

HISTOLOGY OF UTERUS

BY

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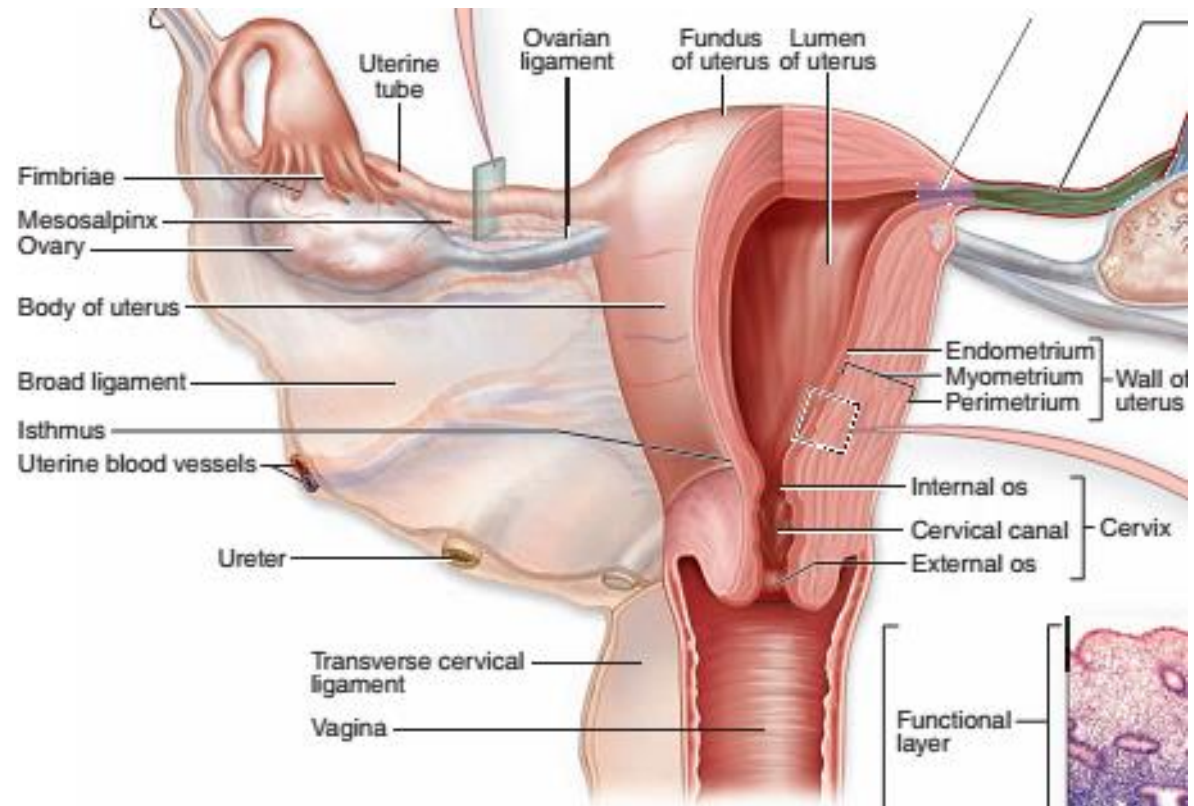
A/P ANATOMY KGMC

Uterus Gross Presentation

- The uterus is a pear-shaped organ
- with thick, muscular walls.

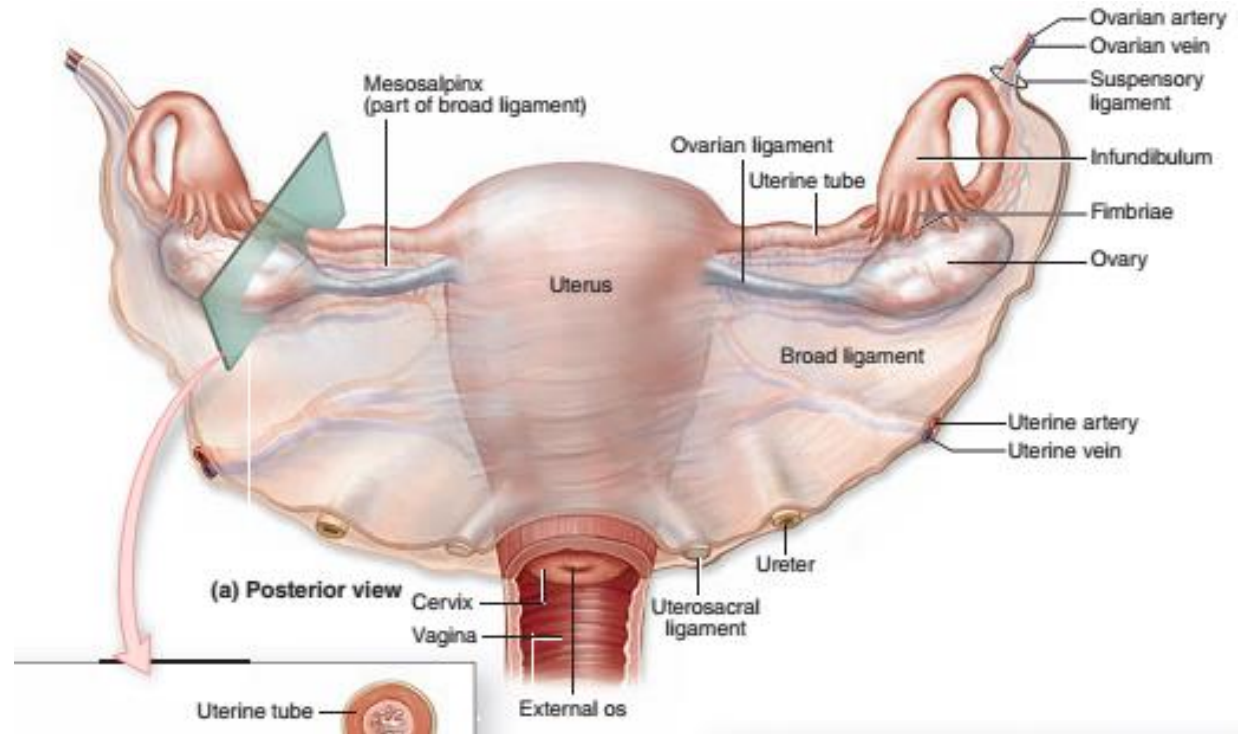
The body of uterus

- largest part
- is entered by the left and right uterine tubes
- The curved, superior area between the tubes is called the fundus.
- The uterus narrows in the isthmus and ends in a lower cylindrical structure, the cervix.
- The lumen of the cervix, the cervical canal, has constricted openings at each end:
- the internal os opens to the main uterine lumen and the external os to the vagina .



Uterus gross presentation

- Supported by the set of ligaments
- And mesenteries also associated with the ovaries and uterine tubes .



