

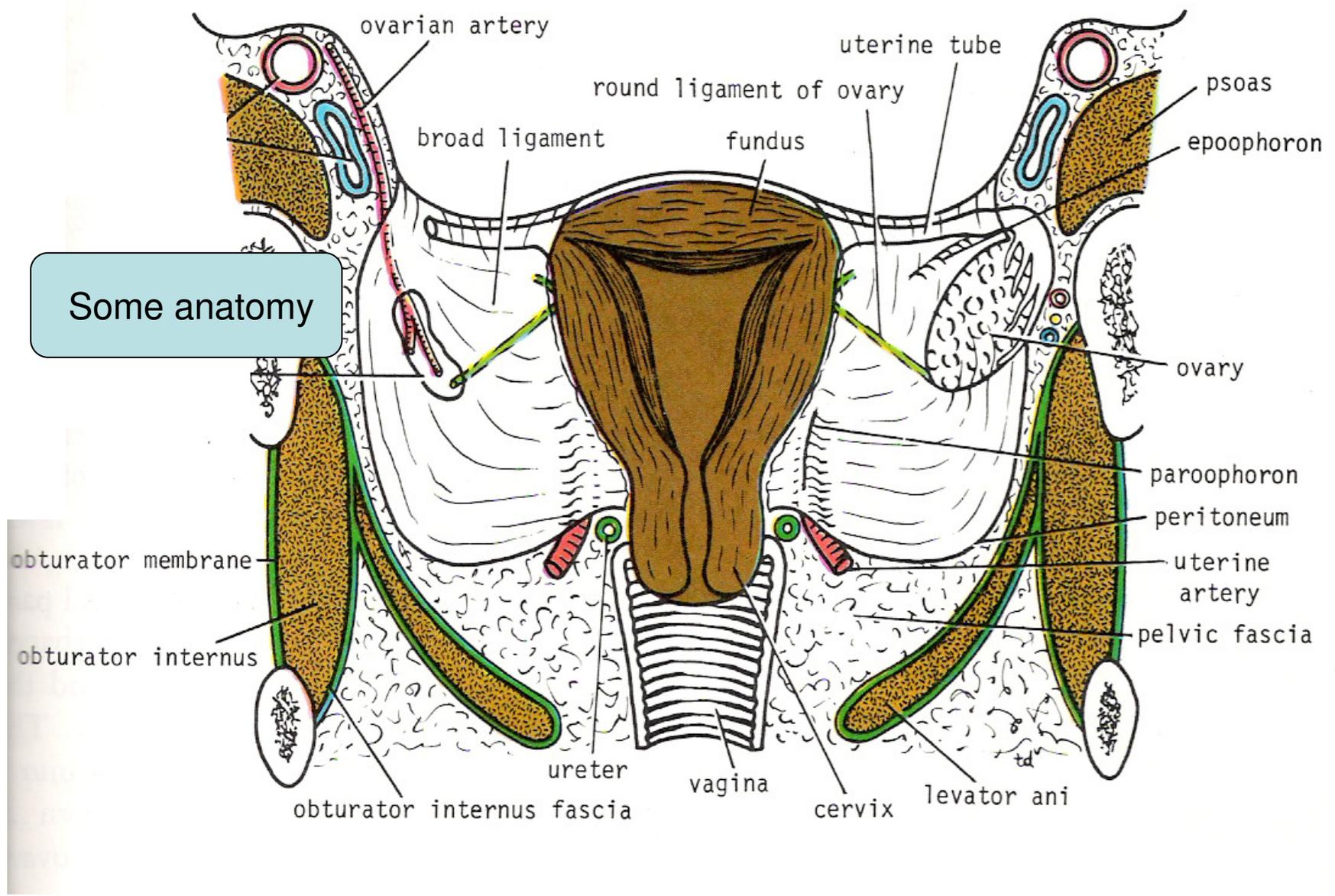


Colposcopic Principles

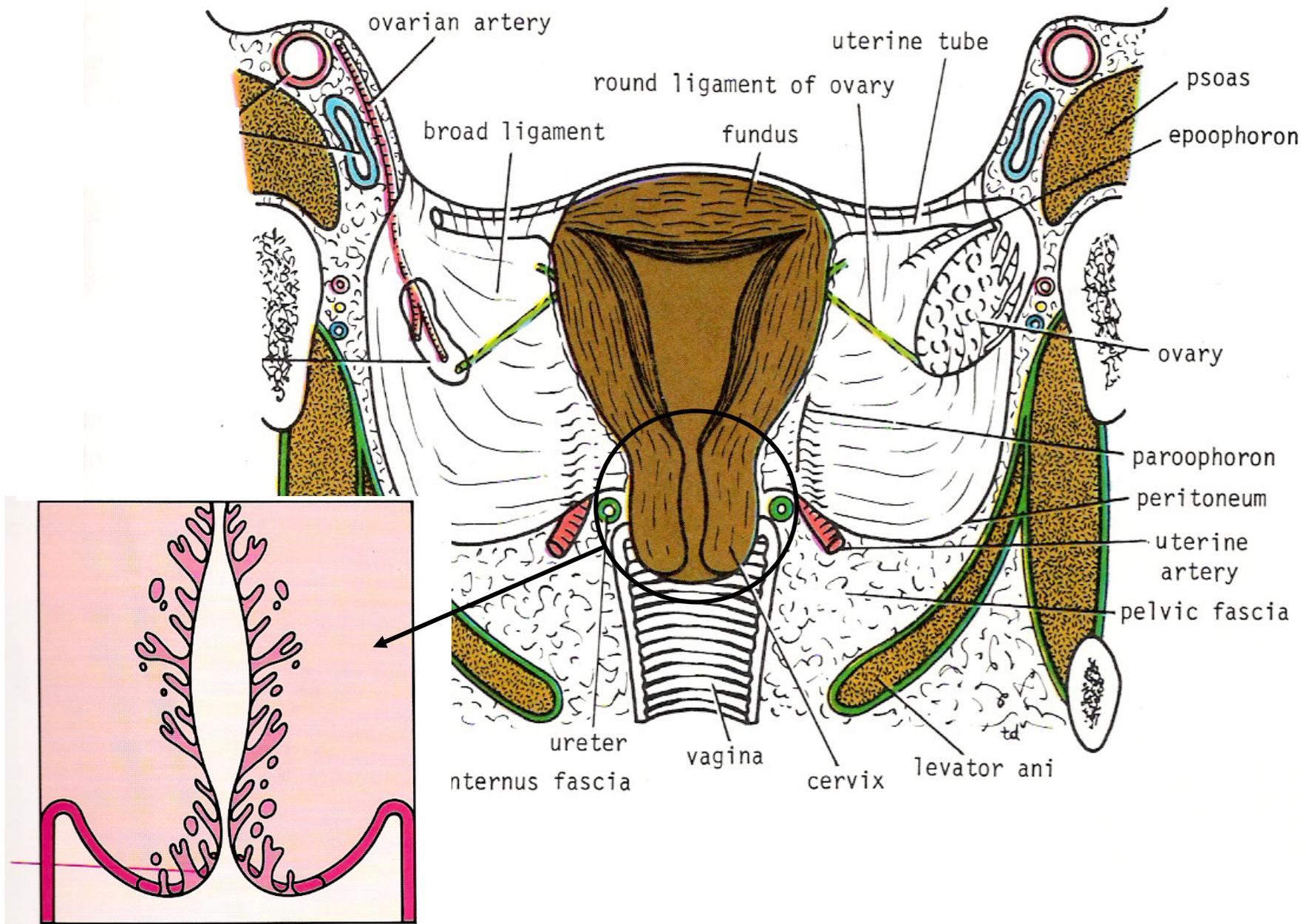
Simon Leeson
Consultant Obstetrician/ Gynaecologist
Betsi Cadwaladr University Health Board
UK

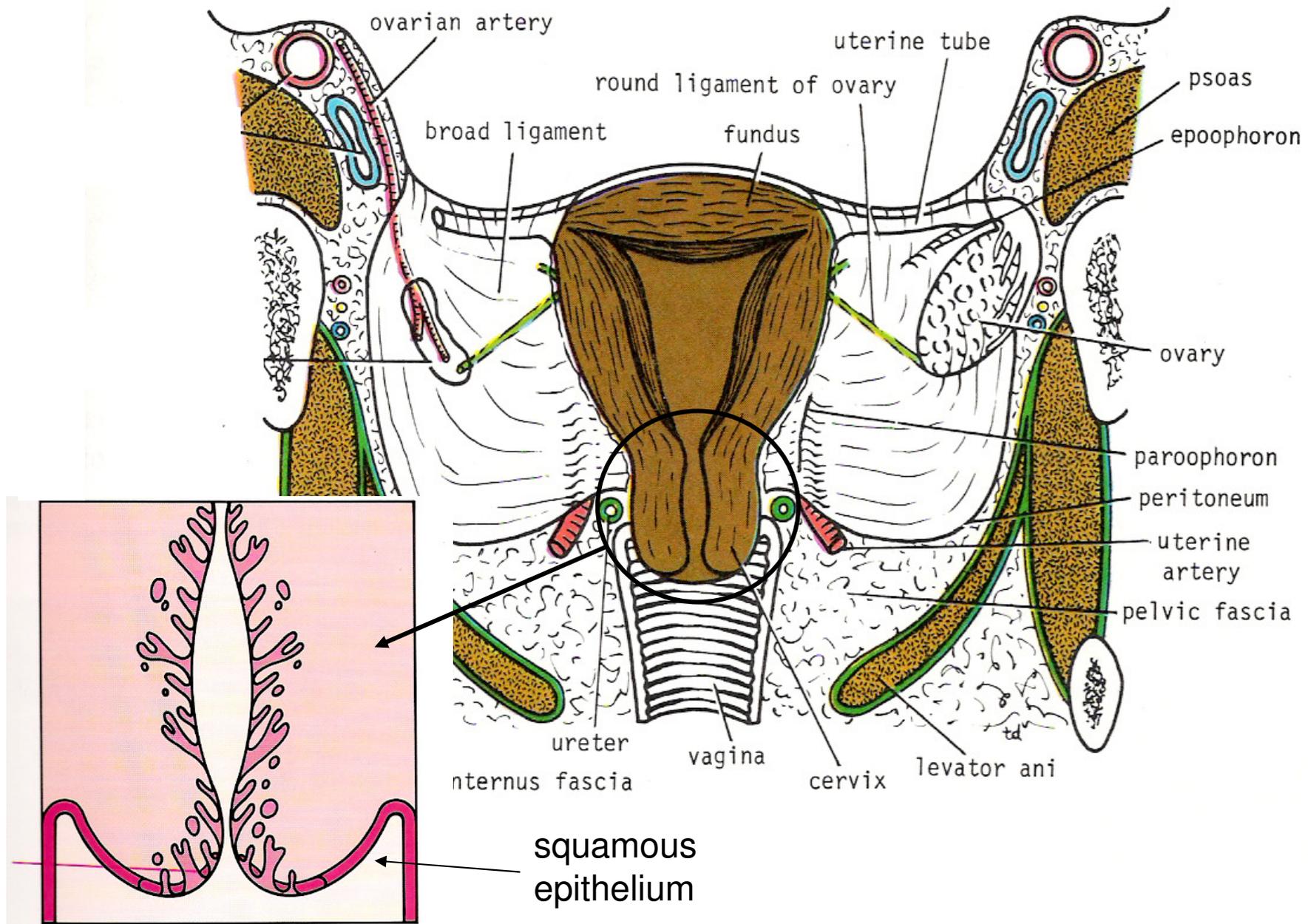
The cervix – topics discussed are:

