



كلية المستقبل الجامعة

قسم تقنيات التخدير

Anatomy

المرحلة الاولى

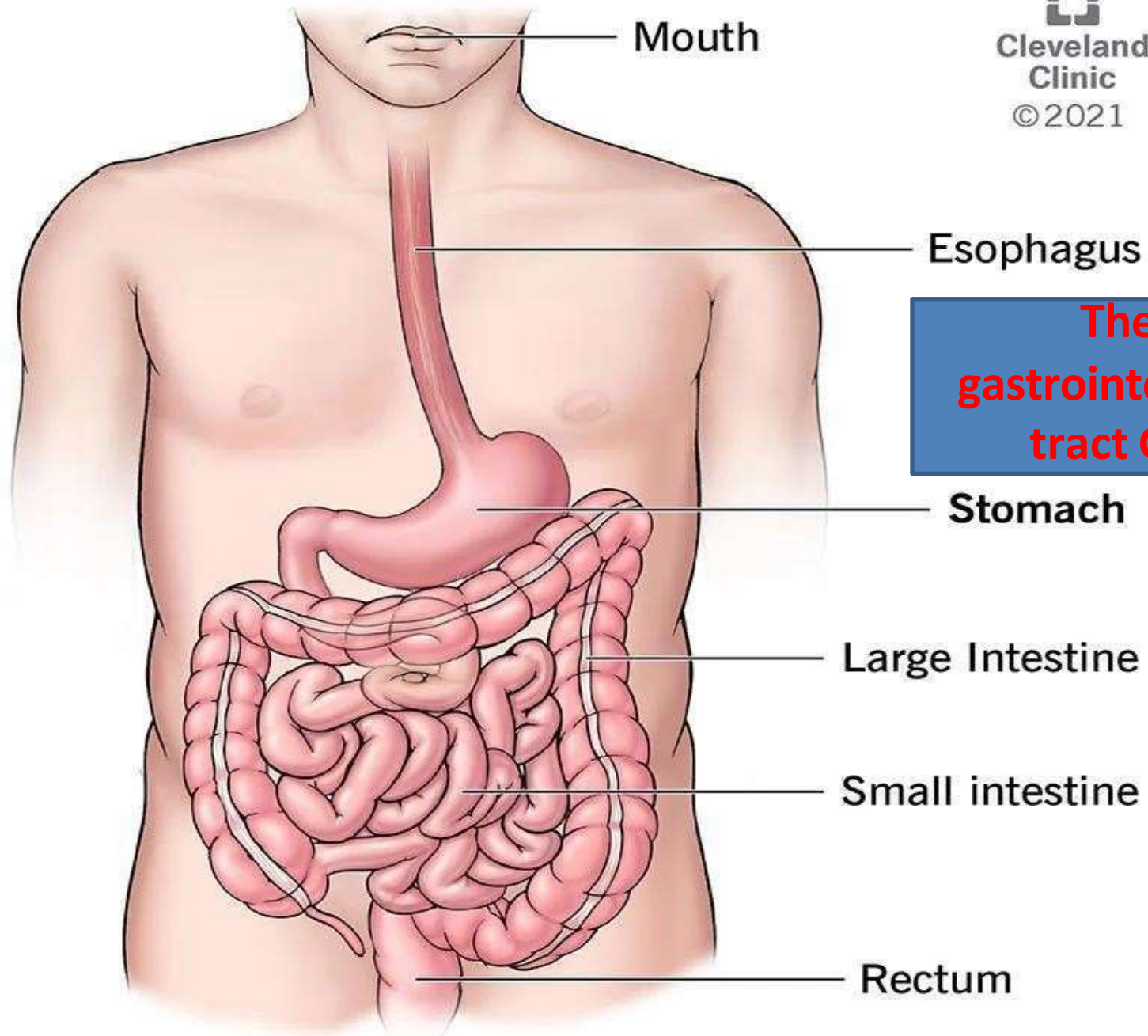
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Lecture ten:Anatomy of the Gastrointestinal tract

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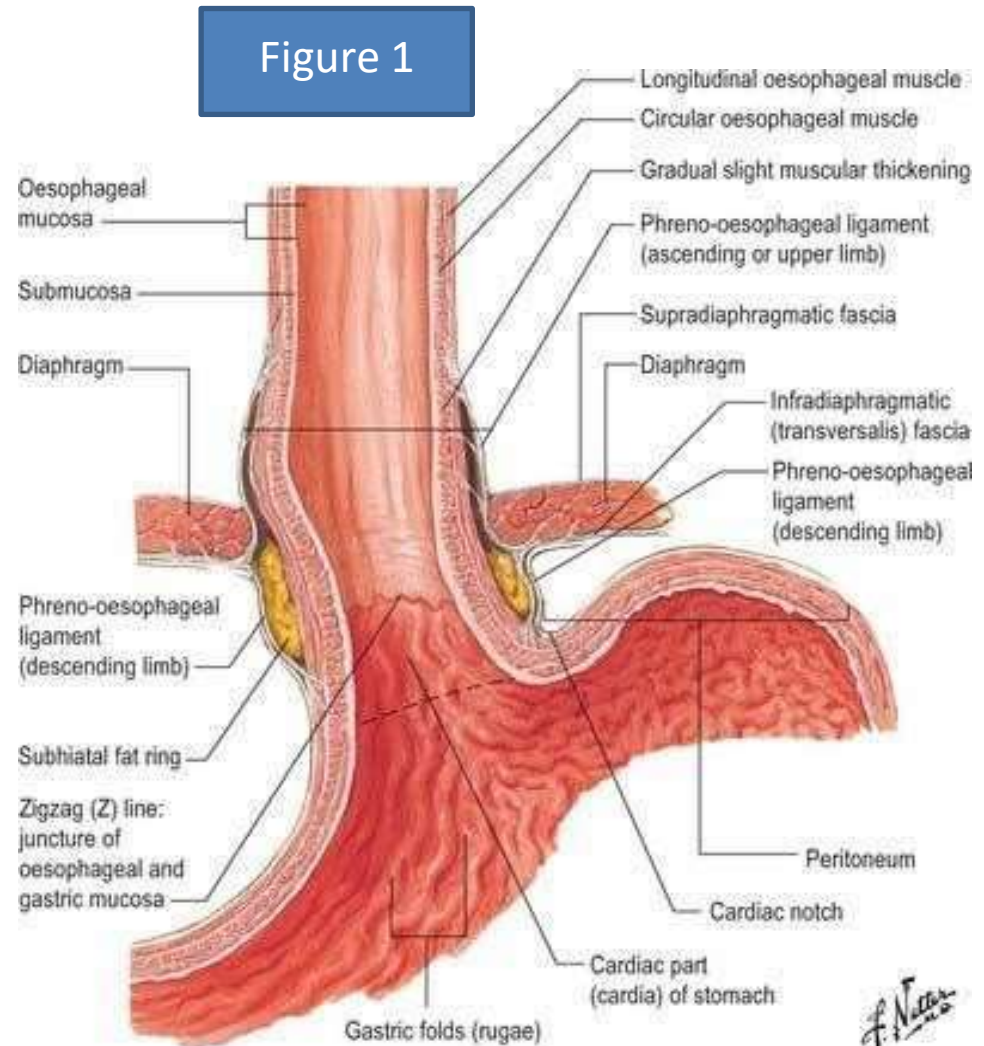
Anatomy of the gastrointestinal tract



