

# ***THE LARGE INTESTINE***

***Dr. Aiman Qais Afar***  
***Surgical Anatomist***

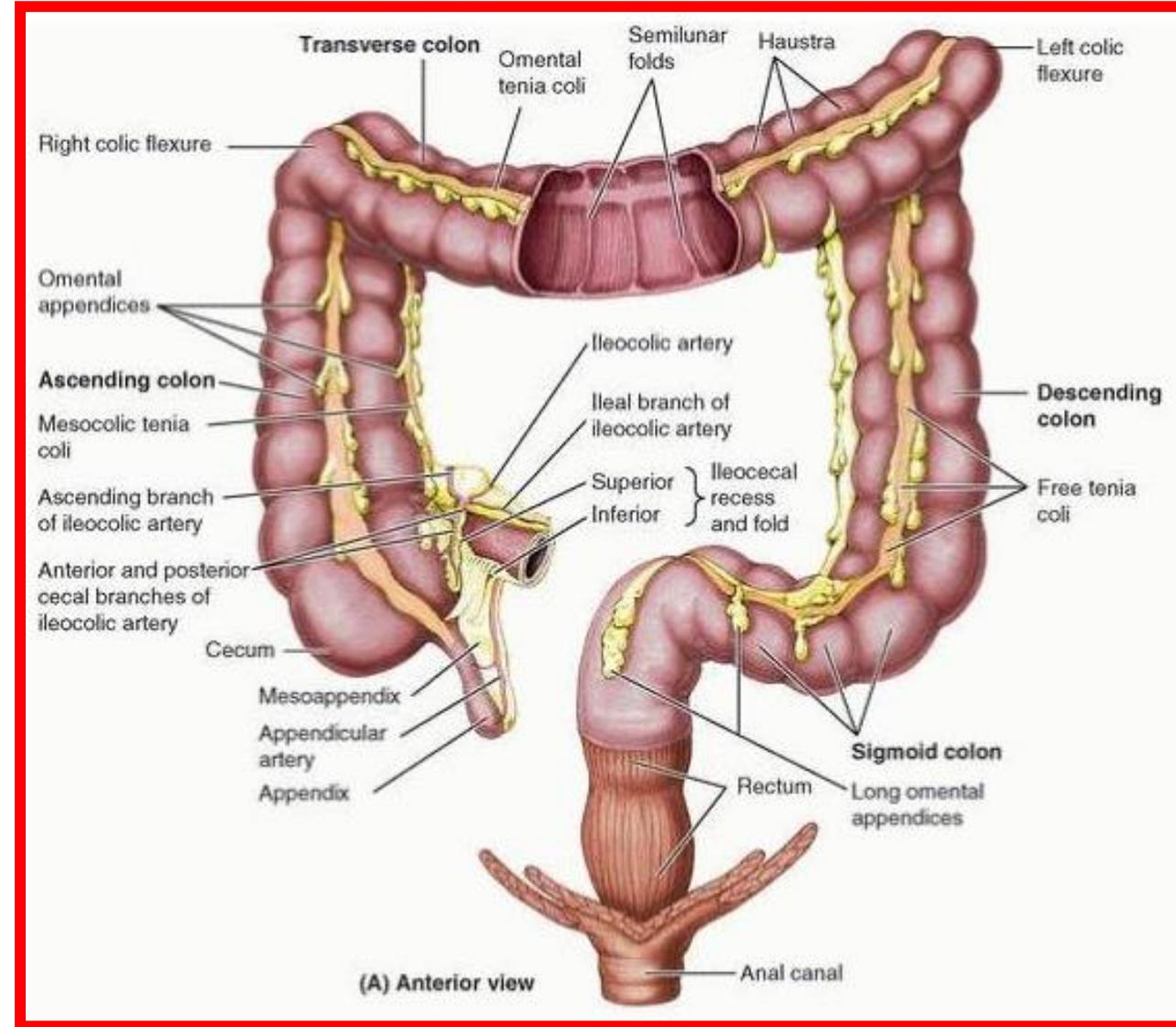
***College of Medicine / University of Mutah***  
***2023-2024***

***Sunday 7 April 2024***

# 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.**

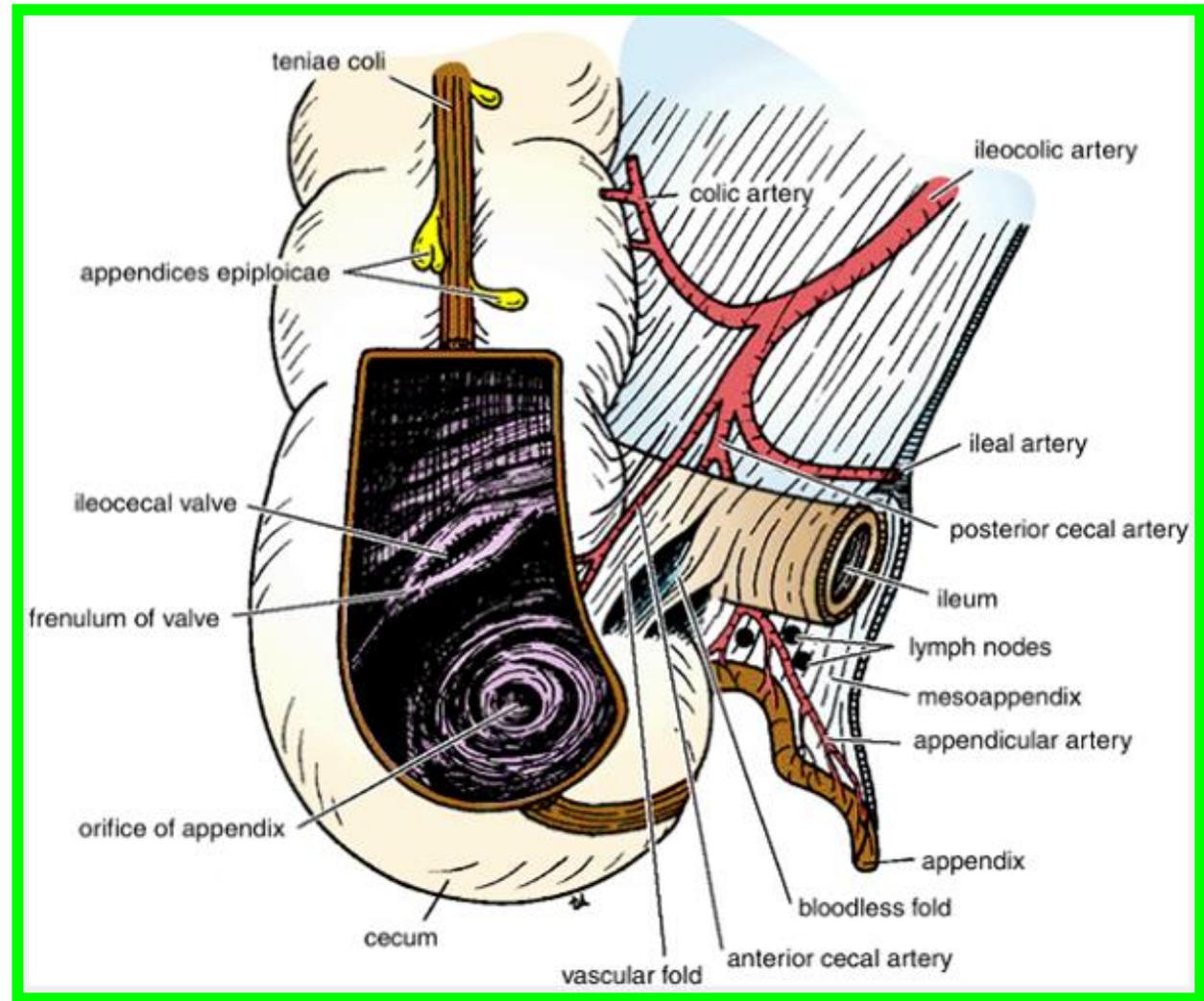
❖ The primary function of the large intestine is the **absorption of water and electrolytes** and the **storage of undigested material** until it can be expelled from the body as feces



# 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.

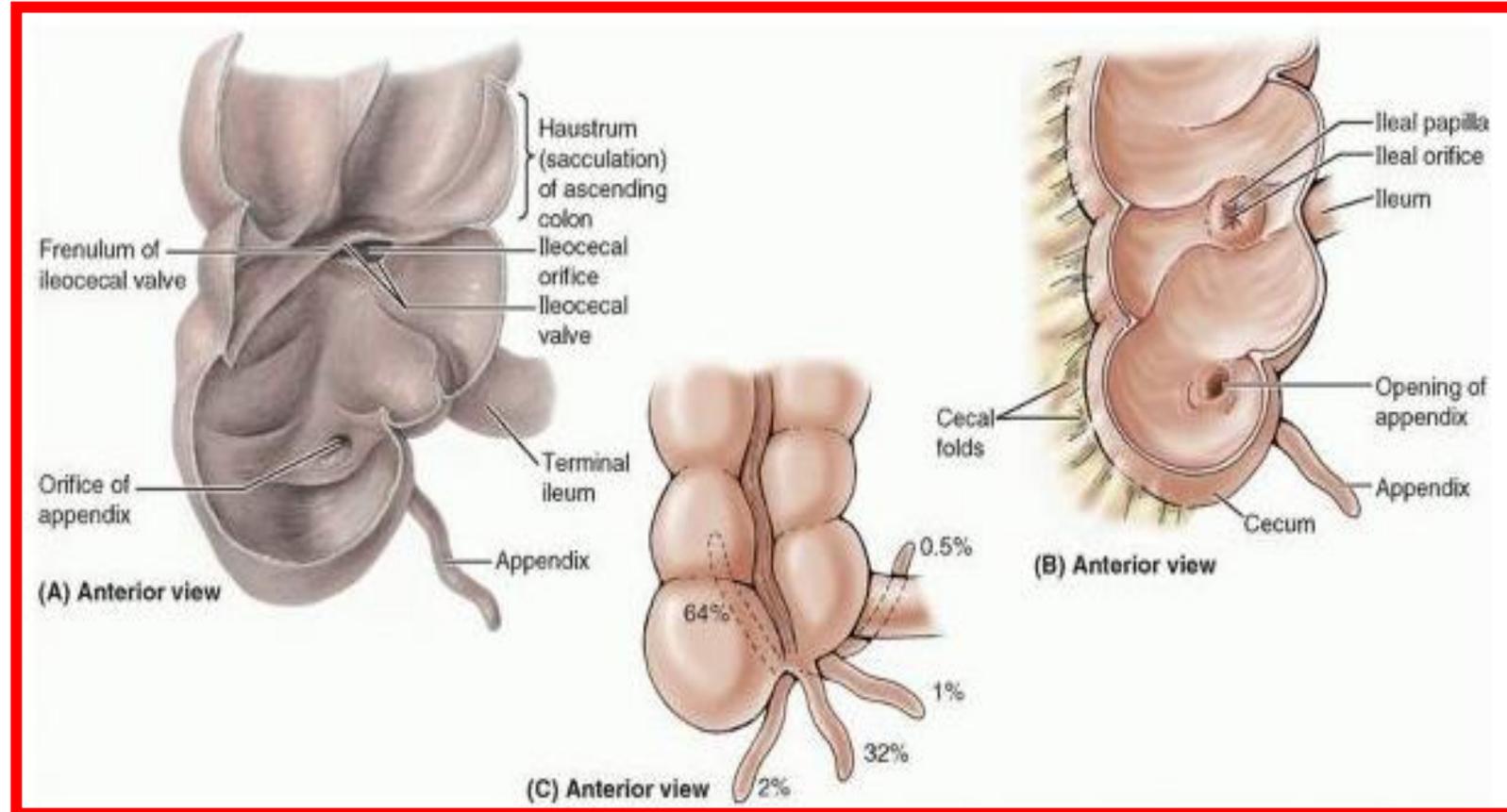
✓ Attached to its posteromedial surface is **the appendix**.

# Cecum

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

Dr Aiman Qais AL Maathidy  
Sunday 7 April 2024

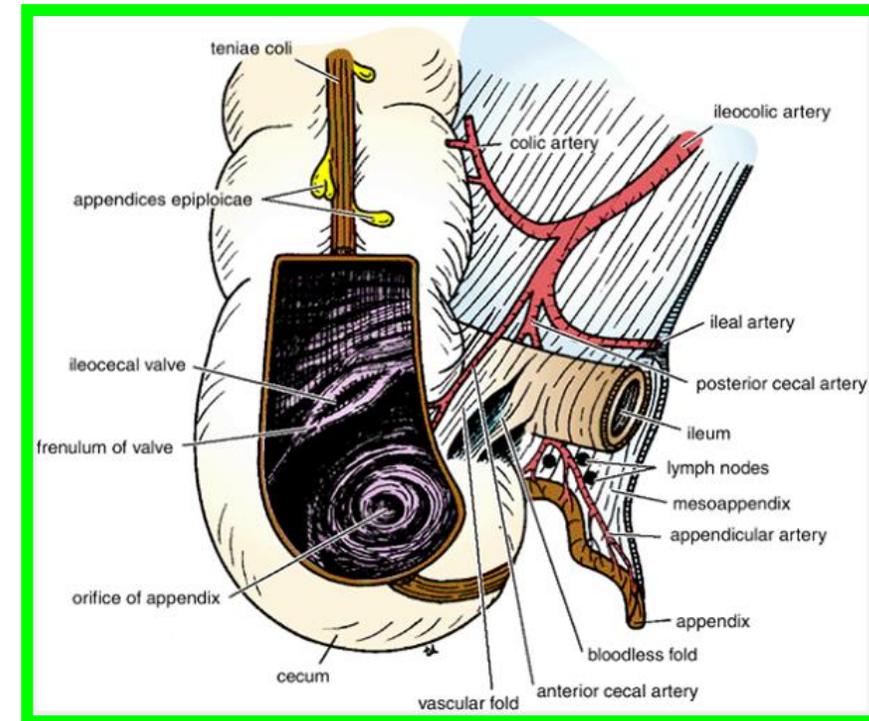
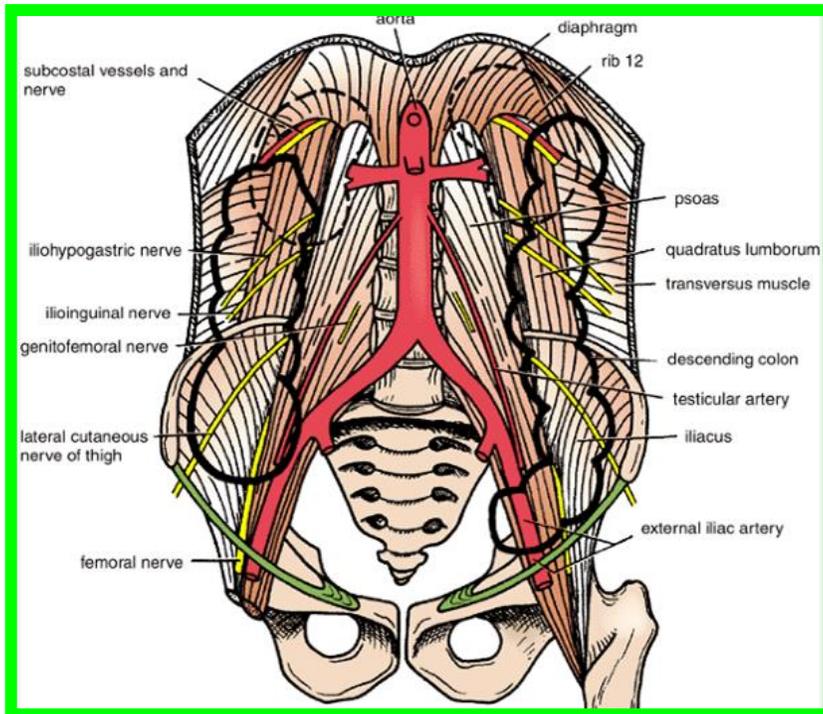
## Relations