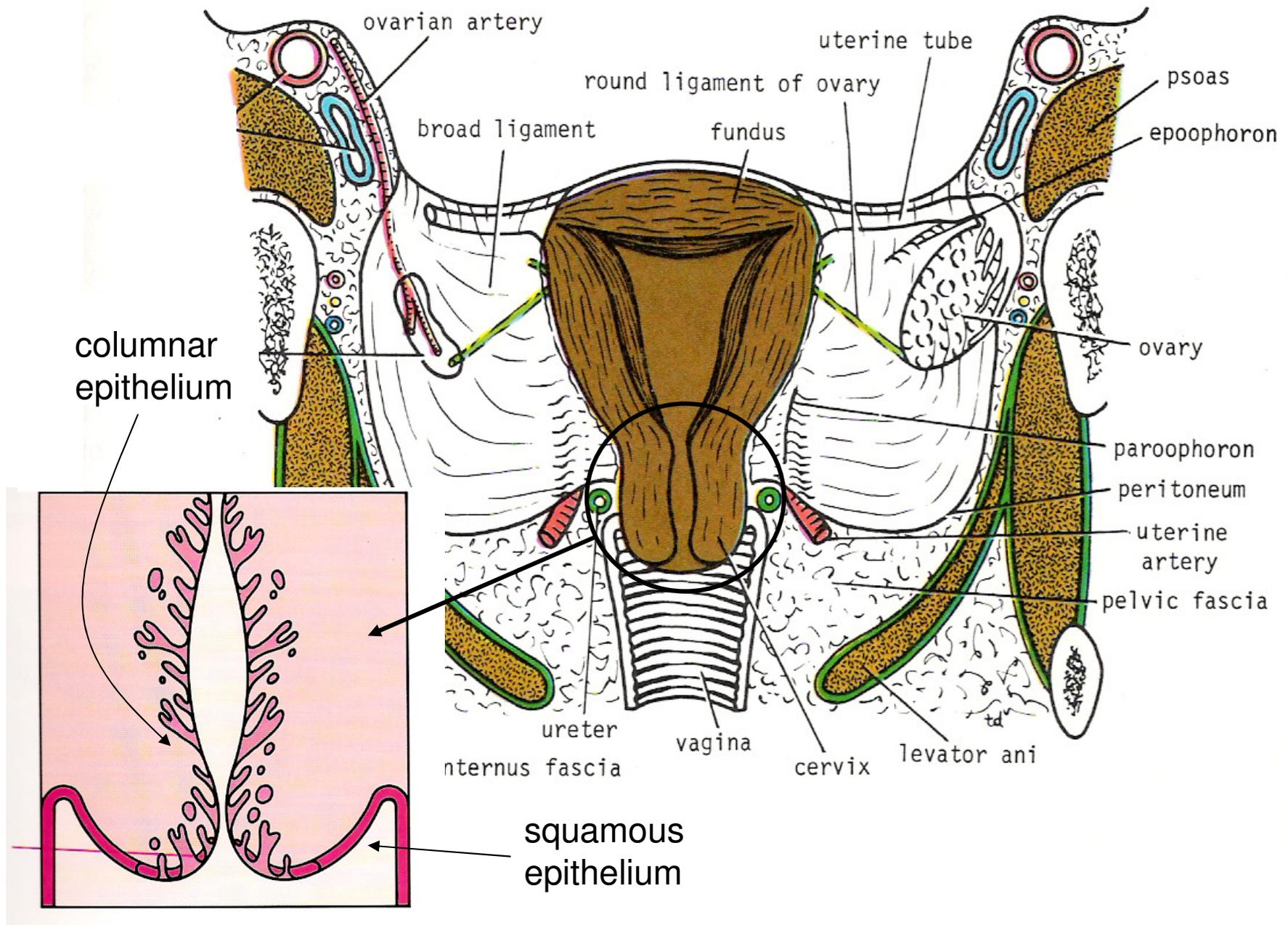
- original squamous epithelium
- endocervical epithelium
- the squamocolumnar junction (scj)
- the transformation zone
- ectopy
- congenital transformation zone (CTZ)
- pregnancy and post menopause

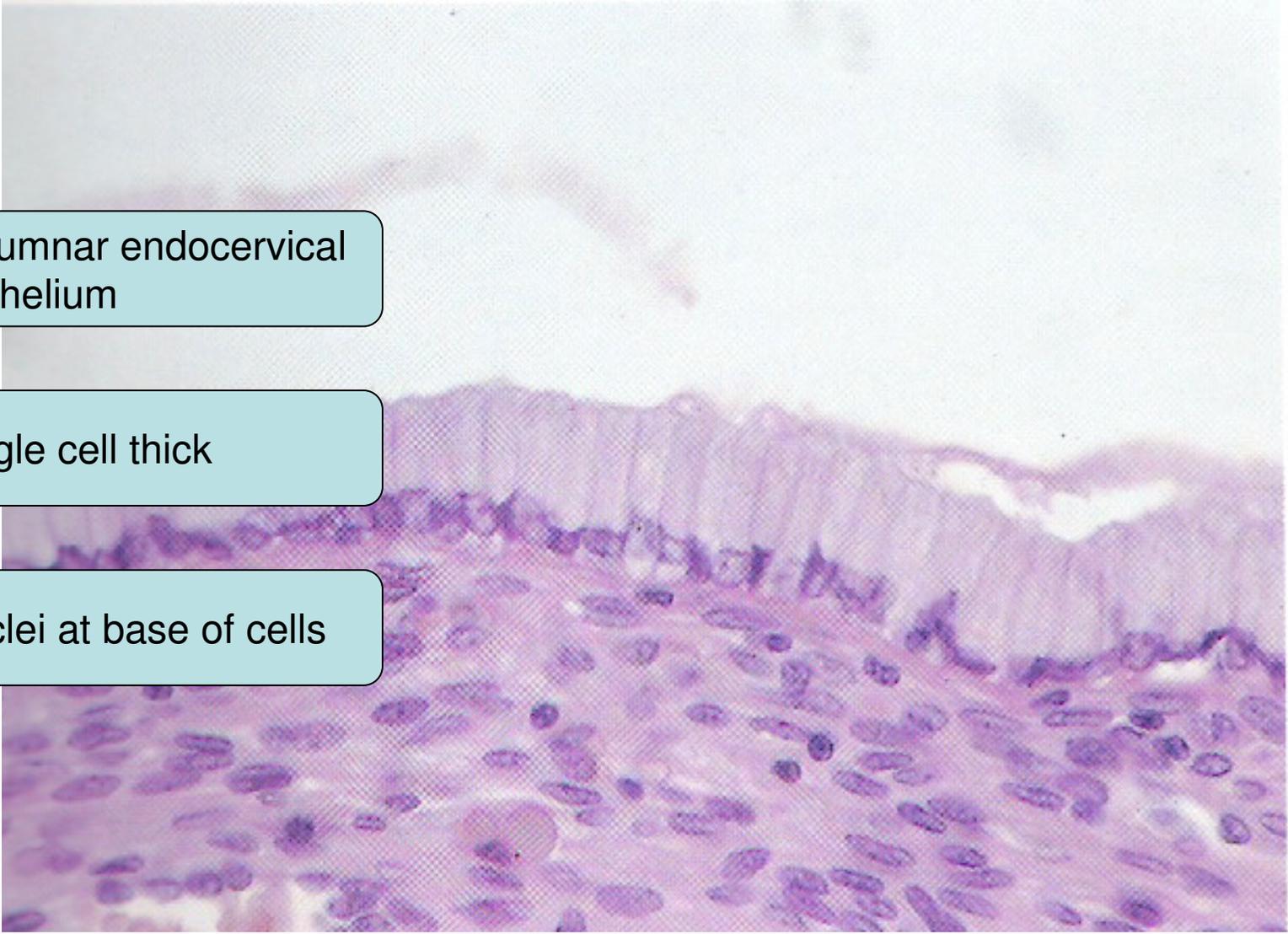


Some anatomy





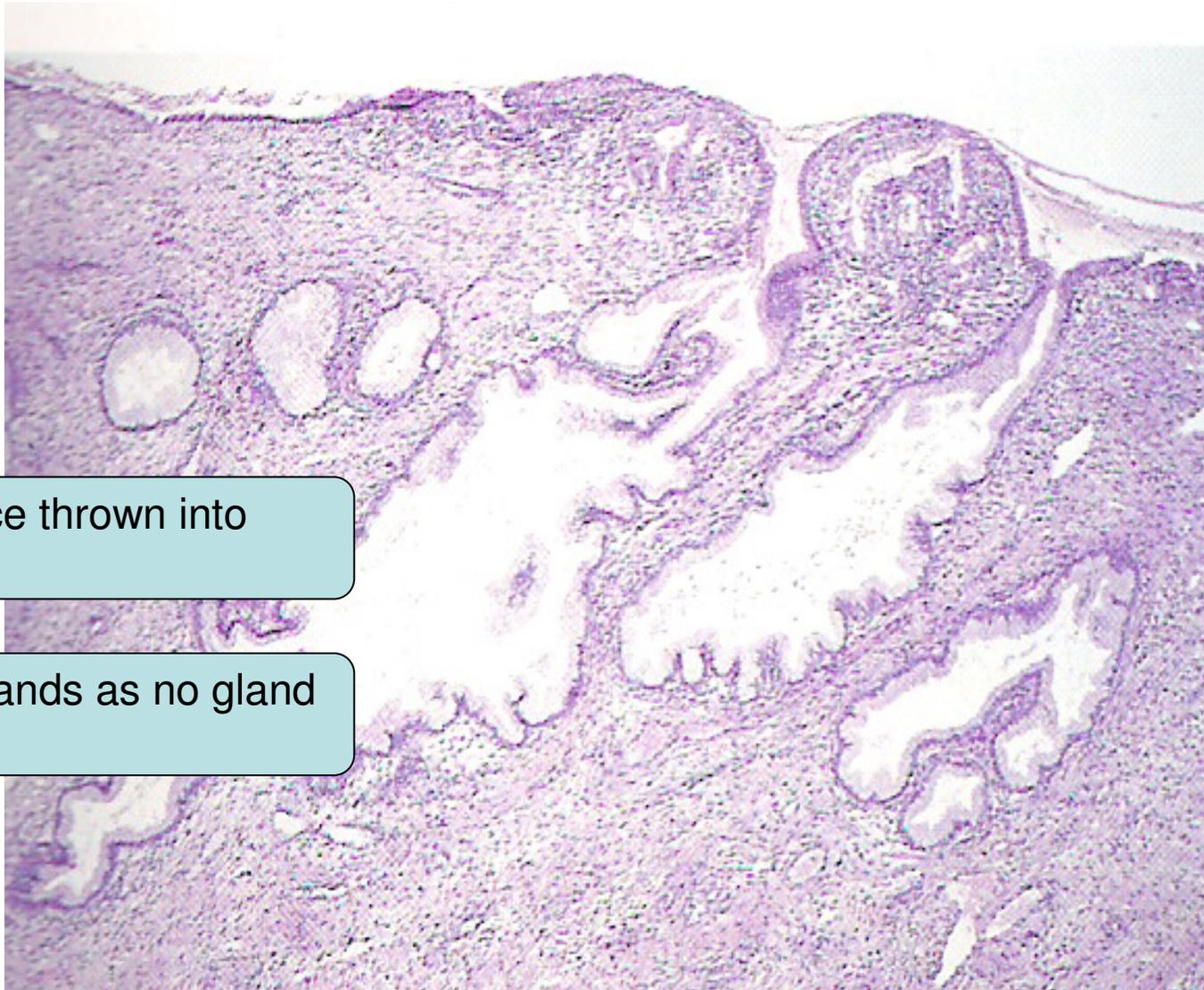


A histological micrograph showing a cross-section of the endocervix. The upper portion of the image displays a layer of columnar epithelium, which is a single layer of tall, rectangular cells. Below this layer is a thick, multi-layered stratum squamosum composed of stratified squamous epithelium. The nuclei of the cells in the lower layers are densely packed and stained dark purple.

