

THE LARGE INTESTINE

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Surgical Anatomist

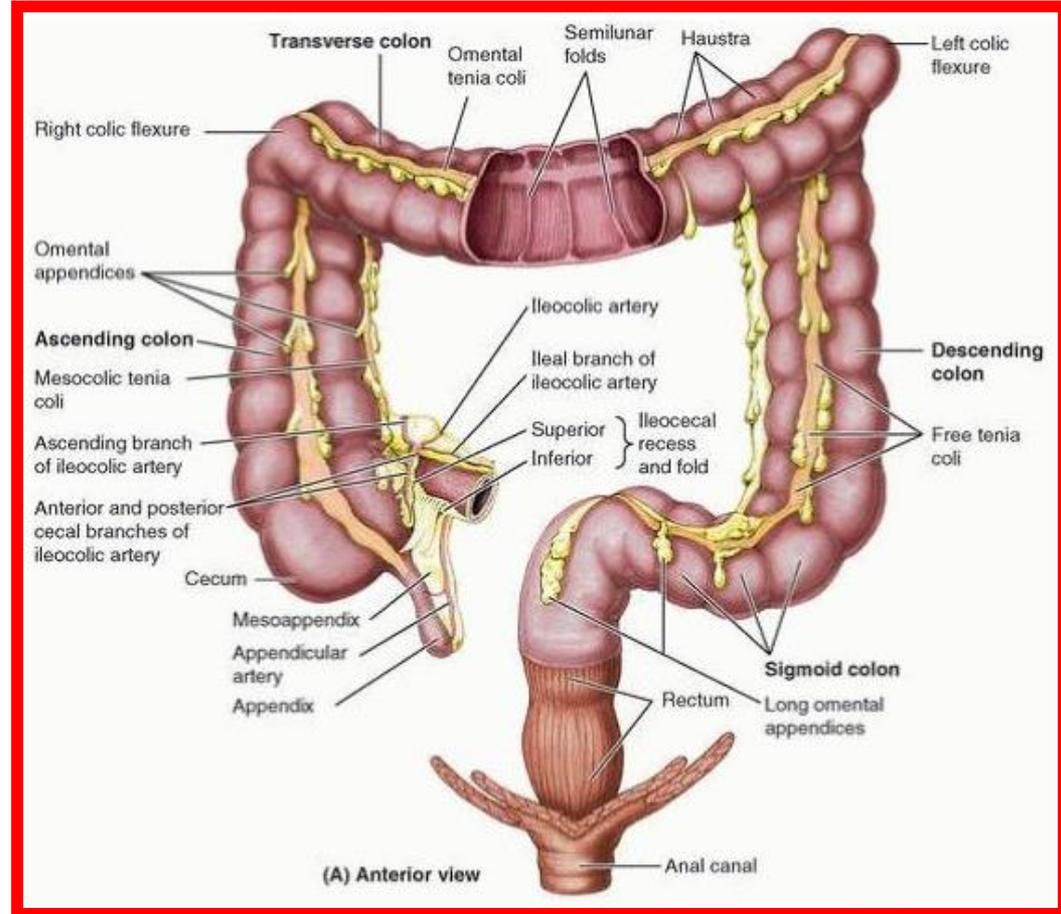
College of Medicine / University of Mutah
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Sunday 10 April 2022

Large Intestine

❖ The large intestine extends from the ileum to the anus. It is divided into the **cecum, appendix, ascending colon, transverse colon, descending colon, and sigmoid colon.**

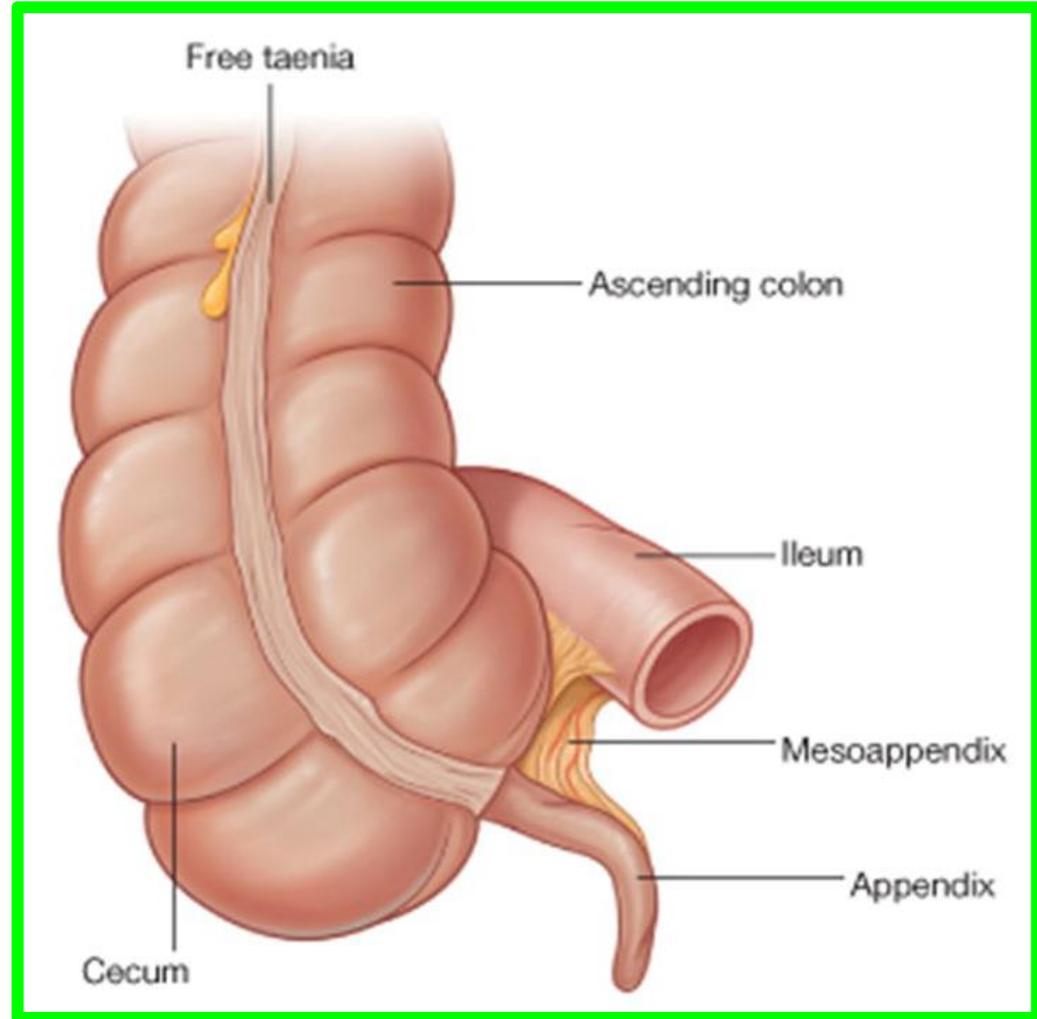
❖ The primary function of the large intestine is the **absorption of water and electrolytes** and the **storage of undigested material** until it can be expelled from the body as feces



Large Intestine

Cecum

❖ Is that part of the large intestine that lies below the level of the junction of the ileum with the large intestine. It is a blind-ended pouch that is situated in the **right iliac fossa**. It is about **2.5 in. (6 – 7.5 cm)** long and is completely covered with peritoneum.

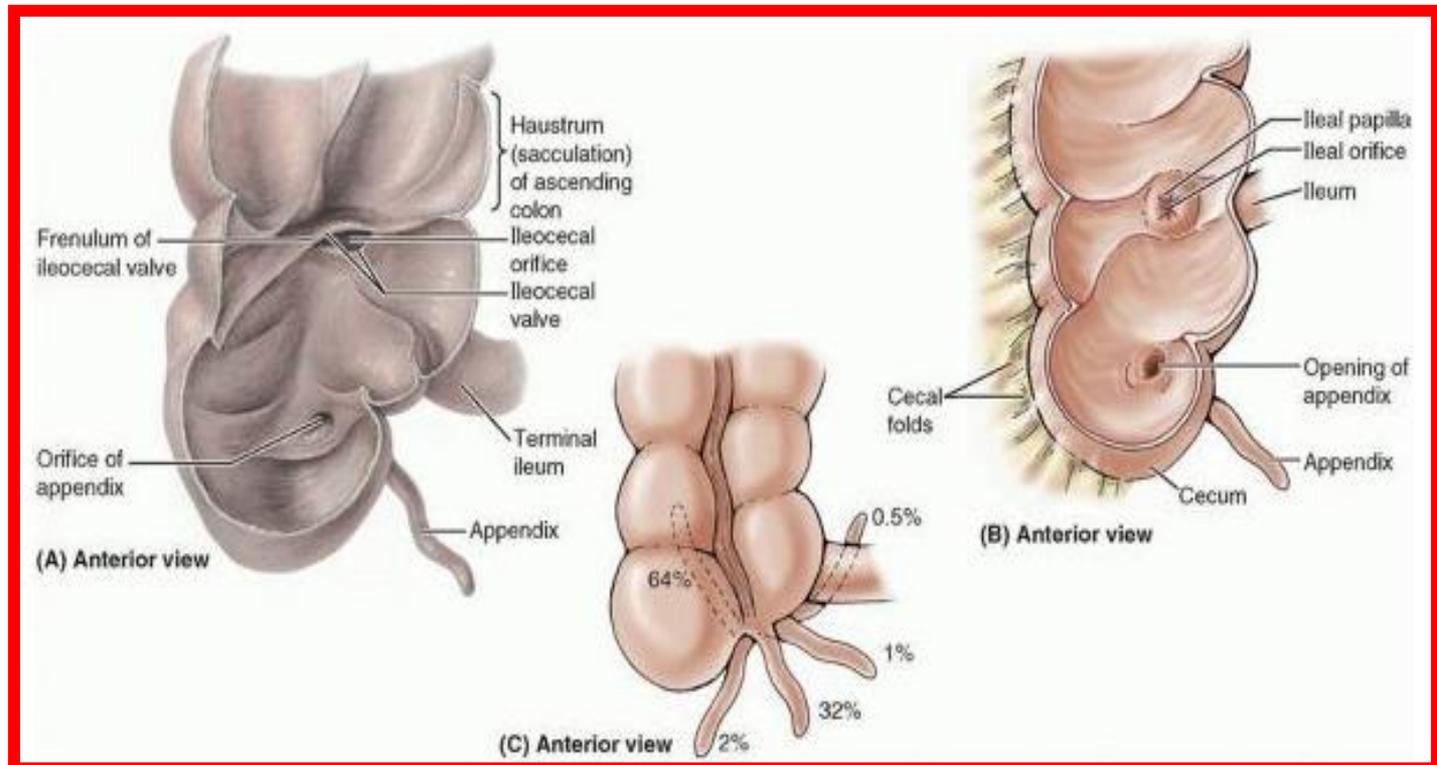


- ✓ It possesses a considerable amount of mobility, although it does not have a mesentery
- ✓ Attached to its posteromedial surface is **the appendix**

The terminal part of **the ileum** enters the large intestine at **the junction of the cecum with the ascending colon.**

✓ The opening is provided with two folds, or lips, which form the so-called **ileocecval valve** .

✓ **The appendix** communicates with the cavity of the cecum through an opening located **below and behind** the ileocecal opening



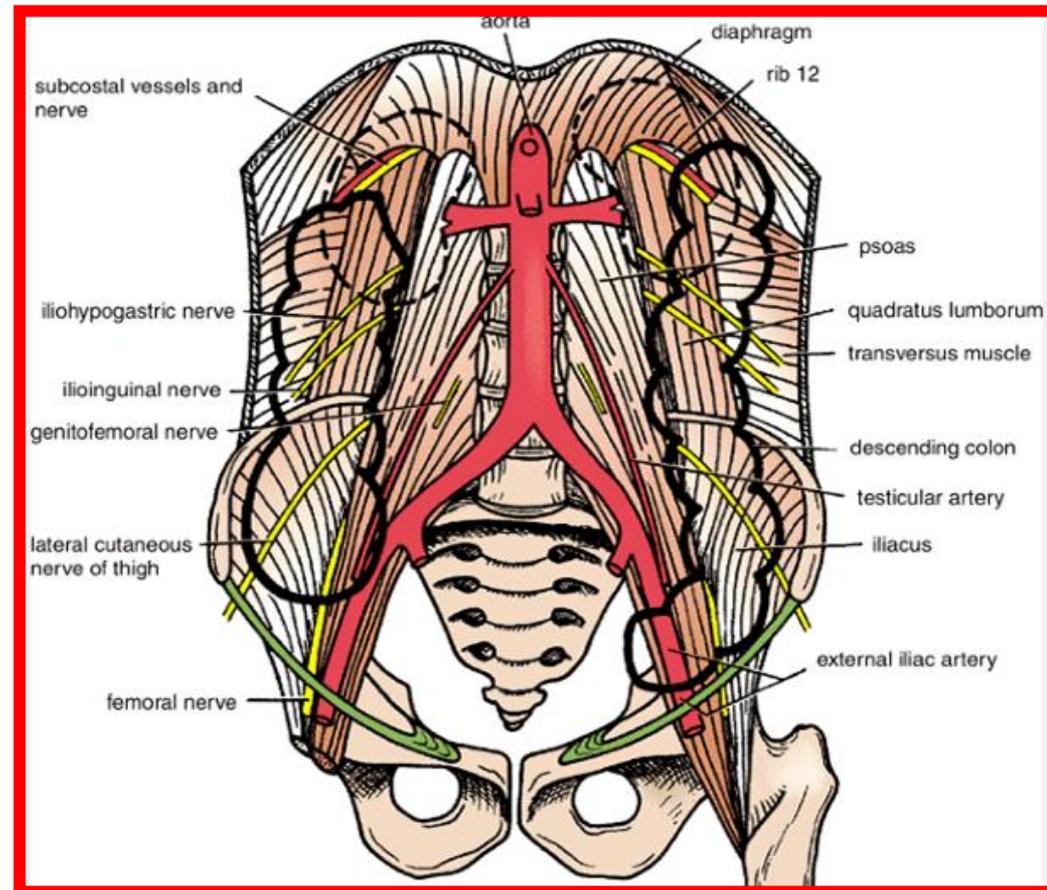
Cecum

Relations

❖ **Anteriorly:** Coils of small intestine, sometimes part of the greater omentum, and the anterior abdominal wall in the right iliac region

