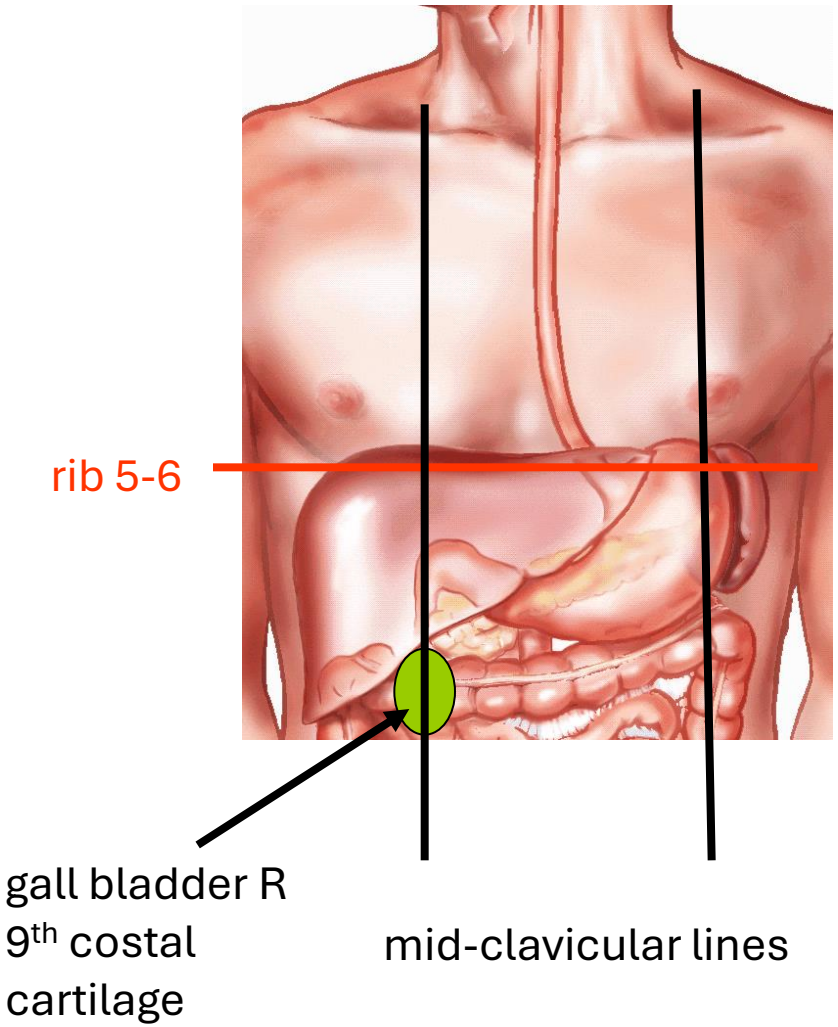
Abdomen I

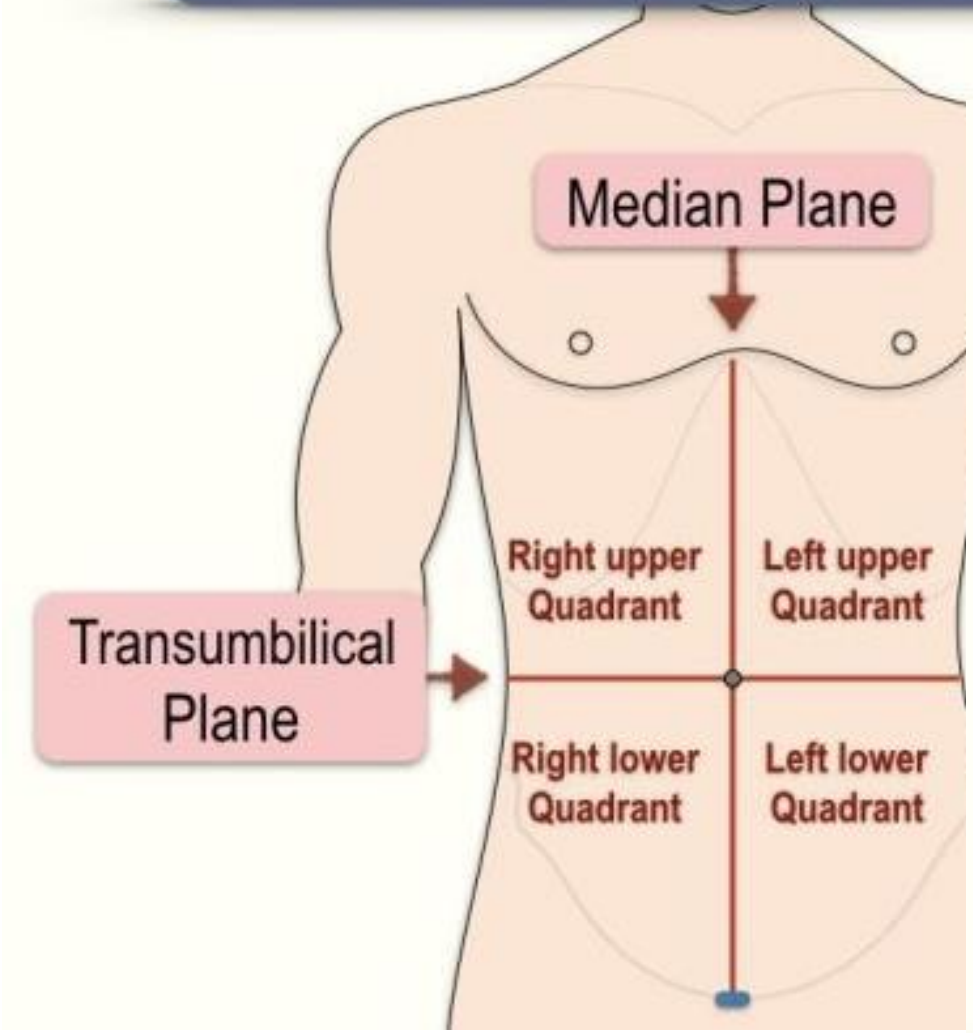
Dr AMAL ALBTOOSH

Surface anatomy



- Most of the **anterior surface** covered by ribs, costal cartilages
- **Superior surface** covered by diaphragm

Abdominal Quadrants

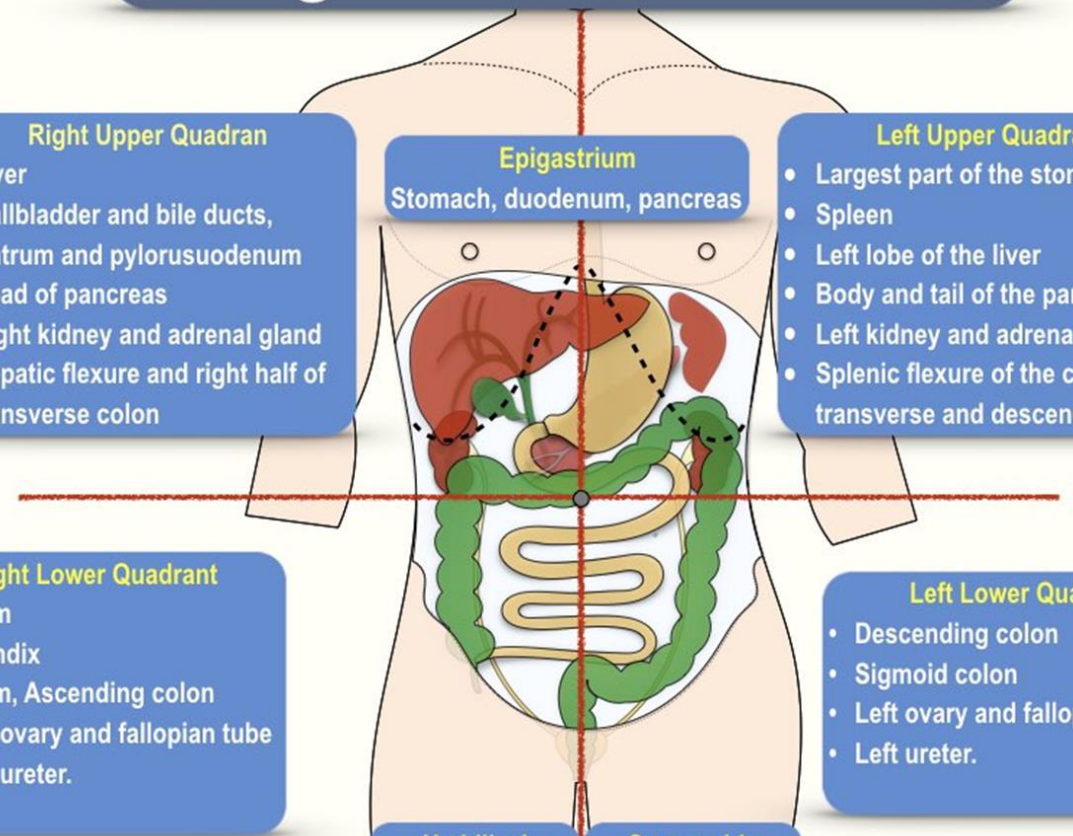


Organs in Quadrants

Right Upper Quadran
- Liver
- Gallbladder and bile ducts,
- Antrum and pylorusuodenum
- Head of pancreas
- Right kidney and adrenal gland
- Hepatic flexure and right half of transverse colon

Epigastrium
Stomach, duodenum, pancreas

Left Upper Quadrant
- Largest part of the stomach
- Spleen
- Left lobe of the liver
- Body and tail of the pancreas
- Left kidney and adrenal gland
- Splenic flexure of the colon, transverse and descending colon



Right Lower Quadrant
- Cecum
- Appendix
- Cecum, Ascending colon
- Right ovary and fallopian tube
- Right ureter.

Left Lower Quadrant
- Descending colon
- Sigmoid colon
- Left ovary and fallopian tube
- Left ureter.

