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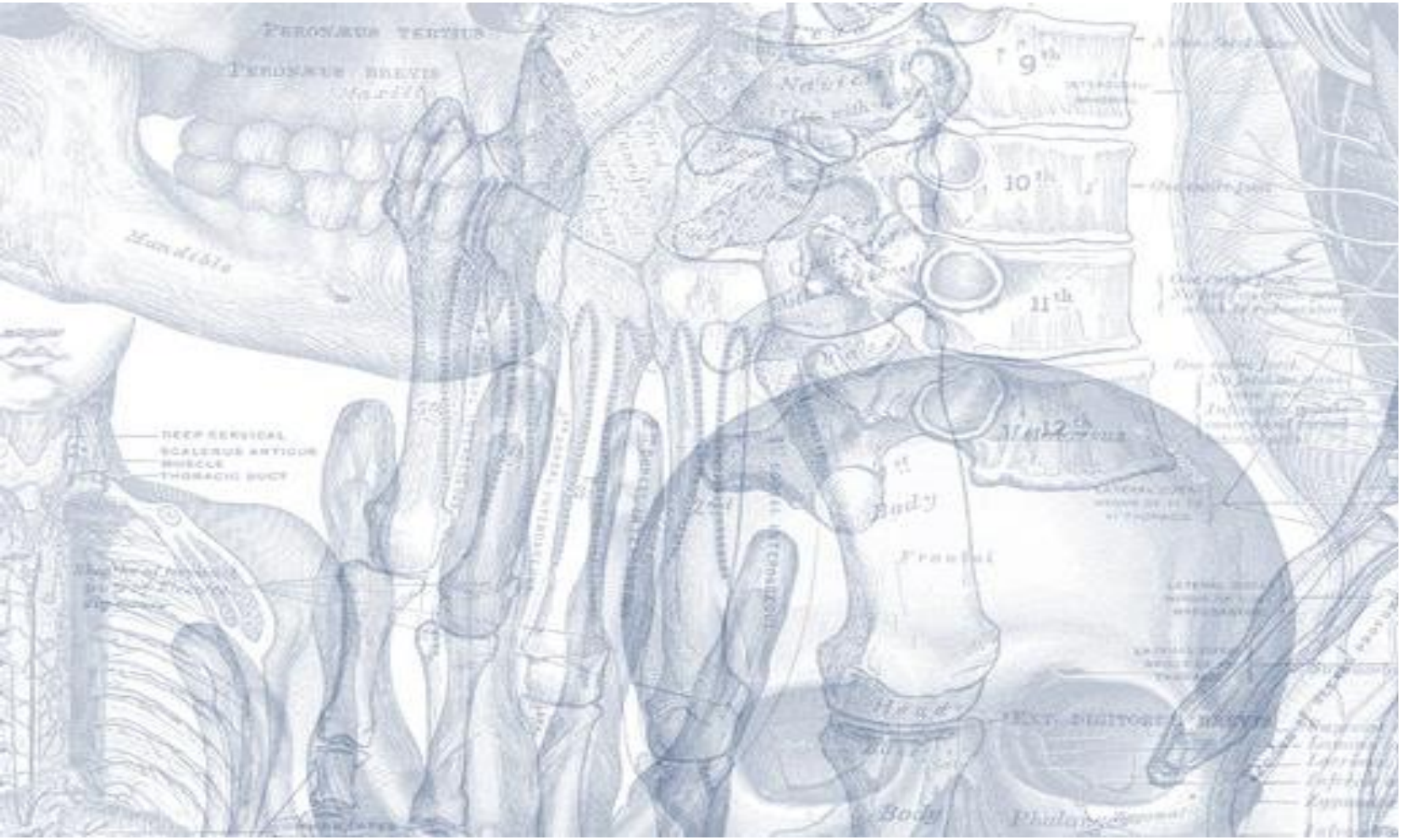


ANATOMY
TEAM 436

436
MEDICINE
KING SAUD UNIVERSITY

تمت المراجعة
شوق الأحمري & عبدالعزيز العنقري

Anatomy of Large Intestines

Please view our Editing File before studying this lecture to check for any changes.

Color Code

- Important
- Doctors Notes
- Notes/Extra explanation

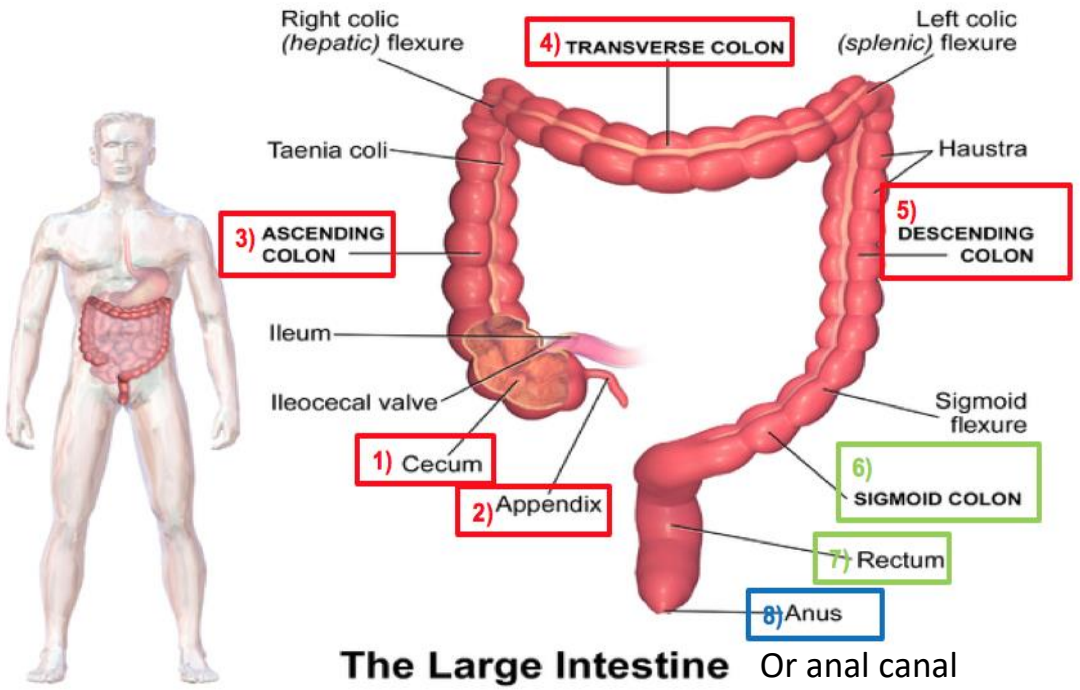
Objectives

By the end of this lecture the student should be able to:

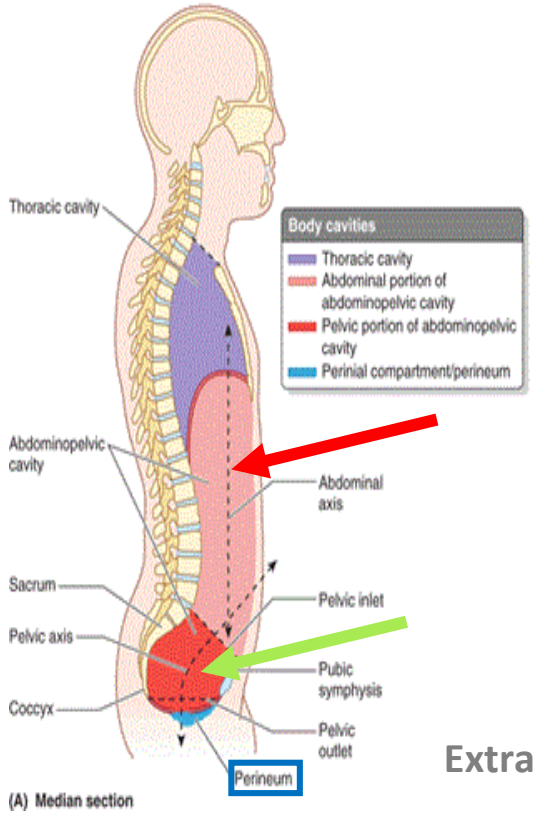
- ✓List the different **parts** of large intestine.
- ✓List the **characteristic** features of colon.
- ✓Describe the anatomy of different parts of large intestine regarding: the **surface anatomy**, **peritoneal covering**, **relations**, **arterial** & **nerve** supply.