The esophagus

Esophagus (Abdominal Portion) (figure.(1

The esophagus is a muscular, tube about 25 cm long that joins the pharynx to the stomach. **The greater part of the esophagus lies within the thorax.** The esophagus enters the abdomen through an opening in the diaphragm and enters the stomach on its right side. The left and right vagi lie on its anterior and posterior surfaces, respectively.

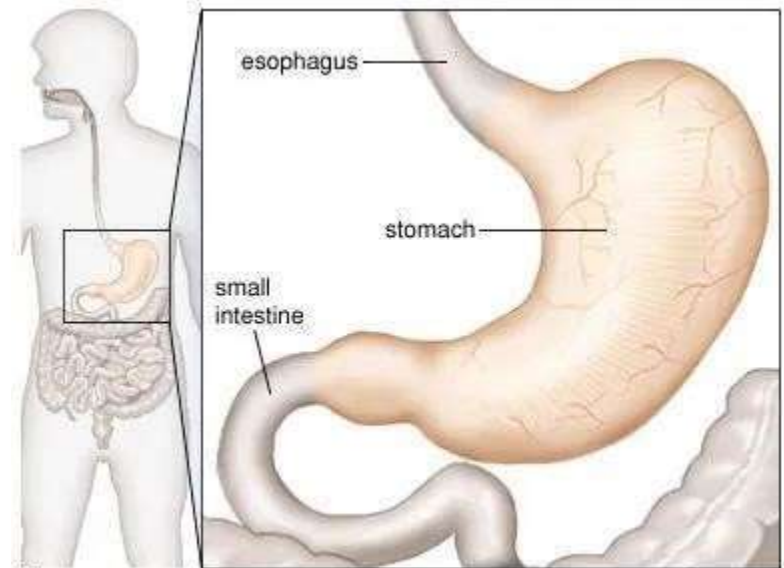


The stomach

The **stomach** is the dilated portion of the alimentary canal and has three main functions (figure.2):

1. **It stores** food,
2. **it mixes** the food with gastric secretions to form a semifluid **chyme**, and
3. **it controls** the rate of delivery of the chyme to the small intestine.

figure2



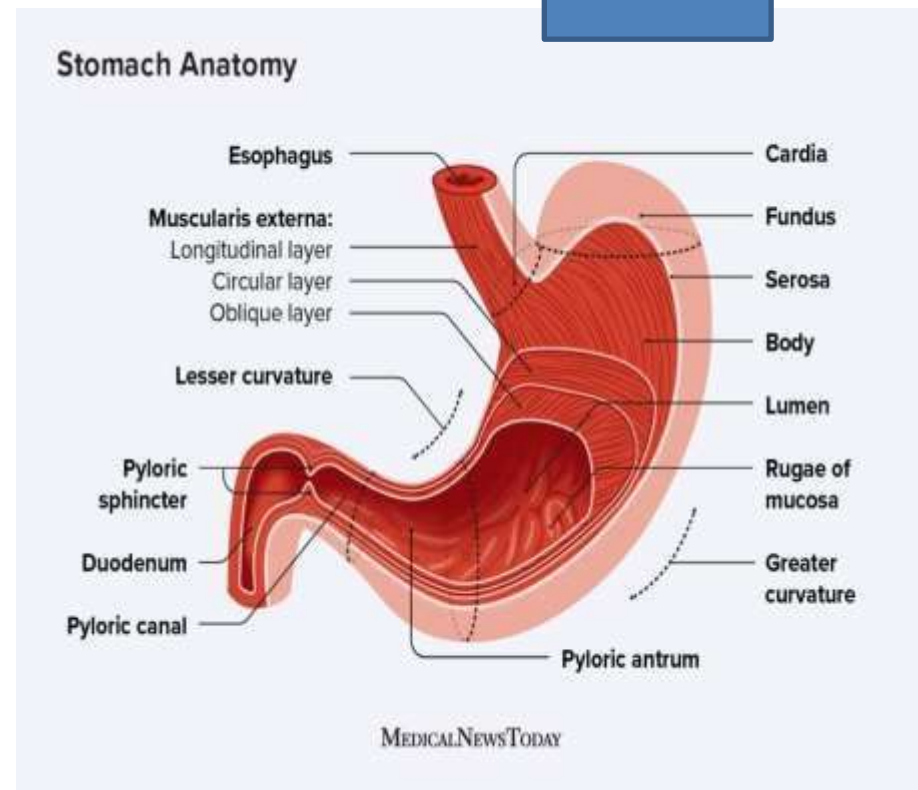
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The stomach

The stomach is relatively fixed at both ends but is very mobile in between.

It is roughly J-shaped and has two openings, the **cardiac** and **pyloric orifices**; two curvatures, the **greater** and **lesser curvatures**; and two surfaces, an **anterior** and a **posterior surface** (Fig.3).

Figure.3

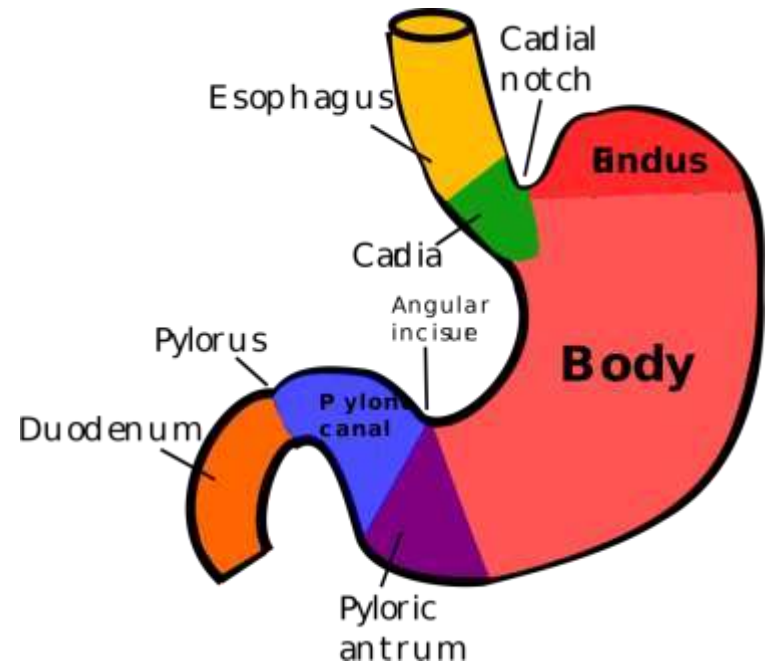


The stomach

The stomach is divided into the following parts (Fig. 4):

- 1. Fundus:** This is dome-shaped and projects upward and to the left of the cardiac orifice. It is usually full of gas.
- 2. Body:** This extends from the level of the cardiac orifice to the level of the **incisura angularis**.