Umbilical
- Aorta
- Pancreas
- Small intestine

Suprapubic
- Urinary bladder
- Uterus

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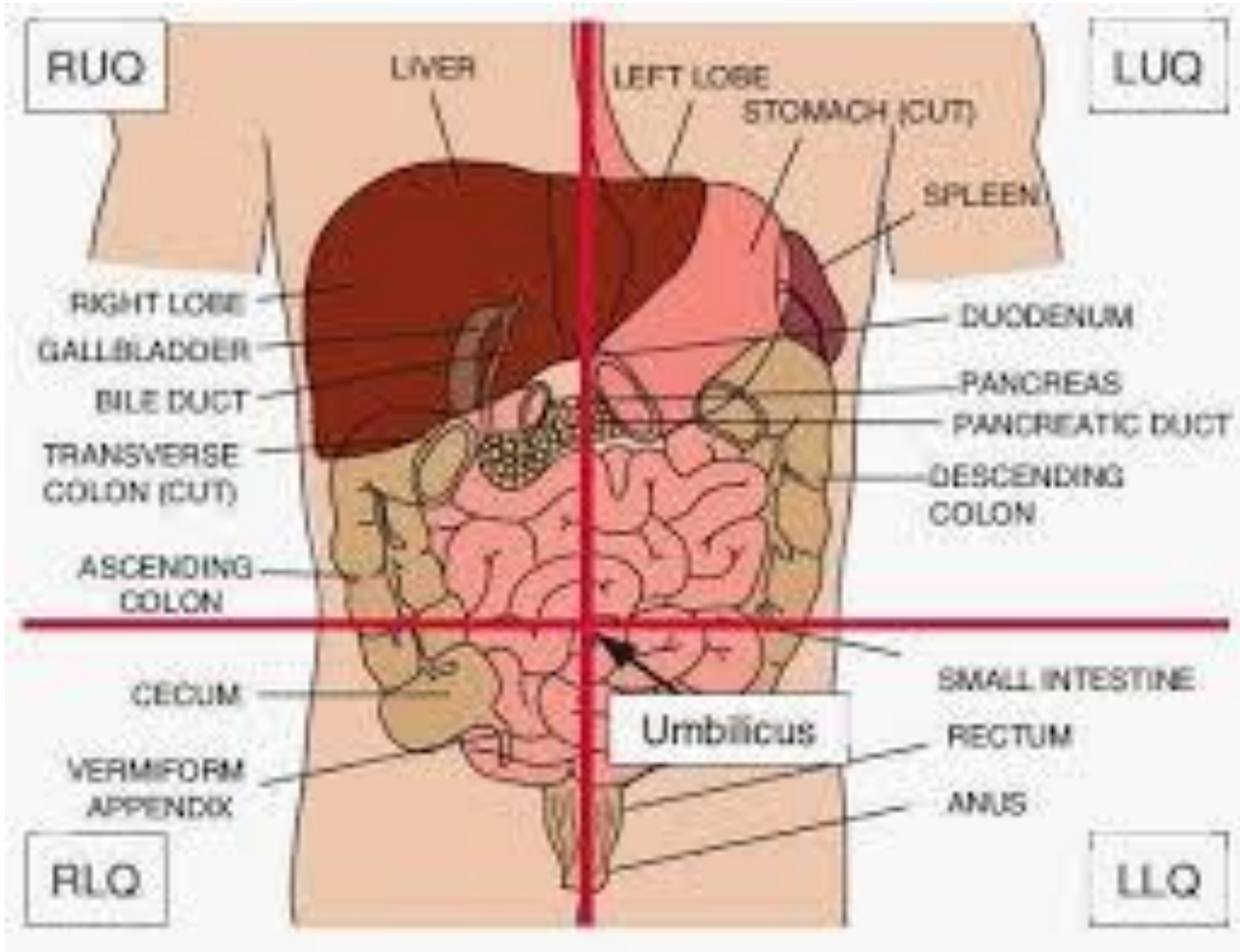
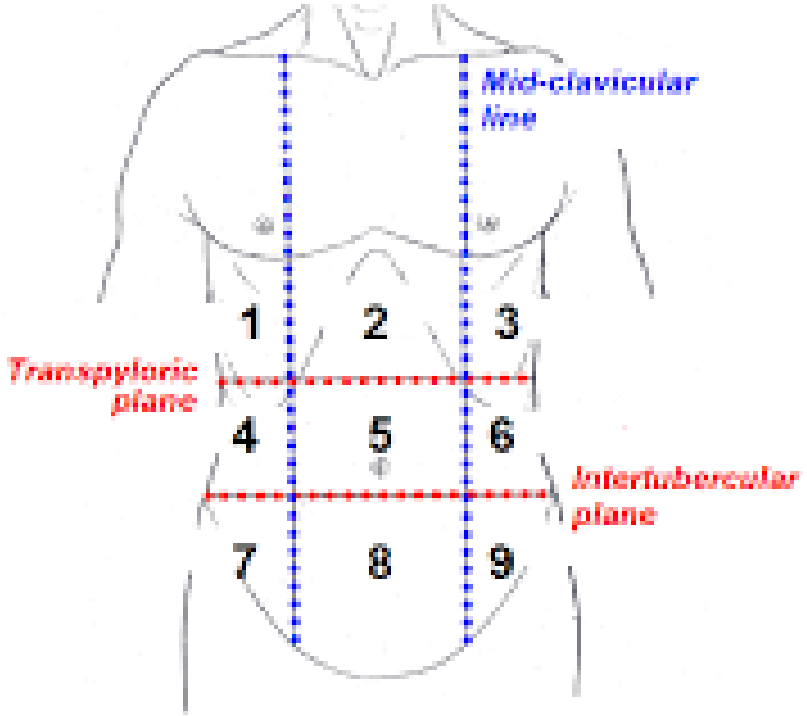
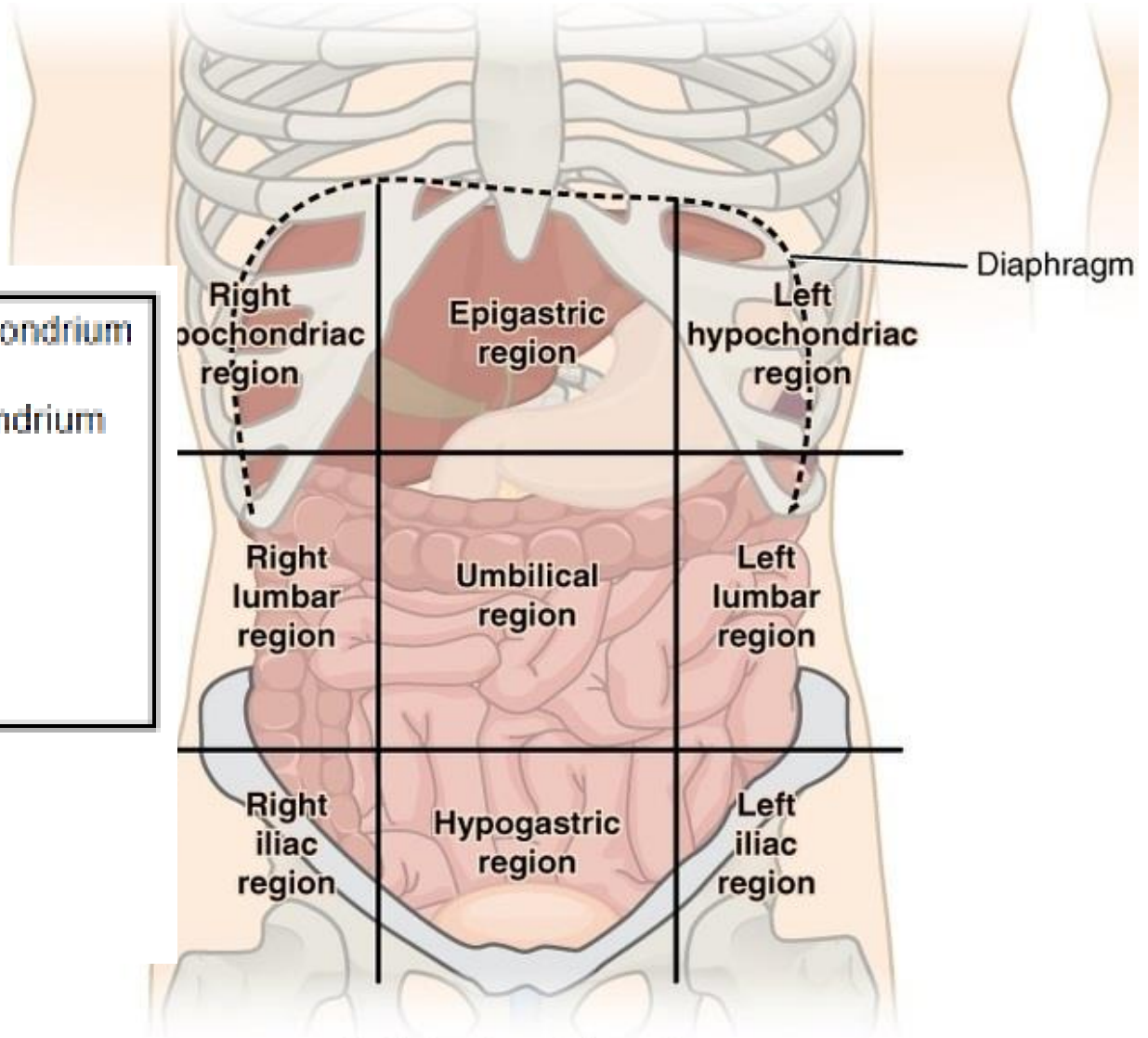

RUQ
LUQ
LIVER
LEFT LOBE
STOMACH (CUT)
SPLEEN
RIGHT LOBE
GALLBLADDER
BILE DUCT
TRANSVERSE COLON (CUT)
DUODENUM
PANCREAS
PANCREATIC DUCT
DESCENDING COLON
ASCENDING COLON
SMALL INTESTINE
CECUM
Umbilicus
RECTUM
VERMIFORM APPENDIX
ANUS
RLQ
LLQ