Uterine Wall

- The uterine wall has three major layers

Perimetrium

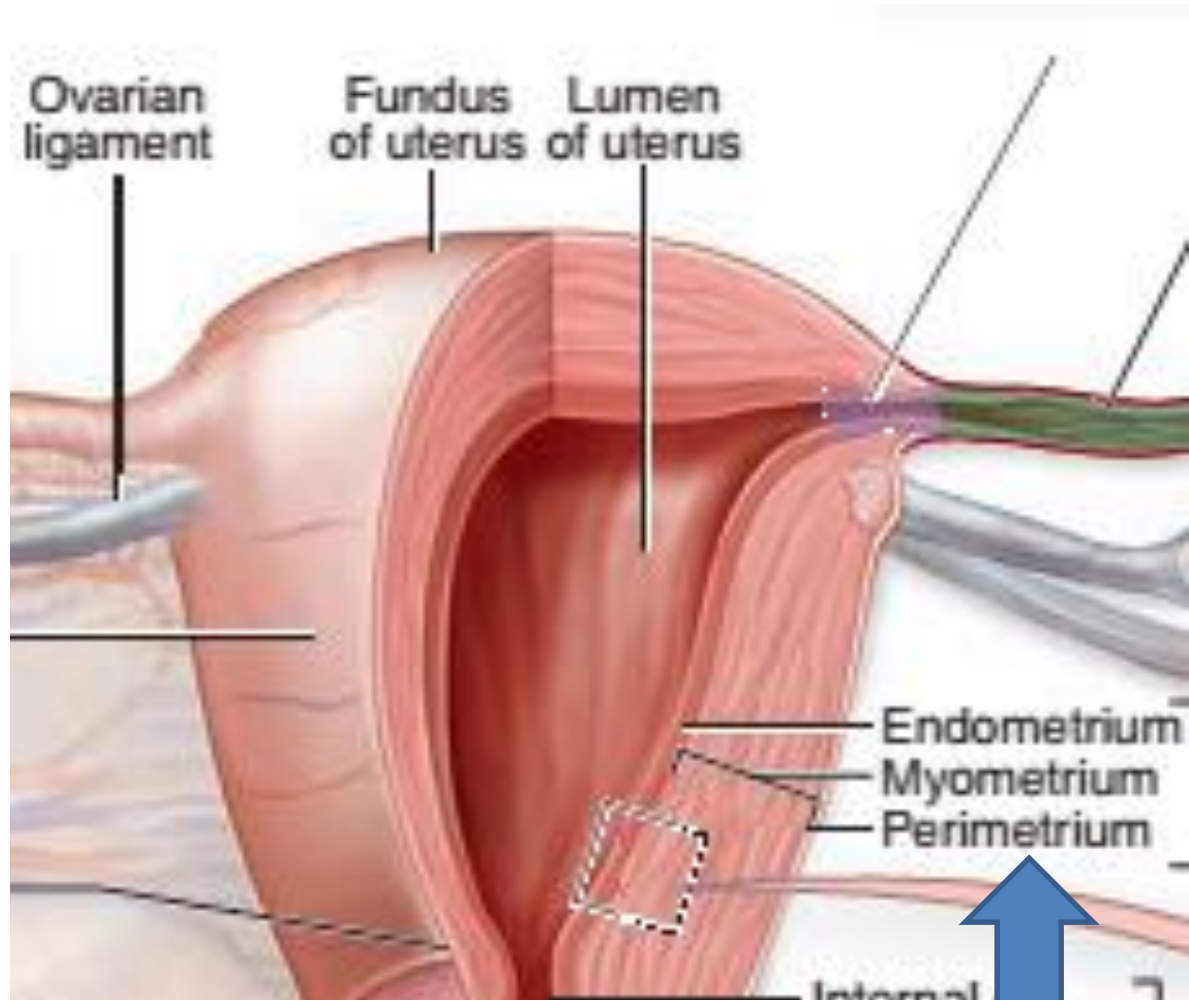
- An outer connective tissue layer,
- continuous with the ligaments
- which is adventitial in some areas
- but largely a serosa covered by mesothelium

Myometrium

- A thick tunic of highly vascularized smooth muscle,

Endometrium

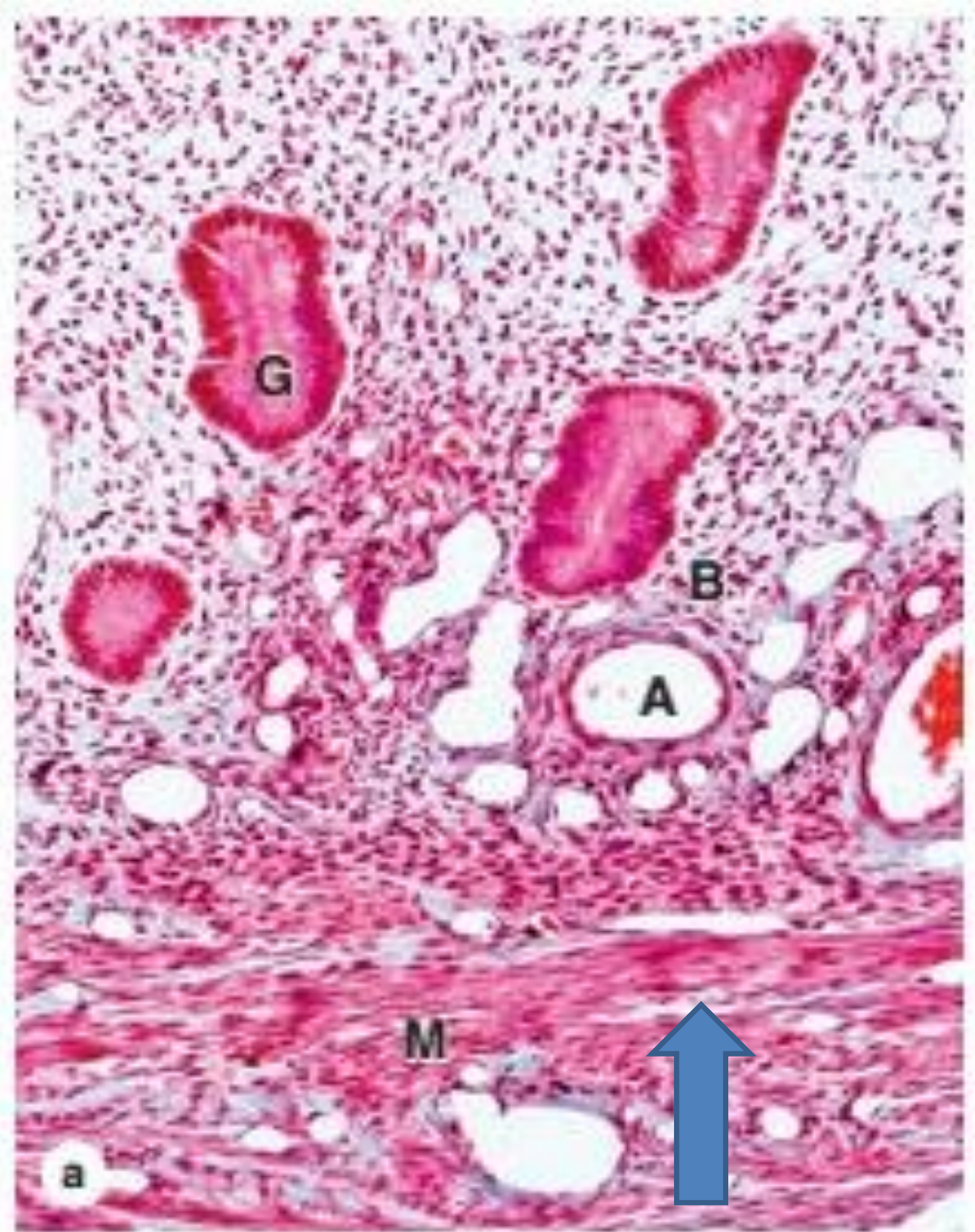
- A mucosa lined by simple columnar epithelium.



