The Abdomen

Muscles of the Abdominal Wall

- Rectus abdominis
- External oblique
- Internal oblique
- Transversus abdominis

The Descending Aorta

Abdominal Aorta & Branches

Unpaired arteries:
- Celiac trunk - liver, stomach, spleen; Branches - left gastric, splenic, & common hepatic arteries.
- Superior mesenteric - pancreas, small intestine, most of large intestine.
- Inferior mesenteric - terminal colon & rectum
Abdominal Aorta & Branches (cont’d)

Paired arteries:
- Inferior phrenic
- Suprarenal
- Renal
- Gonadal
- Lumbar

Mesenteries
- *Fused double sheets of peritoneal membrane; provides routes for blood vessels, lymphatics, and nerves.*
- *Organ reinforcement, prevent entanglement*
- *Lesser/greater omentum, mesocolon (transverse, sigmoid)*
- *Retroperitoneal (pancreas, large intestine); intraperitoneal (stomach)*

The Esophagus
- *Hollow, muscular tube*: 25 cm. long, 2 cm diameter
- *C6 to T7*
- *Angiology*: esophageal, thyrocervical trunk, external carotids, bronchials, celiac trunk & inferior phrenic artery
- *Innervation*: Vagus & esophageal plexus
The Esophagus (cont’d)

- Mucosal stratified epithelium
- Esophageal glands
- Superior 1/3 has skeletal muscles fibers, middle third has skeletal/smooth mixture; bottom third has smooth; visceral reflexes
- No serosa

The Stomach

- Stomach functions in: storage of ingested food, mechanical breakdown, and chemical digestion (chyme formation).
- T7-L3
- 15-25 cm long; empty (50ml), full (up to 4L).
- Rugae
- Cardia, body, fundus, lesser/greater curvatures
- Pylorus, sphincter.

The Stomach (cont’d)

- **Angiology:** left gastric (lesser curve & cardia), splenic (fundus & greater curve), common hepatic (lesser/greater curves of pylorus)
- **Innervation:** Thoracic splanchnic nerves (sympathetic fibers) from celiac plexus; parasympathetics supplied from vagus nerve
- **Musculature:** circular, longitudinal
The Small Intestine

- Body’s major digestive organ
- 6m long, 4cm-2.5 cm diameter
- Accounts for 90% of nutrient absorption
- **Plicae circulares**
- **Three subdivisions**: duodenum, jejunum, ileum

Small Intestine (cont’d)

- Duodenum is retroperitoneal; (L1-L4)
- Hepatopancreatic ampulla and sphincter, major duodenal papilla.
- Jejunum; 2.5m long
- Ileum (peritoneal); 3.6m long; ends at valve

Large Intestine

- Frames small intestine on three sides and extends from ileocecal valve to anus
- 1.5m long
- **Functions**: (1) resorption of water/electrolytes; compaction of feces; (2) vitamin absorption (bacterial flora)
Large Intestine (cont’d)

- Cecum, vermiform appendix
- Colon: haustra, taenia coli, epiploic appendages
- Colon regions: Ascending > hepatic flexure > transverse > splenic flexure > descending > sigmoid flexure > sigmoid
- Rectum: Anal canal/ columns, internal/external anal sphincter, anal orifice.

The Liver

- Largest visceral organ
- Functions: metabolic/hematological regulation, bile production.
- Falciform ligament, ligamentum teres, lobes (right, left, caudate, quadrate), porta hepatis
- Angiology: hepatic artery proper, portal vein

Gall Bladder

- Stores/modifies bile
- Fundus, body, neck
- Cystic duct
The Pancreas

- Exo/endocrine gland
- Head, body, tail
- Retroperitoneal
- Pancreatic/accessory pancreatic duct
- Exocrine product—pancreatic juice
- Islets of Langerhans

Veins Draining the Abdomen

- Lumbar
- Gonadal
- Hepatic
- Renal
- Suprarenal
- Phrenic

Hepatic Portal System

Tributaries

- Inferior mesenteric
- Splenic
- Superior Mesenteric
  * Hepatic portal vein formed by fusion of superior mesenteric and splenic
Posterior abdominal wall

- Kidneys
- Ureter
- Urinary bladder
- Urethra

Kidney Anatomy

Location & External Anatomy

- Retroperitoneal
- T12-L3
- 12cm long, 6cm wide, 3cm thick
- Convex lateral surface, concave medial surface (renal hilus)
- Renal capsule, adipose capsule
- Renal fascia
Kidney Anatomy

Internal Anatomy

• Renal Cortex
• Renal Medulla
• Medullary pyramids
• Renal columns
• Renal pelvis
• Major/minor calyces

Renal histology

• Minor/major calyces, renal pelvis, ureters, urinary bladder, proximal urethra comprised of transitional epithelium

Ureters

• Mucosa
• Longitudinal (inner)
• Circular (outer)
• Adventitia
Kidney Angiology
- Renal artery > segmental > interlobar > arcuate > interlobular > afferent arterioles > glomerulus > efferent arterioles > peritubular capillaries > vasa recta > venules > interlobular veins > arcuate veins > interlobar veins > renal vein

The Adrenal Glands
- Paired
- Cortex
- Medulla
- 3 zones

Abdominal innervation
- Splanchnic nerves (greater, lesser, least)
- Lumbar splanchnic
- Sacral splanchnic