❖ **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



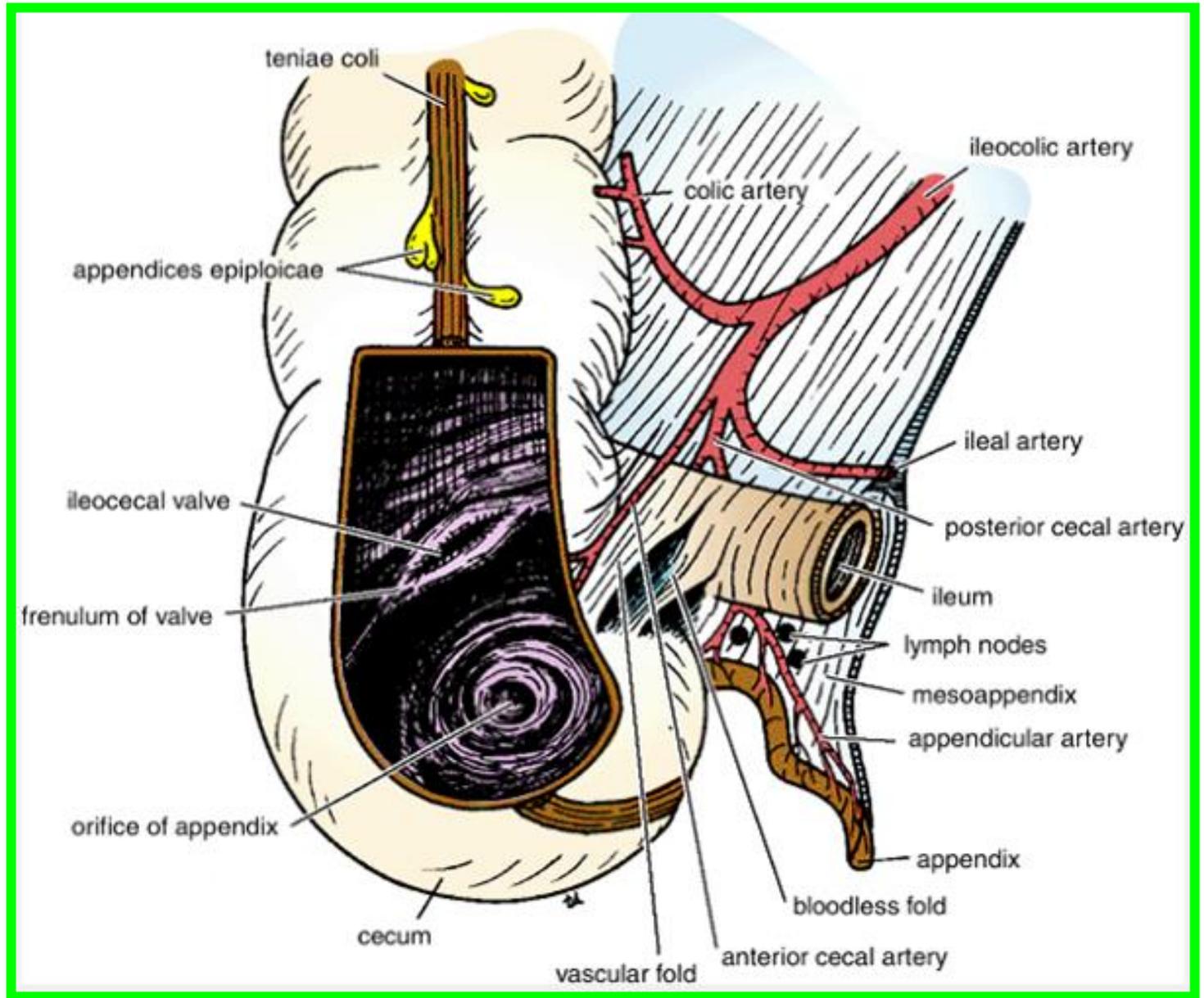
# Cecum

## Blood Supply 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**



# Cecum

Dr Aiman Qais AL Maathidy

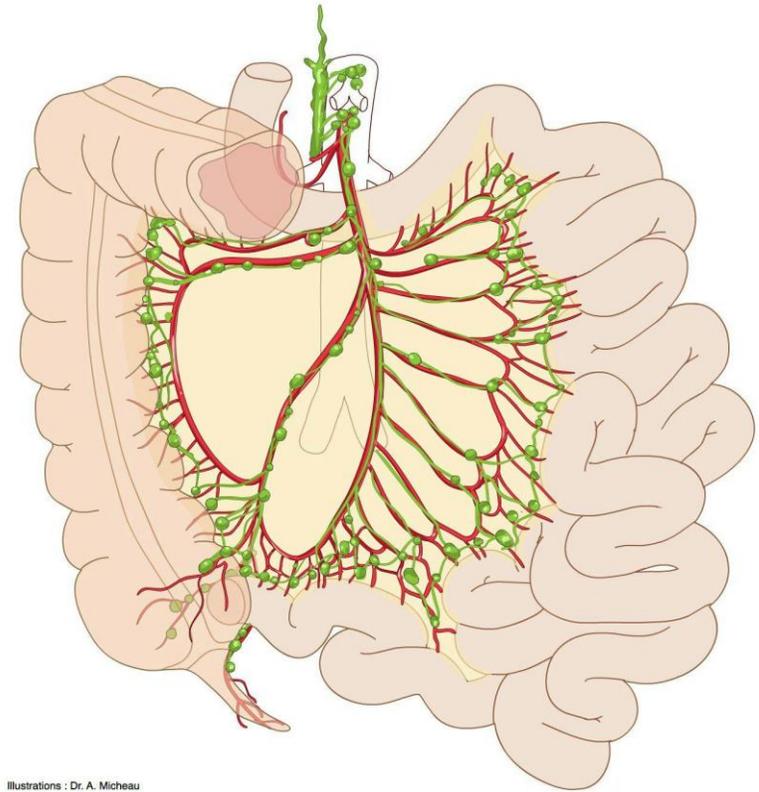
Sunday 7 April 2024

## Lymph Drainage

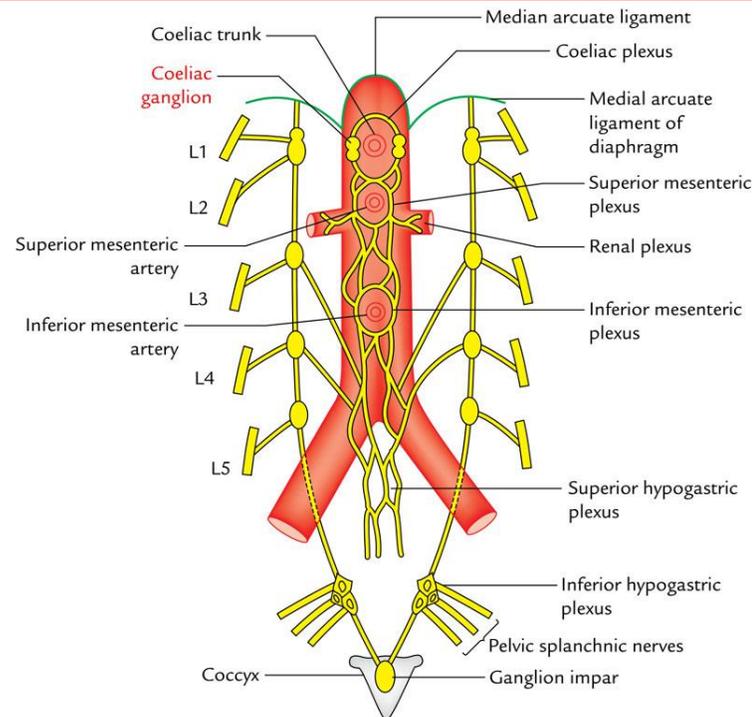
The lymph vessels pass through several mesenteric nodes and finally reach **the superior mesenteric nodes**