Myometrium

The thickest tunic of the uterus

- Shows bundles of smooth muscle fibers
- Separated by connective tissue containing venous plexuses and lymphatics
- The smooth muscle forms interwoven layers
- with fibers of the inner and outer layers disposed generally parallel to the long axis of the organ.



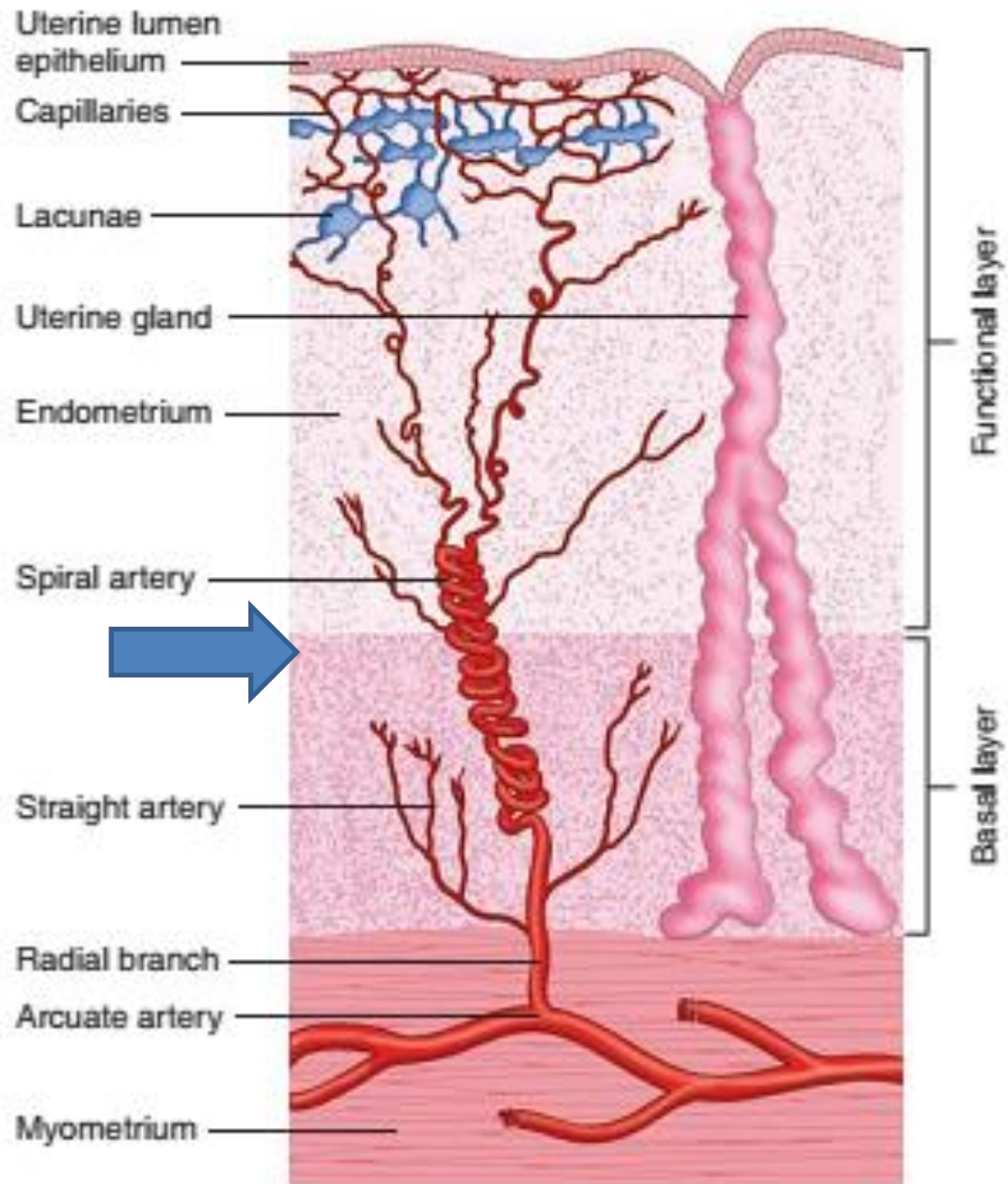
During pregnancy the myometrium

- A period of extensive growth involving both hyperplasia (increasing the number of smooth muscle cells),
- Cell hypertrophy,
- Increased collagen production by the muscle cells,
- which strengthens the uterine wall.
- This well-developed uterine myometrium contracts very forcefully during parturition to expel the infant from the uterus.
- After pregnancy, uterine smooth muscle cells shrink
- And many undergo apoptosis,
- With removal of unneeded collagen,
- And the uterus returns almost to its prepregnancy size.

Endometrium

The lamina propria or stroma of the endometrium contains

- Type III collagen fibers with abundant fibroblasts and ground substance.
- Its simple columnar epithelial lining has both ciliated and secretory cells
- The numerous tubular uterine glands
- That penetrate the full thickness of the endometrium.