Figure. 4



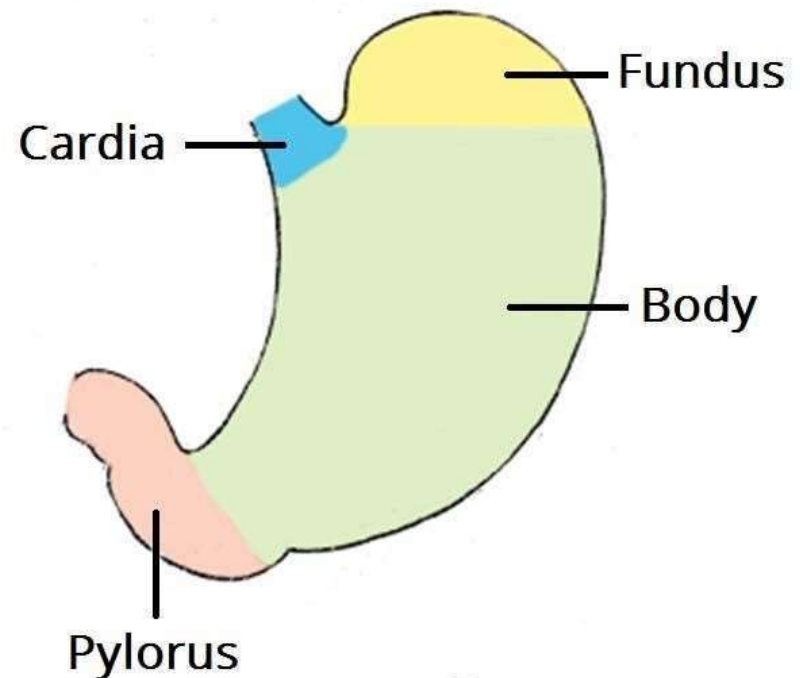
The stomach

a constant notch in the lower part of the lesser curvature.

3. Pyloric antrum: This extends from the incisura angularis to the pylorus (Fig.5).

4. Pylorus: This is the most tubular part of the stomach. The thick muscular wall is called the **pyloric sphincter**

Figure .5

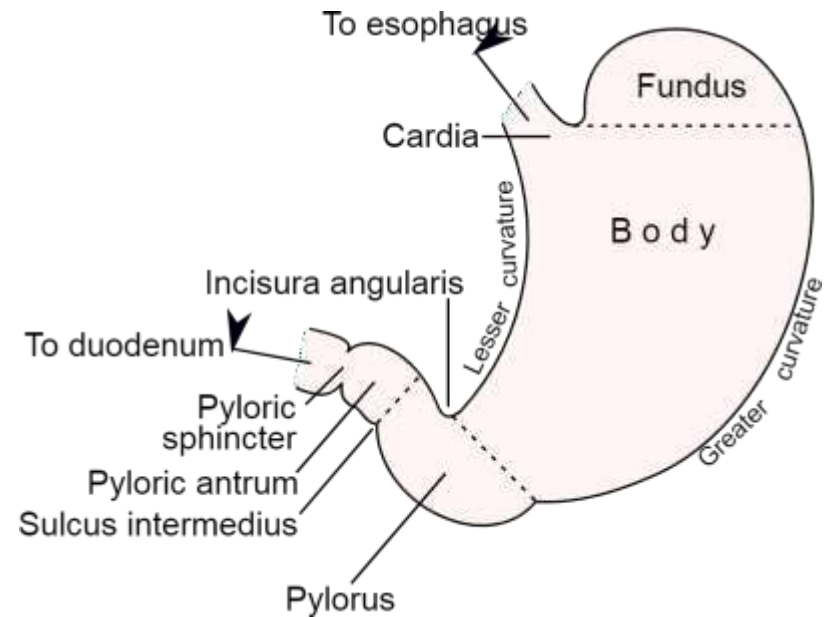


The stomach

The lesser curvature forms the right border of the stomach and extends from the cardiac orifice to the pylorus (Fig. 6). It is suspended from the liver by the lesser omentum.

The greater curvature is much longer than the lesser curvature and extends from the left of the cardiac orifice, over the dome of the fundus, and along the left border of the stomach to the pylorus (figure.6).

Figure.6



The stomach

The **cardiac orifice** is where the esophagus enters the stomach (Fig. 7). here, a physiologic mechanism exists that prevents regurgitation of stomach contents into the esophagus.

The **pyloric orifice** is formed by the **pyloric canal**, which is about 2.5 cm long. The circular muscle coat of the stomach is much thicker here and forms the anatomic and physiologic **pyloric sphincter**.