Parts of the Large Intestine

- (1,2,3,4,5) are found in the abdomen
- (6,7) are found in the pelvis
- (8) is found in the perineum



The Large Intestine Or anal canal



Extra

Characteristics of Colon (NOT found in rectum and anal canal)

1. Taeniae coli:

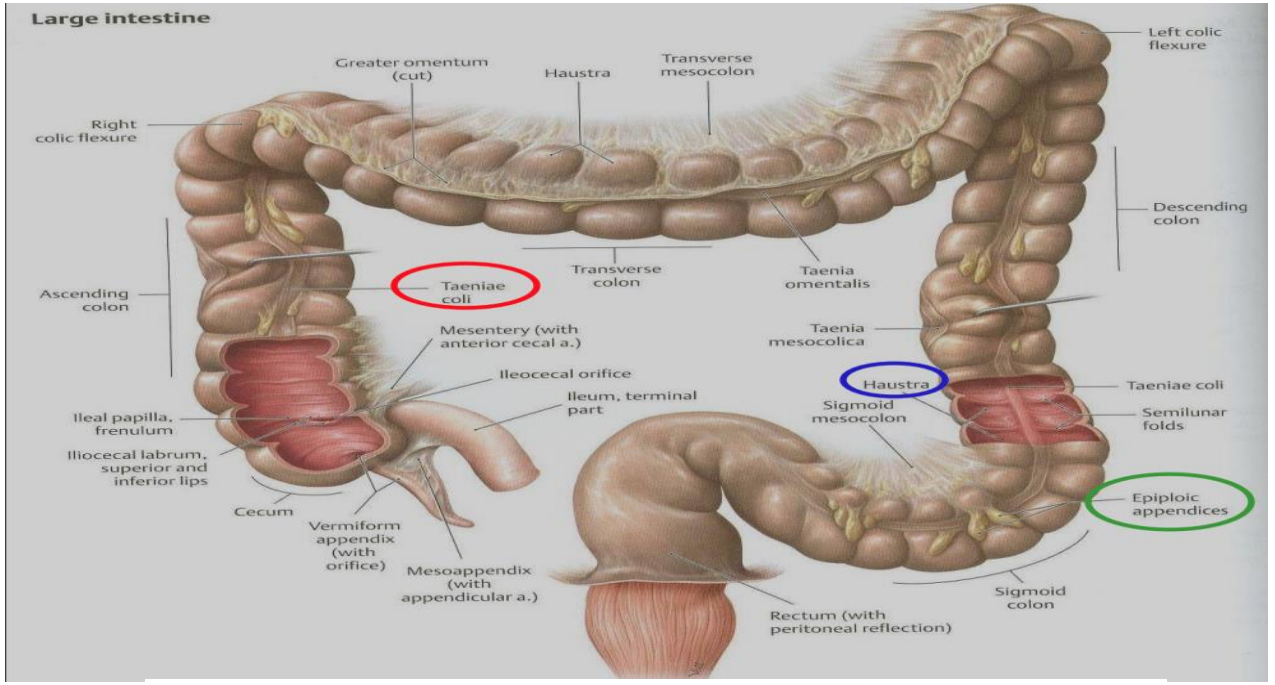
- Three longitudinal muscle bands

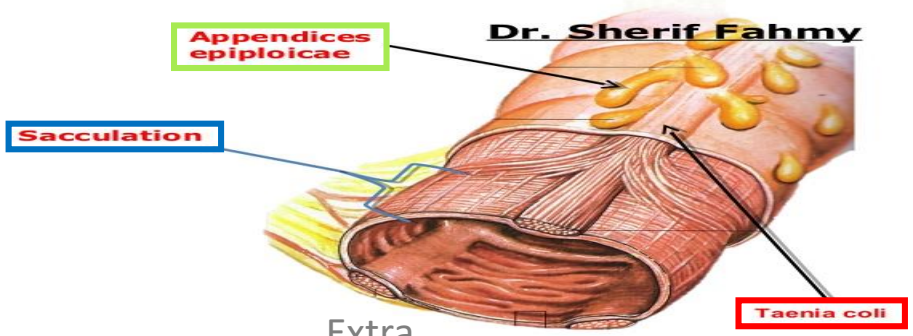
2. Sacculations (Haustra):

- Because the Taeniae coli are shorter than large intestine

3. Epiploic Appendices :

- Short peritoneal folds filled with fat





Extra

Peritoneal Covering

- **Parts with mesentery*:**

1. Transverse colon
2. Sigmoid or pelvic colon
3. Appendix
4. Cecum

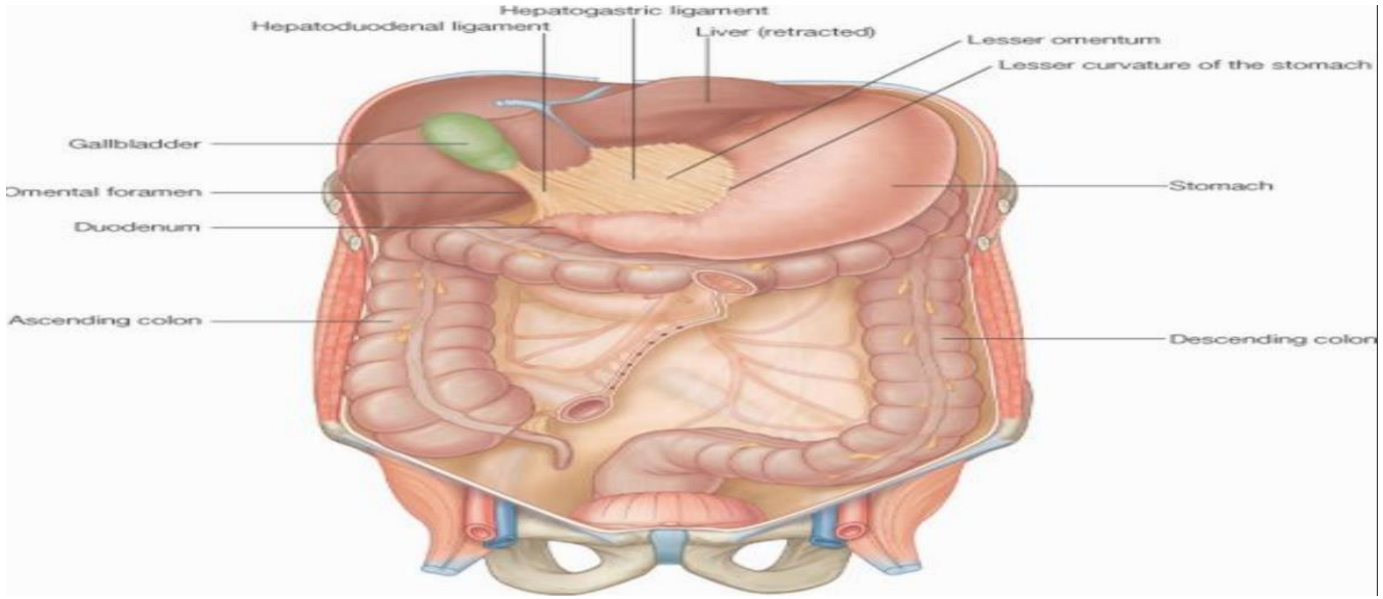
- **Retroperitoneal parts**:**

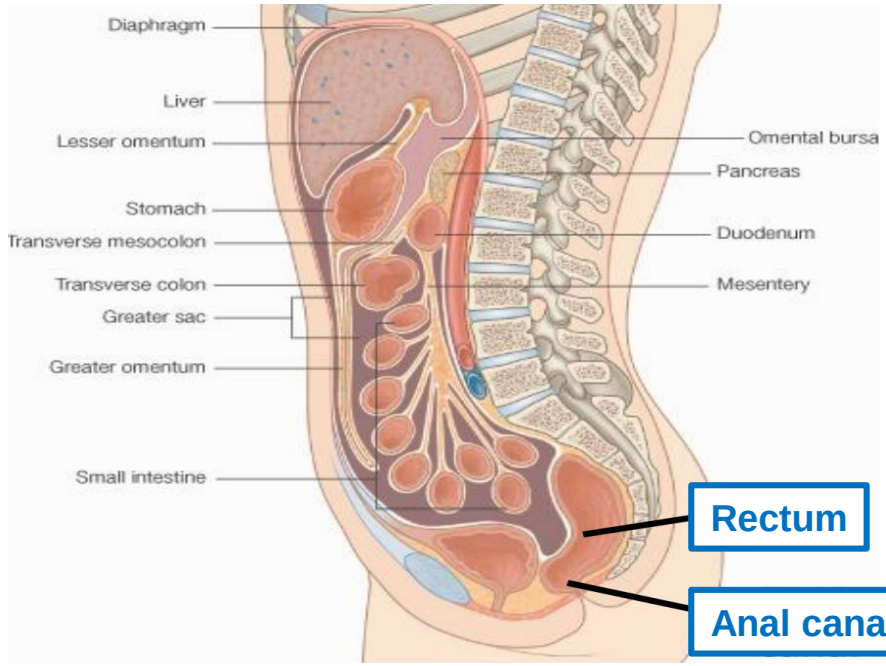
1. Ascending colon
2. Descending colon
3. Upper 2/3 of rectum