## Nerve Supply

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

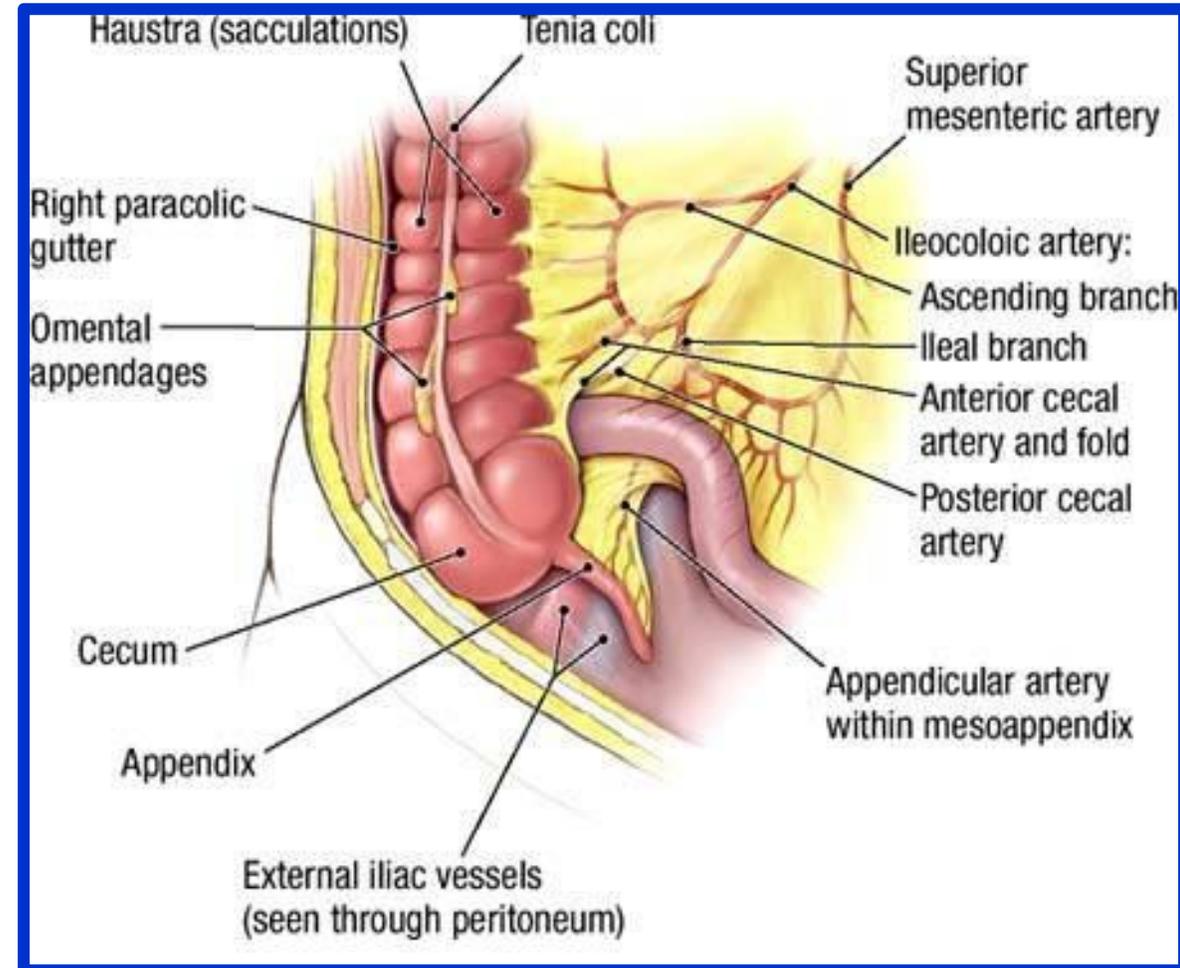


Illustrations : Dr. A. Micheau



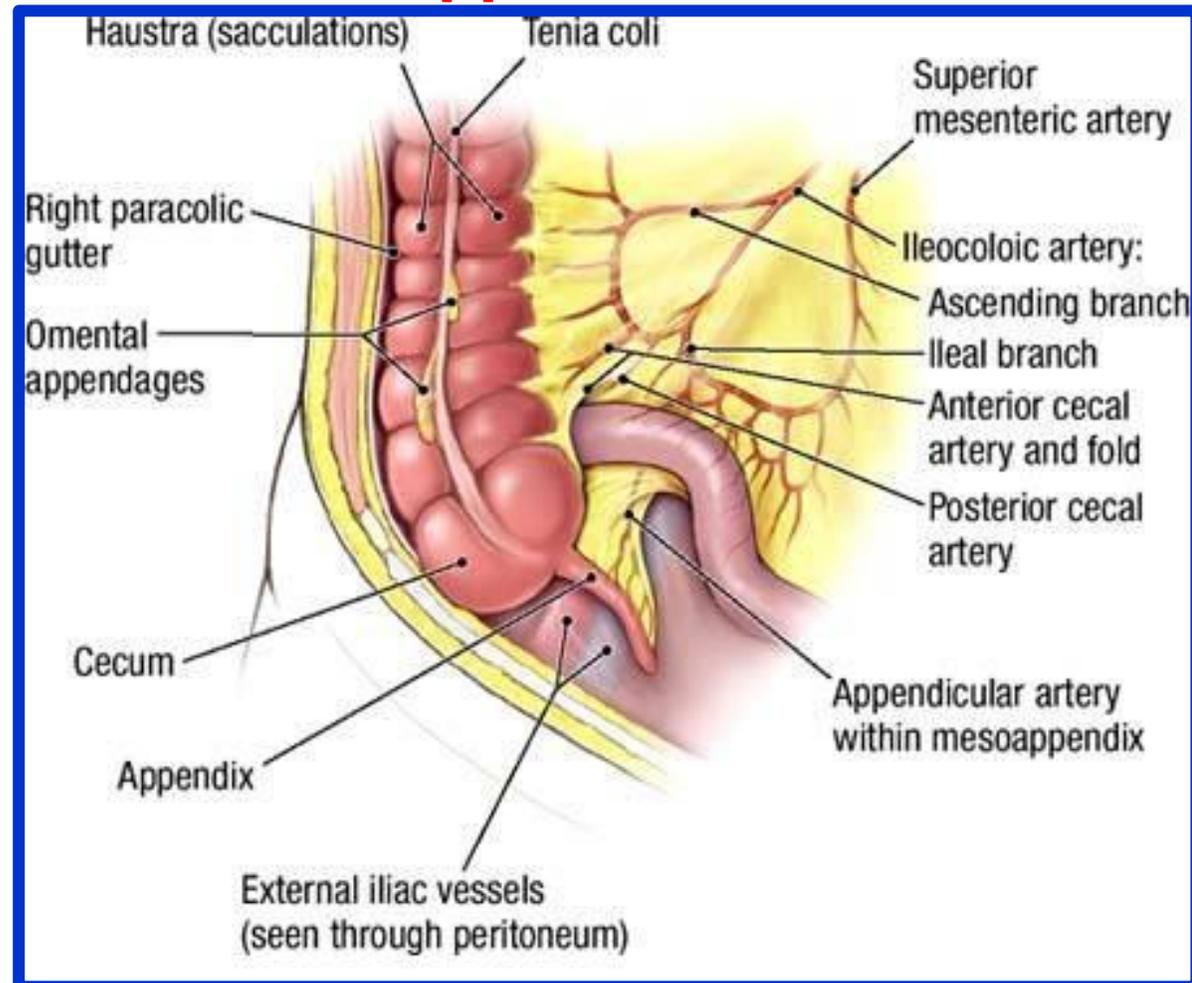
# Appendix

- ✓ 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

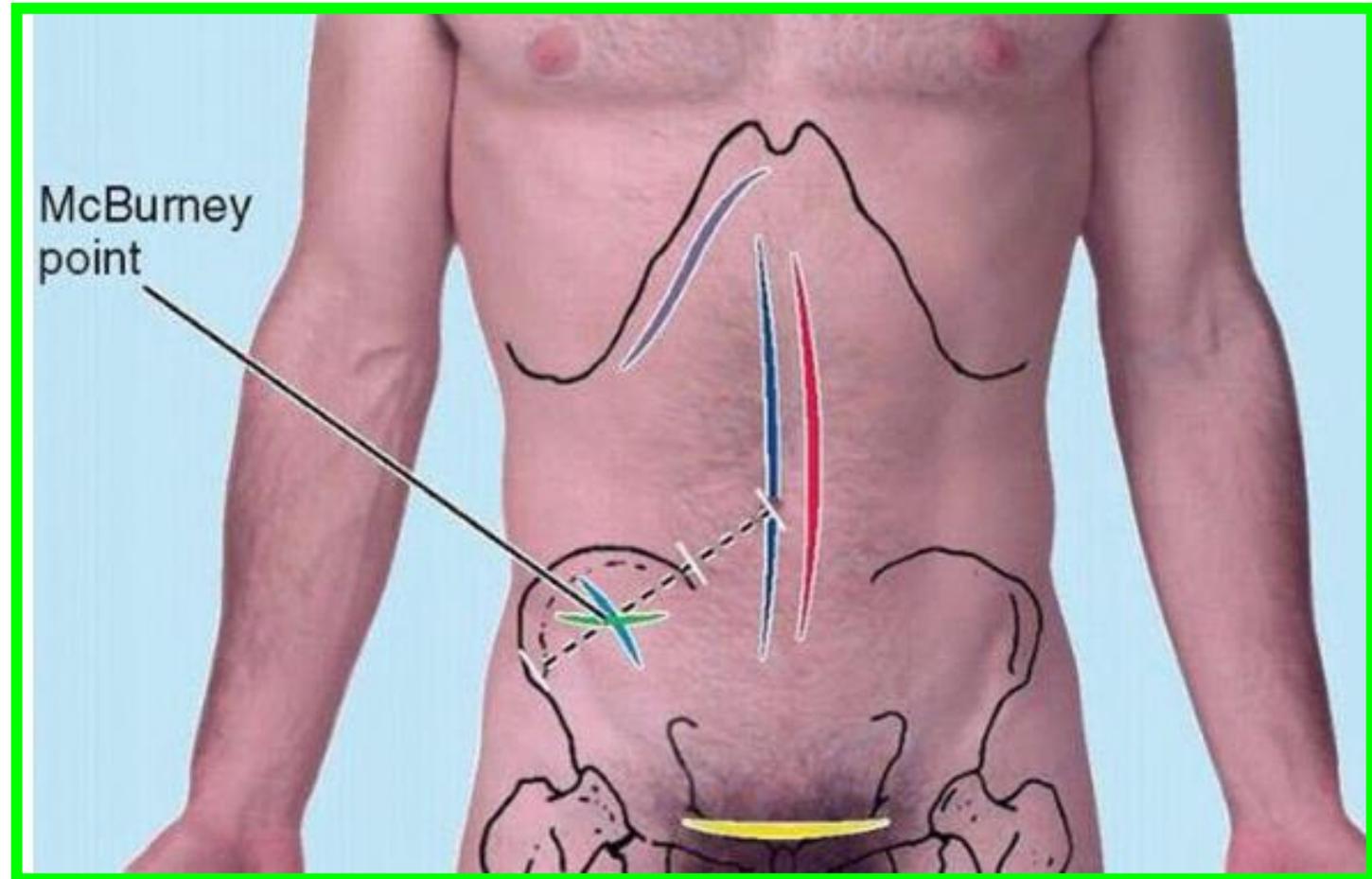
- ✓ It has a **complete peritoneal covering**, which is attached to the mesentery of the small intestine by a short mesentery of its own, **the mesoappendix**.
- ✓ The mesoappendix contains the **appendicular vessels** and nerves



# Appendix

❖ 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.



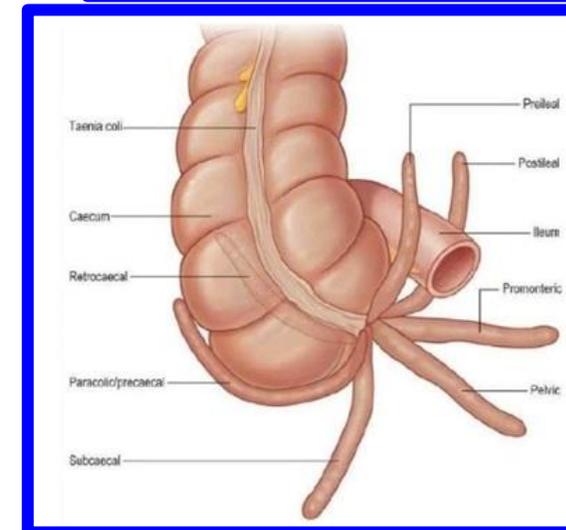
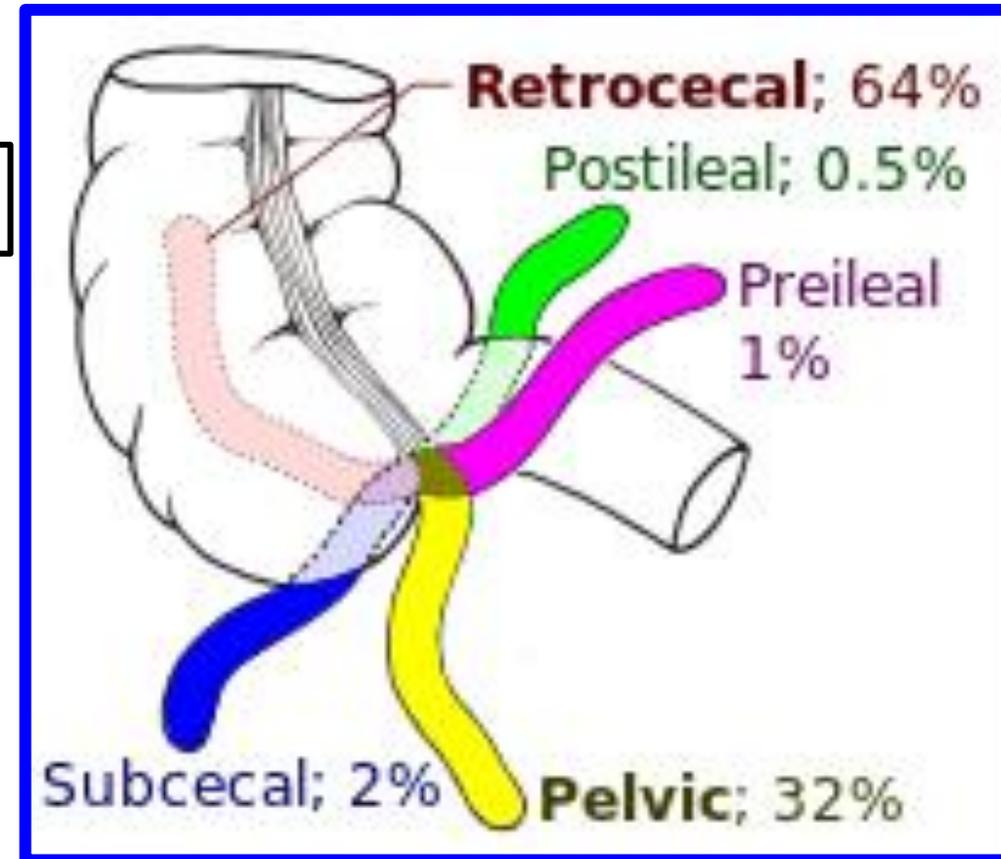
# Appendix

## Common Positions of the Tip of the Appendix

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



Sunday 7 April 2024

# Appendix

## Arteries

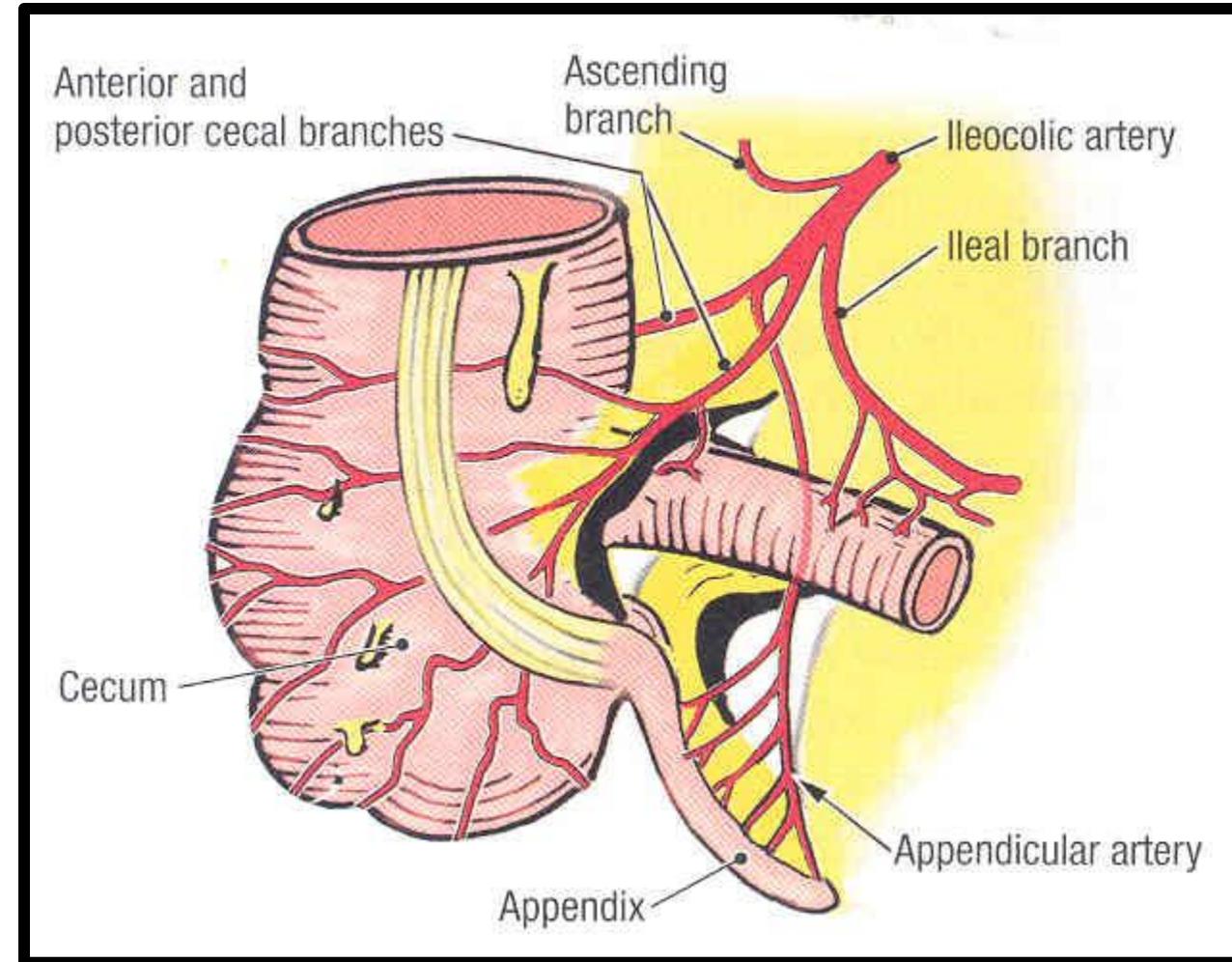
The **appendicular artery** is a branch of the **posterior cecal artery**

## Veins

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

## Lymph Drainage

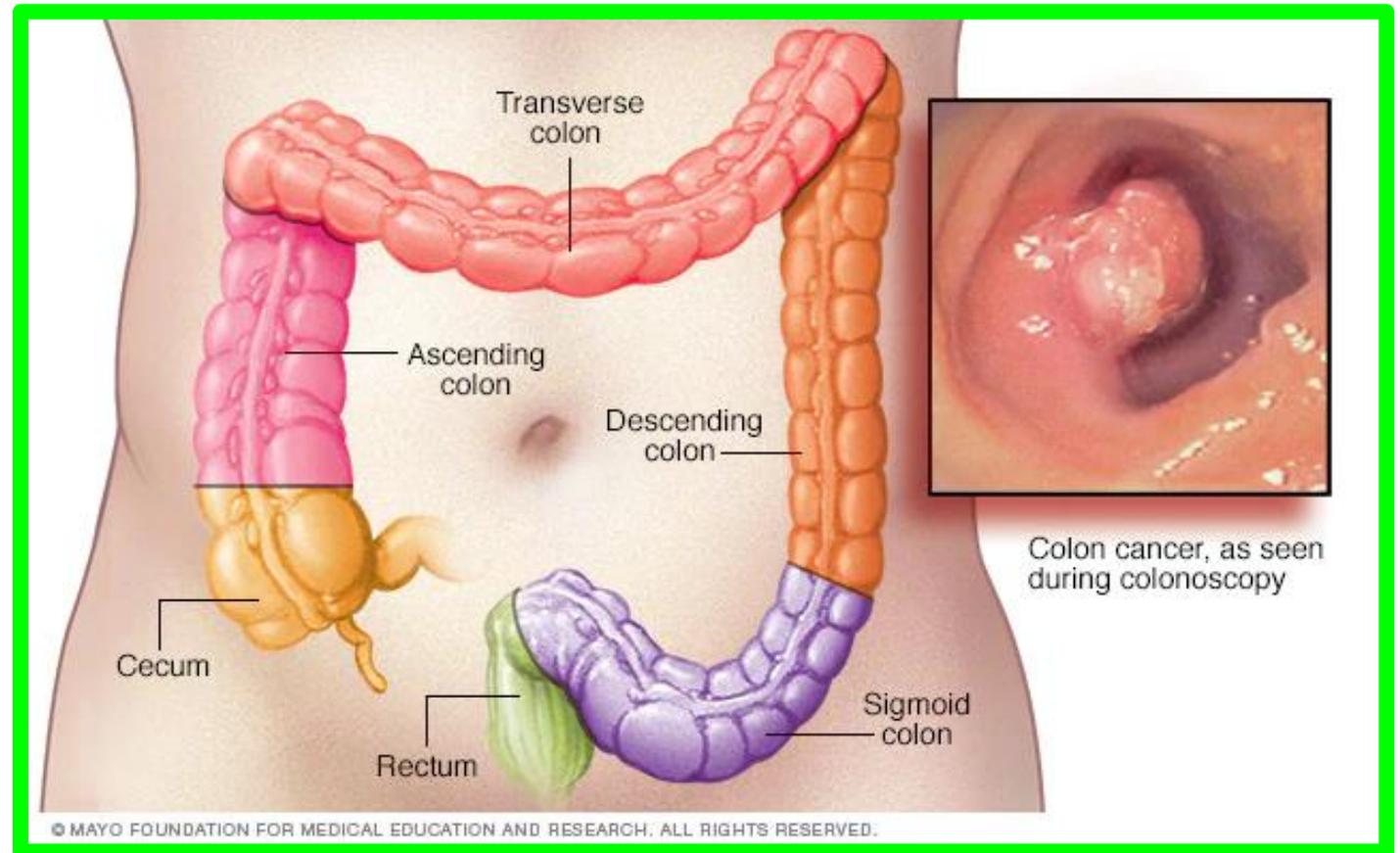
The lymph vessels drain into one or two nodes lying in the mesoappendix and then eventually into **the superior mesenteric nodes**



# Ascending Colon

- ❖ 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.