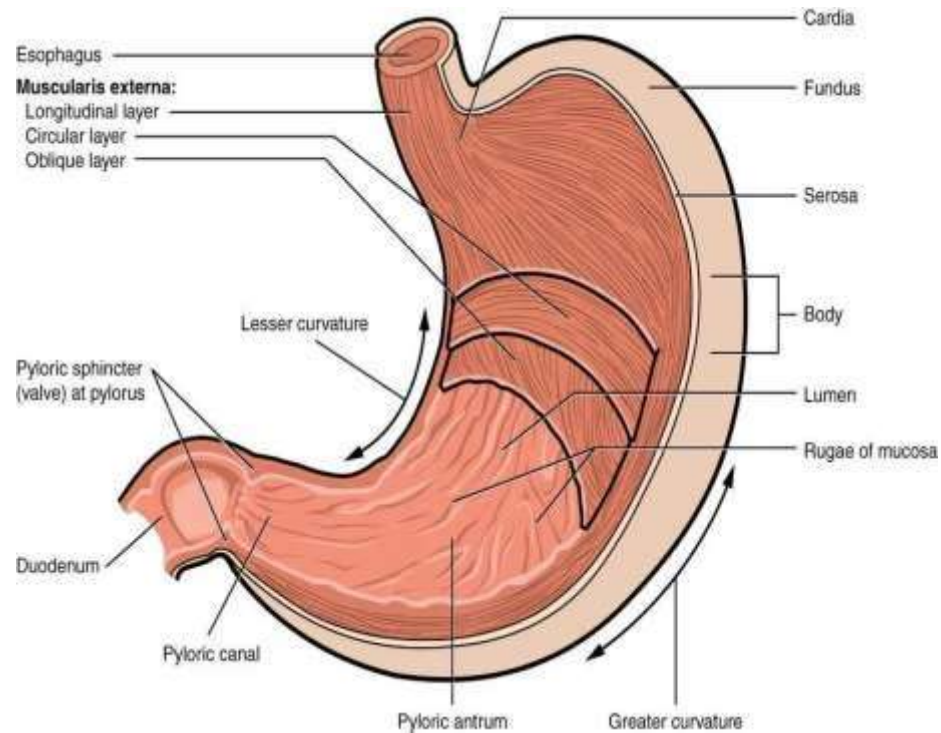


Figure.7

The stomach

Blood Supply

All gastric arteries arise from the celiac artery, (**figure 8**) they are

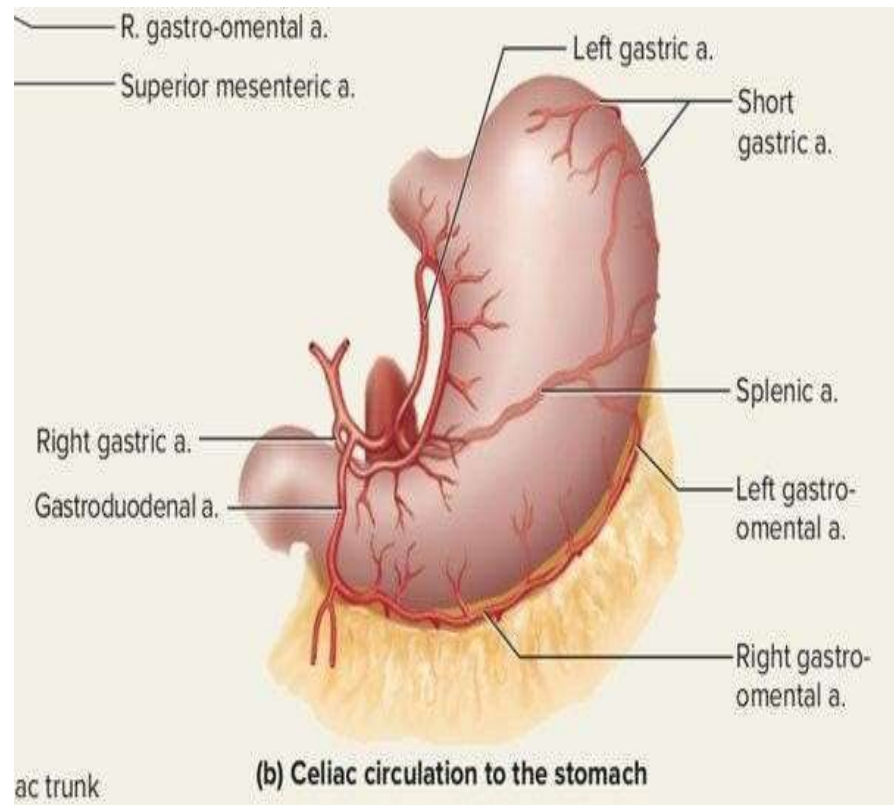
The left gastric artery It supplies the lower third of the esophagus and the upper right part of the stomach.

The right gastric artery. It supplies the lower right part of the stomach.

The short gastric arteries arise from the splenic artery to supplies the fundus.

The left gastroepiploic artery arises from the splenic artery at the hilum of the spleen to supply the stomach along the upper part of the greater curvature.

Figure.8



The stomach

The **right gastroepiploic artery** arises from the gastroduodenal branch of the hepatic artery. It passes to the left and supplies the stomach along the lower part of the greater curvature

The veins drain into the portal circulation (figure 9). The left and right gastric veins drain directly into the portal vein. The **short gastric veins** and the **left gastroepiploic veins** join the splenic vein. The **right gastroepiploic vein** joins the superior mesenteric vein.

