

وسهلا



أهلا

يُمنع أخذ السلايدات بدون
إذن المحرر واي اجراء
يخالف ذلك يقع تحت طائلة
المسؤولية القانونية
جميع المعلومات للاستخدام
التعليمي فقط

الأستاذ الدكتور يوسف حسين

رئيس قسم التشريح والأنسجة والأجنة

كلية الطب - جامعة مؤتة - الأردن

دكتورة من جامعة كولونيا المانيا

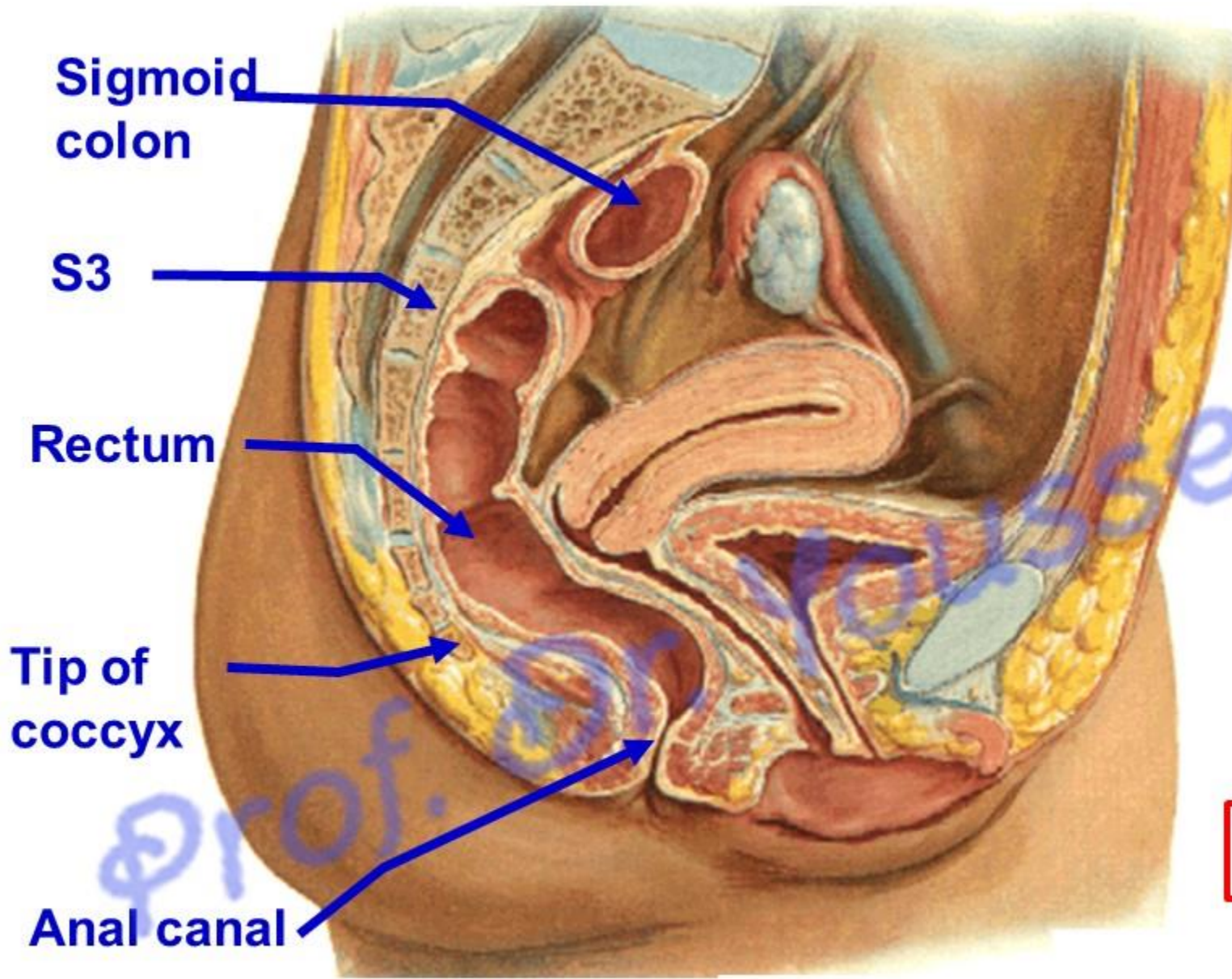
Prof. Dr. Youssef Hussein Anatomy - YouTube

الواتس 00201224904207

dr_youssefhussein@yahoo.com

Rectum

اليو تيوب د. يوسف حسين



Sigmoid colon

S3

Rectum

Tip of coccyx

Anal canal

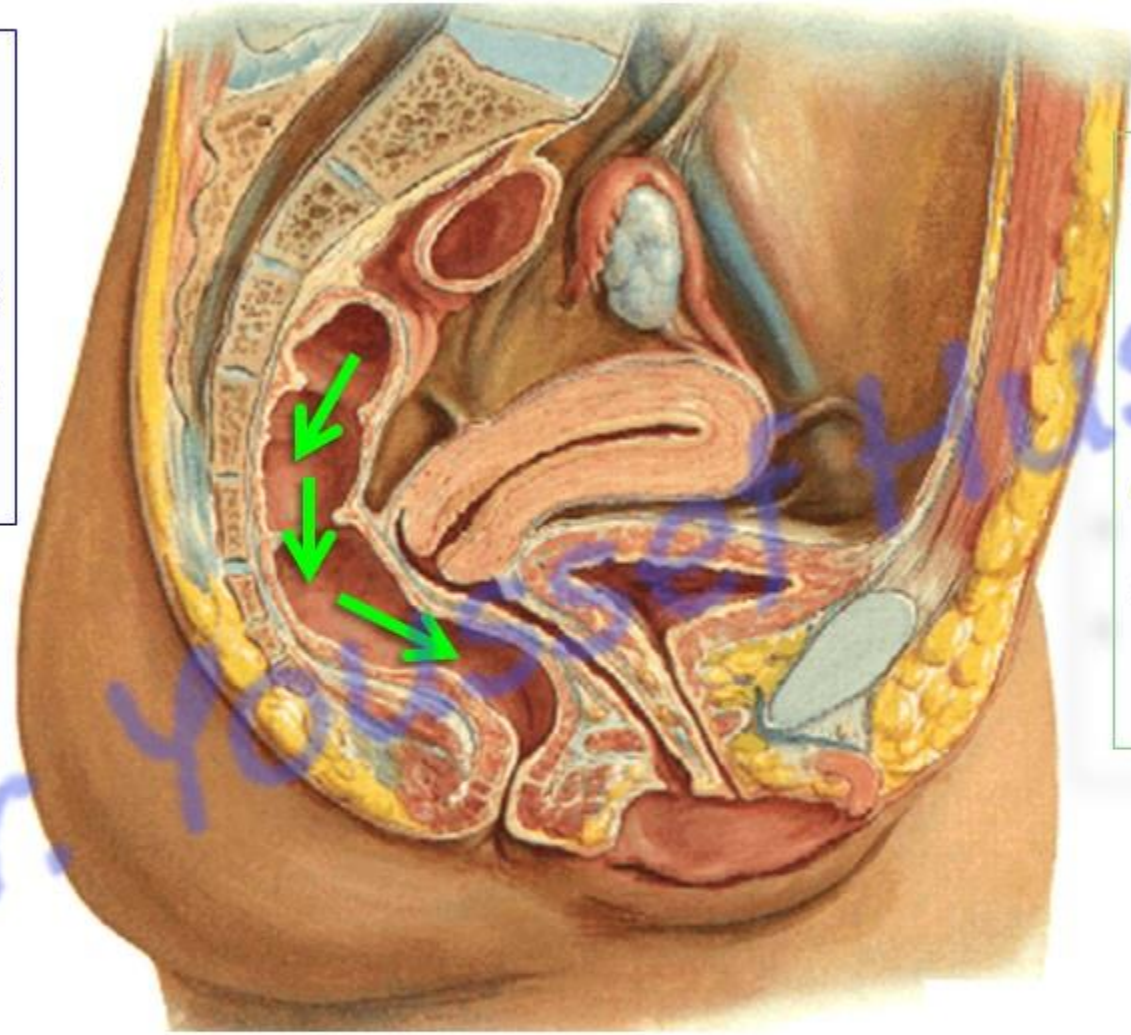
**** Beginning:** a continuation of the sigmoid colon at the 3rd sacral vertebra.

**** End:** at anorectal junction; one inch below and in front the tip of the coccyx.

**** Length,** it is about 12 cm long.

اليوطيوب د. يوسف حسين

- **Anteroposterior flexure**
- Follows the curvature of the sacrum and coccyx (**Sacral flexure**, **convex backward**).



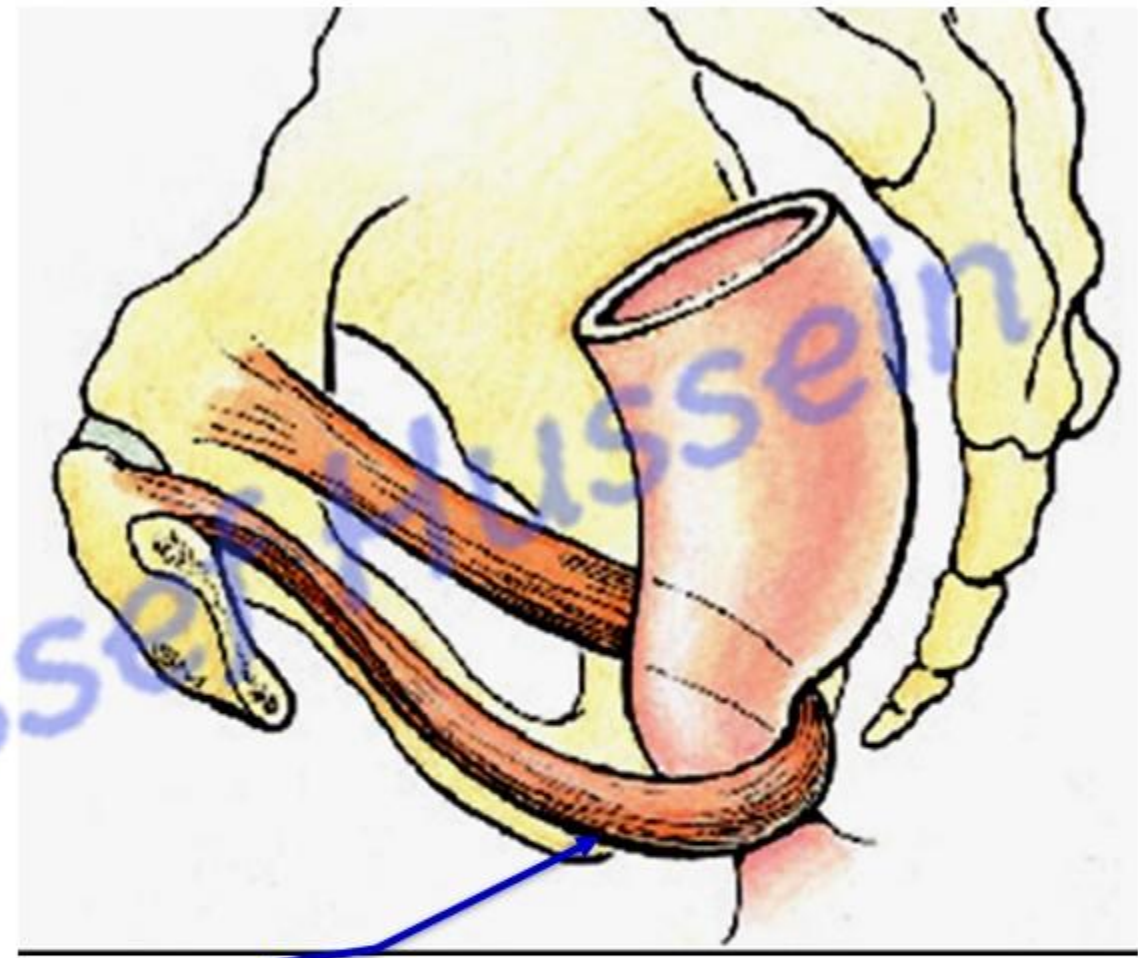
- It descends **Downwards and backwards**
- **Downwards**
- **Downwards and forwards**