- **Parts devoid (بدون) of peritoneal covering:**

1. Lower 1/3 of rectum
2. Anal canal

* The peritoneum covers the anterior and posterior surfaces.
** The peritoneum only covers the anterior surface





Relations of (CECUM – ASCENDING & DESCENDING COLONS)

Anterior:

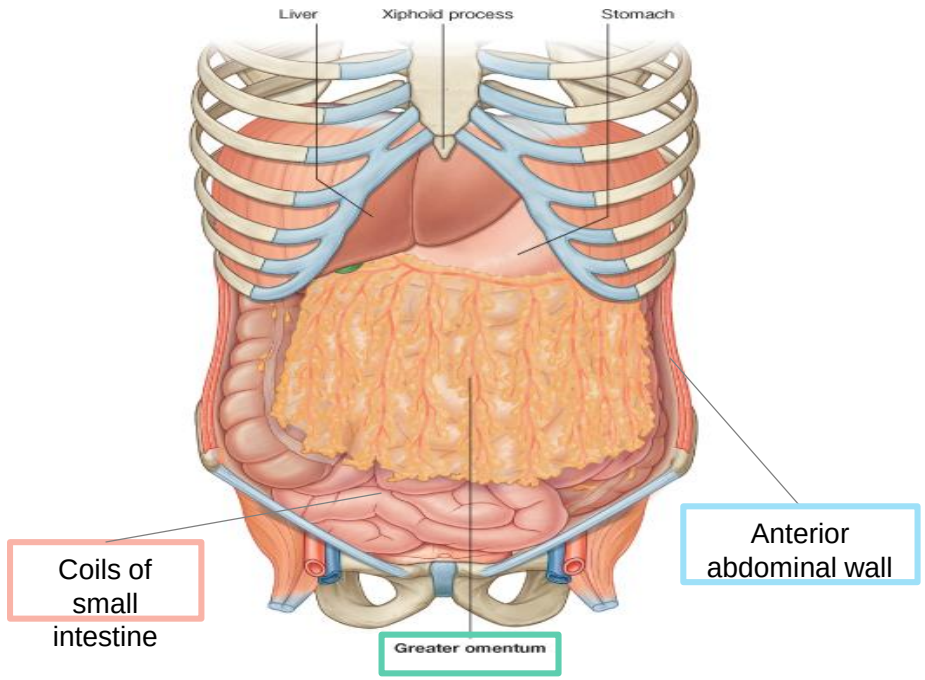
- Greater omentum
- Coils of small intestine
- Anterior abdominal wall

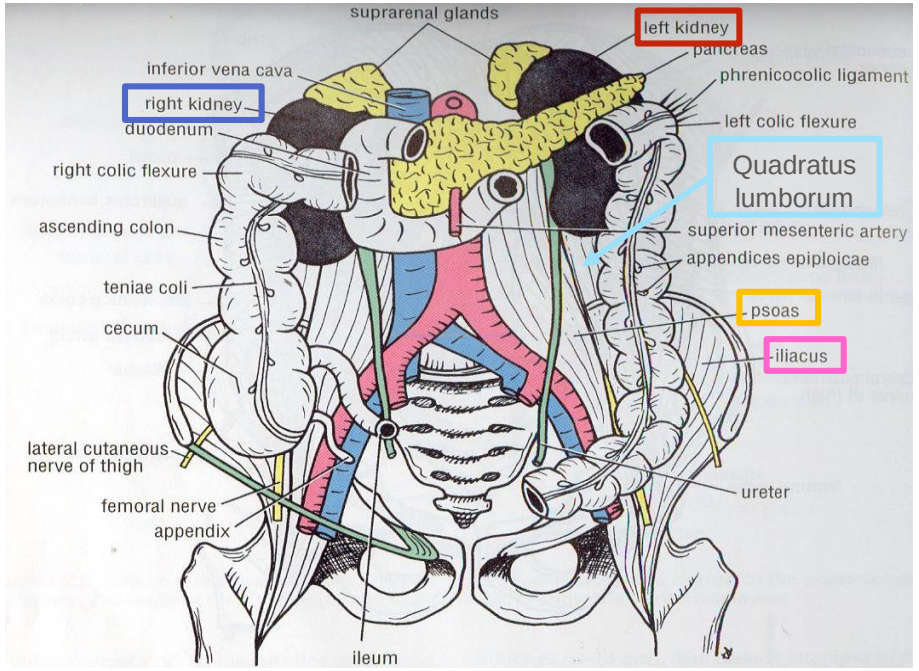
Posterior:

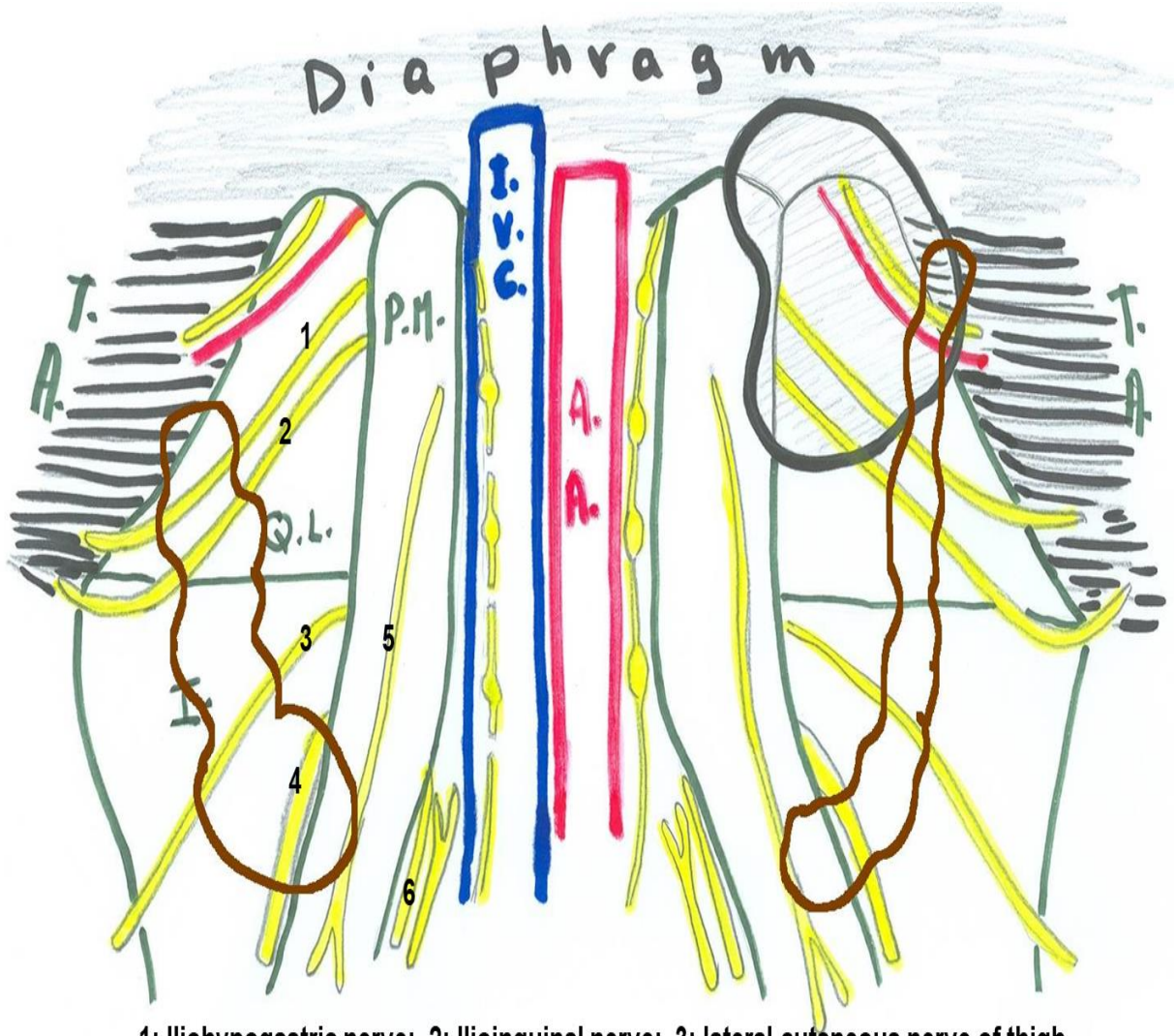
Cecum: Psoas major , Iliacus

Ascending colon: Iliacus ,Quadratus lumborum, Right kidney.