❖ **Posteriorly:** The psoas and the iliacus muscles, the femoral nerve, and the lateral cutaneous nerve of the thigh. *The appendix is commonly found behind the cecum.*

❖ **Medially:** The appendix arises from the cecum on its medial side



Large Intestine

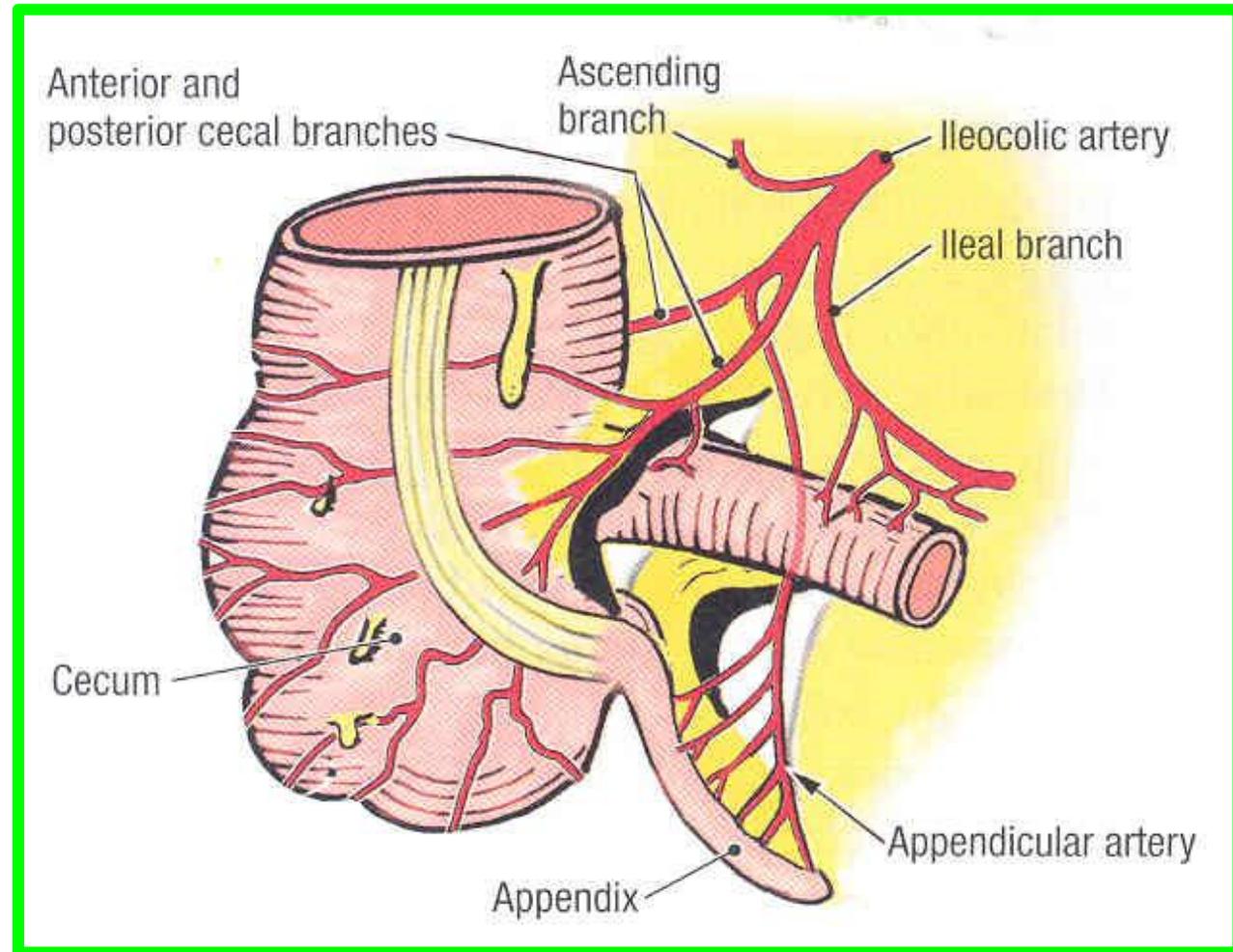
Cecum

Arteries

Anterior and posterior cecal arteries form **the ileocolic artery**, a branch of the **superior mesenteric artery**

Veins

The veins correspond to the arteries and drain into the **superior mesenteric vein**

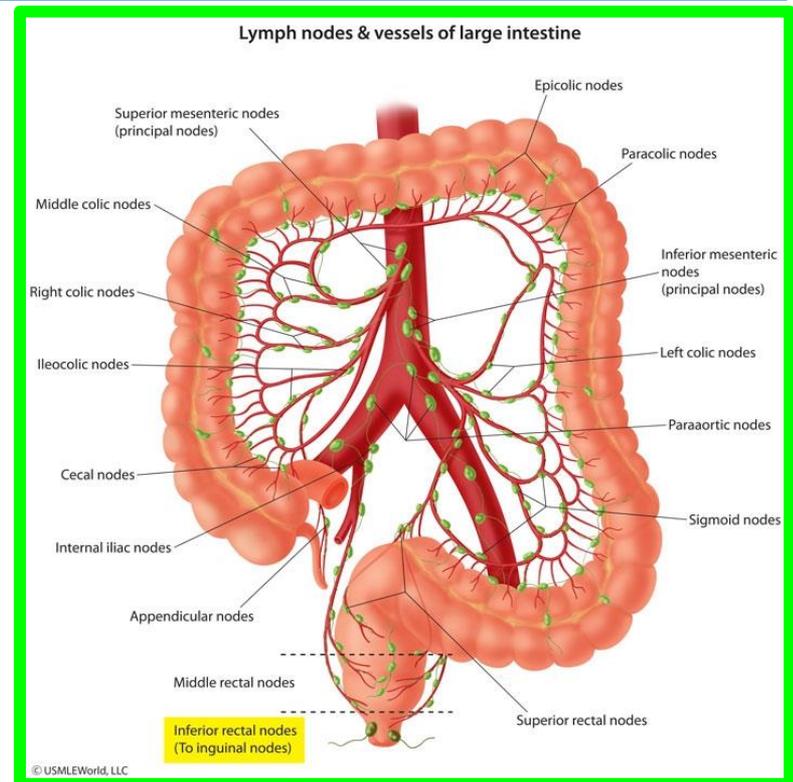
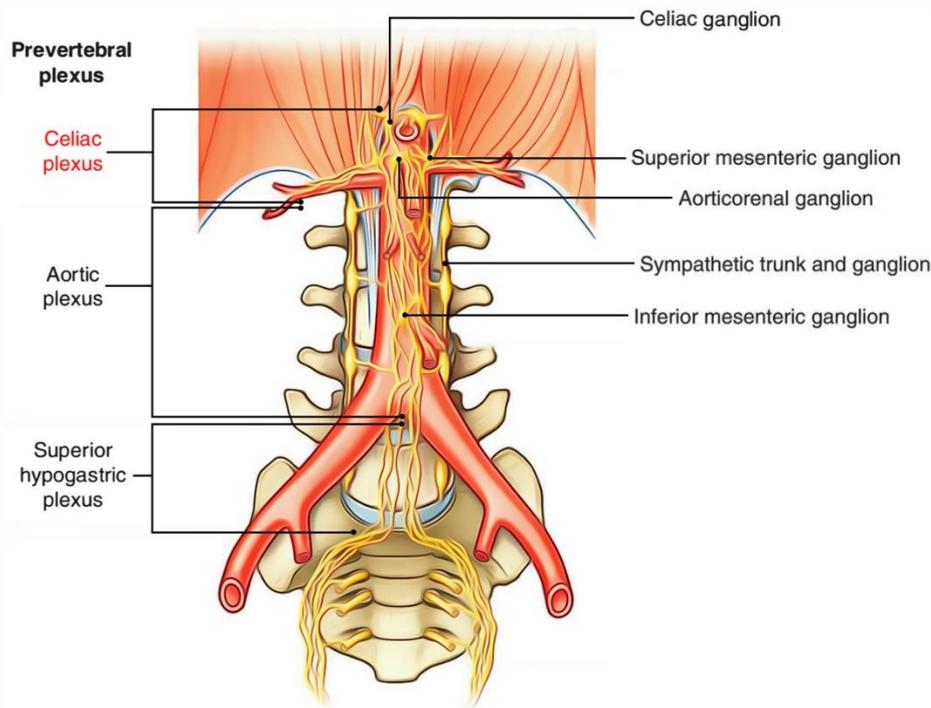


Lymph Drainage

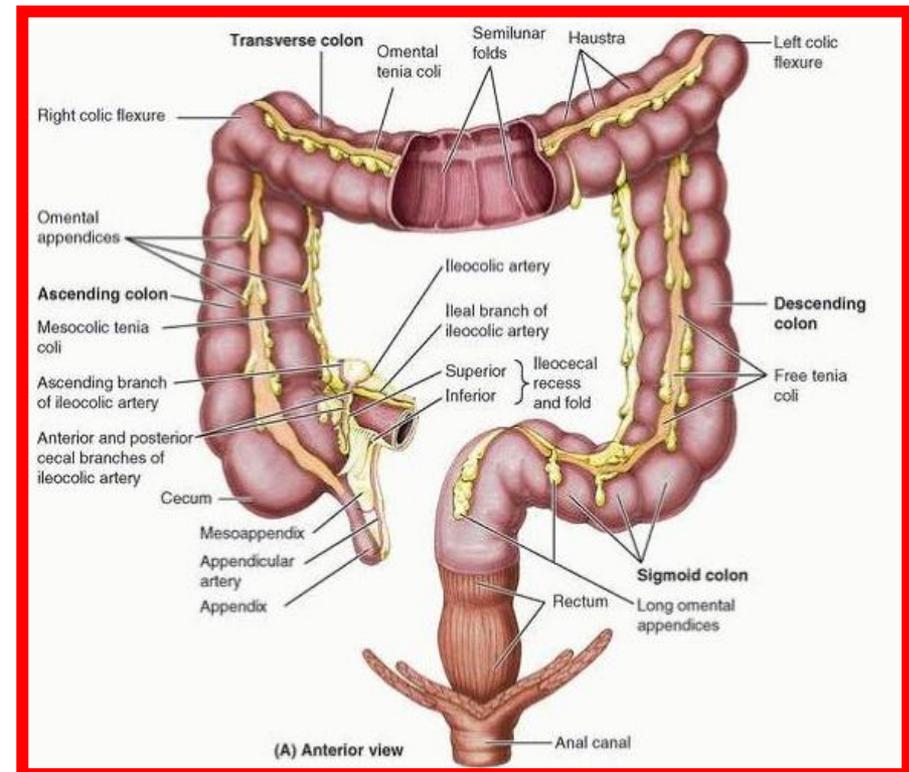
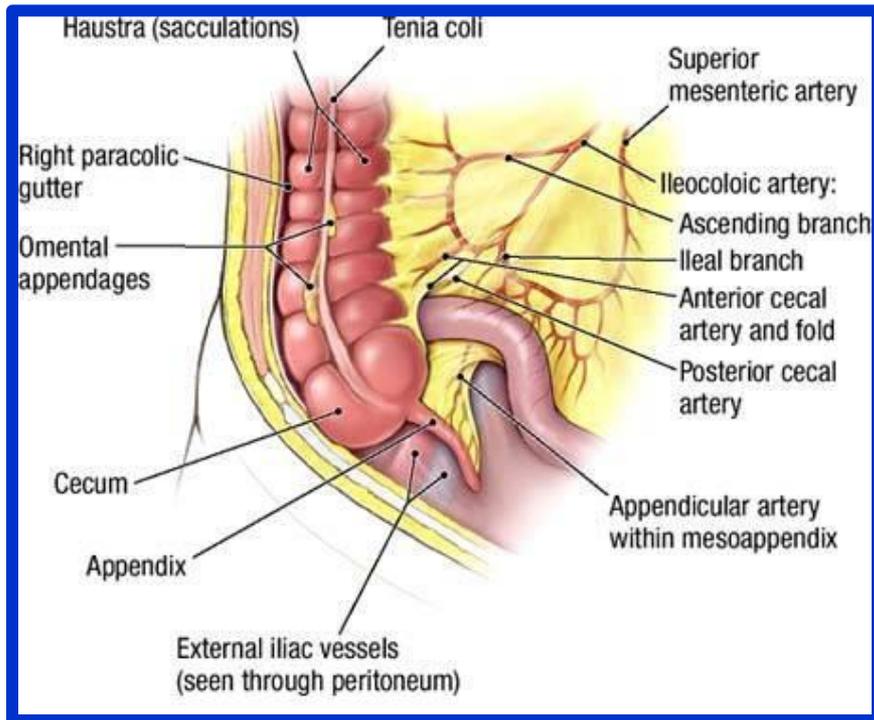
The lymph vessels pass through several mesenteric nodes and finally reach **the superior mesenteric nodes**

Nerve Supply

Branches from the sympathetic and parasympathetic (**vagus**) nerves form **the superior mesenteric plexus**

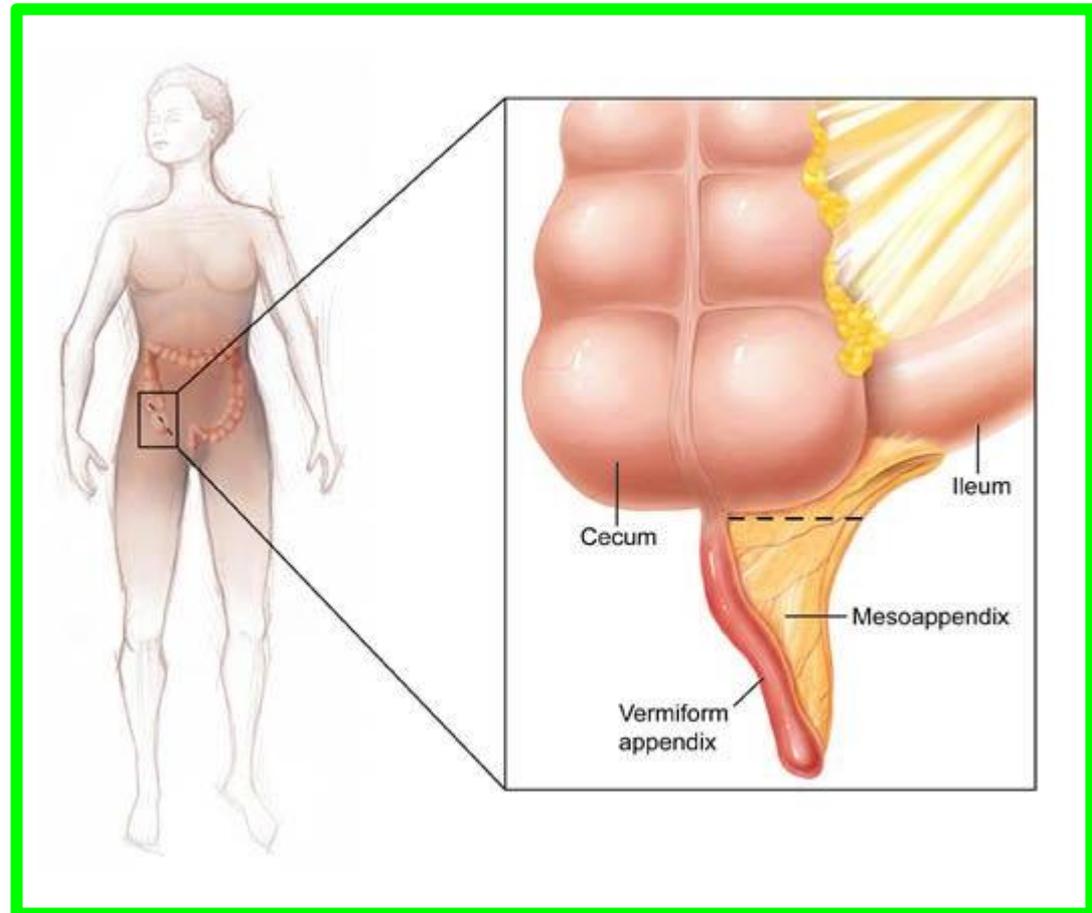


- ✓ Is a narrow, muscular tube containing a large amount of lymphoid tissue.
- ✓ It varies in length from **(6 to 9 cm)**
- ✓ The base is attached to the posteromedial surface of the cecum about 1 in. **(2.5 cm)** below **the ileocecal junction.**
- ✓ The remainder of the appendix is free.