اليوثيوب د. يوسف حسين

dr_youssefhussein@yahoo.com

- **Anteroposterior flexure**

- At anorectal junction (**convex forward**): puborectalis portion of levator ani muscles forms **a sling** at the junction of rectum with anal canal and pulls this part of forward.
- It is an important mechanism for **fecal continence** during the resting state by its active contraction during peristaltic contractions if defecation is not to occur



puborectalis

اليوثيوب د. يوسف حسين

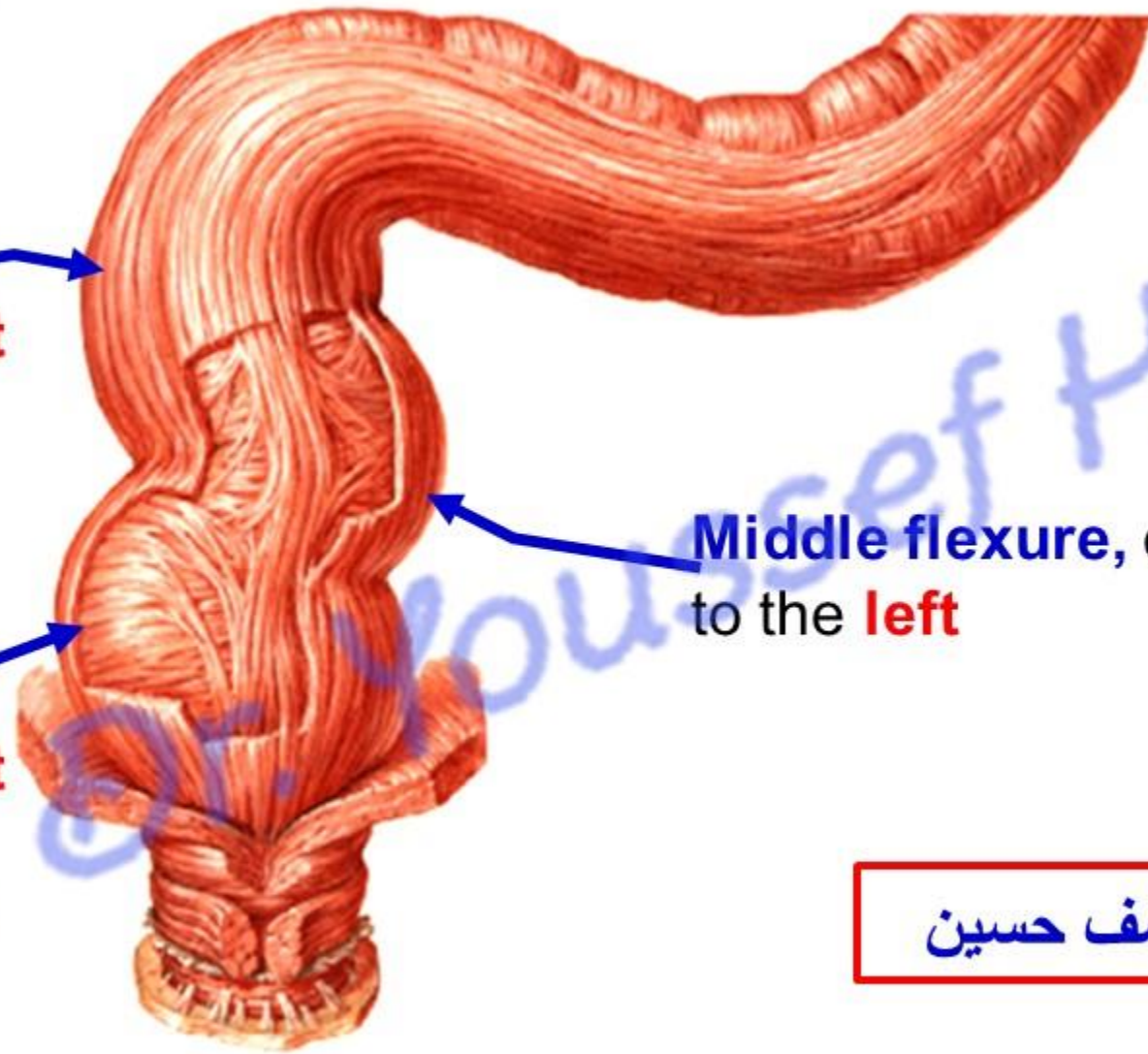
Right

- **3 Lateral rectal flexures**

Upper flexure,
convex to the **right**

Lower flexure,
convex to the **right**

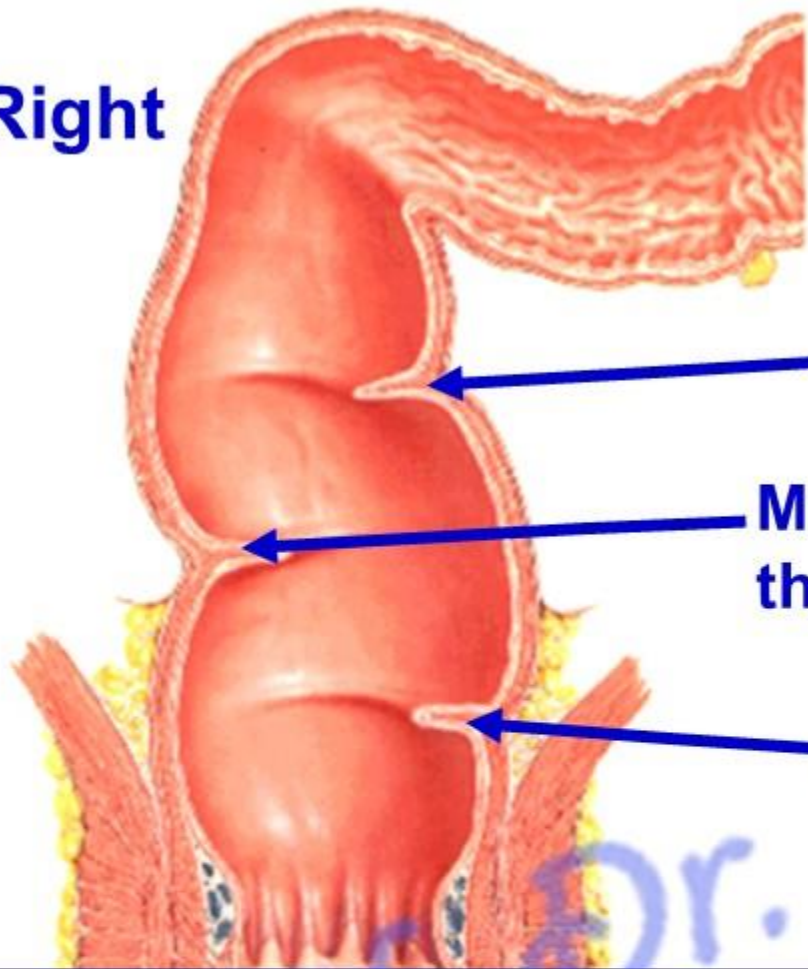
Middle flexure, convex
to the **left**



اليوثيوب د. يوسف حسين

dr_youssefhussein@yahoo.com

Right



- 3 Lateral rectal folds (Houston's valves)

Superior rectal valve

Middle rectal valve, the largest

Inferior rectal valve



- Endoscopic appearance

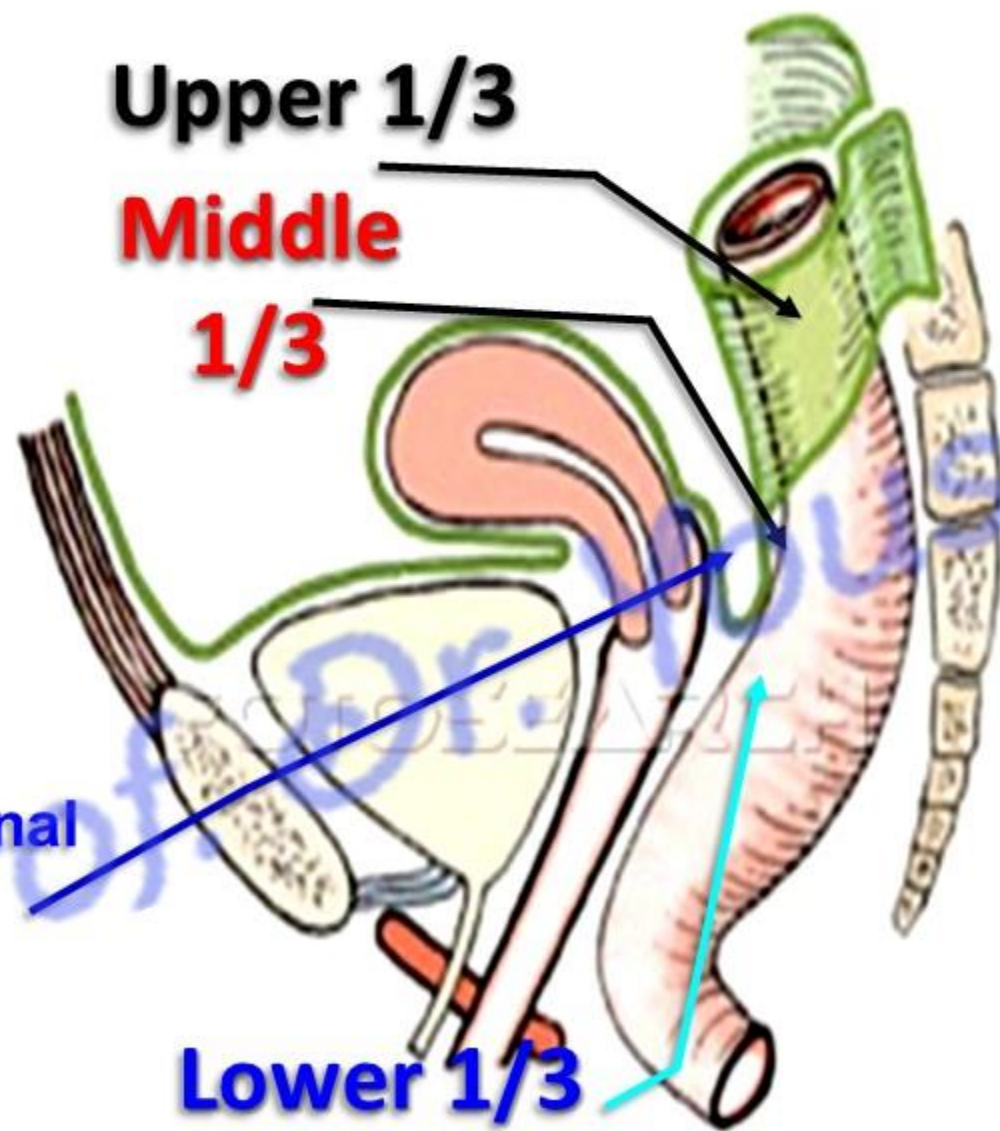
- **Rectal shelves- Houston's valve:** 3 transverse folds lie close to inner aspect of **concave side** of 3 lateral flexures.

- **Functions;** support the **weight of the stool**, and prevent its urging toward the anus.

dr_youssefhussein@yahoo.com

اليوثيوب د. يوسف حسين

Peritoneal Relations



Upper 1/3

Middle
1/3

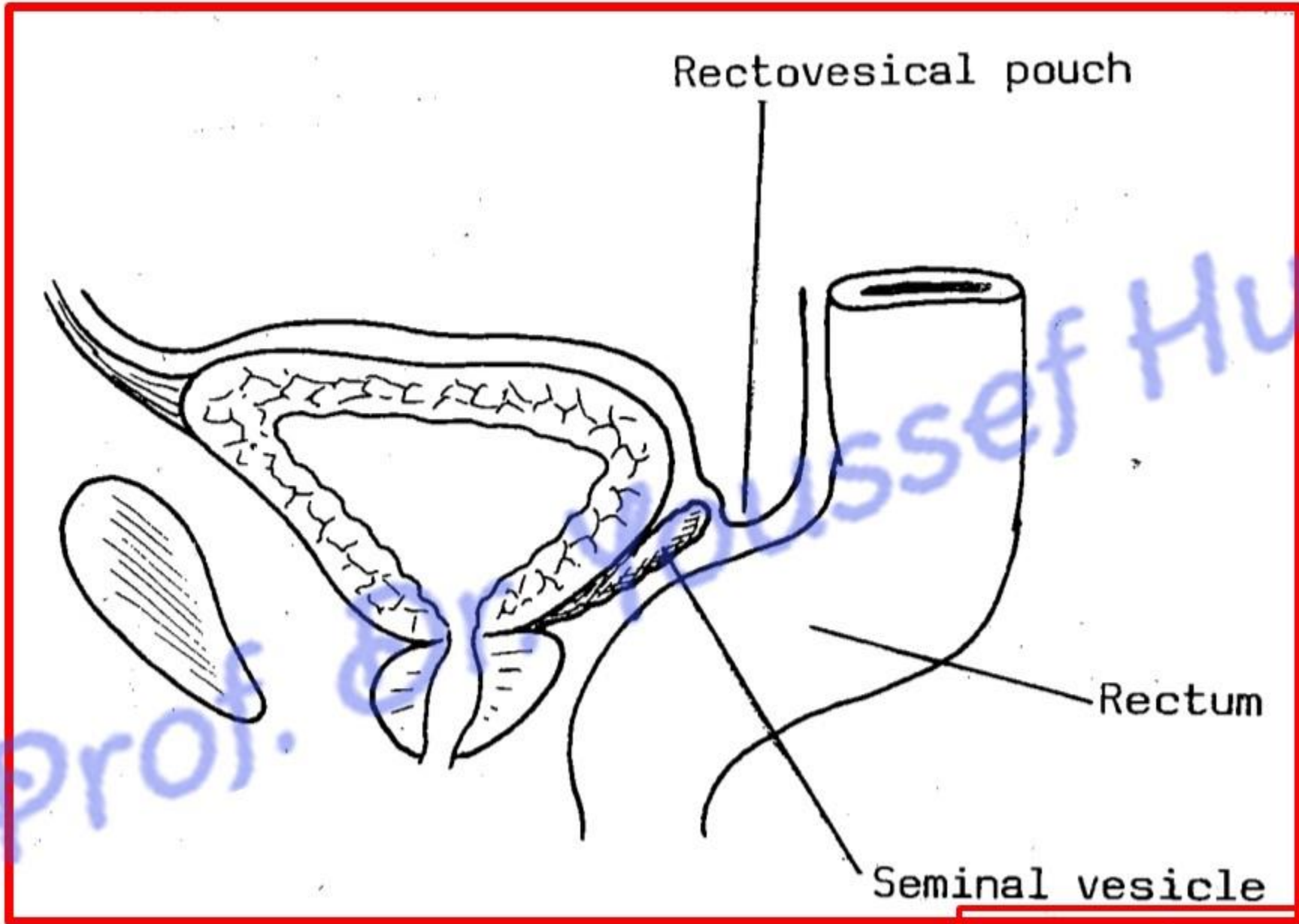
Lower 1/3

Rectovaginal
pouch



اليوتيوب د. يوسف حسين

dr_youssefhussein@yahoo.com



اليو تيوب د. يوسف حسين

**** Peritoneal covering;**

1- The upper third, is covered by peritoneum on the front and sides.