Descending colon: Left kidney, Quadratus lumborum ,Iliacus, psoas major

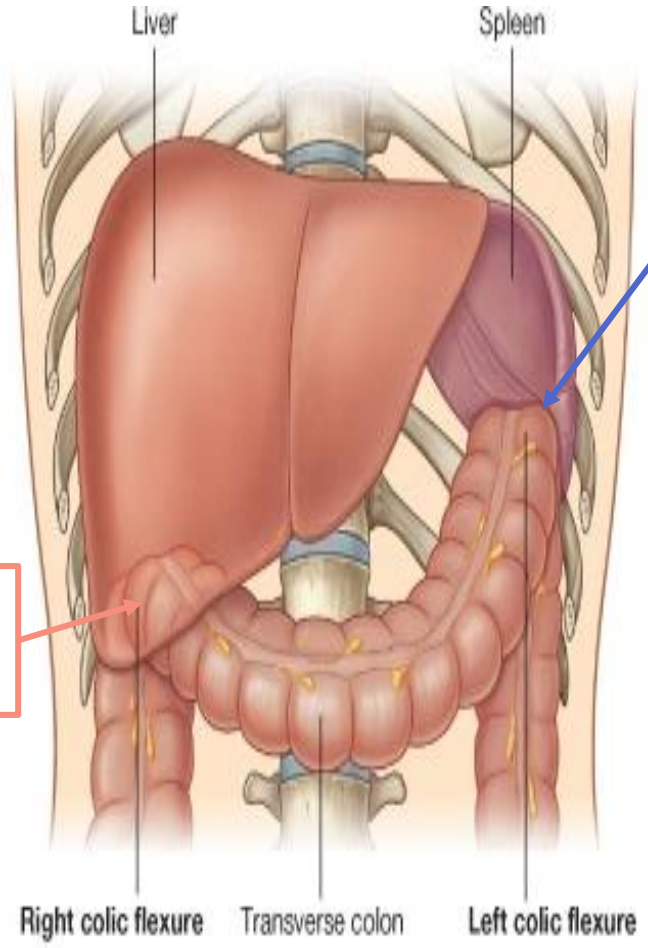






1: Iliohypogastric nerve; 2: Ilioinguinal nerve; 3: lateral cutaneous nerve of thigh
4: Femoral nerve; 5: Genitofemoral nerve; 6: Obturator nerve
P.M.= psoas major; Q.L.=quadratus lumborum; I.=iliacus;
T.A.= transversus abdominis; I.V.C.=inferior vena cava; A.A.=abdominal aorta

COLIC FLEXURES



Splenic flexure
Position: higher
Angle: more acute

Hepatic flexure

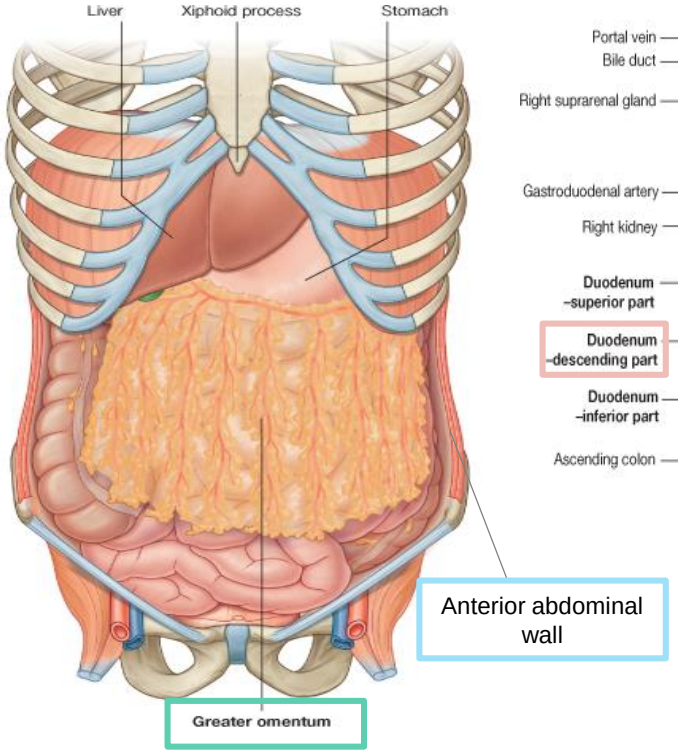
Relations of Transverse Colon

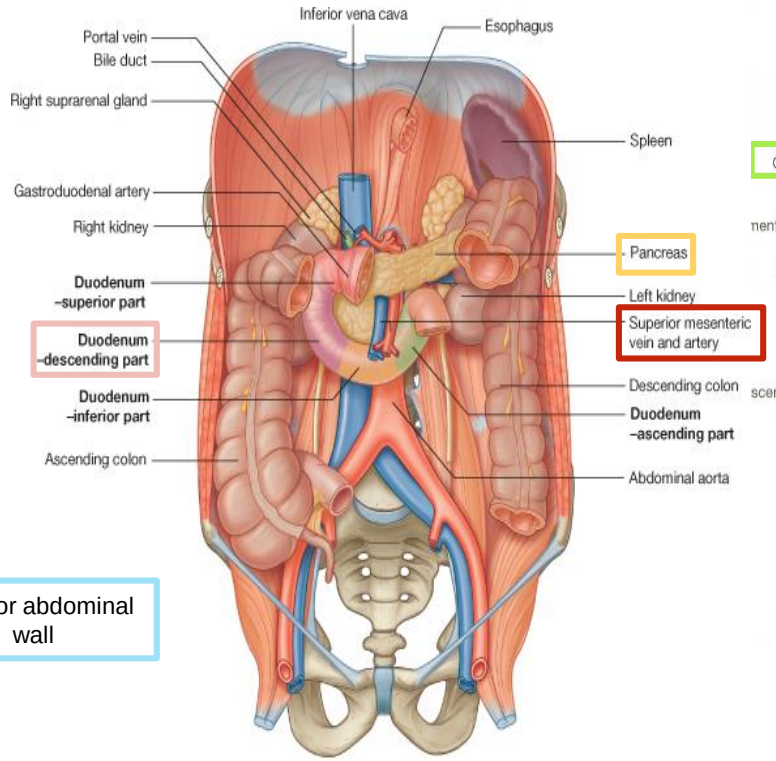
Anterior: greater omentum , anterior abdominal wall

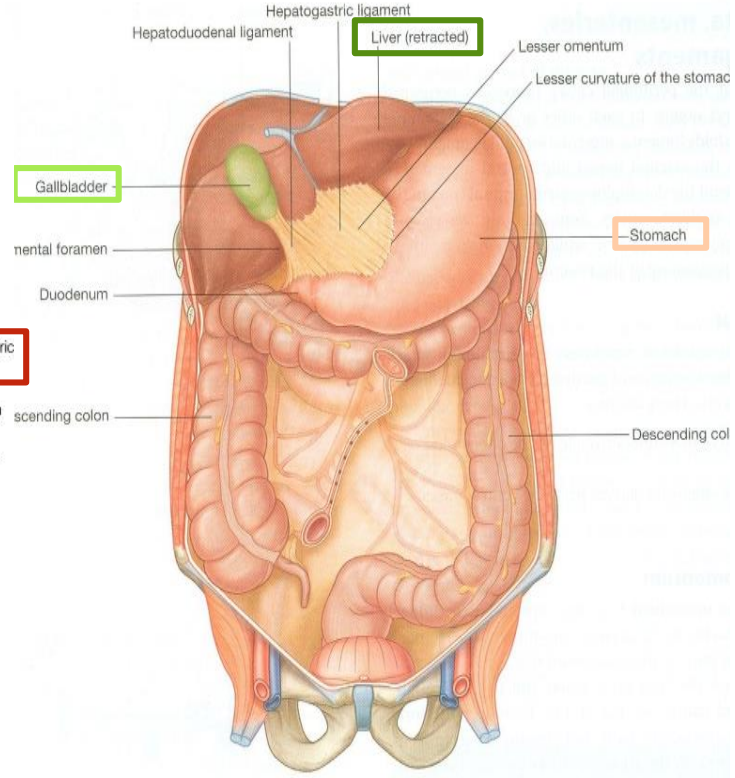
Posterior: 2nd part of duodenum , pancreas & superior mesenteric vessels.