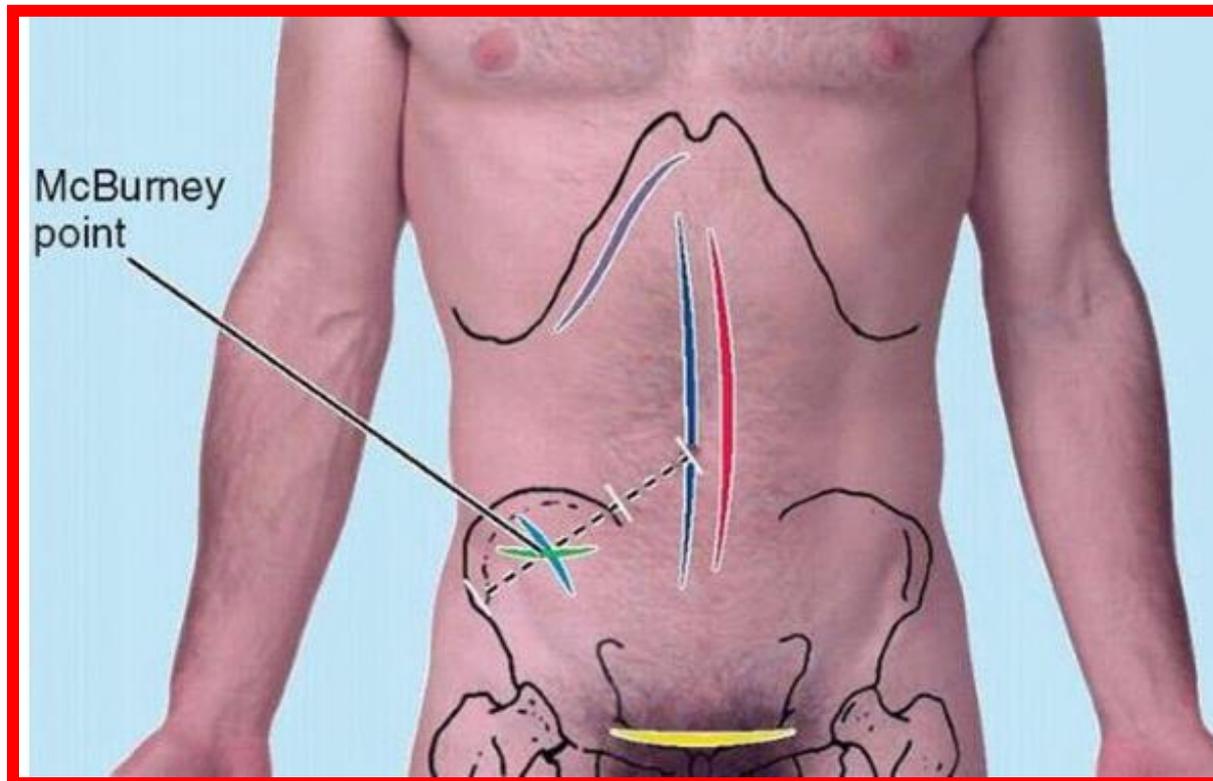


Appendix

- ✓ It has a **complete peritoneal covering**, which is attached to the mesentery of the small intestine by a short mesentery of its own, **the mesoappendix**.
- ✓ The mesoappendix contains the **appendicular vessels** and nerves

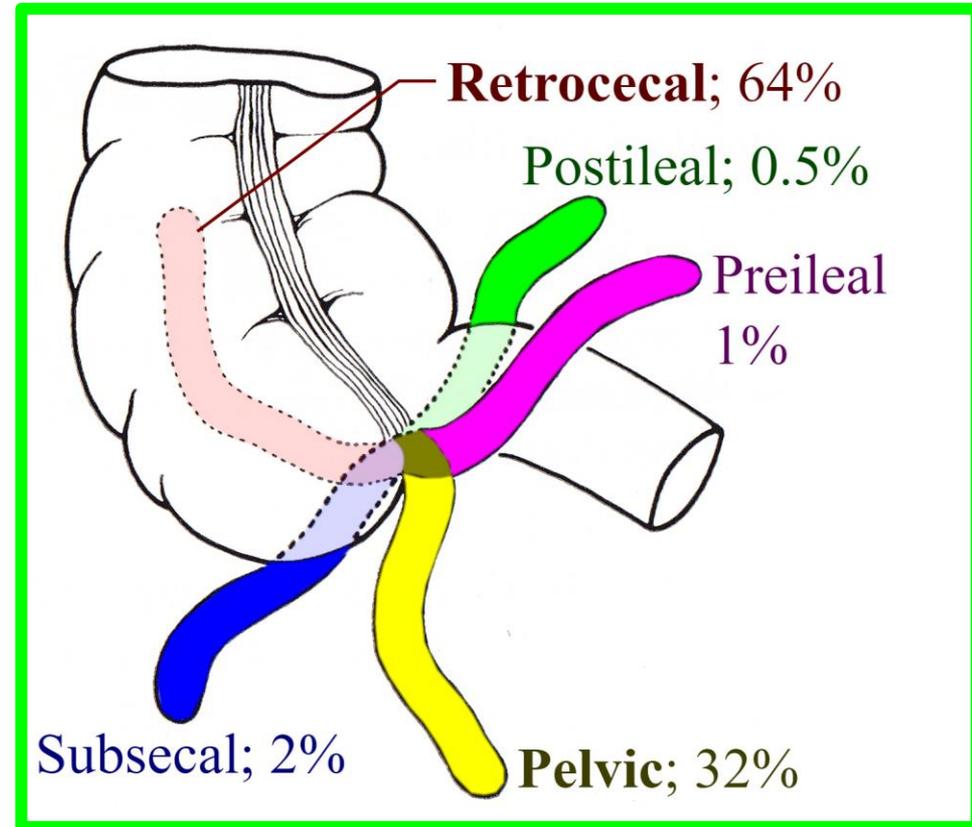


- ❖ The appendix lies in **the right iliac fossa**, and in relation to the anterior abdominal wall its base is situated one third of the way up the line joining **the right anterior superior iliac spine to the umbilicus (McBurney's point)**.
- ❖ Inside the abdomen, the base of the appendix is easily found by identifying **the teniae coli** of the cecum and tracing them to the base of the appendix, where they converge to form a continuous longitudinal muscle coat.



The tip of the appendix is subject to a considerable range of movement and may be found in the following positions:

- (A) hanging down into the pelvis against the right pelvic wall,
- (B) coiled up behind the cecum,
- (C) projecting upward along the lateral side of the cecum, and
- (D) in front of or behind the terminal part of the ileum.



❖ The first and second positions are the most common sites

Arteries

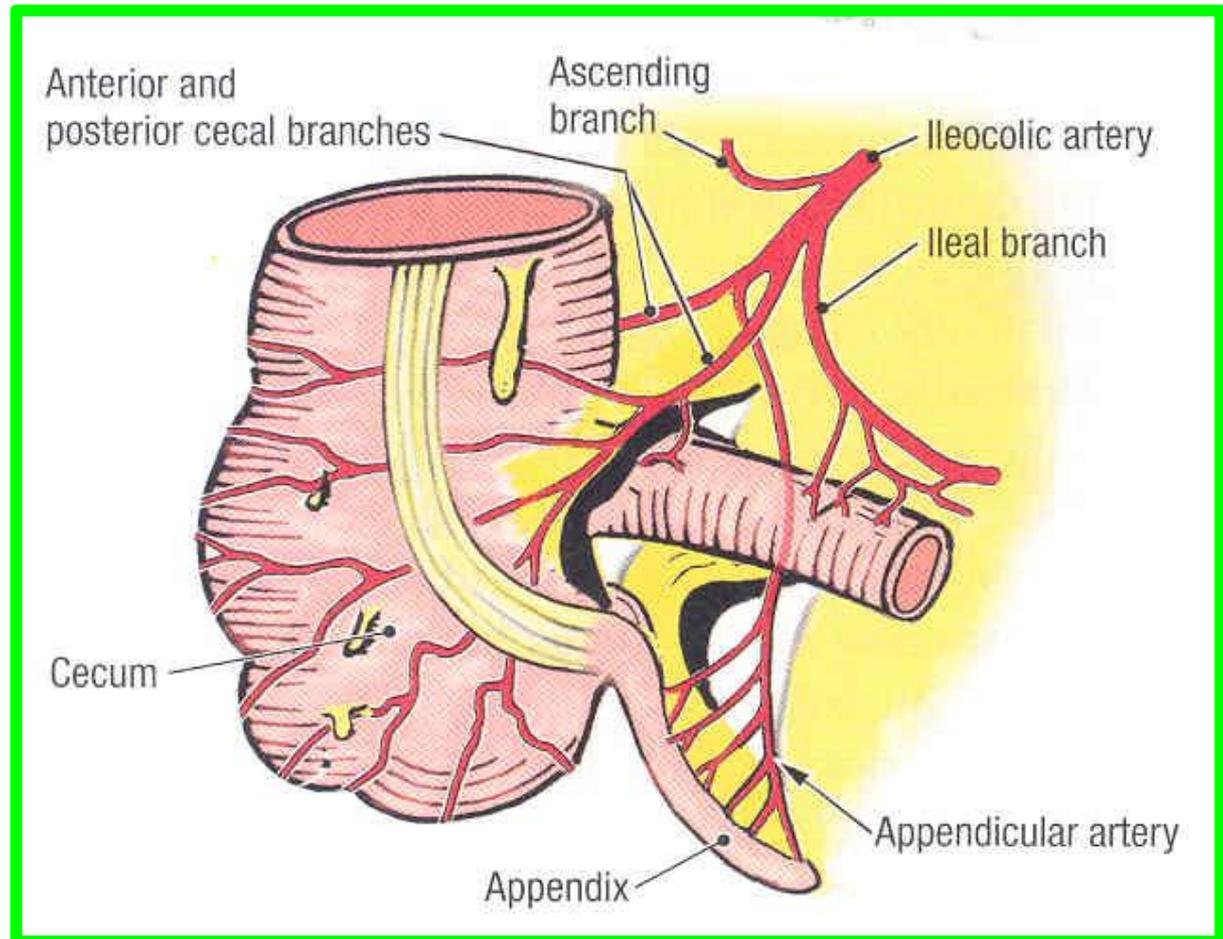
The **appendicular artery** is a branch of the **posterior cecal artery**

Veins

The **appendicular vein** drains into the **posterior cecal vein**

Lymph Drainage

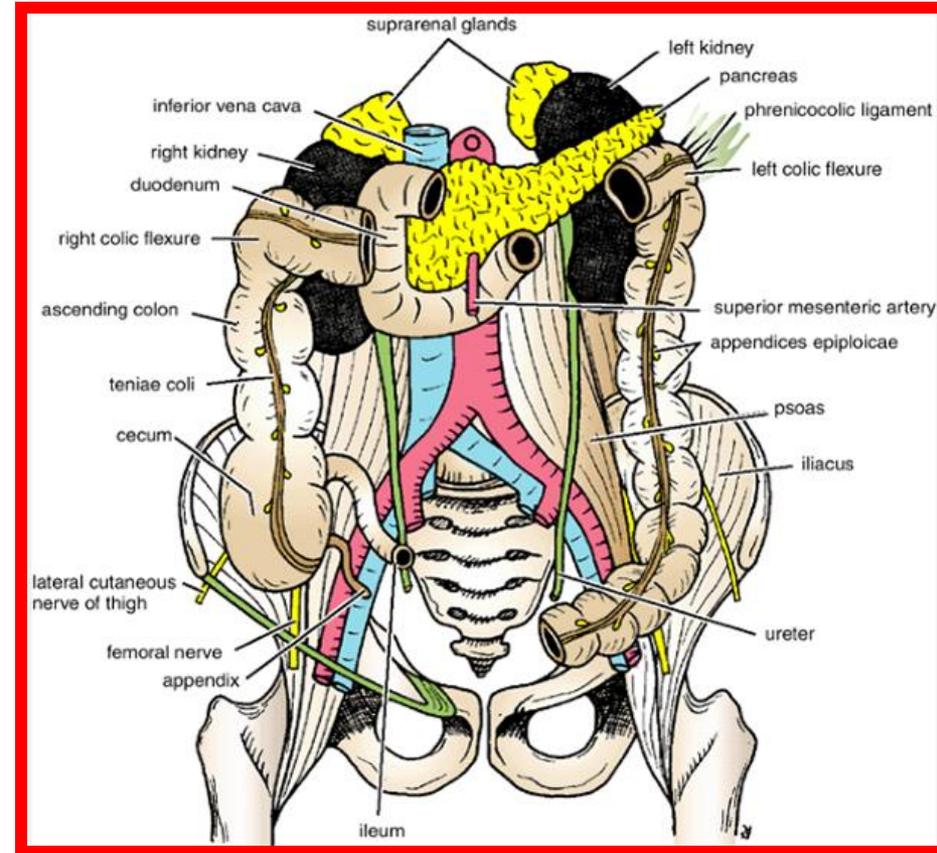
The lymph vessels drain into one or two nodes lying in the mesoappendix and then eventually into the **superior mesenteric nodes**