2- The middle third is only covered by peritoneum anteriorly.

3- The lower third has no peritoneal covering.

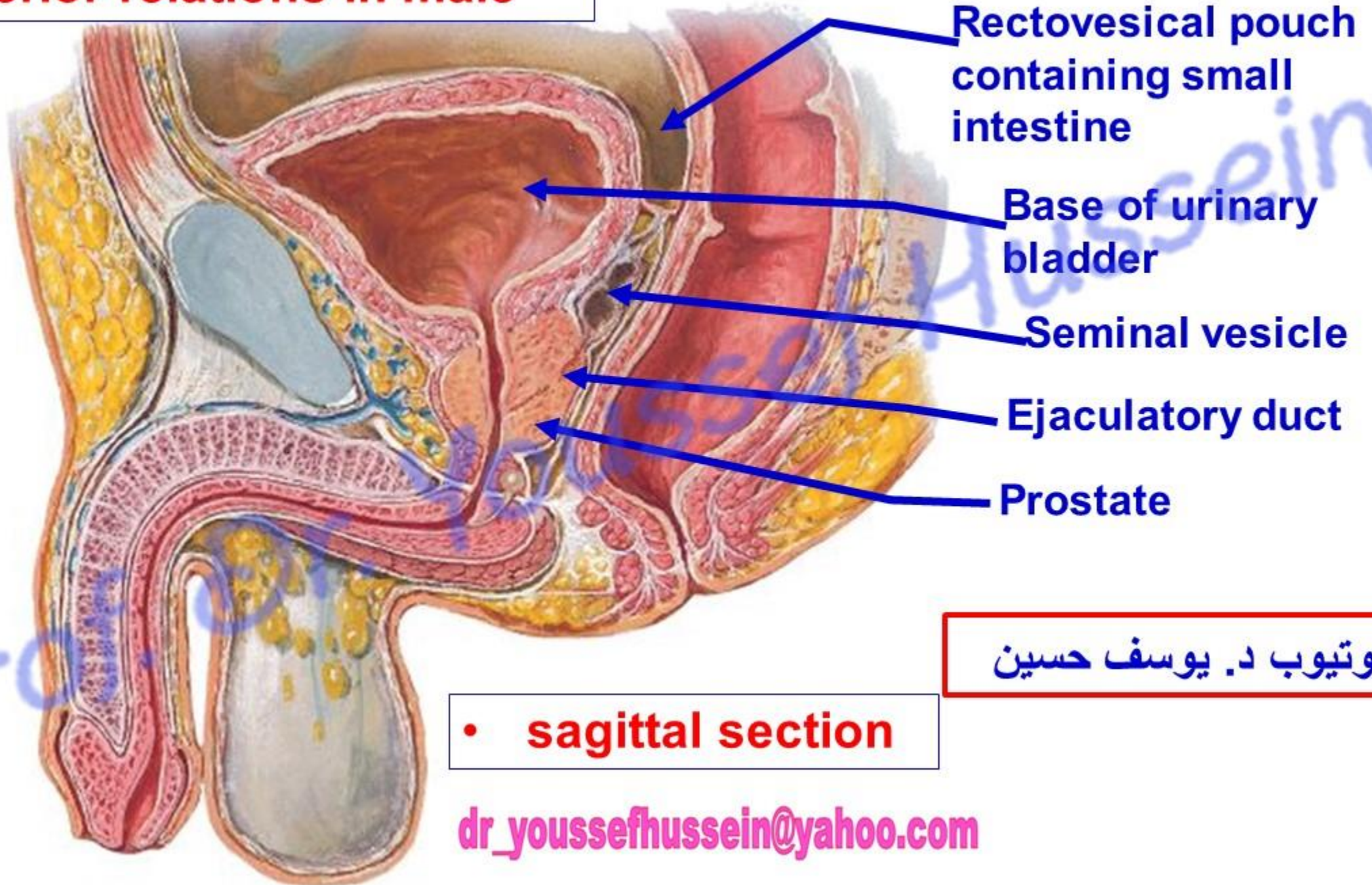
a- In female; - Reflection of peritoneum occurs from the front of the rectum at the Junction of its middle 1/3 and lower 1/3 on to the upper part of **the posterior wall of the vagina** to form the **rectovaginal, or Douglas pouch (5.5 cm from anal orifice)**.

b- In male; Reflection of peritoneum occurs from the front of the rectum at the junction of its middle 1/3 and lower 1/3 to the upper part of the **posterior surface (base) of urinary bladder**, called the **rectovesical pouch of Denonviller (7.5 cm from anal orifice)**