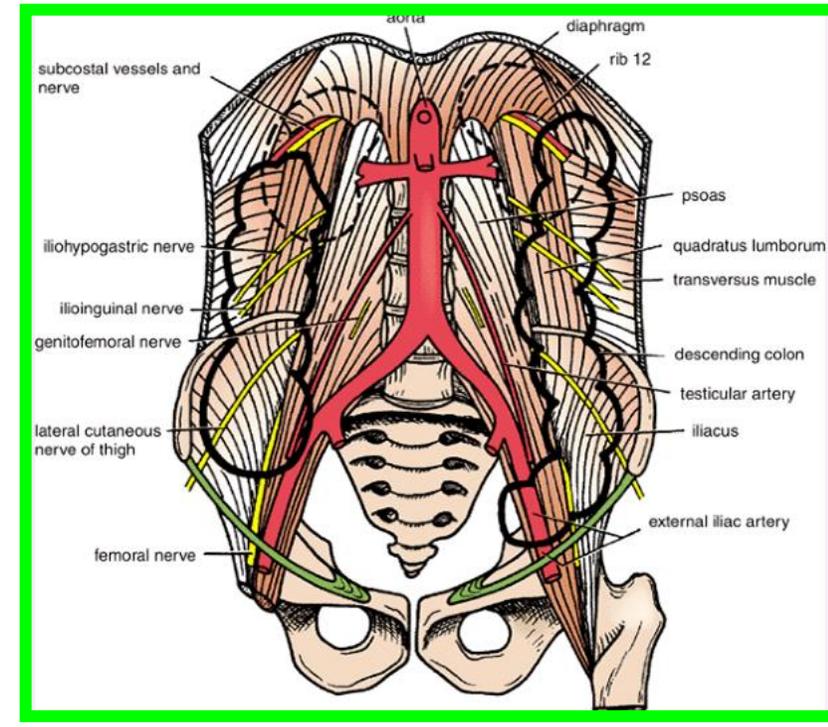
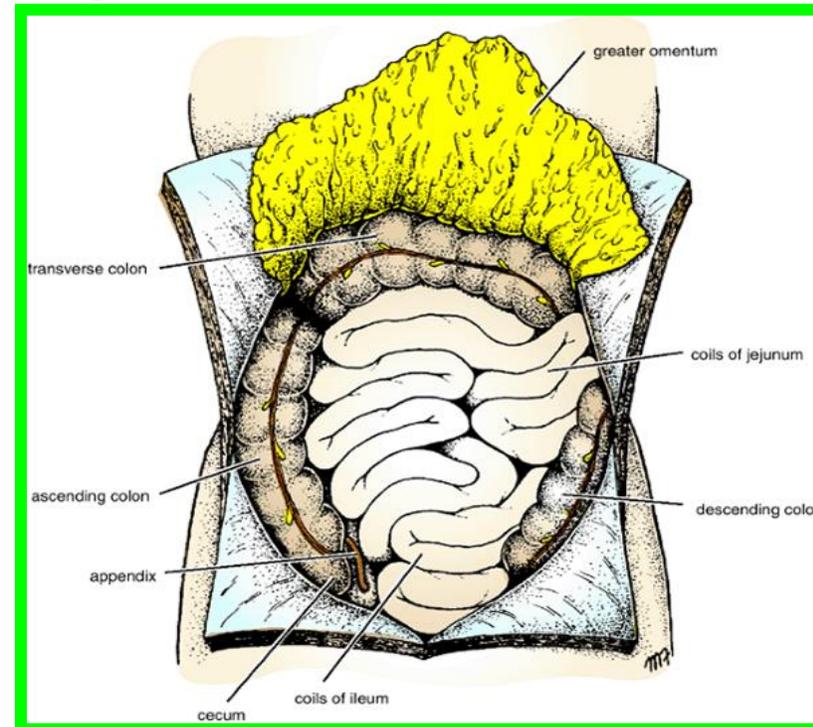
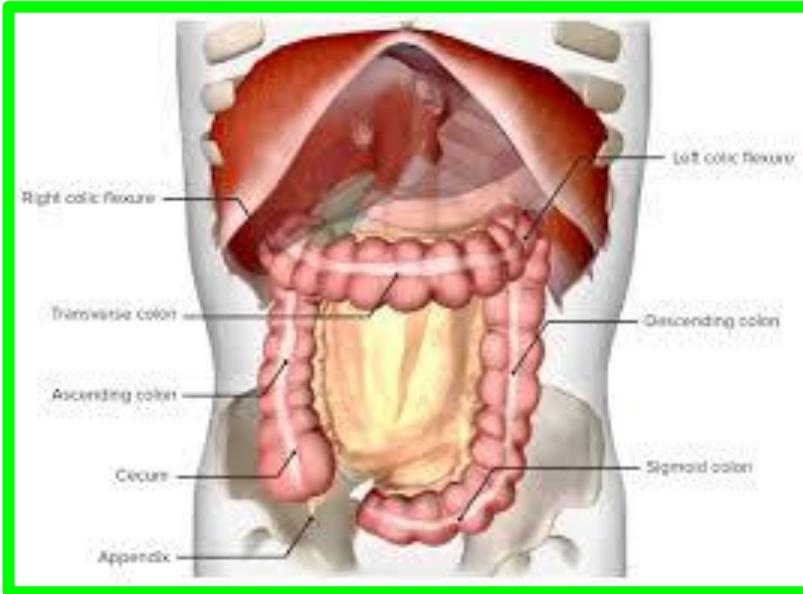
❖ The peritoneum **covers the front and the sides** of the ascending colon, binding it to the posterior abdominal wall.



## 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

## Arteries

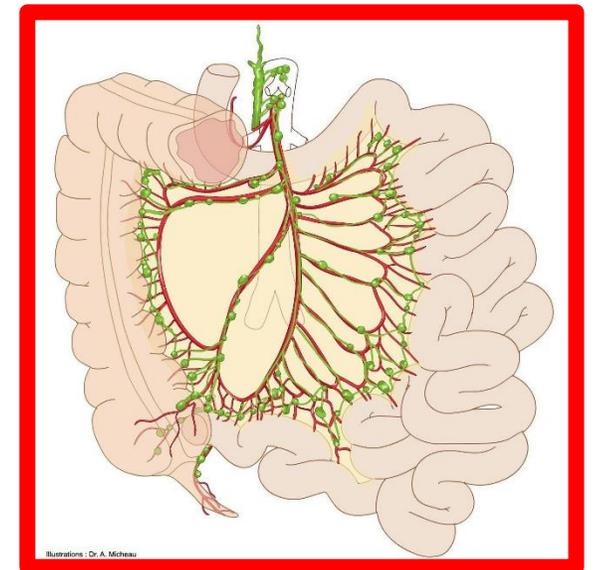
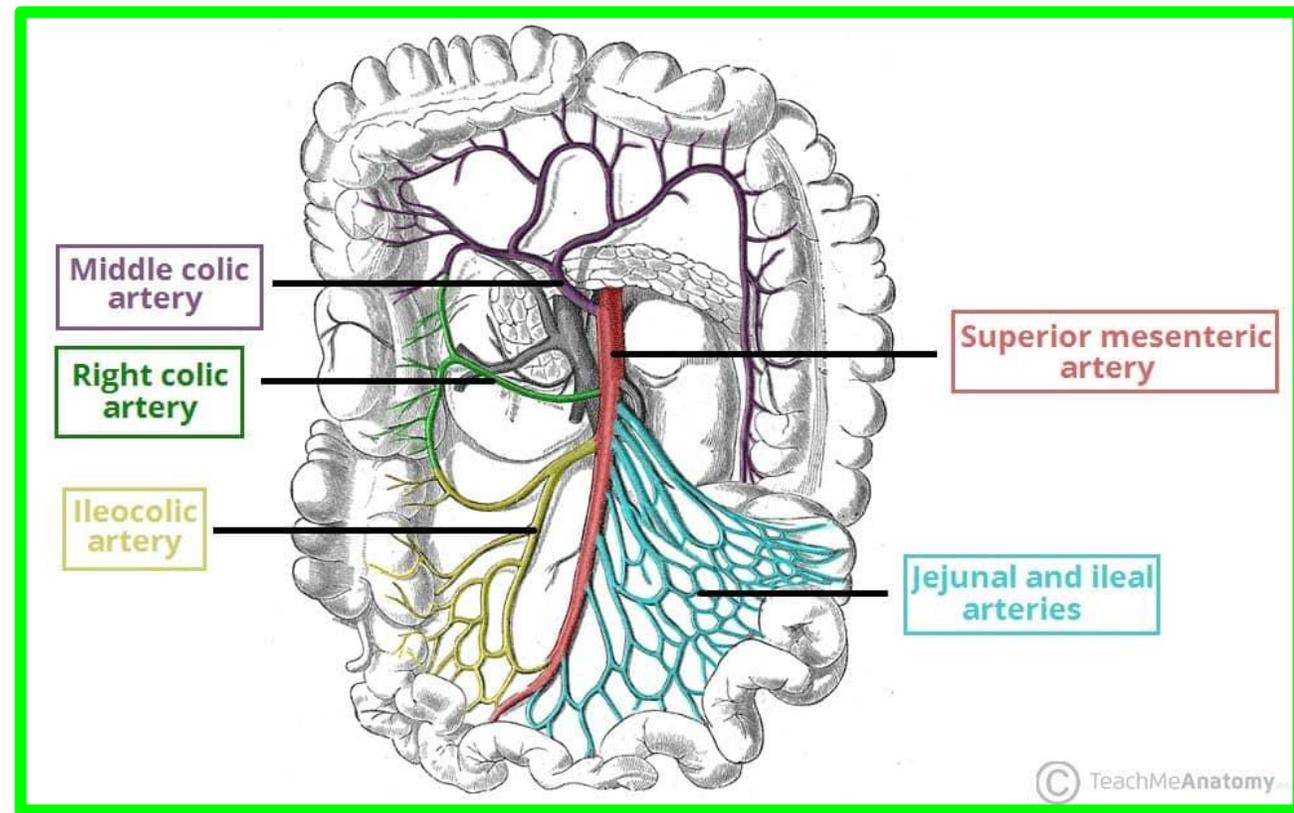
The ileocolic and right colic branches of the superior mesenteric artery supply this area.

