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الأستاذ الدكتور يوسف حسين

أستاذ التشريح وعلم الأجنة - كلية الطب - جامعة الزقازيق - مصر

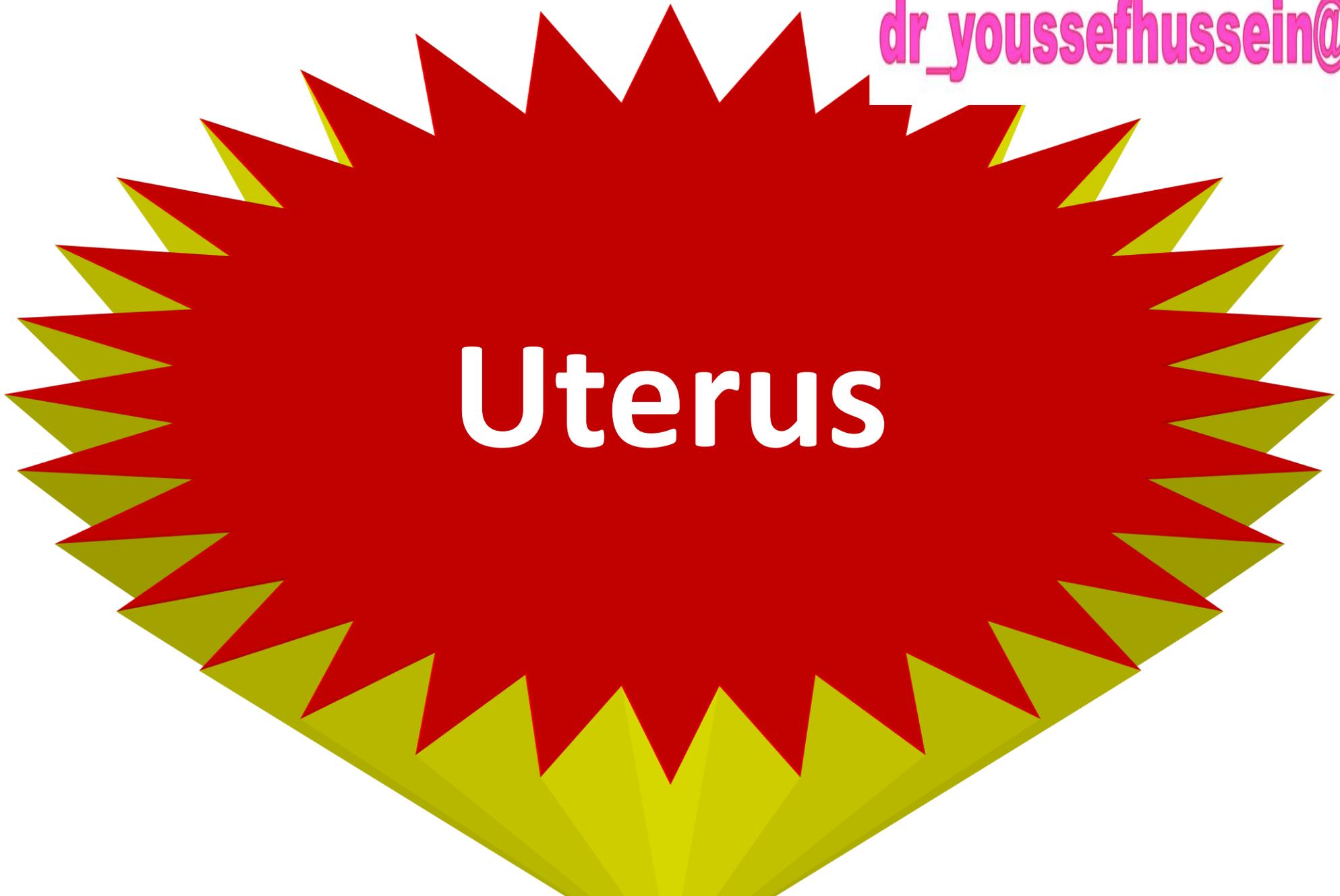
رئيس قسم التشريح و الأنسجة و الأجنة - كلية الطب - جامعة مؤتة - الأردن

دكتورة من جامعة كولونيا المانيا

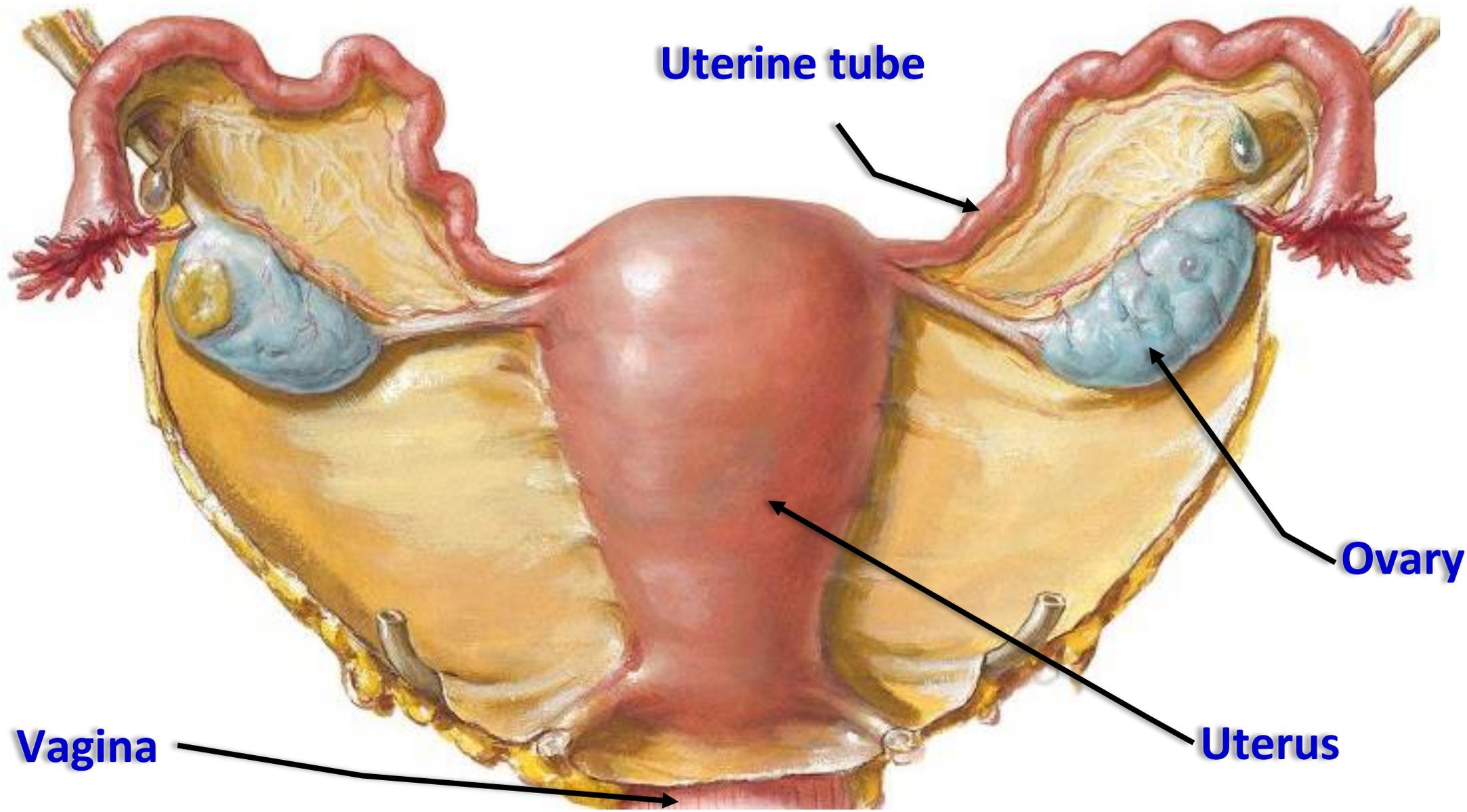
Prof. Dr. Youssef Hussein Anatomy اليوتيوب

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Uterus



Uterine tube

Ovary

Uterus

Vagina

❖ Uterus

- The uterus is a hollow thick-walled muscular organ.

** **Site**, It lies between the urinary bladder **anteriorly** and the rectum **posteriorly**.

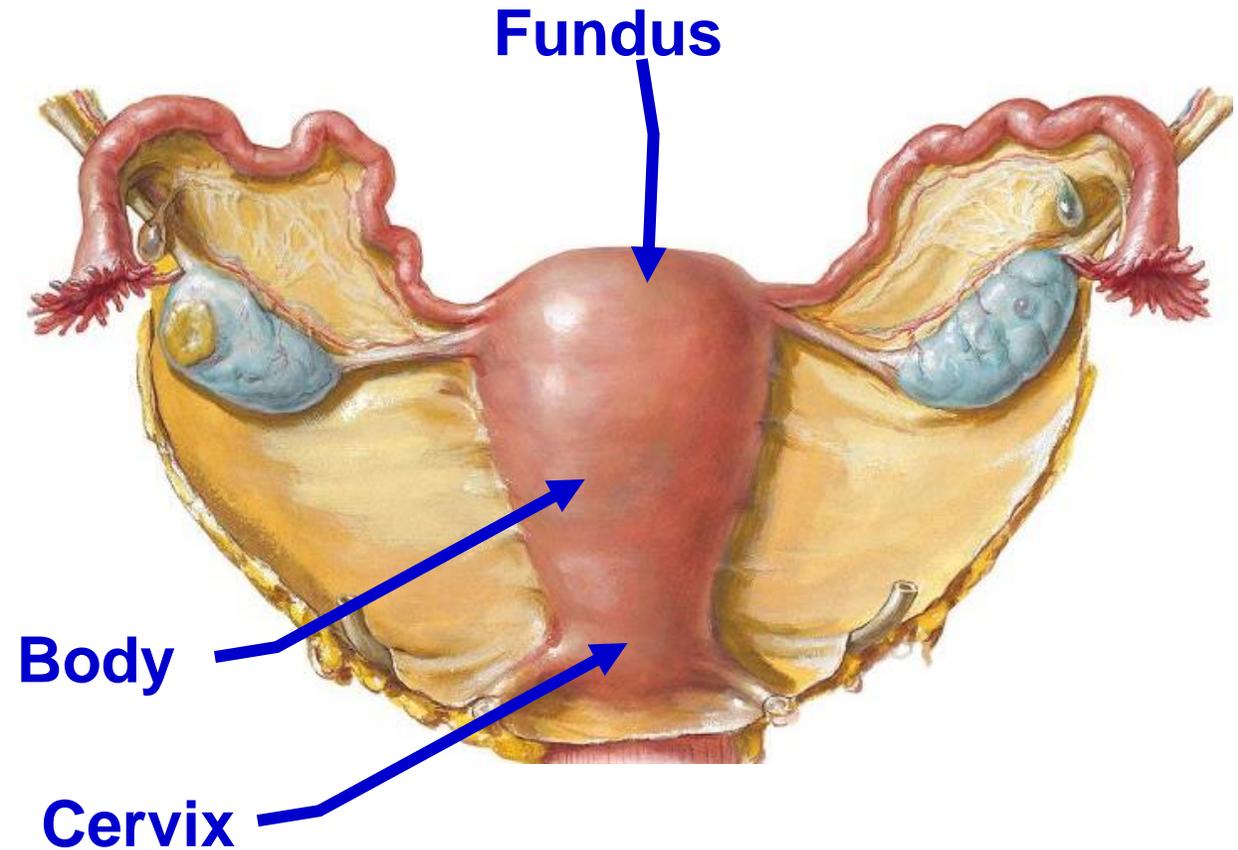
** **Dimensions**

= **Measurements**

(1 inch **thickness**)

(2 inches **breadth**)

(3 inches **Length**)



