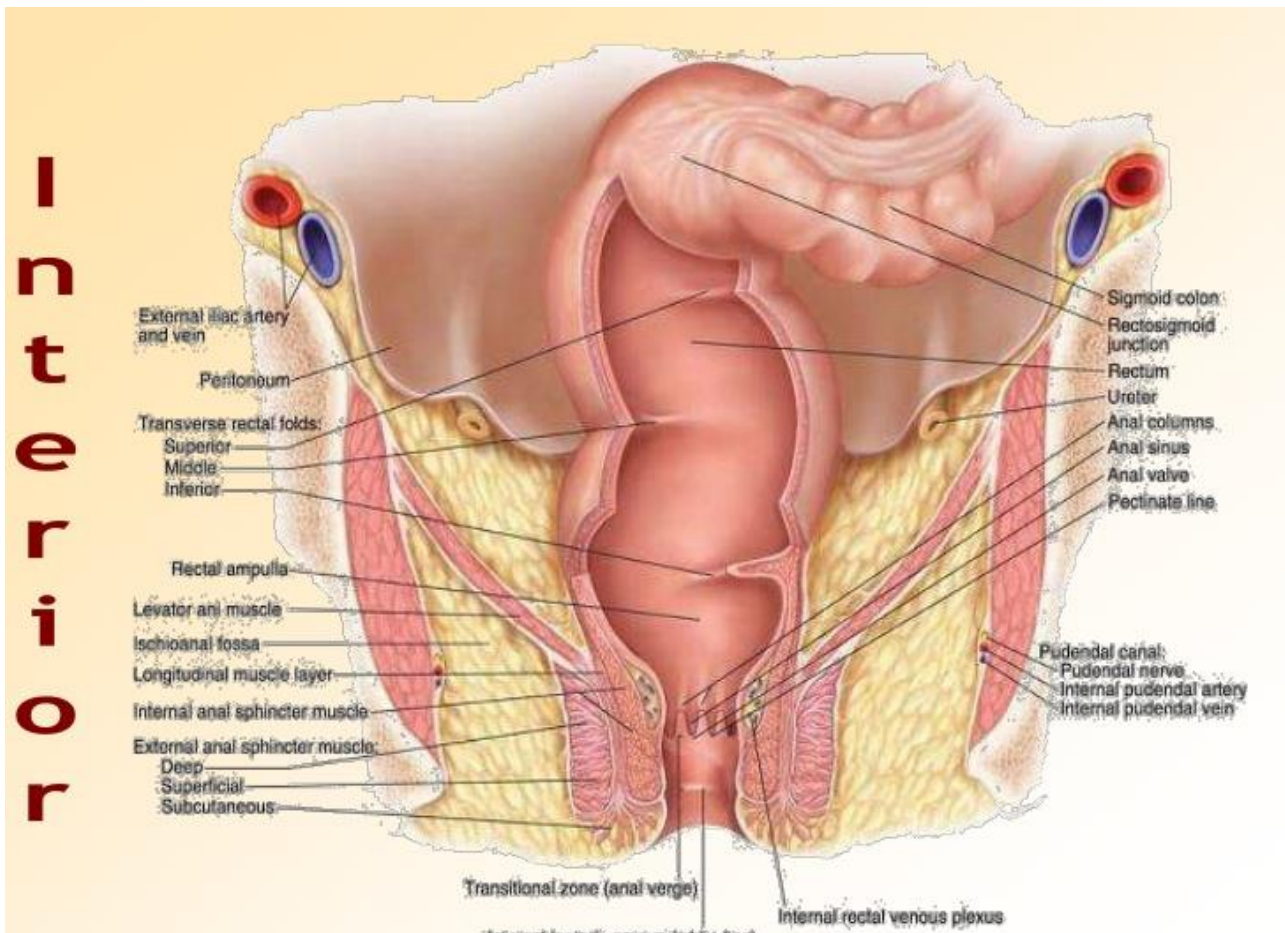
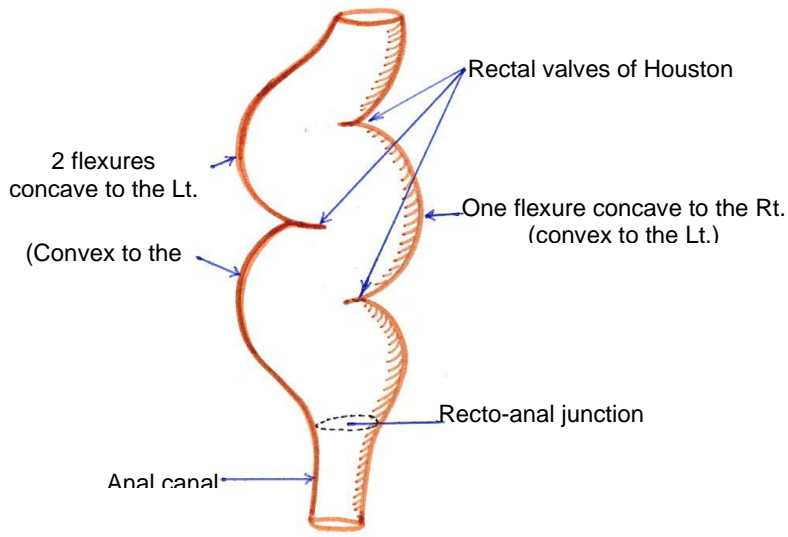
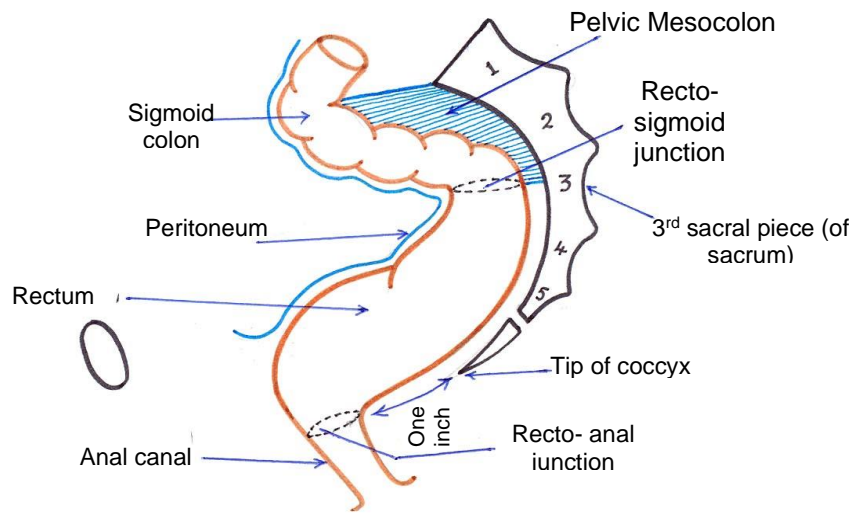