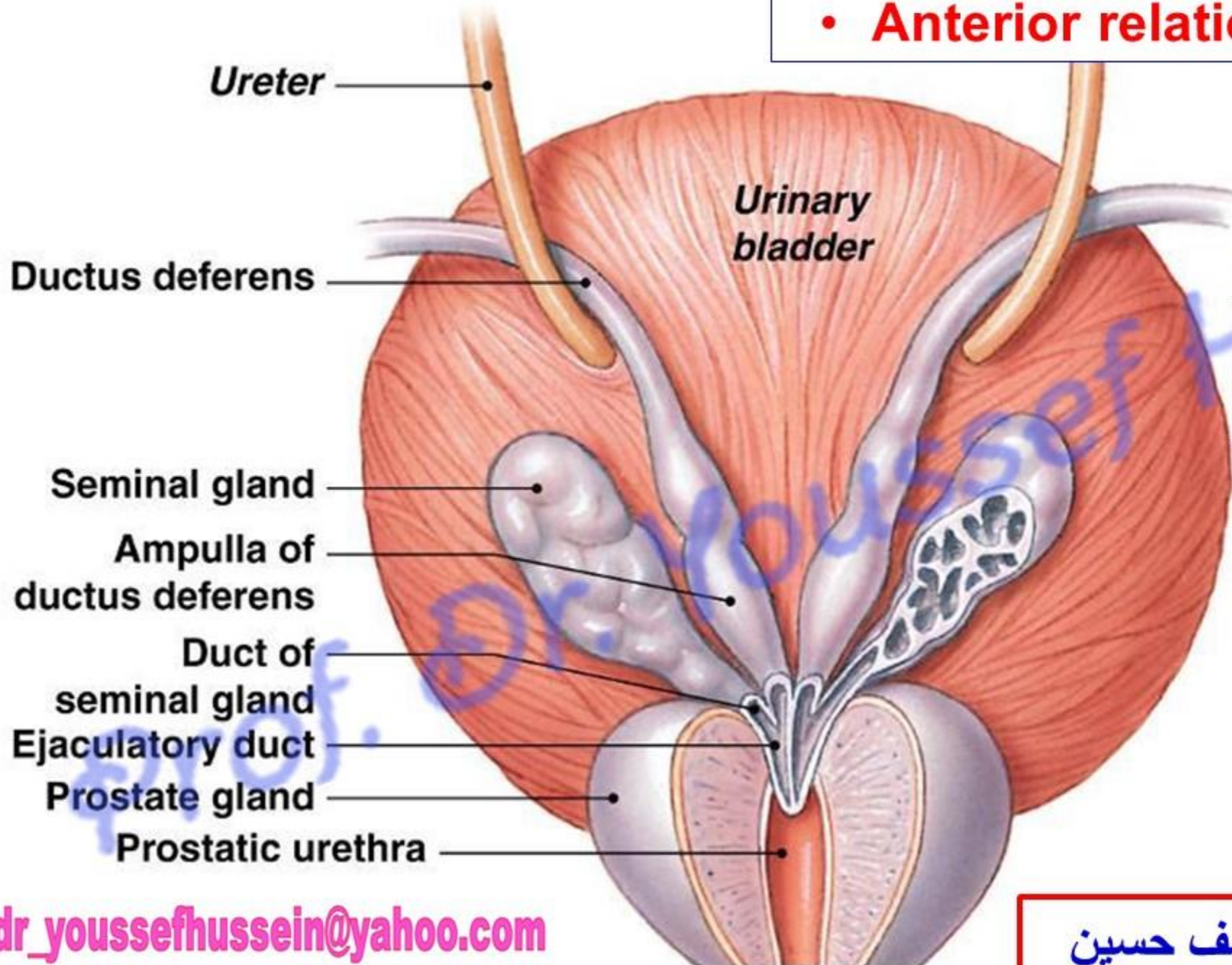
اليو تيوب د. يوسف حسين

dr_youssefhussein@yahoo.com

- **Anterior relations in male**

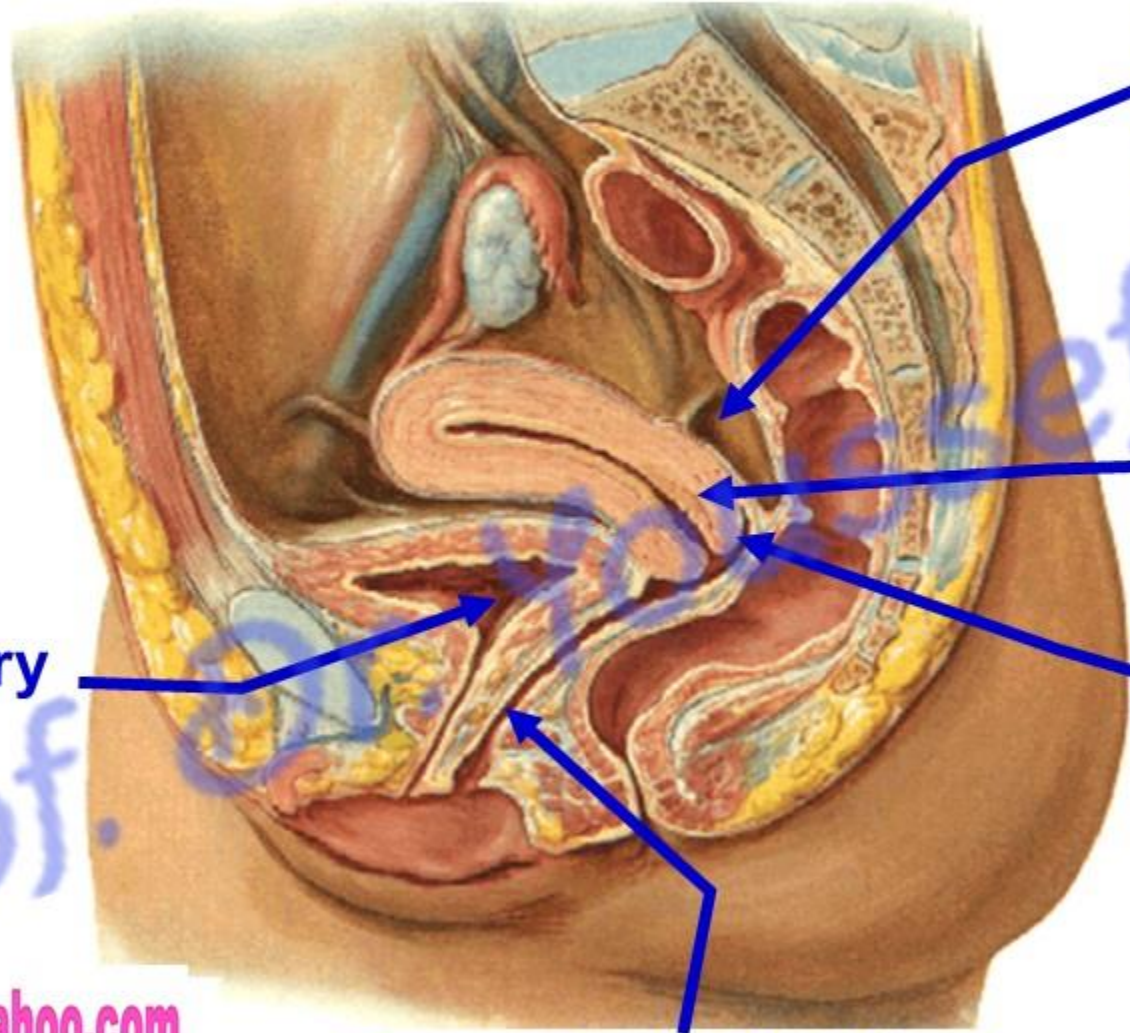


- Anterior relations in male



- Base of urinary bladder

- **Anterior relations in female**



Rectovaginal pouch
containing small
intestine

Cervix of uterus

Posterior
fornix of
vagina

Base of urinary
bladder

Posterior wall of Vagina

اليوطيوب د. يوسف حسين

Posterior relations both sexes

اليوثيوب د. يوسف حسين

Piriform

Median sacral Vs

Sympathetic trunk

Ventral rami of Sacral nerve

Ventral rami of coccygeal nerve

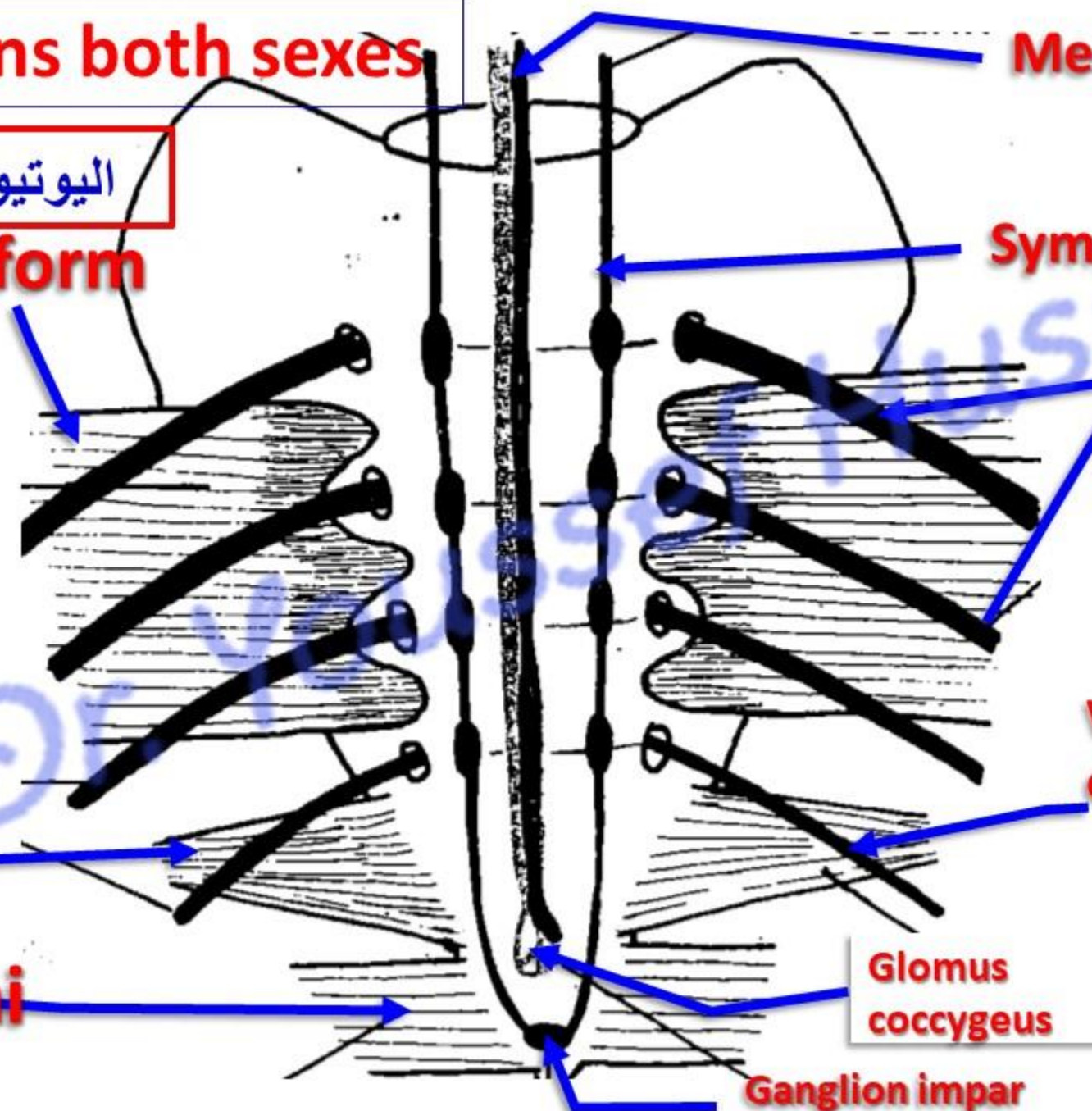
Glomus coccygeus

Ganglion impar

Coccygeus

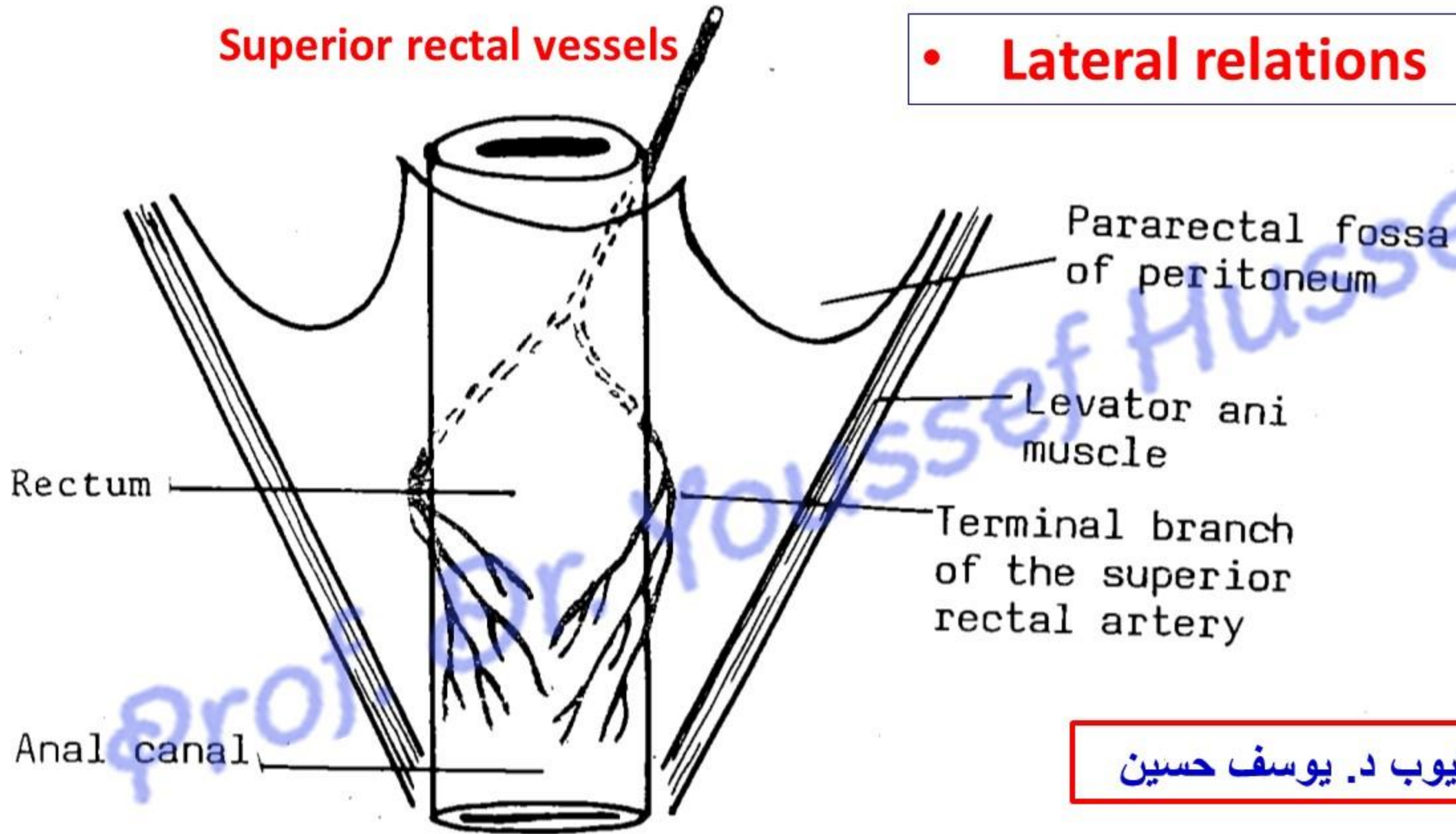
Levator ani

dr_youssefhussein@yahoo.com



Superior rectal vessels

- **Lateral relations**



اليوتيوب د. يوسف حسين

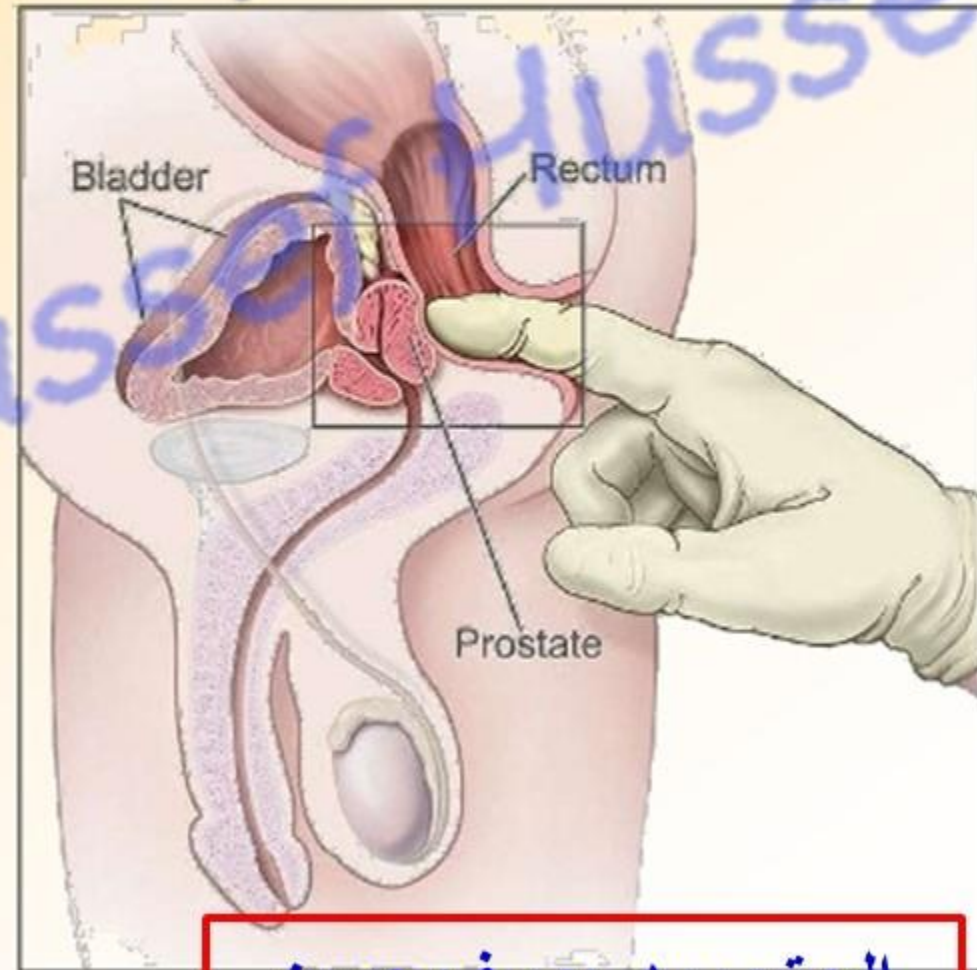
- **Factors support the rectum**
(Store of the stool)

1. **Pelvic diaphragm** (levator ani and coccygeus).
 2. **Perineal body.**
 3. **Lateral ligament of the rectum:** condensation of pelvic fascia.
 4. **Rectovesical fascia of Denonviller in male (anterior):** from the rectum to the back of the urinary bladder.
 5. **Rectovaginal fascia of Douglas in female (anterior):** from the rectum to the back of the vagina.
 6. **Fascia of Waldeyer (posterior):** condensation of pelvic fascia, connects rectum to the sacrum
- *** **Rectal prolapse:** the rectum protrudes from the anal canal

Digital Rectal Examination

P/R. examination

- Examination to check for abnormalities of organs or other structures in the pelvis and lower abdomen
- To check for
 - growths in or enlargement of the prostate gland in males. A tumor in the prostate can often be felt as a hard lump
 - problems in female reproductive organs (uterus and ovaries)
 - rectal bleeding or tumors in the rectum



اليو تيوب د. يوسف حسين

- **Ulcerative colitis**

- is chronic ulceration of the colon and rectum with cramping abdominal pain, rectal bleeding, diarrhea, and loose discharge of pus and mucus with scanty fecal particles.
- Complications include hemorrhoids, abscesses, anemia, electrolyte imbalance, perforation of the colon, and carcinoma.