Parts

**Anterior
abdominal wall**

Fundus

Body

**Uterovesical
pouch**

Urinary bladder

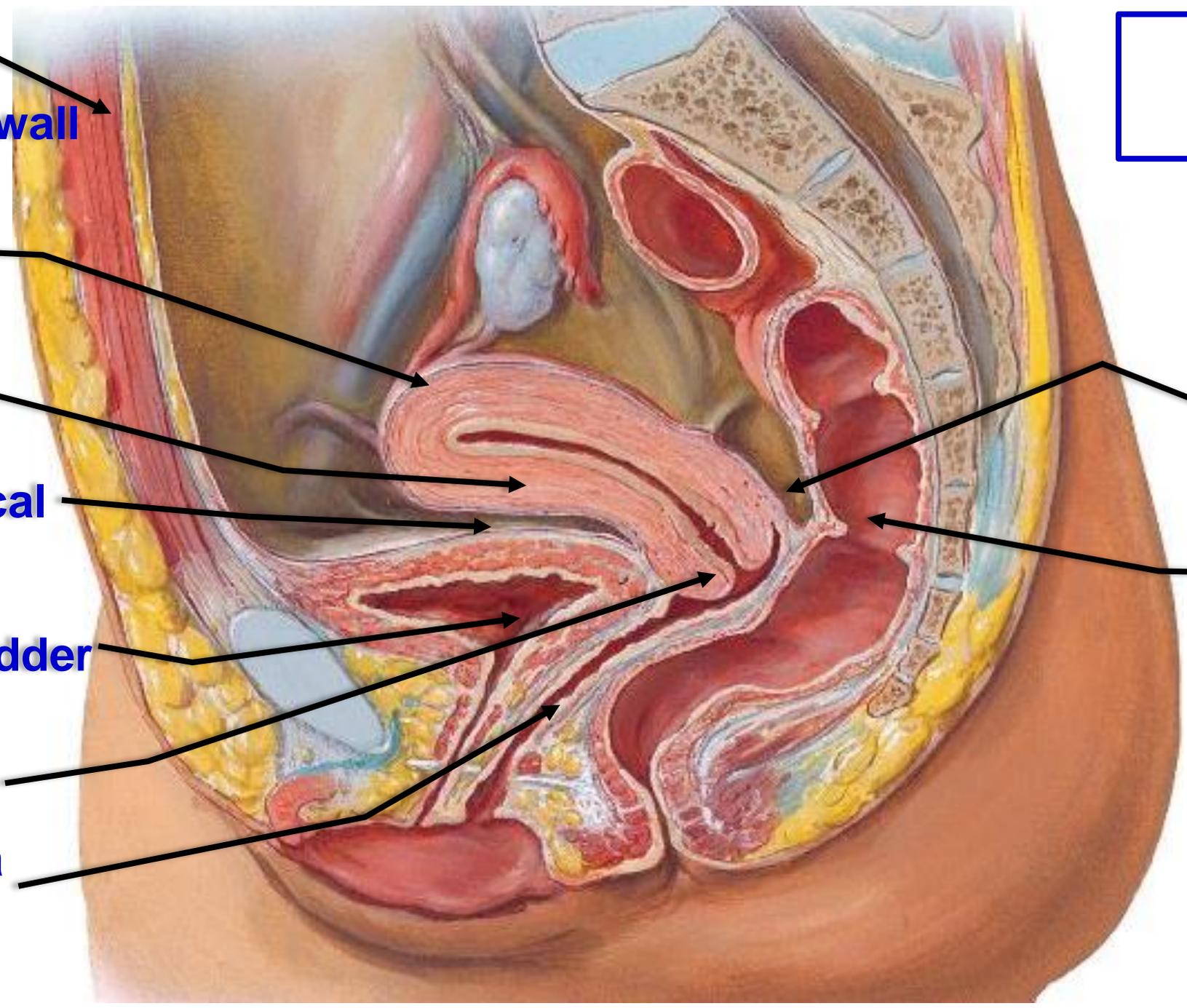
Cervix

Vagina

**Peritoneal
covering**

**Rectovaginal
pouch**

Rectum



**** Peritoneal covering;**

1. Fundus; completely covered by peritoneum.

2. Body,

a. Anterior surface is covered by peritoneum, that reflected at the junction of the body with the cervix to cover the superior surface of the urinary bladder, forming **uterovesical pouch**.

b. Posterior surface is covered by peritoneum.

3- Cervix:

- Posteriorly covered by peritoneum of the **rectovaginal pouch (Douglas)**.
- Anteriorly not covered by the peritoneum

Relations

Fundus free rounded end of the uterus above the opening of the uterine tubes related to coils of small intestine

Anterior

Uterovesical pouch

Superior surface of Urinary bladder

Uterine tube

Posterior

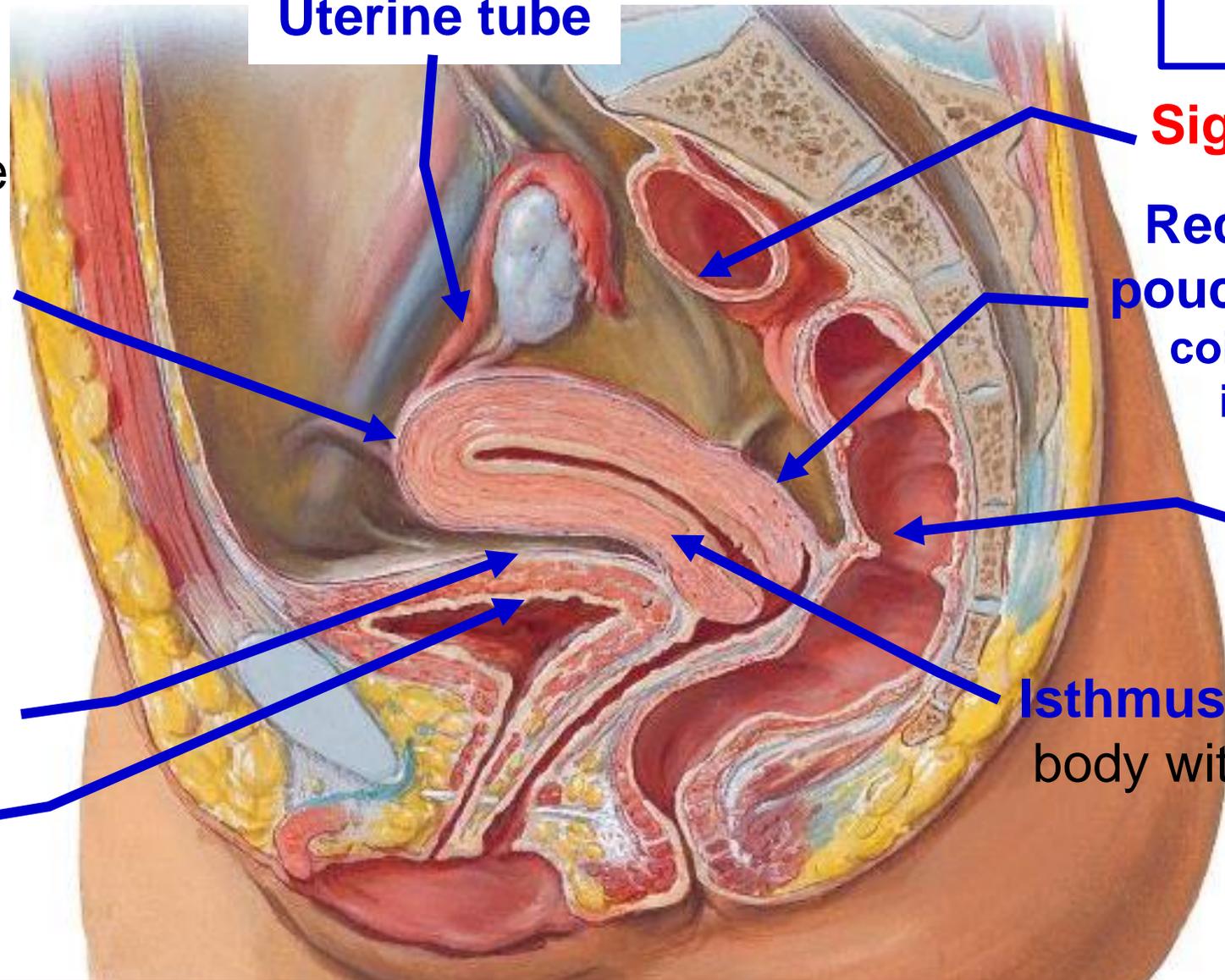
Sigmoid colon

Rectovaginal pouch containing coils of small intestine

Rectum

Isthmus: junction of body with the cervix

- **Lateral borders** give attachment to **broad ligament** of uterus
- It is related to **uterine artery and ureter**

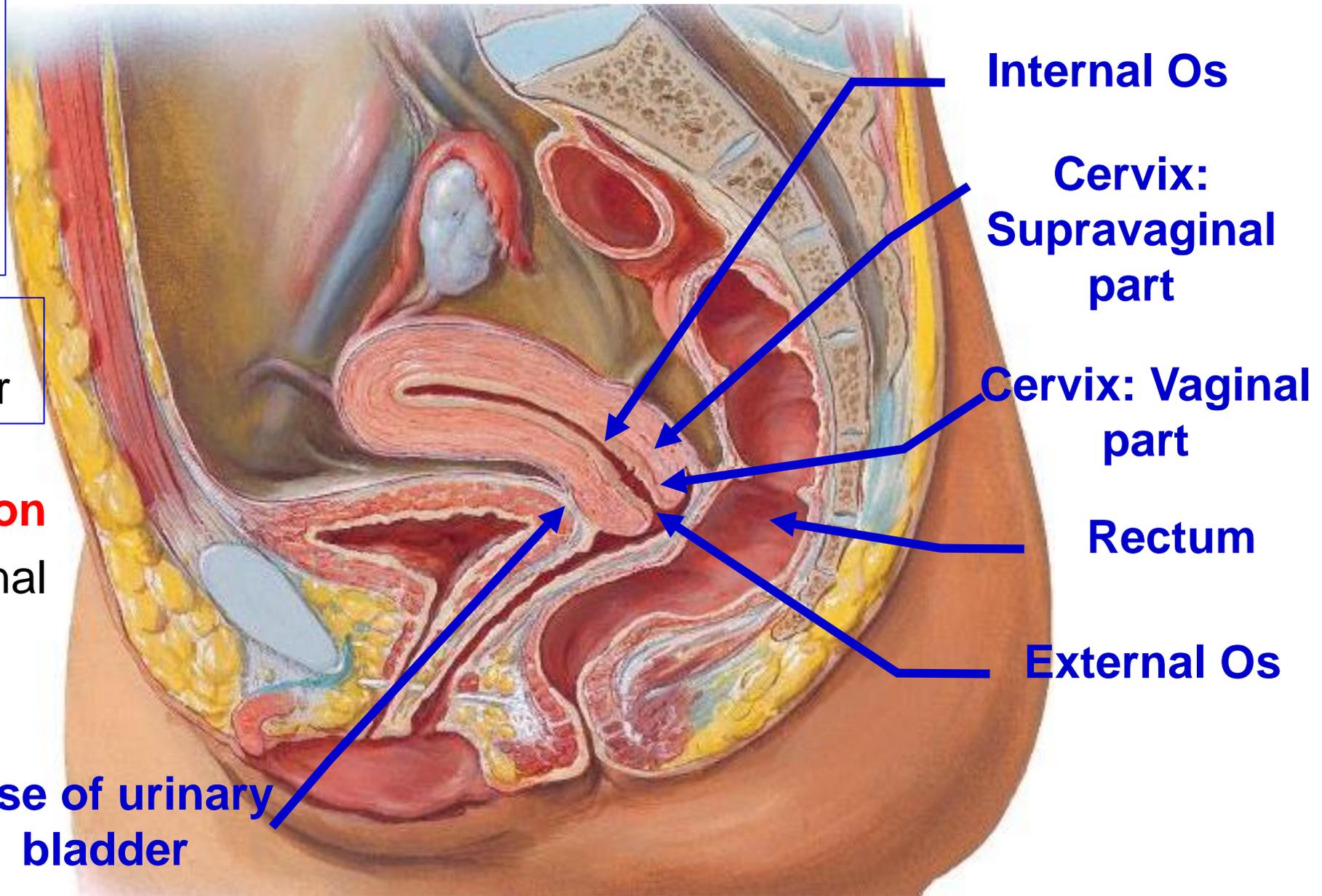


- **Cervix:** projects through upper part of anterior wall of vagina

- **Laterally** related to uterine artery and ureter

- **Vaginal portion** surrounded by the vaginal fornices.

Base of urinary bladder



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Anatomical position Uterus

- **** Anatomical Position of the uterus**
 - **(Anteverted anteflexed)**
- **a- Anteverted**, The cervix of uterus is bent forwards on the anterior wall of the vagina.
 - The angle between axis of vagina and axis of cervix makes **about 90 degree**.
- **b- Anteflexed**, The body of the uterus is bent forwards on the cervix.
 - The angle between axis of cervix and axis of body makes **about 170 degree**.
- **N.B;**
 - An **abnormal position** of the uterus is called **Retroflexed** The body is bent back on the cervix **Retoverted** the whole uterus is bent back on the vagina.