Ascending Colon

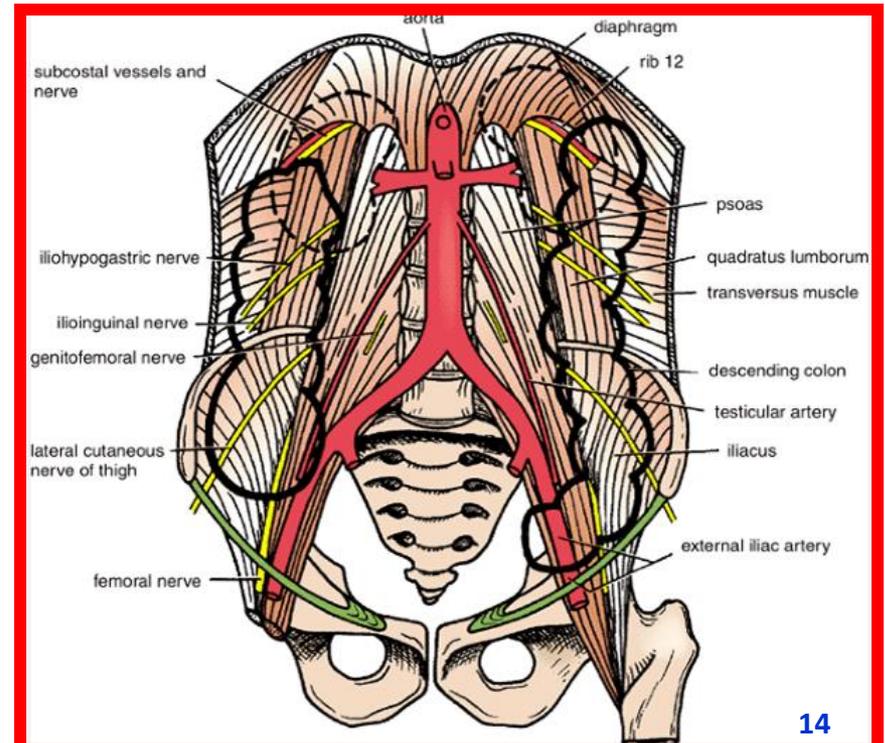
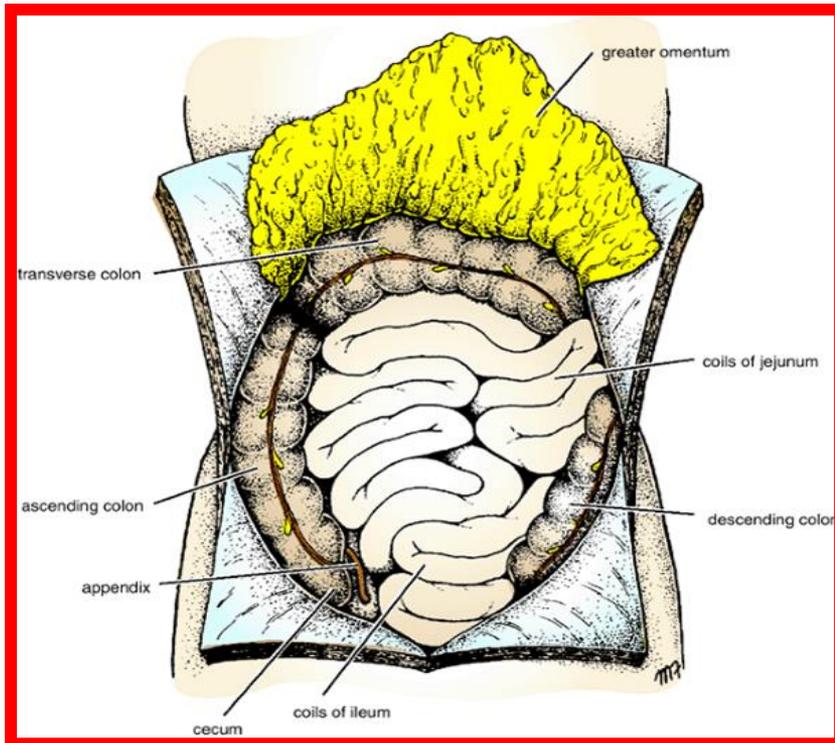
Large Intestine

- ❖ Is about **5 in. (13 cm)** long and lies in the right lower quadrant
- ❖ It extends upward from the cecum to the inferior surface of the right lobe of the liver, where it turns to the left, forming **the right colic flexure**, and becomes continuous with the transverse colon.
- ❖ The peritoneum covers the front and the sides of the ascending colon, binding it to the posterior abdominal wall.



Relations

- ❖ **Anteriorly:** Coils of small intestine, the greater omentum, and the anterior abdominal wall
- ❖ **Posteriorly:** The iliacus, the iliac crest, the quadratus lumborum, the origin of the transversus abdominis muscle, and the lower pole of the right kidney. The iliohypogastric and the ilioinguinal nerves cross behind it



Ascending Colon

Dr Aiman Q AL Maathidy
Sunday 10 April 2022

Arteries

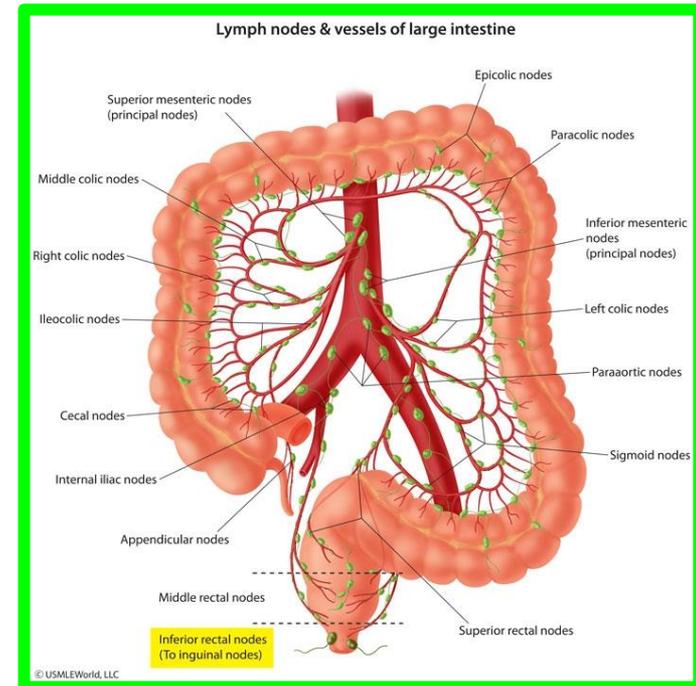
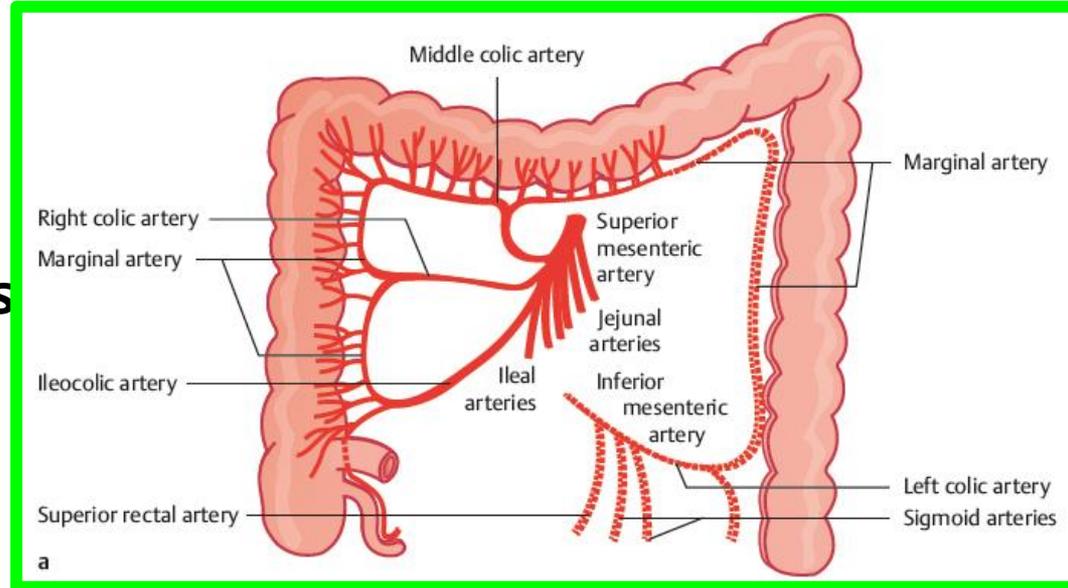
The ileocolic and right colic branches of the superior mesenteric artery supply this area.

Veins

The veins correspond to the arteries and drain into the superior mesenteric vein.

Lymph Drainage

The lymph vessels drain into lymph nodes lying along the course of the colic blood vessels and ultimately reach the superior mesenteric nodes

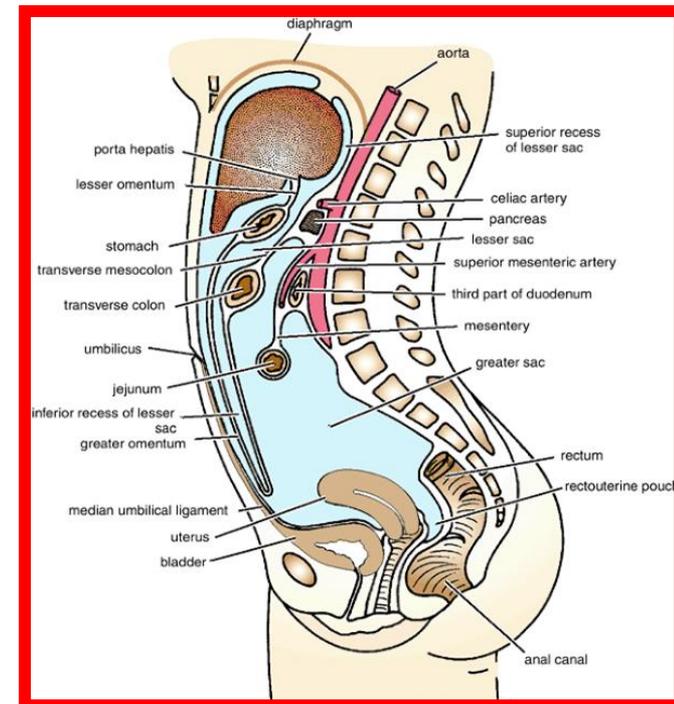
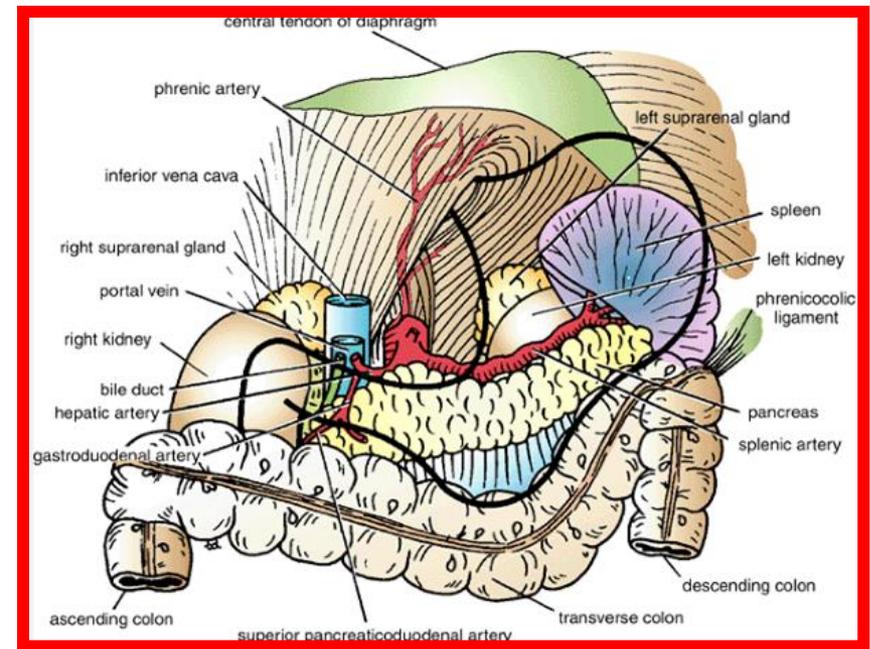


Transverse Colon

❖ The transverse colon is about (38 to 50 cm) long and extends across the abdomen, occupying the umbilical region.

❖ It begins at the right colic flexure below the right lobe of the liver and hangs downward, suspended by the transverse mesocolon from the pancreas. It then ascends to the left colic flexure below the spleen.