## 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

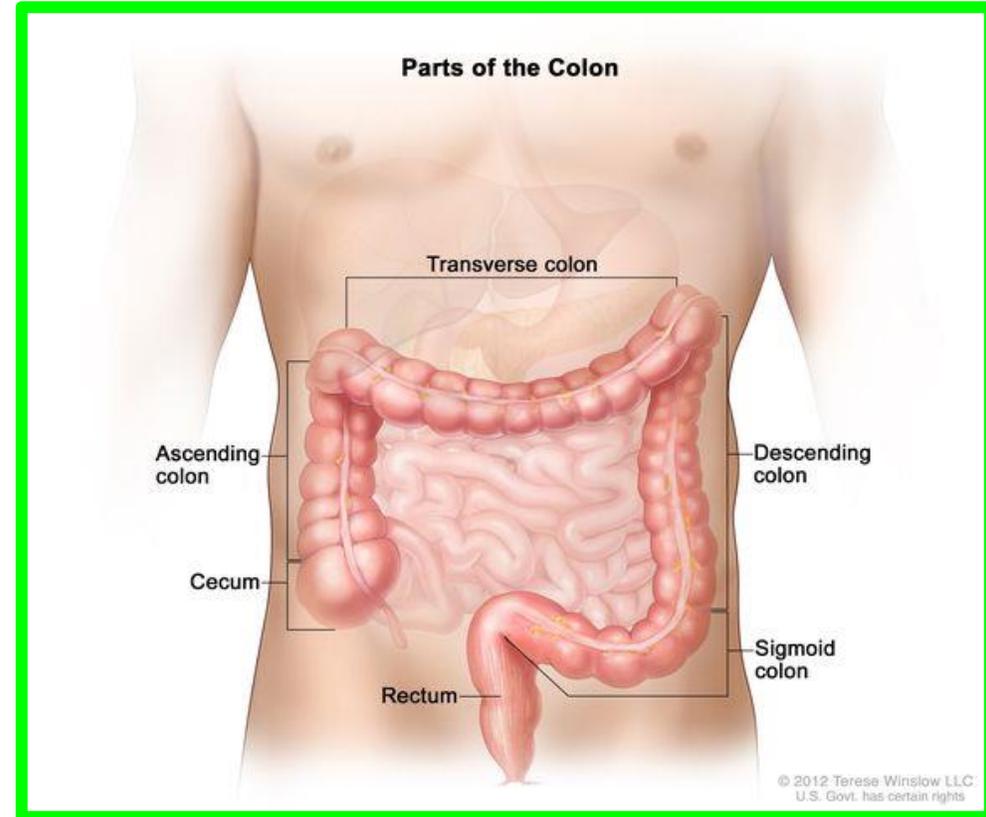


# Transverse Colon

Dr Aiman Qais AL Maathidy  
Sunday 7 April 2024

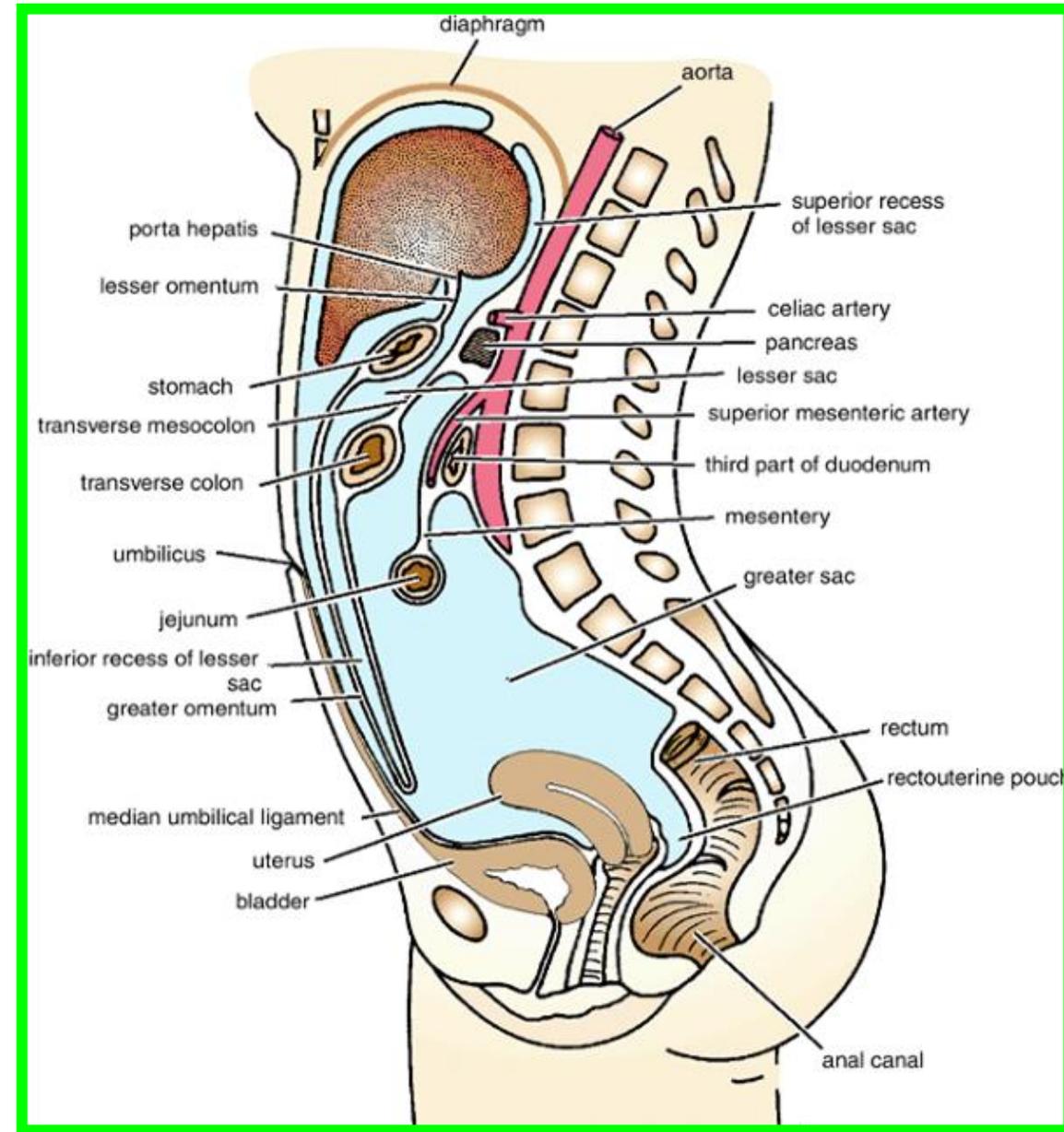
16

- ❖ 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*

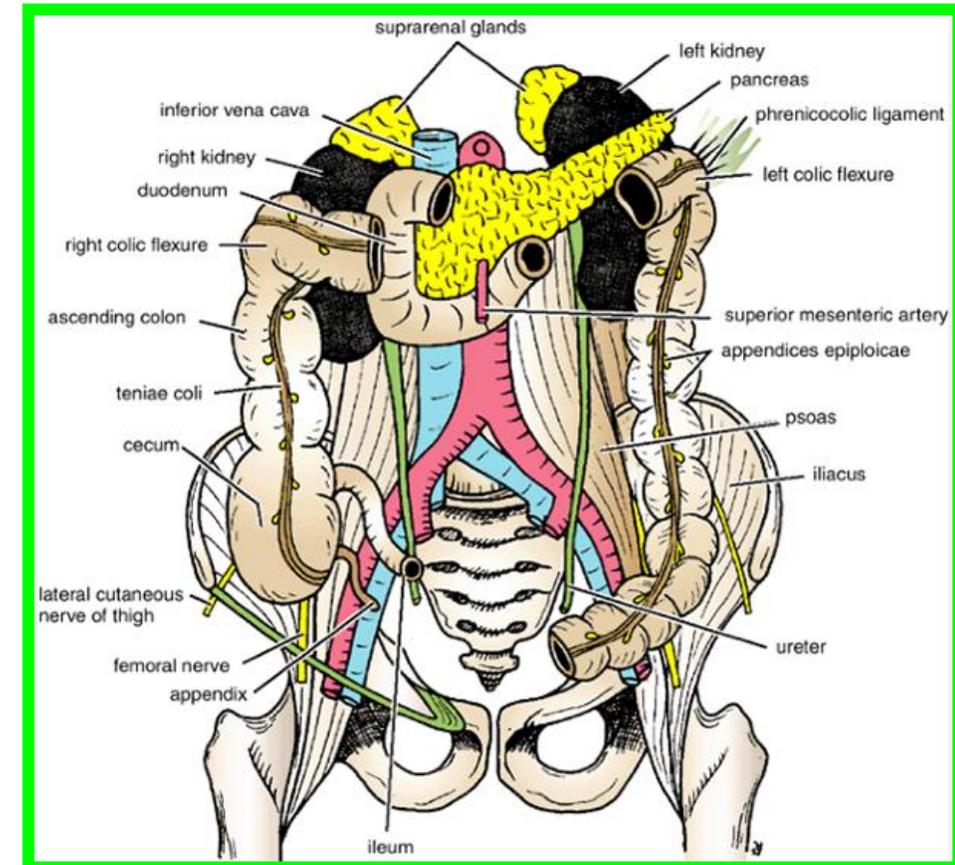
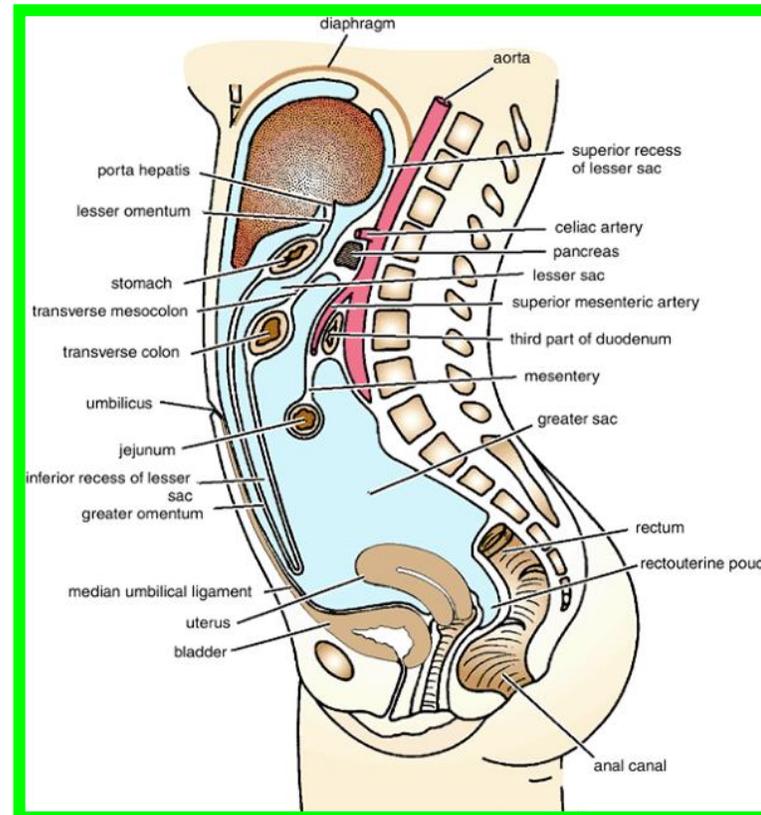


# Transverse Colon

## 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



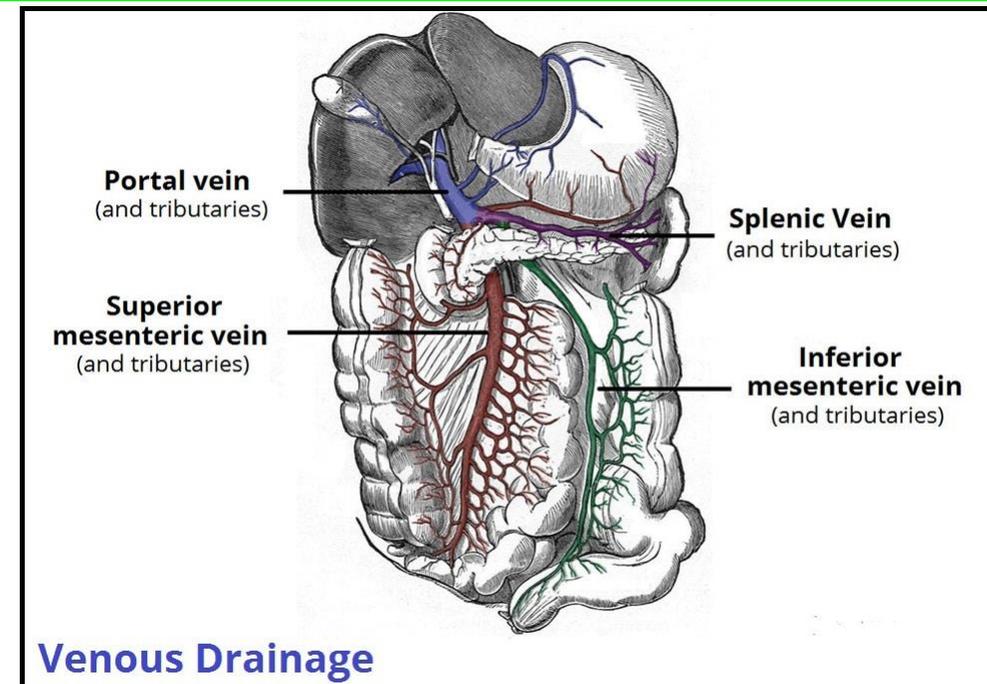
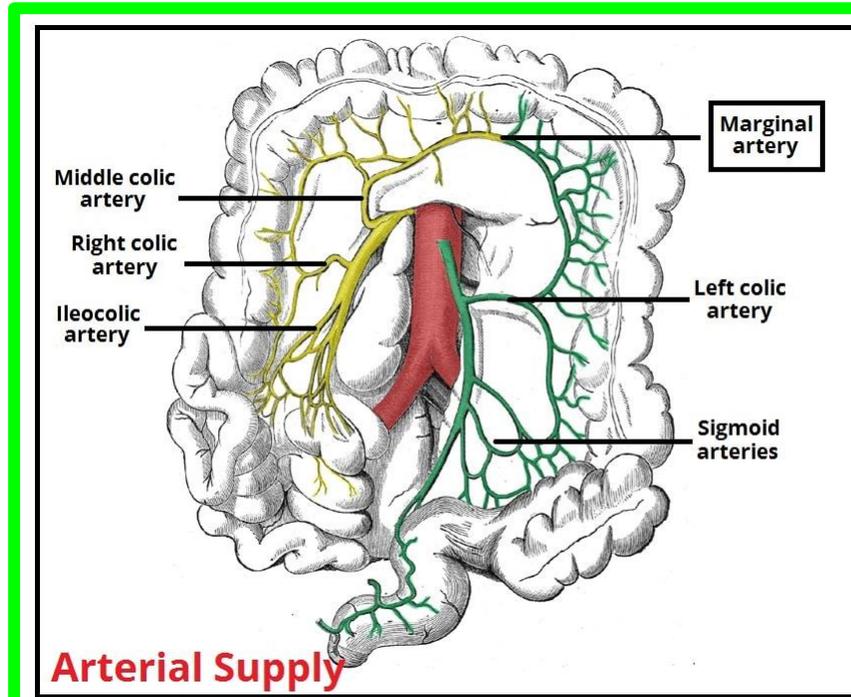
# Transverse Colon

## 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**.



# Transverse Colon

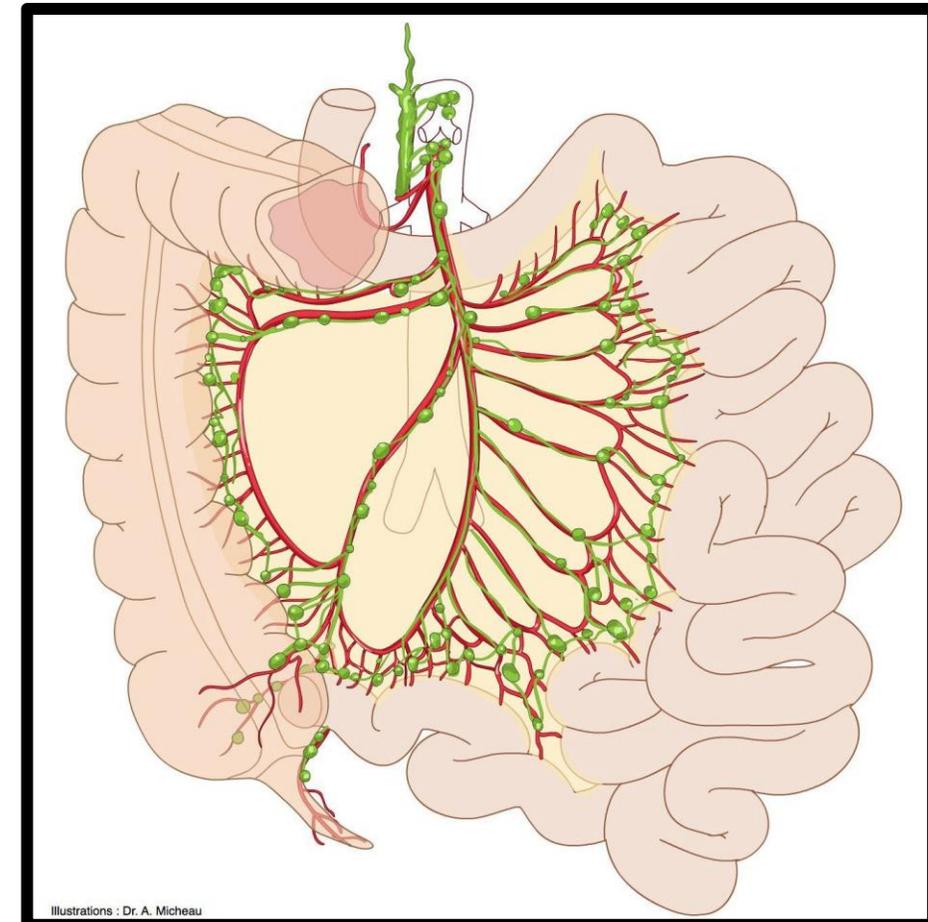
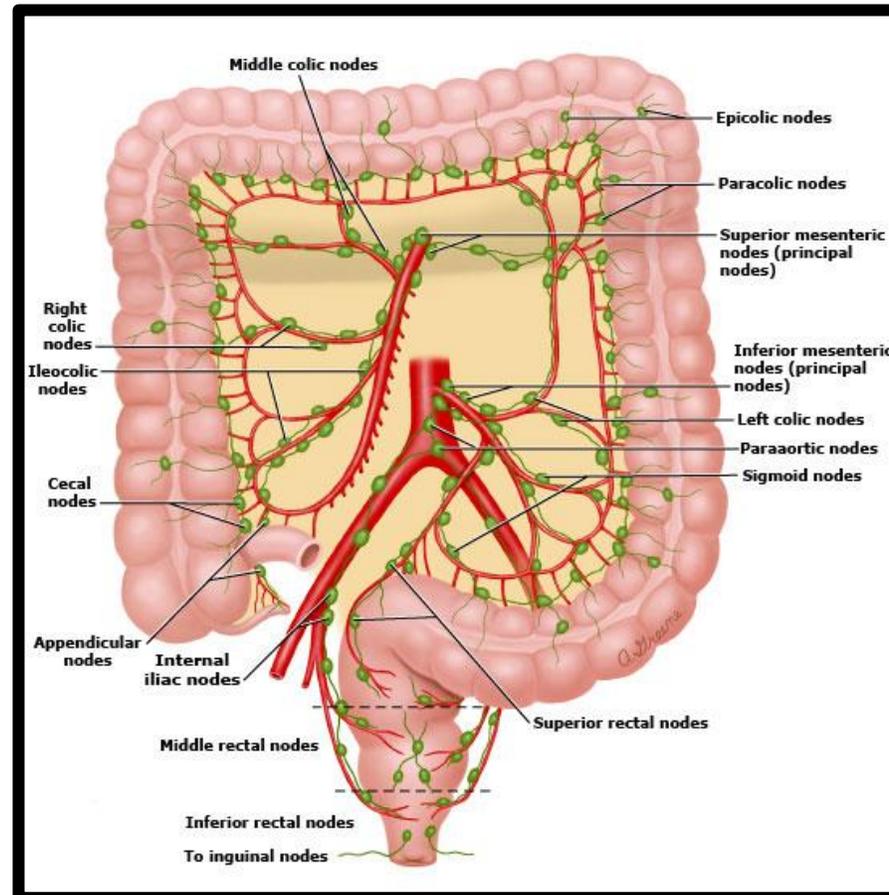
Dr Aiman Qais AL Maathidy