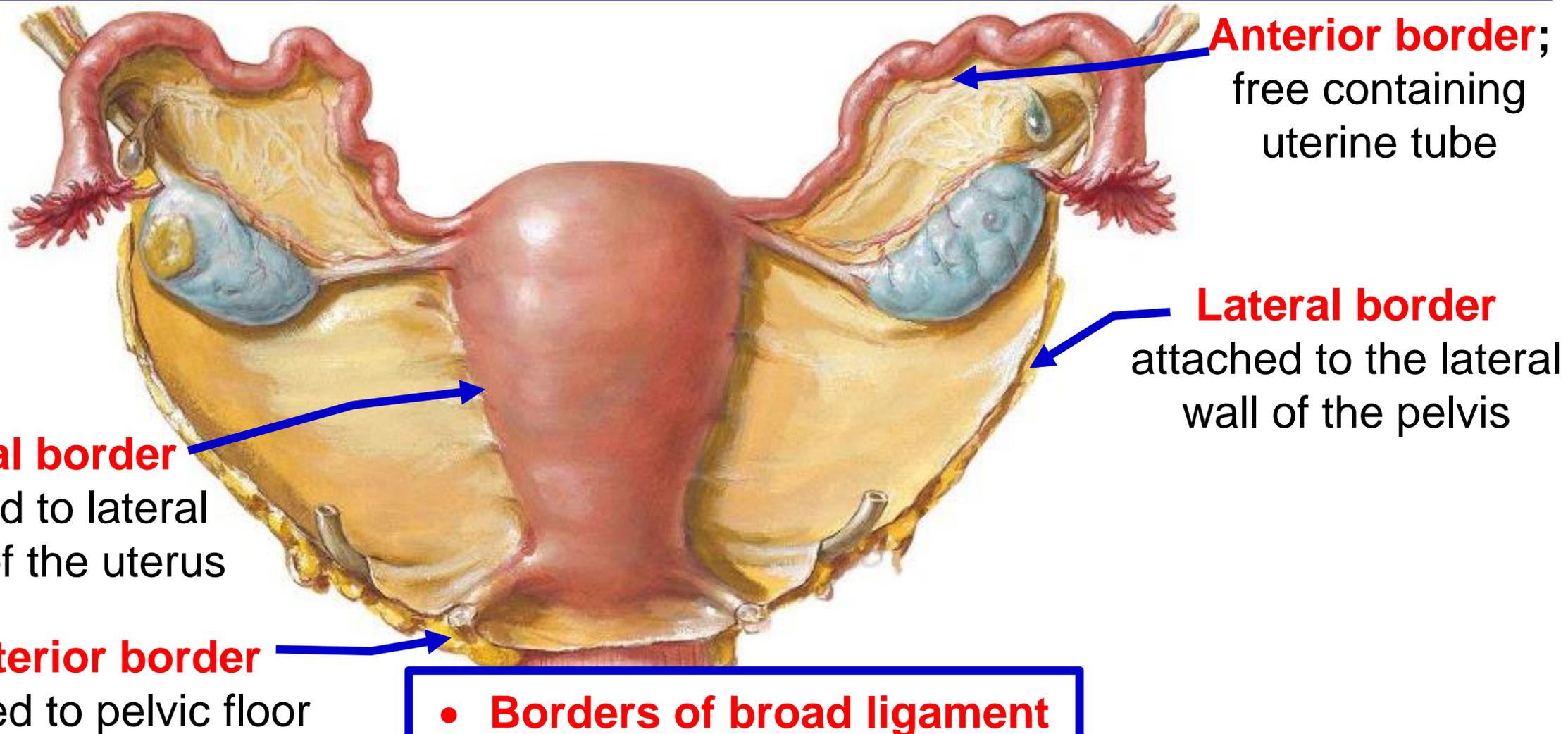


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Ligaments Of Uterus

- **Broad ligaments of the uterus**

- This is a wide fold of **the peritoneum** which extends from the lateral borders of the uterus to the lateral wall of the pelvis on each side.



Suspensory ligament of ovary

(Infundibulopelvic ligament) connects ovary to lateral wall of the pelvis.