Endometrium has two concentric zones:

■ Basal layer

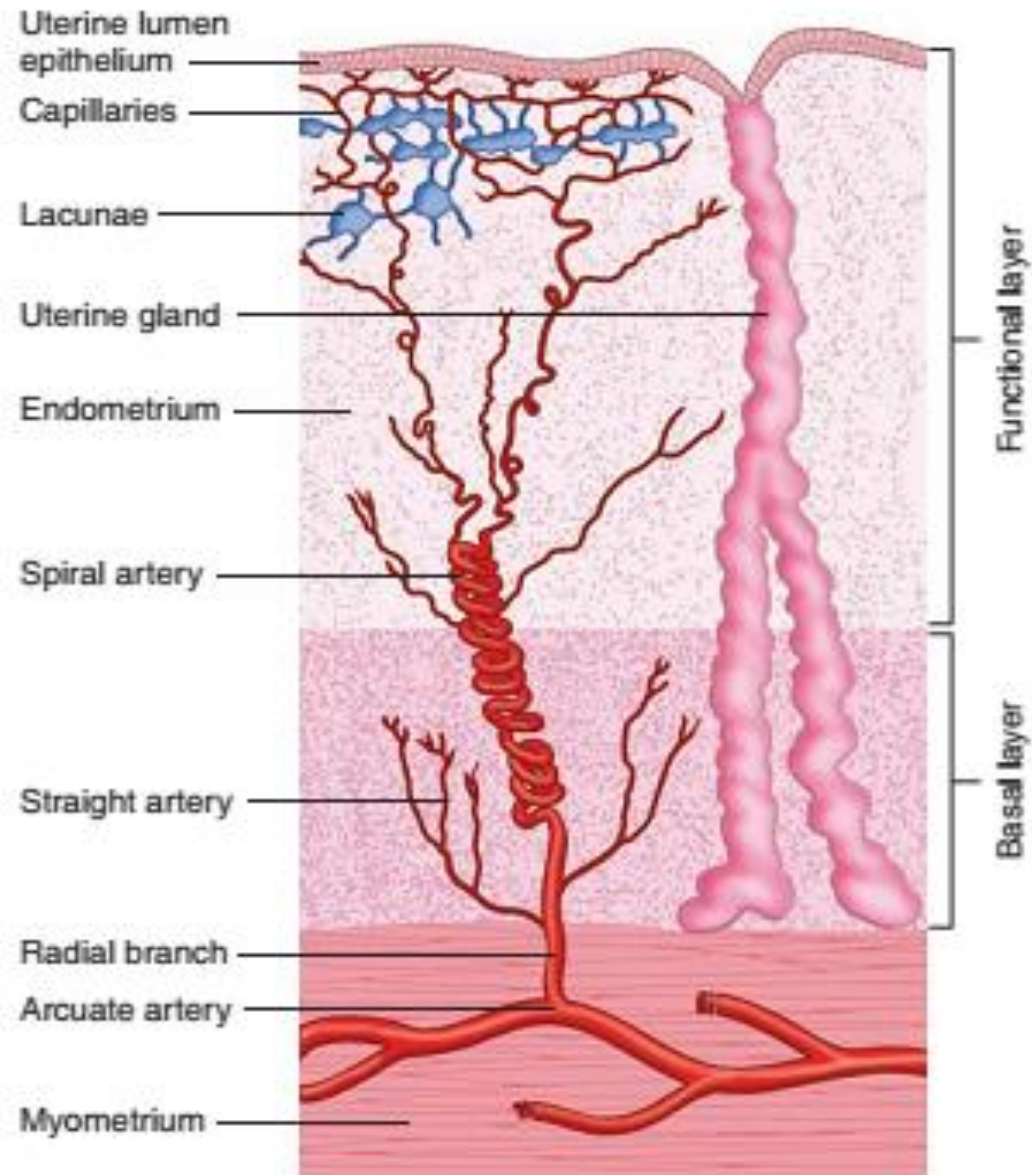
Adjacent to the myometrium has a more highly cellular lamina propria

And contains the deep basal ends of the uterine glands .

■ Superficial functional layer

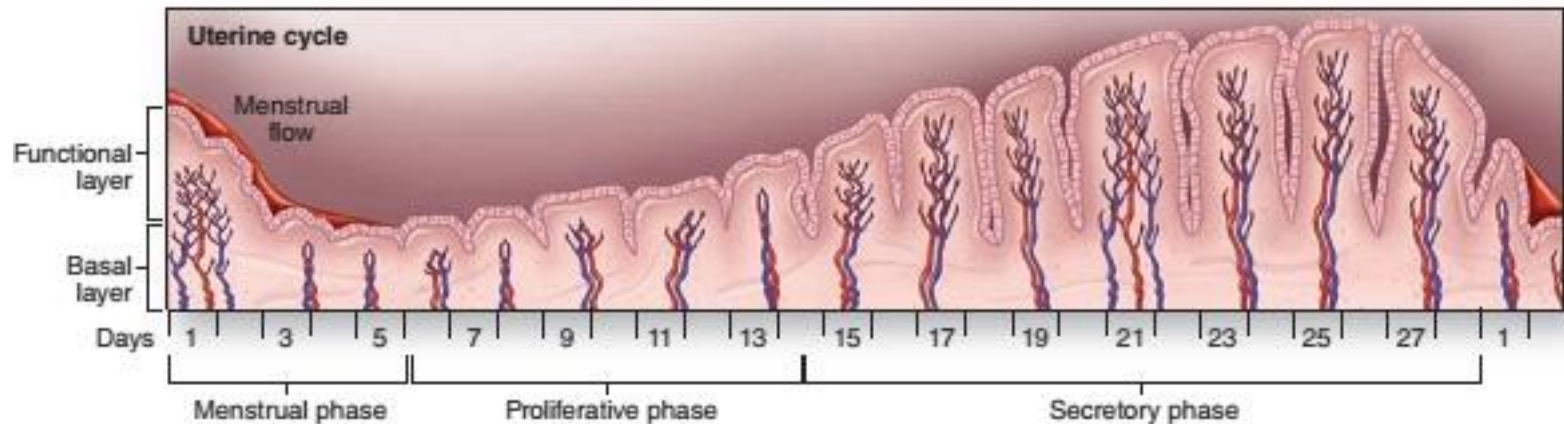
Has a spongier lamina propria

- Richer in ground substance
- And includes most of the length of the glands
- As well as the surface epithelium.



Functional Layer VS Basal layer

Undergoes profound changes during the menstrual cycles, but the basal layer remains relatively unchanged .