Sunday 7 April 2024

20

## 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**.

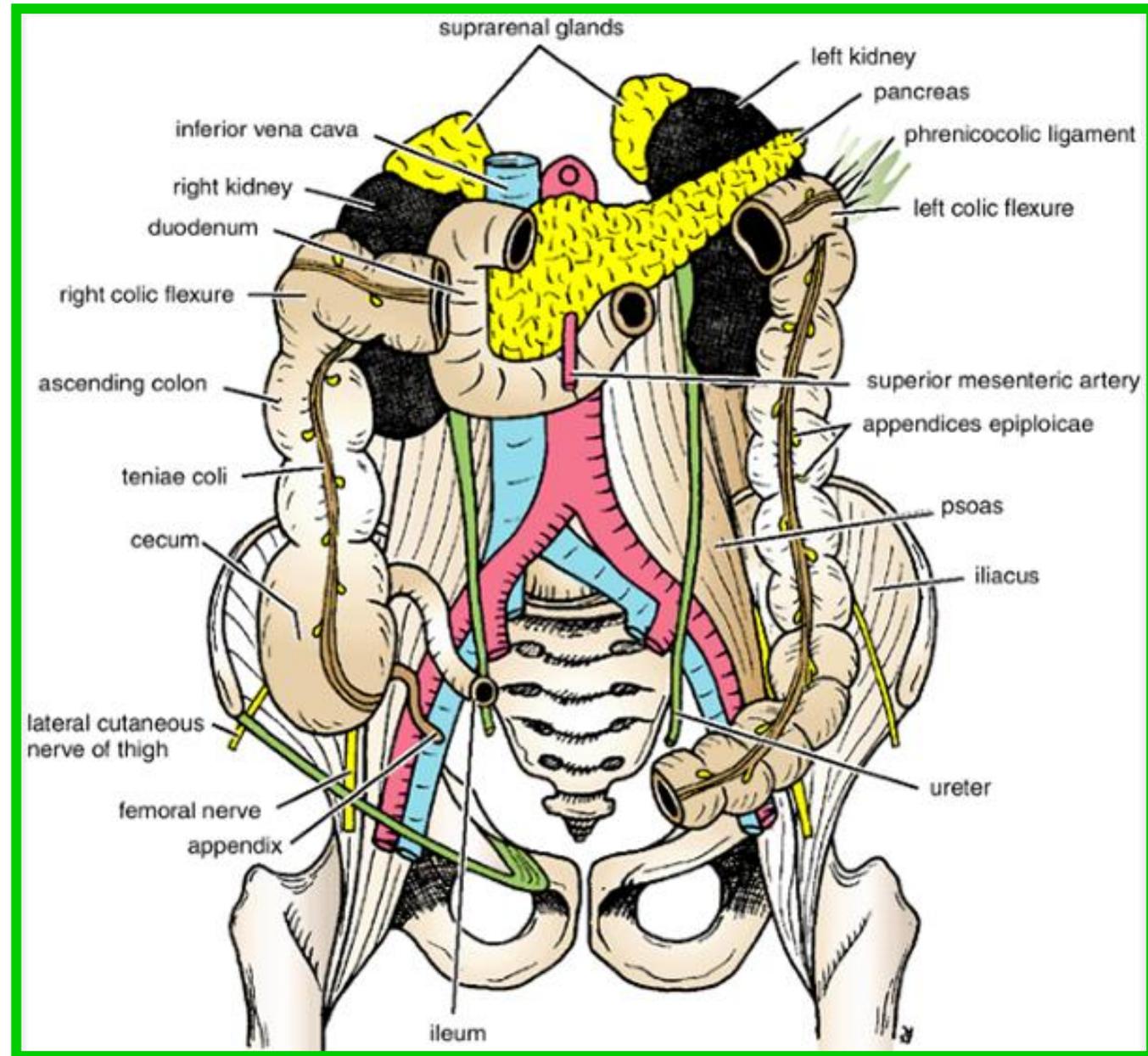


# Descending Colon

❖ 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



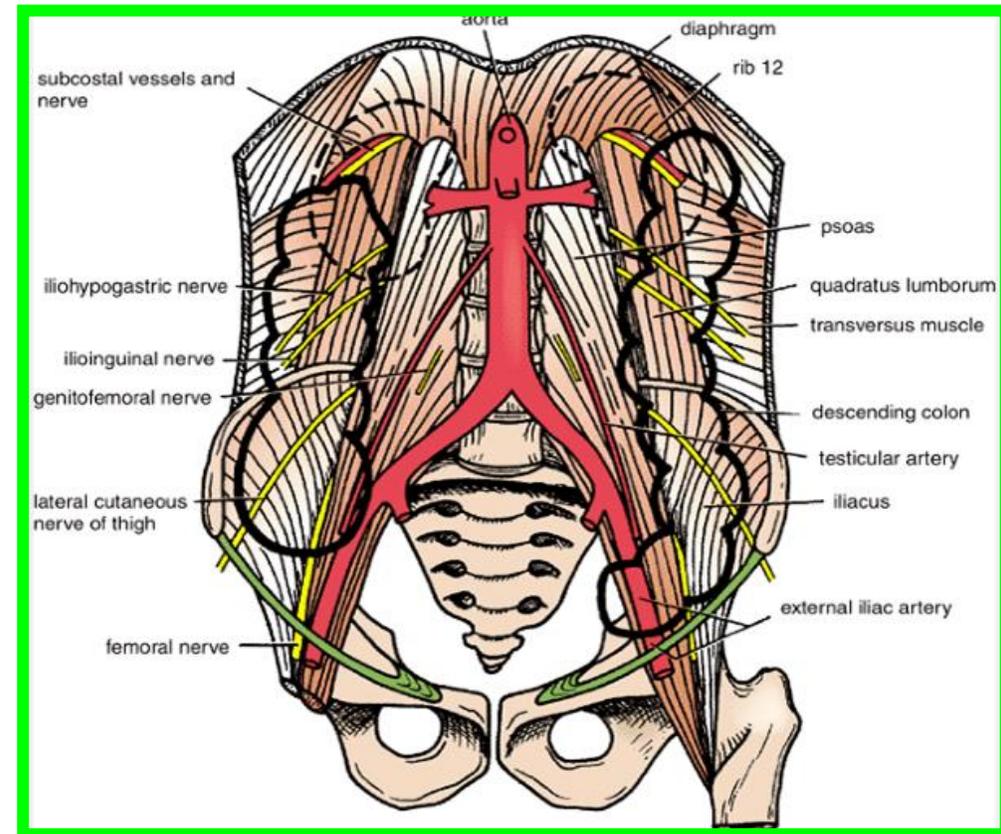
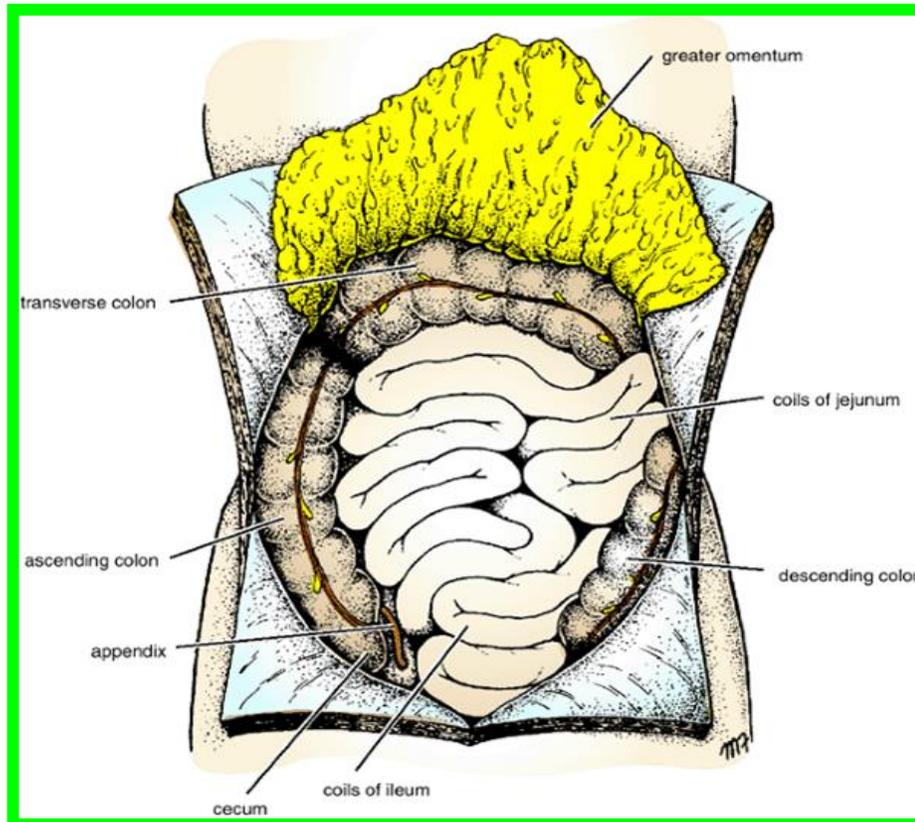
# Descending Colon