Columnar endocervical
epithelium

Single cell thick

Nuclei at base of cells



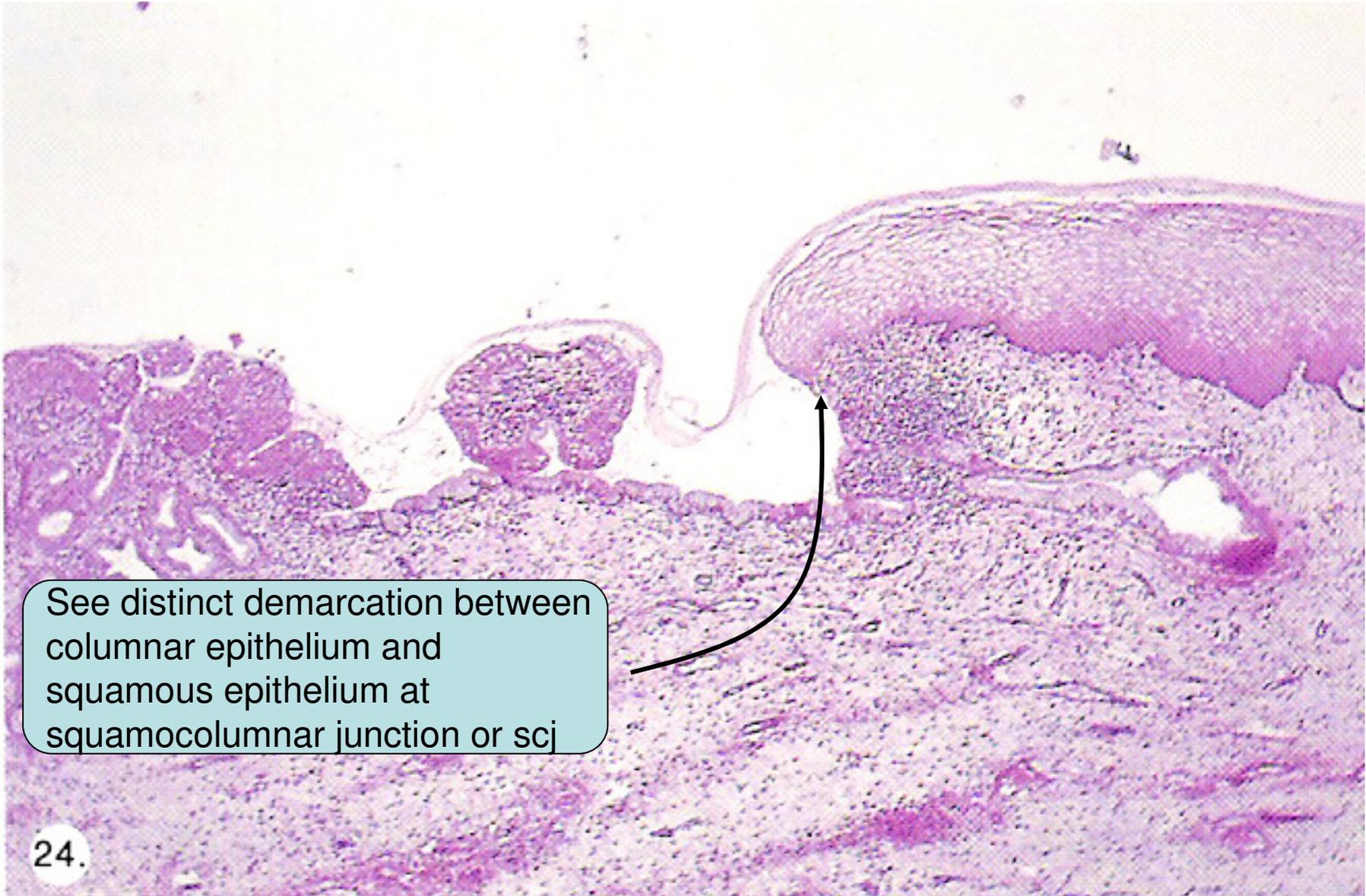
Surface thrown into crypts

Not glands as no gland ducts

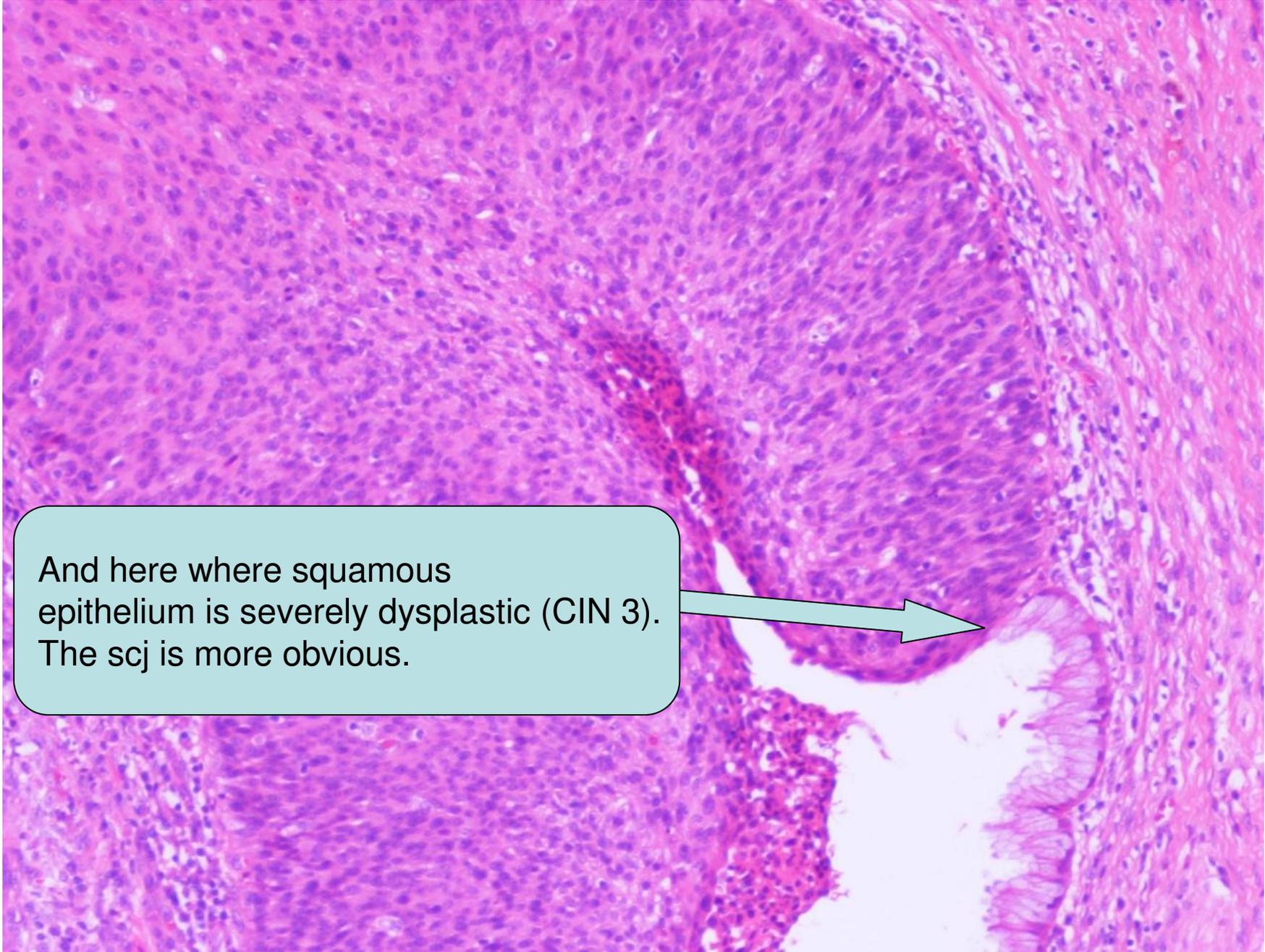


Surface thrown into villi

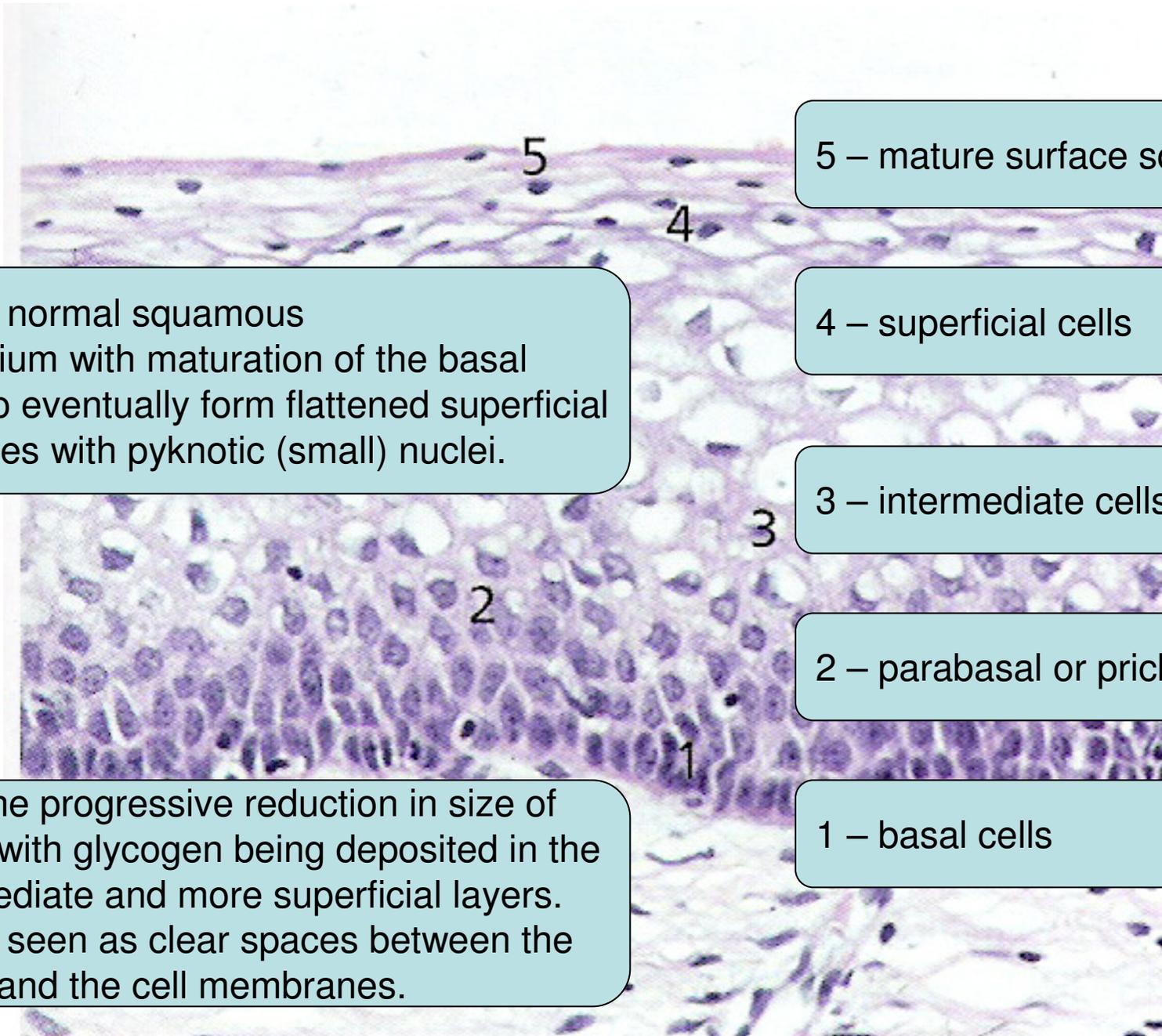
Seen when endocervical canal examined at colposcopy



See distinct demarcation between columnar epithelium and squamous epithelium at squamocolumnar junction or scj



And here where squamous epithelium is severely dysplastic (CIN 3). The scj is more obvious.



This is normal squamous epithelium with maturation of the basal layer to eventually form flattened superficial squames with pyknotic (small) nuclei.

