G09B: Arteries, Veins and Lymphatics of the GI System
Celiac Trunk

A

Common hepatic artery
Hepatic artery proper
Esophageal branches
Left gastric artery
Short gastric arteries
Spleen
Left gastro-omental artery
Splenic artery
Right gastro-omental artery
Superior pancreaticoduodenal arteries

Left hepatic artery
Right hepatic artery
Gastro-duodenal artery
Right gastric artery
Celiac Trunk
Celiac Trunk
Celiac Arteriogram

- Common hepatic artery
- Right gastric artery
- Right gastroepiploic artery
- Left gastric artery
- Splenic artery
- Left gastro-epiploic artery
- Gastroduodenal artery
- Catheter
- Rt and Lt hepatic arteries
- Left gastroepiploic artery
Celiac Artery
SMA and Left Renal Vein
Midgut - Overview

- **Parts:** Duodenum (distal half), jejunum, ileum, appendix, cecum, colon (2/3rds)
- **Arterial supply:** superior mesenteric artery (also celiac trunk, foregut)
  - Jejunal, ileal, middle colic, right colic, ileocolic (appendicular)
- **Venous drainage:** superior and inferior mesenteric veins to portal vein
- **Innervation:** autonomies
- **Lymphatic drainage:** organ nodes
Superior Mesenteric Artery

- Transverse colon
- Inferior pancreaticoduodenal artery
- Superior mesenteric artery
- Jejunum
- Jejunal arteries
- Vasa recta
- Anterior cecal artery
- Appendicular artery
- Posterior cecal artery
- Ileal arteries
- Ileum
- Appendix
- Right colic artery
- Middle colic artery
- Ileocolic artery
- Ascending colon
Superior Mesenteric Artery
Hindgut - Overview

- Parts: Descending colon, rectum, anus
- Arterial supply: inferior mesenteric artery (also SMA, midgut)
  - Left colic, sigmoidal, superior rectal, marginal artery (of Drummond)
- Venous drainage: inferior and superior mesenteric veins to portal vein
- Innervation: autonomies
- Lymphatic drainage: organ nodes
Inferior Mesenteric Artery

Transverse colon
Descending colon
Ascending branch of left colic artery
Descending branch of left colic artery
Left colic artery
Abdominal aorta
Duodenum
Inferior mesenteric artery
Superior rectal artery
Rectum
Sigmoid arteries
Sigmoid colon
Midgut-Hindgut Anastomoses

Arterial Supply of the Large Intestine
Arterial Supply to the Rectum

Aorta

Inferior mesenteric a.

Superior rectal a.

Rectum

Middle rectal a.

Inferior rectal a.

Arterial supply to the rectum; anterior view

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A patient presents with diffuse abdomen pain that localizes a few hours later around the umbilicus. The patient's pain is referred from an inflamed organ.
Portal Venous System
Portal-Caval Anastomoses
Portal-Caval Anastomoses

• No valves
• Flow can be in any direction, depending solely on the pressure gradient
Portal Hypertension

- High blood pressure in the portal vein and its branches.
- Results from liver disease (cirrhosis, schistosomiasis etc...)
Portal Hypertension
Distal splenorenal shunt (DSRS)

- Surgical procedure that connects the splenic vein and left renal vein.
Portal Hypertension

Distal splenorenal shunt (DSRS)

• Surgical procedure that connects the splenic vein and left renal vein.
Lymphatic System

- Lymph is a filtrate of plasma
- Lymph returns interstitial protein and water to the circulation
- In the GI system lymph also returns fat to the circulation
- Lymph may also serve as transport for cancer cells (metastasis)
Lymphatic Drainage - A Rule

- Lymph is drained to lymph nodes that surround each organ.
- Typically, this means that an organ’s lymph nodes are congregated along the arterial supply to that organ.
- Typically, the next set of lymph nodes is located at the origin of the artery to an organ (i.e., aorta).
Lymphatic Drainage of the Gut
Fig. 10-22.—Lymphatics of stomach. (Jamieson and Dobson.)
• Postnodal lymph drains to the thoracic duct (via the cisterna chyli)
Lymphatic Drainage of the Rectum

- Upper part
  - Inferior mesenteric lymph nodes
  - Path of the superior rectal a
- Middle part
  - Internal iliac lymph nodes
  - Path of the middle rectal a
- Lower part
  - Inguinal lymph nodes
  - Path of the inferior rectal a
Arterial Supply to the Rectum

- Aorta
- Inferior mesenteric a.
- Superior rectal a.
- Middle rectal a.
- Inferior rectal a.
- Rectum
- Anus

Arterial supply to the rectum; anterior view

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