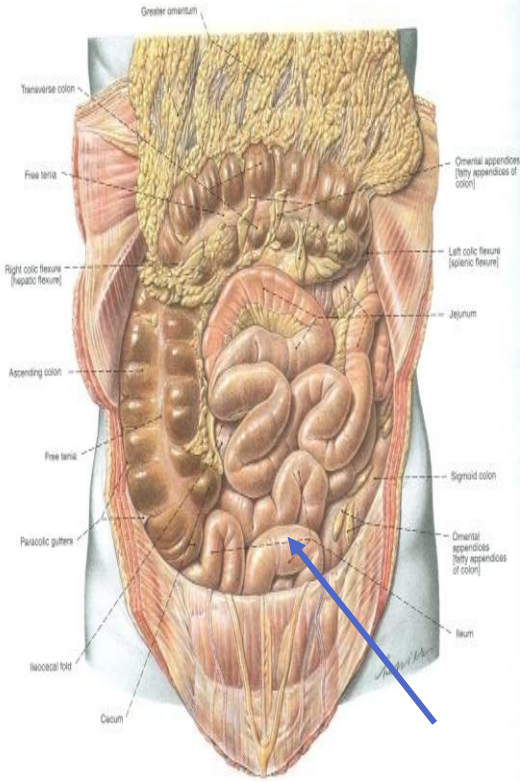
Superior: liver, gall bladder, stomach

Inferior: coils of small intestine









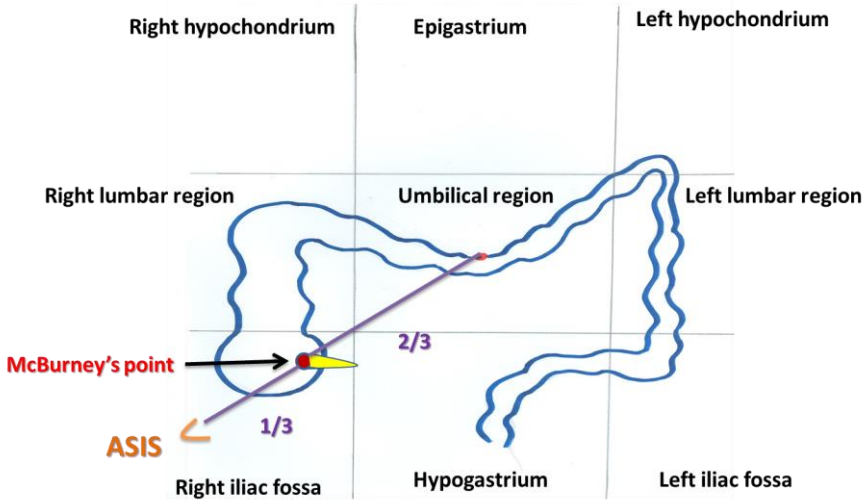
Appendix
Surface Anatomy Important

- The appendix is a lymphoid tissue for immunity.
- The base of appendix is marked by McBurney's point:

A point at the junction of **lateral** 1/3 & **medial** 2/3 of a line traced from right anterior superior iliac spine to umbilicus.

(Its importance lies in the fact that tenderness and rebound at this point is suggestive of **appendicitis**)

لما الدكتور يفحص المريض يحط اصبعين على المكان واذا شالها بسرعه حيصرخ المريض من الالم اذا كانت ملتهبه



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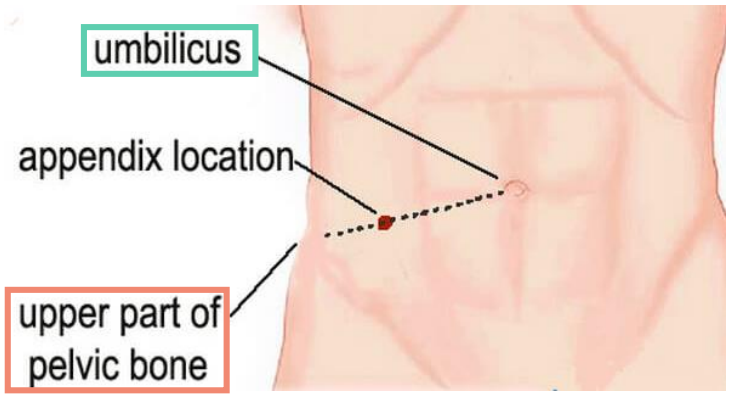
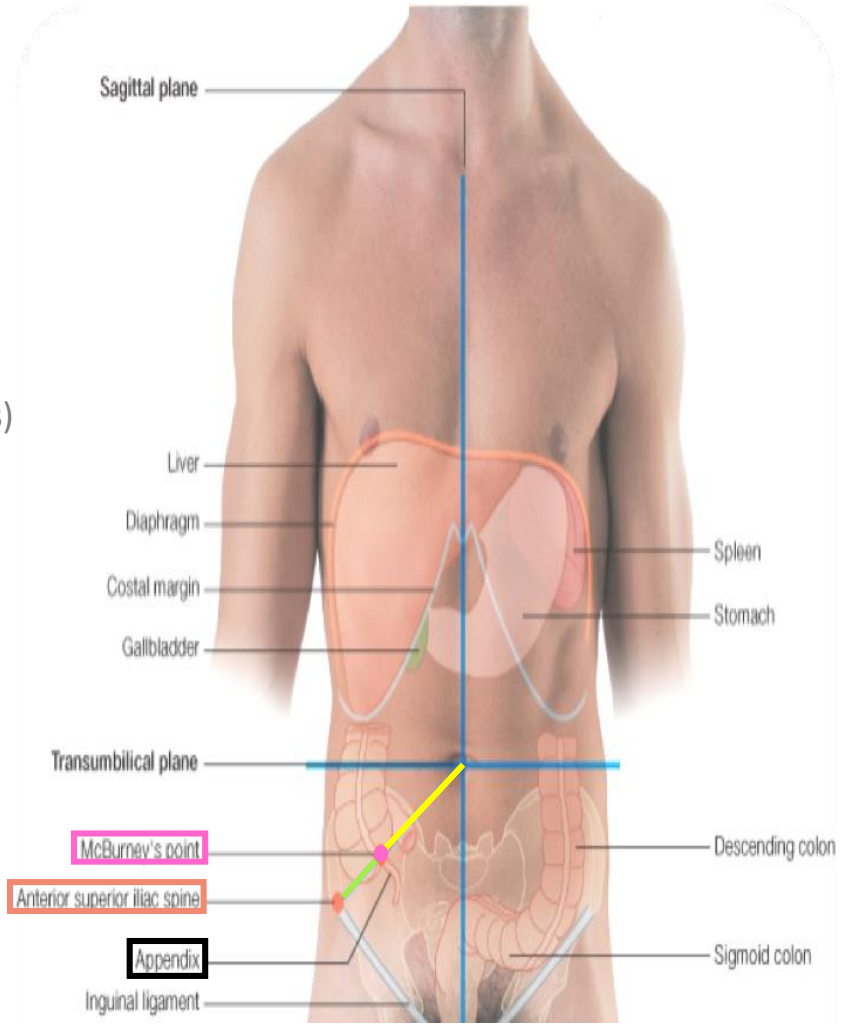




Appendix

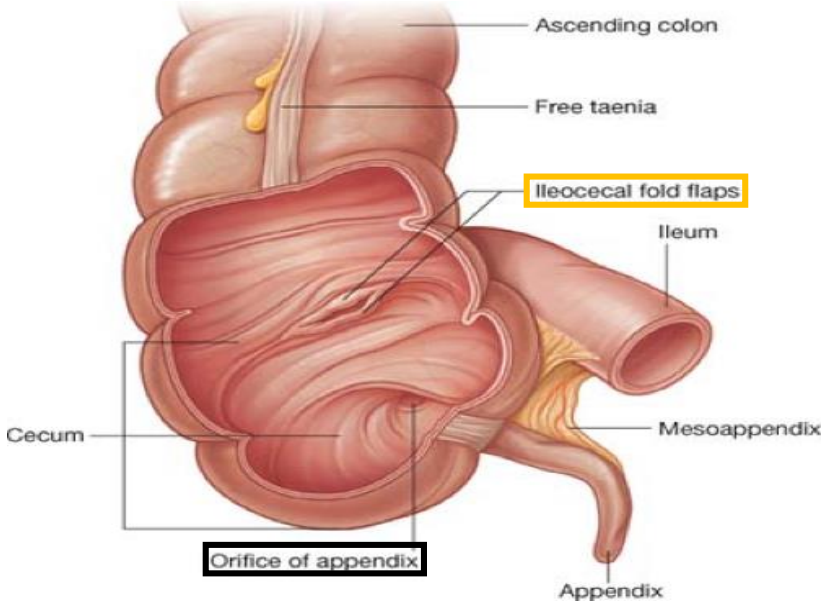
- **Opening:** (opens into cecum)