Dr Aiman Qais AL Maathidy  
Sunday 7 April 2024

## 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.



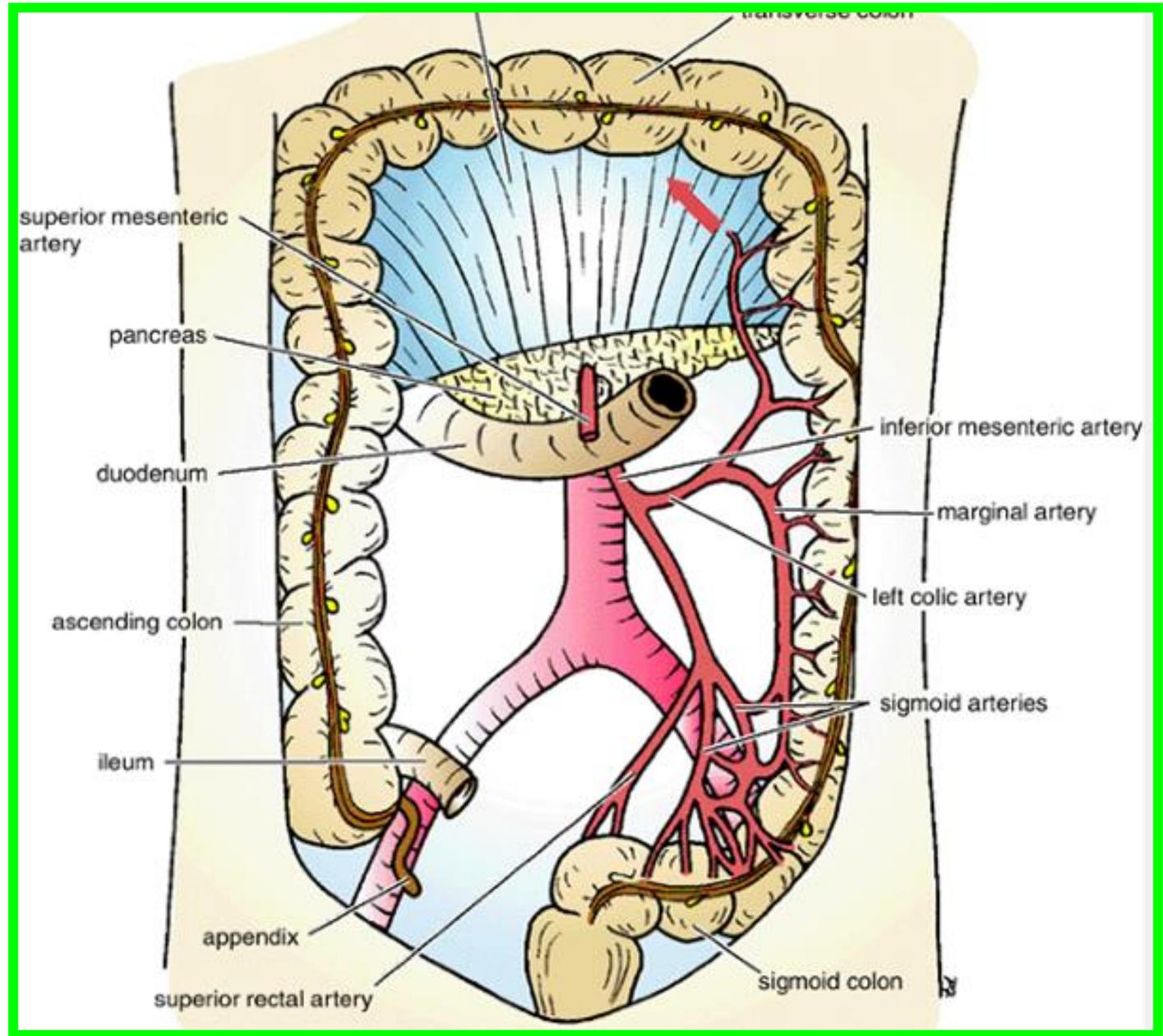
# Descending Colon

## Blood Supply Arteries

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

## Veins

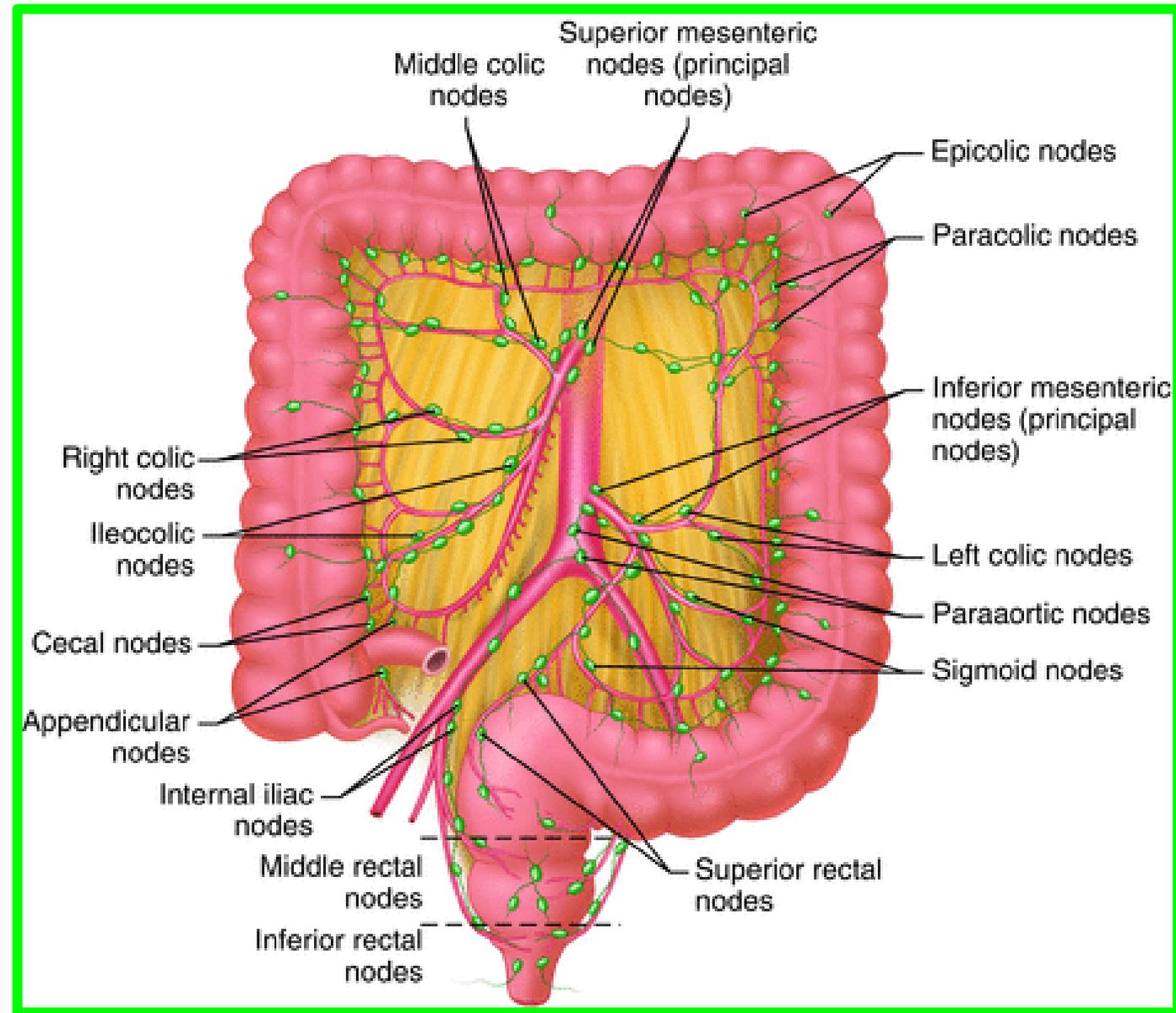
The veins correspond to the arteries and drain into the inferior mesenteric vein



# Descending Colon

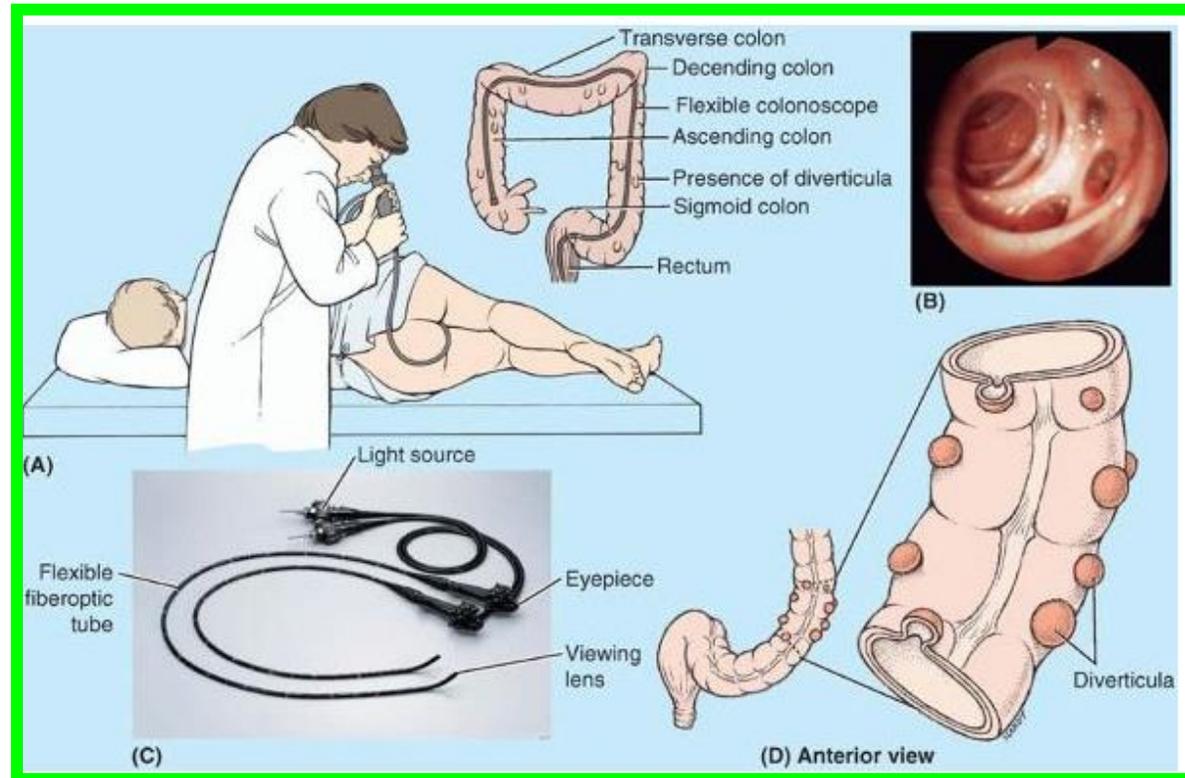
## Lymph Drainage

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



# Examination of large intestine

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**.

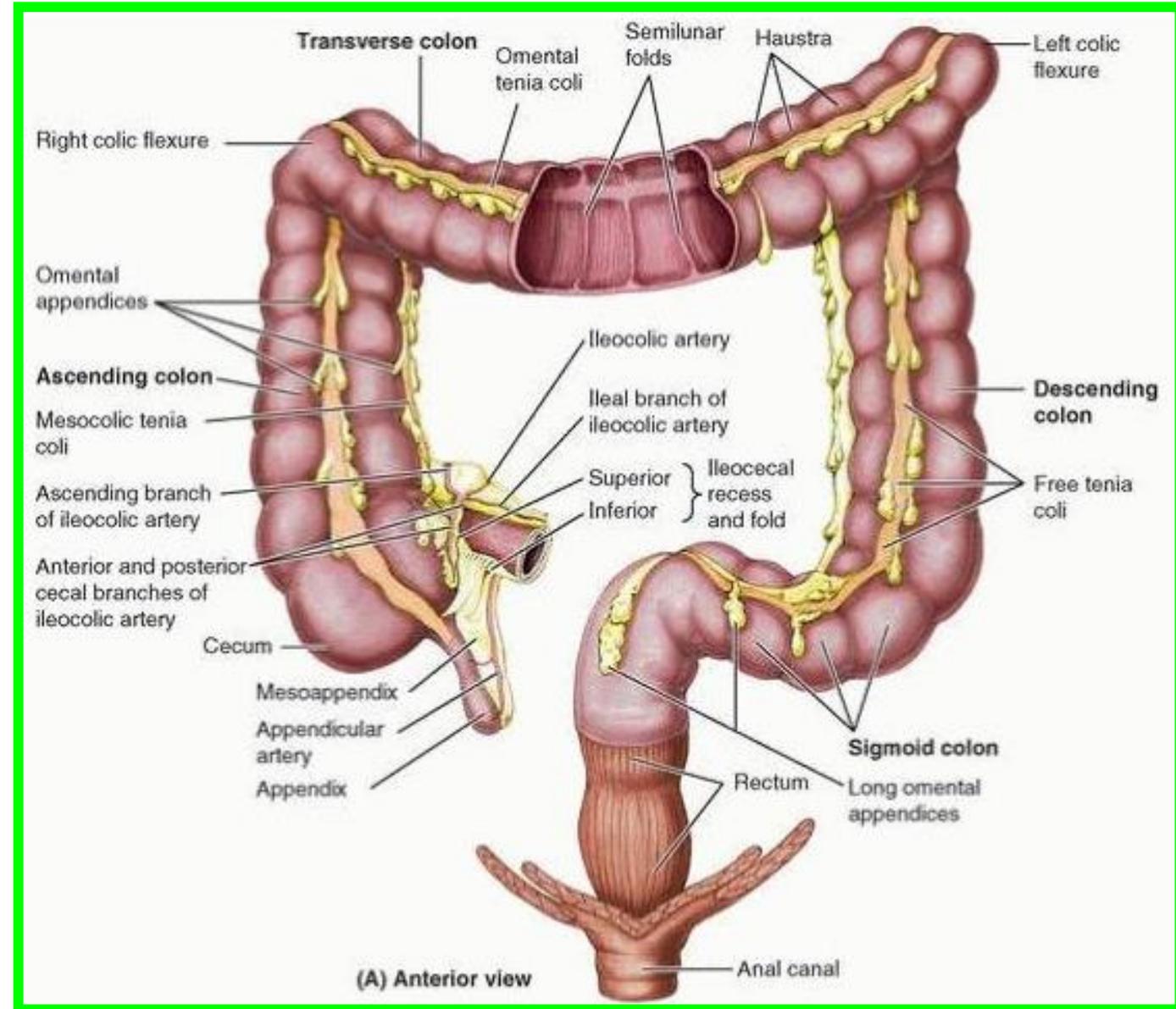


# Sigmoid Colon

❖ 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**



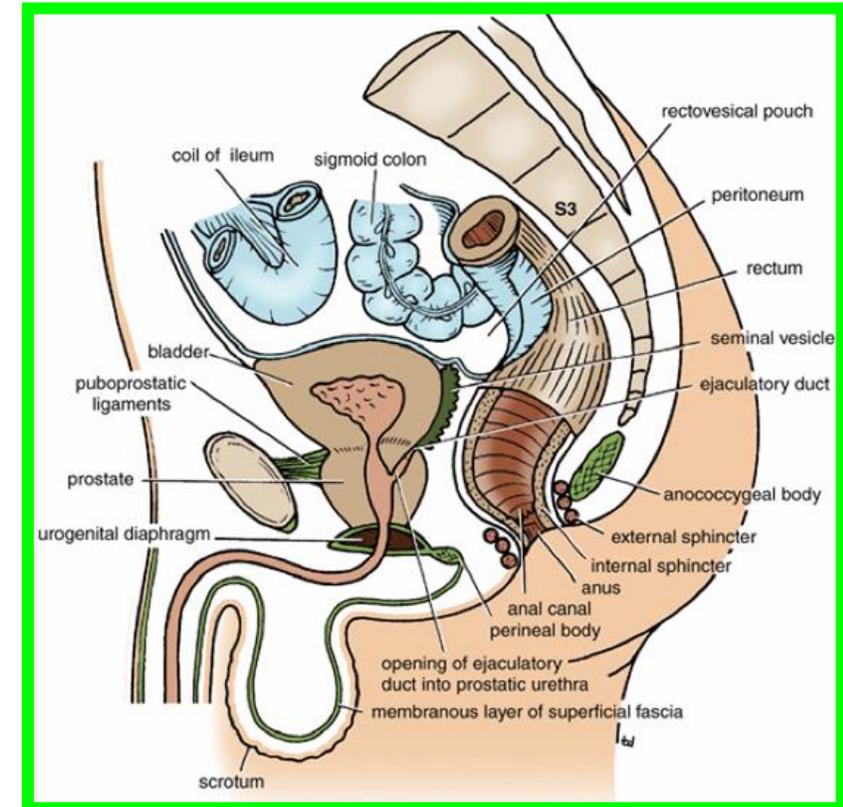
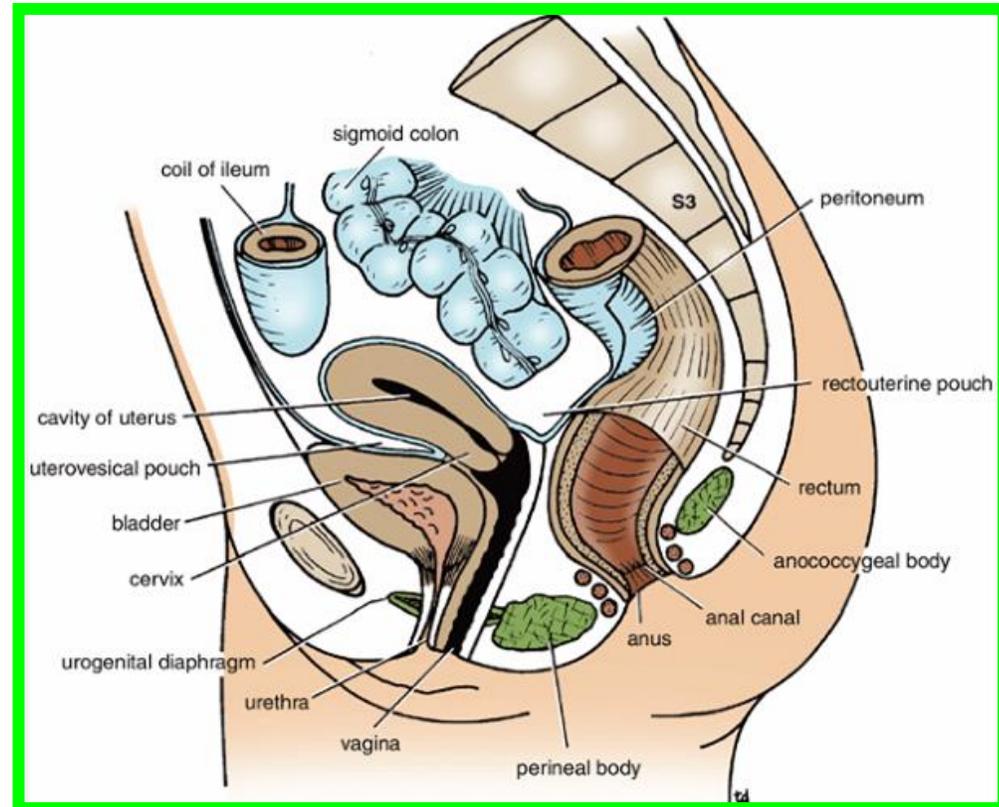
# Sigmoid Colon