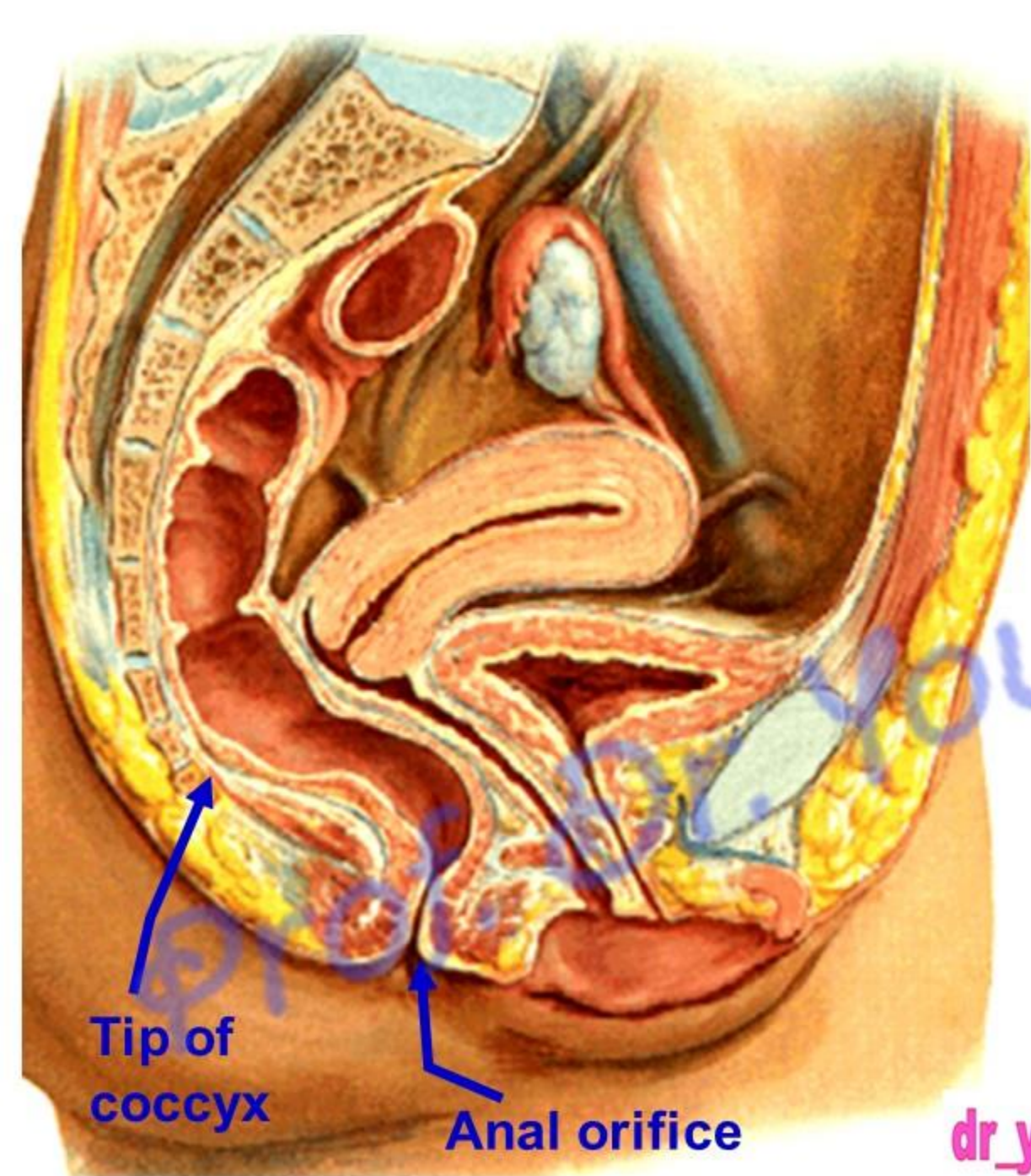
- **Irritable bowel syndrome (Nervous colon)**

- Causes: unknown, Genetic factors, Food sensitivity, bacterial overgrowth and neurotransmitter
- Abdominal cramps, bloating, diarrhea or constipation

dr_youssefhussein@yahoo.com

Anal canal

اليو تيوب د. يوسف حسين



• Anal Canal

- ** **Beginning**, one Inch below and in front of the tip of the coccyx as a continuation of the rectum.
- ** **Length**; It is about 4 cm long.
- ** **End**: It descends downwards and backwards to end at the anus (anal orifice).

اليوثيوب د. يوسف حسين

dr_youssefhusseini@yahoo.com

- **Posterior relations in female**

- **Relations in female**

- **Anterior relations in female**

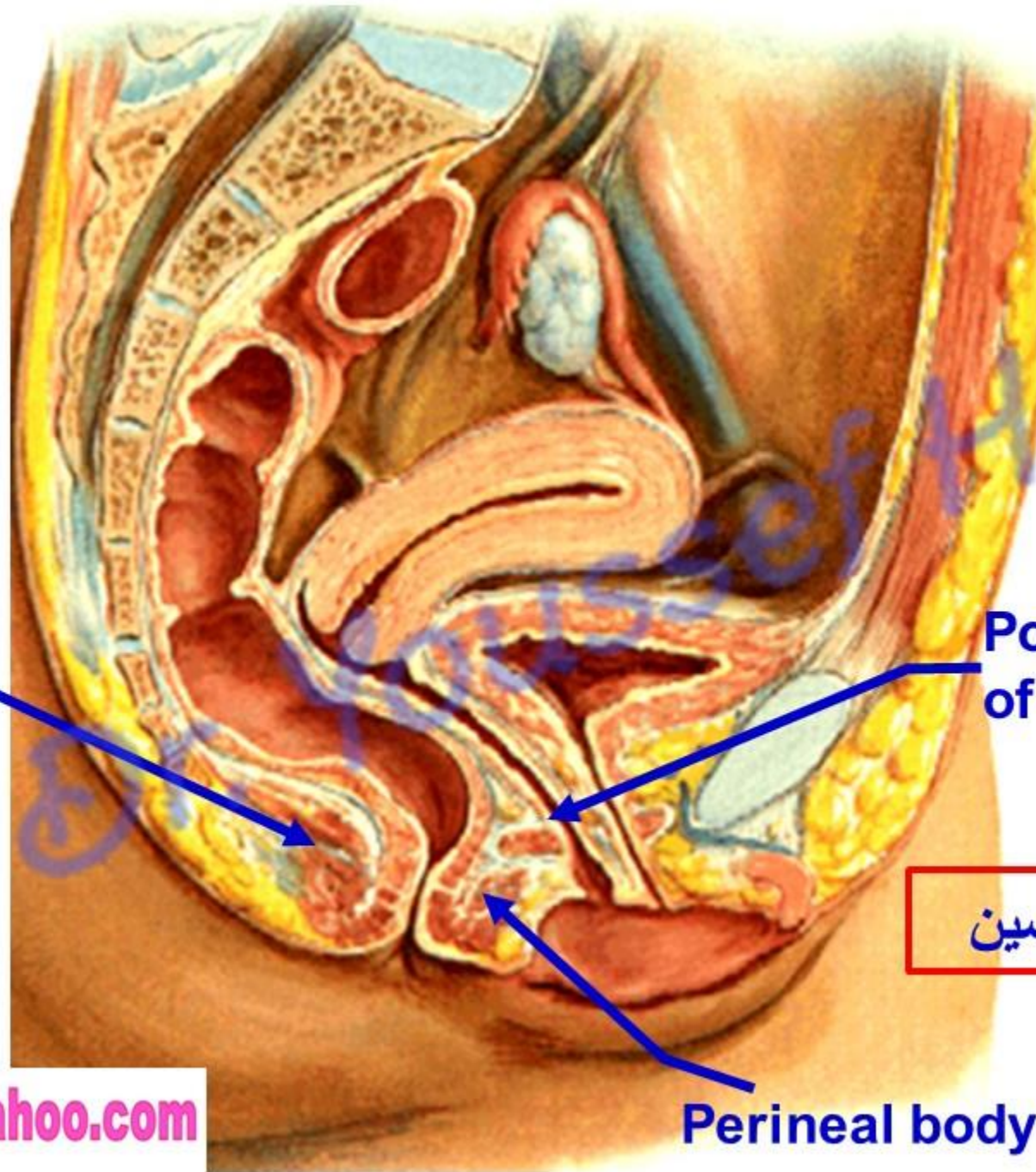
Anococcygeal raphe

Posterior wall of vagina

اليوثيوب د. يوسف حسين

Perineal body

dr_youssefhussein@yahoo.com



• **Relations in male**

• **Posterior relations**

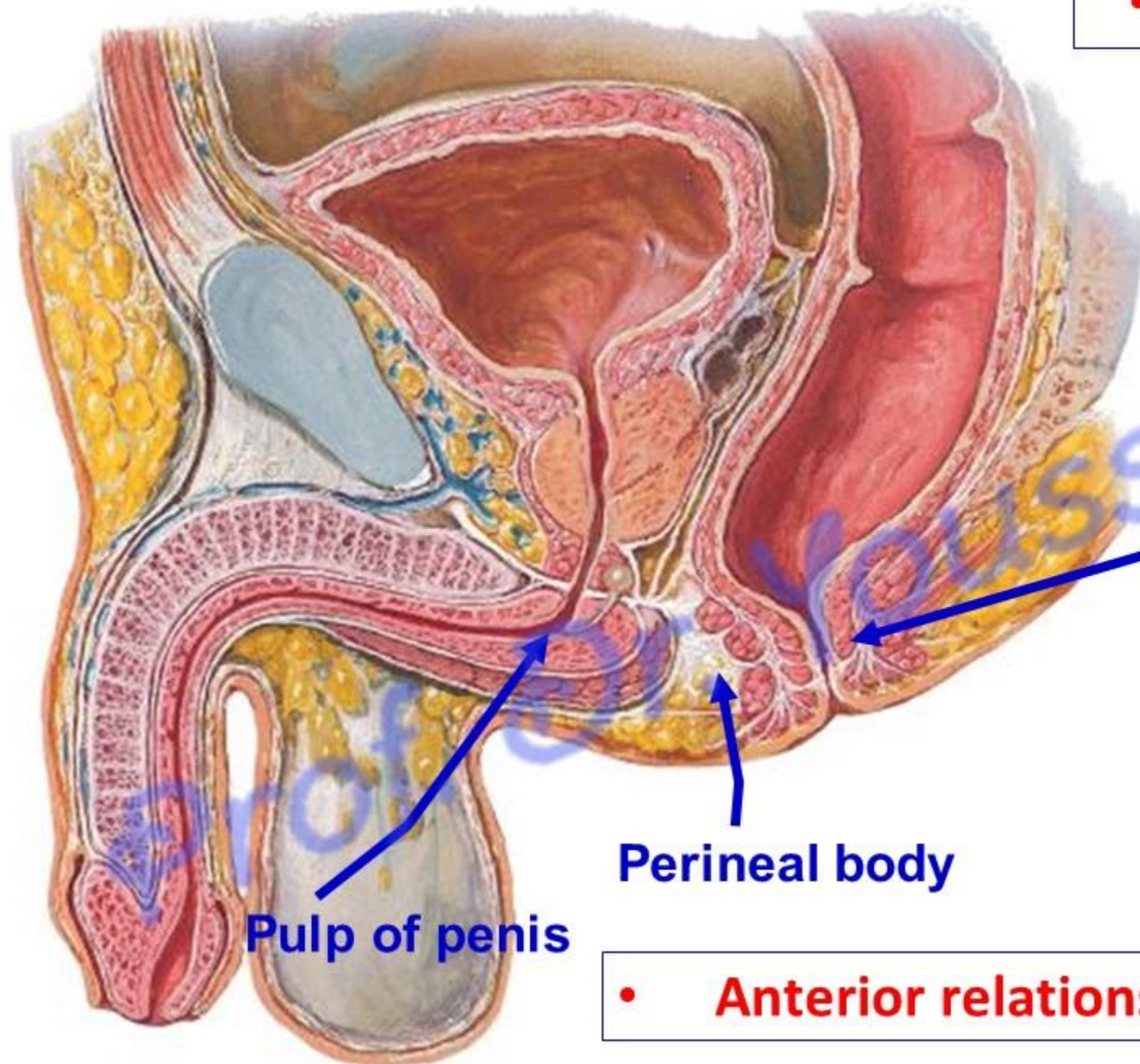
Anococcygeal raphe

Perineal body

Pulp of penis

• **Anterior relations**

اليوطيوب د. يوسف حسين



dr_youssefhussein@yahoo.com

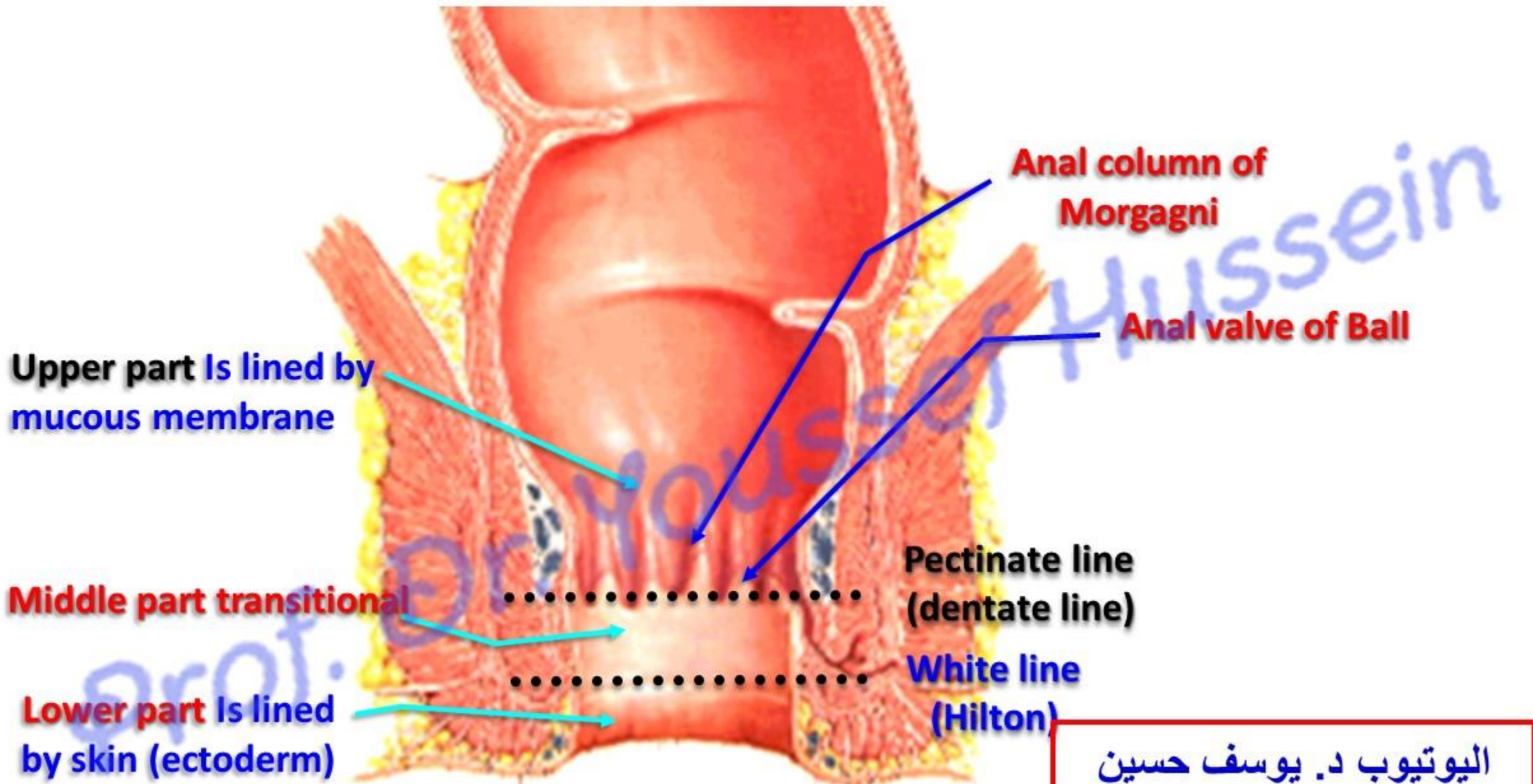
- **Lateral Relations
in both sex**

Levator ani
(above)