## RECTUM

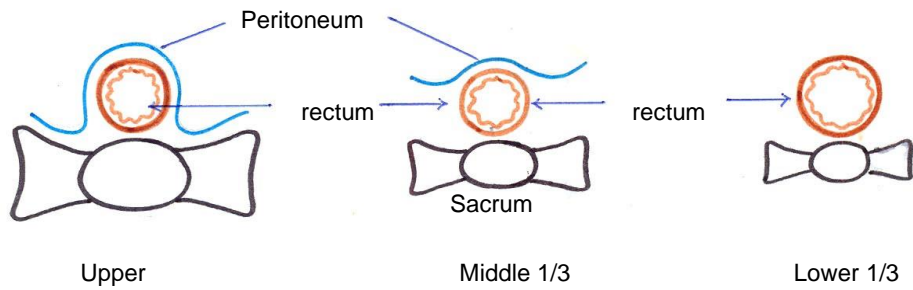
- \* **It begins** at recto-sigmoid junction at the level of middle piece of sacrum (S<sub>3</sub> vertebra) .
- \* **It ends** one inch below & in front of tip of coccyx at the ano-rectal junction (ano-rectal ring around which the puborectalis muscle loops from behind ) to continue as the anal canal.
- \* It is 6-8 inches long. Its lower 1/3 is dilated forming ampula of rectum.
- \* **Flexures:**
  - a) **Antero-posterior flexure:** It is concave anteriorly ( follow sacrum)
  - b) **Lat. flexure:** It presents a 3 concavities, the upper & lower are concave to the left while the middle is concave to the right These lateral flexures creat 3 folds of mucosa inside the lumen known as valves of Hauston.
- \* **Peritoneal coverings:**
  - a) Upper 1/3: covered in front & sides.
  - b) Middle 1/3: covered only ant.
  - c) Lower 1/3: not covered.