Uterine tube

Mesosalpinx

between uterine tube, ligament of the ovary and mesovarium

Mesovarium

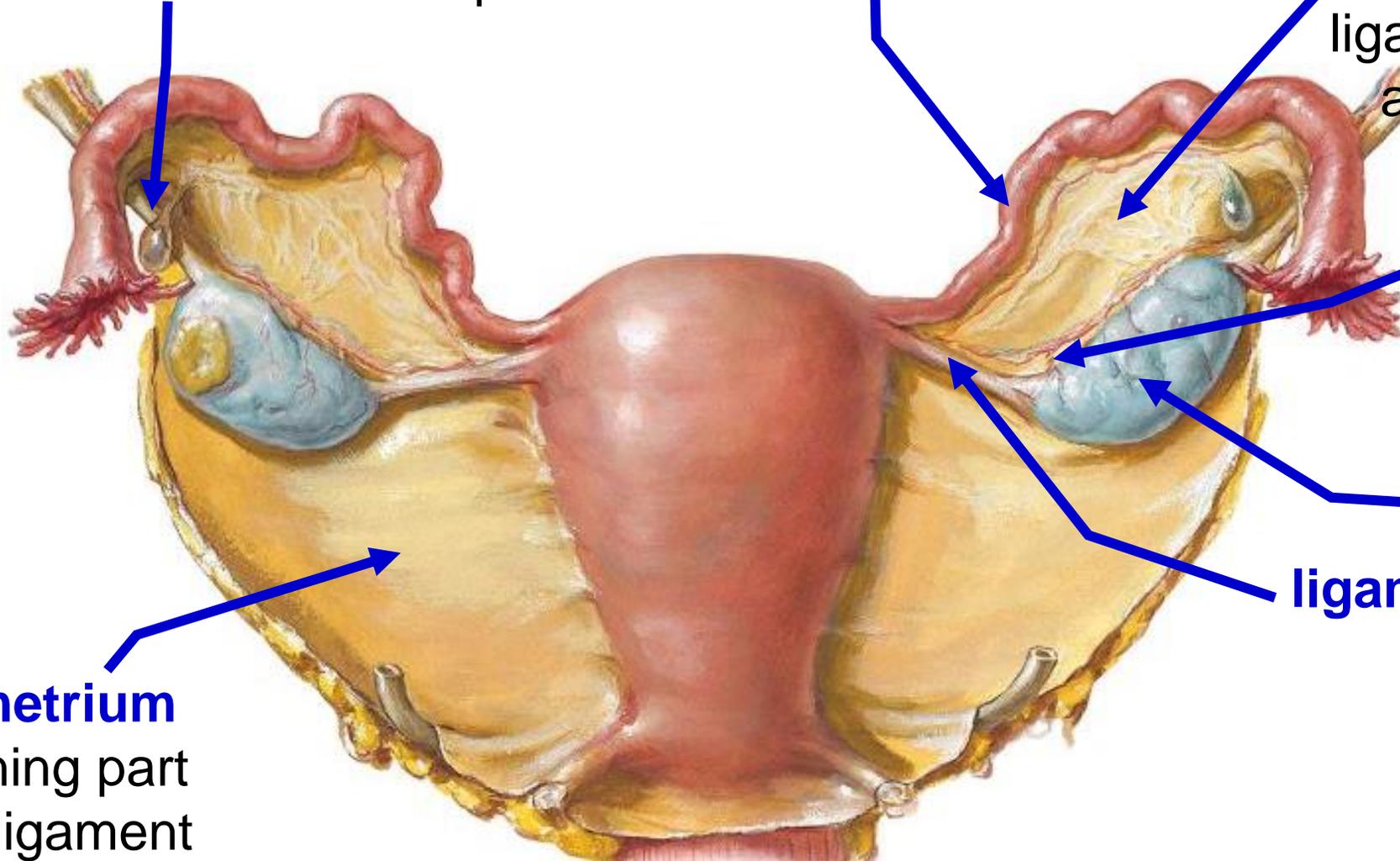
connecting ovary to broad ligament

Ovary

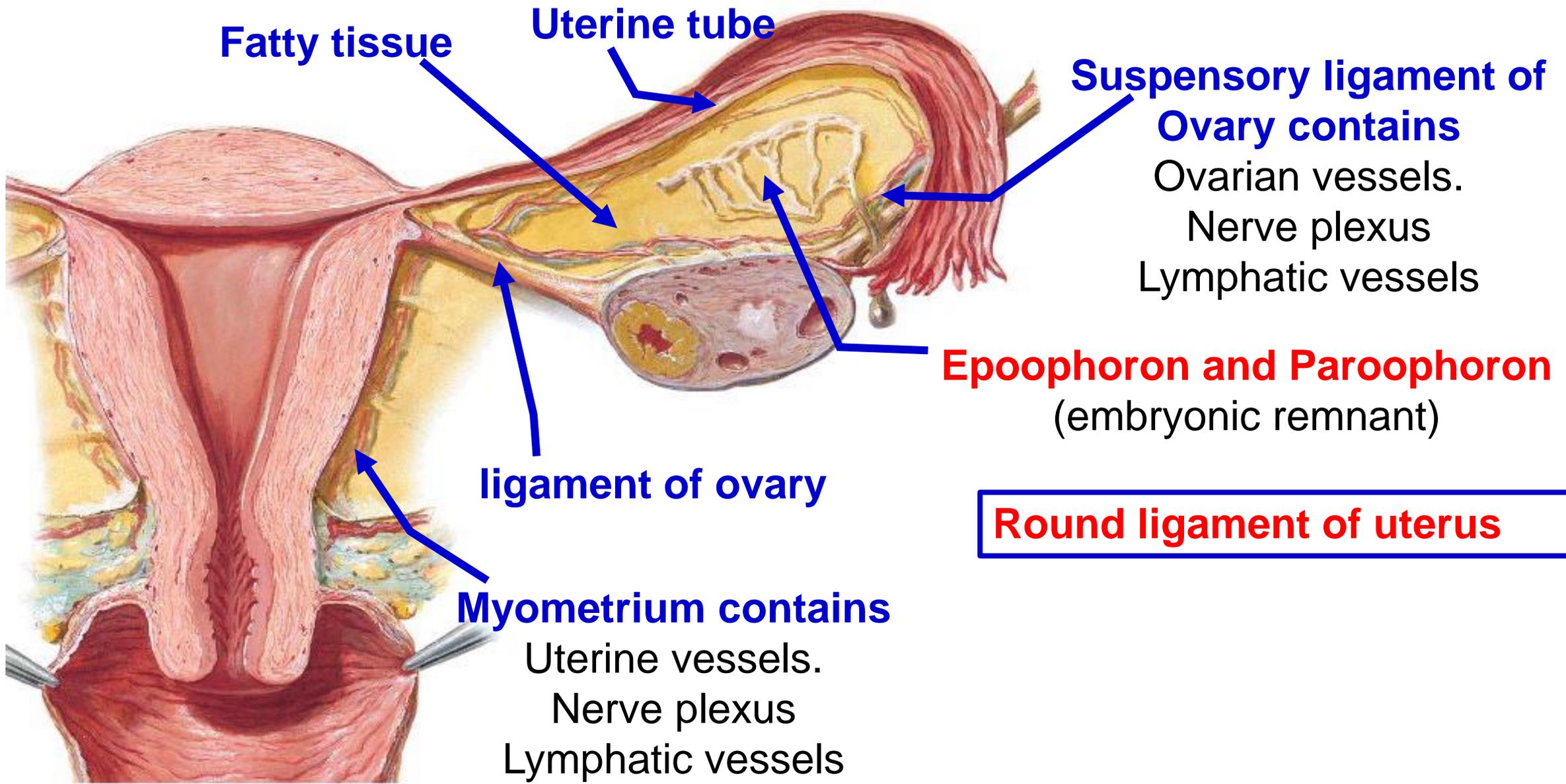
Ligament of ovary

Myometrium

remaining part of the ligament



• **Parts of broad ligament**



- **Contents of broad ligament**

Posteriorly

Other ligaments of uterus

Rectum

Uterus

Urinary bladder

Uterosacral ligament

Transverse cervical/Cardinal (Mackenrodt's) ligament

Round ligament of uterus

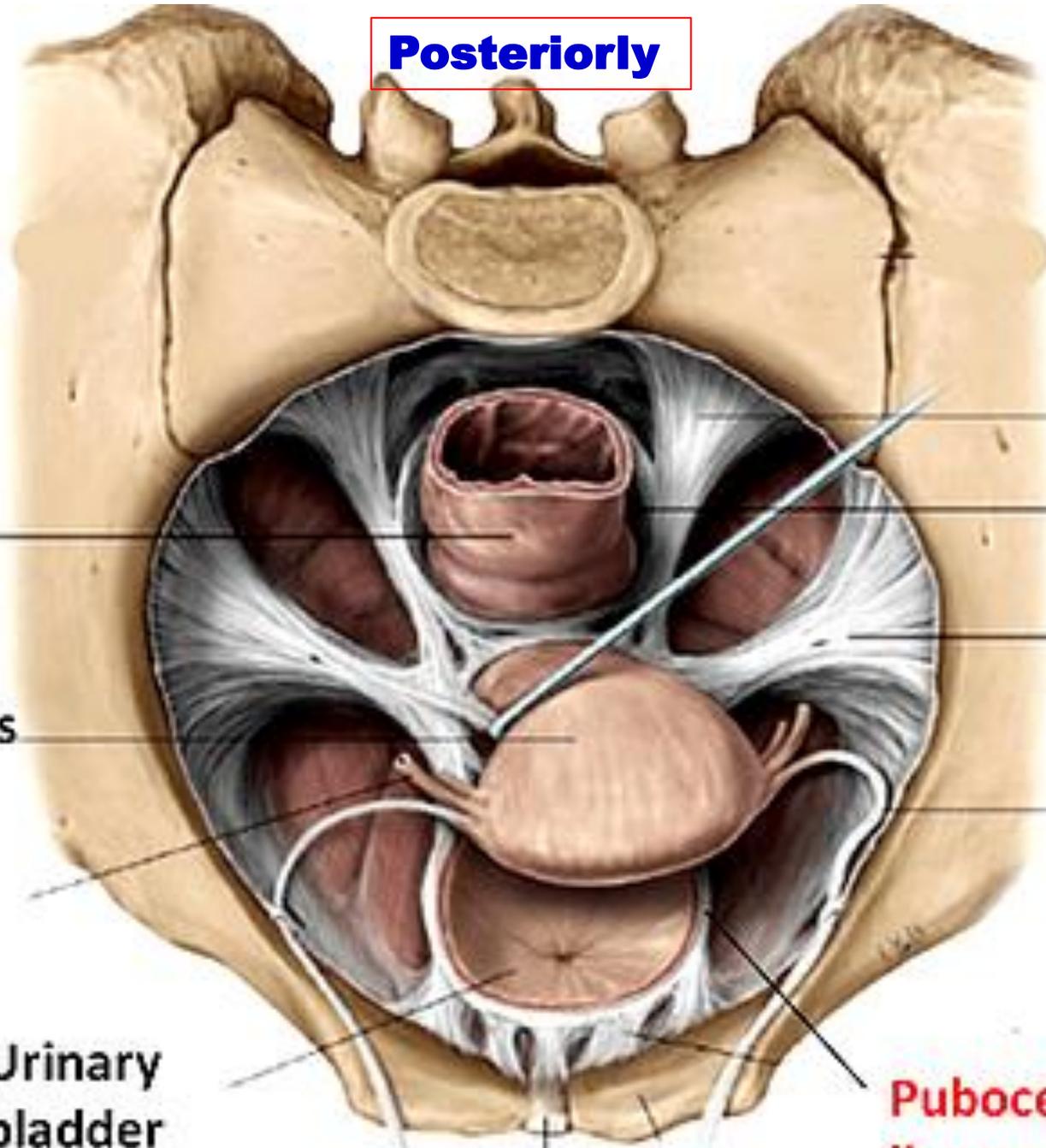
Pubocervical ligament

1

2

4

3



• Other ligaments of uterus

1- Transverse cervical ligaments (Mackenrodt's ligament) (Laterally)

- These are the most important ligaments for maintaining the position of the uterus.
- They extend from the cervix of the uterus to the lateral wall of the pelvis.

2- **Uterosacral ligaments (posteriorly)**: extend from the cervix of the uterus to the sacrum on both sides of the **rectum**.

3- **Pubocervical (anteriorly)**, extend from the cervix of the uterus to the symphysis pubis on both sides of the **urinary bladder**.

4- **Round ligament of the uterus**, connects the uterus **below and Infront** of the uterine tube to the labia majora. It passes through the inguinal canal.

** Factors support the uterus

1- Ligaments of the uterus.

2- Position of the uterus.

3- Pelvic diaphragm.

4- Urogenital diaphragm.

5- Perineal body.

❖ **Uterine prolapse**: Uterus descends into vagina

❖ It occurs due to weakness of ligaments, diaphragms and perineal body

Upper part of body

Pre-aortic LNs

Para-aortic LNs

Internal iliac LNs

Cervix

Lower part of body

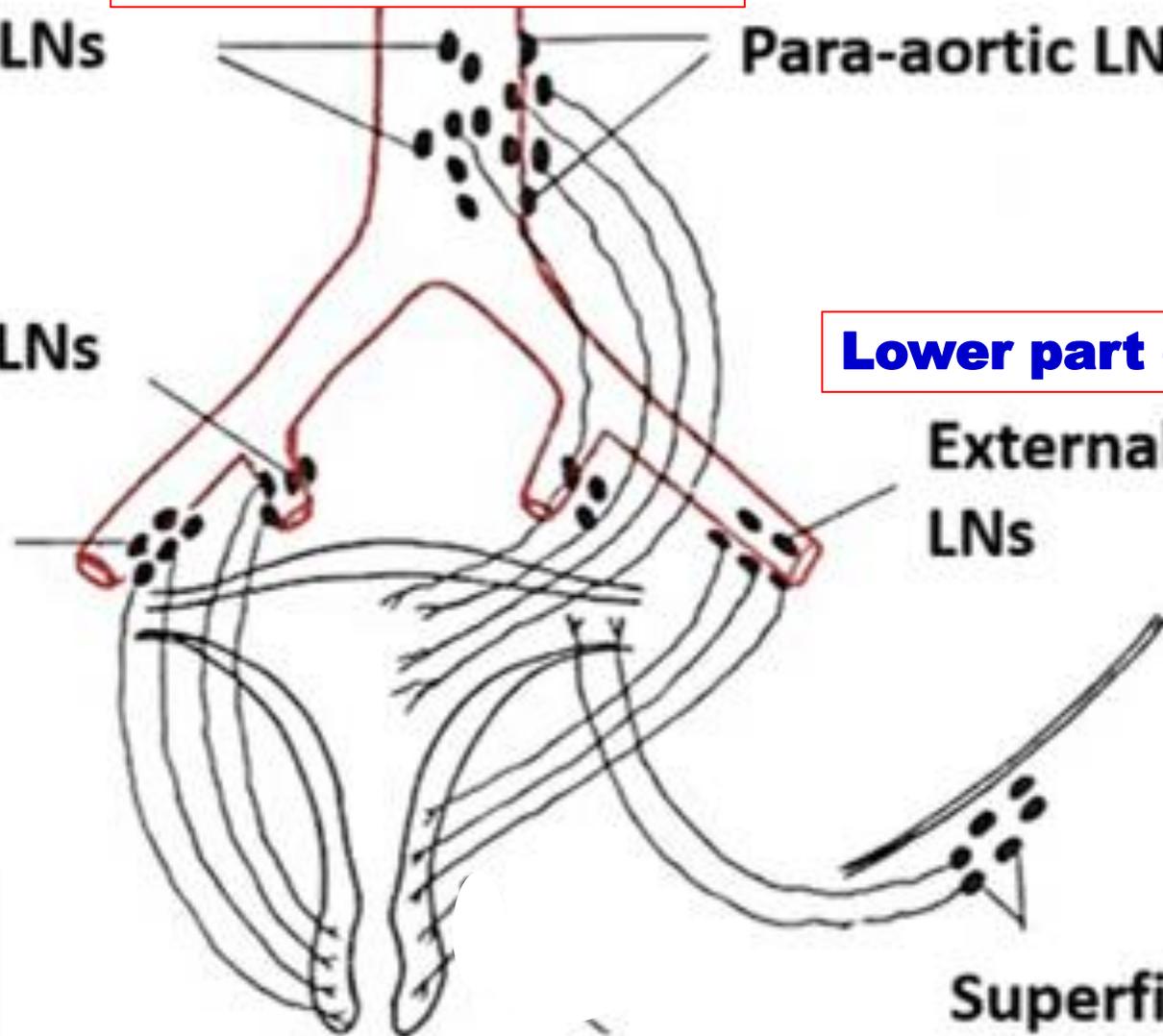
External iliac LNs

External iliac LNs

Lymphatic drainage of uterus

Region close to medial end of uterine tube

Superficial inguinal LNs



** Arterial supply:

1- Uterine artery from anterior division of internal iliac artery.

- It ascends on the lateral border of uterus in the broad ligament and turns laterally below the uterine tube to anastomosis with the ovarian artery.
- It is a tortuous artery to allow expansion of the uterus during pregnancy.

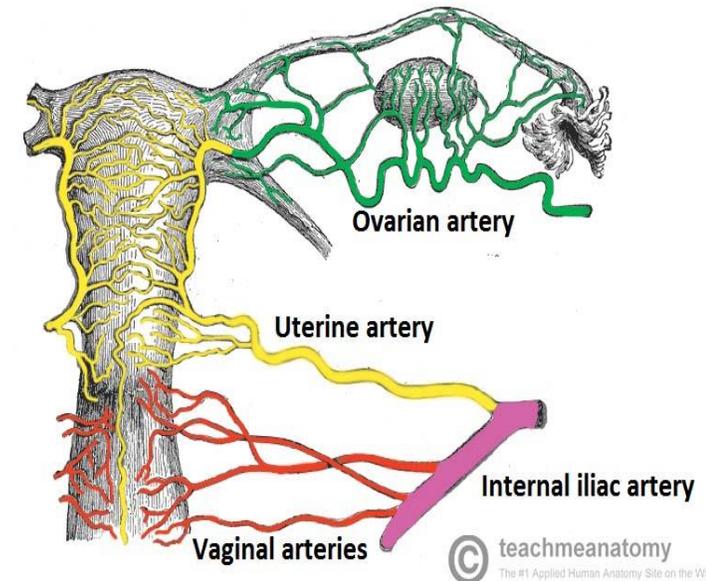
2- Vaginal artery from internal iliac artery.

** Venous drainage:

- Uterine venous plexus → uterine vein → internal iliac vein.

** Nerve supply

- Sympathetic from T12 & L1.
- Parasympathetic fibers, from S2, 3, 4.