Ischiorectal fossa
(below)

اليوثيوب د. يوسف حسين

dr_youssefhussein@yahoo.com



Upper part is lined by mucous membrane

Middle part transitional

Lower part is lined by skin (ectoderm)

Anal column of Morgagni

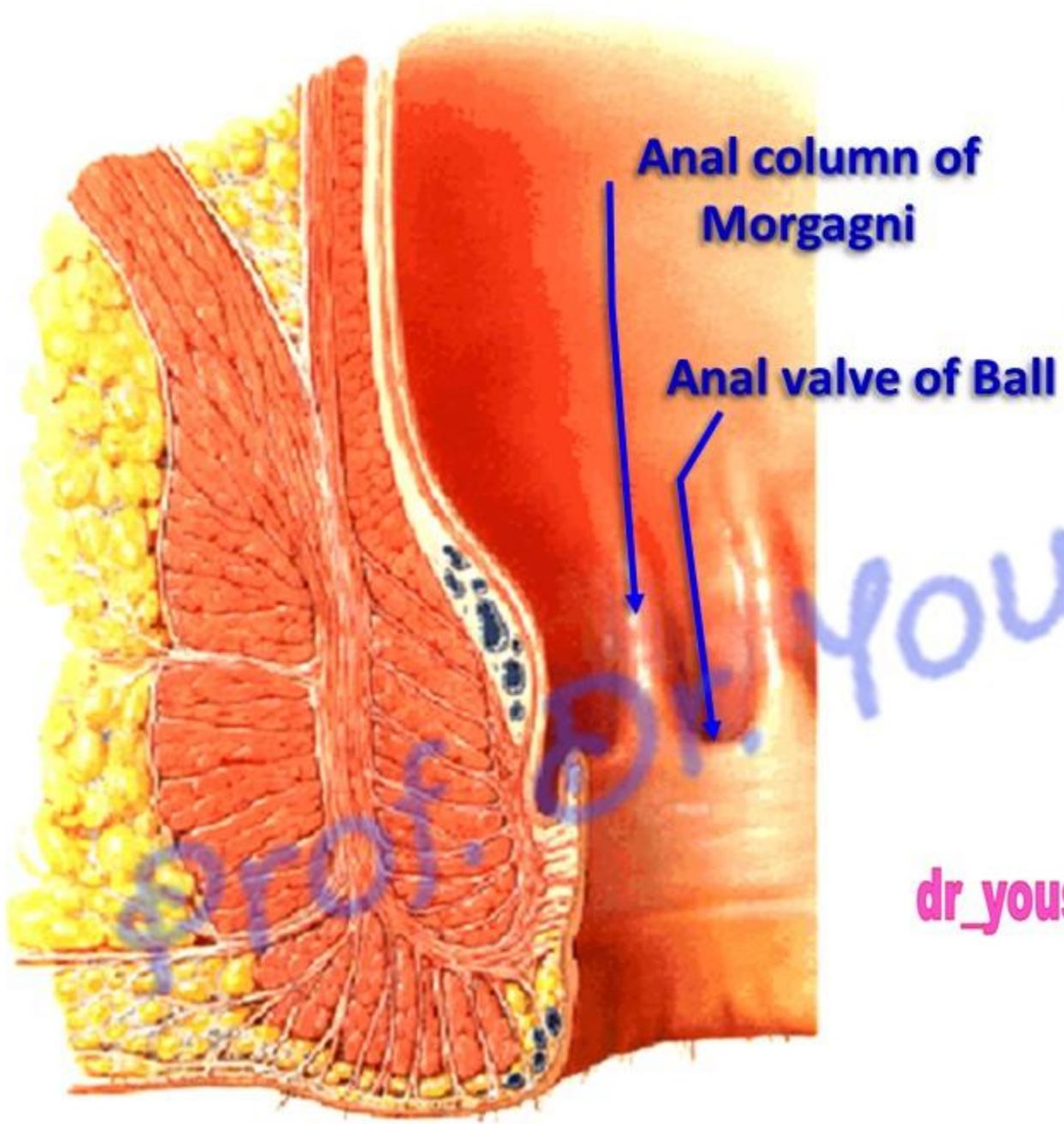
Anal valve of Ball

Pectinate line (dentate line)

White line (Hilton)

اليوثيوب د. يوسف حسين

Mucocutaneous lining of the anal canal



**** Internal appearance (Mucous membrane) of the anal canal**

- **Upper part**, (1.5 cm) mucous part, endodermal (lined by simple columnar epithelium).
 - It shows 6-10 vertical folds called **anal columns of Morgagni**.
 - The lower end of the anal columns is connected by crescentic folds called **anal valves of Ball**.
 - Above each anal valve there is a small recess called **anal sinus** receiving the opening of the anal gland.

dr_youssefhussein@yahoo.com

البيوتوب د. يوسف حسين

**** Internal appearance (Mucous membrane) of the anal canal**

2- Middle part (1.5 cm); transitional zone;

- It is lined by stratified squamous epithelium **devoid** of sweat and sebaceous glands.
- It extends **from** the pectinate line above **to** the white line below.
- The **white line of Hilton** demarcates the lower end of the internal anal sphincter.

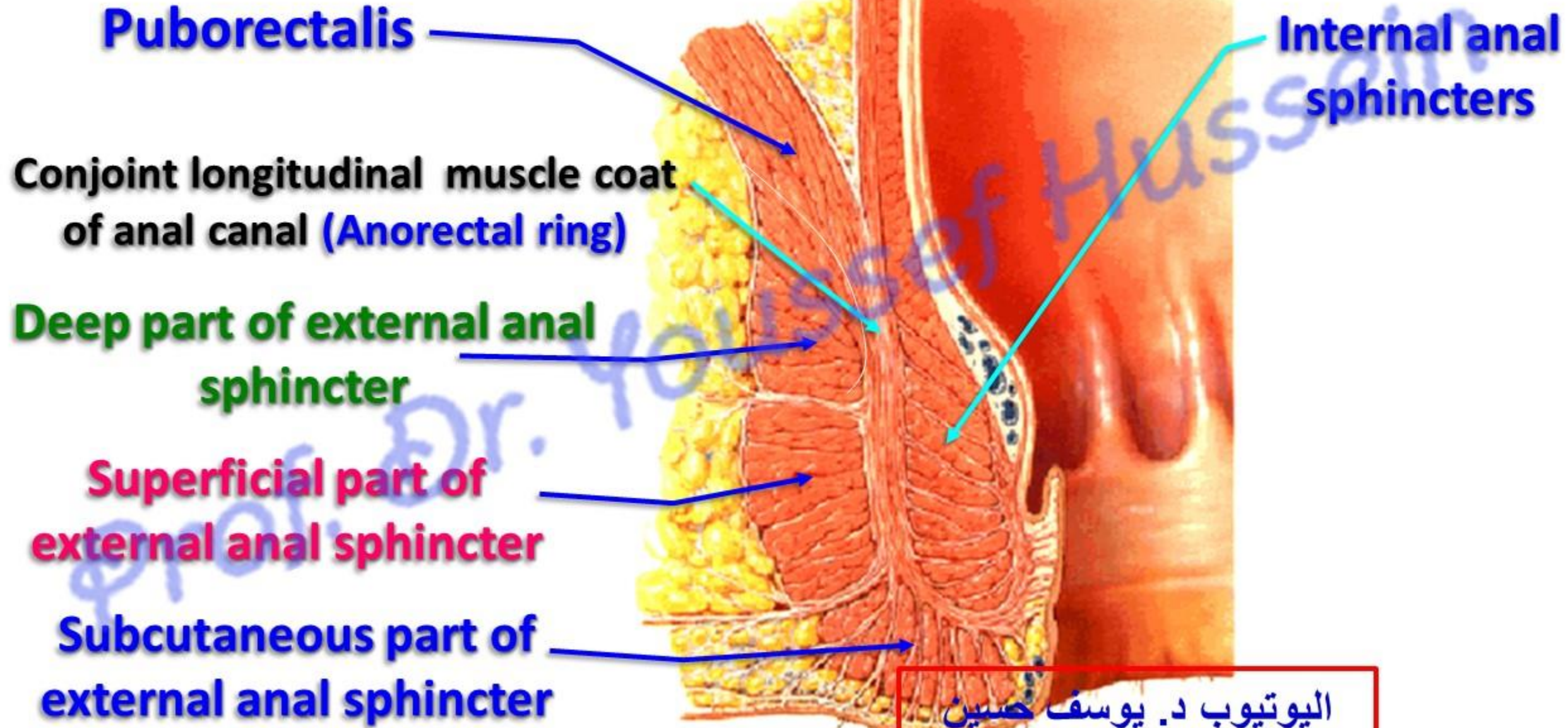
3- Lower part, (1 cm), ectodermal in origin,

- It is lined by true skin containing sweat and sebaceous glands
- **Anal fissure, tear of the lining of the anal canal leading to severe pain and bleeding.**

اليو تيوب د. يوسف حسين

dr_youssefhussein@yahoo.com

• L.S. Sphincters of the anal canal



- **Sphincters of the anal canal**

- A- Internal anal sphincter:**

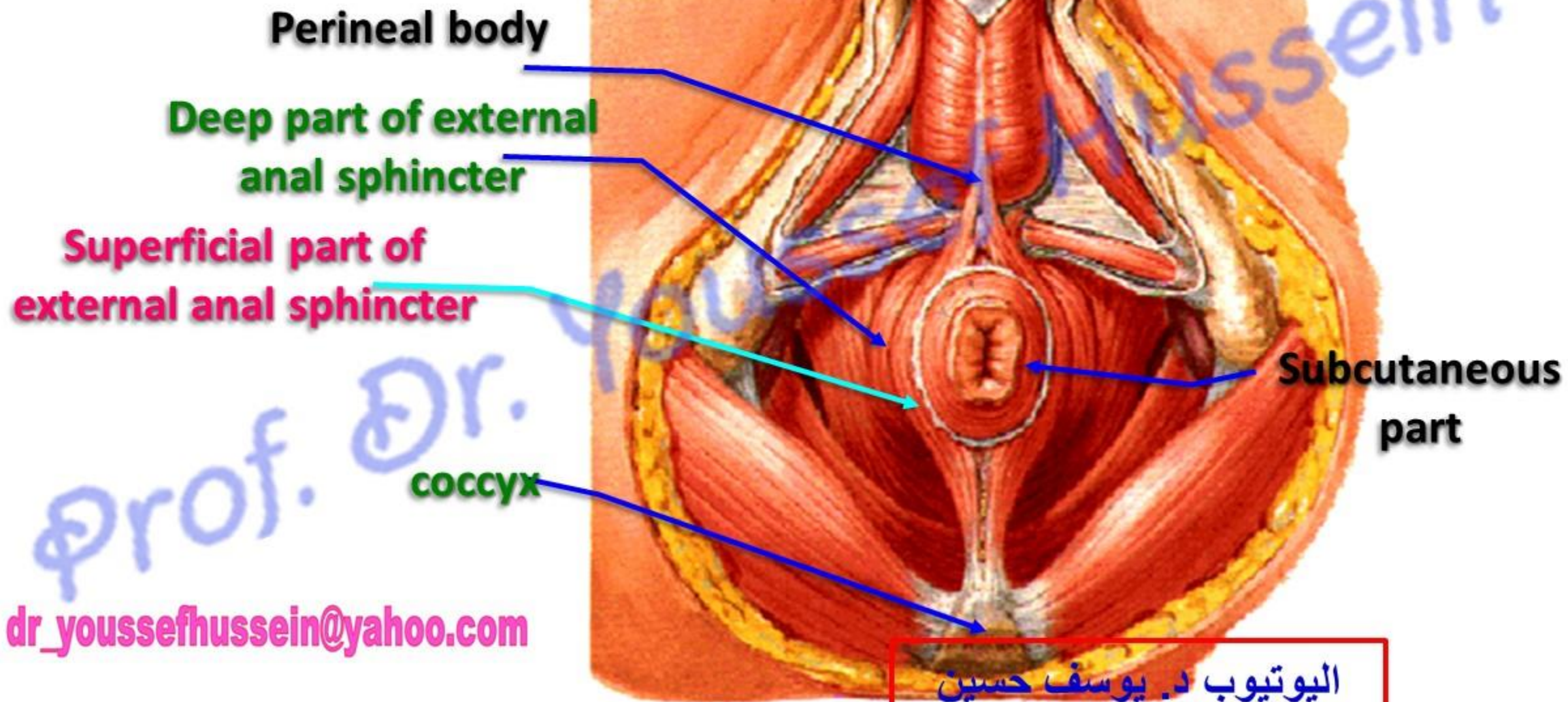
- It surrounds the **upper 2/3** of the anal canal.
- It is a thickening of **circular smooth muscle** layer of the gut.
- It is thickened in chronic constipation.
- It is an **involuntary** muscle.
- **Nerve supply** by autonomic nerves.
 - **Parasympathetic** fibers from **S2, 3, 4**, produces **relaxation** of the sphincter.
 - **Sympathetic** fibers from **inferior hypogastric plexus**, produces **contraction** of sphincter.