Ant. View of Rectum

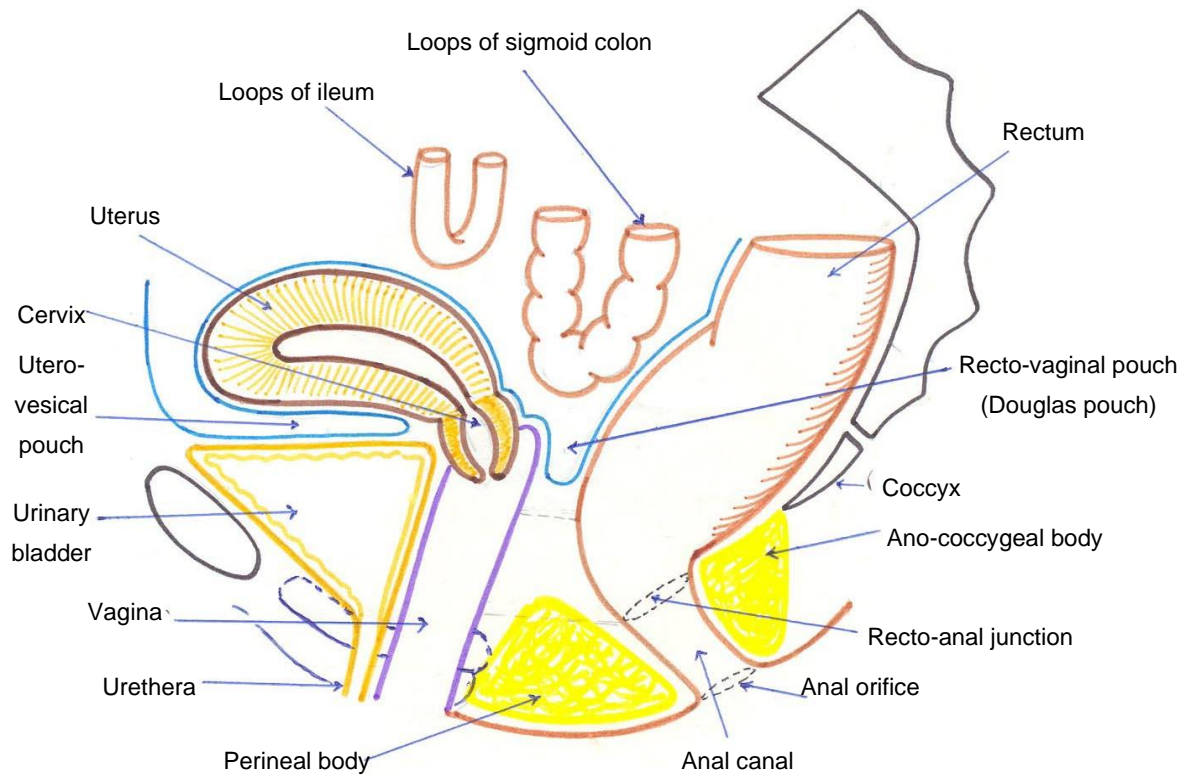
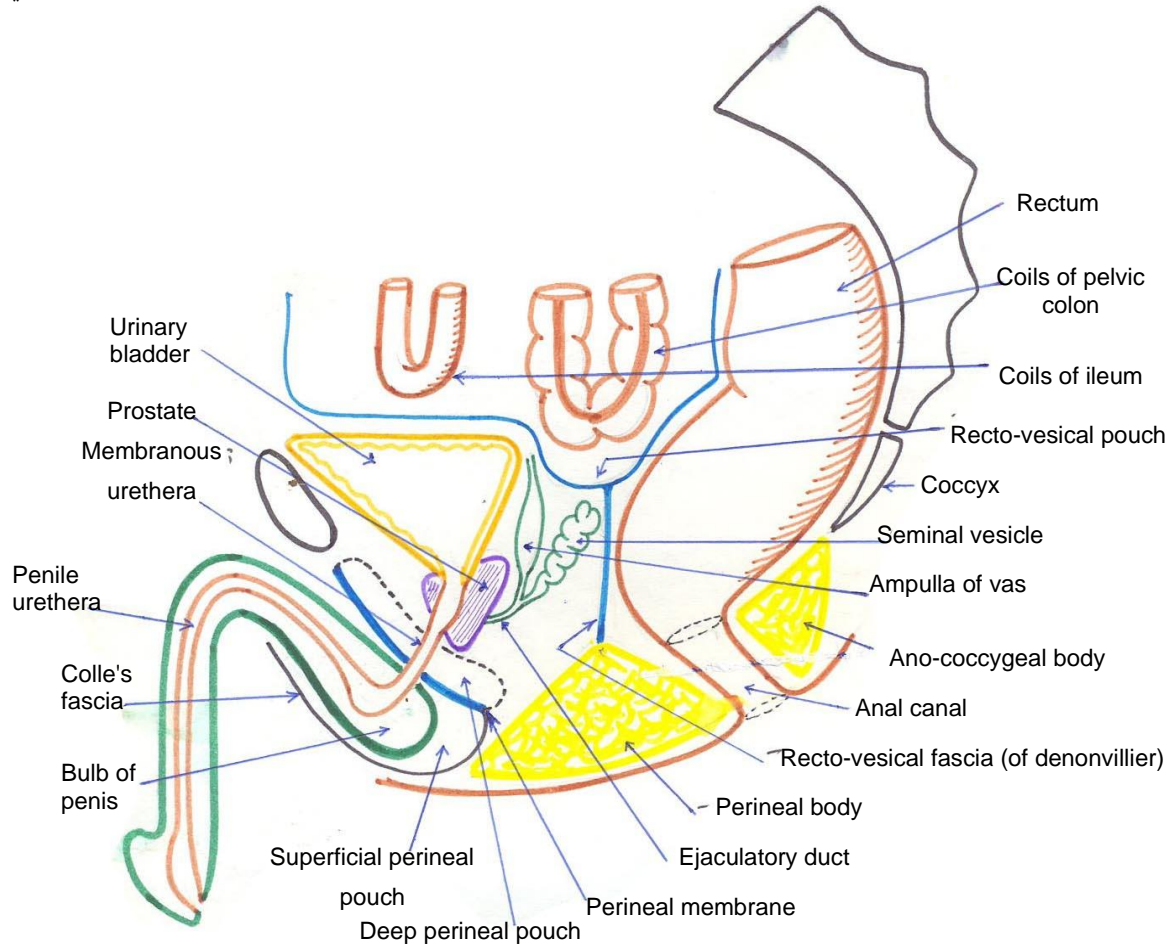
Lat. flexures of the Rectum