1 - Right hypochondrium
2 - Epigastrium
3 - Left hypochondrium
4 - Right flank
5 - Umbilical
6 - Left flank
7 - Right groin
8 - Pubic
9 - Left groin

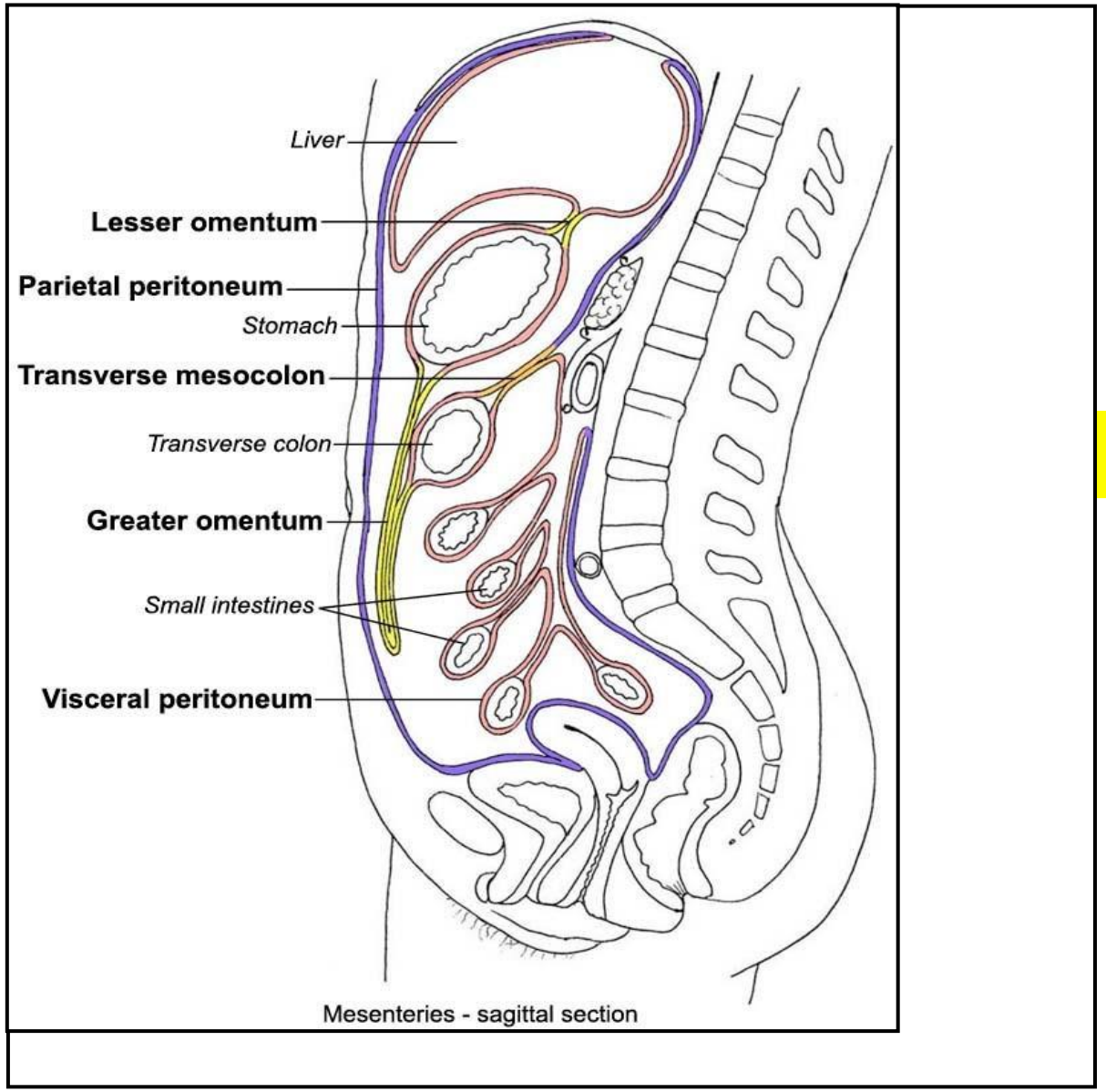


(a) Abdominopelvic regions

Peritoneal Membrane

- **The peritoneal membrane is the smooth, transparent membrane that lines the abdominal cavity and contains the internal organs of the abdomen and pelvis, such as the stomach and large intes**
- **Reflections**
  - **Omentum (apron or drape)**
  - **Mesentery**
  - **“Ligaments”**
- **Extent of organ covering**
  - **Intraperitoneal**
  - **Retroperitoneal**

