22.11A: Anatomy of the Large Intestine

The large intestine absorbs water from the remaining indigestible food matter and compacts feces prior to defecation.

Learning Objectives

• Describe the function and anatomy of the large intestine

Key Points

• The large intestine starts in the right iliac region of the pelvis, just at or below the right waist, where it is joined to the bottom end of the small intestine. It is about 4.9 feet (1.5 m) long, which is about one-fifth of the whole length of the intestinal canal.

• The appendix is attached to its inferior surface of the cecum. It contains the least lymphoid tissue, and it is a part of mucosa-associated lymphoid tissue that gives it an important role in immunity.

• On the surface of the large intestine, three bands of longitudinal muscle fibers called taeniae coli, each about 0.2 inches wide, can be identified. They start at the base of the appendix and extend from the cecum to the rectum.

Key Terms

• **appendix**: An inner organ without any known use that can become inflamed.

• **cecum**: A pouch, usually peritoneal, that is considered to be the beginning of the large intestine.

• **colon**: The part of the large intestine that is the final segment of the digestive system, after (distal to) the ileum and before (proximal to) the anus.
Function and Form of the Large Intestine

The function of the large intestine (or large bowel) is to absorb water from the remaining indigestible food matter, and then to pass the useless waste material from the body. The large intestine consists of the cecum and colon.

Large intestine: A schematic of the large intestine, with the colon marked as follows: cecum; 1) ascending colon; 2) transverse colon; 3) descending colon; 4) sigmoid colon, rectum, and anus.

It starts in the right iliac region of the pelvis, just at or below the right waist, where it is joined to the bottom end of the small intestine (cecum). From here it continues up the abdomen (ascending colon), then across the width of the abdominal cavity (transverse colon), and then it turns down (descending colon), continuing to its endpoint at the anus (sigmoid colon to rectum to anus). The large intestine is about 4.9 feet (1.5 m) long—about one-fifth of the whole length of the intestinal canal.

Differences Between Large and Small Intestine

The large intestine differs in physical form from the small intestine in several ways. The large intestine is much wider, and the longitudinal layers of the muscularis are reduced to three, strap-like structures known as the taeniae coli.

The wall of the large intestine is lined with simple columnar epithelium. Instead of having the evaginations of the small intestine (villi), the large intestine has invaginations (the intestinal glands).

While both the small intestine and the large intestine have goblet cells, they are more abundant in the large intestine.
Additional Structures

The appendix is attached to its inferior surface of the cecum. It contains the least lymphoid tissue, and it is a part of mucosa-associated lymphoid tissue, which gives it an important role in immunity.

Appendicitis is the result of a blockage that traps infectious material in the lumen. The appendix can be removed with no apparent damage or consequence to the patient.

On the surface of the large intestine, bands of longitudinal muscle fibers called taeniae coli, each about 0.2 inches wide, can be identified. There are three bands, starting at the base of the appendix and extending from the cecum to the rectum.

Along the sides of the taeniae, tags of peritoneum filled with fat, called epiploic appendages (or appendices epiploicae) are found. The sacculations, called haustra, are characteristic features of the large intestine, and distinguish it from the small intestine.