Peritoneal Covering of Rectum

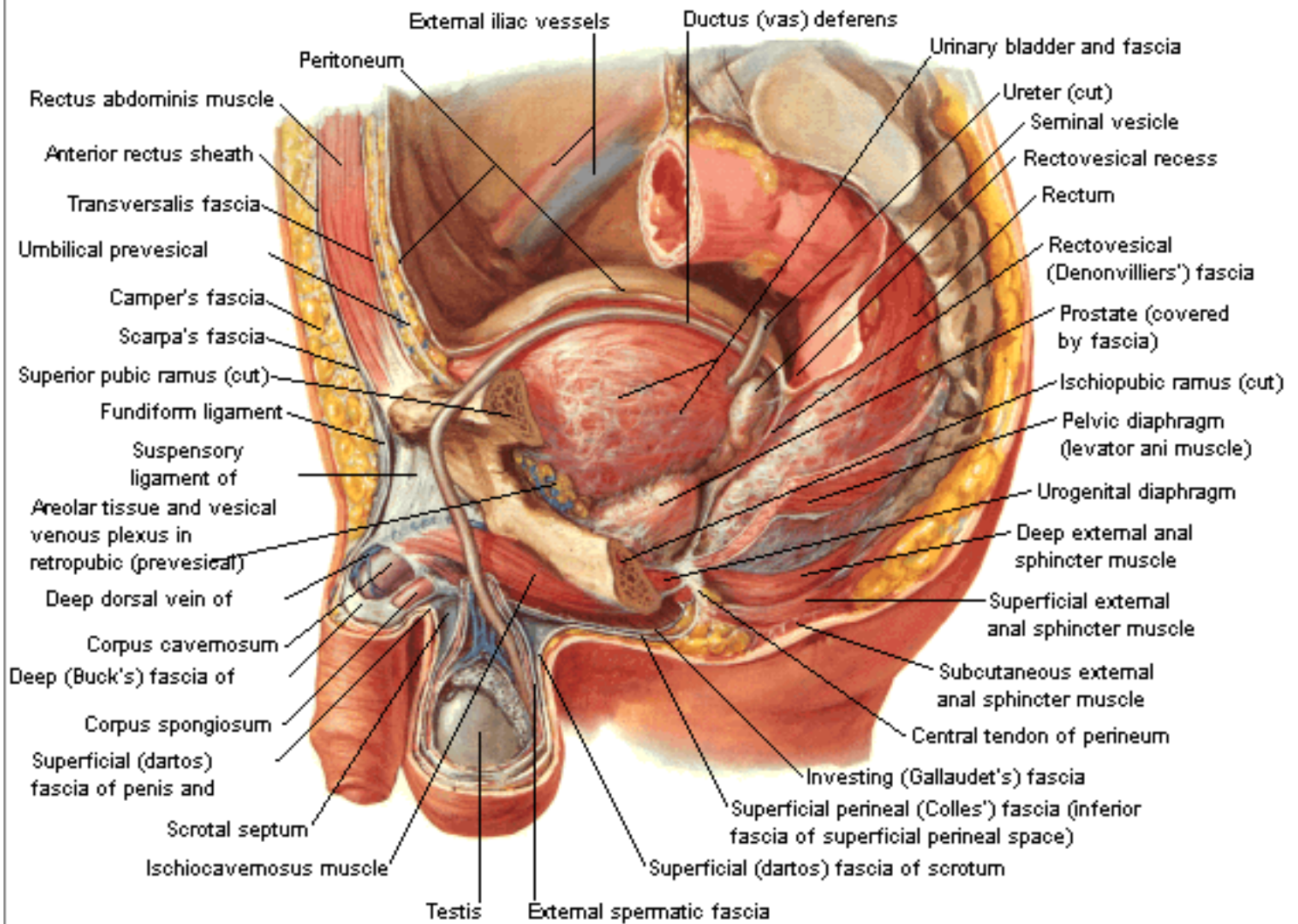
**Sagittal section in Male Pelvis:**

\*



# Pelvic Viscera and Perineum of Male

## Paramedian Sagittal Section



\* **Relations:**

1. **Posterior:** Sacrum, coccyx, pyriformis, coccygeus, levator ani, sacral & coccygeal nerves , 2 sympathetic chain, median sacral artery, Lateral sacral artery & superior rectal Vessels. The rectum is separated from these structures by Waldeyer's fascia.

2. **Anterior:**

a) **In males:**

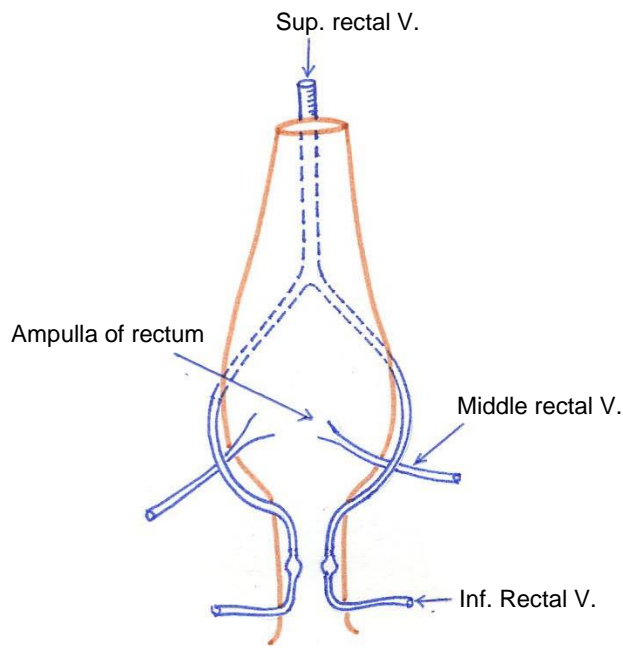
- *Upper 2/3:* Loops of small intestine & pelvic colon.
- *Lower 1/3:* (ampula of rectum) base of urinary bladder, prostate, seminal vesicle, ampula of vas, ejaculatory ducts. The rectum is separated from these structures by recto-vesicale ( Denonvillier's ) fascia.

b) **In females:**

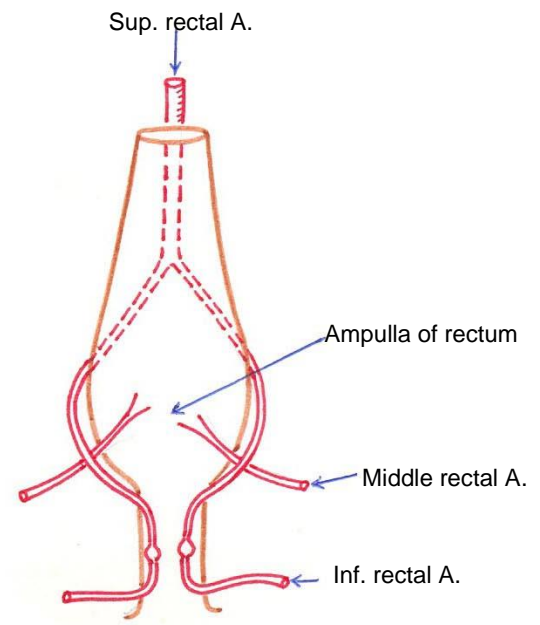
- *Upper 2/3:* Loops of small intestine, pelvic colon, uterus.
- *Lower 1/3:* Vagina.