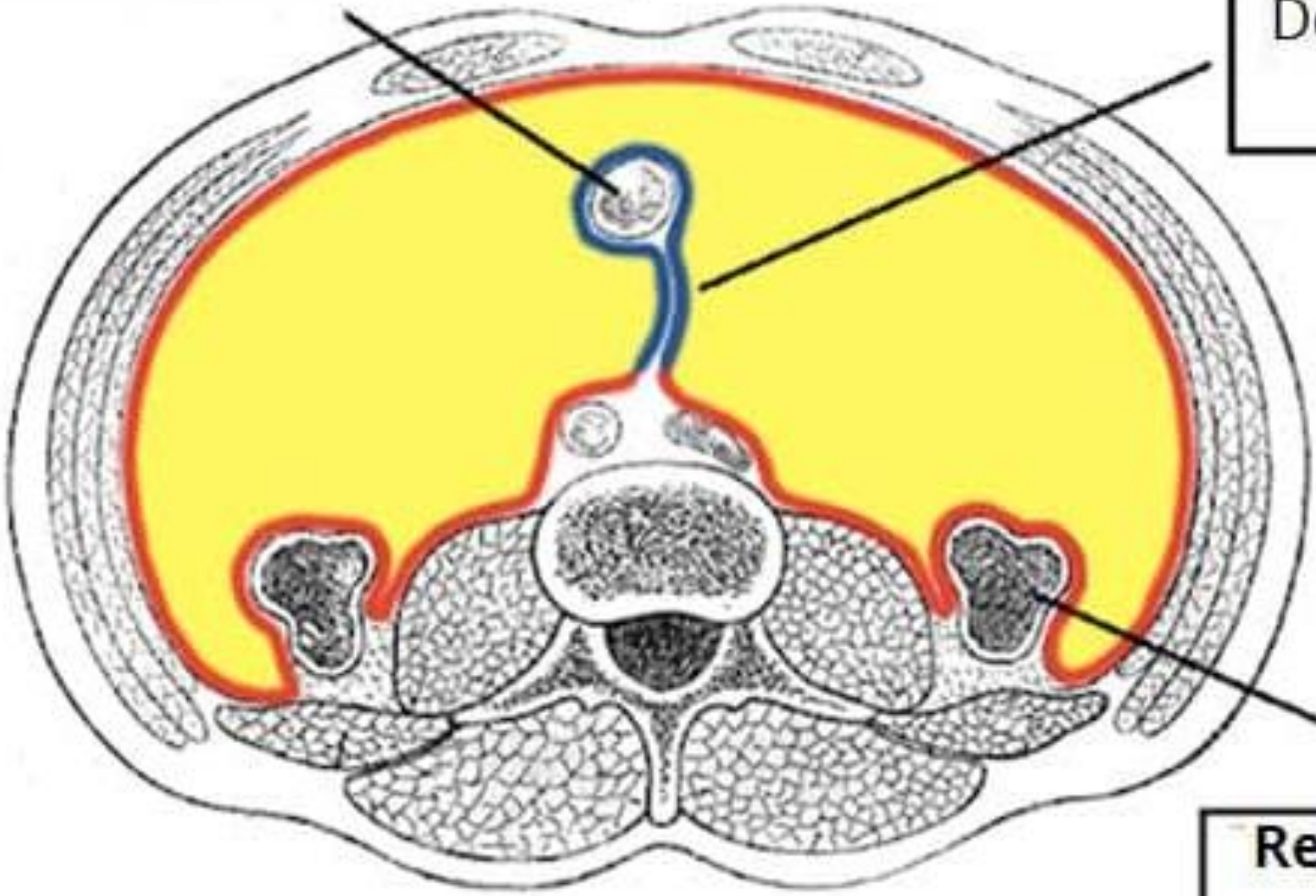
Intraperitoneal



Retroperitoneal

Intraperitoneal Organ
Jejunum

Mesentary
Double layer of visceral peritoneum

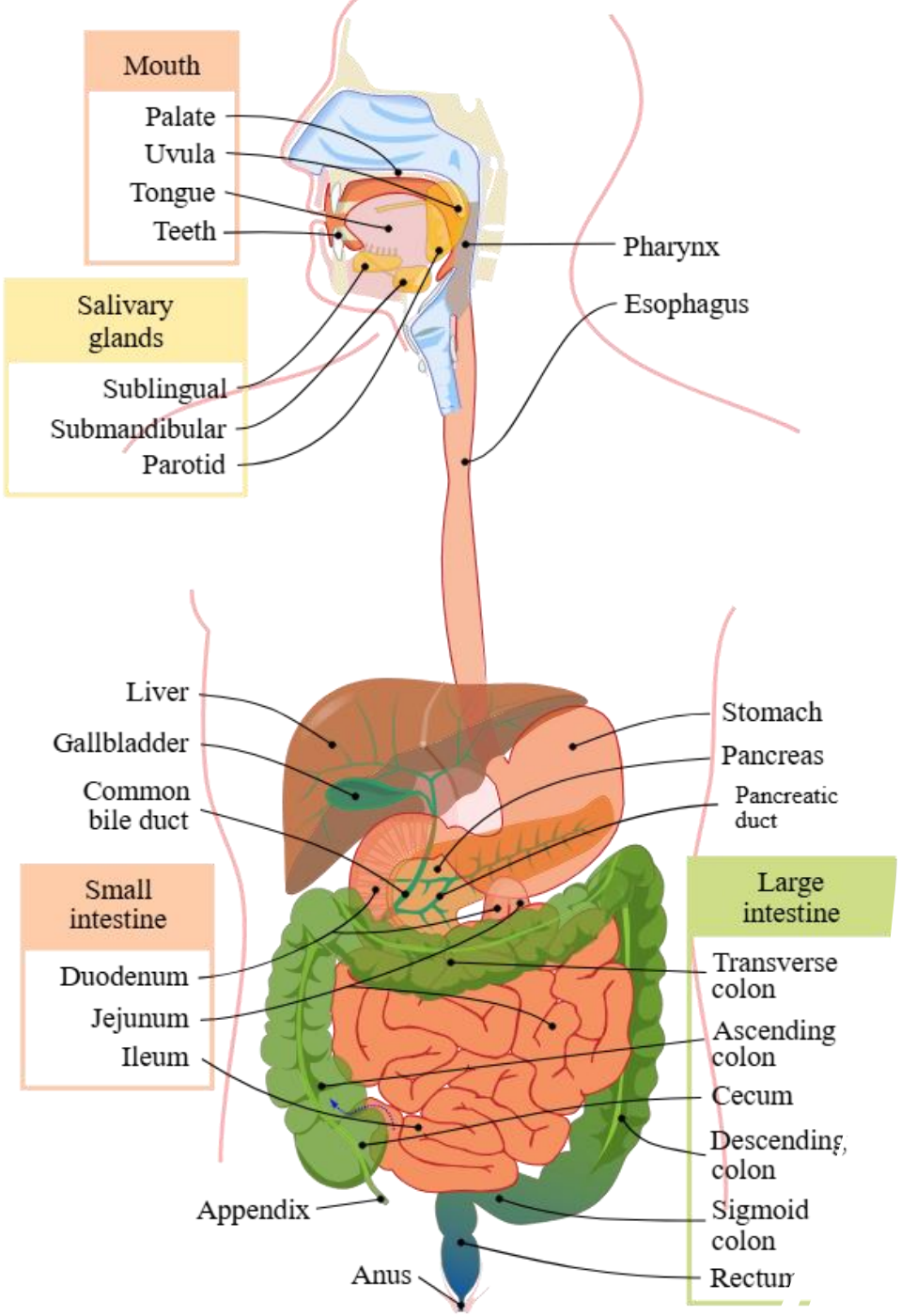


Retroperitoneal Organ
Ascending colon

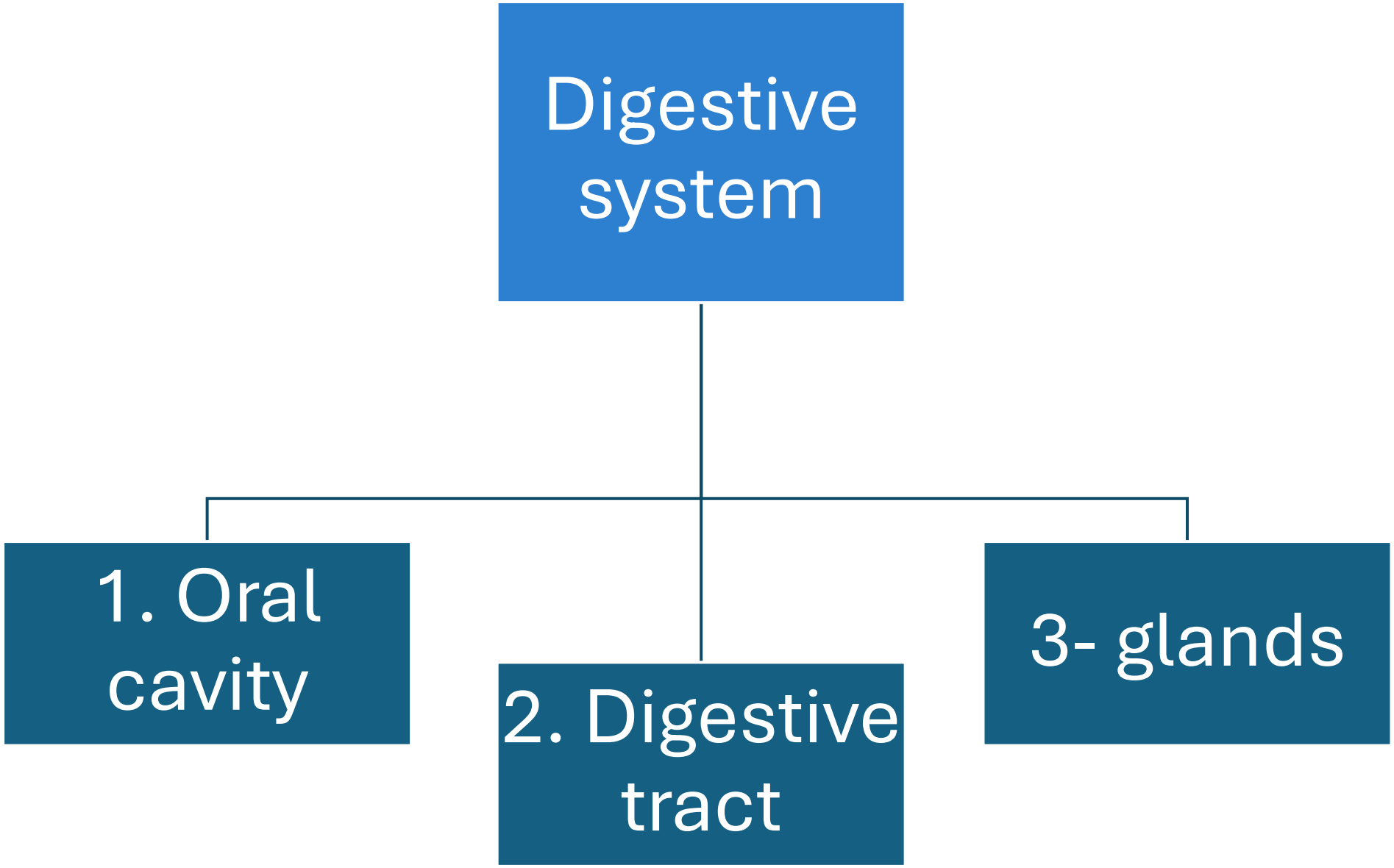
Retroperitoneal Organs

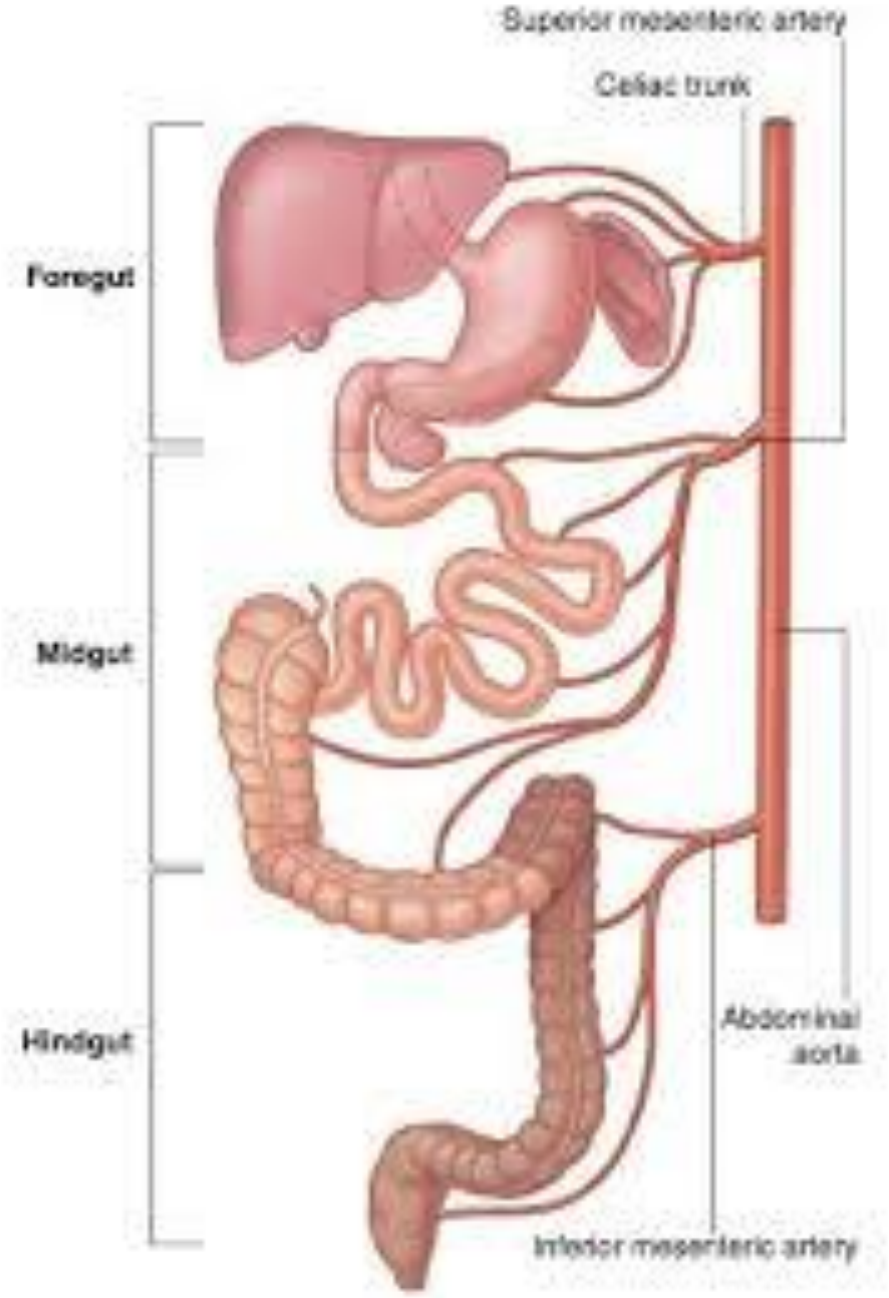
Mnemonic : SAD PUCKER

* **S** Suprarenal gland
* **A** Aorta and IVC
* **D** Duodenum (half)
* **P** Pancreas
* **U** Ureters
* **C** Colon (asc & desc)
* **K** Kidneys
* **E** Esophagus
* **R** Rectum