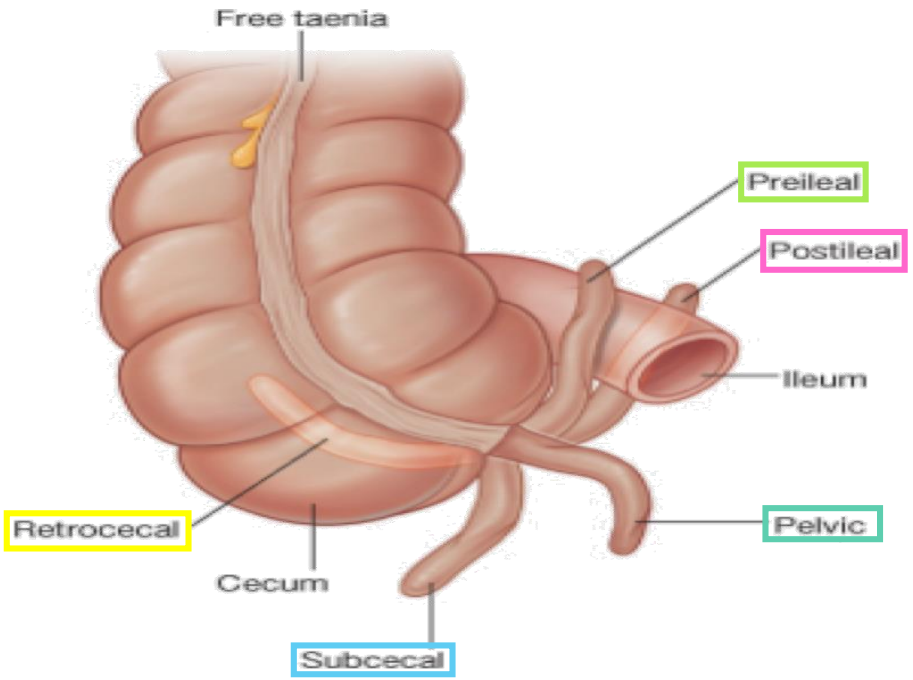
At posteromedial aspect of cecum, 1 inch below ileocecal junction.

- **Positions:** The **free end** is mobile so it moves and we may find it in the following positions:
  1. Retrocecal (most common)
  2. Pelvic (may be misdiagnosed with ovavitis)
  3. Subcecal (below)
  4. Preilieal
  5. Postileal (least common)

مهم نعرفها عشان اذا كان عندنا التهاب في الزائدة وجئنا نبي نشيلها اول شيء لازم ندورها وري السيكم اذا ما لقيناها نبدأ ندور في الاماكن الثانية

Extra



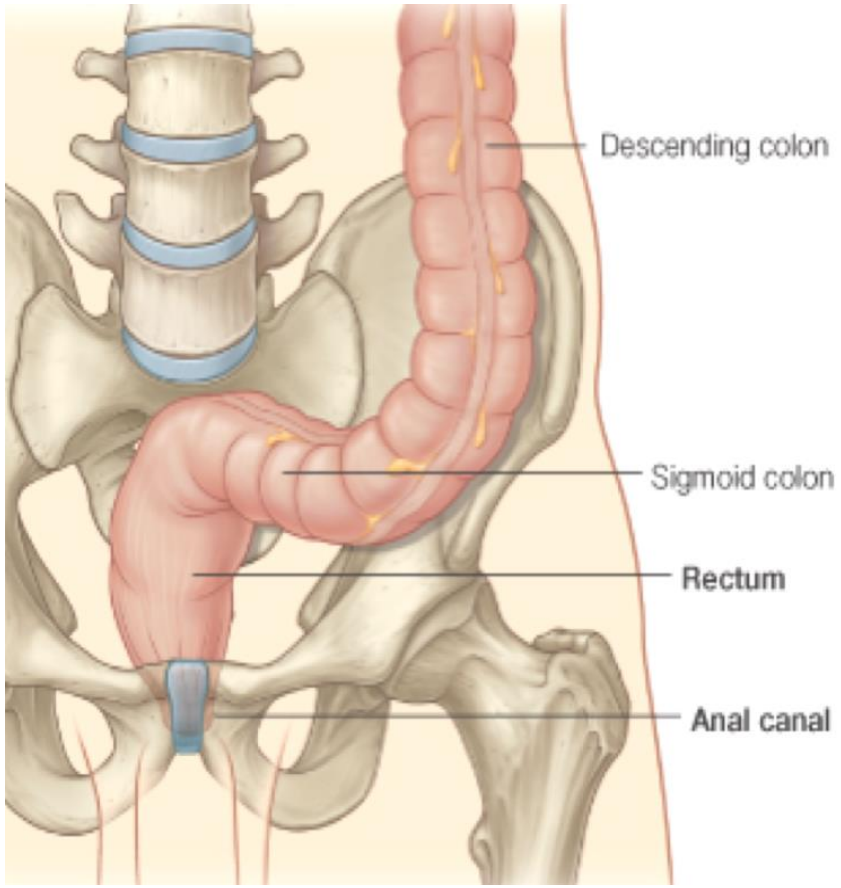


Rectum

- **Beginning:** as a continuation of sigmoid colon at level of **S3** in front.

- **Termination:** continues as anal canal, one inch below & in front of tip of coccyx.
  Its end is dilated to form the rectal ampulla.

- **Length:** 13 cm (5 inches)

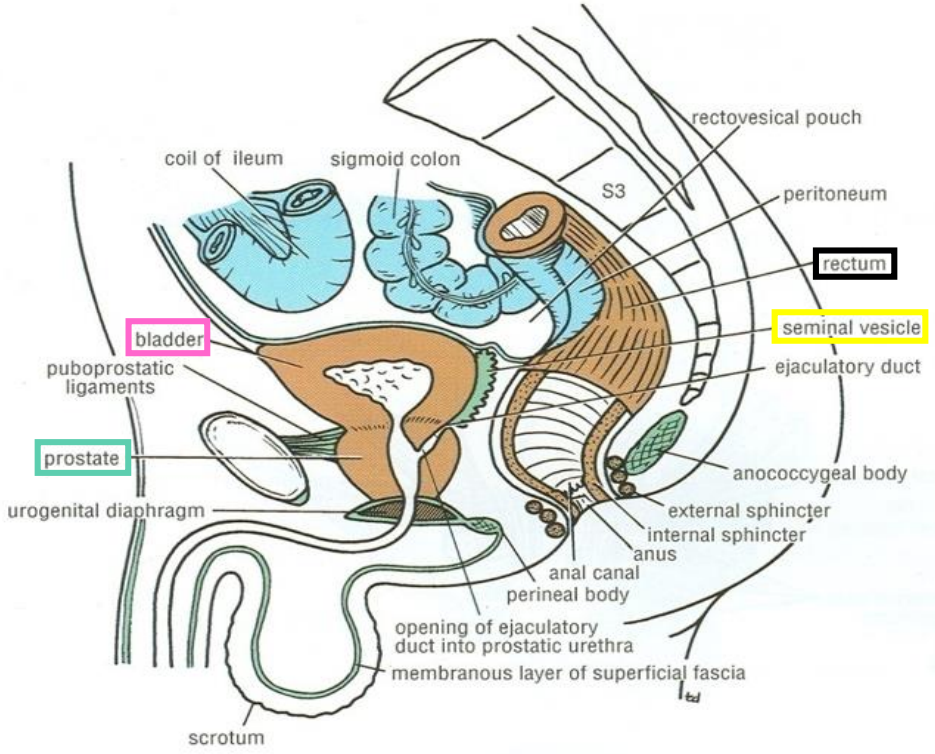


Relations of Rectum in Pelvis

* Due to its relation to the rectum, the easiest way to diagnose prostate enlargement is by examining it per rectal.
** Also prostate cancer may spread backwards and press on the sacral plexus causing symptoms of sciatica

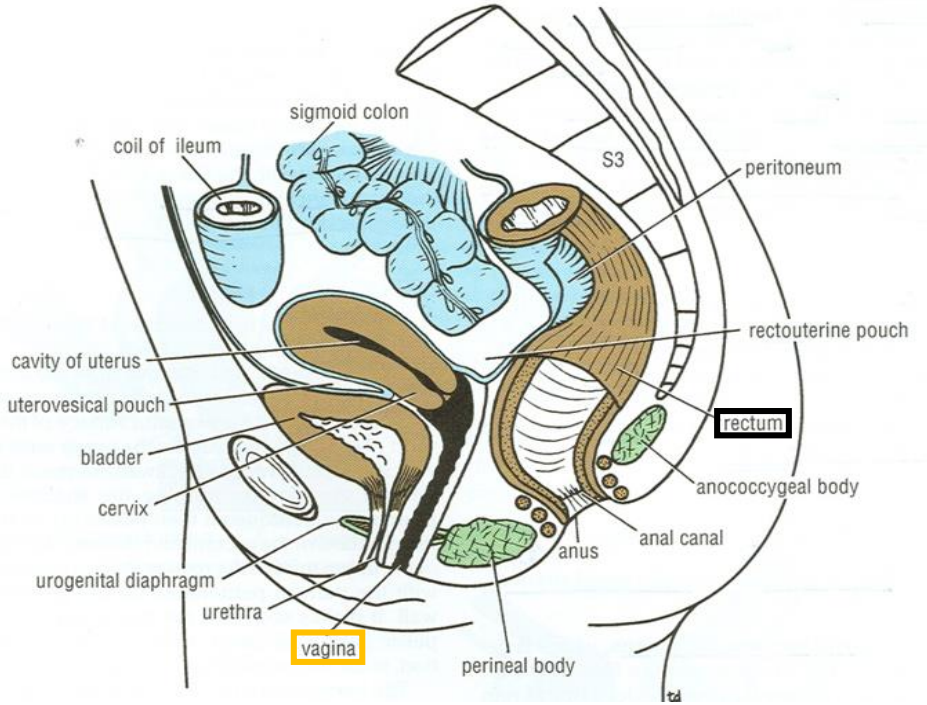
Male Pelvis

- Anterior: seminal vesicles, posterior surfaces of urinary bladder & prostate gland*
- Posterior: sacrum, sacral plexus** & coccyx



