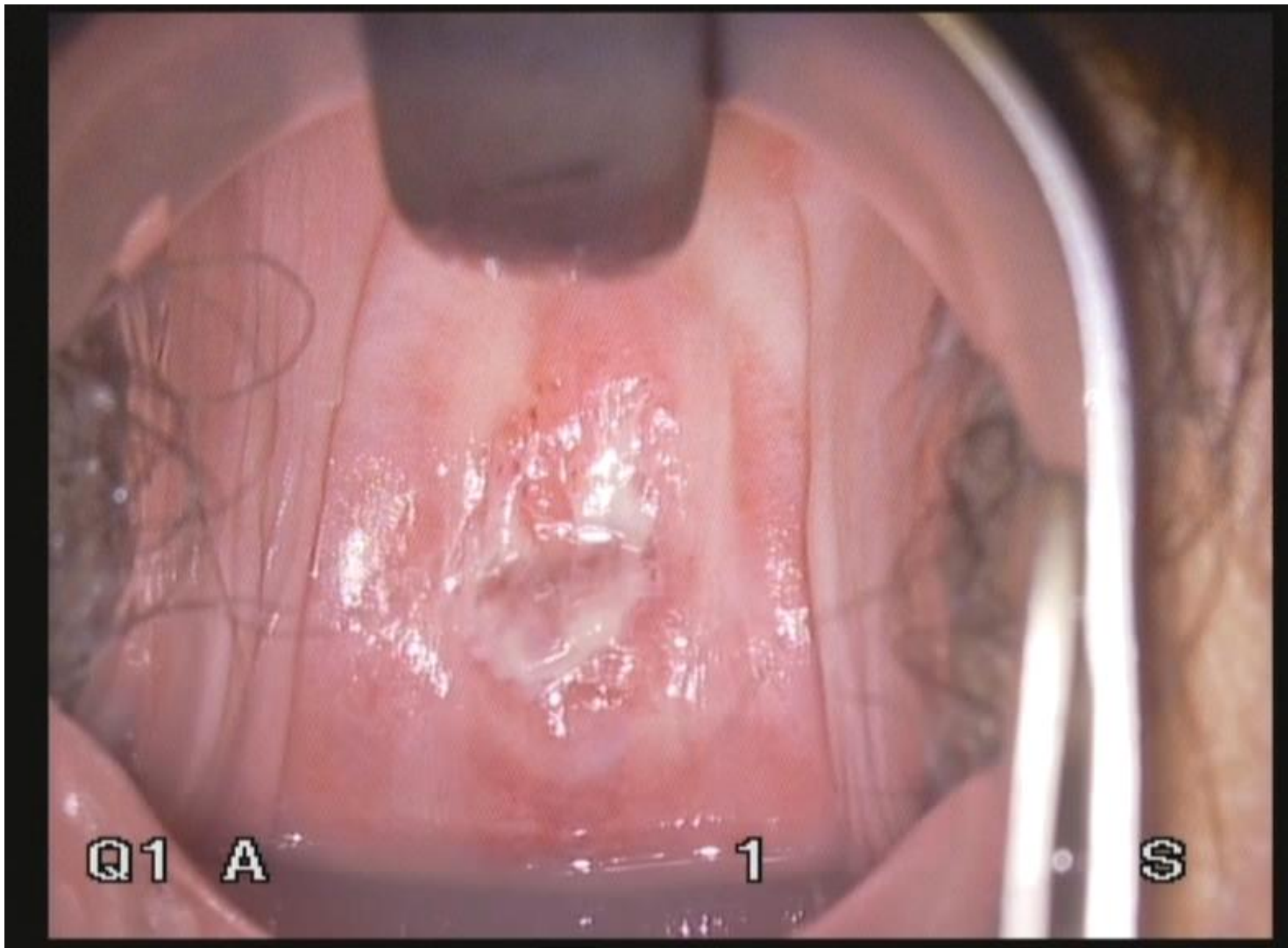
Treatment principles



Summary



- Understanding the TZ is fundamental to colposcopy
- Treating the whole TZ is fundamental to successful management of CIN
- Colposcopy is one part of the assessment for pre-malignancy and early malignancy.
- One can have the wrong colposcopy impression, but with a proper knowledge of the algorithms, still manage the patient correctly



Courtesy Swee Choong