Gastrointestinal (GI) System
- Overview -

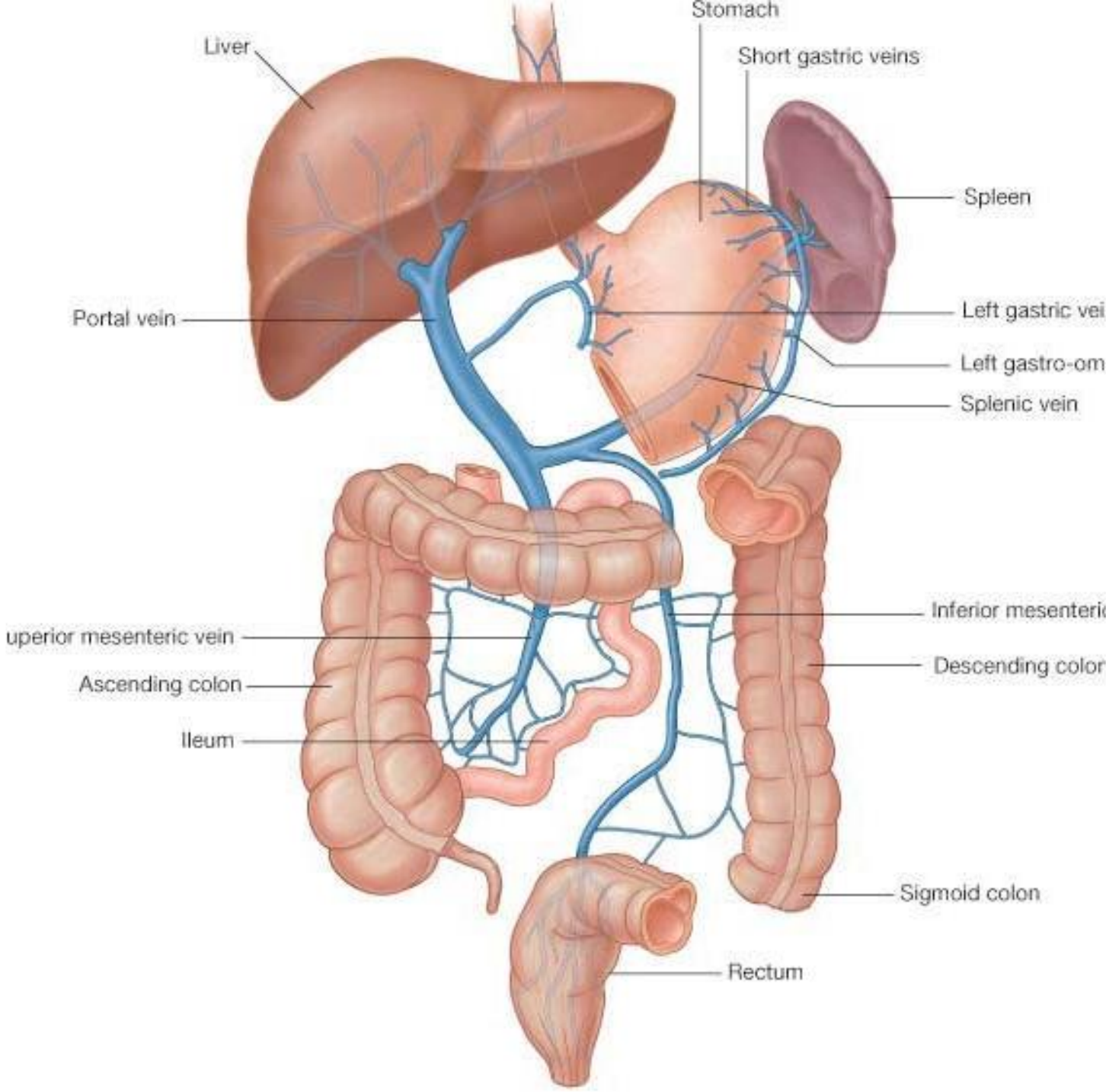

Digestive system
1. Oral cavity
2. Digestive tract
3- glands

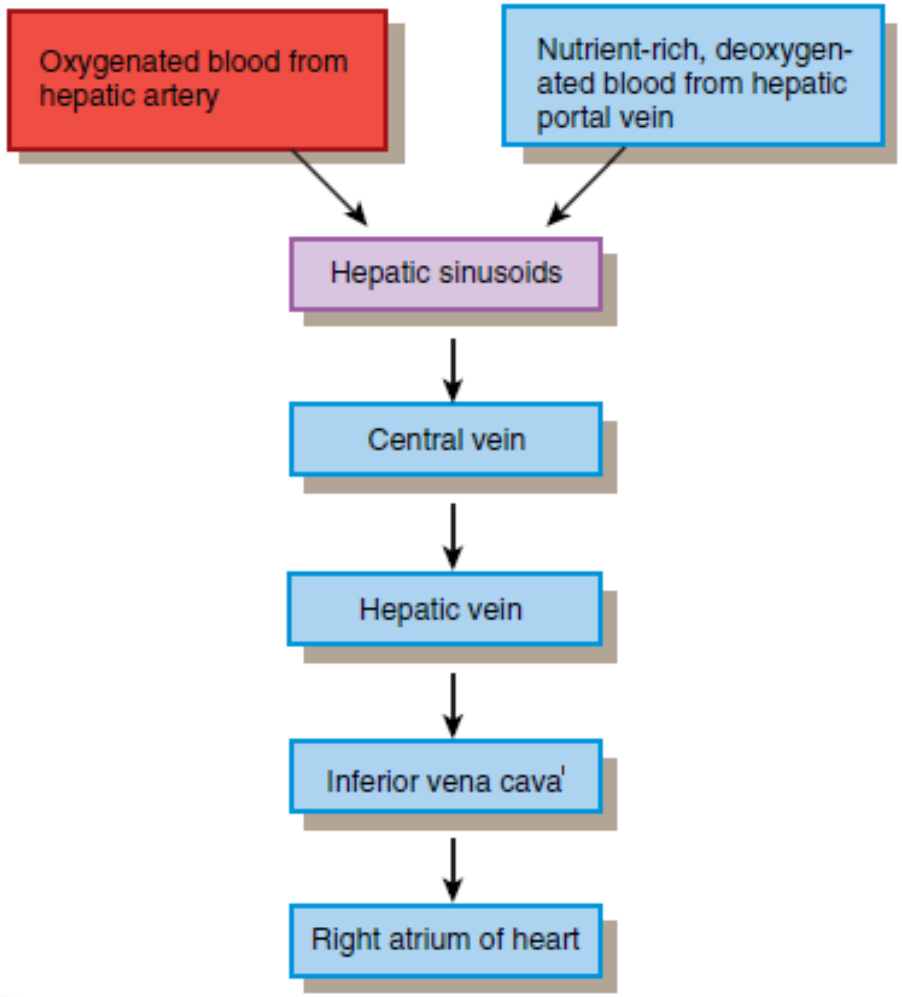


Foregut, Midgut, Hindgut

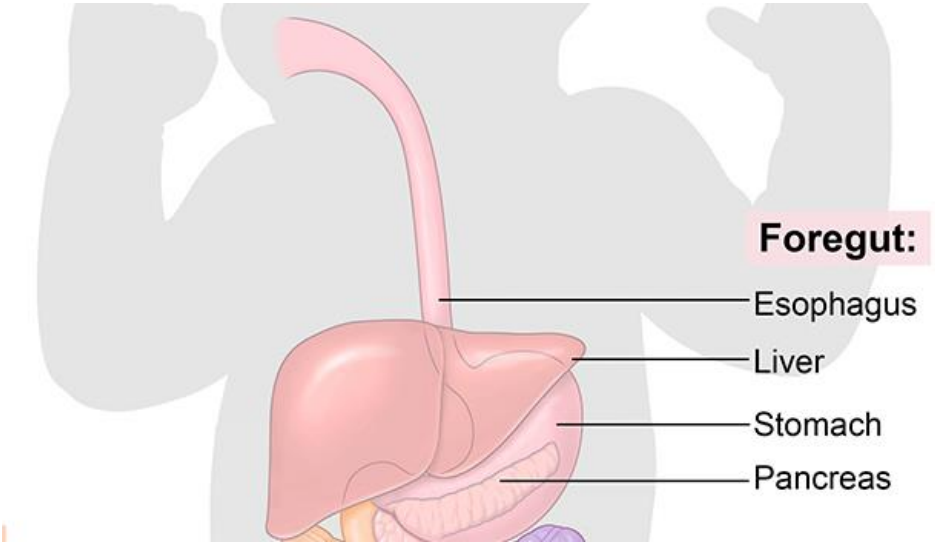
Distinction is based on <u>embryologic arterial supply</u>

Foregut, Midgut, Hindgut Unique venous drainage




Oxygenated blood from hepatic artery
Nutrient-rich, deoxygen-ated blood from hepatic portal vein
Hepatic sinusoids
Central vein
Hepatic vein
Inferior vena cava
Right atrium of heart

Foregut - Overview



Parts: Stomach, duodenum (half), liver, gall bladder, pancreas, spleen

Arterial supply: celiac artery (trunk)

- 3 branches:
  - ✓ Splenic
  - ✓ left gastric
  - ✓ common hepatic

Venous drainage:

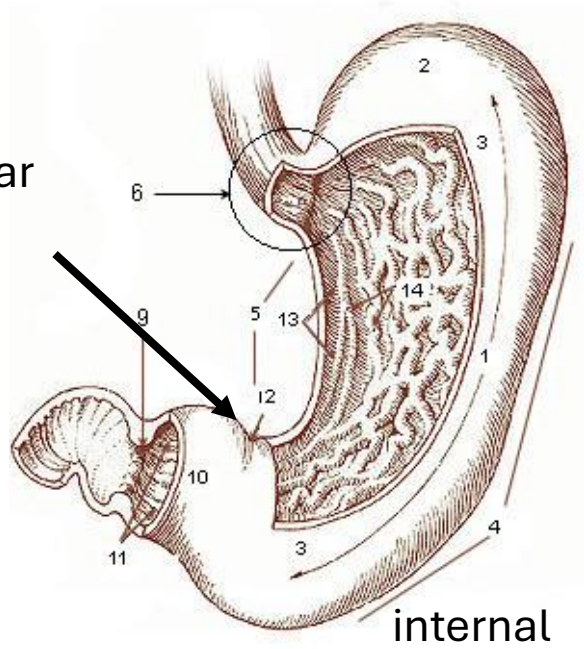
gastric and splenic veins to portal vein

Innervation: autonomics

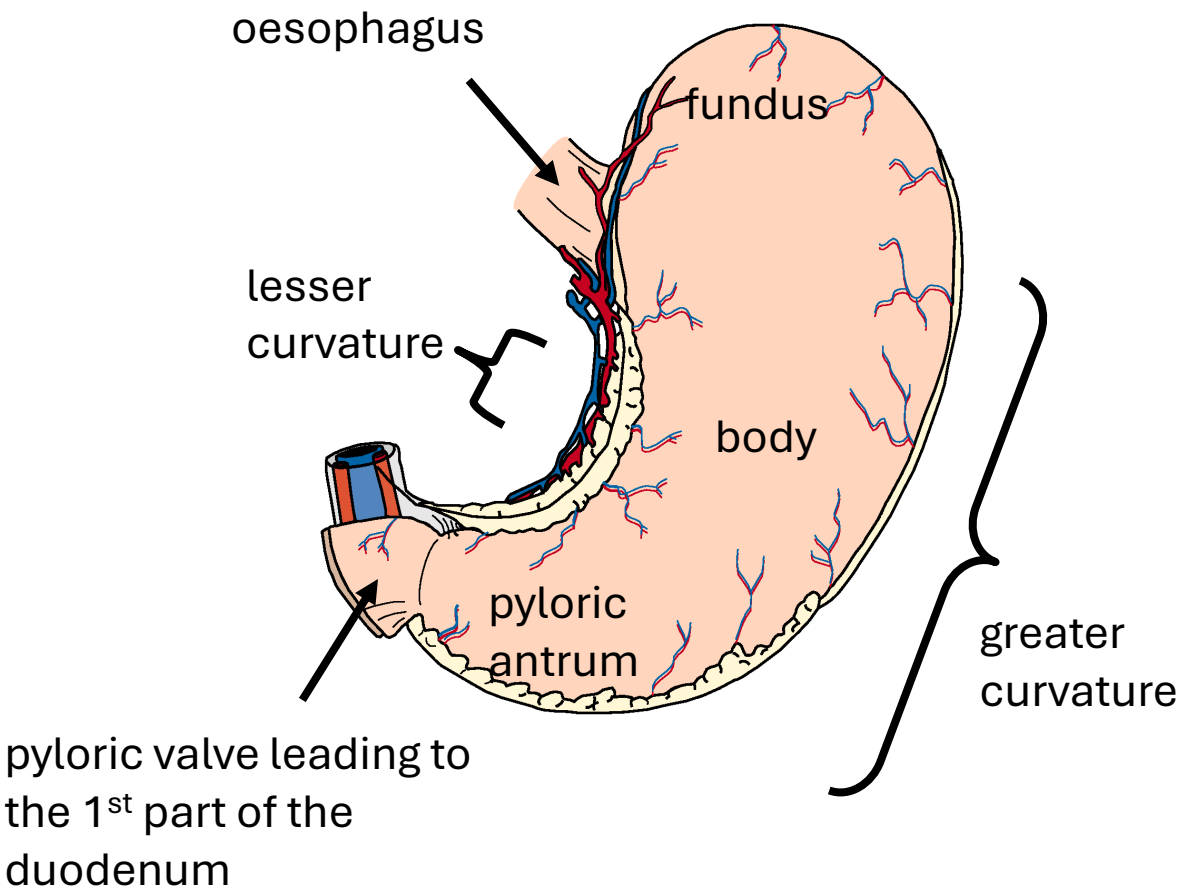
Lymphatic drainage: organ nodes

Stomach

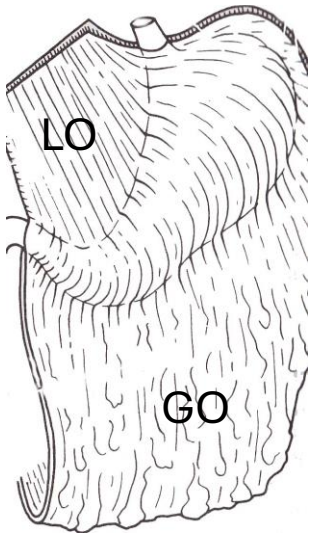
- Smooth muscular bag from external view
- When empty inner surface highly folded = rugae

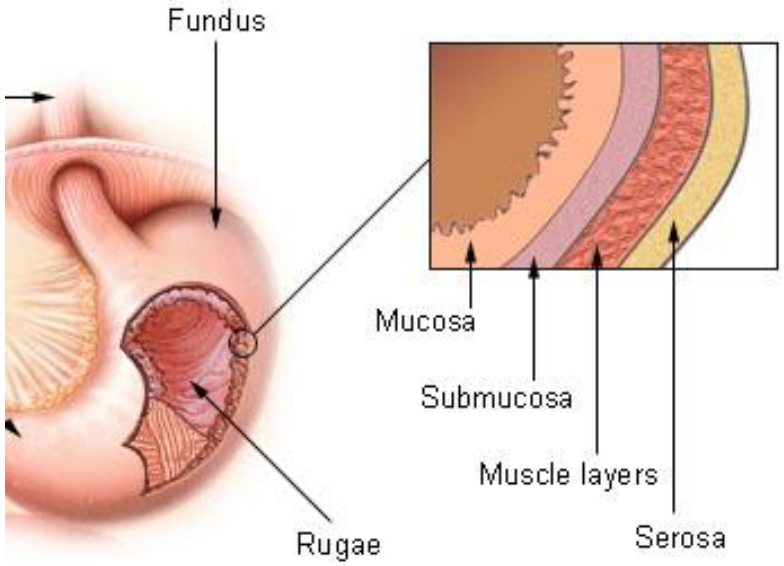


Stomach morphology



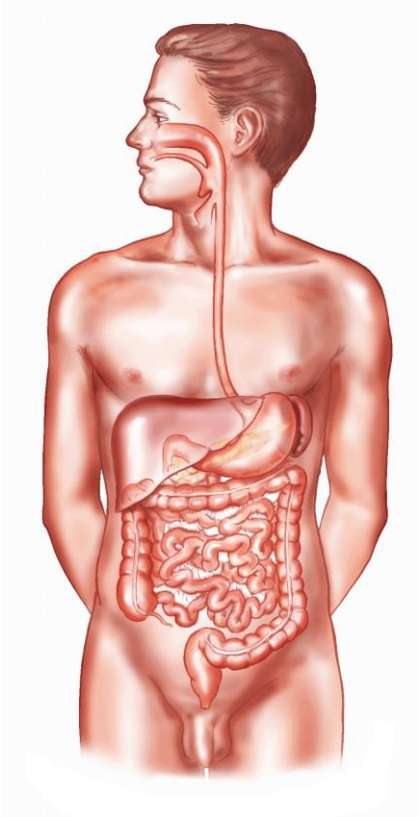
Stomach morphology

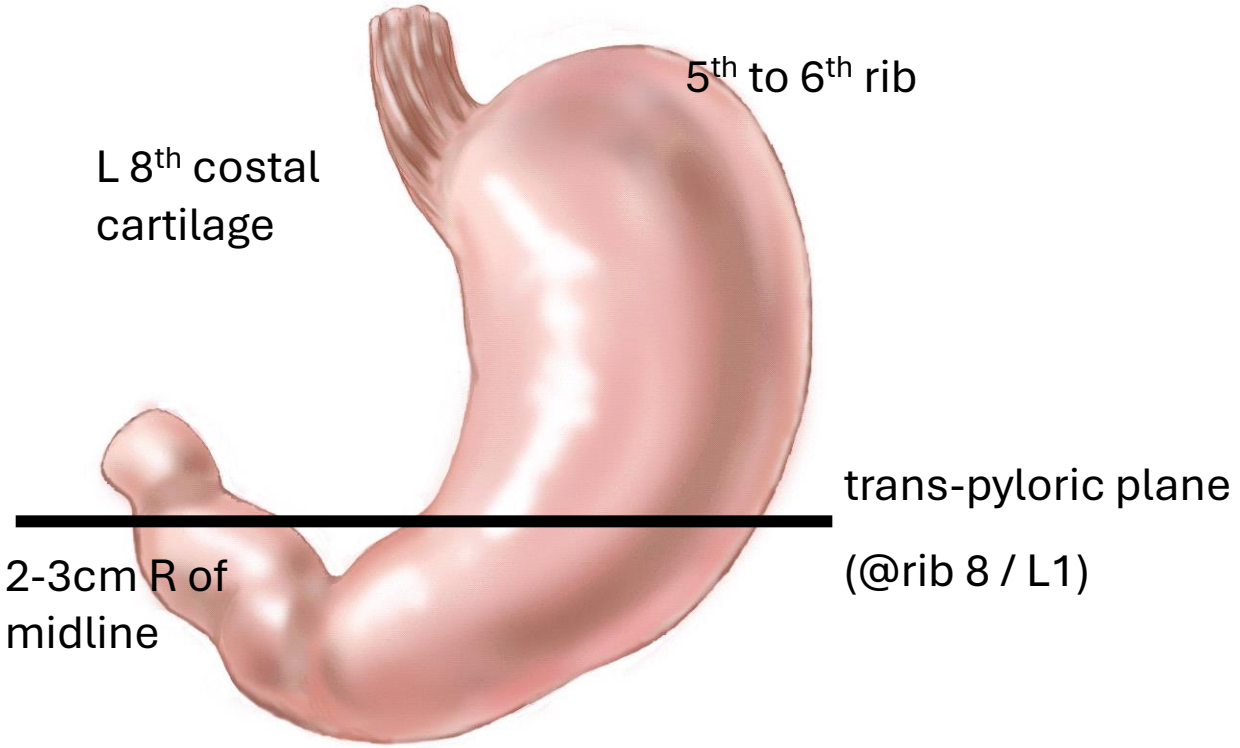




- Intra-peritoneal
- Lesser omentum from lesser curvature
- Greater omentum from greater curvature
- Layers (outer to inner) = serosa, muscularis externa (outer longitudinal, middle circular, inner oblique), submucosa, mucosa