Female Pelvis

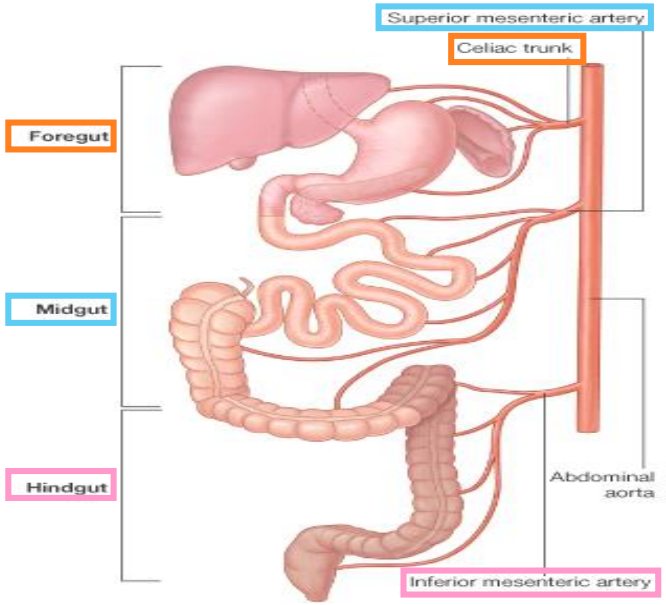
- Anterior: posterior wall of vagina
- Posterior: sacrum, sacral plexus & coccyx
  (posterior relations are the same in male and female)



Relation Between **Embryological Origin** of GIT& its **Arterial Supply**

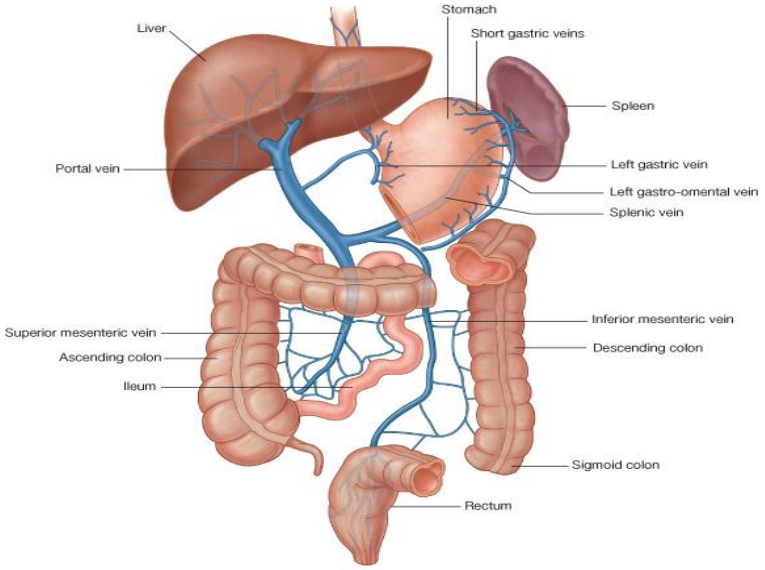
GIT is developed from foregut, midgut and hindgut. Each of which has its own blood supply:

Foregut	from esophagus → proximal duodenum at major duodenal papilla	**Celiac trunk**
Midgut	from distal duodenum after opening → right 2/3 of transvers colon	**Superior mesenteric artery**
Hindgut	from left 1/3 of transvers colon → anal canal	**Inferior mesenteric artery**



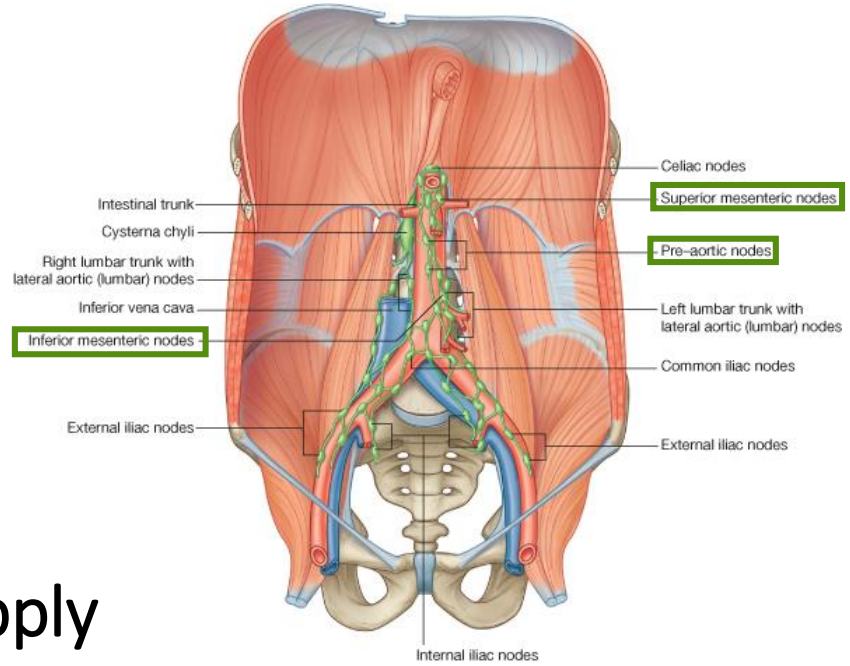
Venous Drainage Of GIT

The veins of the gut form the tributaries of the portal vein which enters the liver and drains into the **portal circulation.**



Lymph Drainage of GIT *Only on the girls' slides*

- The lymph vessels follow the arteries.
- Ultimately, all the lymph is collected at the **Preaortic lymph nodes** (Superior & Inferior mesenteric).

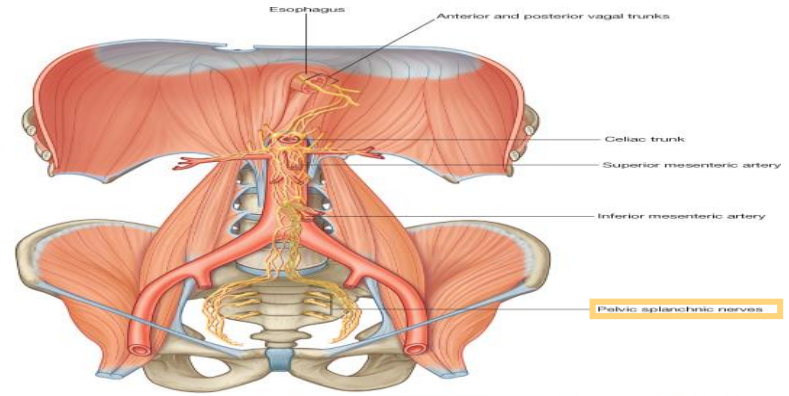


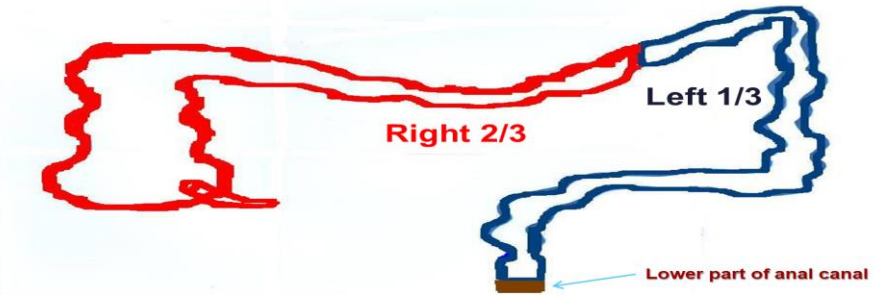
Relation Between **Embryological Origin** & **Nerve Supply**

