



**Anatomy Team**  
**MED 439**

Revised & Approved



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# The Large Intestine

GNT Block

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Don't forget to check the [Editing File](#)

**Color index:**

**Content**

**Male slides**

**Female slides**

**Important**

**Doctors notes**

Extra information, explanation

# Objectives

At the end of the lecture the students must know:

- List the different parts of large intestine.
- List the characteristic features of colon.
- Describe the anatomy of different parts of the large intestine regarding:
  1. the surface anatomy
  2. peritoneal covering
  3. relations
  4. arterial & nerve supply.

# Large Intestine

## Large Intestine

### Parts of Large Intestine

#### In Abdomen

- cecum (in right iliac region)
- appendix (in right iliac region)
- Ascending Colon (in right lumbar region)
- Transverse Colon (in 4,5,6 regions)
- descending Colon (in left lumbar region)

#### In pelvis

- (Pelvic) sigmoid Colon (in left iliac, hypogastric regions)
- rectum

#### In perineum

- anal Canal

### Characteristics of COLON

#### Taeniae coli

- 3 longitudinal muscle bands
- **Sacculations (Haustra)**
- Because the Taeniae coli are shorter than large intestine  
Formed by the tone of taenia coli
- **Epiploic Appendices**
- Short peritoneal folds filled with fat. along the length of taenia coli

**NOTE: THESE CHARACTERISTICS ARE NOT FOUND IN RECTUM & ANAL CANAL**

### Peritoneal covering

#### Parts With Mesentery

allow some movement

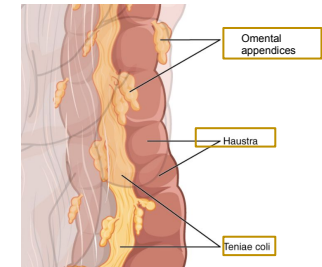
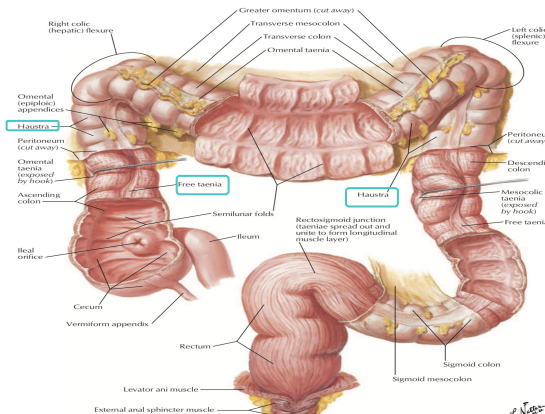
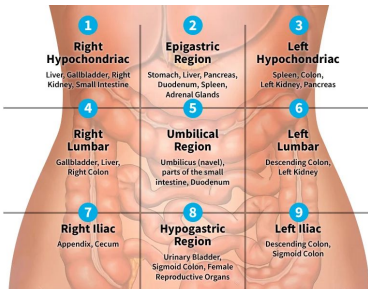
1. Transverse colon (transverse mesocolon)
2. Sigmoid colon (sigmoid mesocolon)
3. Appendix (mesoappendix)
4. Cecum

**Retroperitoneal Parts** only the anterior aspect is covered, fixed to the posterior wall, no movement

1. Ascending colon
2. Descending colon
3. Upper  $\frac{2}{3}$  of rectum

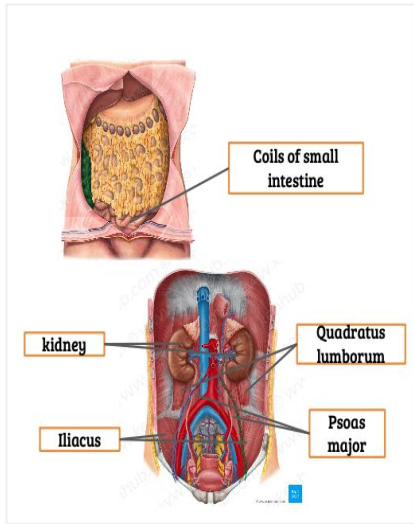
#### Parts Devoid of Peritoneal Covering