Blood Supplying the Endometrium

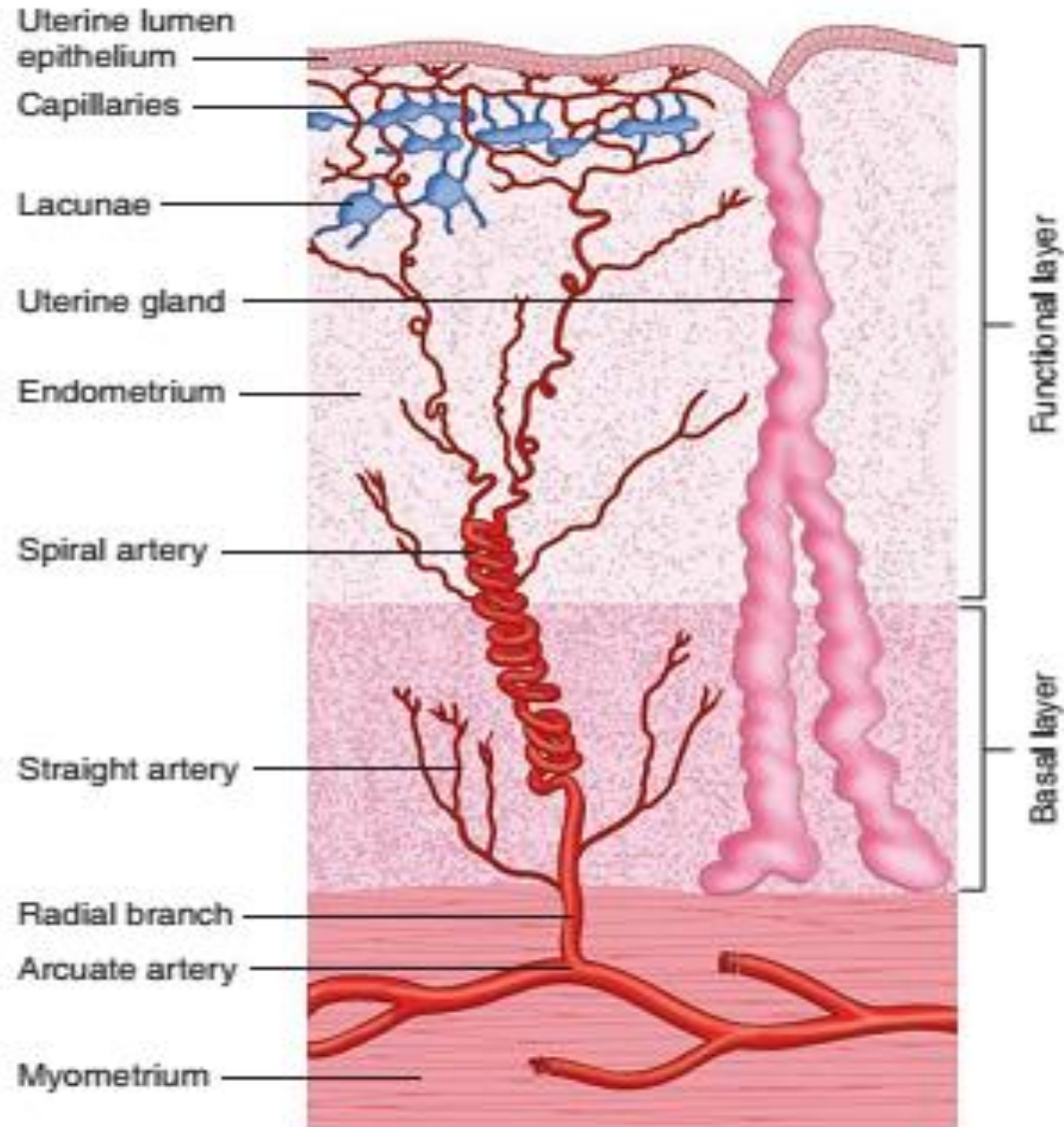
- The blood vessels supplying the endometrium have special significance in the periodic sloughing.