- B- External anal sphincter;**

- It surrounds the **whole length** of the anal canal; outside the internal anal sphincter.
- It is formed of **striated muscle** fibers.
- It is a **voluntary** muscle.
- **Nerve supply** by inferior rectal nerve from pudendal nerve.

اليوثيوب د. يوسف حسين

T.S. External anal sphincter



dr_youssefhussein@yahoo.com

الـيـوتـيـوب د. يـوسـف حـسـين

**** Parts of the external anal sphincter;**

1- Subcutaneous part (under the skin),

- It is a **thick circular band** surrounding the **lower part** of the anal canal.
- has **no bony** attachment

2- Superficial part: above the subcutaneous part,

- It is formed of **two bands** surrounding **lower part** of the internal anal sphincter.
- They arise from the coccyx and inserted into the perineal body.

3- Deep part: above the superficial part.

- It is a **thick circular band** surrounding the **upper part** of the internal anal sphincter.
- has **no bony** attachment

C- Ano-rectal ring;

- It is formed by the fusion of,
 - a- Internal anal sphincter.
 - b- Deep part of the external anal sphincter.
 - c- Puborectalis part of the levator ani muscle.

اليوتيوب د. يوسف حسين

Division of the ring produces fecal incontinence

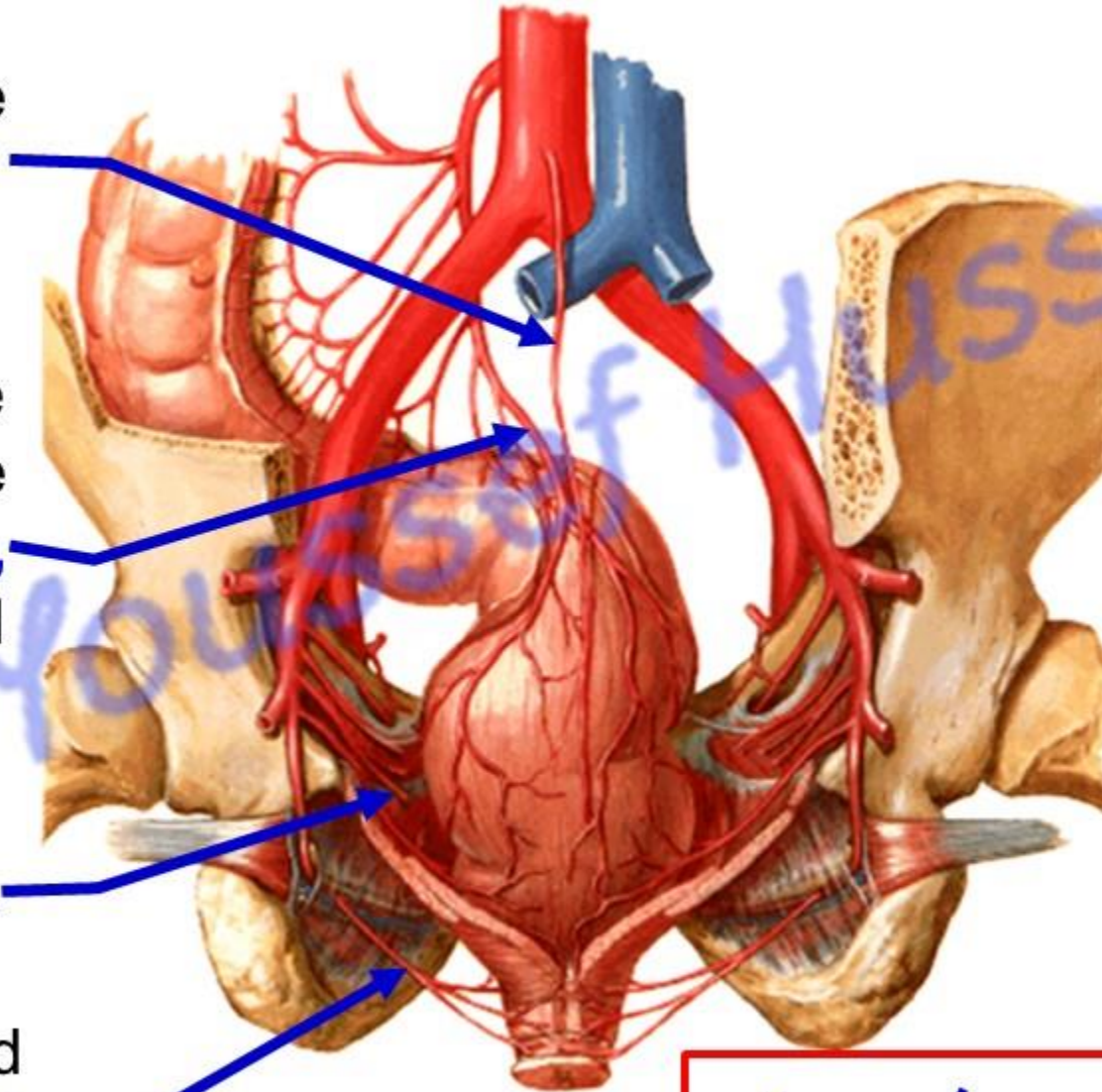
Arterial supply of the rectum and anal canal

Median sacral artery, (single branch) from **abdominal aorta**.

Superior rectal artery, (single branch) continuation of the **inferior mesenteric artery**, anastomosis with the middle and inferior rectal arteries

Middle rectal arteries (right and left) from the **internal iliac artery**

Inferior rectal arteries (right and left) from the **internal pudendal artery**.