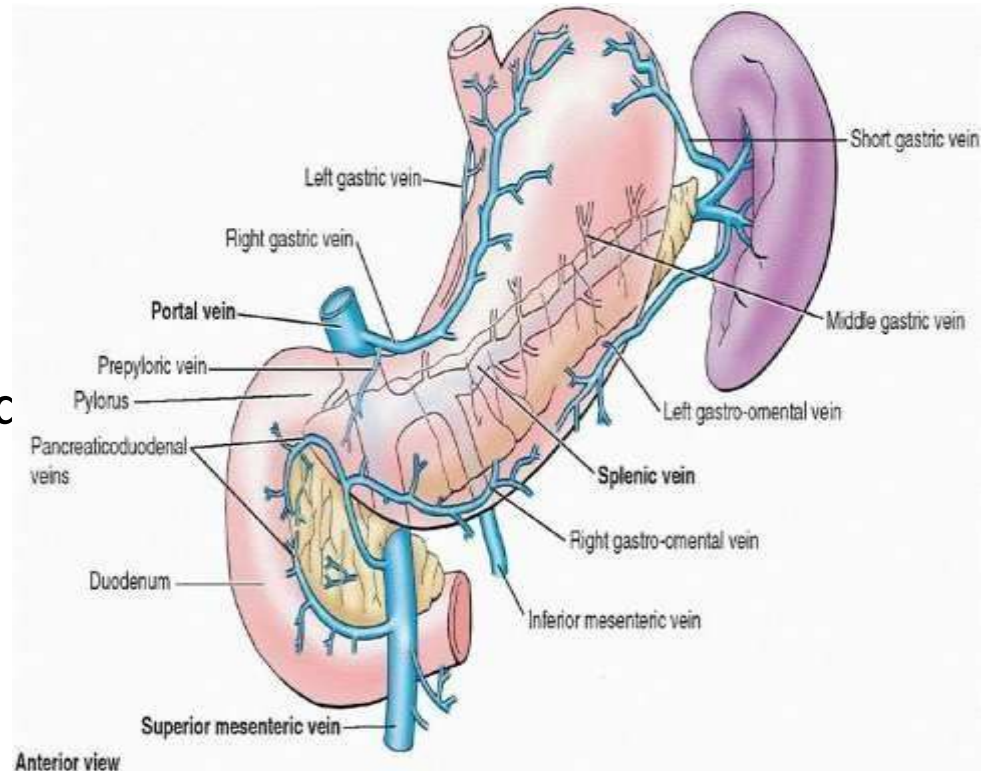


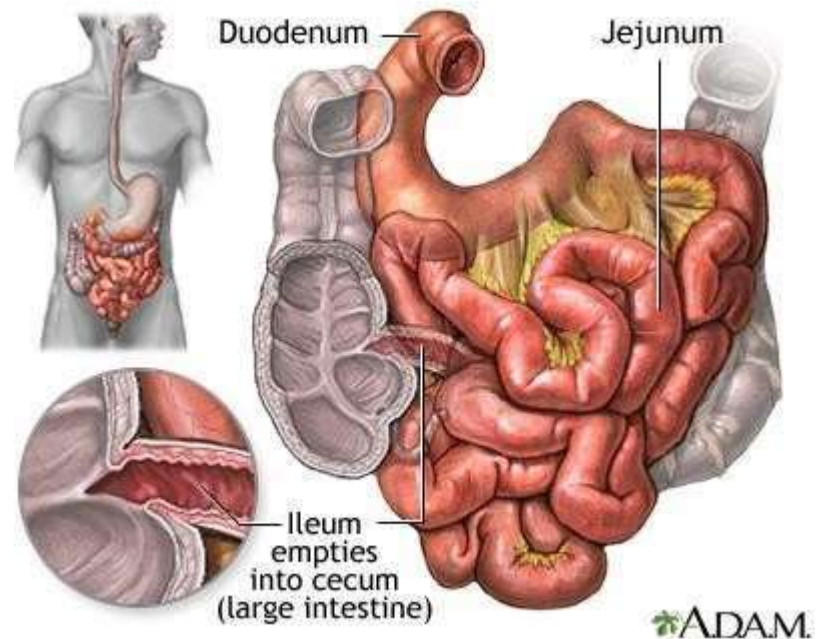
Figure.9

The small intestine

Small Intestine

The small intestine is the **longest part of the alimentary canal** and extends from the pylorus of the stomach to the ileocecal junction (**Fig. 10**). The greater part of digestion and food absorption takes place in the small intestine. It is divided into three parts: the **duodenum, the jejunum, and the ileum**

Figure 10

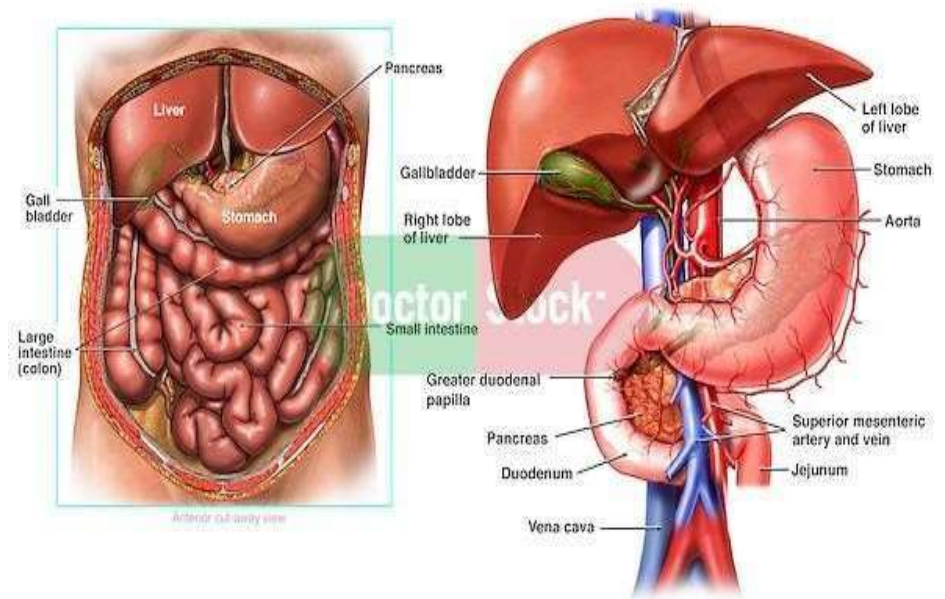


The Small Intestine

Duodenum

The duodenum is a C-shaped tube, about (25 cm) long, it joins the stomach to the jejunum. It is situated in the epigastric and umbilical regions (figure. 11) . It receives the openings of **the bile and pancreatic ducts**. The duodenum curves around the head of the pancreas.

Figure .11



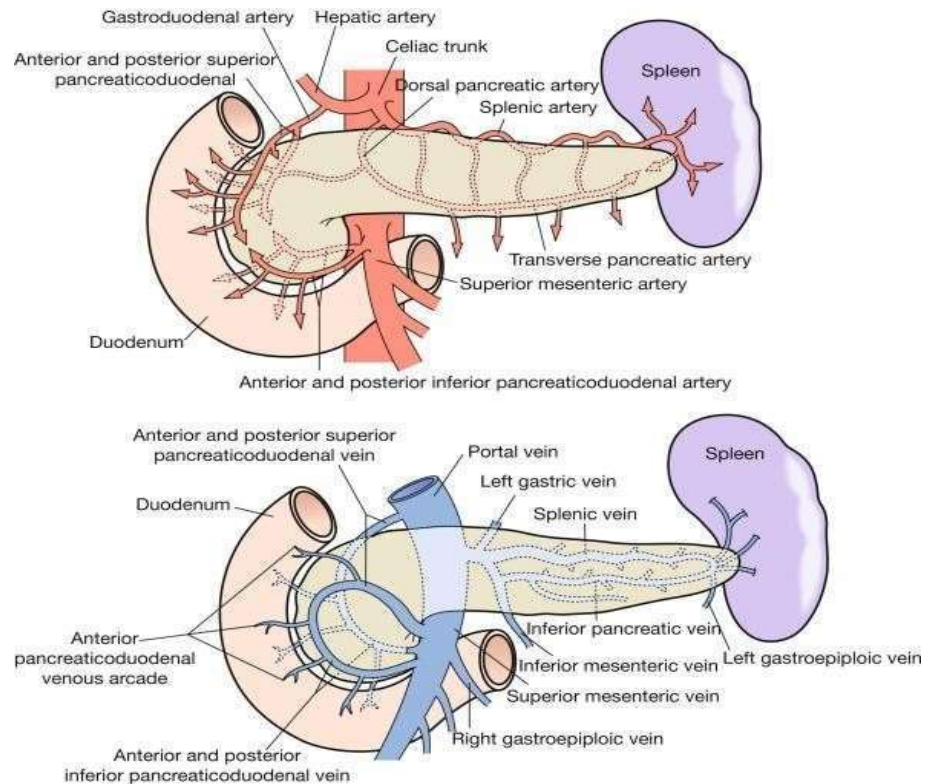
The Small Intestine

Figure.12

Blood Supply

Arteries The upper half of the duodenum is supplied by the superior pancreaticoduodenal artery, a branch of the gastroduodenal artery (Figs.12). The lower half is supplied by the inferior pancreaticoduodenal artery, a branch of the superior mesenteric artery.