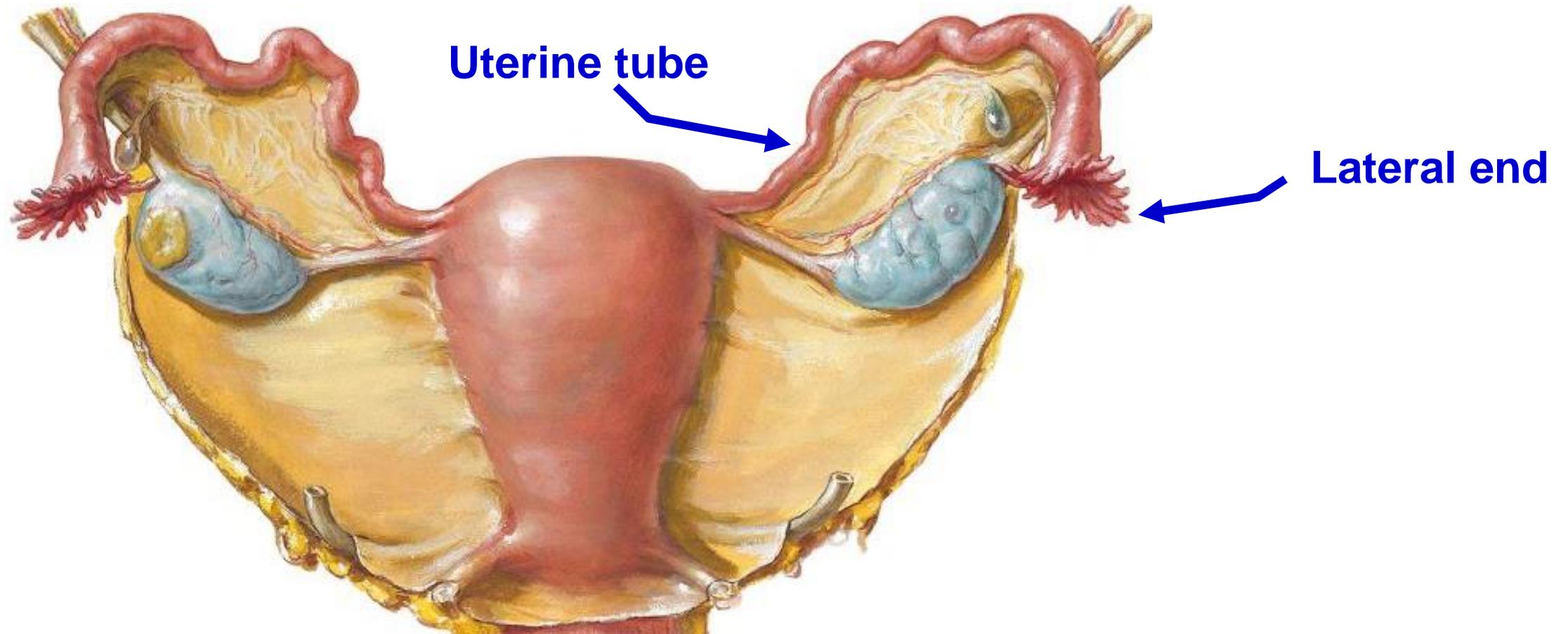


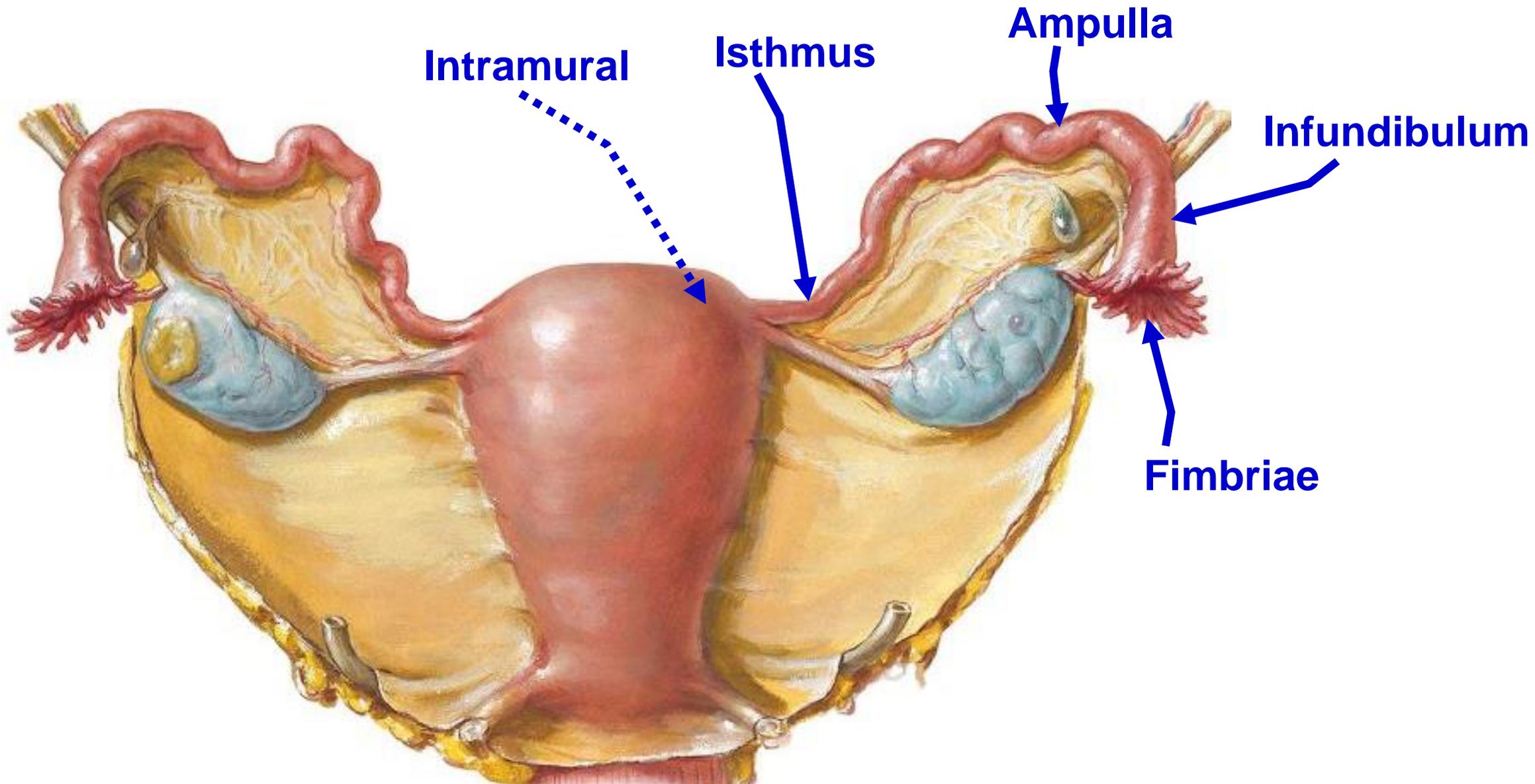
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Uterine tube

Fallopian tube

- The two tubes run in the free border of the broad ligament.
- It is about **10 cm long** and has **2 ends**.
- a- Medial end** opens in the uterine cavity at the junction of the fundus with the body.
- b- Lateral end** opens in the peritoneal cavity





• Parts of uterine tube

**** Parts of the tube:** From the lateral to the medial end,

1- Infundibulum: a funnel-shaped which open in the peritoneal cavity.

- It has a number of processes called **fimbriae**. One of these fimbriae is large and extends to the ovary and called **ovarian fimbria**.

2- Ampulla: a dilated, tortuous and thin-walled.

3- Isthmus: a narrow straight part, constituting the medial 1/3 of the tube.

4- Intramural part: the part inside the uterine wall (narrowest part).

**** Functions of the tubes:**

1. Picks up the ovum.

2. Transport the sperm from the uterine cavity.

3. Site of fertilization in the ampulla.

4. Transport the fertilized ovum to the uterus.

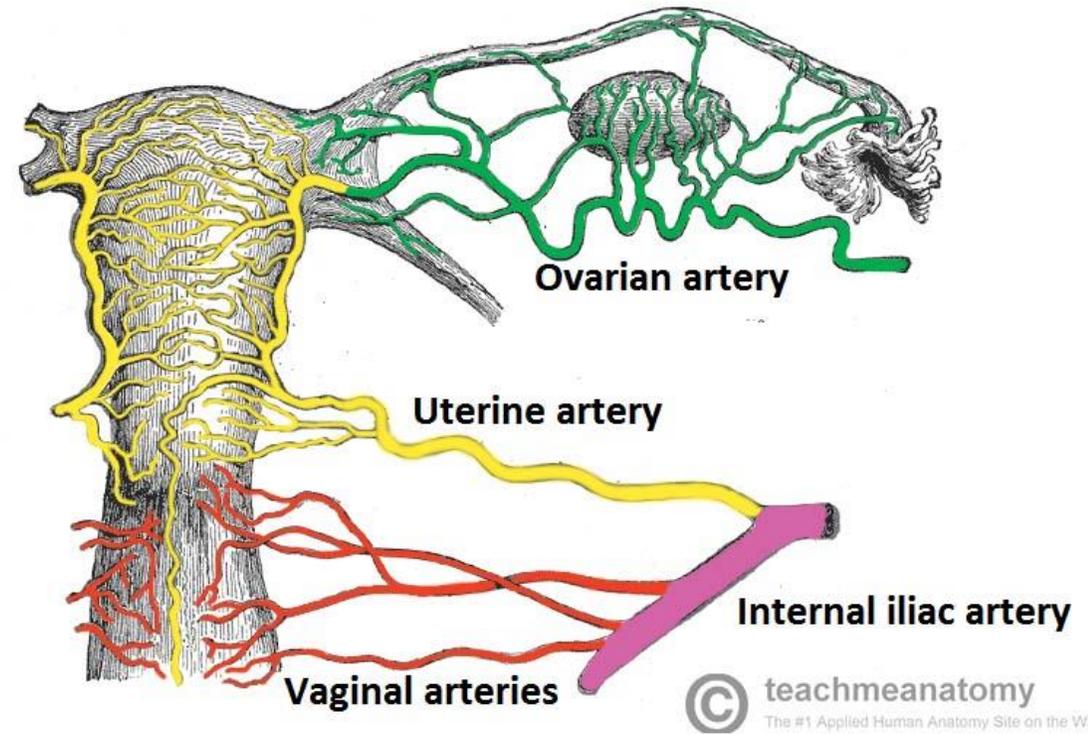
**** Arterial supply:**

- 1) The lateral part by the ovarian artery.
- 2) The medial part by the uterine artery.

**** Lymphatic drainage:** to the preaortic and paraaortic lymph nodes.

**** Nerve supply:**

- Sympathetic from T 10 to L 2.
- Parasympathetic S2,3,4.



- Rupture of uterine tube In case of ectopic pregnancy after 6 weeks
- It is life threatening internal bleeding and peritonitis, adhesion and closure of tube

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Ovary

Ovaries

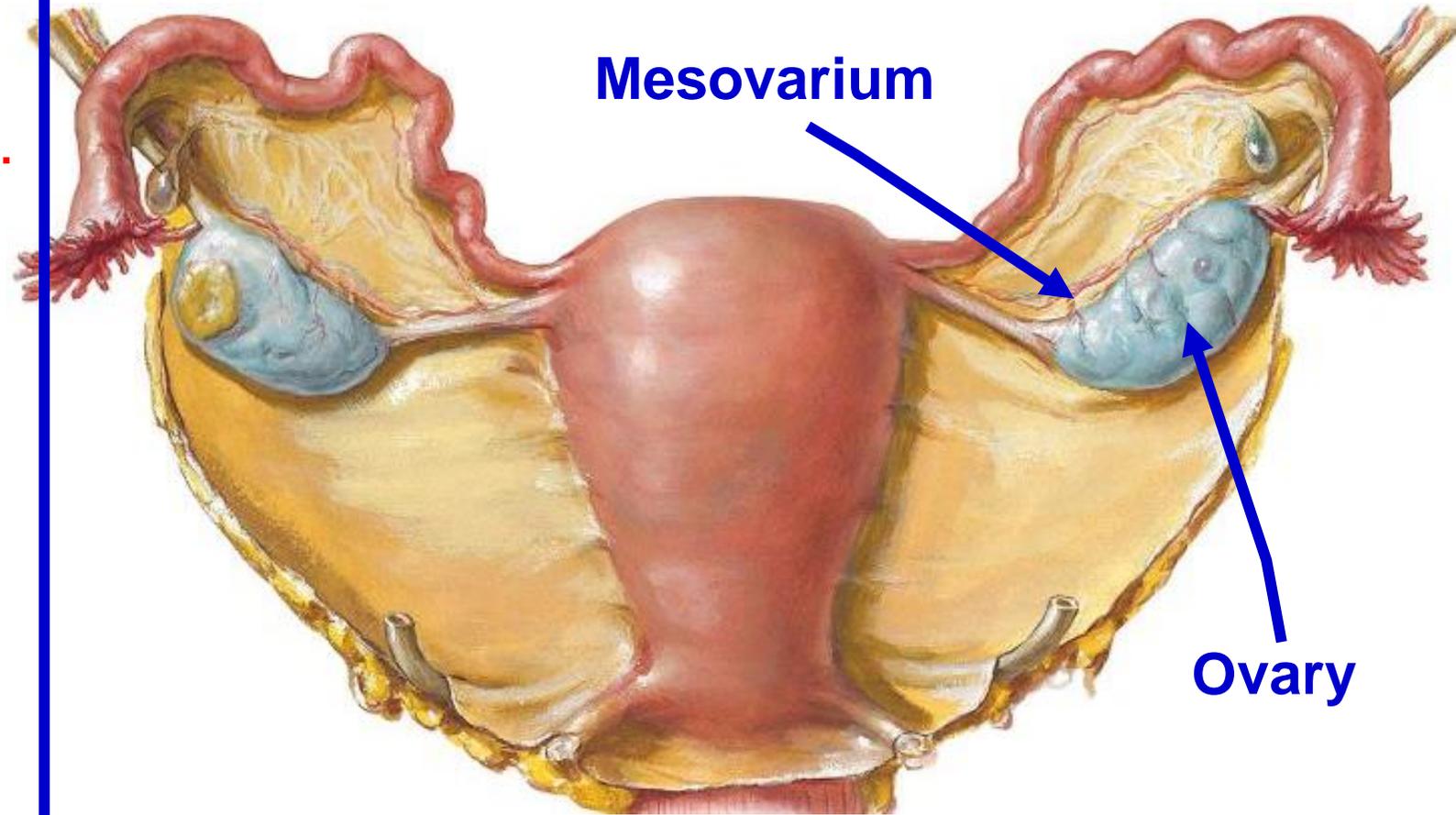
- One on each side
- **Primary female sex organs.**
- Each ovary is attached to the upper surface of the broad ligament by the mesovarium.