3. **Lat. :**

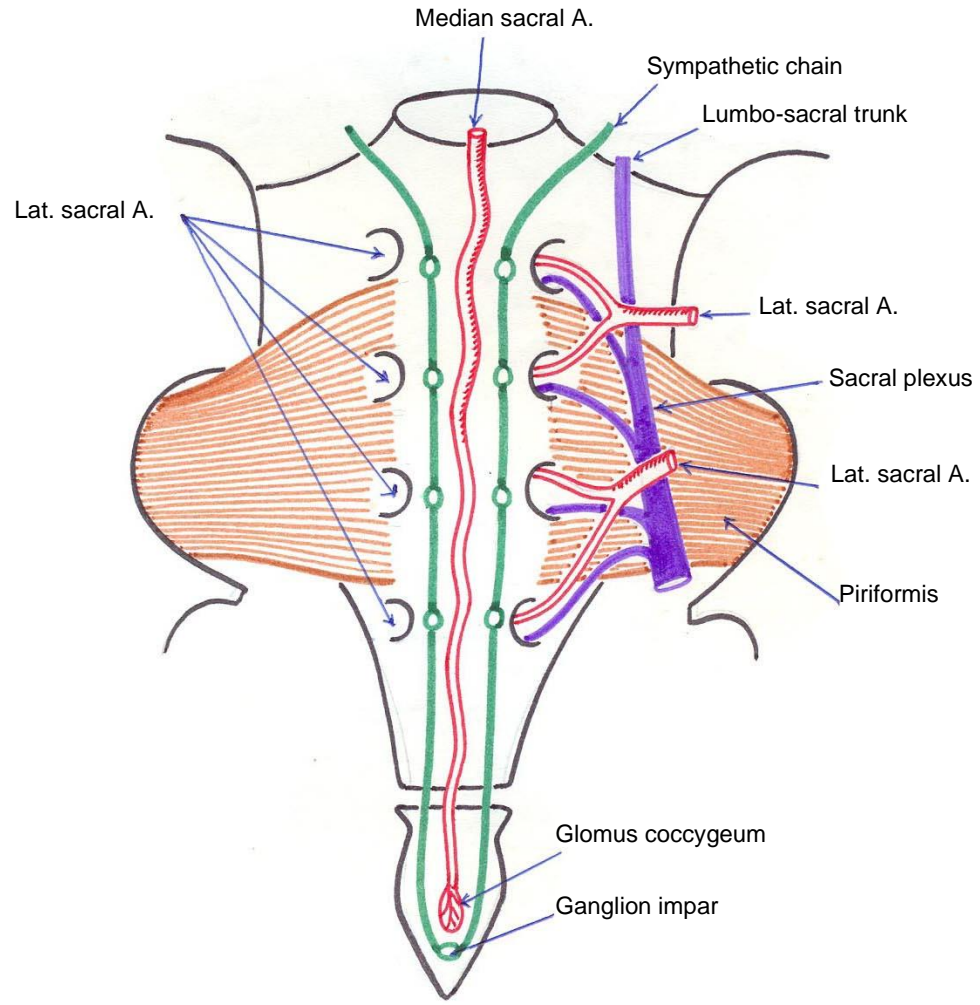
- *Upper 2/3:* Loops of small intestine.
- *Lower 1/3:* Levator ani (at ano-rectal junction) & ureters.