Stomach – surface anatomy

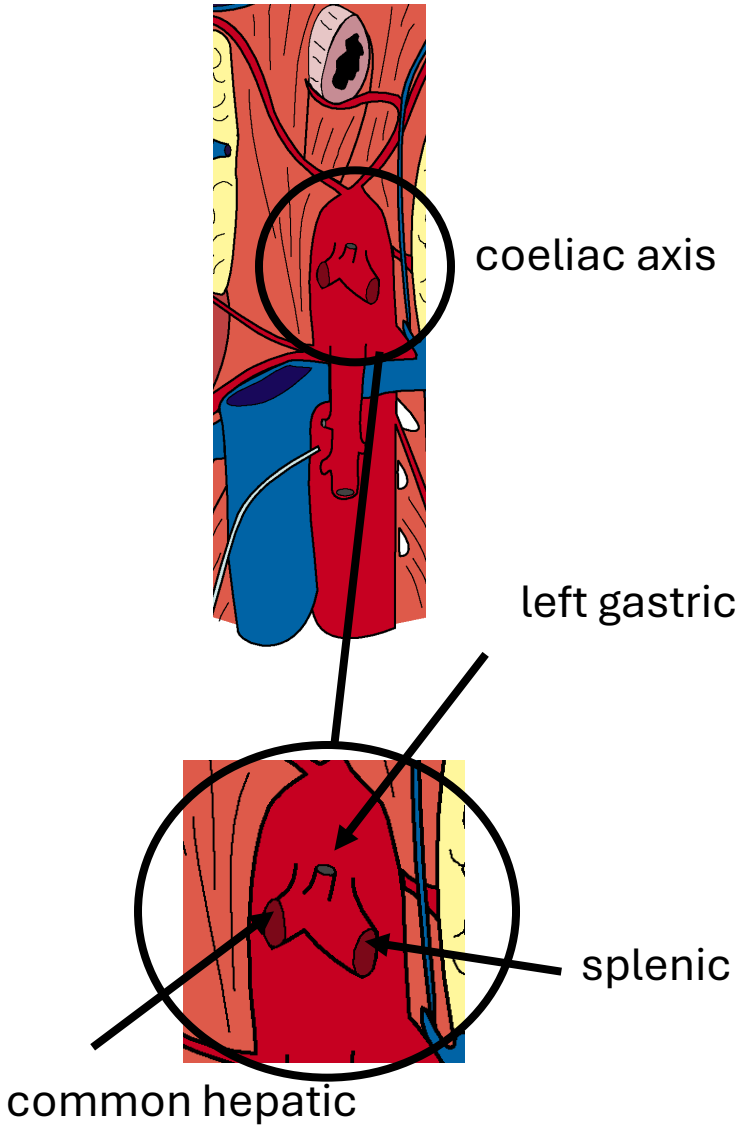


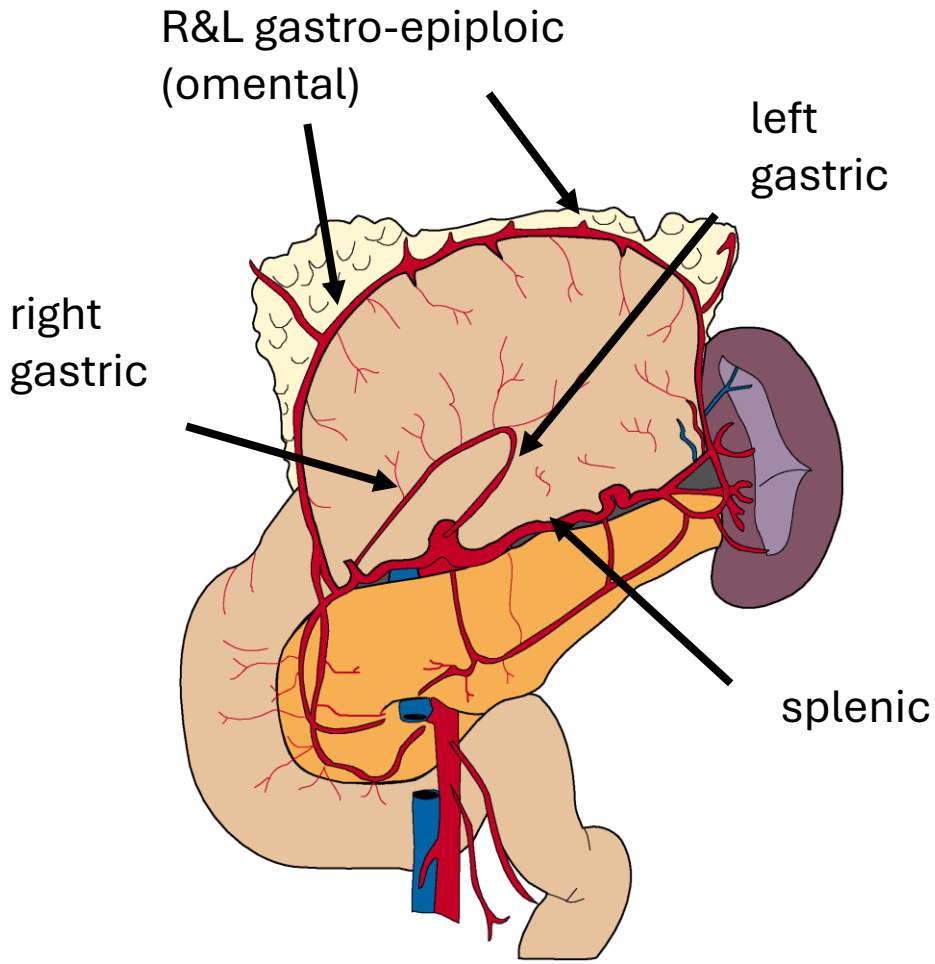


- Shape changes as stomach fills
- Position also alters
- Many stomach shapes are ‘normal’