1. Lower  $\frac{1}{3}$  of rectum
2. Anal canal



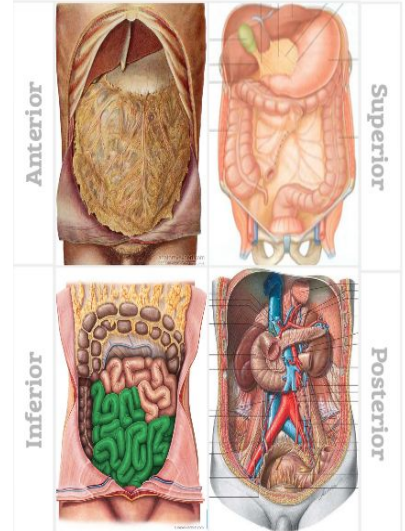
# Cecum–ascending & Descending Colons

Parts	Cecum	Ascending colon	Descending colon
<b>Anterior Relations</b>	<ul style="list-style-type: none"> <li>Greater omentum</li> <li>Coils of small intestine</li> <li>Anterior abdominal wall</li> </ul>		
<b>Posterior Relations</b>	<ol style="list-style-type: none"> <li>Right Psoas major</li> <li>Right Iliacus</li> </ol> <p>Nerves: (all right)* lateral cutaneous of thigh ,Femoral,Genitofemoral</p>	<ol style="list-style-type: none"> <li>Right Iliacus</li> <li>Right Quadratus lumborum</li> <li>Right kidney.</li> </ol> <p>Nerves: (all right)* Iliohypogastric Ilioinguinal</p>	<ol style="list-style-type: none"> <li>Left Iliacus</li> <li>Left Quadratus lumborum</li> <li>Left kidney.</li> <li>Left Psoas major</li> </ol> <p>Nerves: (all left)* Iliohypogastric ,Ilioinguinal, lateral cutaneous of thigh Femoral, Genitofemoral;</p>



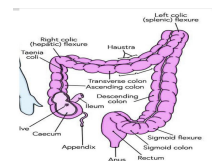
## Transverse Colon

Anterior Relations	Posterior Relations	Superior Relation	Inferior Relation
<ol style="list-style-type: none"> <li>greater omentum</li> <li>anterior abdominal wall</li> </ol>	<ol style="list-style-type: none"> <li>2nd part of duodenum</li> <li>Head of pancreas</li> <li>superior mesenteric vessels</li> <li>Coils of S I .</li> </ol>	<ol style="list-style-type: none"> <li>liver</li> <li>gallbladder</li> <li>stomach</li> </ol> <p>Transverse colon is Posteroinferior to the stomach (part of the stomach bed)</p>	<ol style="list-style-type: none"> <li>coils of small intestine</li> </ol>



## Colic Flexures

- Hepatic flexure (right colic flexure): position: lower(liver push it down) + angle: wider
- Splenic flexure (left colic flexure): Position: higher + Angle: more acute



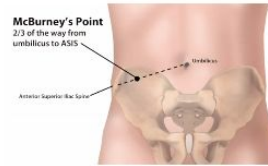
# Appendix

# Rectum

It is lymphoid tissue but its position makes it part of the large intestine

## Surface anatomy

- the base of appendix is marked by McBurney's point:
  - A point at the junction of lateral  $\frac{1}{3}$  & medial  $\frac{2}{3}$  of a line
  - traced from right anterior superior iliac spine to umbilicus
- It is an important point in surgery.



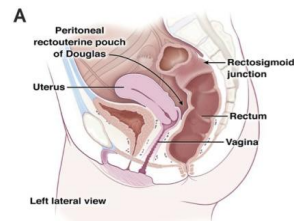
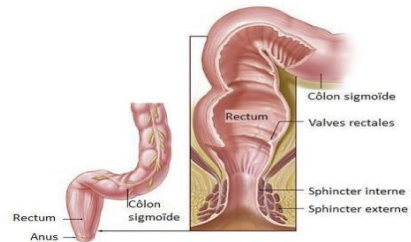
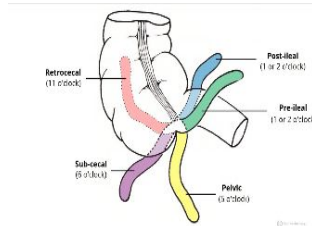
People with appendicular problems may describe pain near this location.

## Opening

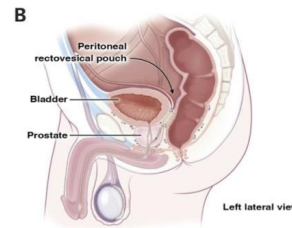
At posteromedial aspect of cecum, 1 inch below ileo-cecal junction

## Positions

- Retrocecal:(most common)
- Pelvic
- Subcecal
- Preileal
- Postileal:(least common)



between the uterus, vagina & rectum is rectouterine (Douglas) pouch that has sigmoid colon



between the Urinary bladder & the rectum is rectovesical pouch (sac of peritoneum)

## Beginning

As a continuation of sigmoid colon at level of **S3**

## Termination

Continue as anal canal, one inch below and in front of tips of coccyx. Its end is dilated to form the rectal ampulla.