❖ The left colic flexure is higher than the right colic flexure and is suspended from the diaphragm by the phrenicocolic ligament

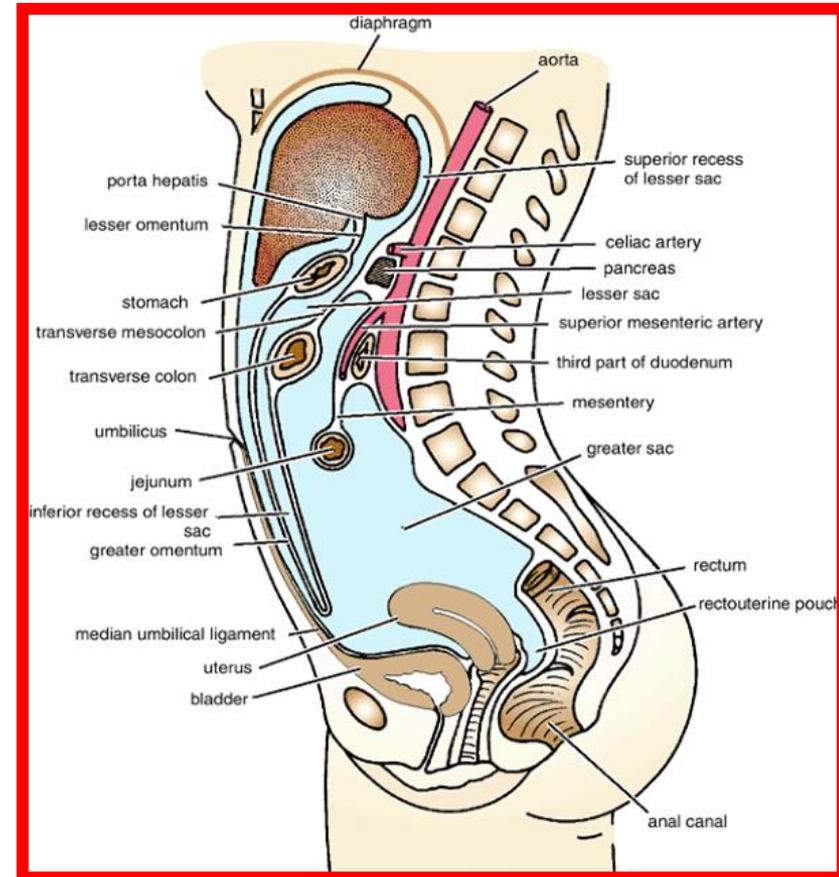


Transverse Colon

❖ The transverse mesocolon, or mesentery of the transverse colon, suspends the transverse colon from the **anterior border of the pancreas**

❖ The mesentery is attached to the **superior border of the transverse colon**, and the posterior layers of the greater omentum are attached to the **inferior border**

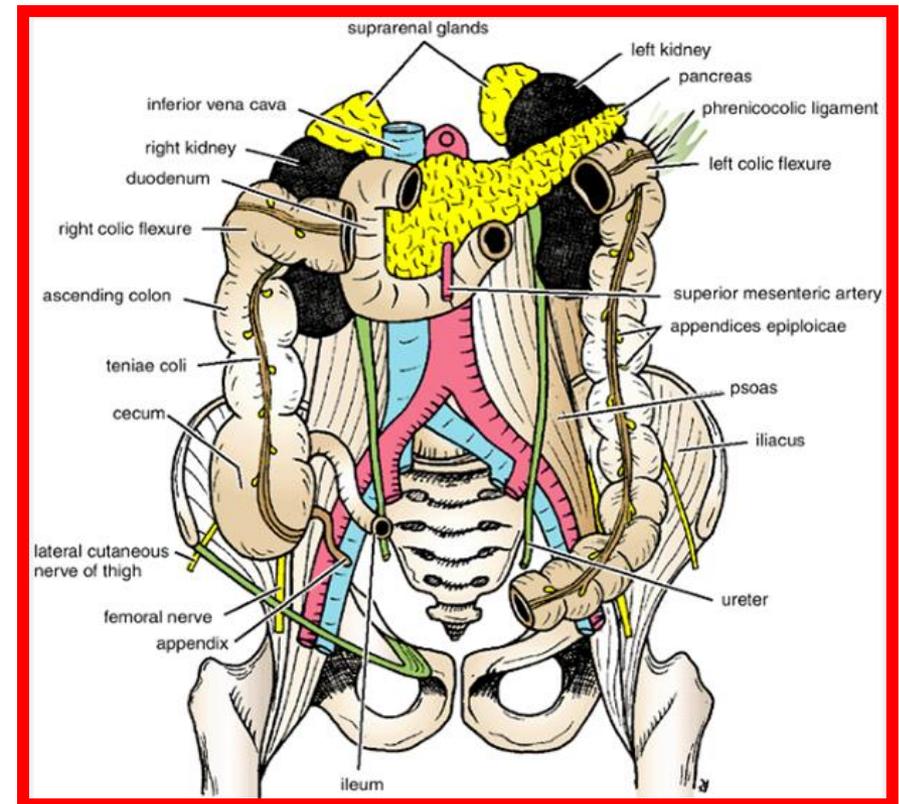
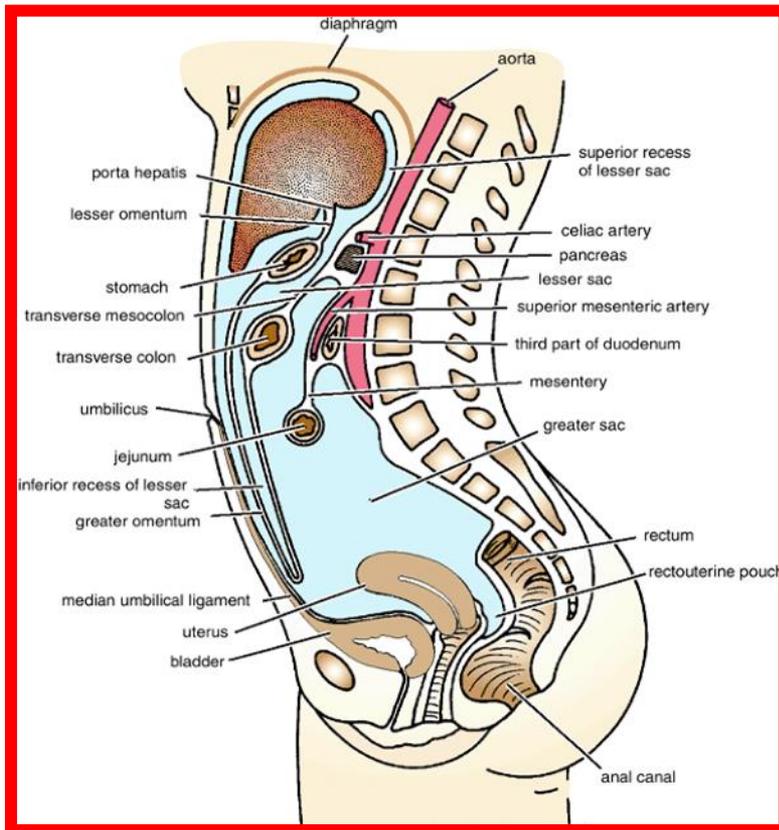
❖ Because of the length of the transverse mesocolon, the position of the transverse colon is extremely variable and *may sometimes reach down as far as the pelvis*



Relations

Anteriorly: The greater omentum and the anterior abdominal wall (umbilical and hypogastric regions)

Posteriorly: The second part of the duodenum, the head of the pancreas, and the coils of the jejunum and ileum

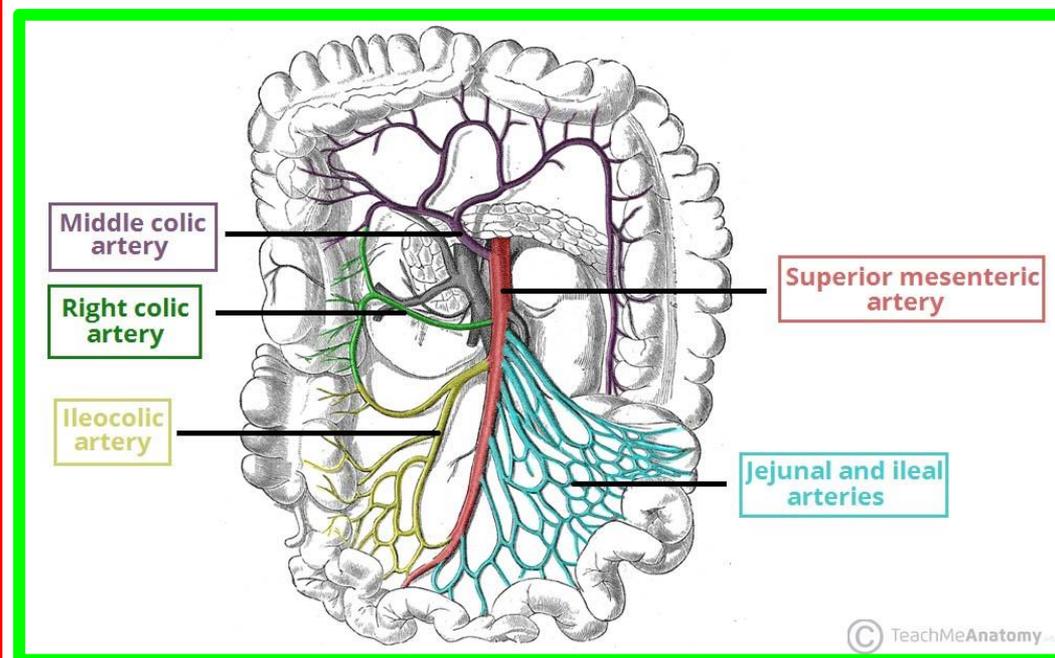
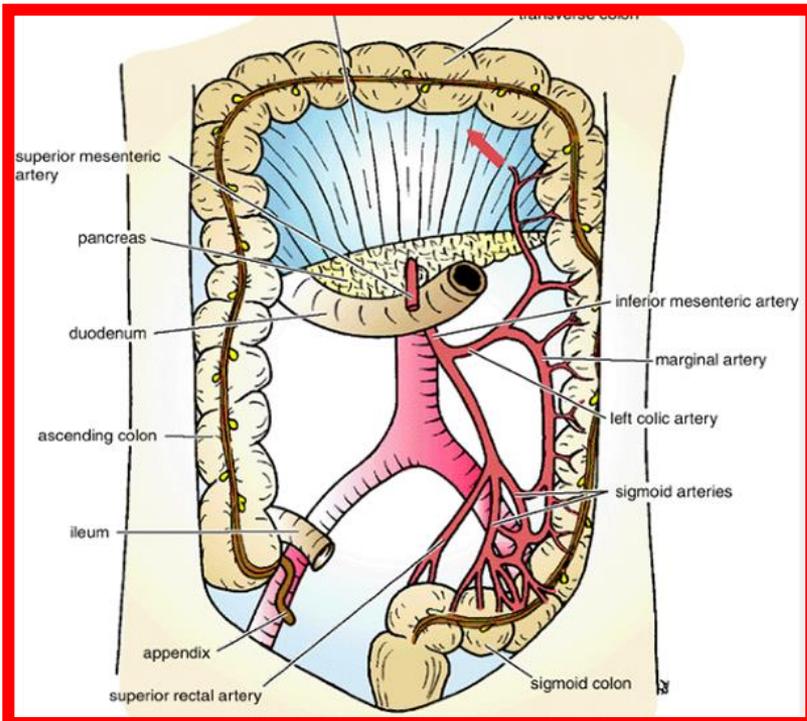


Arteries

The proximal two thirds are supplied by **the middle colic artery**, a branch of the **superior mesenteric artery**. The distal third is supplied by **the left colic artery**, a branch of the **inferior mesenteric artery**

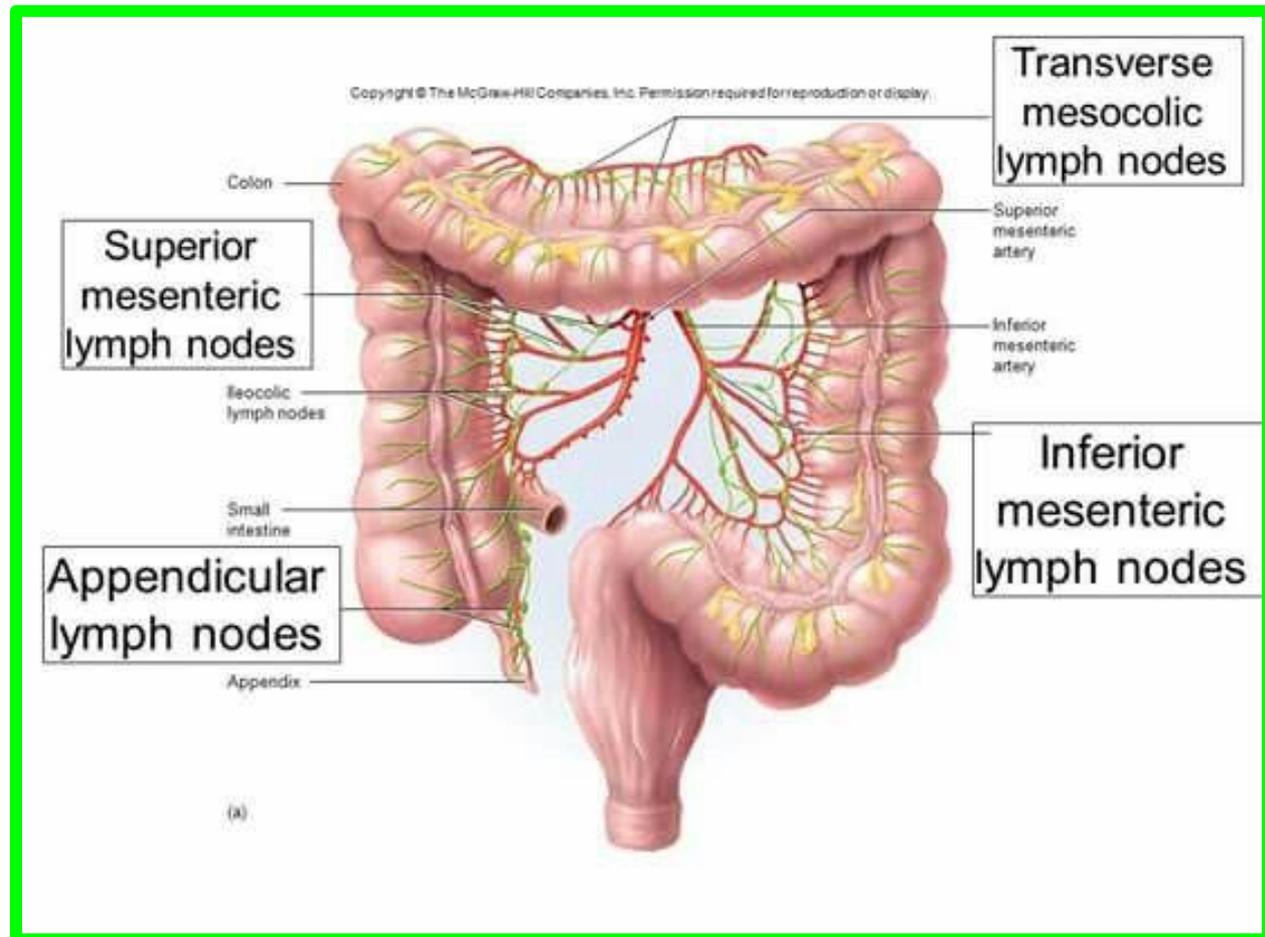
Veins

The veins correspond to the arteries and drain into the **superior and inferior mesenteric veins**.