5 – mature surface squames

4 – superficial cells

3 – intermediate cells

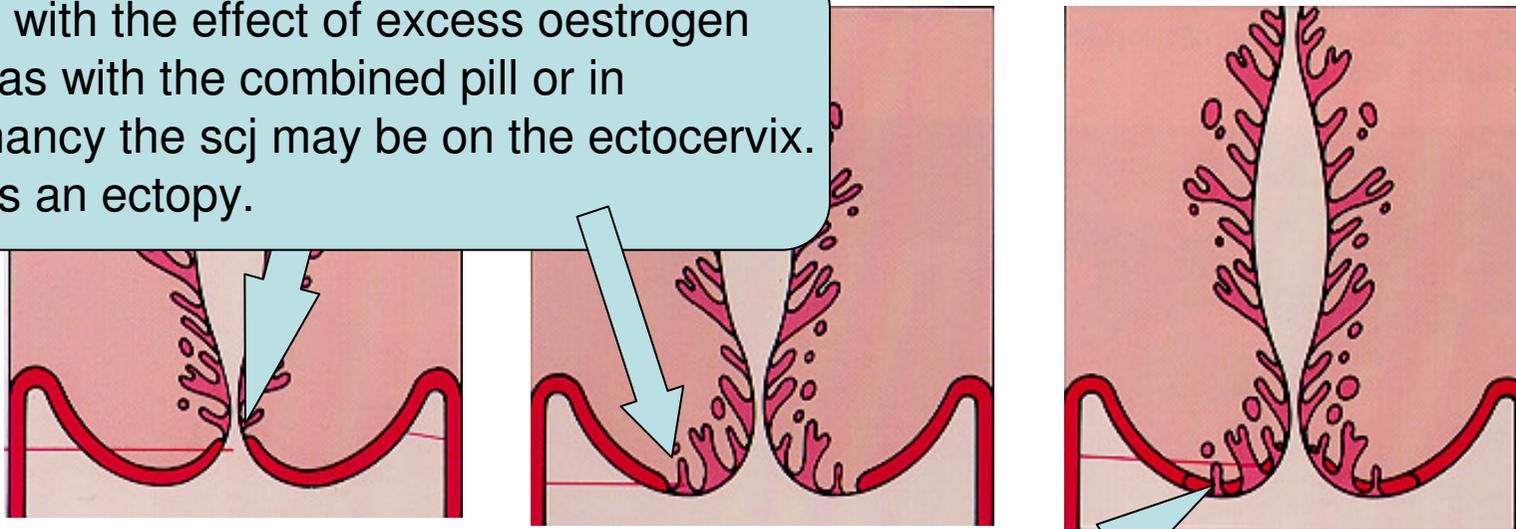
2 – parabasal or prickle cells

1 – basal cells

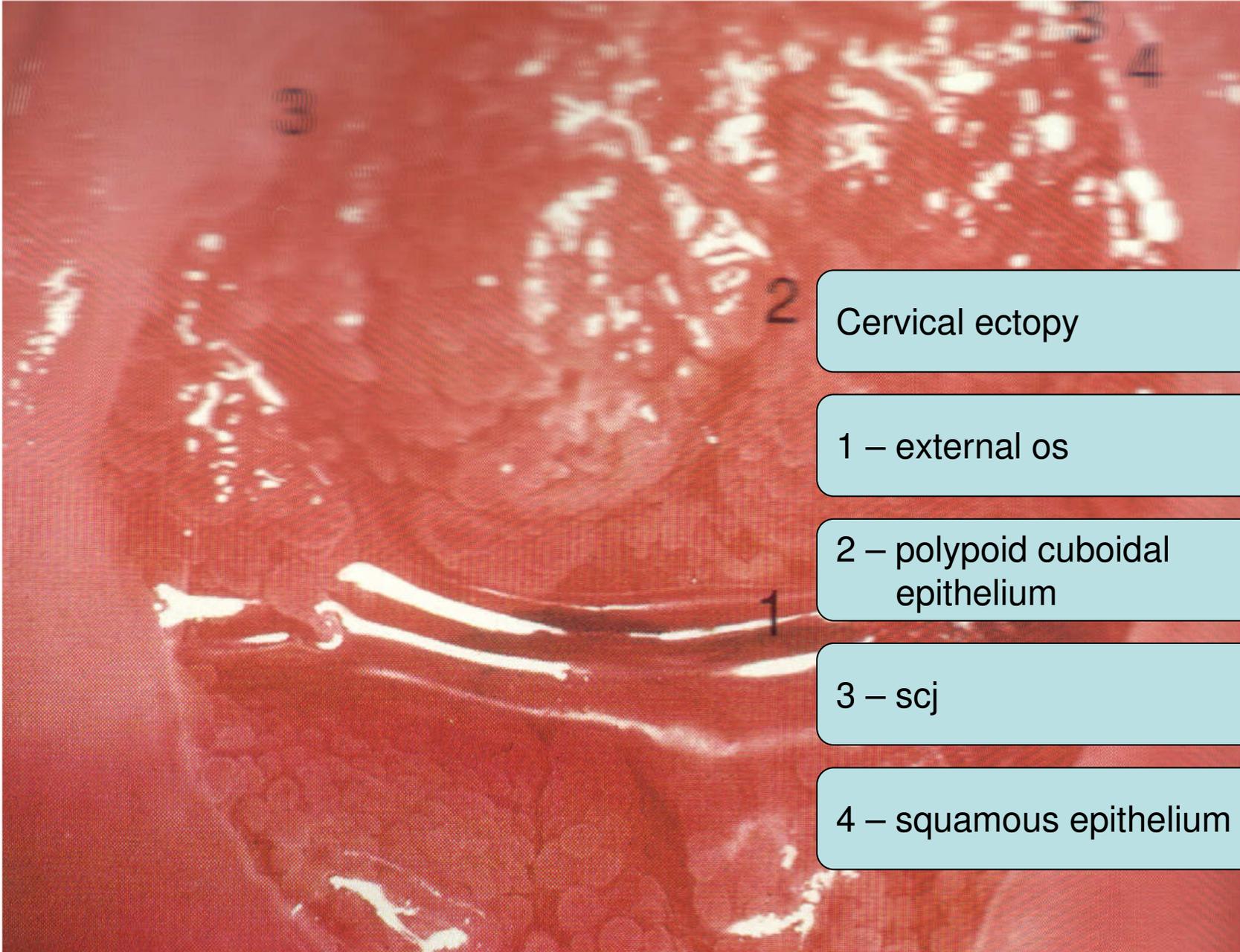
Note the progressive reduction in size of nuclei with glycogen being deposited in the intermediate and more superficial layers. This is seen as clear spaces between the nuclei and the cell membranes.

The scj is at the external os in the post-pubertal pre-menopausal female.

Often with the effect of excess oestrogen such as with the combined pill or in pregnancy the scj may be on the ectocervix. This is an ectopy.



Exposed to the acid environment of the vagina, basal cells of the squamous epithelium begin a process of squamous metaplasia forming new squamous epithelium toward the external os, covering or surrounding crypt openings.



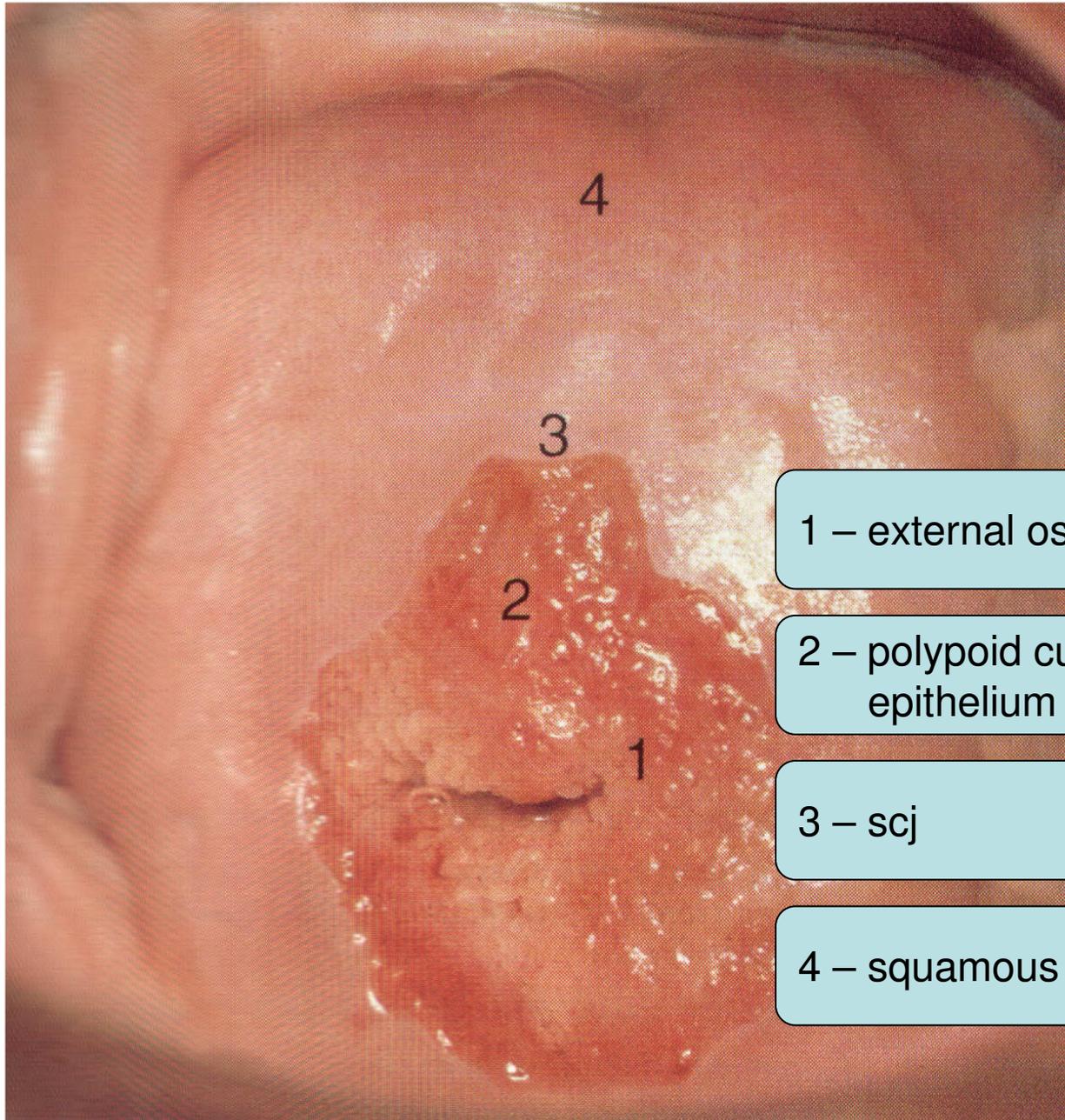
Cervical ectopy

1 – external os

2 – polypoid cuboidal
epithelium

3 – scj

4 – squamous epithelium



1 – external os

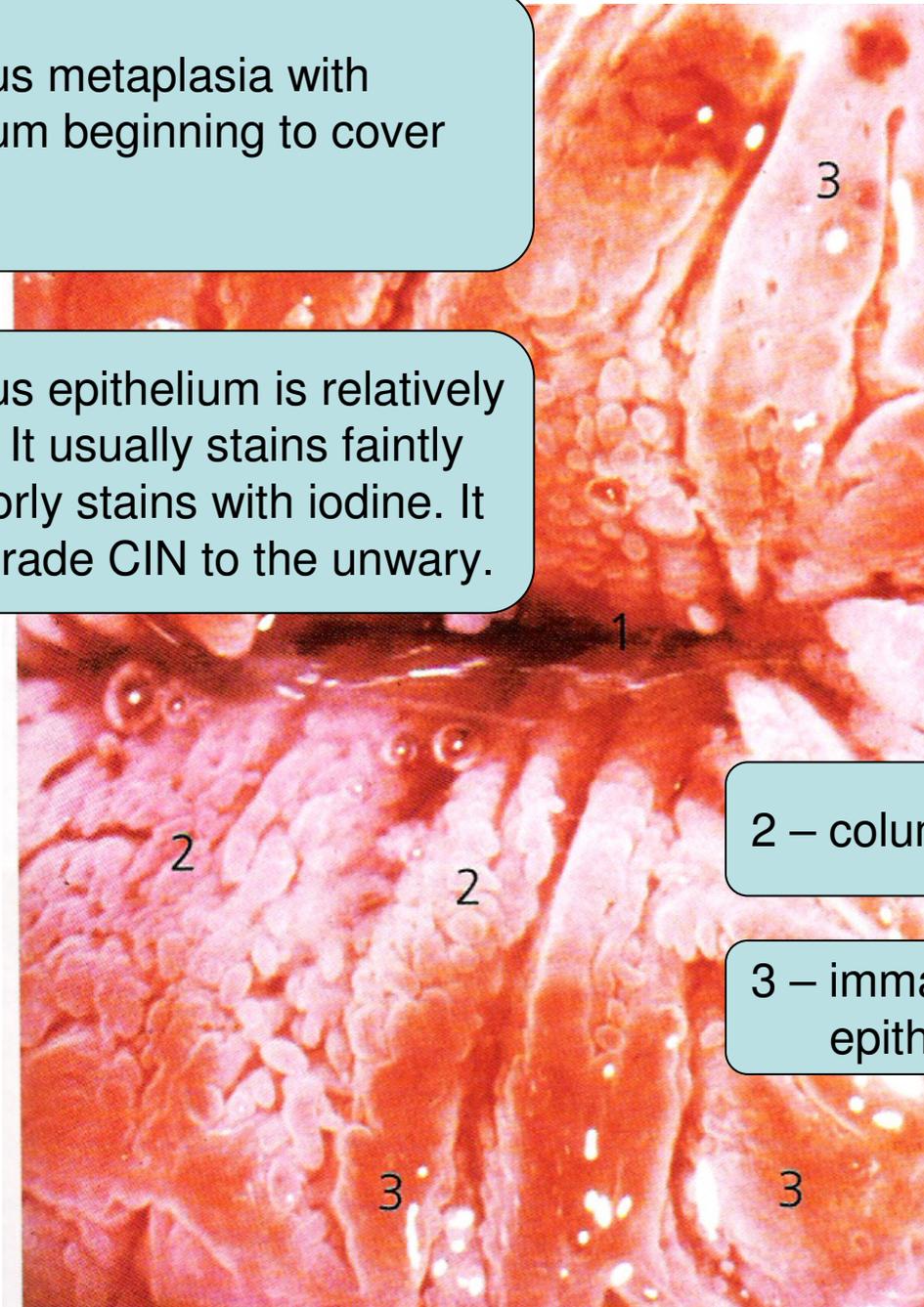
2 – polypoid cuboidal
epithelium

3 – scj

4 – squamous epithelium

Immature squamous metaplasia with squamous epithelium beginning to cover some crypts.