Veins The superior pancreaticoduodenal vein drains into the portal vein; the inferior vein joins the superior mesenteric vein

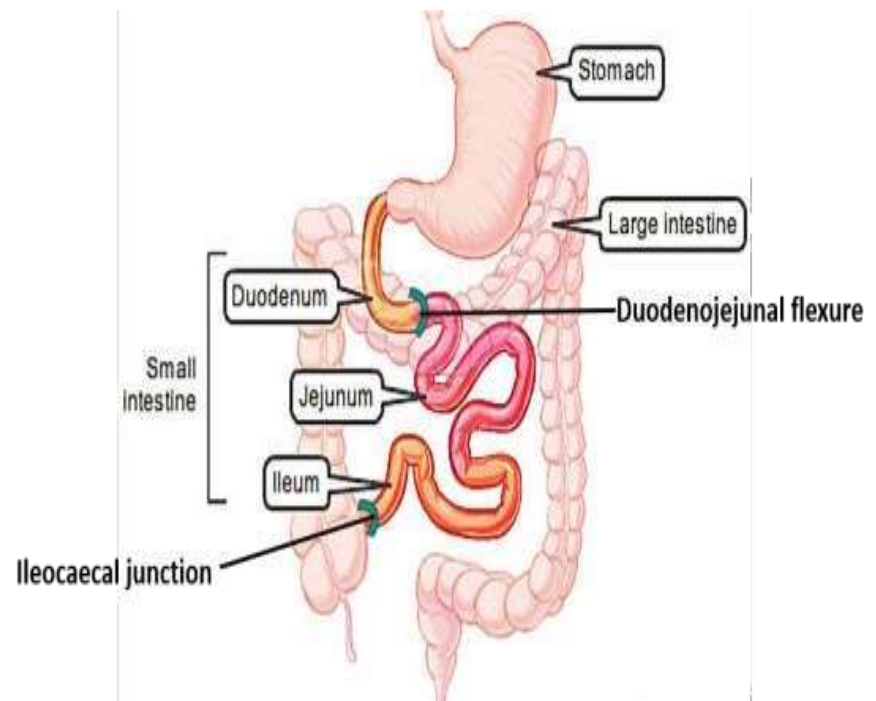


The Small Intestine

Jejunum and Ileum

The jejunum and ileum measure about (6 m) long; the upper two fifths of this length make up the jejunum. The jejunum begins at the duodenojejunal flexure, and the ileum ends at the ileocecal junction (figure. 13).

Figure. 13



The Small Intestine

The jejunum and ileum are freely mobile and are attached to the posterior abdominal wall by a fan-shaped fold of peritoneum known as the **mesentery of the small intestine (figure.14)**. Through the root of the mesentery enter and exit the branches of the superior mesenteric artery and vein.

Figure 14

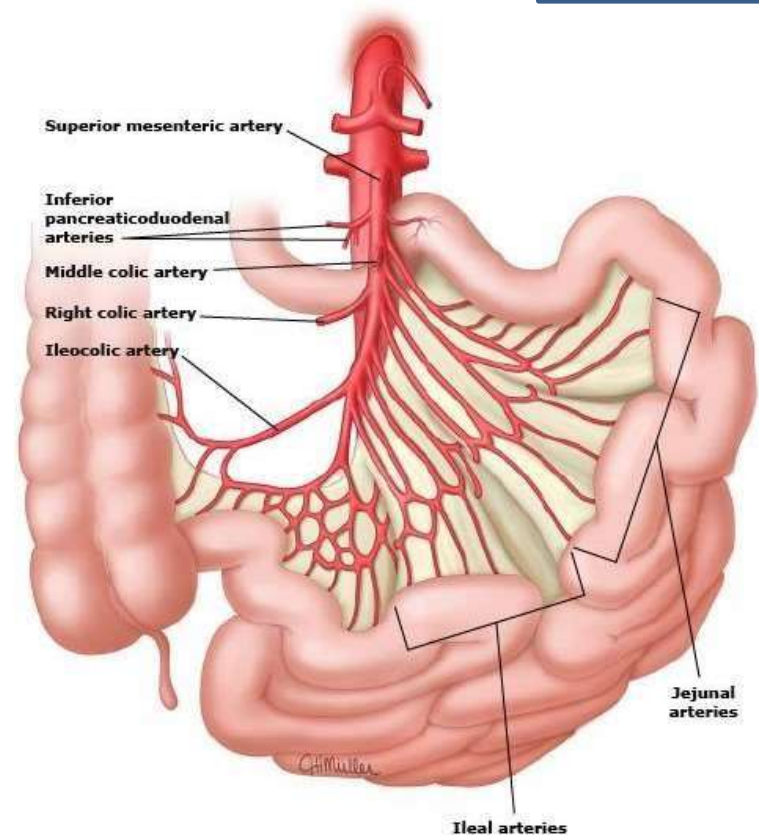


The Small Intestine

Blood Supply

Arteries The arterial supply is from branches of the **superior mesenteric artery** (Fig.15). The intestinal branches arise from the left side of the artery and run in the mesentery to reach the gut. They anastomose with one another to form a series of arcades. The lowest part of the ileum is also supplied by the ileocolic artery.

Figure.15

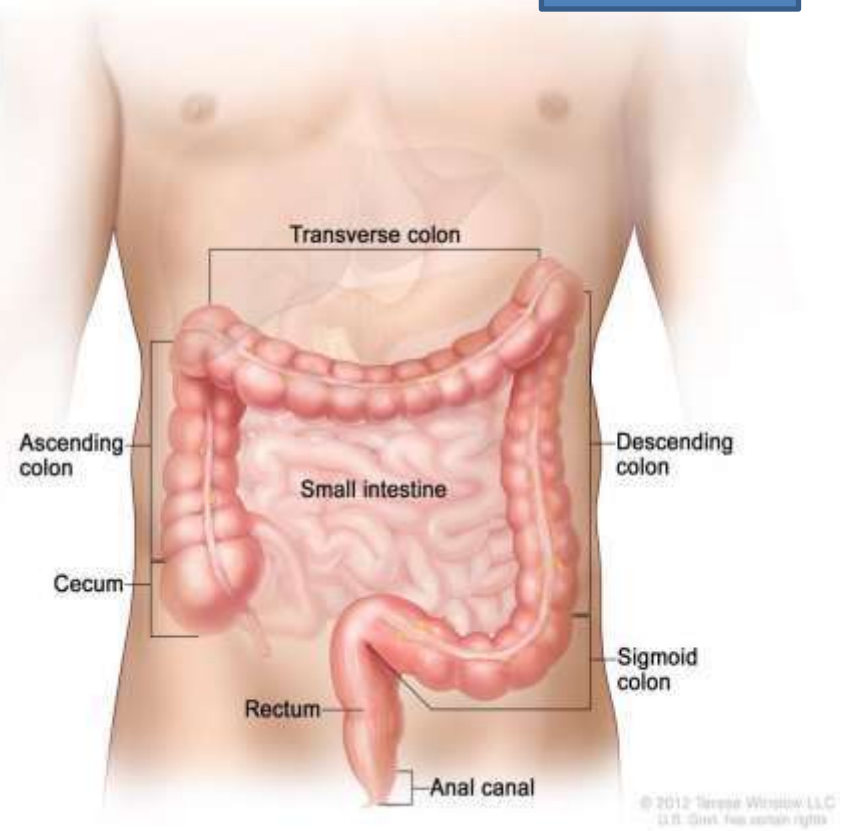


The large intestine

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 rectum, and anal canal (figure.16).