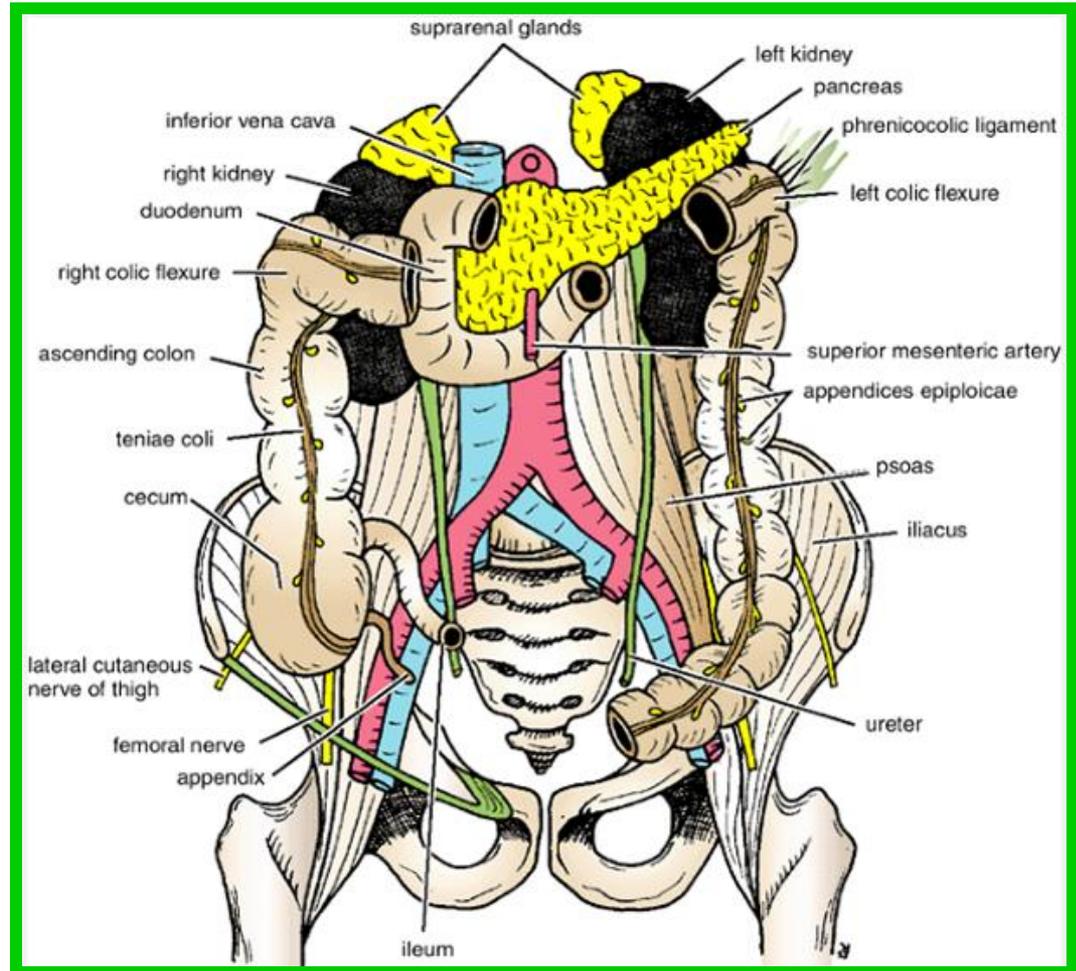
Lymph Drainage

The proximal two thirds drain into the **colic nodes** and then into the **superior mesenteric nodes**; the distal third drains into the **colic nodes** and then into the **inferior mesenteric nodes**.



Descending Colon

- ❖ The descending colon is about **10 in. (25 cm)** long and lies in the left upper and lower quadrants
- ❖ It extends downward from the left colic flexure, to the pelvic brim, where it becomes continuous with **the sigmoid colon**
- ❖ The peritoneum covers the front and the sides and binds it to the posterior abdominal wall

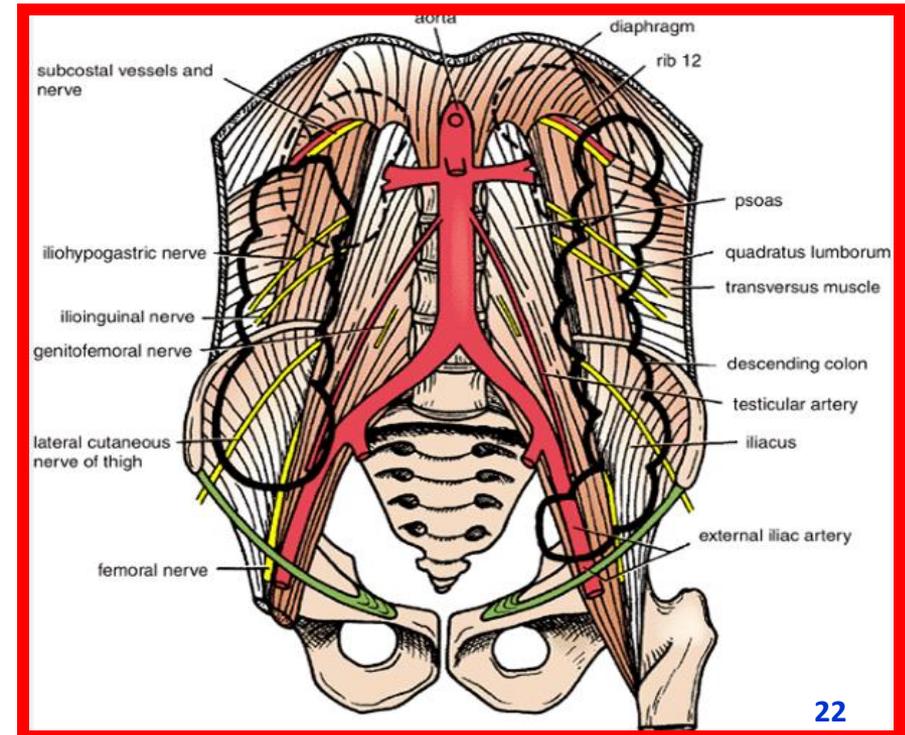
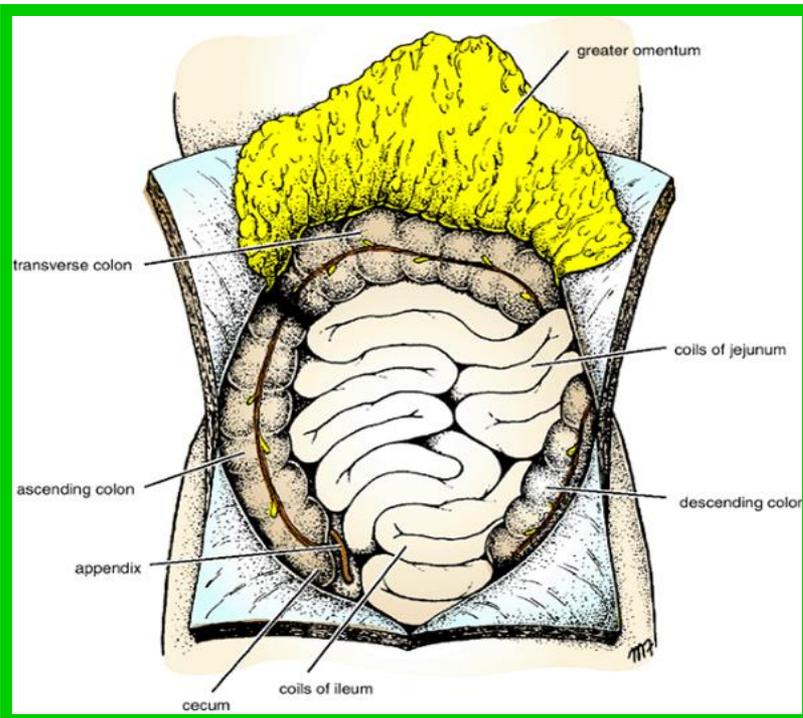


Descending Colon

Relations

Anteriorly: Coils of small intestine, the greater omentum, and the anterior abdominal wall

Posteriorly: The lateral border of the left kidney, the origin of the transversus abdominis muscle, the quadratus lumborum, the iliac crest, the iliacus, and the left psoas. The iliohypogastric and the ilioinguinal nerves, the lateral cutaneous nerve of the thigh, and the femoral nerve also lie posteriorly.



Descending Colon

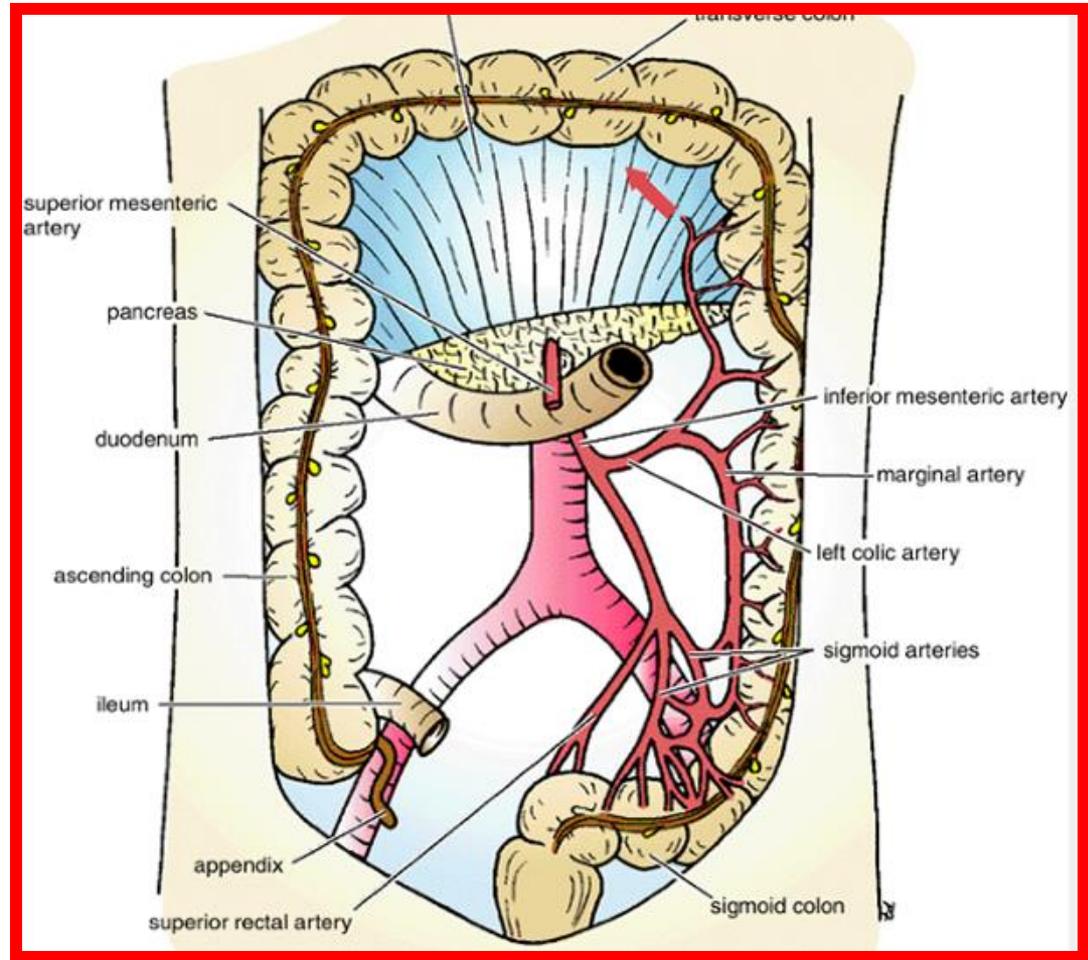
Blood Supply

Arteries

The left colic and the sigmoid branches of the inferior mesenteric artery supply this area.

Veins

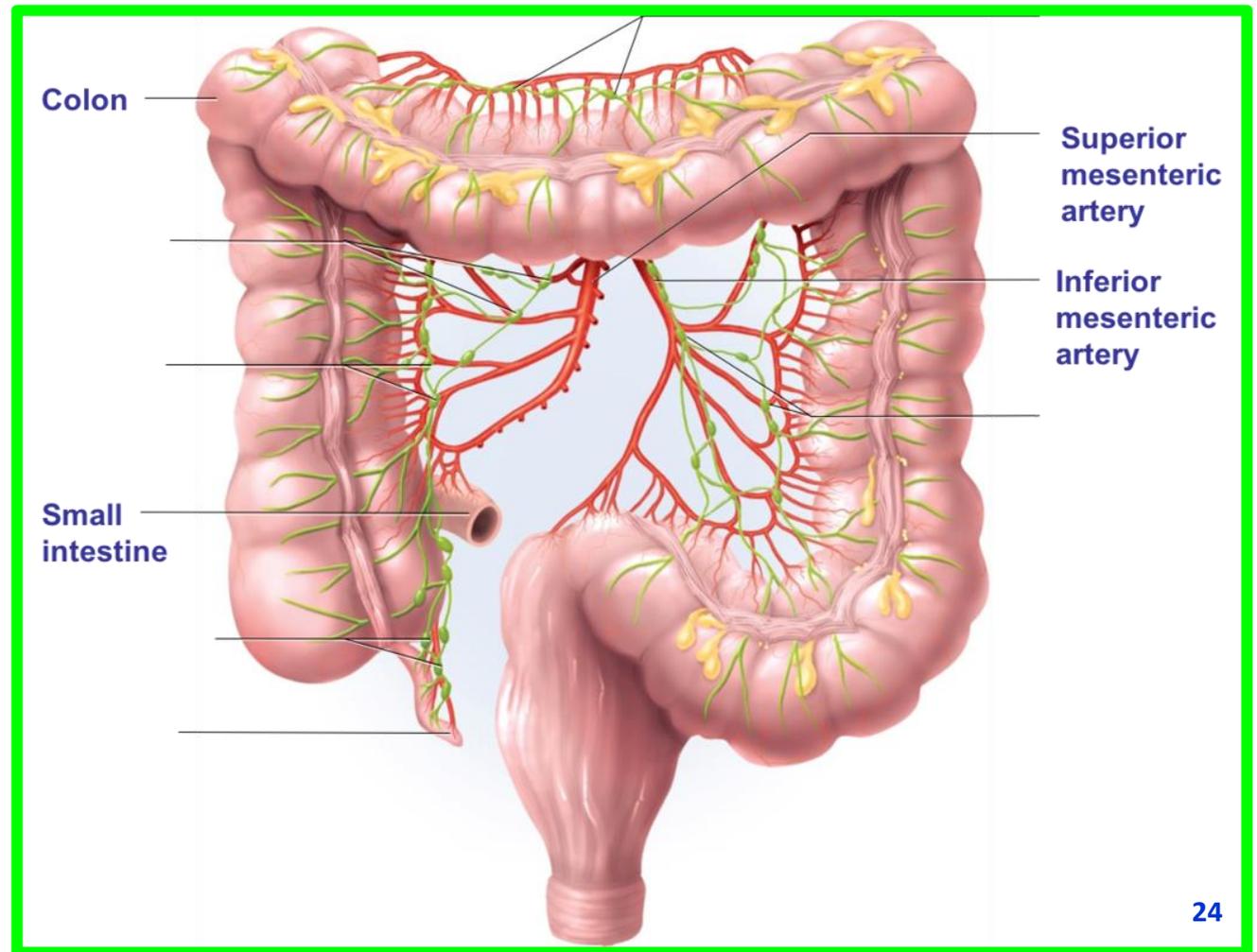
The veins correspond to the arteries and drain into the inferior mesenteric vein



Descending Colon

Lymph Drainage

Lymph drains into the colic lymph nodes and the **inferior mesenteric nodes** around the origin of the **inferior mesenteric artery**.