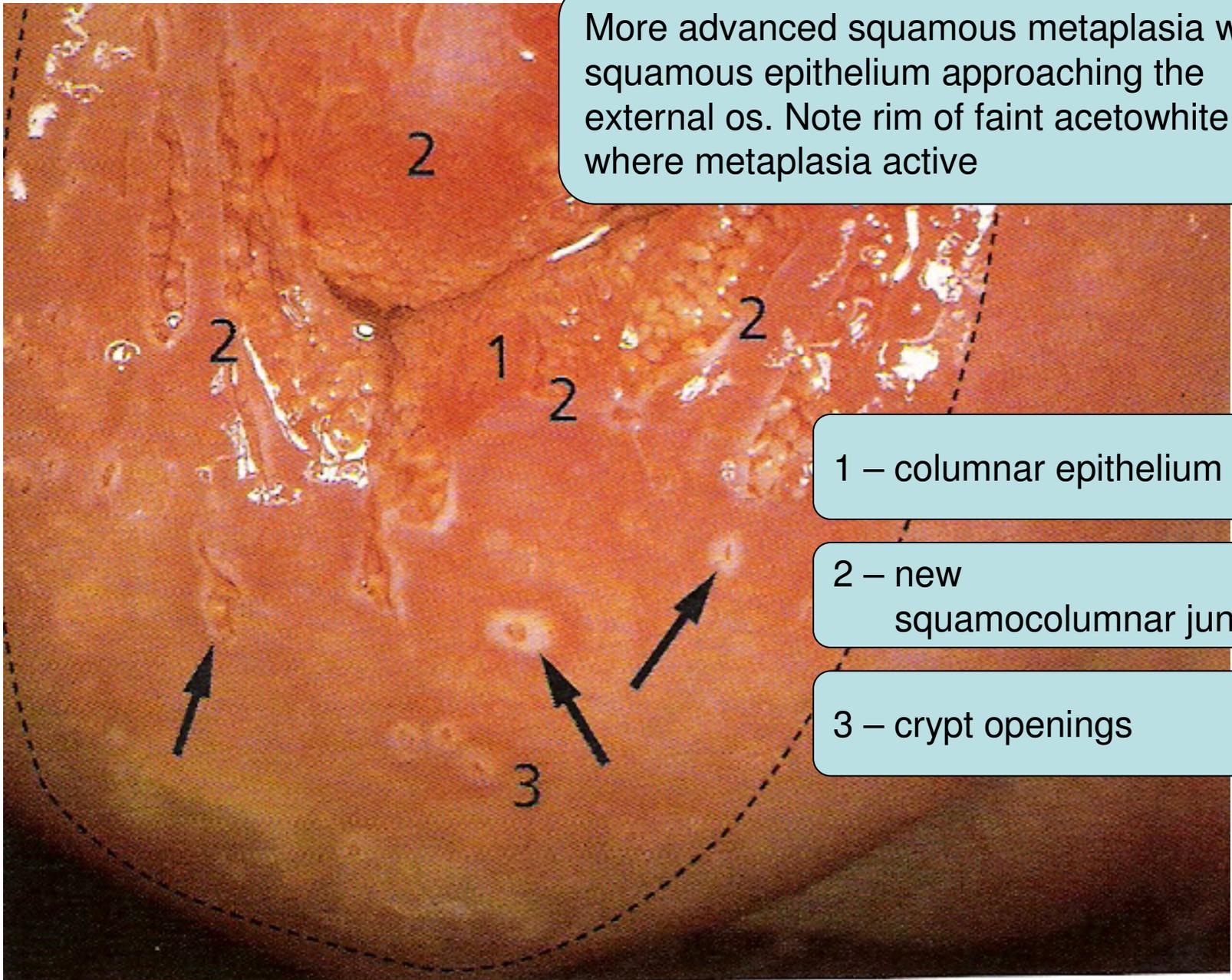
Immature squamous epithelium is relatively glycogen deficient. It usually stains faintly acetowhite and poorly stains with iodine. It may look like low grade CIN to the unwary.



2 – columnar epithelium

3 – immature squamous epithelium

More advanced squamous metaplasia with squamous epithelium approaching the external os. Note rim of faint acetowhite where metaplasia active

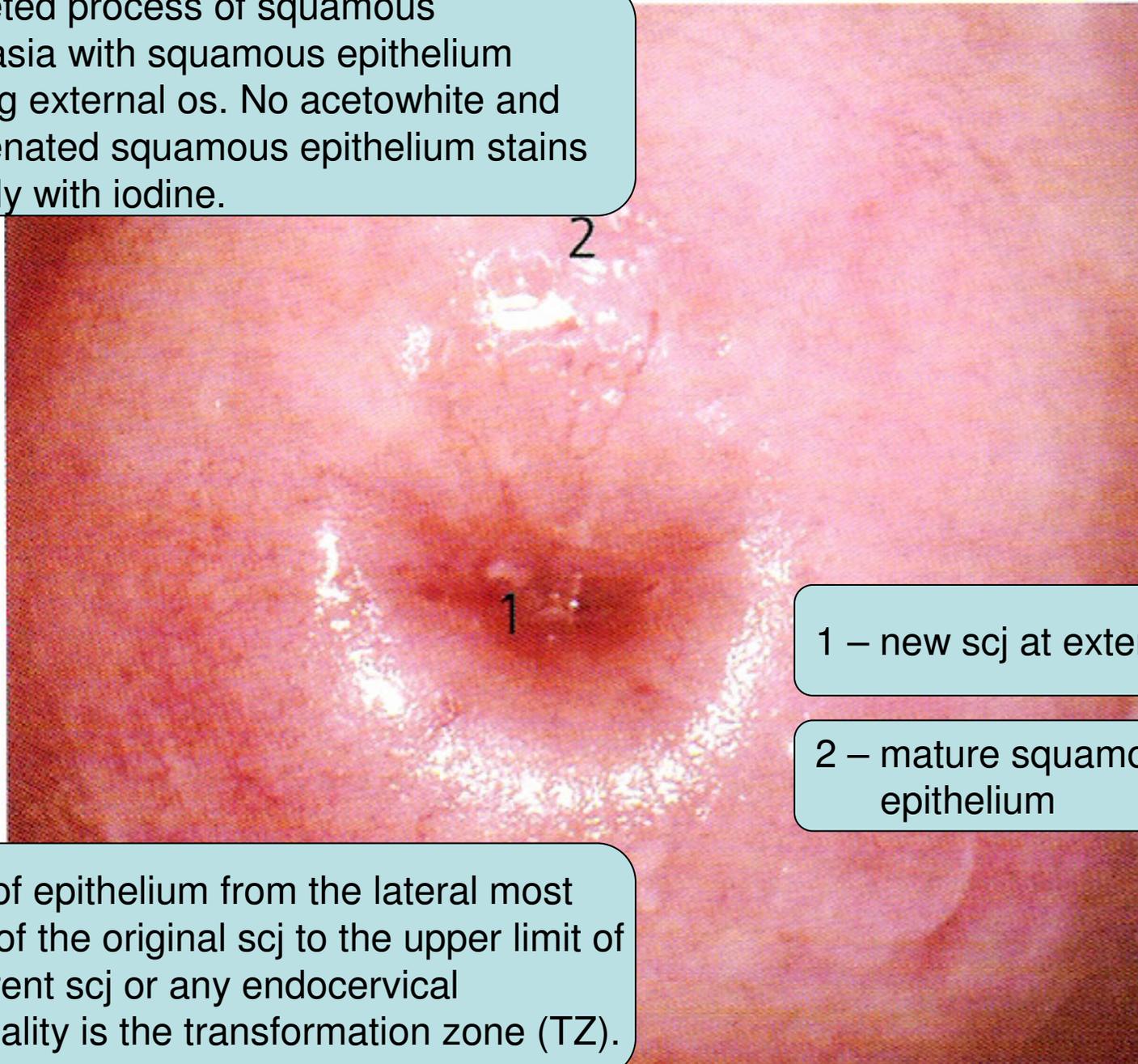


1 – columnar epithelium

2 – new squamocolumnar junction

3 – crypt openings

Completed process of squamous metaplasia with squamous epithelium reaching external os. No acetowhite and glycogenated squamous epithelium stains intensely with iodine.

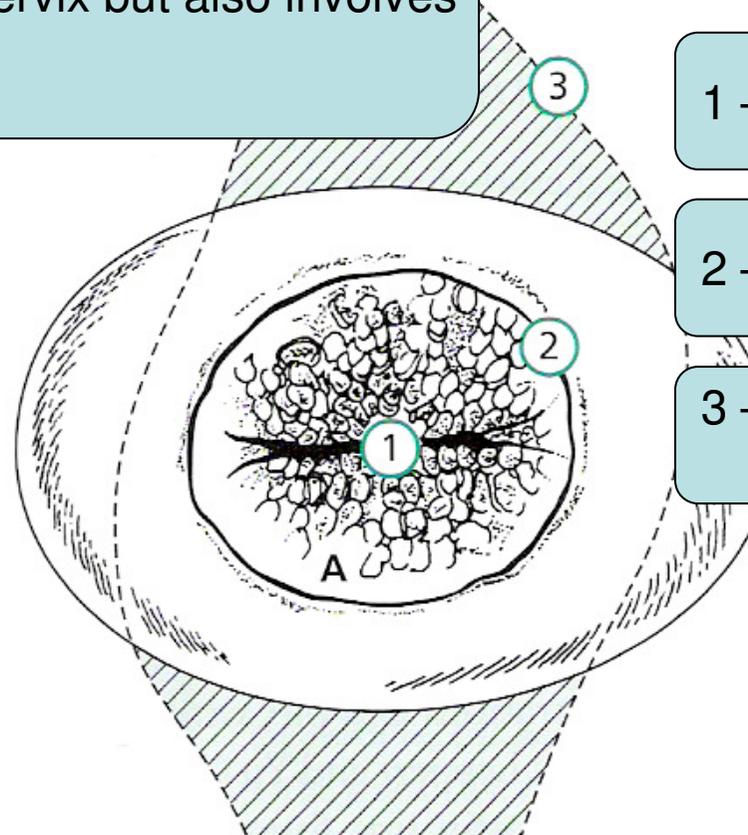


1 – new scj at external os

2 – mature squamous epithelium

Extent of epithelium from the lateral most aspect of the original scj to the upper limit of the current scj or any endocervical abnormality is the transformation zone (TZ).

Congenital TZ where squamous metaplasia involves not just the cervix but also involves the adjacent vagina.



1 – external os

2 – new scj on ectocervix

3 – original TZ on anterior fornix of vagina

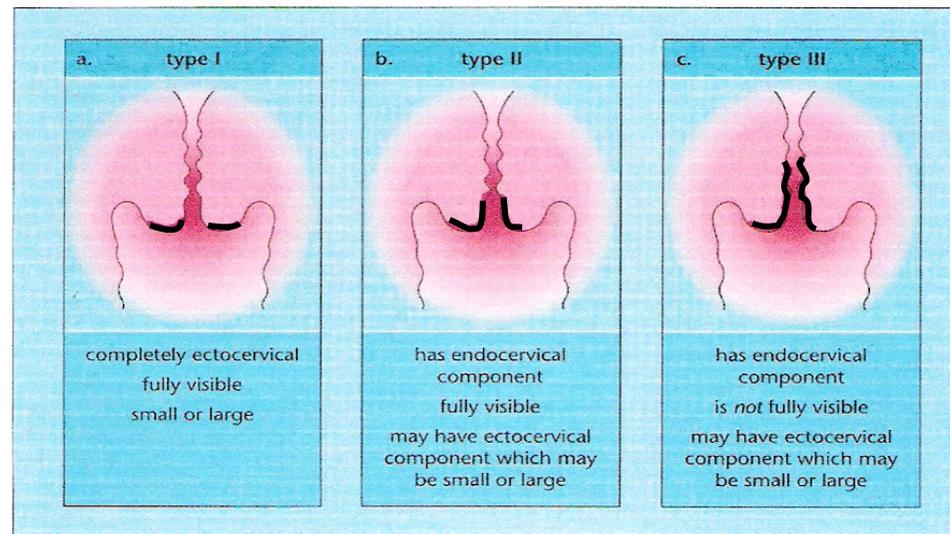
This is seen in up to 4% of women and provides an opportunity for VaIN to develop if HPV infection is added to the metaplastic process.