Origin: **Midgut** (endoderm)
Nerve supply: (Autonomic): Sympathetic (celiac) + Vagus

Origin: **Hindgut** (endoderm)
Nerve supply: (Autonomic): Sympathetic + pelvic splanchnic nerves

Origin: **ectoderm** (lower 1/3 of anal canal)
Nerve Supply: **Somatic** (inferior rectal)





Peritoneal Covering	CECUM – ASCENDING & DESCENDING COLONS	Transverse Colon	APPENDIX	Rectum	Venous, lymph, nerve supply
PARTS with MESENTERY: 1. Transverse colon 2. Sigmoid colon 3. Appendix 4. Cecum RETROPERITONEAL PARTS: 1. Ascending colon 2. Descending colon 3. Upper 2/3 of rectum PARTS DEVOID OF PERITONEAL COVERING: 1. Lower 1/3 of rectum 2. Anal canal	Anterior Relations: -Greater omentum -Coils of small intestine -Anterior abdominal wall Posterior Relations: **Cecum**: 1. Psoas major 2. Iliacus **Ascending colon:** 1. Iliacus 2. Quadratus lumborum 3. Right kidney. **Descending colon:** 1. Left kidney 2. Quadratus lumborum 3. Iliacus	COLIC FLEXURES: 1-Hepatic flexure 2-Splenic flexure: higher + more acute angle **Relations:** **Anterior**: -greater omentum, -anterior abdominal wall. **Posterior:** -2nd part of duodenum , -pancreas & -superior mesenteric vessels. **Superior:** -liver, - gall bladder, -stomach **Inferior:** -coils of small intestine	**Surface anatomy**: the base of appendix is marked by Mc'Burney'spoint. **Opening**:At posteromedial aspect of cecum. **Positions**: 1.Retrocecal most common 2.Pelvic 3.Subcecal 4.Preilieal 5.Postileal: least common	**Beginning**: at level of S3. **Termination:** continues as anal canal, one inch below & in front of tip of coccyx. **Length**: 13 cm(5 inches) **Relations** **Posterior:** sacrum , sacral plexus & coccyx **Anterior:** **MALE** PELVIS: seminal vesicles, posterior surfaces of urinary bladder & prostate gland. **FEMALE** PELVIS: posterior wall of vagina.	**Venous drainage:** Portal circulation. **Lymph drainage:** Preaortic lymph nodes. **Nerve supply:** **Origin: Midgut** Nerve supply: (**Autonomic**): Sympathetic + Vagus **Origin: Hindgut** Nerve supply: (**Autonomic**): Sympathetic + pelvic splanchnic nerves **Origin: ectoderm** (lower 1/3 of anal canal) Nerve Supply: **Somatic** (inferior rectal)

MCQs

1. The taeniae coli found in which of the following structure ?
A- Transverse colon
B- Small intestine
C- Rectum
D- Anal canal

2. Which of the following part is with mesentery ?
A- Lower 1/3 of rectum
B- Appendix
C- Ascending colon
D- Upper 2/3 of rectum

3. Which of the following structure is an anterior relation of cecum ?
A- Psoas major
B- lliacus
C- Quadratus lumborum
D- Coils of small intestine

4. The superior mesenteric vessels relate to Transverse colon ?
A- Anteriorly
B- Posteriorly
C- Superiorly
D- inferiorly

5. Which one of the following is the nerve supply of the Hindgut (endoderm):
A- Sympathetic + pelvic splanchnic nerves
B- Somatic (inferior rectal)
C- Sympathetic + Vagus

6. All the lymph in the GIT is collected at the:
A- Preaorticlymph nodes (Superior & Inferior mesenteric).
B- Preaorticlymph nodes (anterior & Inferior mesenteric).
C- postaorticlymph node

7. The termination of the rectum is:
A- as a continuation of sigmoid colon at level of S3.
B- continues as anal canal, one inch below & in front of tip of coccyx.
C- sacral plexus & coccyx

8. Which one of the following parts of large intestine is found in the pelvis?
A- Transverse colon
B- Anal canal
C- Rectum
D- Cecum

9. Its surface anatomy is marked by Mc'Burney's point:
A- Rectum
B- Colon
C- Appendix
D- Pancreas

Answers:

1. A, 2. B, 3. D, 4. B 5.A 6.A

7.B 8.C 9.C

SAQ

1. What are the Characteristics of COLON ?

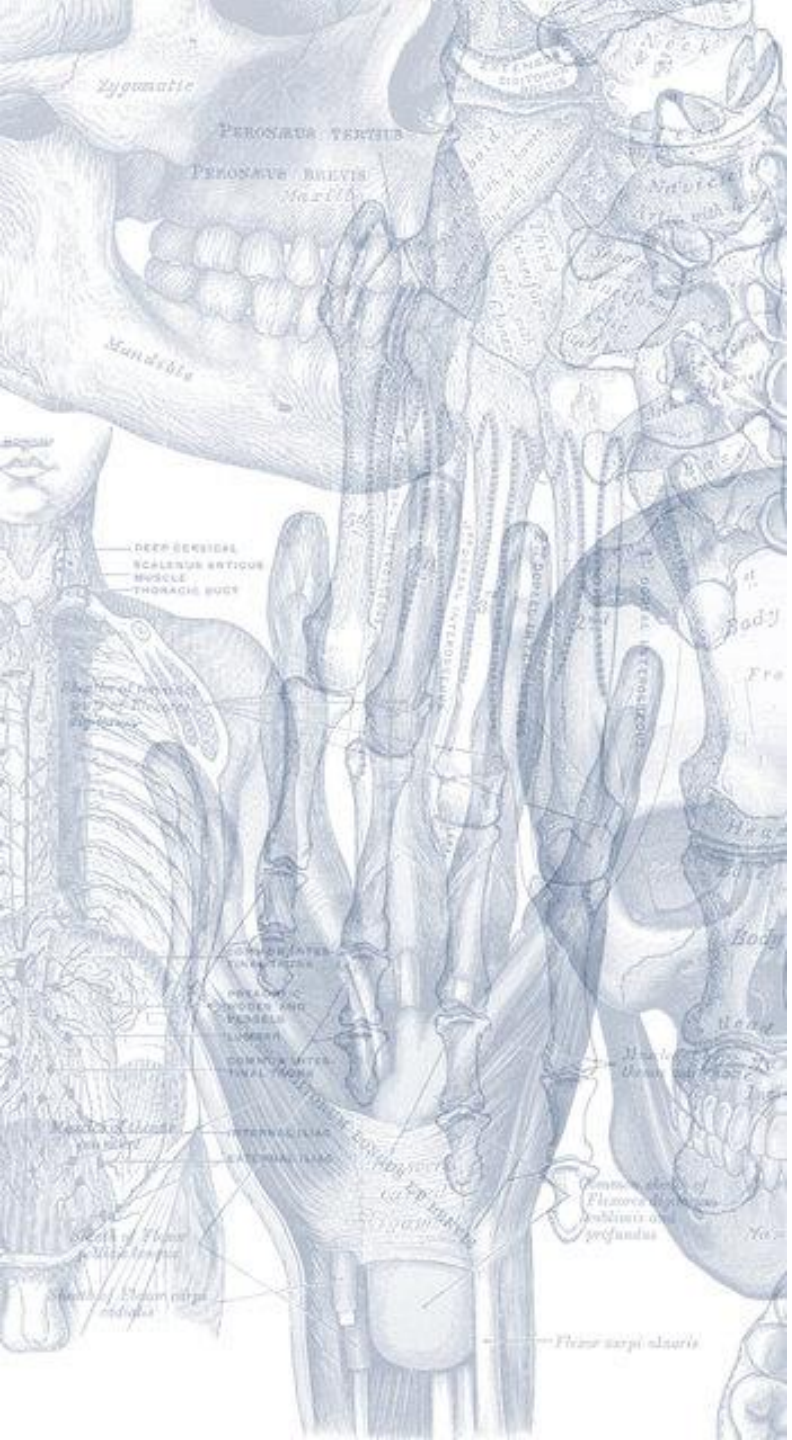
    1) Taeniae coli
    2) Sacculations
    3) Epiploic appendices

2. What are the Anterior Relations of (CECUM – ASCENDING & DESCENDING COLONS)

    1) Anterior abdominal wall
    2) Coils of small intestine
    3) Greater omentum

3. What are the Posterior Relations (CECUM – ASCENDING & DESCENDING COLONS)

    - **Cecum**: 1. Psoas major 2. Iliacus
    - **Ascending colon**: 1. Iliacus 2. Quadratus lumborum 3. Right kidney.
    - **Descending colon**: 1. Left kidney 2. Quadratus lumborum 3. Iliacus



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References:

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2- Greys Anatomy for Students

3- TeachMeAnatomy.com