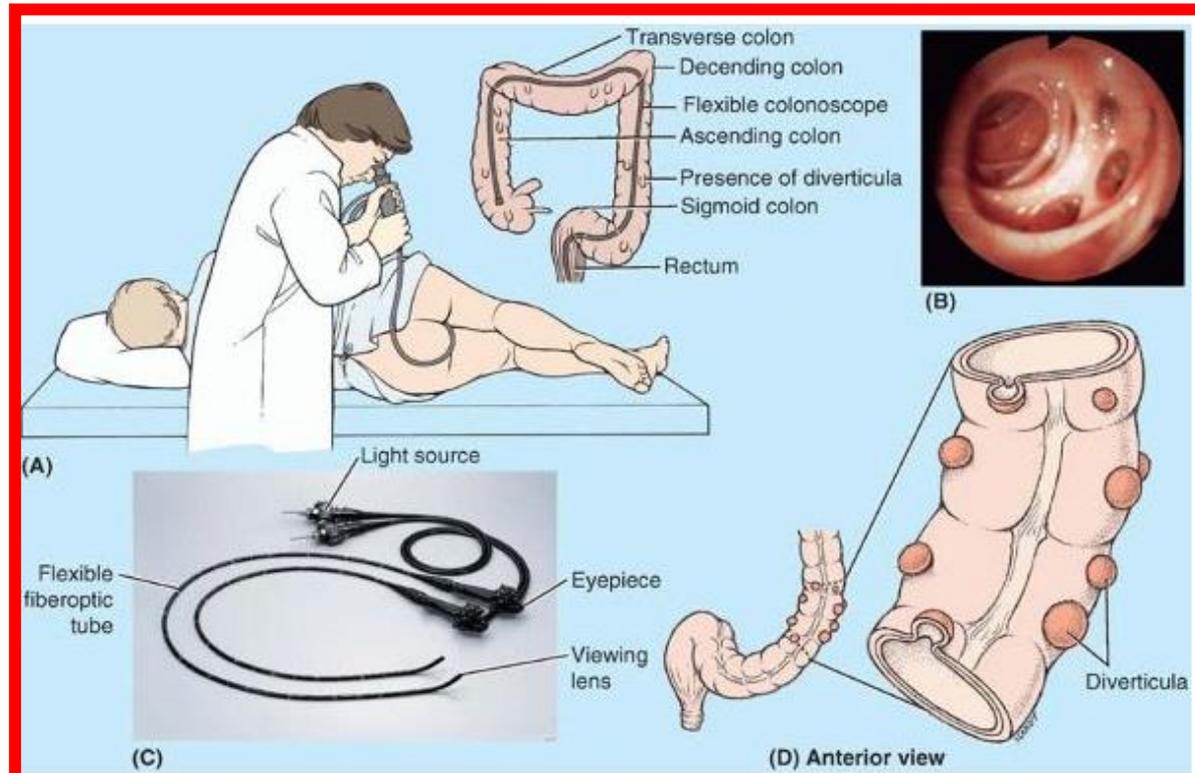


Examination of large intestine

Dr Aiman Q AL Maathidy

Sunday 10 April 2022

The interior of the colon can be observed and photographed in a procedure called colonoscopy or coloscopy, using a long, flexible fiberoptic endoscope (**colonoscope**) inserted into the colon through the anus and rectum. Small instruments can be passed through the colonoscope and used to facilitate minor operative procedures, such as biopsies or removal of polyps.

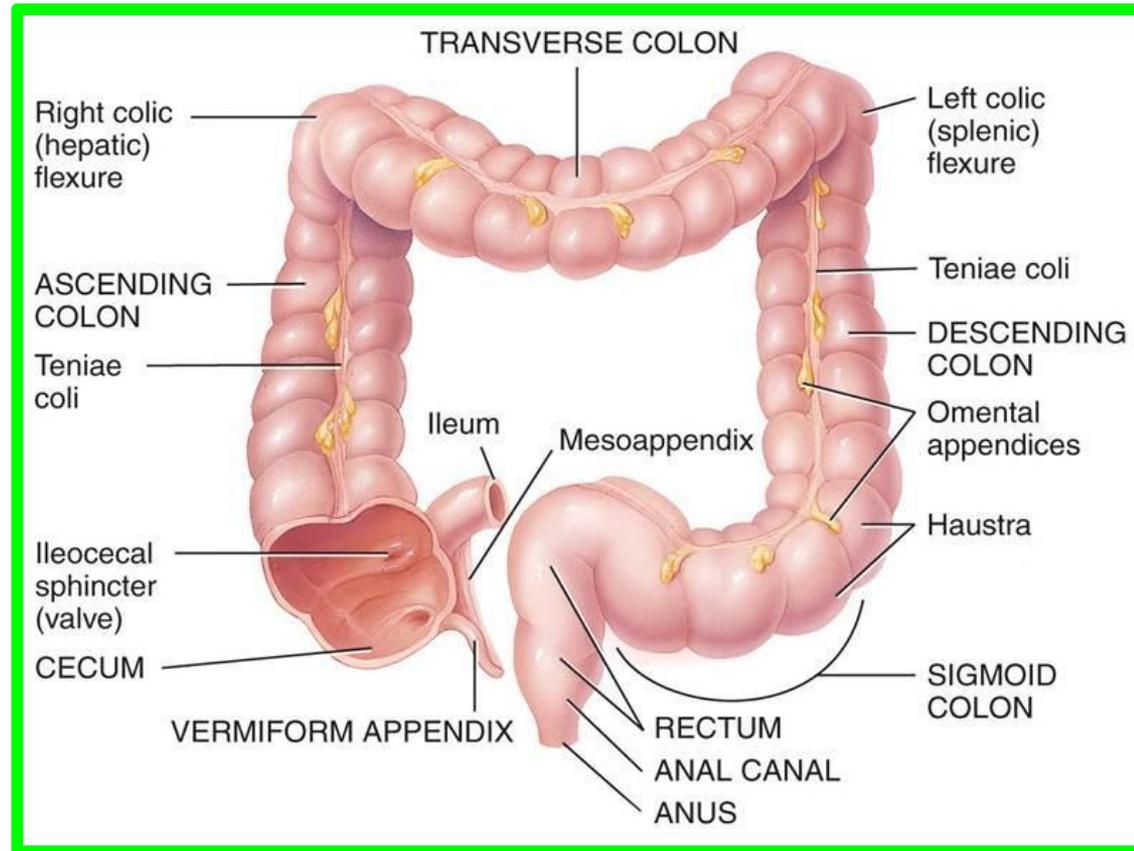


Sigmoid Colon

❖ The sigmoid colon, is **10 to 15 in. (25 to 38 cm)** characterized by its S-shaped loop of variable length, links the descending colon and the rectum.

❖ The sigmoid colon extends from **the iliac fossa to the third sacral (S₃) vertebra**, where it joins the rectum.

❖ The termination of **the teniae coli**, approximately **15 cm from the anus**, indicates the **rectosigmoid junction**



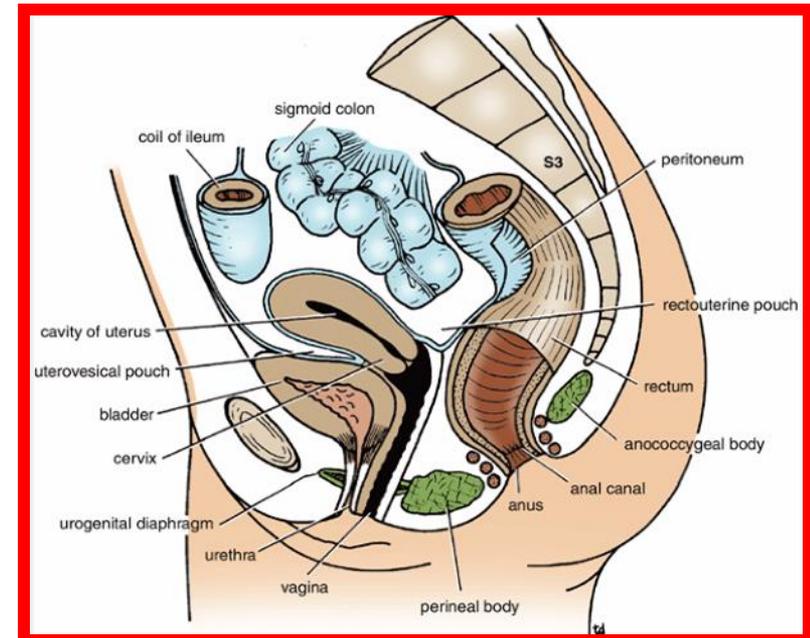
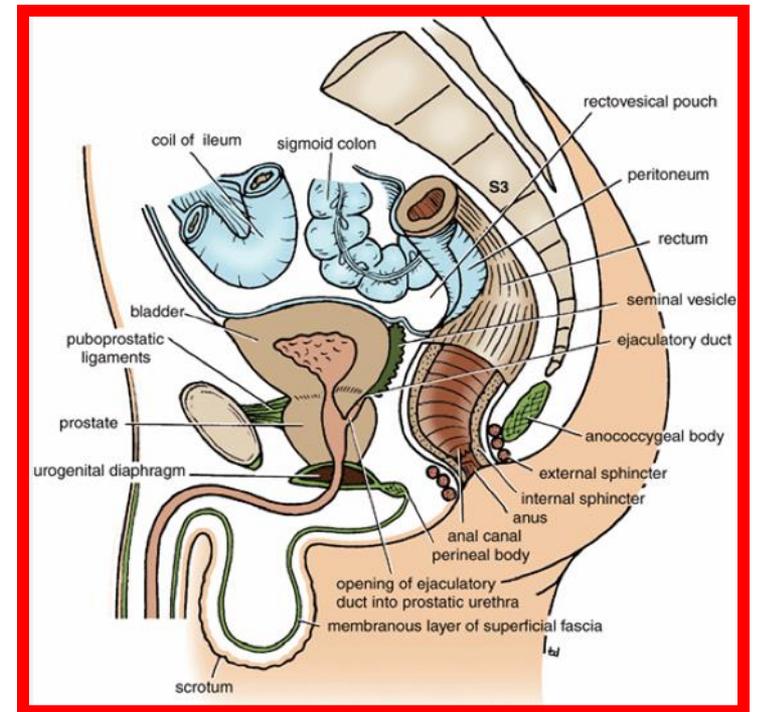
Sigmoid Colon

Relations

Anteriorly: In the male, the urinary bladder; in the female, the posterior surface of the uterus and the upper part of the vagina

Posteriorly: The rectum and the sacrum.

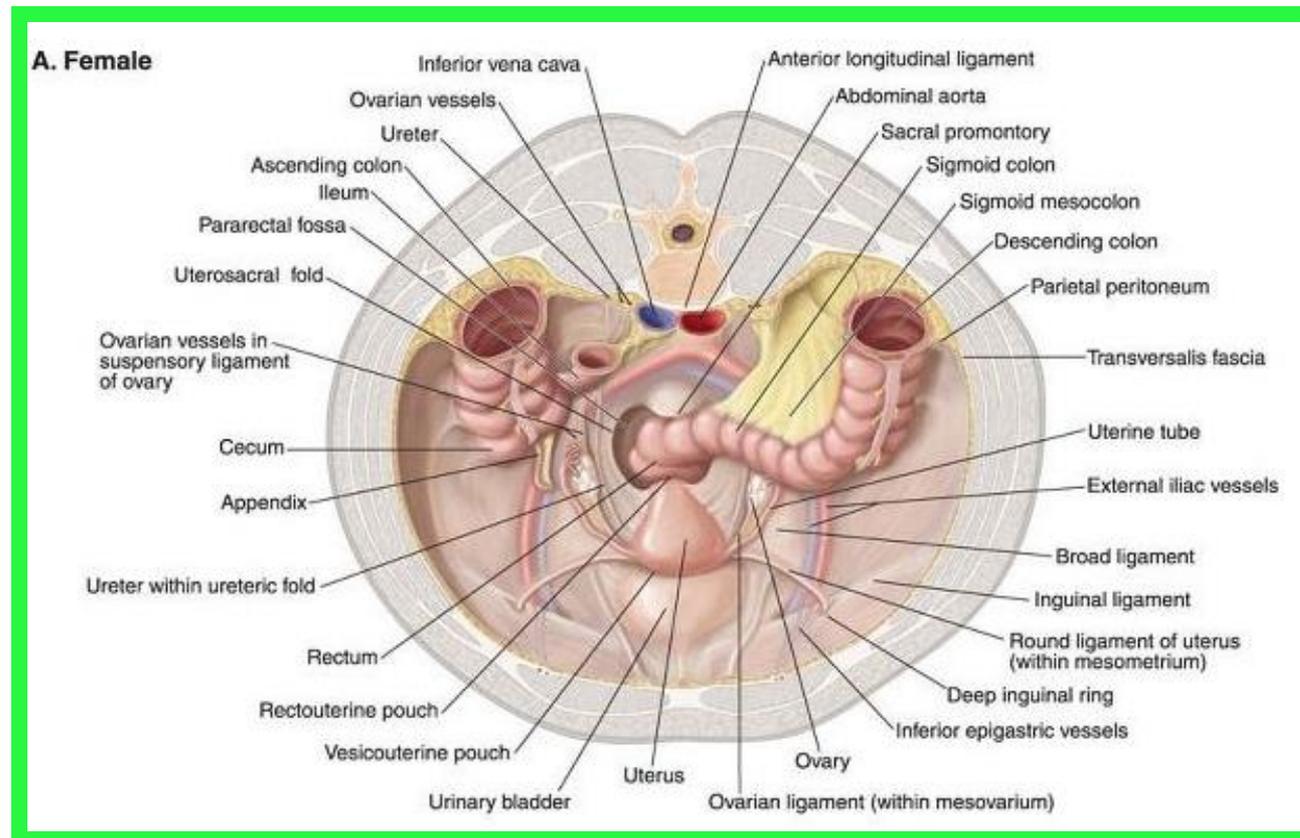
❖ The sigmoid colon is also related to the lower coils of the terminal part of the ileum



Sigmoid Colon

The sigmoid colon usually has a long mesentery—the **sigmoid mesocolon** and therefore has considerable freedom of movement, especially its middle part.