The new transformation zone classification

One of the most important recommendations in the new IFPC classification was to define three types of transformation zone (Walker *et al.*, 2003; Prendiville *et al.*, 2003). The system has three indices by which the transformation zone may be classified. These are:

1. the size of the ectocervical component of the transformation zone;
2. the position of the upper limit of the transformation zone; and
3. the visibility of the upper limit of the transformation zone.

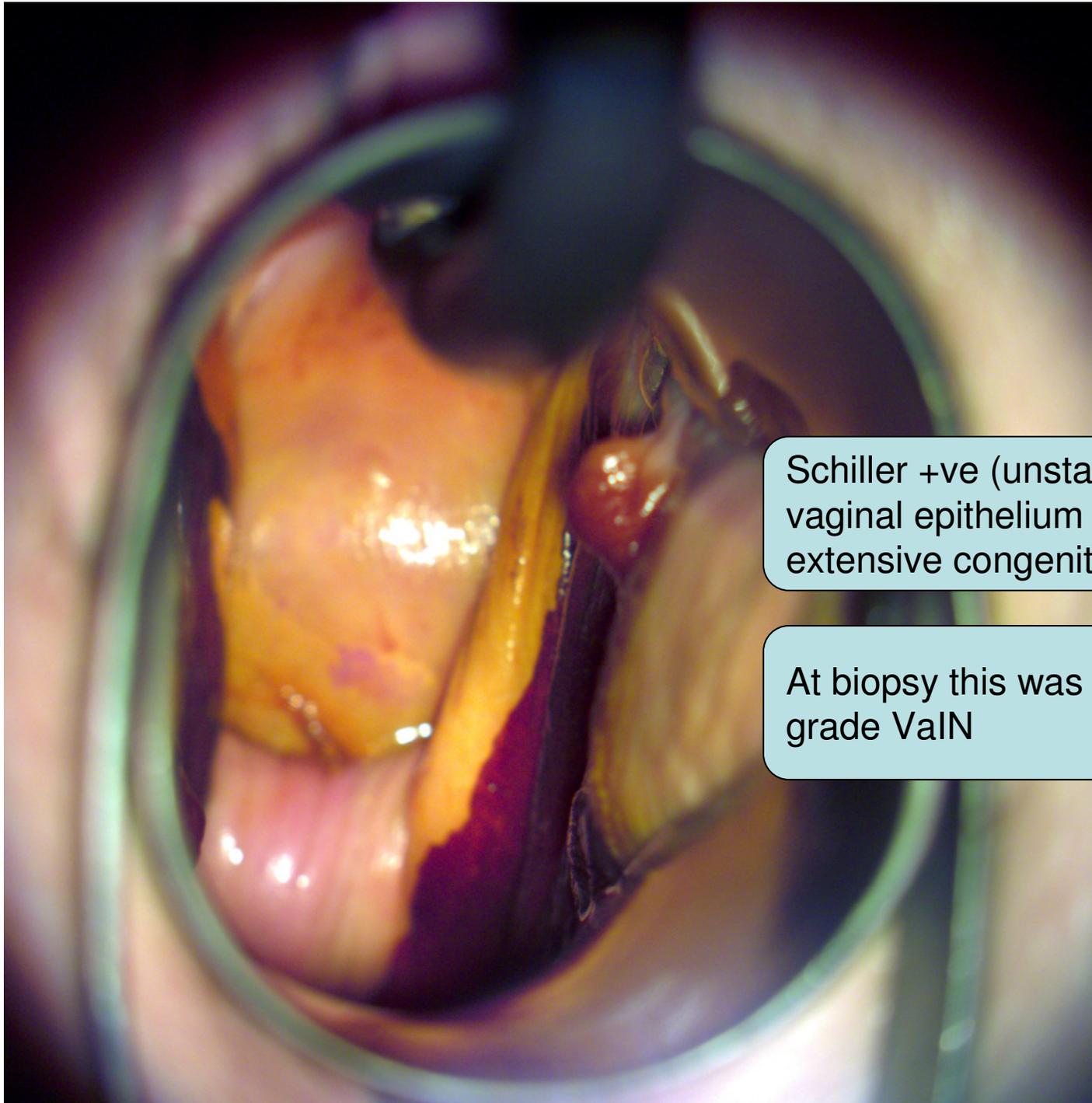
The three types of transformation can be characterized as being completely ectocervical, fully visible with an endo-cervical component, or not fully visible (Fig 1). The qualification large or small refers to the ectocervical component of the transformation zone. Large means that the transformation zone occupies more than half of the ectocervical epithelium.



The three types of transformation zone, as proposed by the new IFPC classification



Extensive high grade CIN
involving entire ectocervix

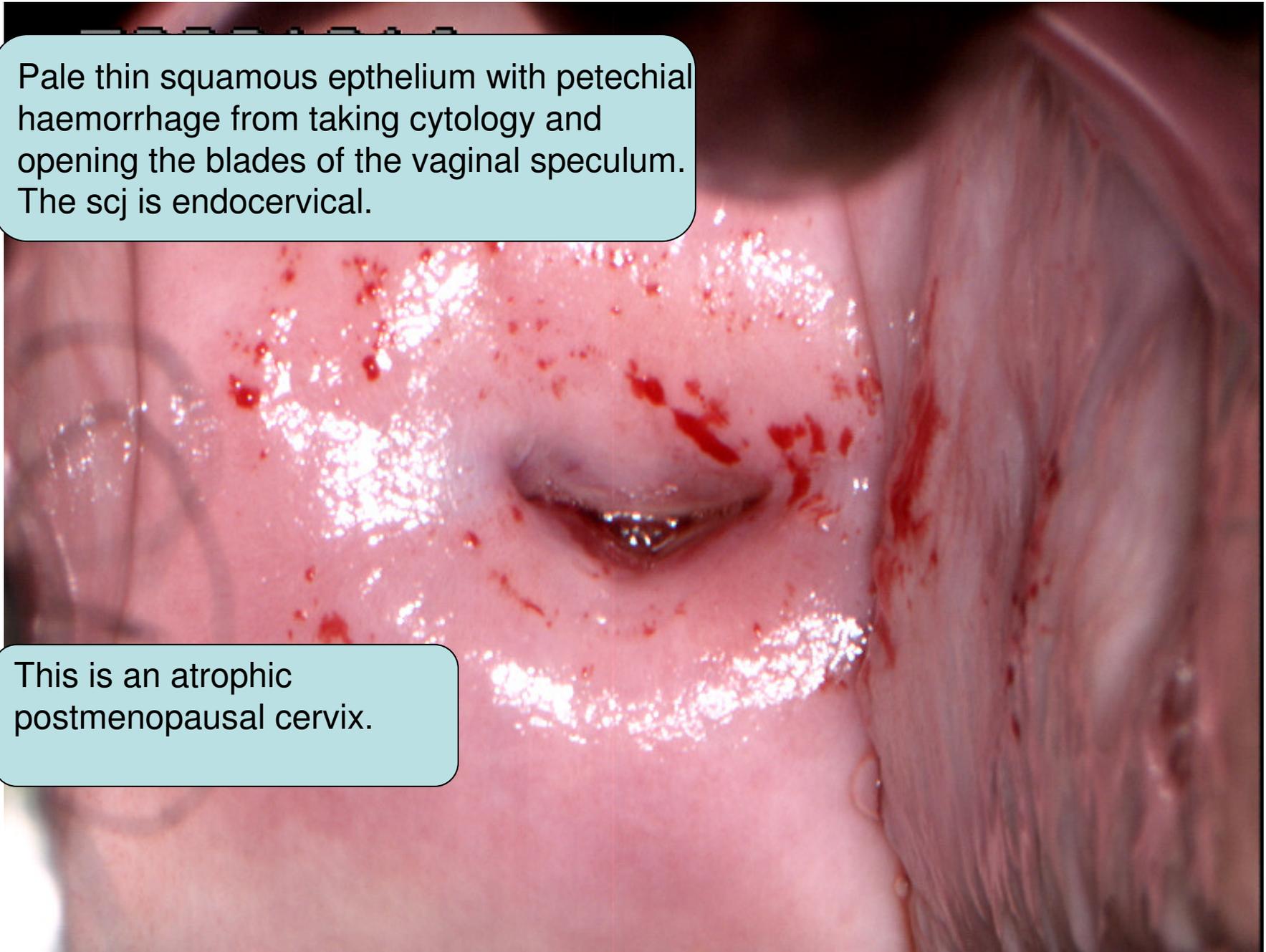


Schiller +ve (unstained)
vaginal epithelium due to
extensive congenital TZ.

At biopsy this was high
grade VaIN

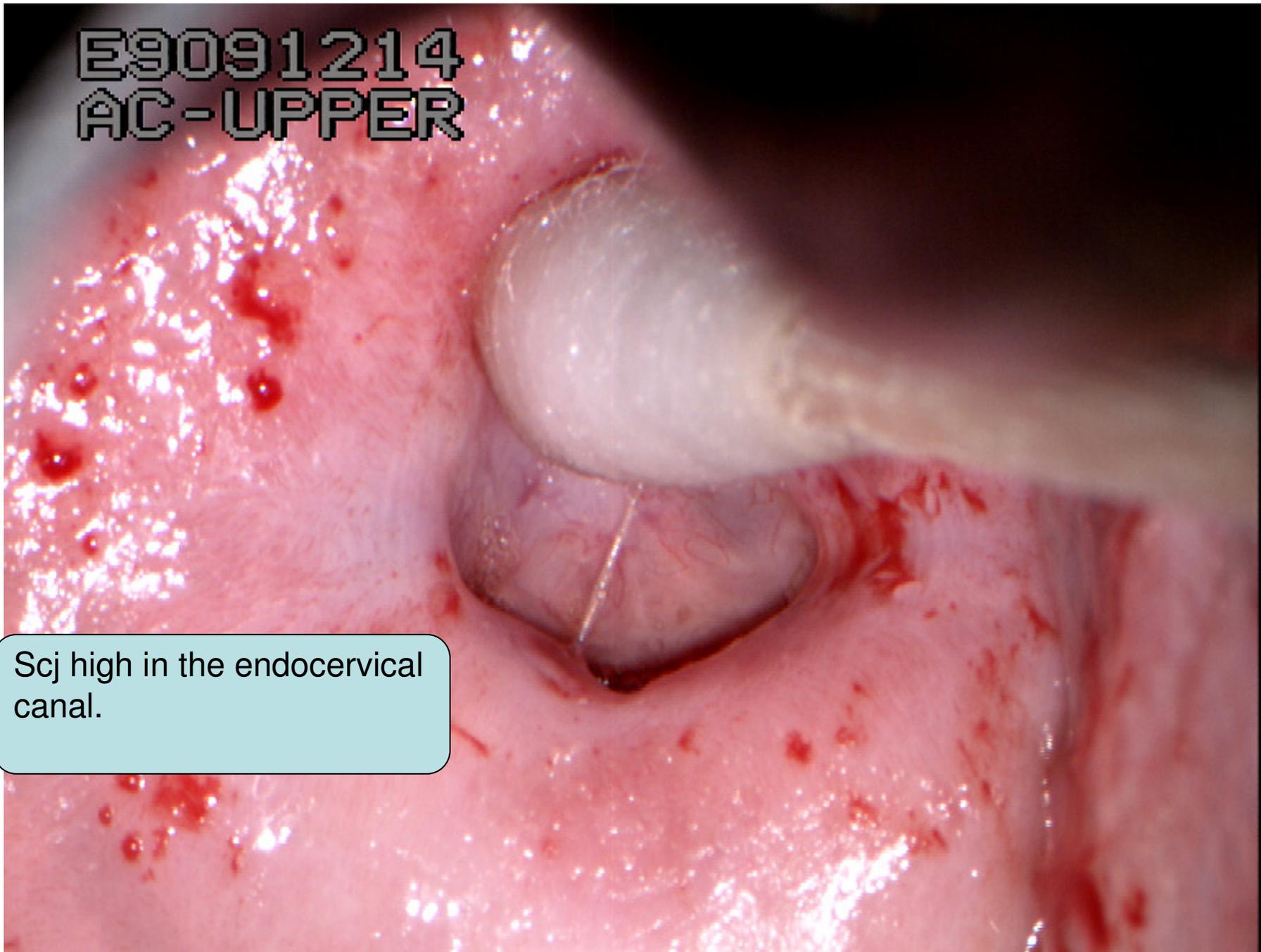
Pale thin squamous epithelium with petechial haemorrhage from taking cytology and opening the blades of the vaginal speculum. The scj is endocervical.