Arcuate arteries

- In the middle layers of the myometrium
- Radial branch

Straight arteries

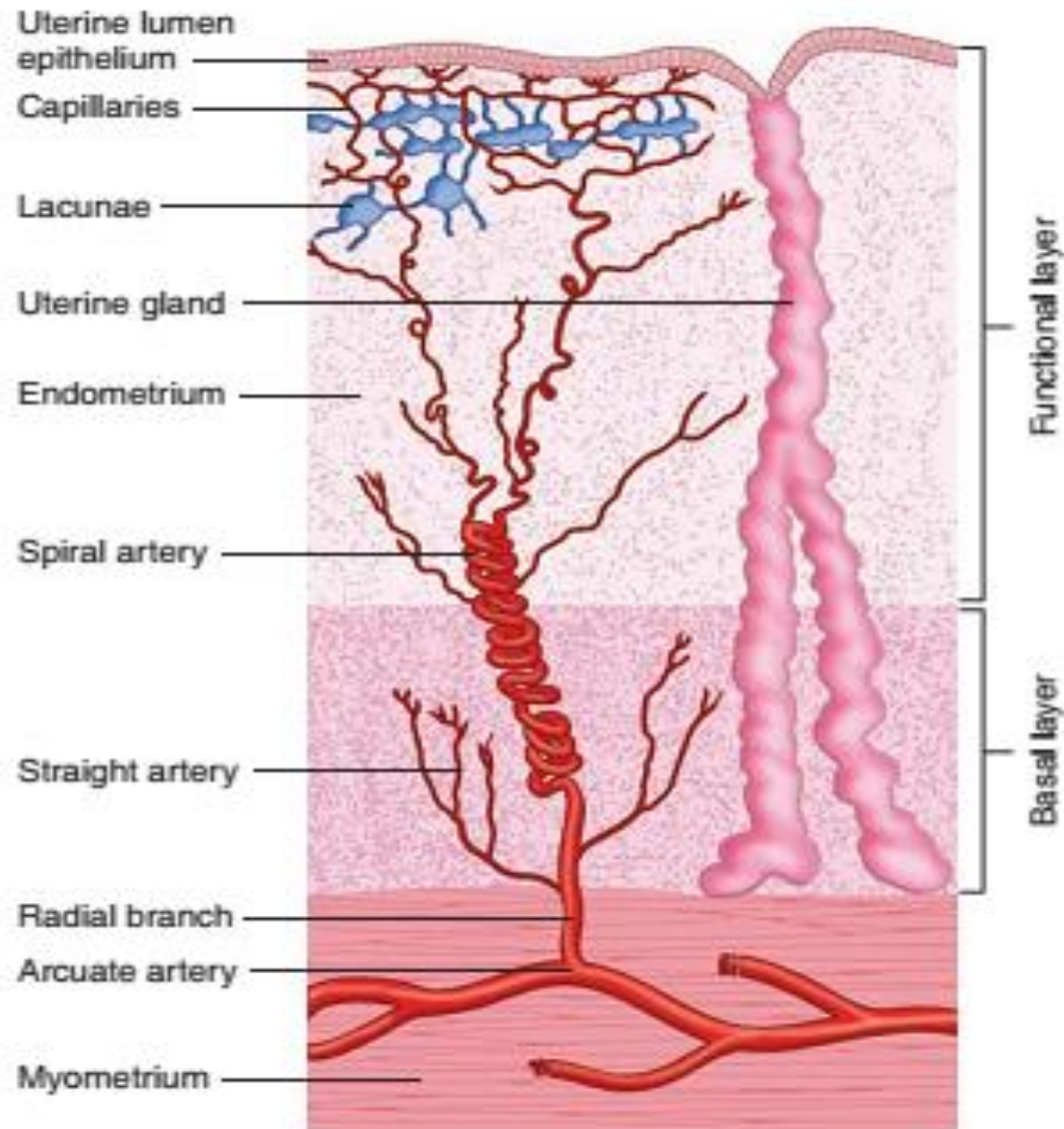
- which supply only the basal layer



Blood Supplying the Endometrium

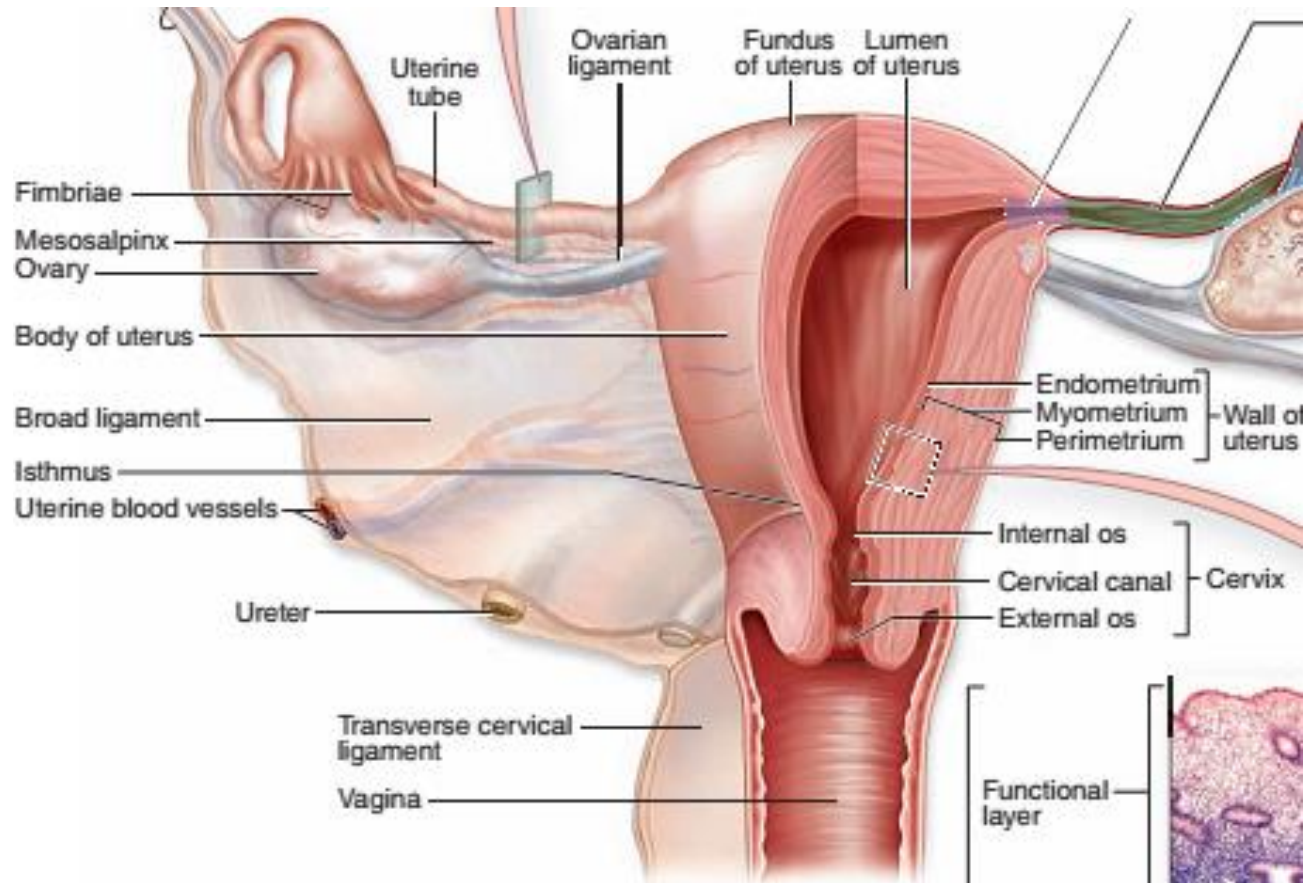
Spiral arteries

- And long, progesterone-sensitive spiral arteries,
- which extend farther and bring blood throughout the functional layer.
- branch with numerous arterioles supplying a rich, superficial capillary bed
- That includes many dilated, thin-walled vascular lacunae drained by venules.



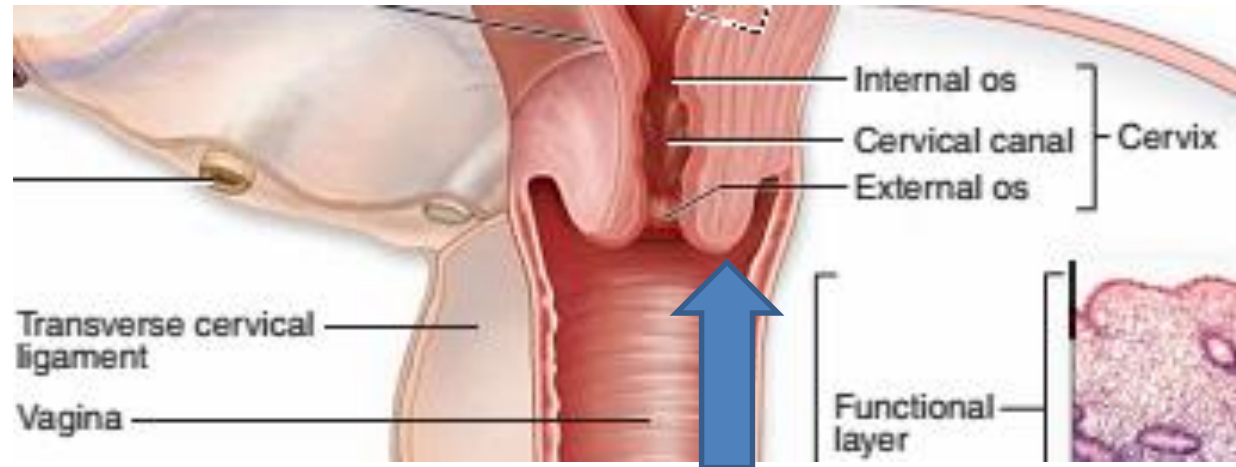
Cervix

- Is the lower, cylindrical part of the uterus .
- The cervix differs histologically from the rest of the uterus.
- The endocervical mucosa is a simple columnar epithelium on a thick lamina propria
- With many large branched, mucus-secreting cervical glands.