** Dimensions

- 1 cm thickness
- 2 cm breadth
- 3 cm Length

** Anatomical features:

- It is **almond** **الوزة** **shaped** with smooth surface **before** **puberty**.



**** Ovarian fossa is bound by;**

1- Superiorly: external iliac vessels.

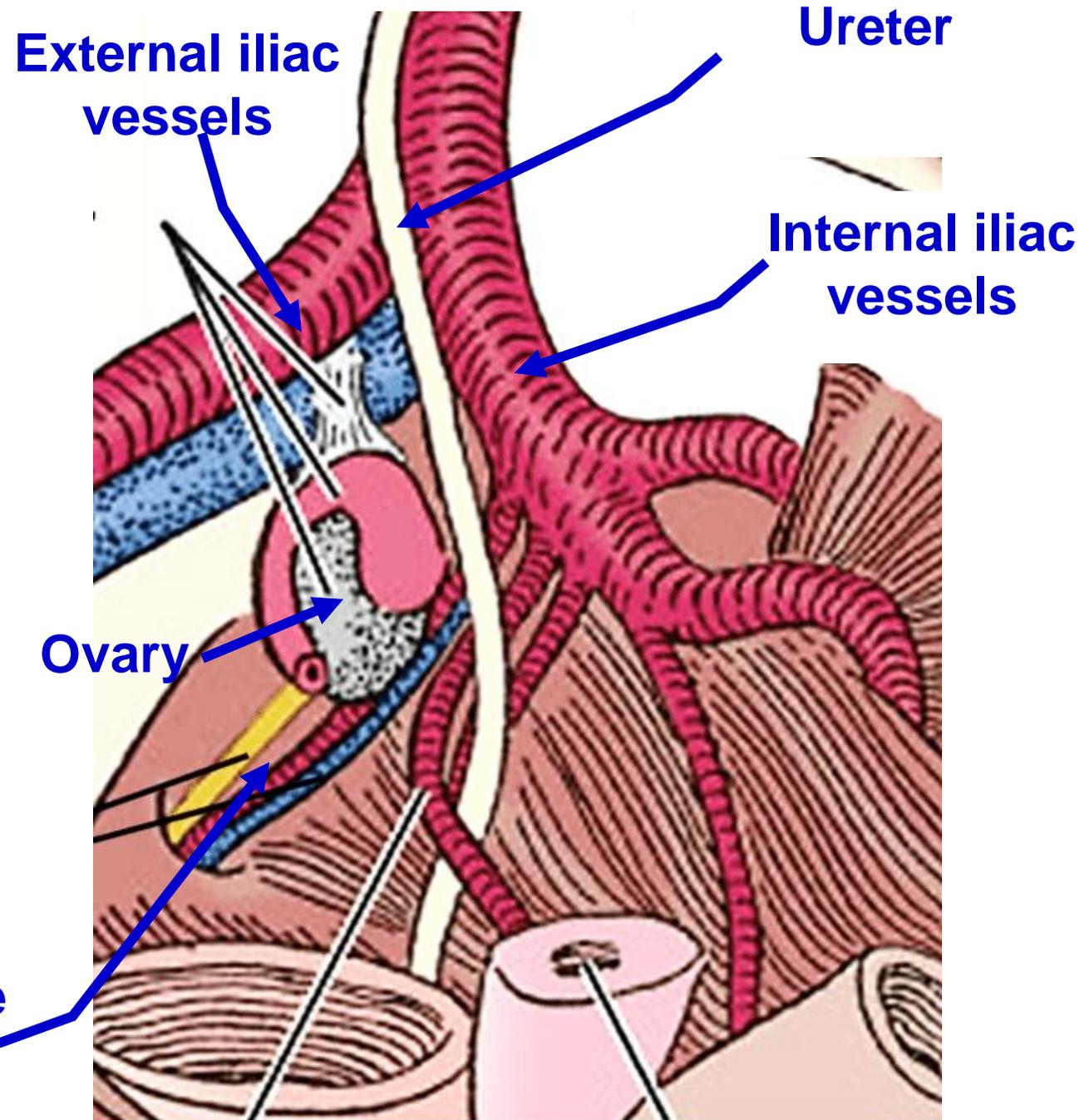
2- Posteriorly: internal iliac vessels and ureter.

3- Laterally (floor): obturator internus muscle and obturator nerve and vessels.

- **Lateral surface of ovary related to floor of fossa.**

- **Medial surface:** directed to the uterus.

Obturator nerve and vessels



- **Ovary**

**** General features**, It has

- **2 ends**

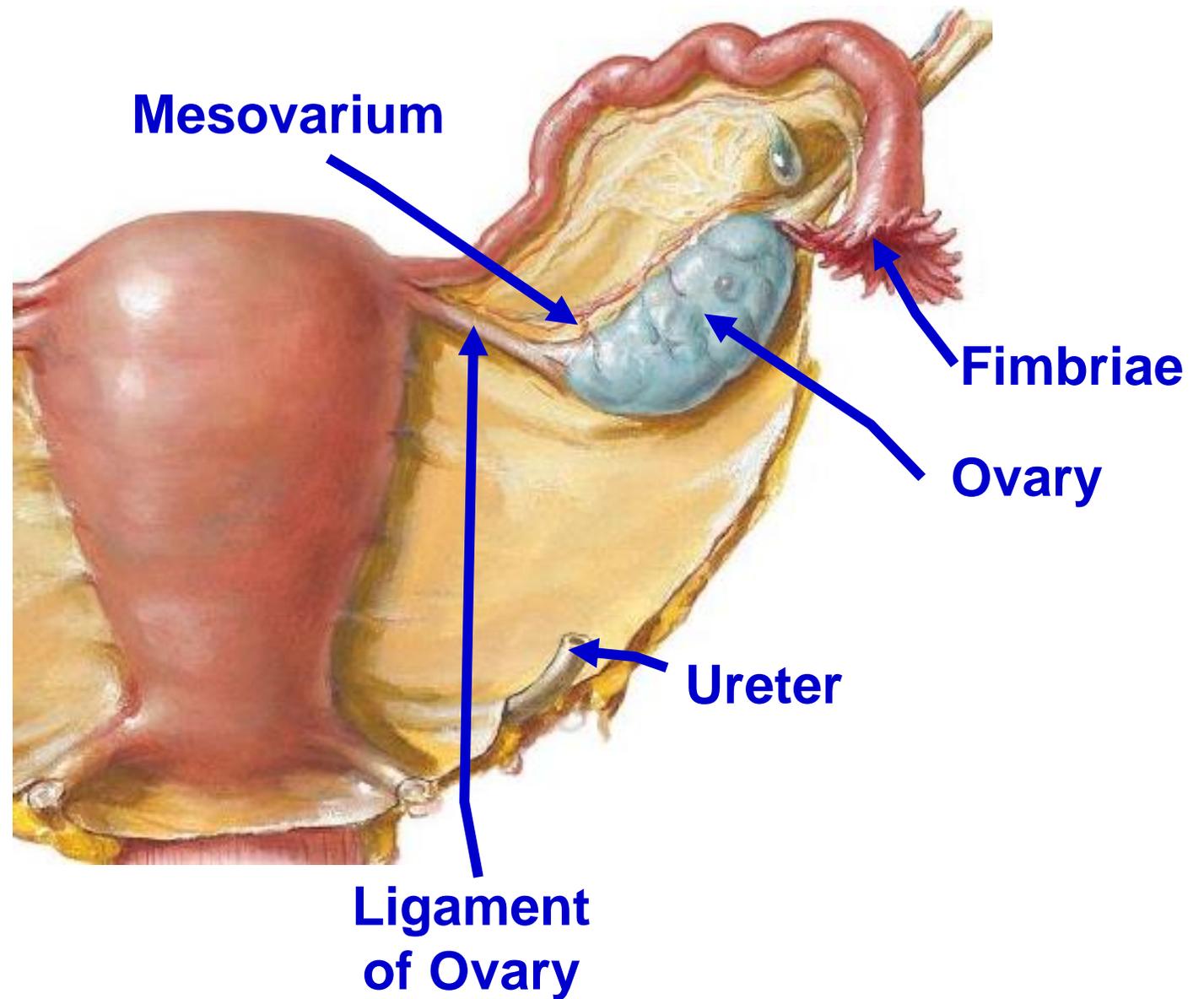
1- Tubal (upper) end: covered by fimbriated end of uterine tube.

2- Uterine (lower) end: gives attachment to ligament of ovary.

- **2 borders**

1- Free border directed backward and related to ureter.

2- Attached border: attached to the upper layer of the broad ligament by the mesovarium



**** Ligaments of the ovary,**

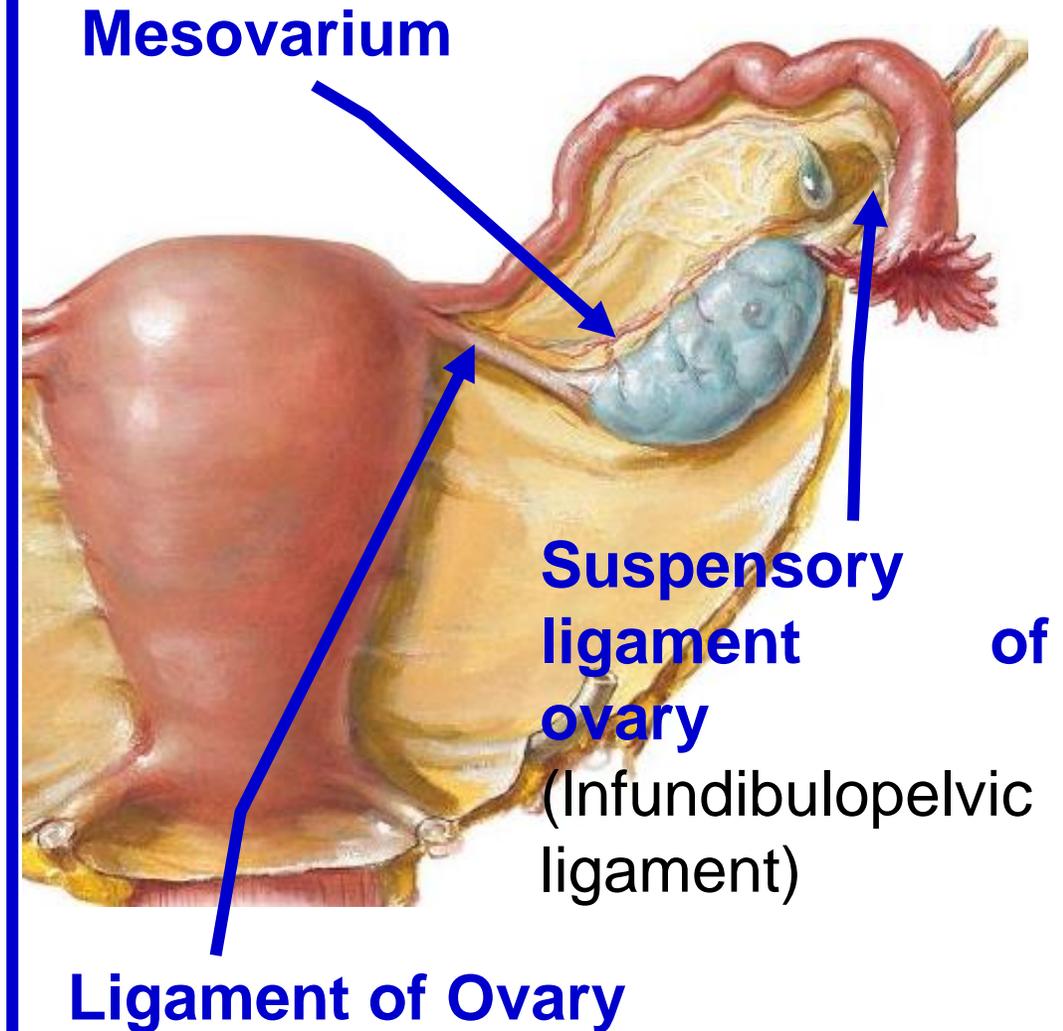
1- Suspensory ligament of the ovary extends from ovary to wall of pelvis, contains ovarian vessels, nerve plexus and lymph vessels.