This is an atrophic postmenopausal cervix.



E9091214
AC-UPPER

Scj high in the endocervical canal.



E9091214
IODINE

The squamous epithelium is poorly glycogenated and incompletely stains with iodine.



The colposcopy clinic

- When taking a history the following points must be noted
 - age
 - referral cytology
 - cytology history
 - LMP (*exclude pregnancy*)
 - contraception (*can effect the location of the scj and quality of cytology*)
 - smoking
 - parity
 - past medical history
 - allergies

Sample history and examination

CONSULTANT	CLINIC NOTES	Reg. No.
PATIENT'S NAME:		
(address)		
Age	Single	Married
	yrs.	Widow
		yrs.
OBSTETRICAL HISTORY:		
	Menarche	Cycle
		Loss
		Clots
	Pain	L.M.P.
		?IMB/PCB
INTERMENSTRUAL DISCHARGE:		
BLADDER SYMPTOMS:		Bowels
PREVIOUS ILLNESSES:		
		?smoker
		contraception
PRESENT HISTORY		DATE:

After taking the history you need to:

- Explain what abnormal cytology means and the colposcopy involves
- Who will be in examination room
- What is likely to be done
- Obtain verbal or written consent for colposcopy or treatment



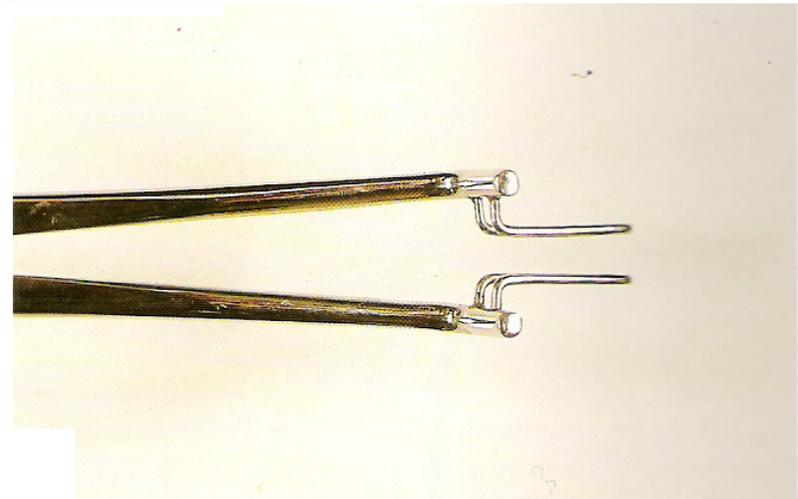
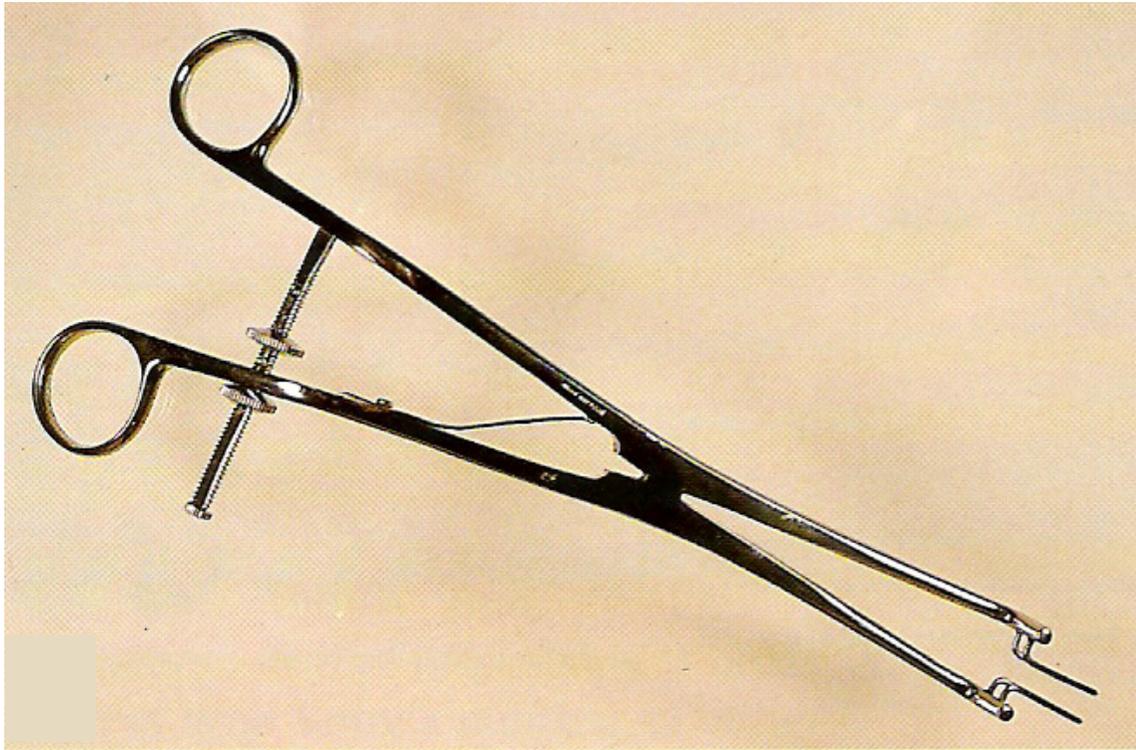
- Examination must be methodical:
 - visual inspection
 - taking swabs and repeating cytology (*cytology only if referral cytology inadequate or a repeat cytology is due. Swabs only if infection suspected. Ask permission for chlamydia testing*)
 - saline/ green filter (*to look for abnormal vessels*)
 - acetic acid
 - identification of the scj/ unsatisfactory colposcopy (*unsatisfactory colposcopy means that the scj cannot be seen despite use of an endocervical speculum*)
 - Lugol's iodine/ Schiller's test
 - Biopsy (*ideal to take multiple punch biopsies if abnormality seen. Loop excision at 1st visit only recommended for high grade referrals*)

Magnification is 6 -40x with a focal length of around 200mm. A binocular view provides 3D vision.



Note that the Cervex™ broom has replaced other samplers for LBC.





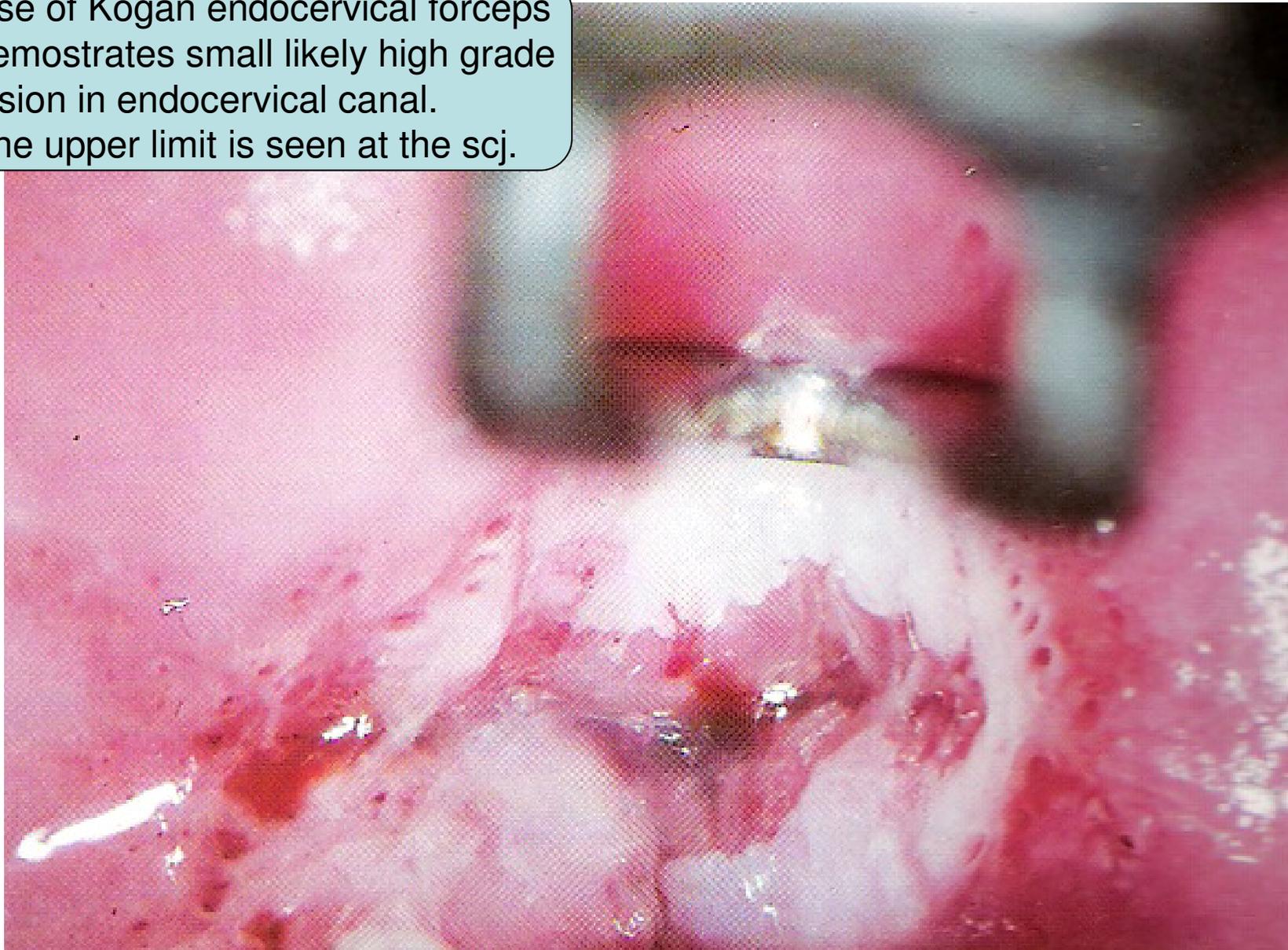
Kogan endocervical forceps

Can you see the scj?

Can you see the upper limit
of an abnormality?



Use of Kogan endocervical forceps demonstrates small likely high grade lesion in endocervical canal. The upper limit is seen at the scj.