Venous drainage of rectum and anal canal

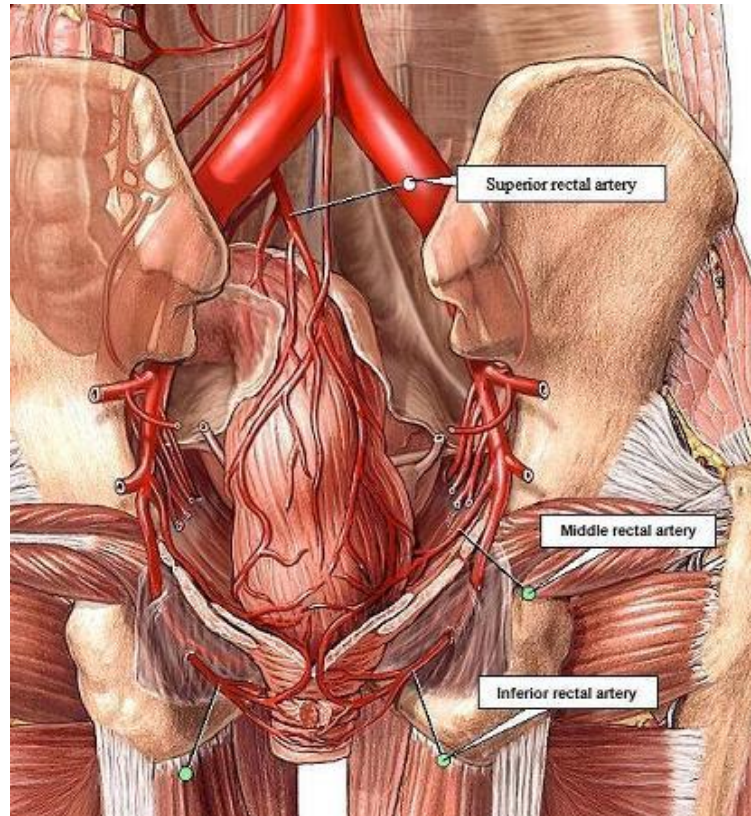


Arterial supply of rectum and anal canal

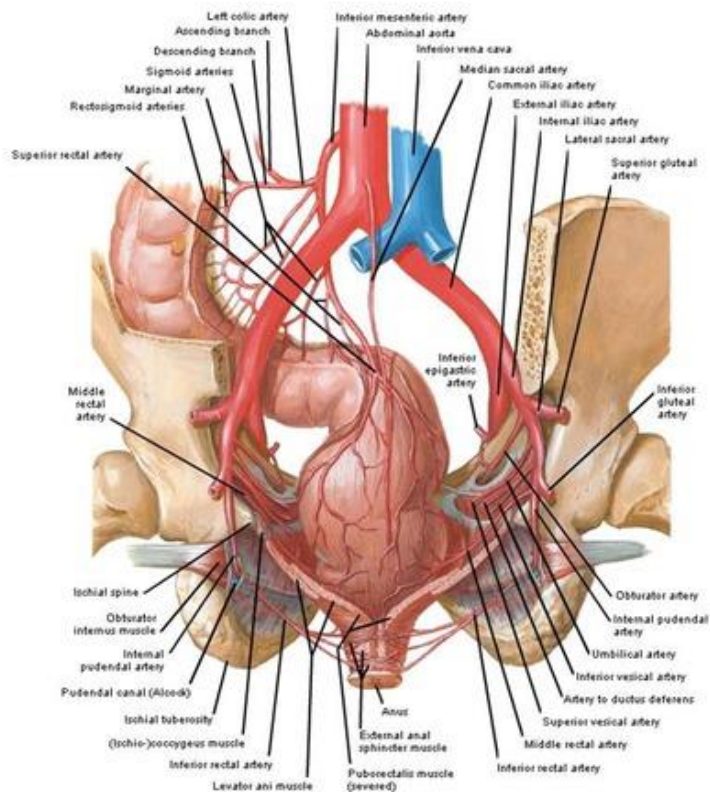


Posterior Relation (Bed) of Rectum in male and female

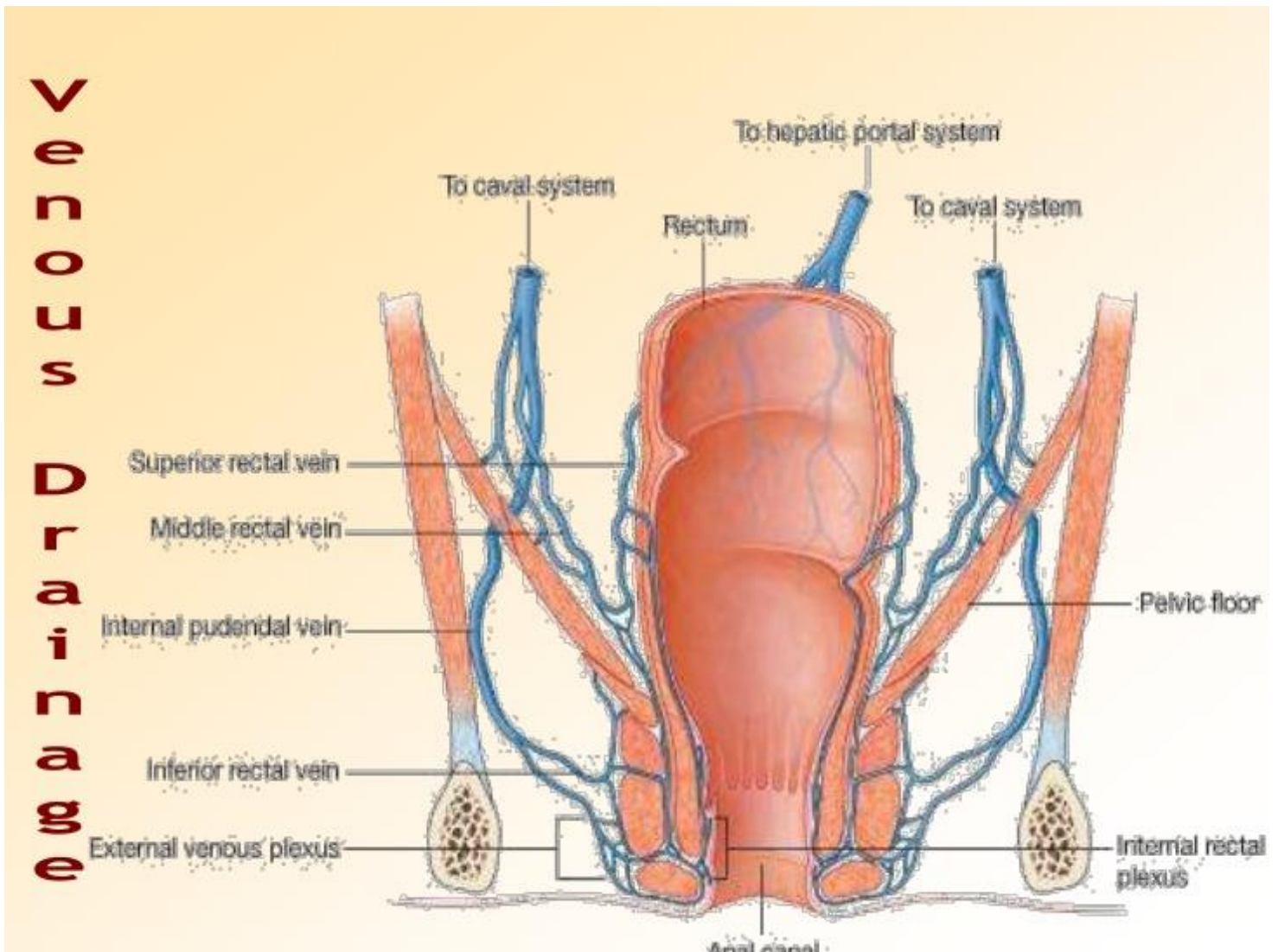
- \* **Arterial supply:** Sup. rectal artery is the main arterial supply (from inferior mesenteric ), middle rectal artery (from anterior division of internal iliac artery), Inferior rectal artery has no role (from internal pudendal) & median sacral artery .