## Length

13 cm (5 inches)

## Relations of rectum in pelvis

### Anterior

**Male:** Posterior surfaces of urinary bladder, Seminal vesicles, Prostate gland

**Female:** posterior wall of vagina

### Posterior

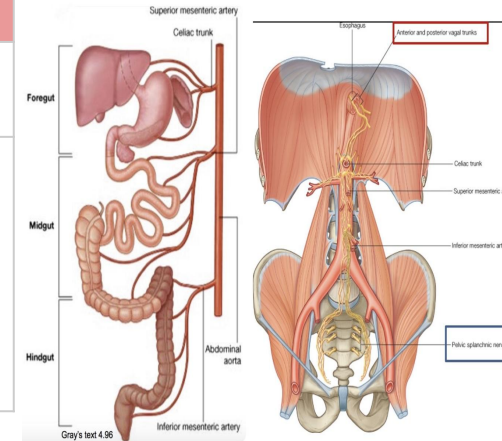
sacral plexus, sacrum, coccyx

cancer of the rectum may press on the sacral plexus → sciatica

# Relation between embryological origin of GIT and supply

## Artery

1-Foregut	2-Midgut (endoderm)	3-hindgut (endoderm)	4-Ectoderm
<p>celiac trunk includes stomach, liver, gallbladder, pancreas, spleen, upper part of duodenum until major duodenal papilla.</p>	<p>superior mesenteric artery Includes the rest of duodenum, jejunum, ileum, cecum, appendix, ascending colon, right 2/3 of transverse colon.</p>	<p>inferior mesenteric artery left 1/3 of transverse colon, descending colon, sigmoid colon, rectum, upper part of anal canal.</p>	<p>inferior rectal artery, lower part of the anal canal</p>

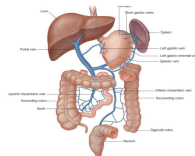


Transverse colon has double supply

## Venous drainage

- Veins draining gut form the portal circulation
- All veins finally end into portal vein which enters the liver

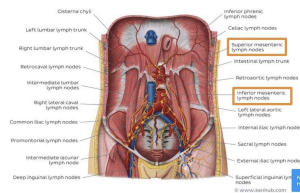
Either direct to the portal vein or from Superior mesenteric V or Inferior mesenteric V to the Portal.



## Lymph drainage

- The lymph vessels follow the arteries
- Ultimately, all the lymph is collected at the preaortic lymph nodes (superior and inferior mesenteric)

Then to Celiac LN



## Nerve supply

- Midgut (endoderm) autonomic supply: sympathetic + vagus nerve
- Hindgut (endoderm) autonomic nerve supply: sympathetic + pelvic splanchnic nerves (S2, S3, S4)
- Ectoderm (lower 1/3 of anal canal) somatic nerve supply: inferior rectal → branch of pudendal nerve → branch of sacral plexus

# MCQ

Q1: In Which of the following regions lies the McBurney's point "frome males doctor"

A: Right iliac fossa

B:Hypogastrium

C: Right lumbar region

D: Umbilical region

Q2: Which one of the following parts of large intestine is found in the pelvis "frome males doctor"

A: Transverse colon

B: Anal canal

C: Rectum

D: Cecum

Q3: appendix is a part of large intestine in

A:pelvis

B: abdomen

C: In peritoneum

D: C & B

Q4: what of the following is a part WITHOUT Mesentery

A: Transverse colon

B:Sigmoid colon

C:Ascending Colon

D:Cecum

Q5: Posterior relation of Transverse colon

A: pancreas

B:3rd part of duodenum

C:2nd part of duodenum

D: A & C

Q6: McBurney's point is

A: A point at the junction of lateral  $\frac{1}{3}$  & medial  $\frac{2}{3}$  of a line

B: mark of the base of appendix

C: At posteromedial aspect of cecum,

D: A&B

Answer key:  
1 (A) , 2 (C) , 3 (B) , 4 (C) , 5 (D) , 6 (D)

# MCQ

**Q7: the rectum begins at the level of**

**A: S1**

**B: S2**

**C: S3**

**D: S4**

**Q8: which of the following is not related to the rectum posteriorly ?**

**A: prostate gland**

**B: sacral plexus**

**C: sacrum**

**D: coccyx**

**Q9: the foregut arterial supply is ?**

**A: celiac trunk**

**B: superior mesentric artery**

**C: inferior mesentric artery**

**D: inferior rectal**

**Q10: the superior mesentric artery supplies all except**

**A: ascending colon**

**B: left  $\frac{1}{3}$  of transverse colon**

**C: right  $\frac{2}{3}$  of transverse colon**

**D: cecum**

**Q11: lymph drainage of the Git**

**A: superior mesentric lymph nodes**

**B: inferior mesentric nodes**

**C: both superior and inferior**

**D: aortic nodes**

**Q12: what is the nerve supply of the ectoderm?**

**A: sympathetic**

**B: inferior rectal**

**C: vagus**

**D: pelvic splanchnic**

Answer key:  
7(C) , 8(A) , 9(A) , 10(B) , 11(C) , 12(B)



# SAQ

Q1: What are the 3 Characteristics of COLON ?

Q2: Enumerate the posterior relations of Ascending colon?

Q3: where does the rectum terminate?

Q4: what is the end venous drainage of the gut ?

## Answers

1: 1- Taeniae coli 3- Sacculations (Haustra) 3- Epiploic Appendices

2: 1-Right Iliacus 2-Right Quadratus lumborum 3-Right kidney.

3: continues as anal canal one inch below and in front of coccyx tip

4: veins draining the gut form the portal circulation and finally end into the portal vein

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