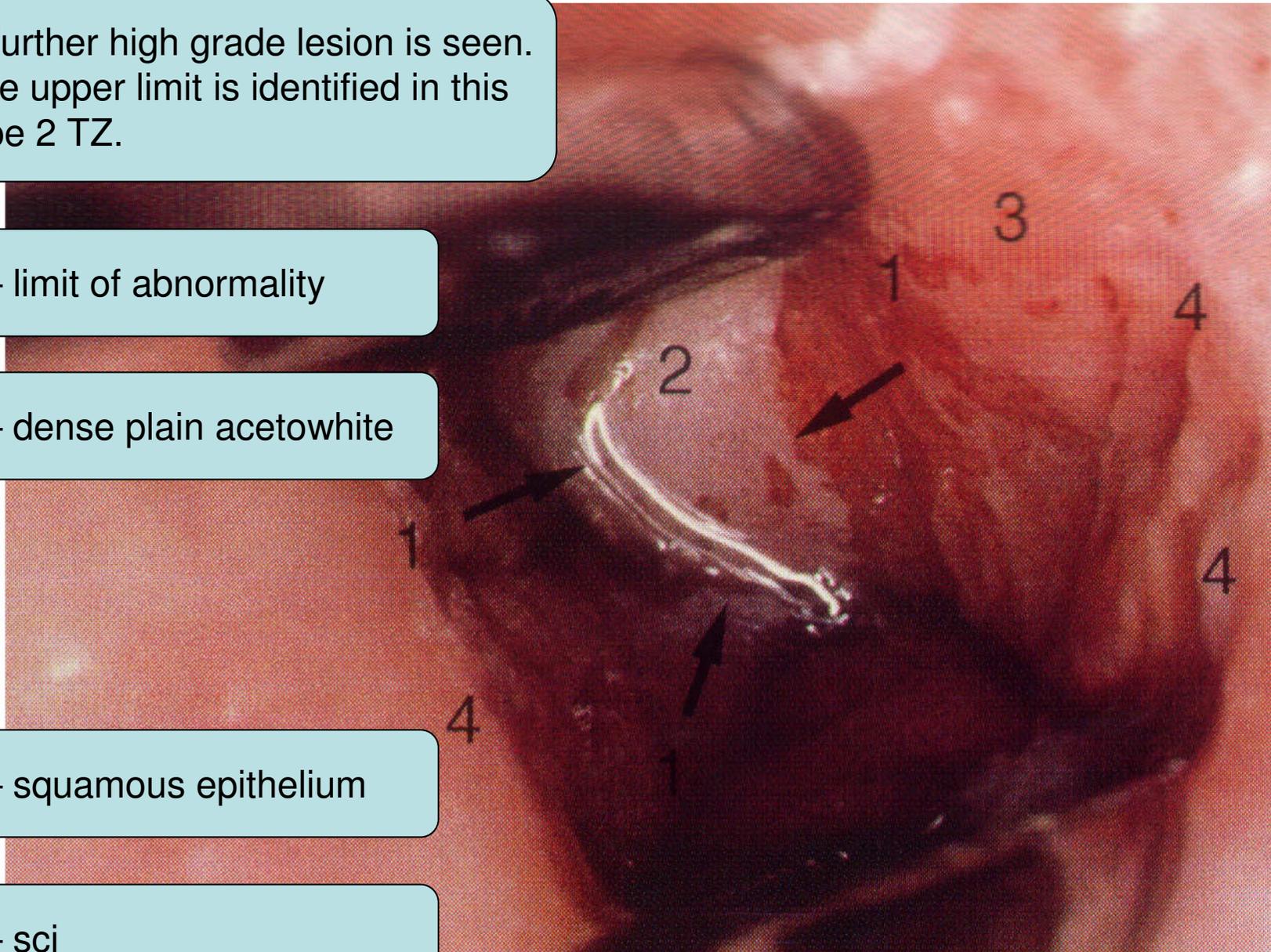
A further high grade lesion is seen.
The upper limit is identified in this
type 2 TZ.

1 – limit of abnormality

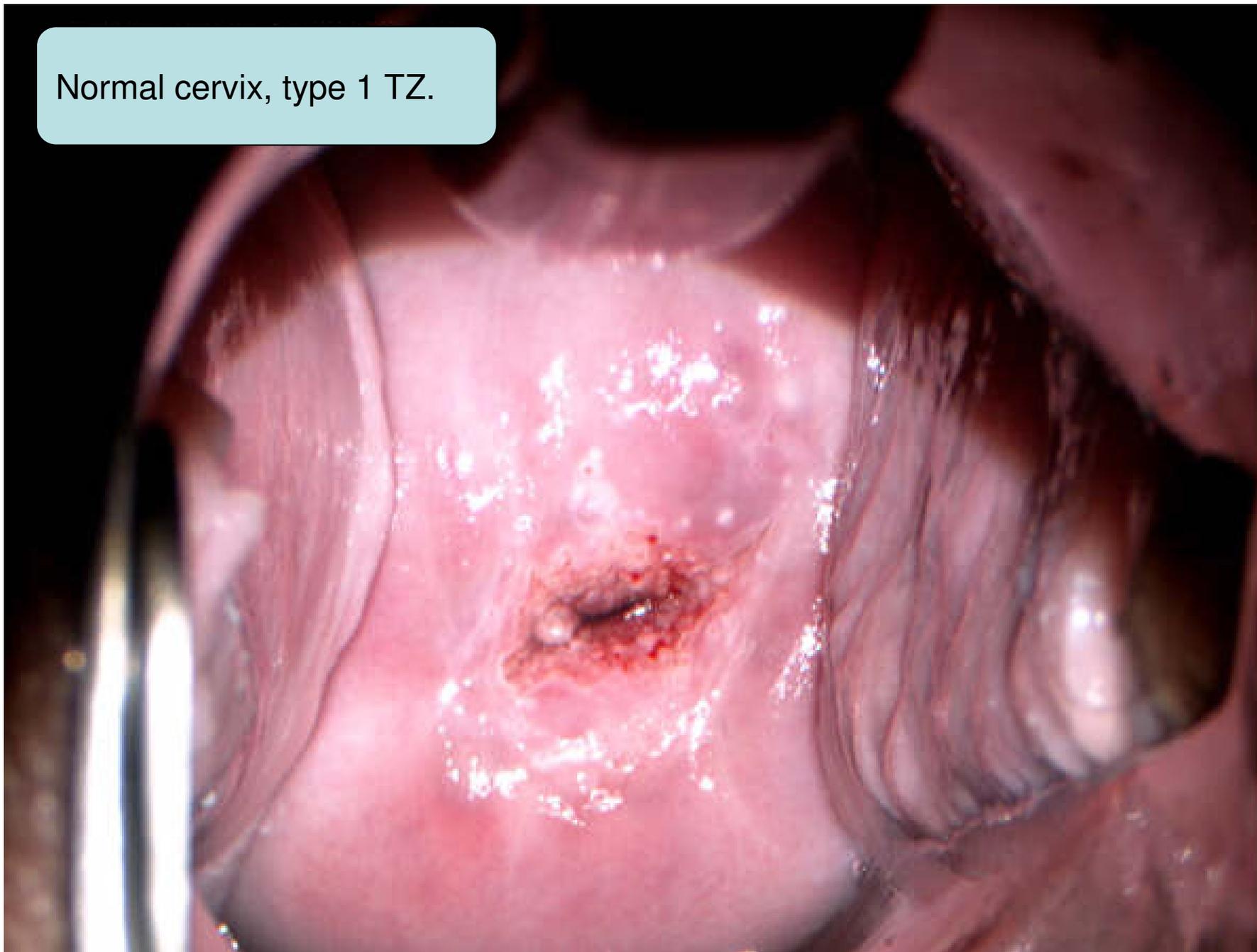
2 – dense plain acetowhite

3 – squamous epithelium

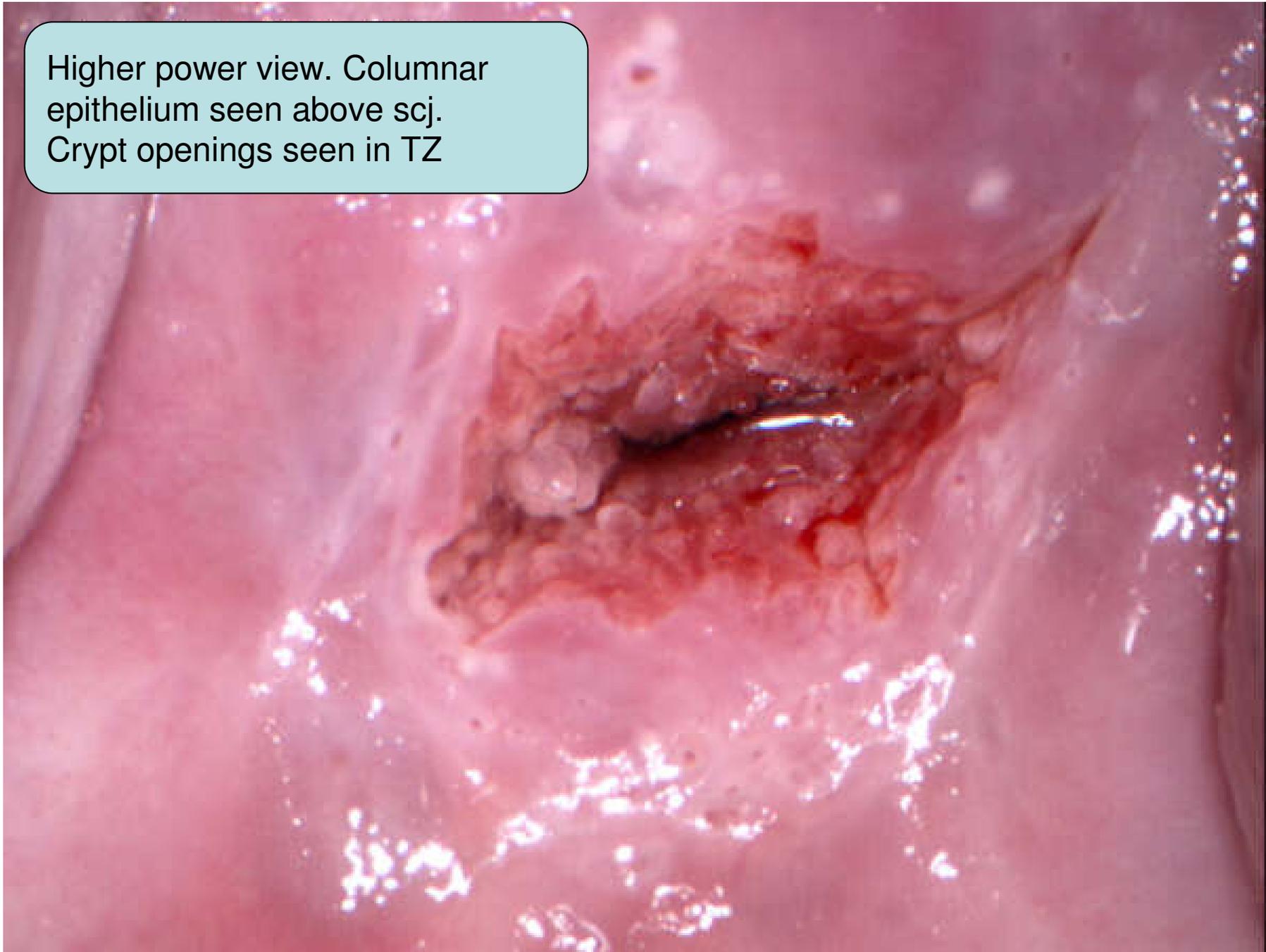
4 – scj



Normal cervix, type 1 TZ.



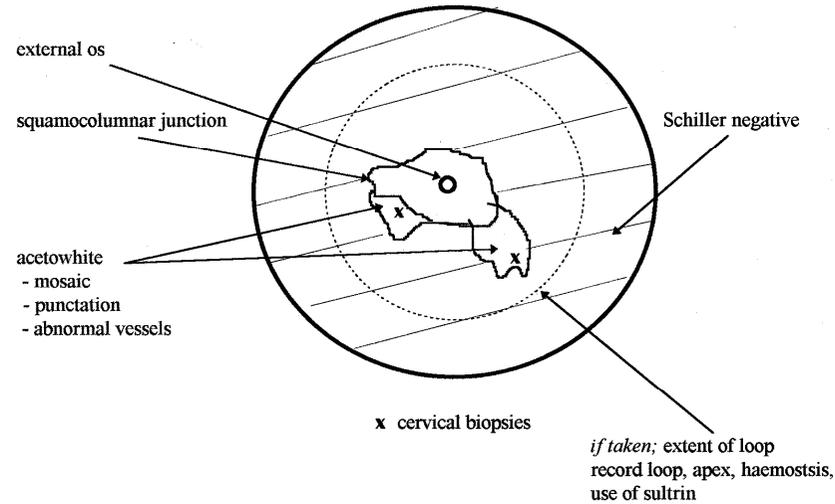
Higher power view. Columnar epithelium seen above scj.
Crypt openings seen in TZ



EXAMINATION

date.....

Remember to document findings with a picture so you can identify biopsy sites and extent of any abnormality.



H.V.S

Chlamydia

± Ecto/ endosmear

V.E.

±Vaginal/ Vulval colposcopy

PROVISIONAL DIAGNOSIS AND RECOMMENDATIONS

LOW/ HIGH GRADE/ INVASIVE LESION*

WRITE WITH RESULTS TO PATIENT AND GP

RECOMMENDED TREATMENT

*Colposcopists accuracy of predicting high grade or invasive lesions should be $\geq 70\%$ ². High grade = CIN II/III.

Record NSF guideline

- After the examination explaining the findings
- Arrange further care
- Inform how and when test result will be sent to the patient.