2- Ligament of ovary, connects ovary with the uterus **below and behind** the uterine tube.

**** Peritoneal relation**

- It is suspended in **peritoneal** cavity, **not covered by peritoneum**, the oocyte expelled at ovulation passes into **peritoneal** cavity and then is picked up by the fimbriae of the uterine tube.

- **Attached border:** attached to the upper layer of the broad ligament by the mesovarium



**** Arterial supply:** the ovarian (**gonadal**) artery from abdominal aorta.

**** Venous drainage:** The ovarian veins.

1) The right ovarian vein drains into the inferior vena cava;

2) The left ovarian vein drains into the left renal vein.

**** Lymphatic drainage:** Into paraaortic lymph nodes.

**** Nerve supply:** sympathetic from T10, 11 while parasympathetic from S2, 3, 4.

Functions: produce eggs and oestrogen and progesterone hormones

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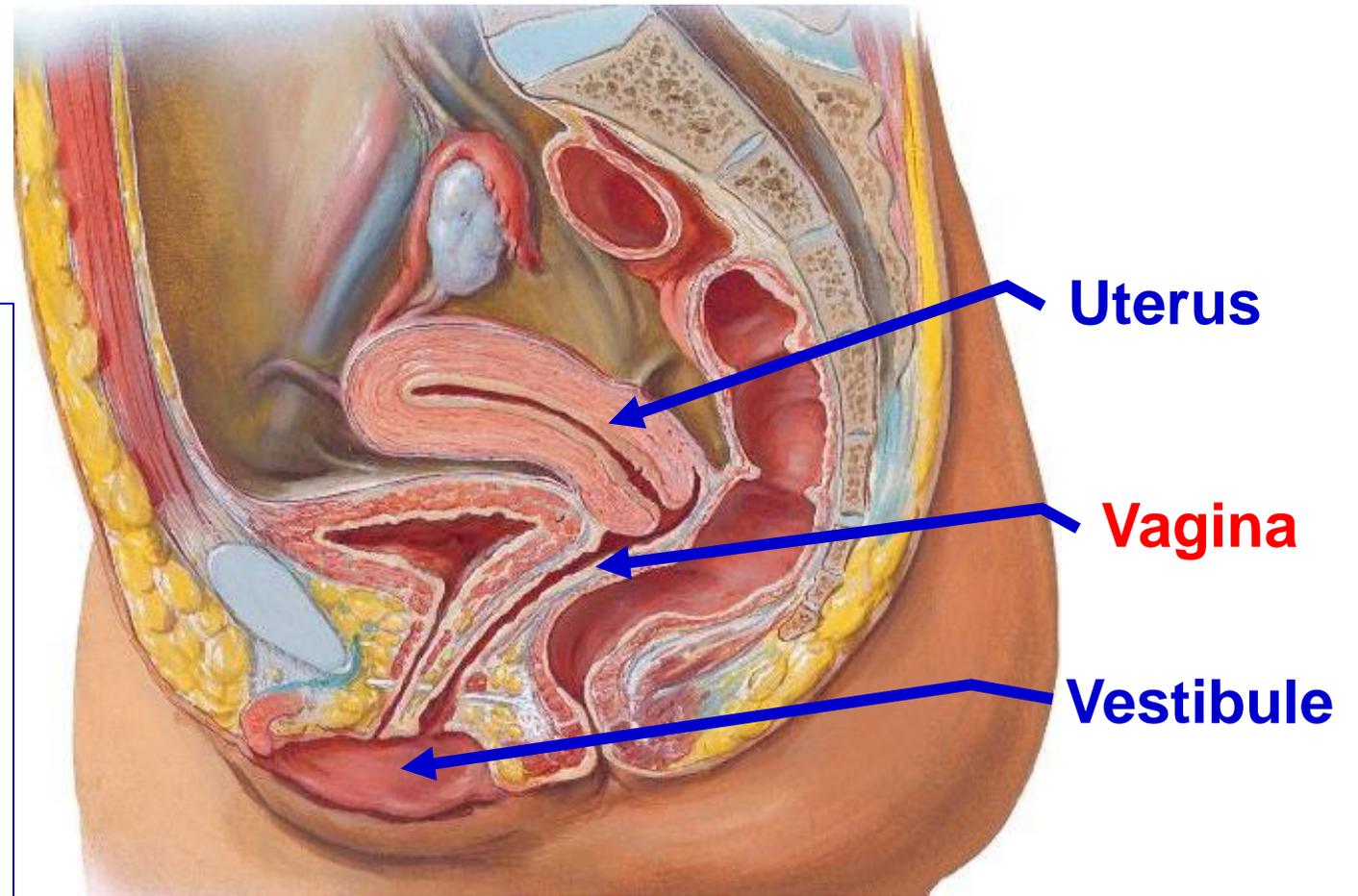
Vagina

❖ Vagina

- This is the canal connecting the uterus with the vestibule.

**** Direction;** it is directed upwards and slightly backwards.

**** Diameter;** lower part 2.5 cm while the upper part 5 cm.



**** Relations of the vagina ;**

- Anterior wall about 7.5 cm.

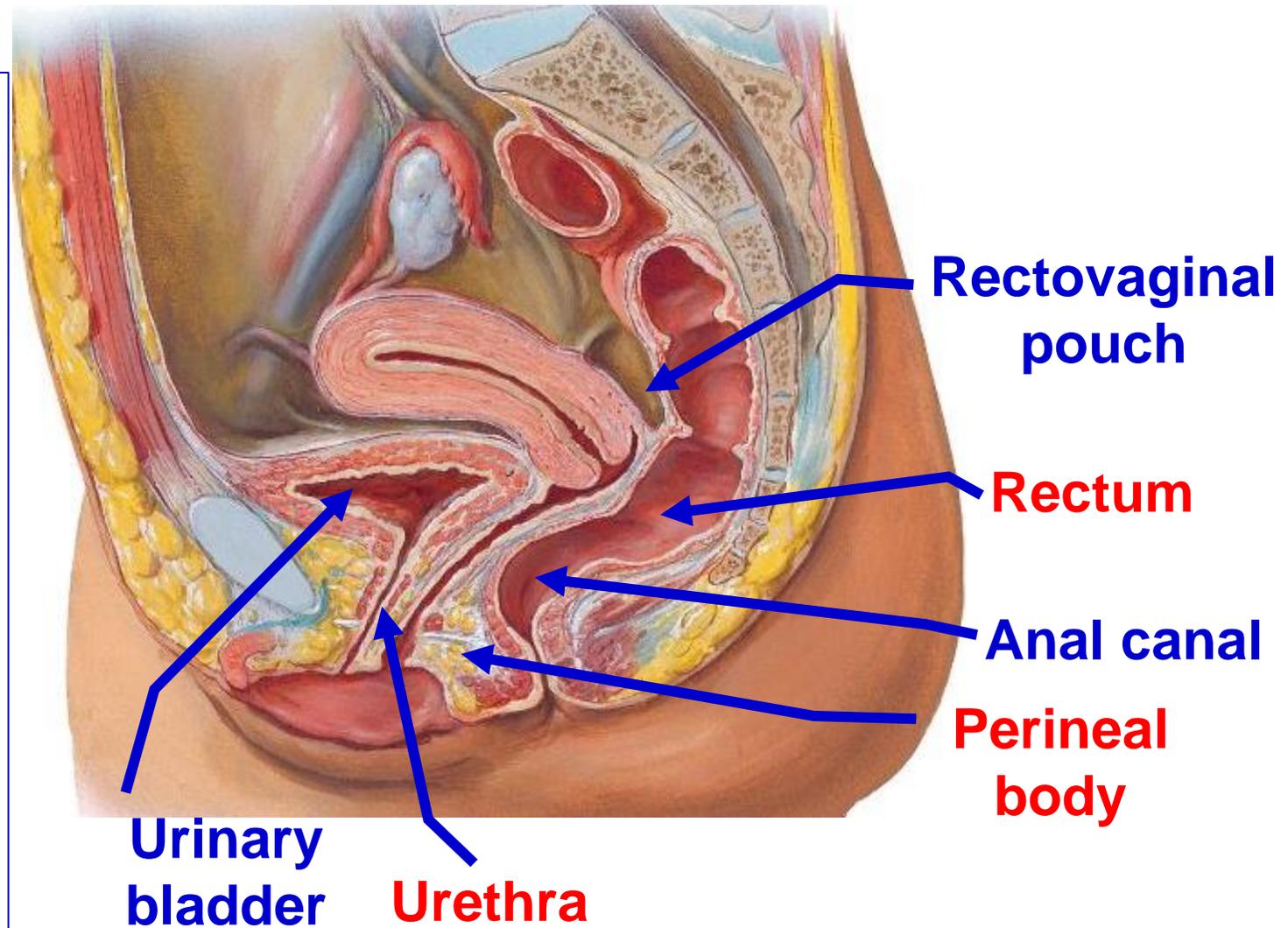
- It is related to base of urinary bladder and urethra.

- Posterior wall about 9 cm

a- Upper 1/3 is covered by peritoneum of rectovaginal pouch.

b- Middle 1/3 is directly related to the rectum.

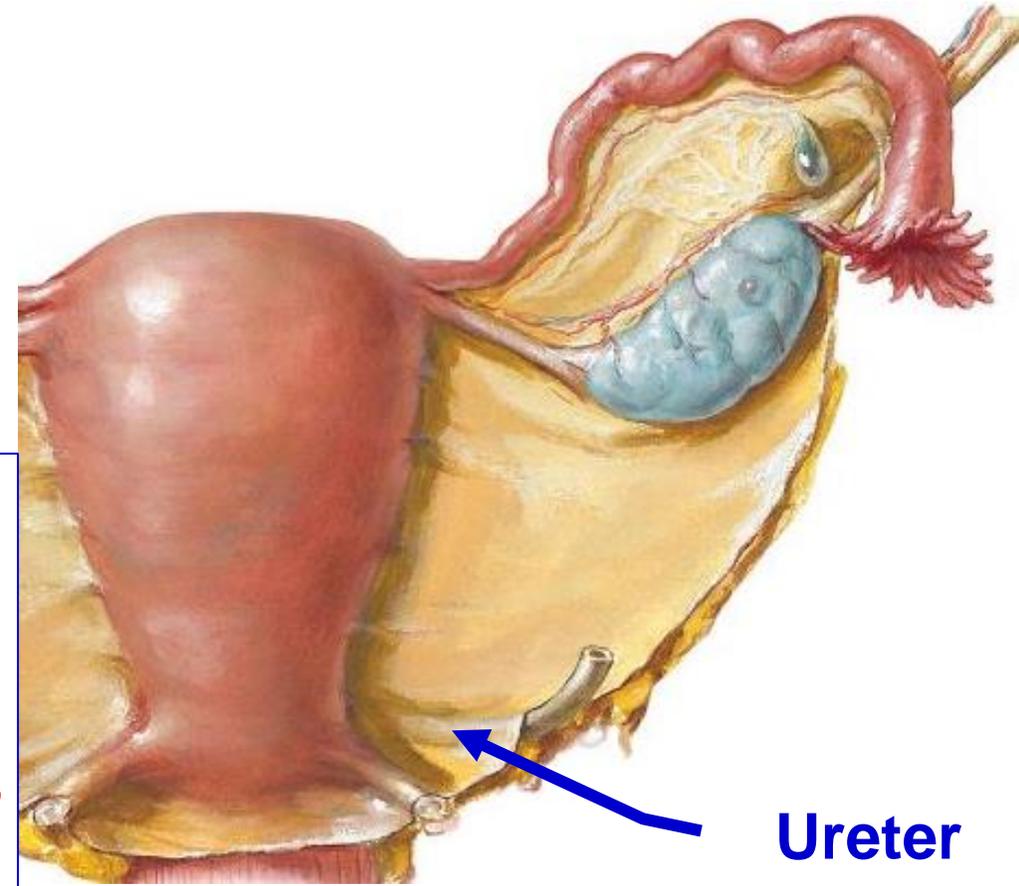
c- Lower 1/3 is related to the anal canal and perineal body.



- Laterally:

- a- Upper part** related to the ureter.
- b- Middle part** related to the levator ani.
- c- Lower part** transverses the deep and superficial perineal pouches.