**Arteries of Rectum and Anal Canal: Posterior View**

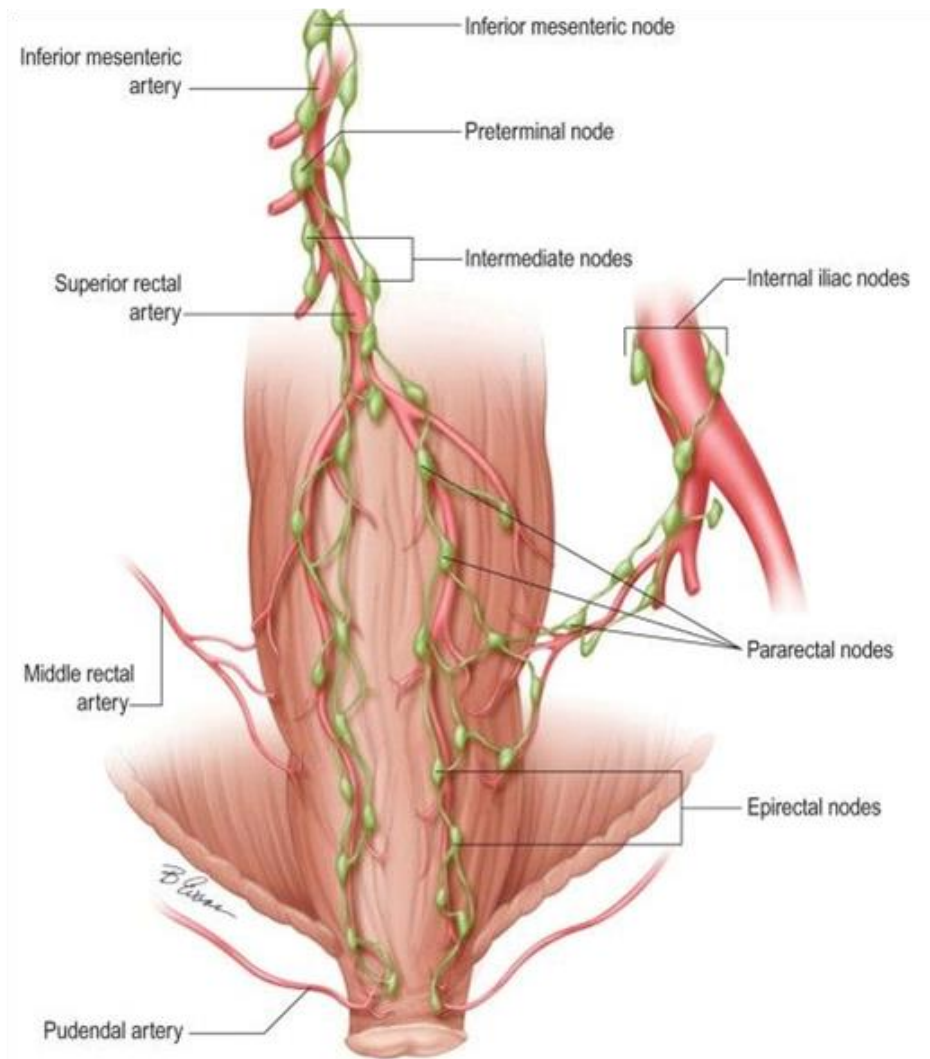


\* **Venous drainage:** Follows arteries.



\* **Lymphatic drainage:** To the para-rectal L.Ns (around the rectum) then spread in 2 directions:

- a. From the para-rectal L.Ns related to the upper 2/3 of rectum → superior rectal L.Ns → inferior mesentric L.Ns. → gastrointestinal lymph trunk to cisterna chyli etc.
- b. From the para-rectal L.Ns related to lower 1/3 of rectum to middle rectal L.Ns → intenal iliac L.Ns → common iliac L.Ns. →para-aortic L.Ns → lumbar lymph trunk to cisterna chyli..etc.