## 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.

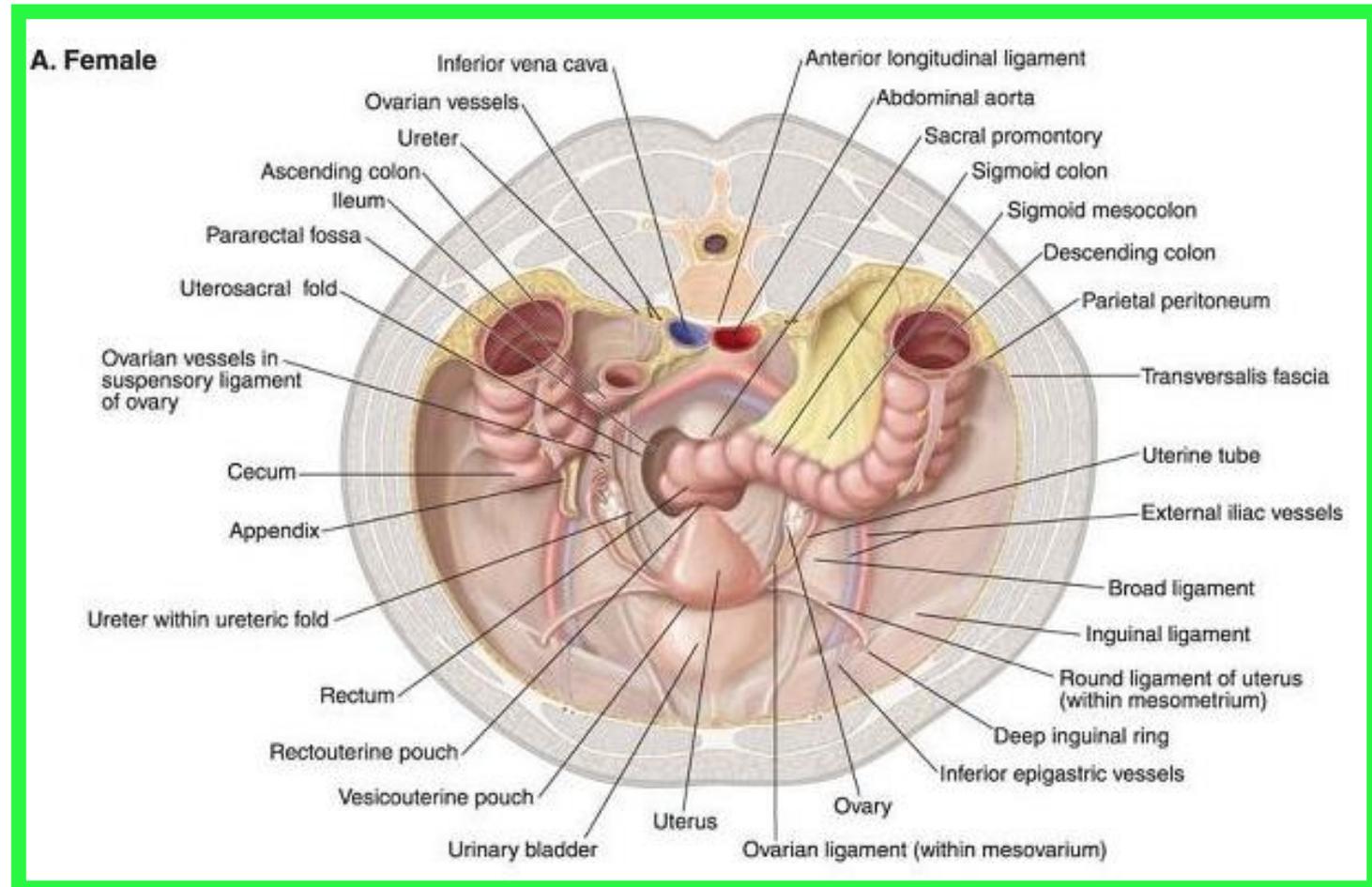
❖ The sigmoid colon is also related to the lower coils of the terminal part of the ileum



# 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



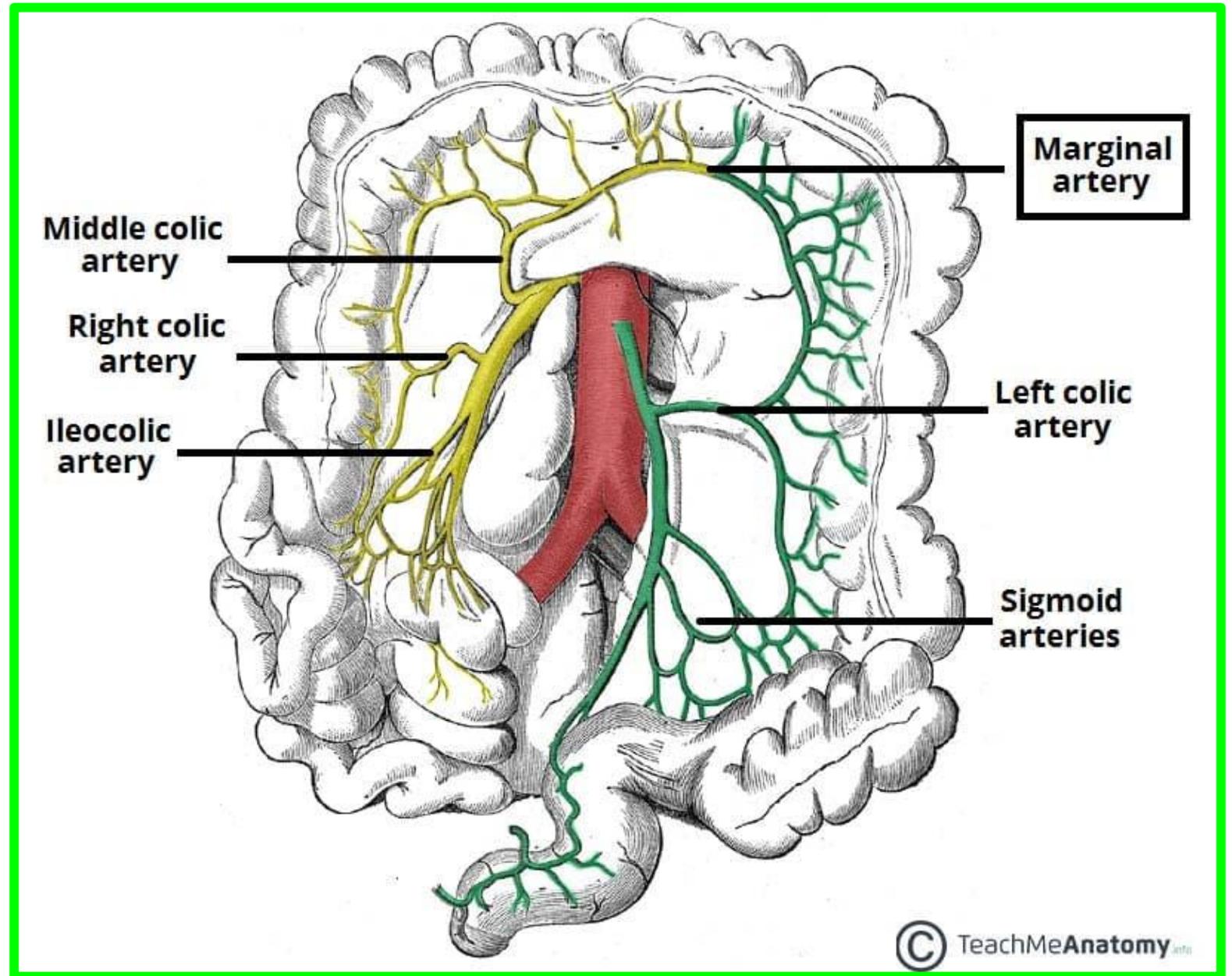
# Sigmoid Colon

## Blood Supply Arteries

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

## Veins

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



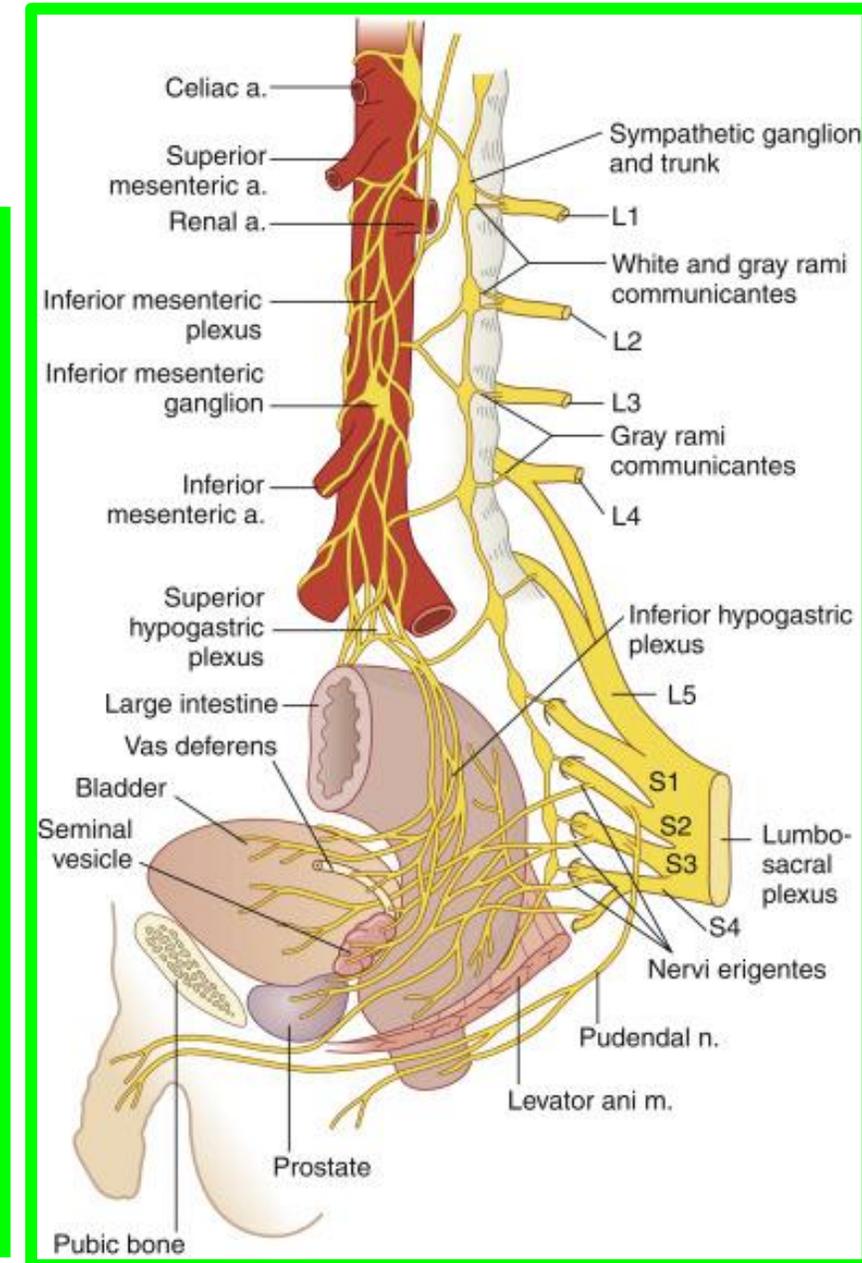
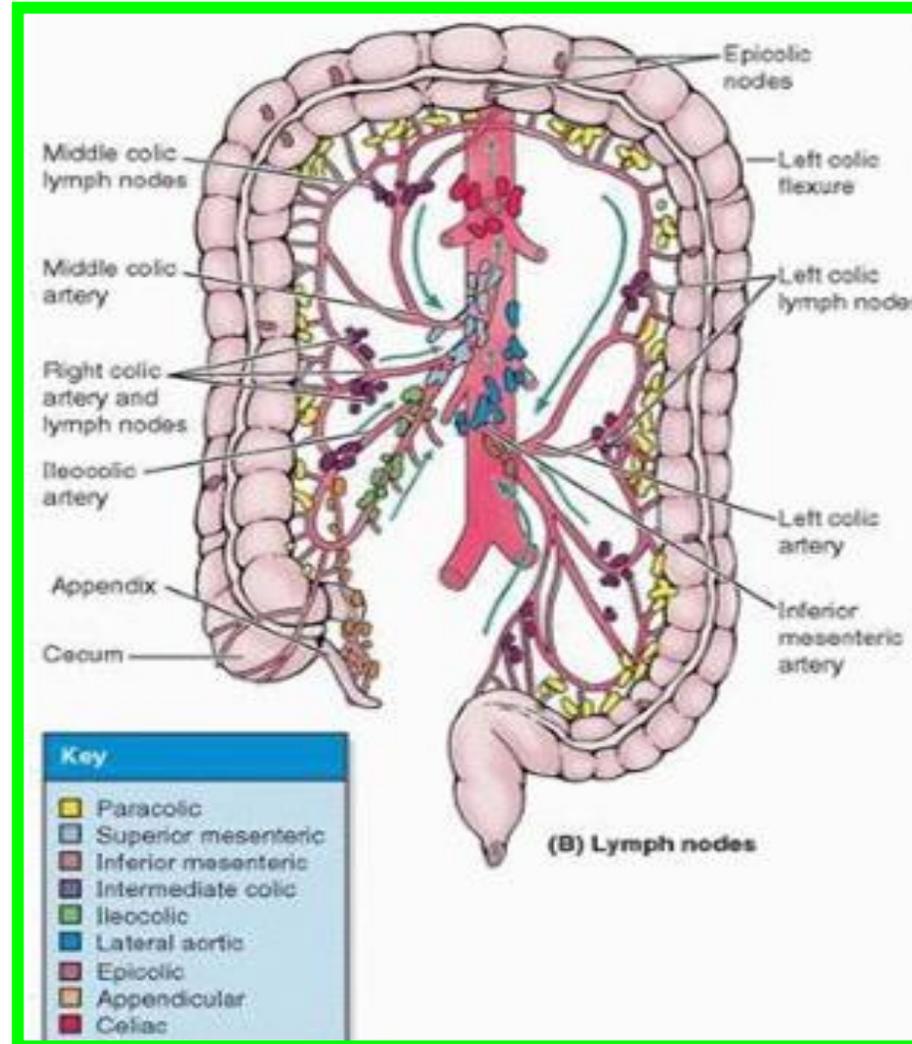
# Sigmoid Colon

## 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**



***Dr Aiman Q. AL Maathidy***  
***Surgical Anatomist***  
***Sunday 7 April 2024***