- Its walls are in contact but opened & expand during sexual intercourse
- In virgin, the lower end of the lumen is closed by a thin membrane called **hymen** (*about 1.5 cm from the opening*) that ruptured with the 1st intercourse.
- **Types of hymen:** Ring shape (the commonest form), Semilunar, **Cribriform**, imperforate, **absent** and elastic persist after copulation

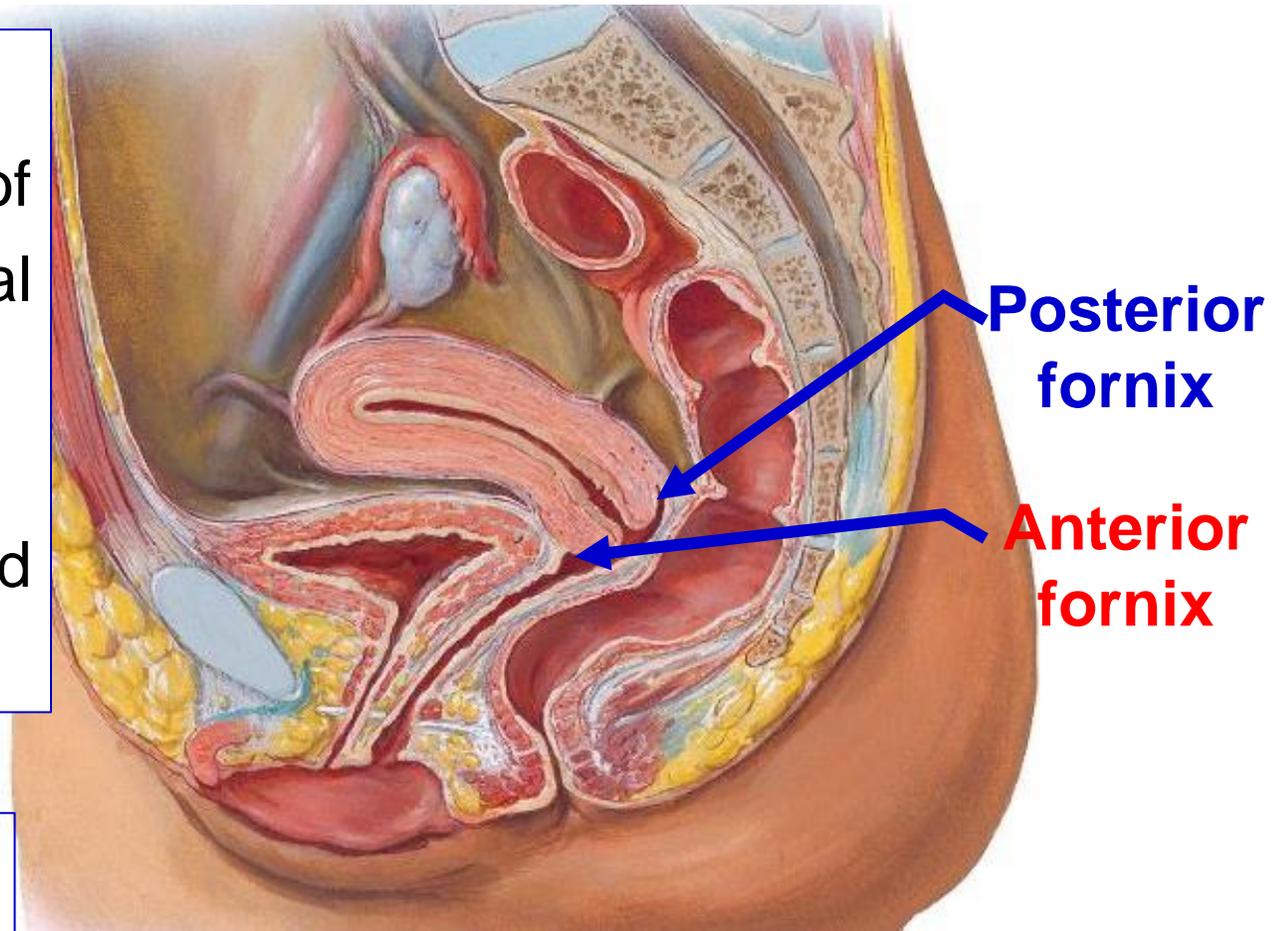


**** Fornices of the vagina:**

- These are recesses of the upper part of the vagina which surrounds the vaginal part of the cervix
- Anterior, posterior and 2 Lateral
- Posterior is the largest one and related to Douglas pouch.

**** Peritoneal covering of the vagina:**

- Only the upper part of the posterior wall by peritoneum of **rectovaginal pouch**.



**** Arterial supply:**

- 1) Vaginal artery from internal iliac artery.
- 2) Uterine artery from internal iliac artery.

**** Venous drainage:** to the vaginal venous plexus → internal iliac vein.

**** Lymphatic drainage:**

- a- The upper part drains into the internal iliac lymph nodes.
- c- The lower part drains into the superficial inguinal lymph nodes.

**** Nerve supply:**

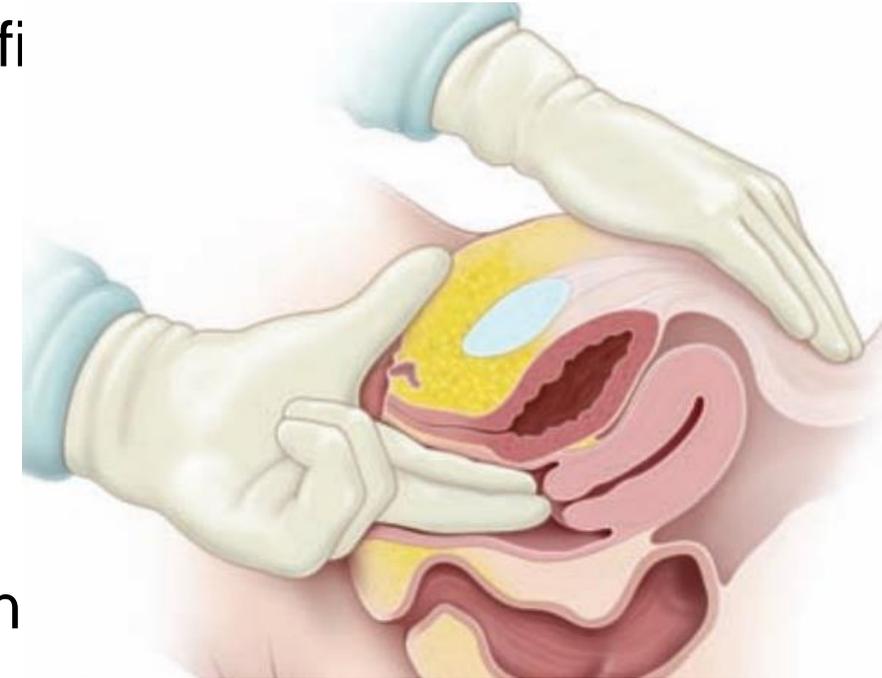
- Upper 2/3 supplied by sympathetic and parasympathetic.
- Lower 1/3 pain sensitive and supplied by pudendal nerve.

**** Applied anatomy**

1- Vaginal examination:

- This is done by inserting both index and middle fi through vagina.
- **The structures felt** are:
- Cervix of the uterus and fornices of the vagina
- **Anteriorly:** The base of urinary bladder and urethra,
- **Posteriorly:** Rectovaginal (Douglas) pouch.

- ### **2- Bimanual examination:** With the index and middle fin of the right hand inserted high up into the vagina, pressure is done by the left hand on the suprapubic part of the anterior abdominal wall.
- By this method, the size and characteristics of the uterus can be evaluated.

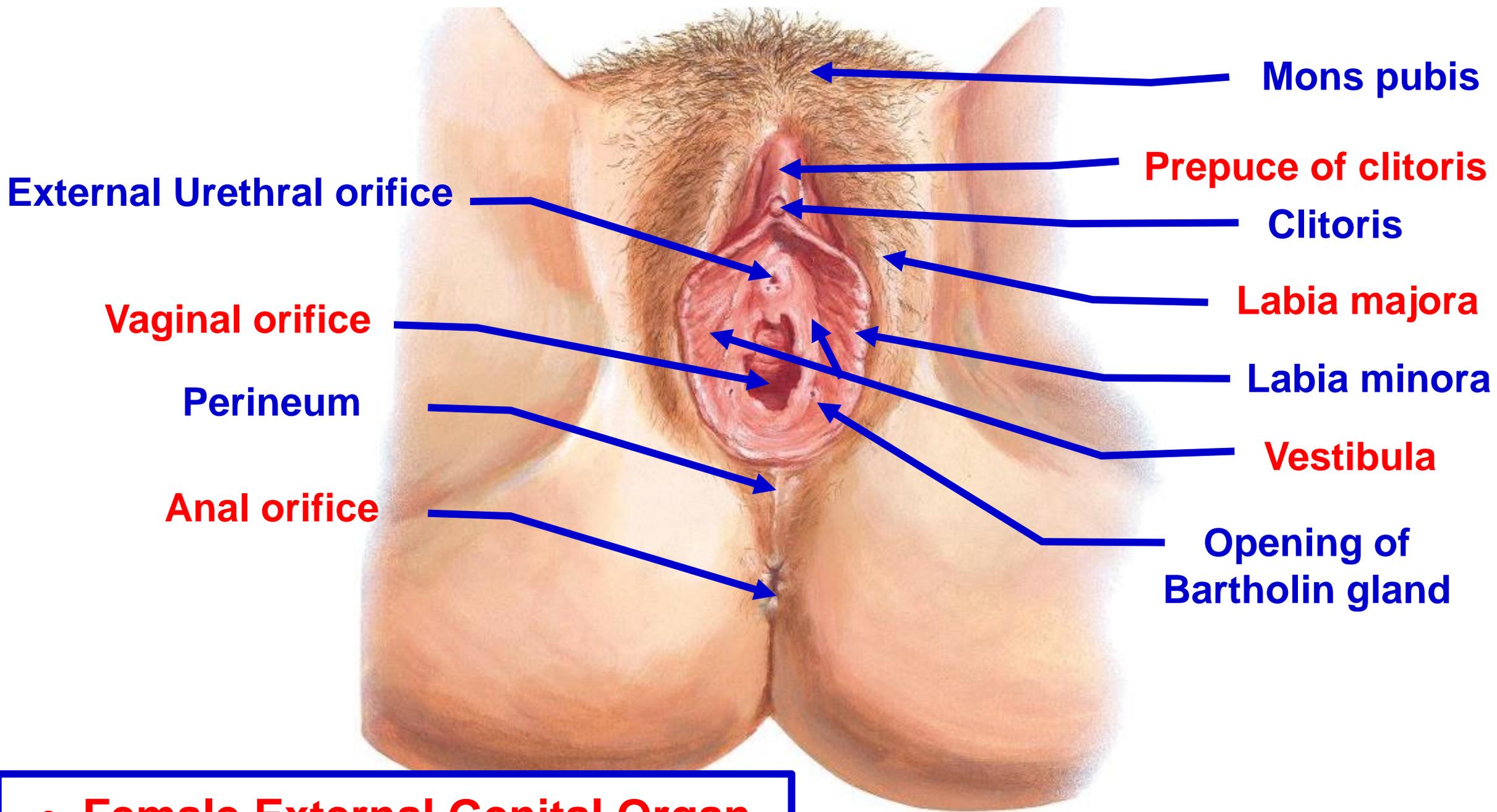


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Vulva

External female

Genital organ



Mons pubis

Prepuce of clitoris

Clitoris

Labia majora

Labia minora

Vestibula

Opening of Bartholin gland

External Urethral orifice

Vaginal orifice

Perineum

Anal orifice

• Female External Genital Organ

- **Female External Genital Organ**

- **Vulva**

1- Mons pubis, collection of fat overlying the symphysis pubes covered by hairs.

2- Labia majora a pair of skin folds, they are covered by hairs after puberty.

3- Labia minora a pair of thin skin folds between the two labia majora devoid of hairs.

- **Anteriorly**, each fold passes above clitoris to meet its fellow of the opposite side, forming the **prepuce of the clitoris**.
- **Posteriorly**, two laminae unite to form the frenulum (fourchette).

4- Clitoris is an erectile corpora cavernosa tissue which becomes engorged with blood (enlarge) during sexual stimulation.

5- Vestibule this is the interval between the two labia minora.

- It receives the external urethral orifice anteriorly and vaginal orifice posteriorly.

6- Greater vestibular glands (Bartholin glands);

2 small rounded glands, one on each side of the vaginal orifice.

- They secrete mucus to lubricate the vagina during sexual intercourse

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