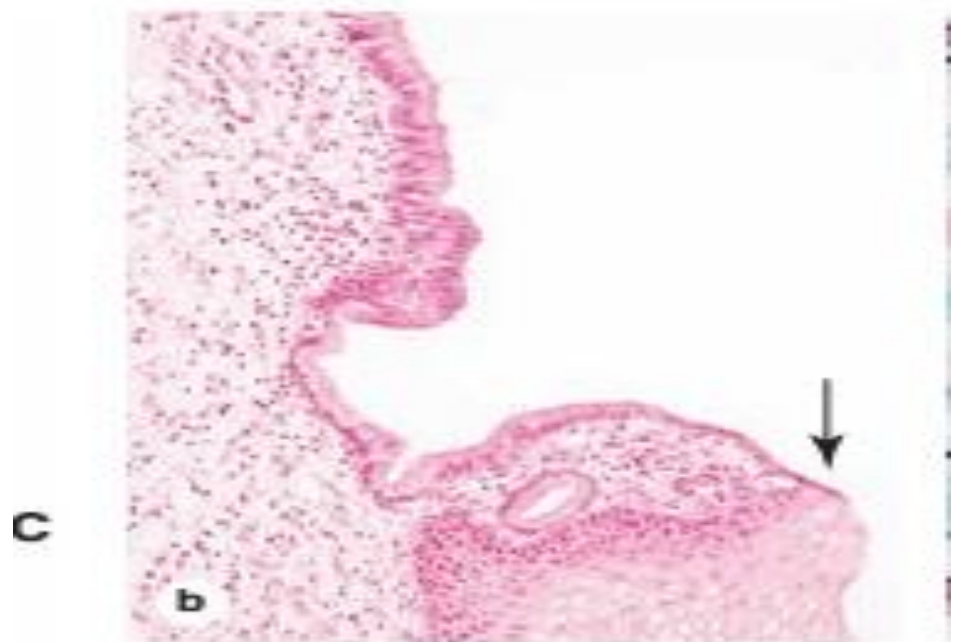
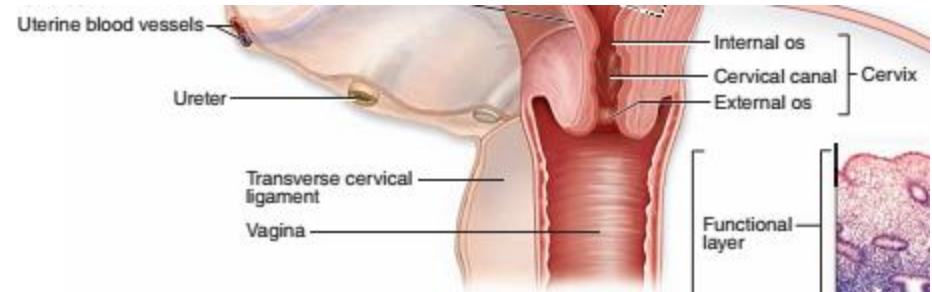
Cervix

- Does not change its thickness during the ovarian cycle
- And is not shed during menstruation.
- The cervical region around the external os projects slightly into the upper vagina
- And is covered by exocervical mucosa with nonkeratinized stratified squamous epithelium continuous with that of the vagina.



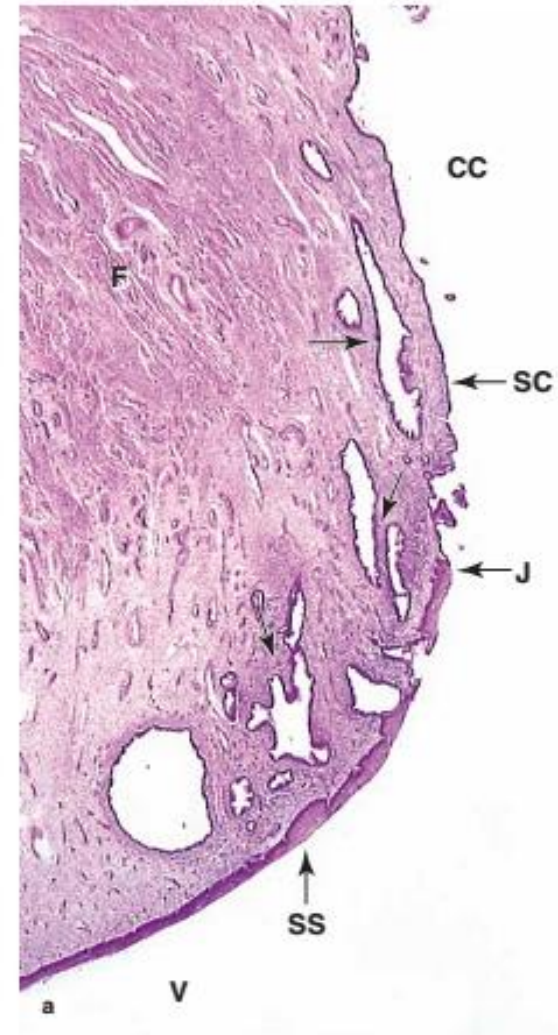
Cervix (transformation zone)

- The junction between this squamous epithelium and the mucus-secreting columnar epithelium of the endocervix occurs in the transformation zone.
- An area just outside the external os that shift slightly with the cyclical changes in uterine size
- Periodic exposure of the squamous-columnar junction to the vaginal environment can stimulate reprogramming of epithelial stem cells
- which occasionally leads to intraepithelial neoplasia at that site.



Cervix

- The deeper wall of the cervix consists mainly of dense connective tissue, with much less smooth muscle than the rest of the uterus
- The cervix becomes relatively rigid during pregnancy and helps retain the fetus in the uterus.



Cervical Mucus Changes

Under the influence of progesterone,

- The consistency of cervical mucus changes cyclically and plays a significant role in fertilization and early pregnancy.

At ovulation

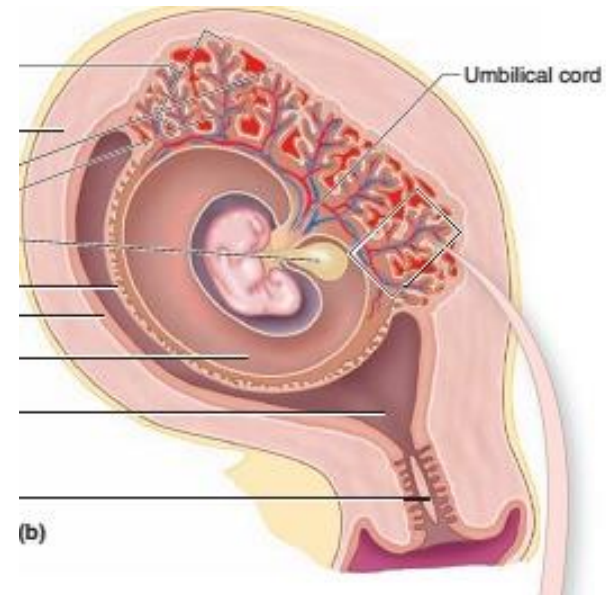
- Mucous secretion is abundant and watery, facilitating sperm movements into the uterus.

In the luteal phase

- Mucus is more viscous and hinders the passage of sperm.