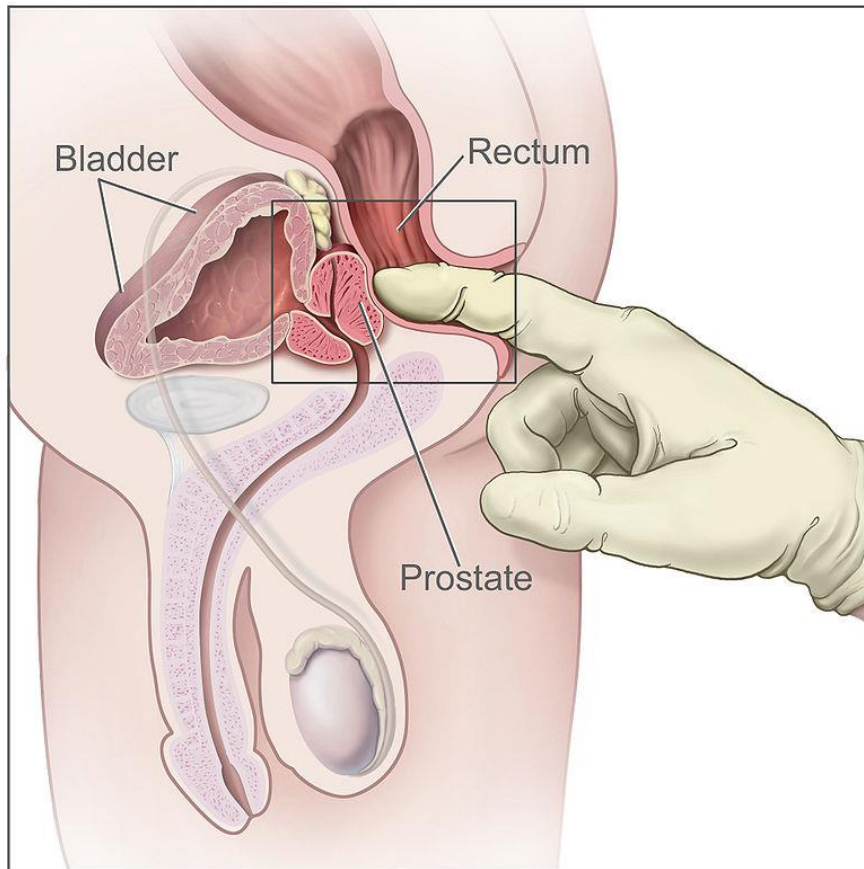
★ **Applied anatomy:**

1. **The arterial anastomosis** in the wall of the rectum is so extensive that the middle rectal arteries can supply the rectum if the inferior mesenteric or superior rectal artery has to be clamped or ligated during surgery for colonic cancer.
2. Because the superior rectal vein drains into the portal circulation and middle and inferior rectal veins drain into the systemic circulation, this is an important area for **porto-systemic anastomosis**.
3. Varicosity of internal haemorrhoidal venous plexus → internal piles in the lower part of the rectum and upper 1/2 of anal canal.

4. After anarectal surgery, men may be unable to ejaculate if there is damage to the pelvic splanchnic nerves (nervi erigants) which supply the bubbospongiosus muscles.
5. Cancer rectum may infiltrate superior rectal vein → 2ry piles.
6. **Direct spread of cancer rectum:** to the surrounding structures eg. sacrum, sacral plexus, pelvic wall, ureters, vagina and ureterus in female, urinary bladder, prostate and seminal vesicles in males.
7. **Lymphatic spread** in cancer rectum (mention lymphatic drainage of rectum).
8. During excision of rectum and sigmoid colon in cancer rectum, the **inferior mesenteric vessels** are ligated below the level of upper left colic vessels to preserve blood supply of descending colon.
9. **The rectovesical septum** (fascia of Denonvillier) in males is anterior to the rectum and important surgically:
  - a) **Spread of cancer** rectum anteriorly to the bladder and prostate is delayed.
  - b) **During resection of the rectum**, the plane of this fascia is located so that the prostate and urinary bladder can be separated and preserved from the rectum.
10. **P-R examination:** with the right index introduced through the anal canal and lower part of rectum, many structures can be palpated.

* In males	* In females
• Anal sphincters, ano-rectal ring and walls of anal canal and rectum.	
• Pelvic surface of sacrum and coccyx, ischeal spines and tuberosities.	
• Median sulcus in the back of prostate.	• Cervix and lower part of uterus
• Notch between 2 seminal vesicles.	
• Posterior surface of urinary bladder.	The back of vagina.
• Bulb of penis	

- Pathological enlargement of prostate, seminal vesicles, internal iliac or para-rectal L.Ns, swellings in the ischio-rectal fossa, abnormal contents in rectovesical or rectouterine pouch (malignant nodules or fluid) , tenderness on the right side in pelvic appendicitis or stones in the ureters.



11. **Proctoscope** is used to examine the interior of the rectum and biopsies of lesions may be taken through it.
12. During **insertion of a sigmoidoscope**, the curvatures of the rectum and the acute curve of the rectosigmoid junction and transverse rectal folds have to be kept in mind to avoid discomfort of the patient.
13. Normally, the lumen of the **rectum is empty** (except during defecation), any space occupying lesion leading to sense of incomplete defecation.
14. Any **irritation of rectum** leading to tenesmus eg. proctitis and pelvic appendicitis.

15. The lower part of rectum is surrounded by **pelvi-rectal space** which may be infected → pelvi-rectal abscess and its rupture → *extra-sphincteric anal fistula*.
16. **Waldayer's ligament** is attached between the promontory of sacrum and posterior wall of rectum. It supports the rectum and prevent rectal prolapse when this ligament is weakened (malignancy, malnutrition, debility ..... etc) → rectal prolapse.