Figure. 16

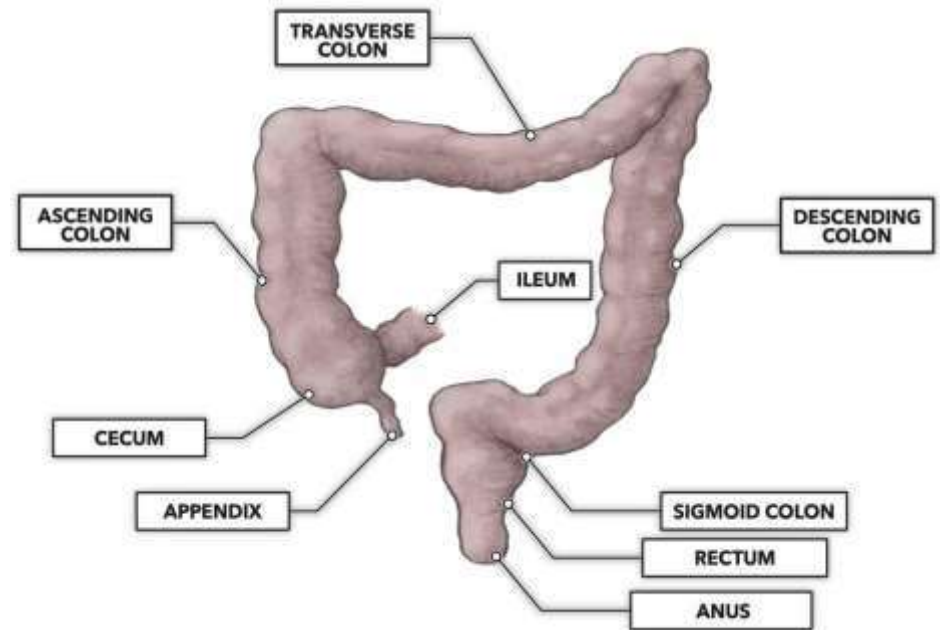


The large intestine

Cecum

The cecum is the first part of the large intestine (Figs.17). It is a blind-ended pouch that is situated in the **right iliac fossa**. The longitudinal muscle form three flat bands, the **teniae coli**, which converge on the base of the appendix . The appendix communicates with the cavity of the cecum below and behind the ileocecal opening.

Figure.17



The large intestine

Ascending Colon

The ascending colon lies in the right lower quadrant (Fig. 17). 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.

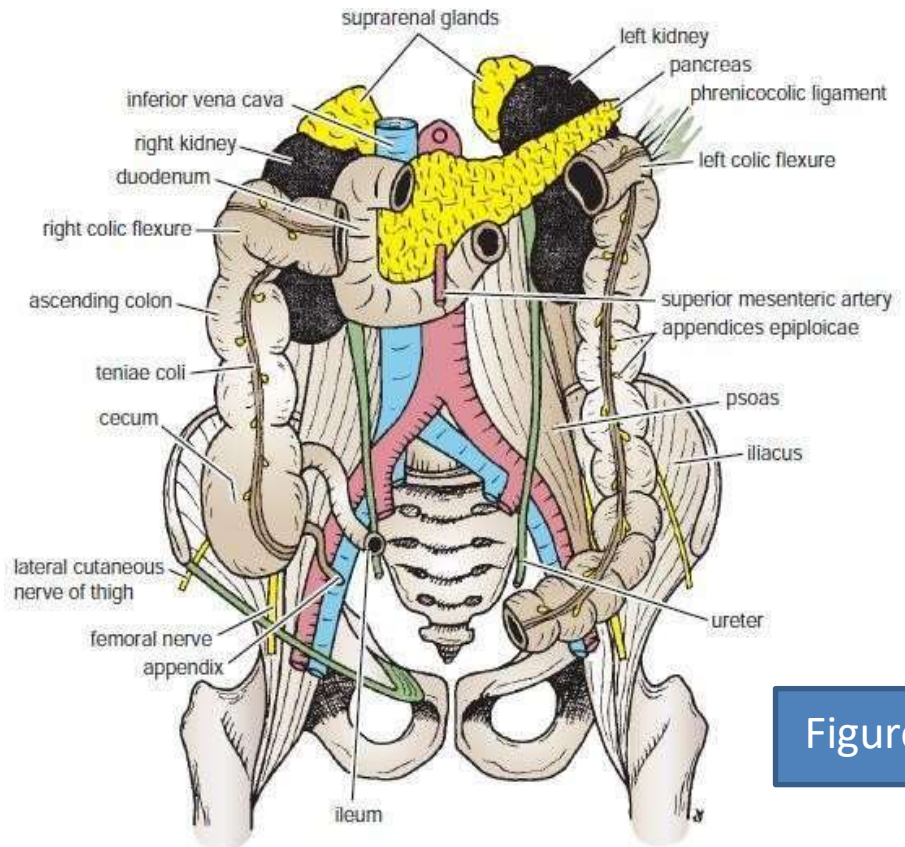
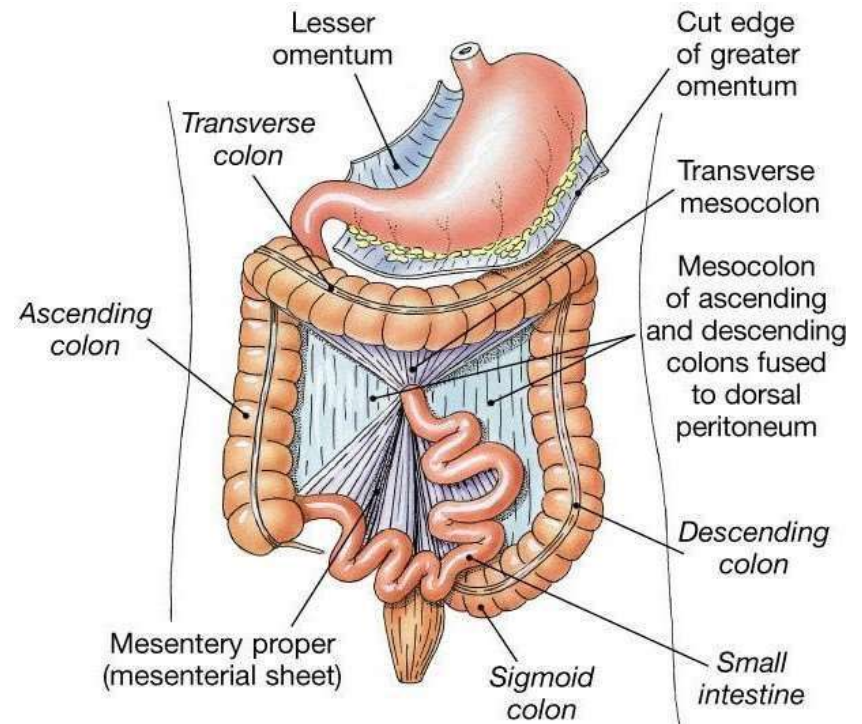