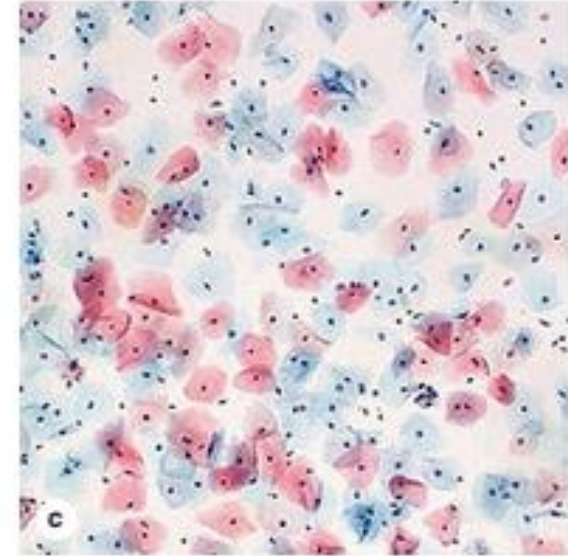
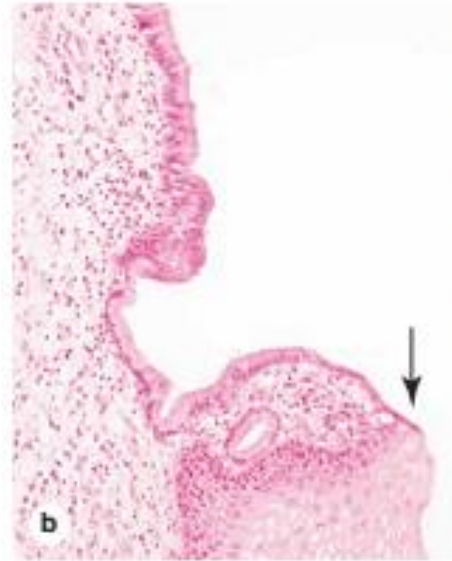
During pregnancy

- The cervical glands proliferate and secrete highly viscous mucus that forms a plug in the cervical canal.



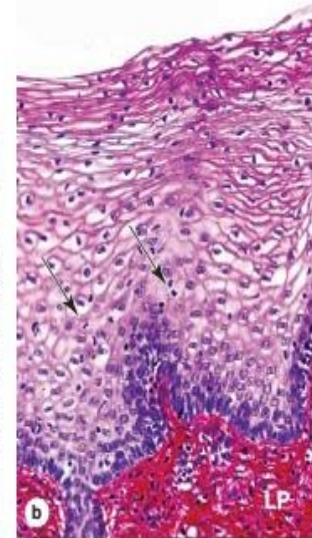
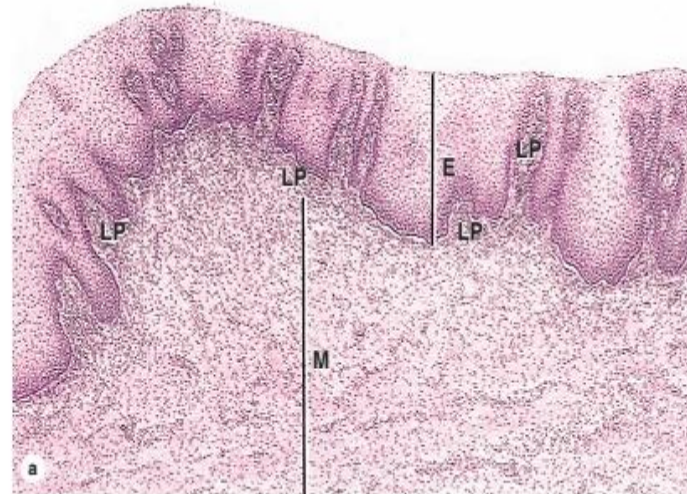
Cervical Cancer

- The incidence of cervical cancer worldwide has been greatly reduced by widespread, routine screening by exfoliative cytology to examine for dysplasia of the cervical epithelium .
- The test called the Pap smear
- Uses cells that have been lightly scraped from cervix.
- Abnormal cells suggestive of precancerous .
- The epithelial dysplasia that precedes squamous cell neoplasia, the most common type of cervical cancer,
- occurs in metaplastic cells of the transformation zone at a mean age of 54 years.
- The human papillomas virus (HPV) is strongly implicated in the pathogenesis of this cancer.



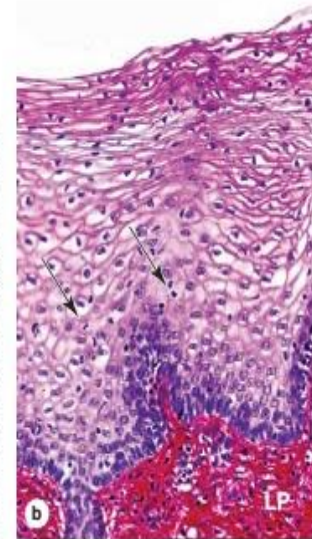
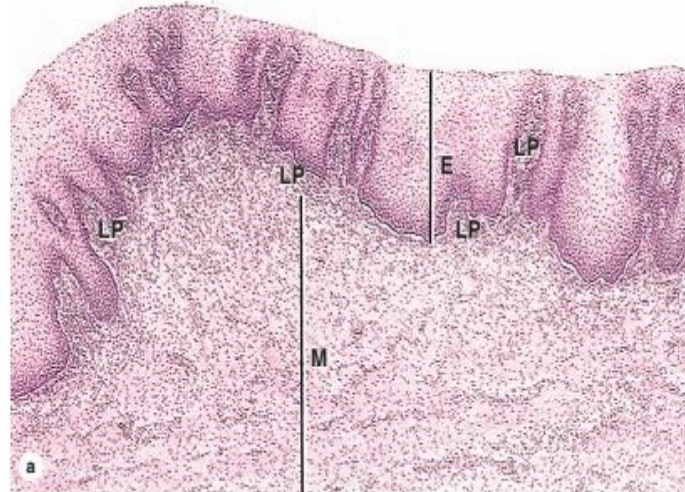
VAGINA

- The wall of the vagina lacks glands
- And consists of a mucosa, a muscular layer, and an adventitia.
- The epithelium of the vaginal mucosa is stratified squamous,
- With a thickness of 150-200 μm in adults .



VAGINA

- Stimulated by estrogens, the epithelial cells synthesize and accumulate glycogen.
- When the cells desquamate, bacteria metabolize glycogen to lactic acid, causing a relatively low pH within the vagina,
- which helps provide protection against pathogenic microorganisms.
- The lamina propria of the mucosa is rich in elastic fibers, with numerous narrow papillae projecting into the overlying epithelium



- Mucus in the vagina is produced by the cervical glands.
- Mucus is also provided by glands at the vaginal vestibule,
- Including the paired greater vestibular glands (of Bartholin),
- Which are homologous to the male bulbourethral glands.

Atrophic Vaginitis

Involves thinning or atrophy of the vaginal epithelium

caused by diminished estrogen levels

and occurs most often in postmenopausal woman.

This change allows the more frequent inflammation and infections .

Thanks