اليوطيوب د. يوسف حسين

dr_youssefhusseini@yahoo.com

Venous Drainage

Median sacral vein
ends in left common
iliac vein **or** IVC

IVC

Inferior Mesenteric Vein

Superior Rectal Vein

Internal iliac Vein

Middle Rectal Vein

Internal Pudendal
Vein

Inferior Rectal Vein

Six Radical Veins

Internal rectal
venous plexus

External rectal
venous plexus

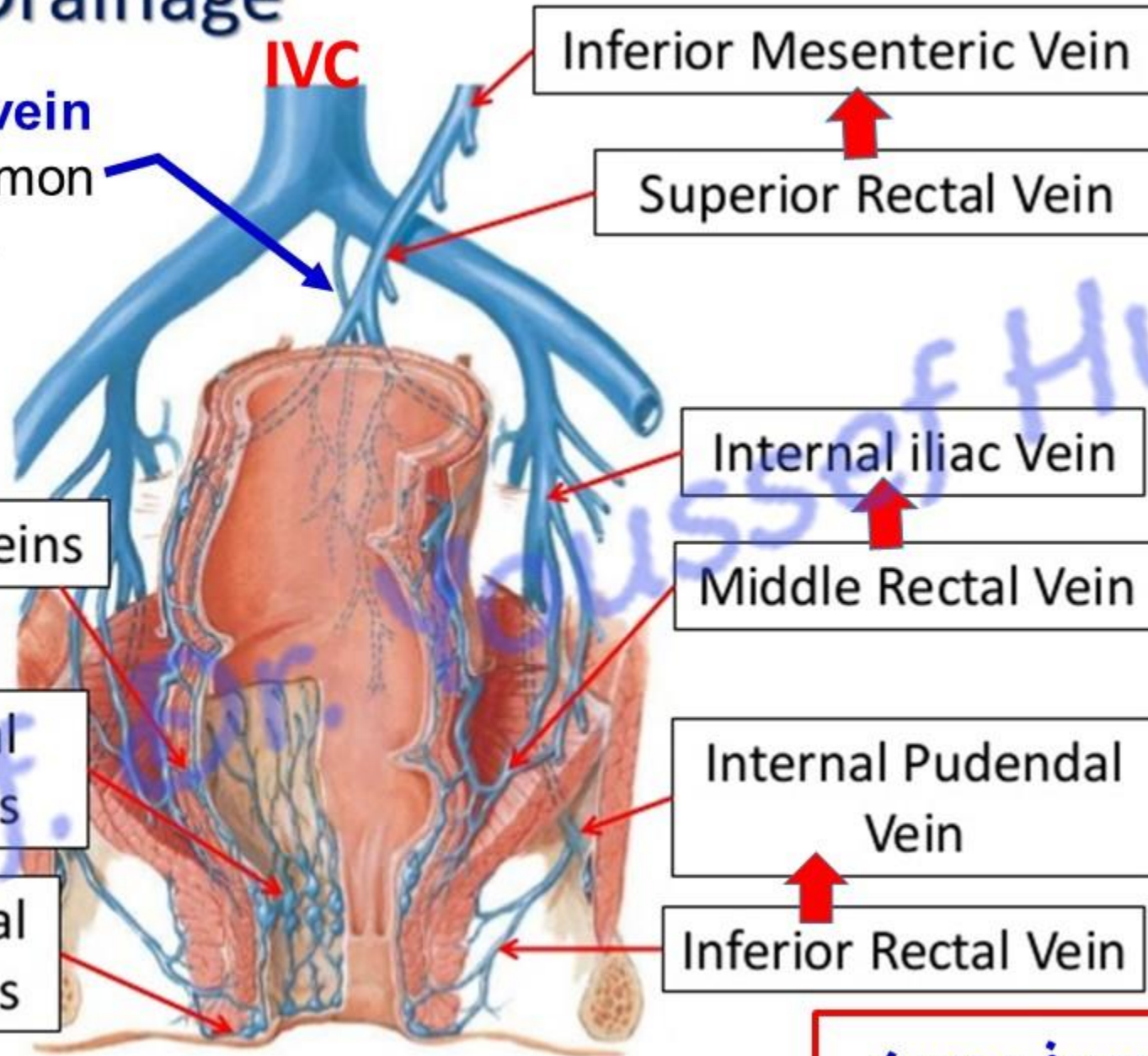
P

S

S

اليوثيوب د. يوسف حسين

dr_youssefhussein@yahoo.com

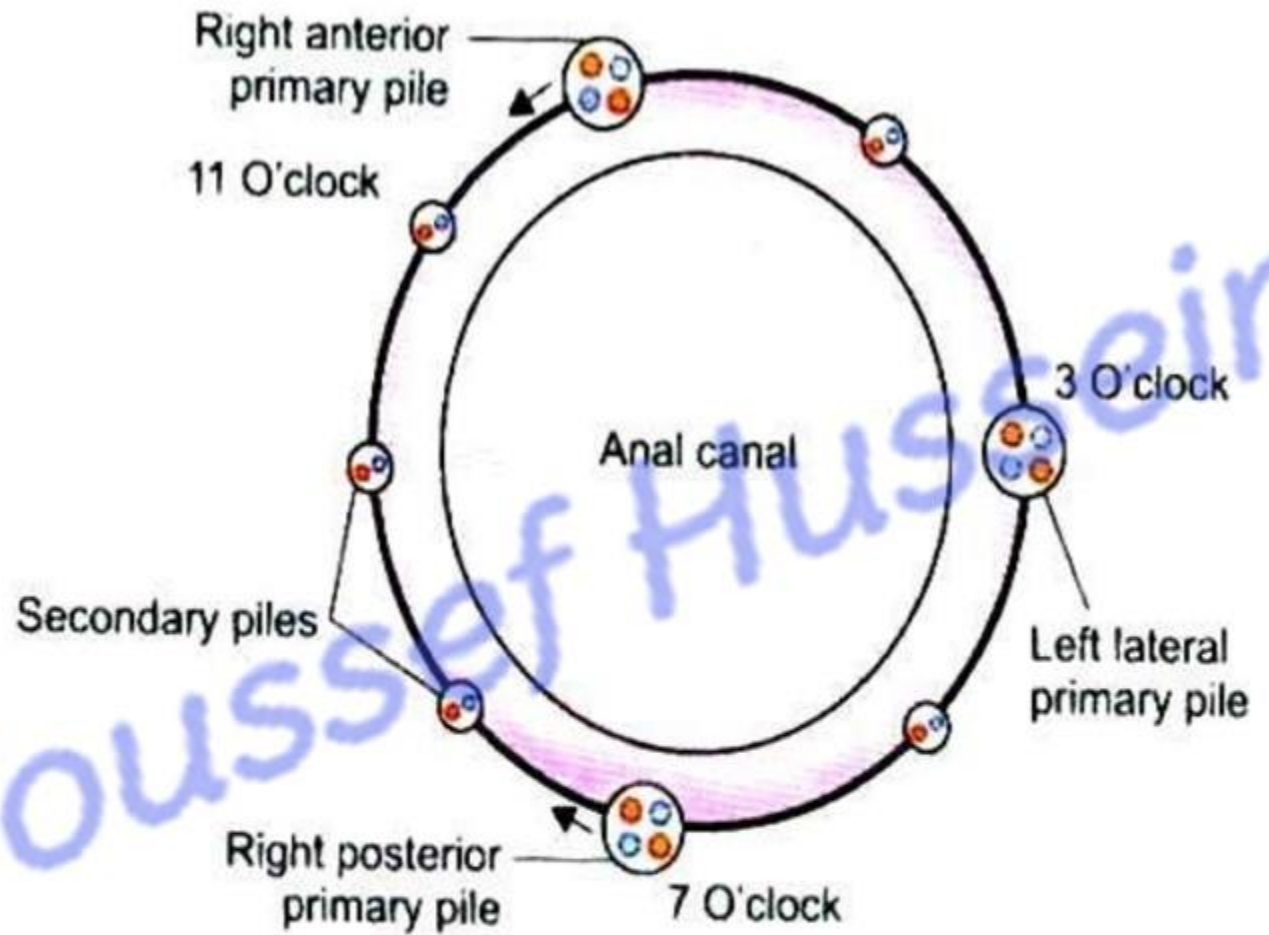
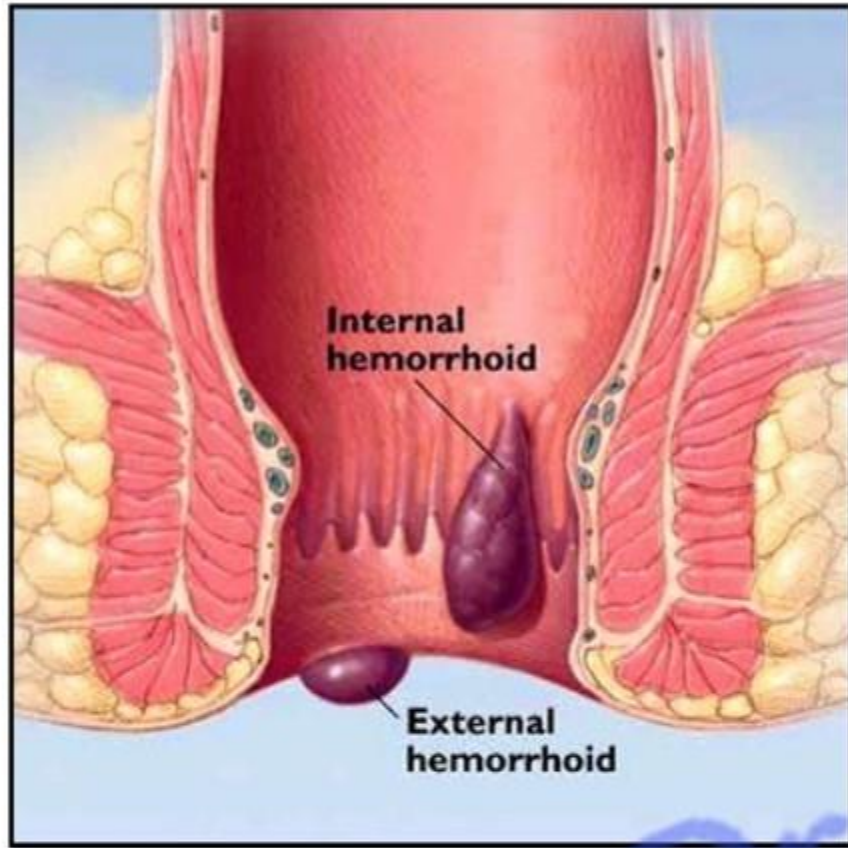


Internal rectal venous plexuses

- It lies in the **submucosa**.
- It is drained mainly by **superior** rectal vein (**portal**).
- Dilatation of this plexus leads to **internal piles**.
- It occurs mainly at the **3, 7, 11** O'clock positions.
- **Painless bleeding** and prolapse from the anal opening

External rectal venous plexuses

- It lies **outside** the muscle wall
- It is drained mainly by **middle** and **inferior** rectal veins (**systemic**).
- Dilatation of this plexus leads to **external piles**.
- It occurs under the skin around the anus (painful and bleeding).



Hemorrhoids (Piles): Swollen (enlarged) and inflammation of veins in the wall of the anal canal leading to bleeding and pain

اليوتيوب د. يوسف حسين

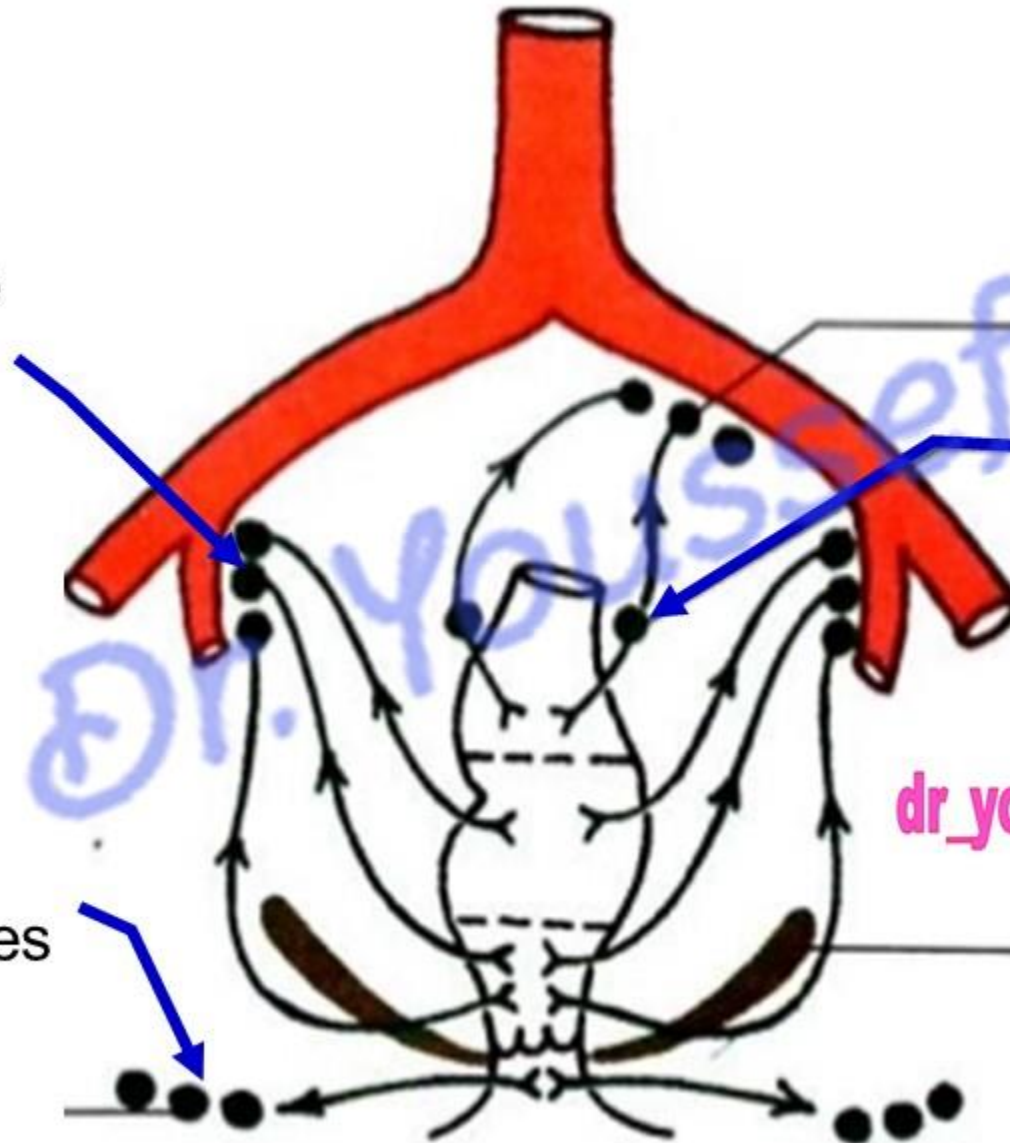
dr_youssefhussein@yahoo.com

Lymphatic drainage of the rectum & anal canal

Middle part into the **internal iliac** lymph nodes

Upper part drains into **pararectal** then to inferior mesenteric lymph nodes.

Lower part drains into the **superficial inguinal** lymph nodes



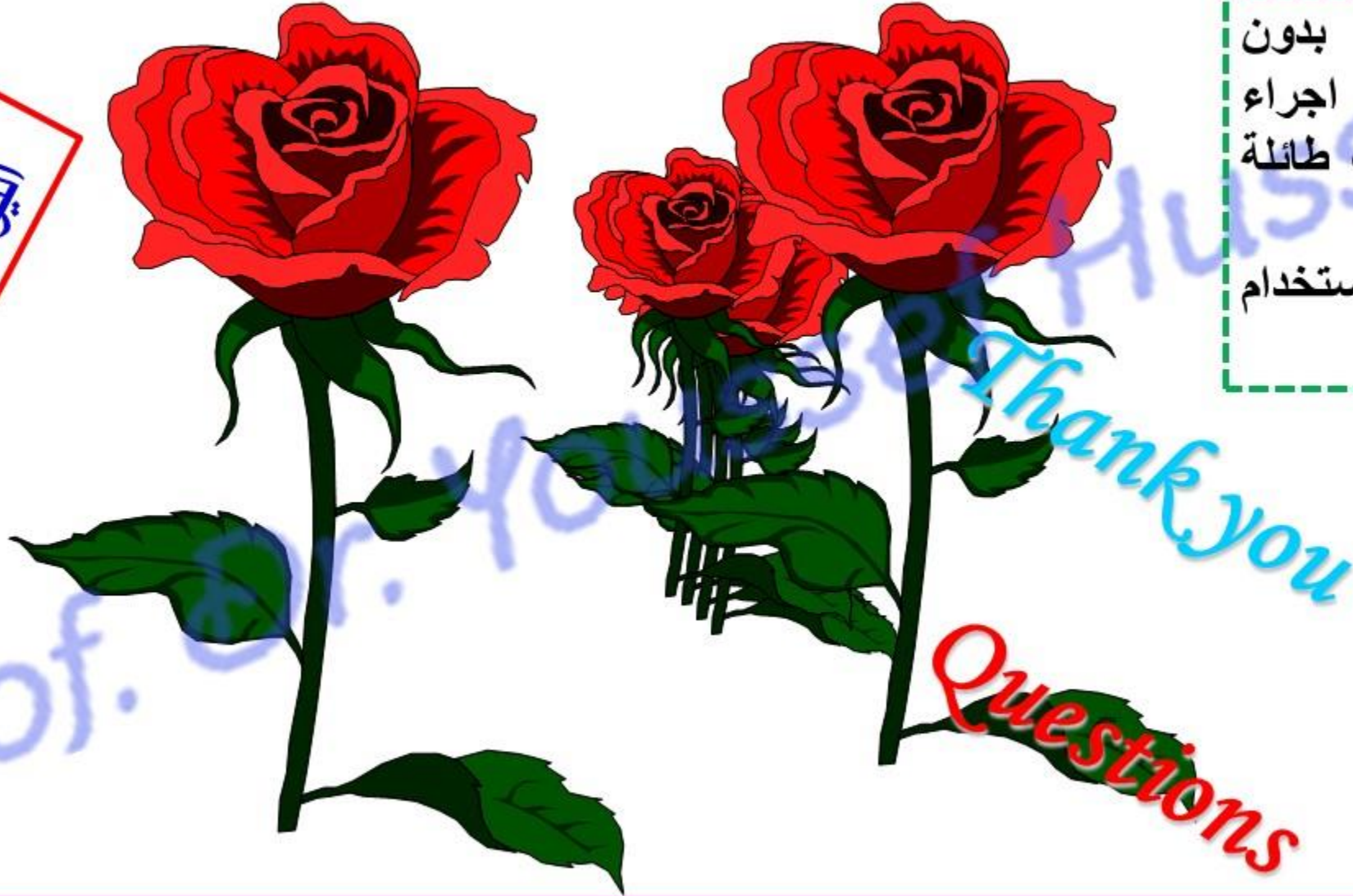
dr_youssefhussein@yahoo.com

اليوثيوب د. يوسف حسين

https://www.youtube.com/channel/UCVSNqbibj9UWYaJdd_cn0PQ

يُمنع أخذ السلايدات بدون
إذن المحرر و اي اجراء
يخالف ذلك يقع تحت طائلة
المسؤولية القانونية
جميع المعلومات للاستخدام
التعليمي فقط

اليوتيوب د. يوسف حسين



<https://www.youtube.com/@ProfDrYoussefHusseainAnatomy/playlists>