Figure.17

The large intestine

Transverse Colon

The transverse colon extends across the abdomen, occupying the umbilical region. It begins at the right colic flexure below the right lobe of the liver (Fig.18) and hangs downward, suspended by the transverse mesocolon from the pancreas (Fig. 5.6). 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**



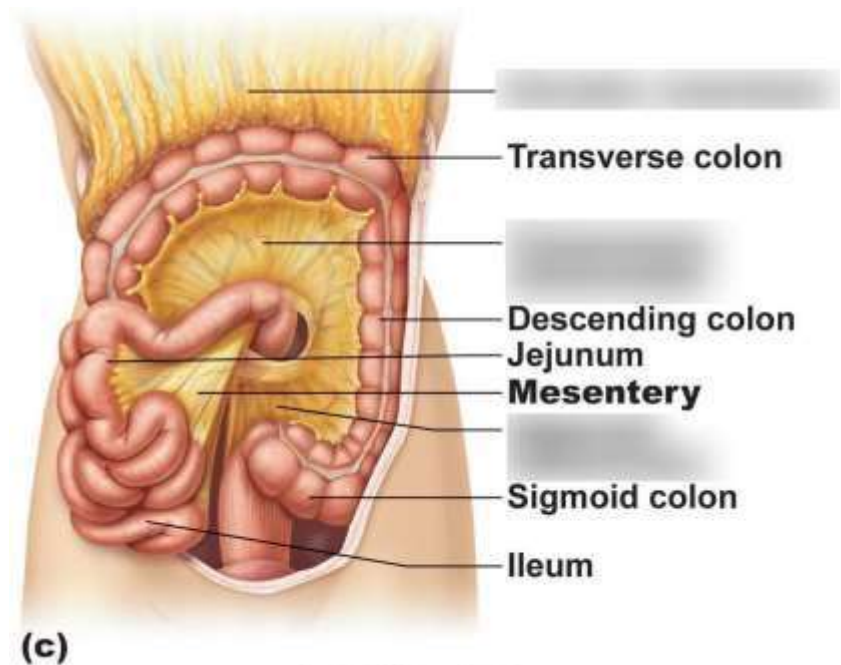
(d) Organization of mesenteries, anterior view

The large intestine

Descending Colon

The descending colon is about (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 (figure19).

Figure .19



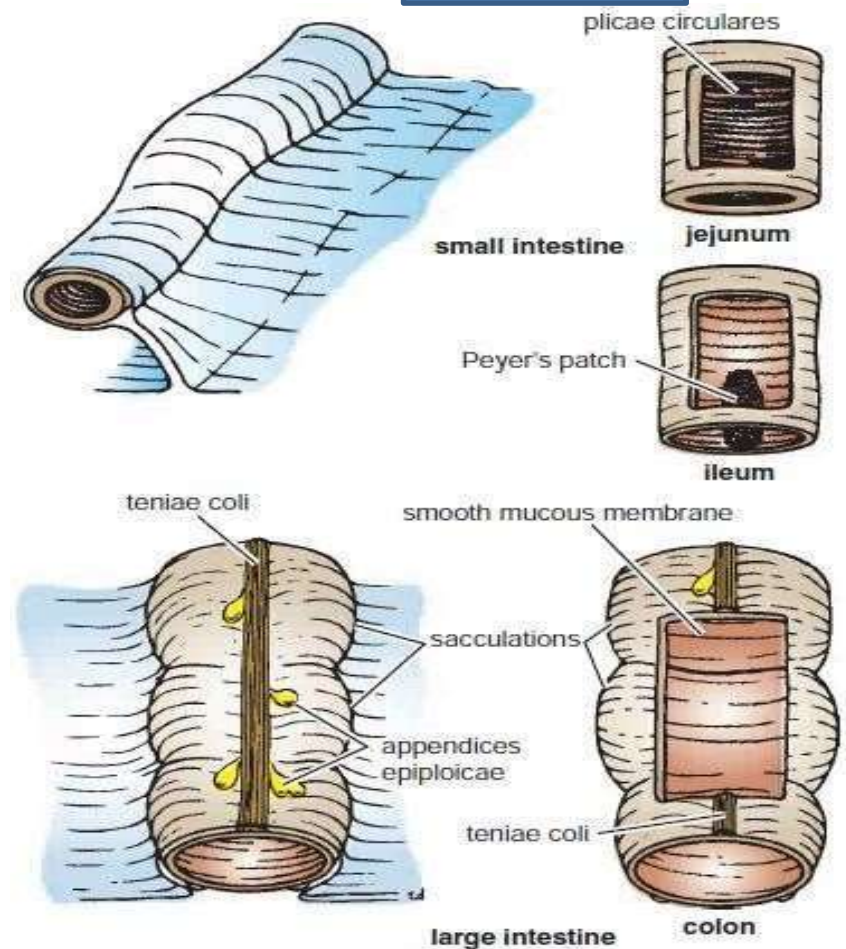
The large intestine

Differences between small and large intestine

External Differences (figure 20)

- ■ The small intestine is mobile, whereas the ascending and descending parts of the colon are fixed.
- ■ The caliber of the full small intestine is smaller than that of the filled large intestine.
- ■ The small intestine has a mesentery that passes downward across the midline into the right iliac fossa.

Figure. 20



The large intestine

- The longitudinal muscle of the small intestine forms a continuous layer around the gut. In the large intestine the longitudinal muscle is collected into three bands, the **teniae coli** (Fig.20).
- ■ The small intestine has no fatty tags attached to its wall. The large intestine has fatty tags, called the **appendices epiploicae**.
- ■ The wall of the small intestine is smooth, whereas that of the large intestine is sacculated.