The root of the sigmoid mesocolon has an **inverted V-shaped attachment**



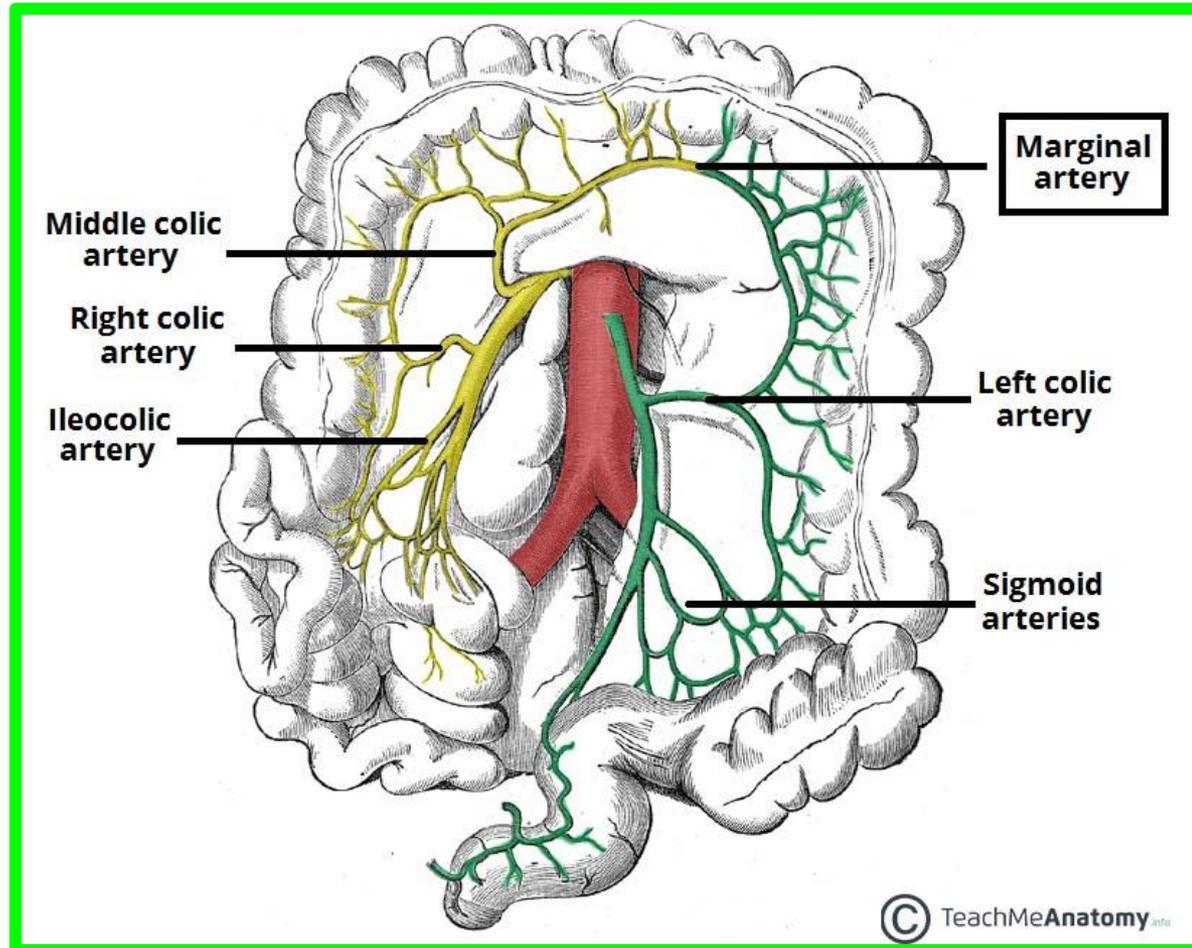
Sigmoid Colon

Arteries

Sigmoid branches of the **inferior mesenteric artery**.

Veins

The veins drain into **the inferior mesenteric vein**, which joins **the portal venous system**.



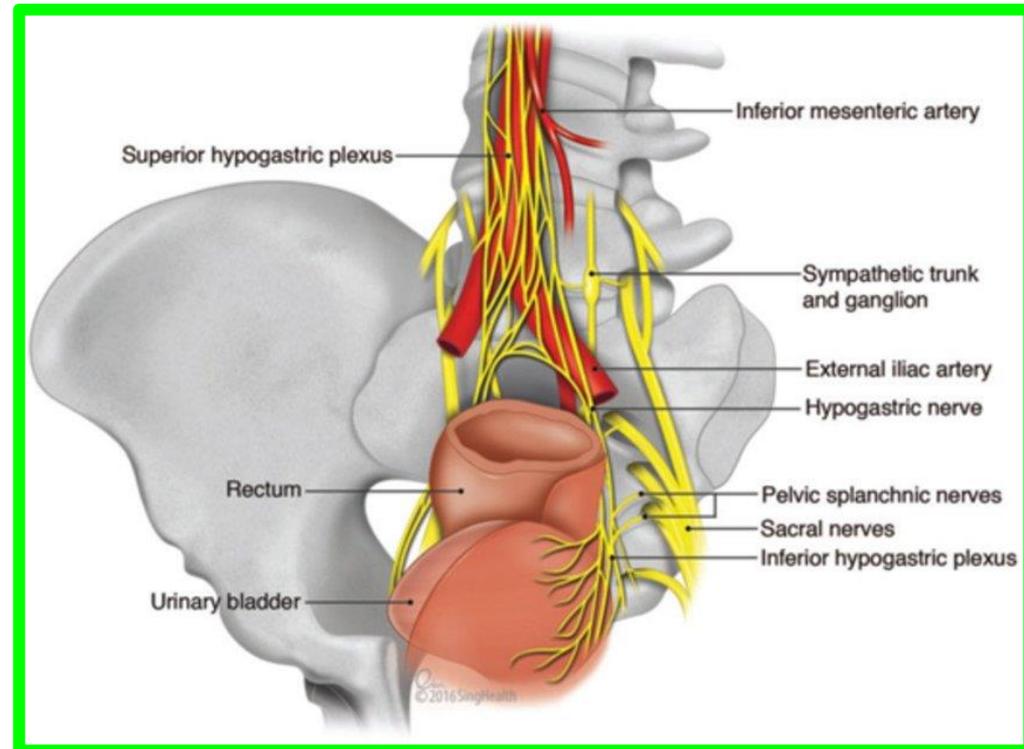
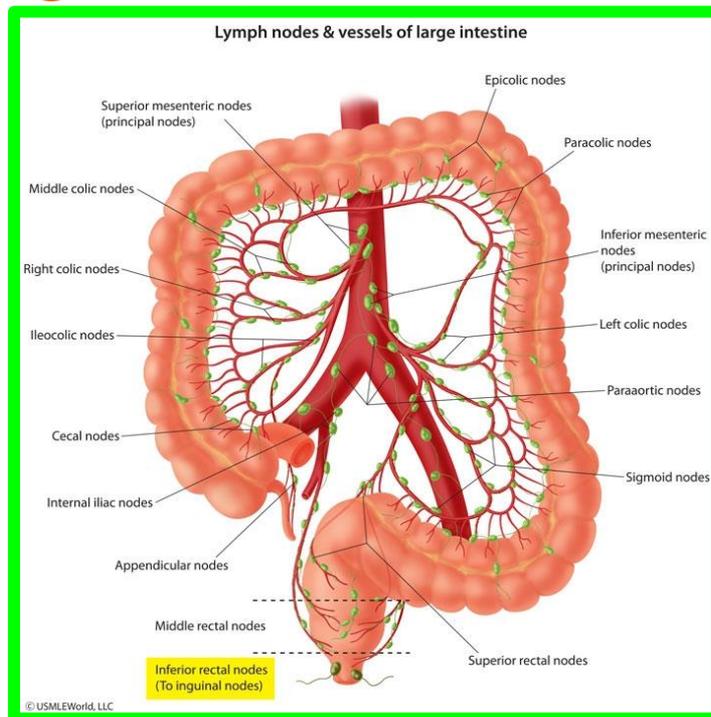
Sigmoid Colon

Lymph Drainage

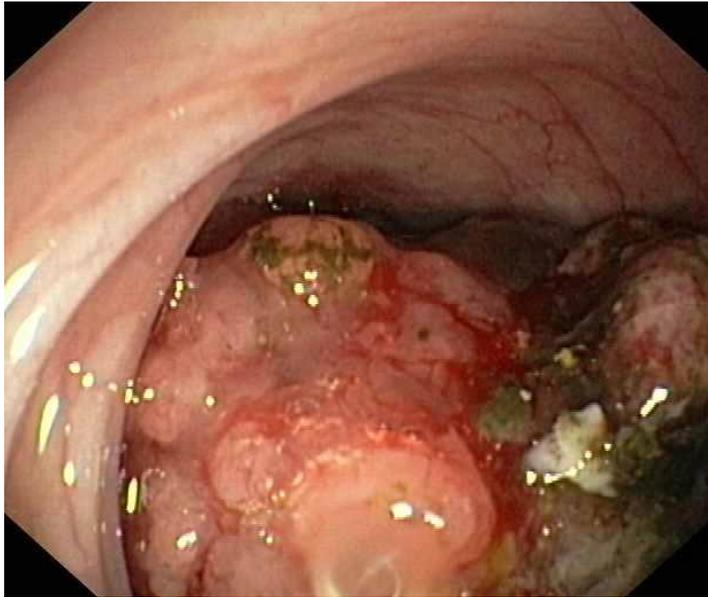
The lymph drains into nodes along the course of **the sigmoid arteries**; from these nodes, the lymph travels to **the inferior mesenteric nodes**

Nerve Supply

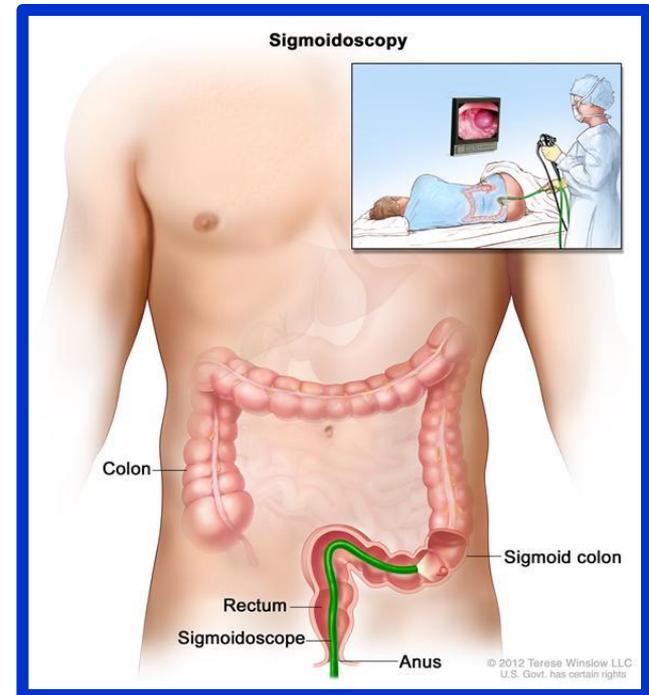
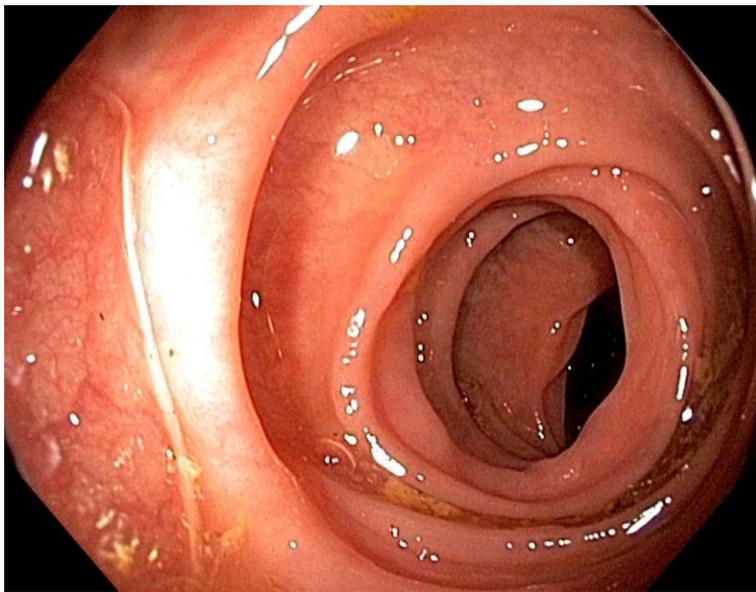
The sympathetic and parasympathetic nerves from the **inferior hypogastric plexuses**



Sigmoid Colon



Most tumors of the large intestine occur in the sigmoid colon and rectum; they often appear near **the rectosigmoid junction**. The interior of the sigmoid colon is observed with a **sigmoidoscope**, a shorter endoscope, in a procedure called **sigmoidoscopy**.



Dr Aiman Q. AL Maathidy
Sunday 10 April 2022