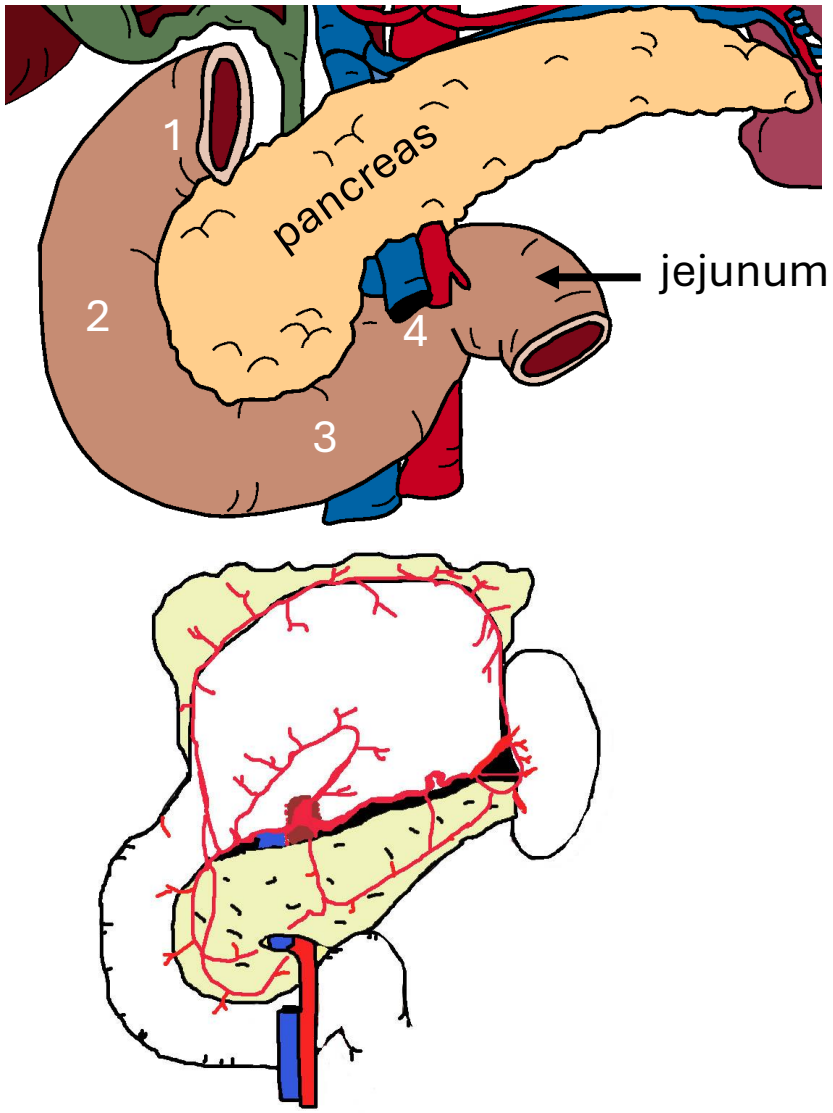
Stomach – arteries

- Supplied by branches of the coeliac axis (trunk)
- T12 from aorta



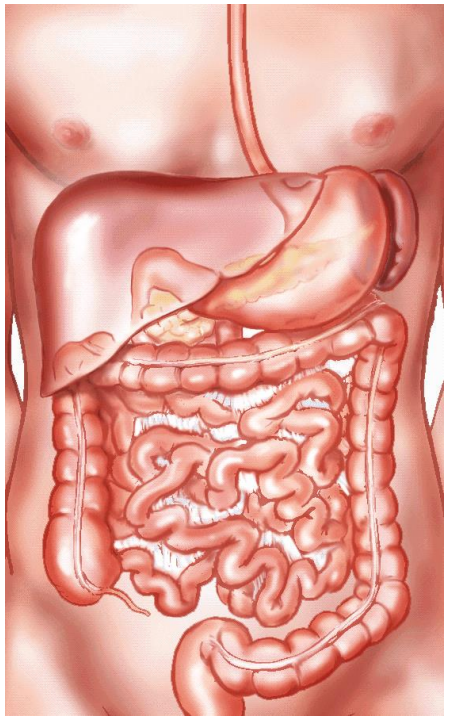


Duodenum

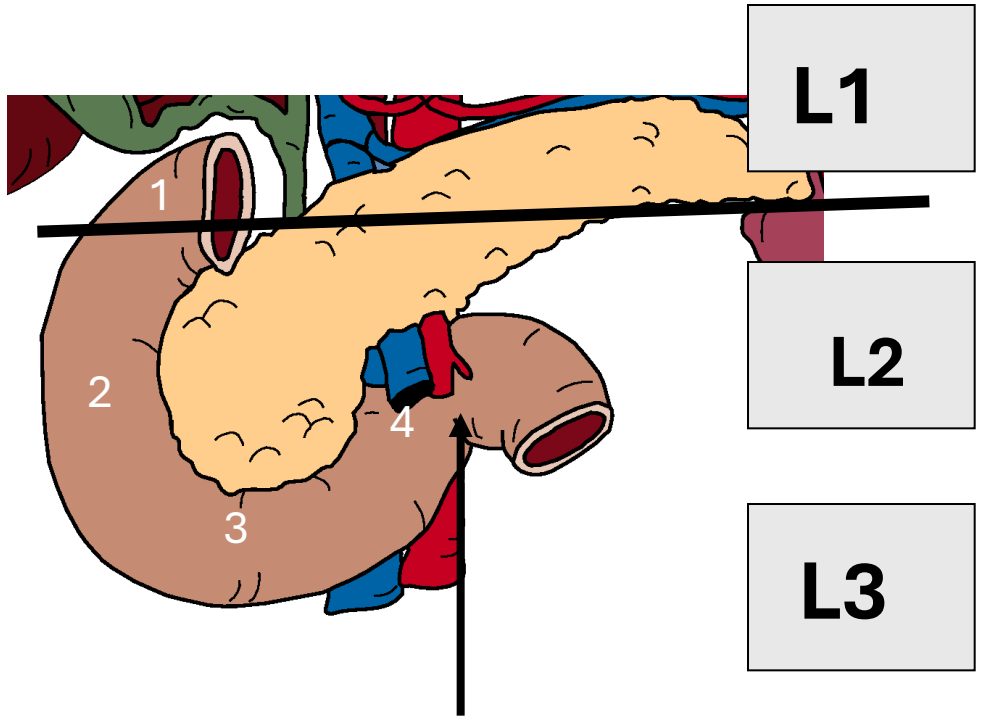


- C-shaped @ 25cm
- Surrounds the head of pancreas
- Dorsal mesentery on 1st part, 2-4 retro-peritoneal
- 1st part = duodenal cap
- 2nd part = descending entrance of bile and pancreatic ducts at ampulla of Vater
- 3rd part = transverse
- 4th part = ascending to jejunum

Duodenum – surface anatomy



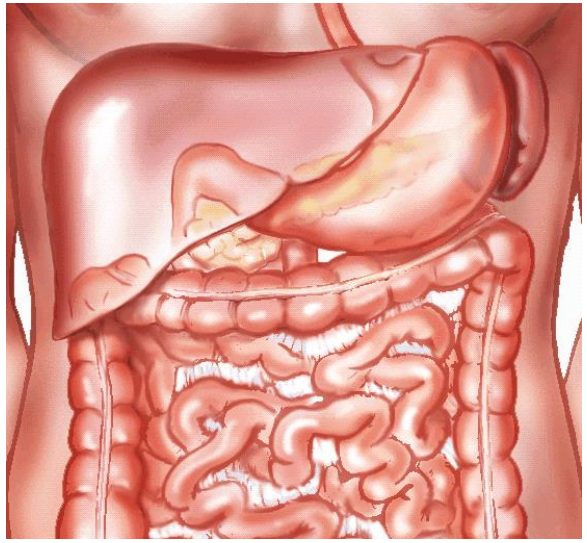
vertebral level

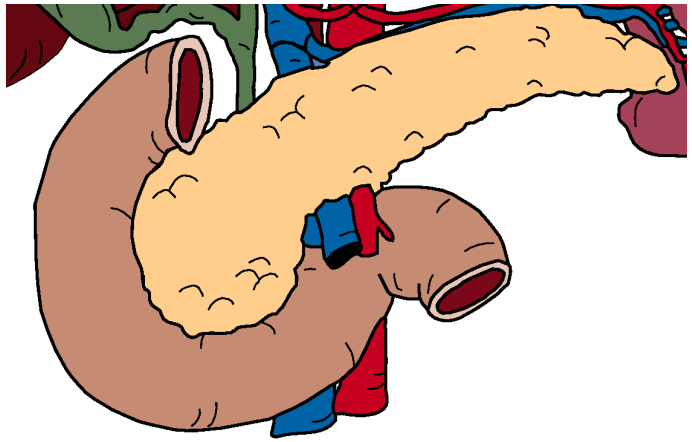


duodenal-jejunal junction @ 3cm L of midline

= trans-pyloric plane

Relations of the duodenum

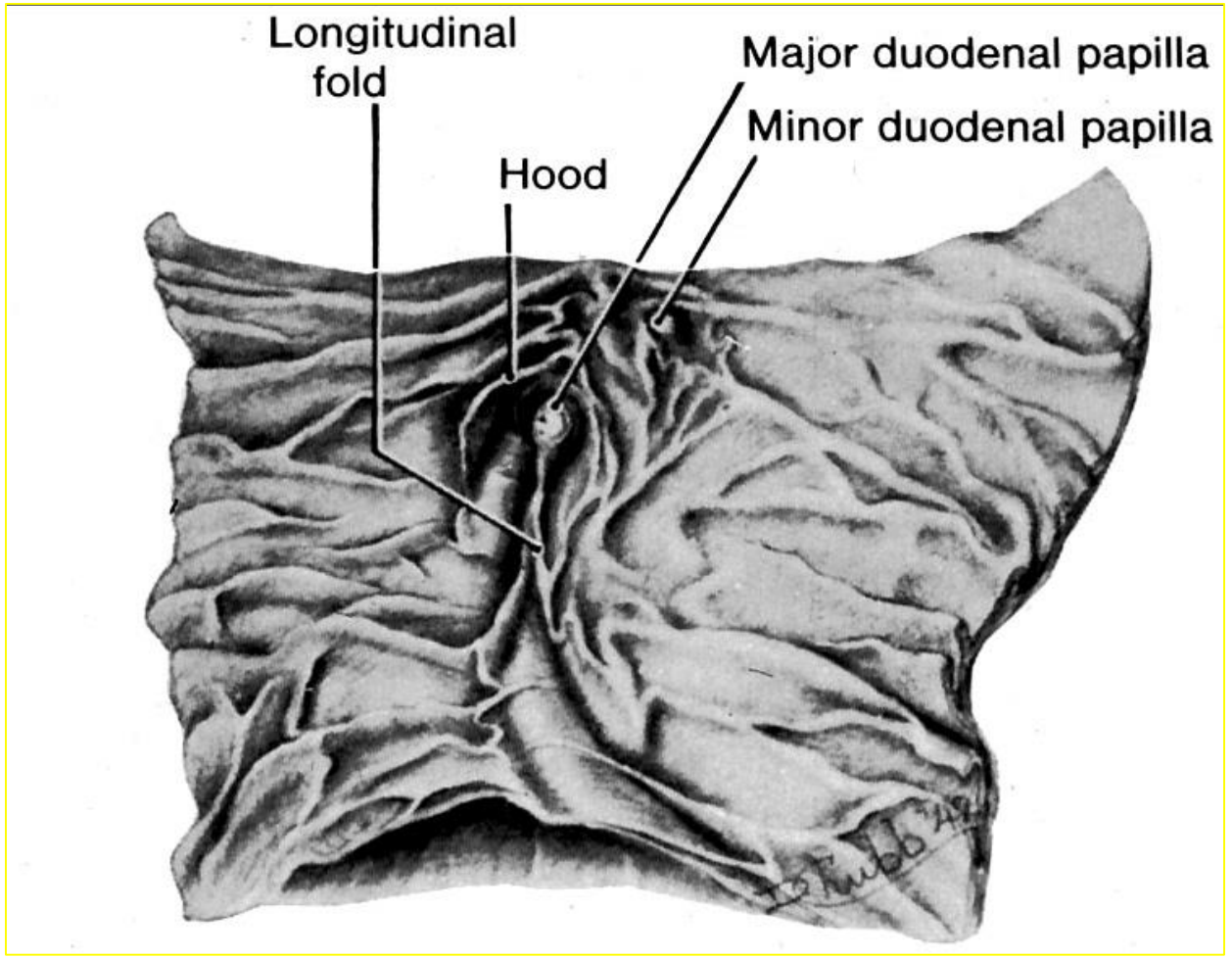




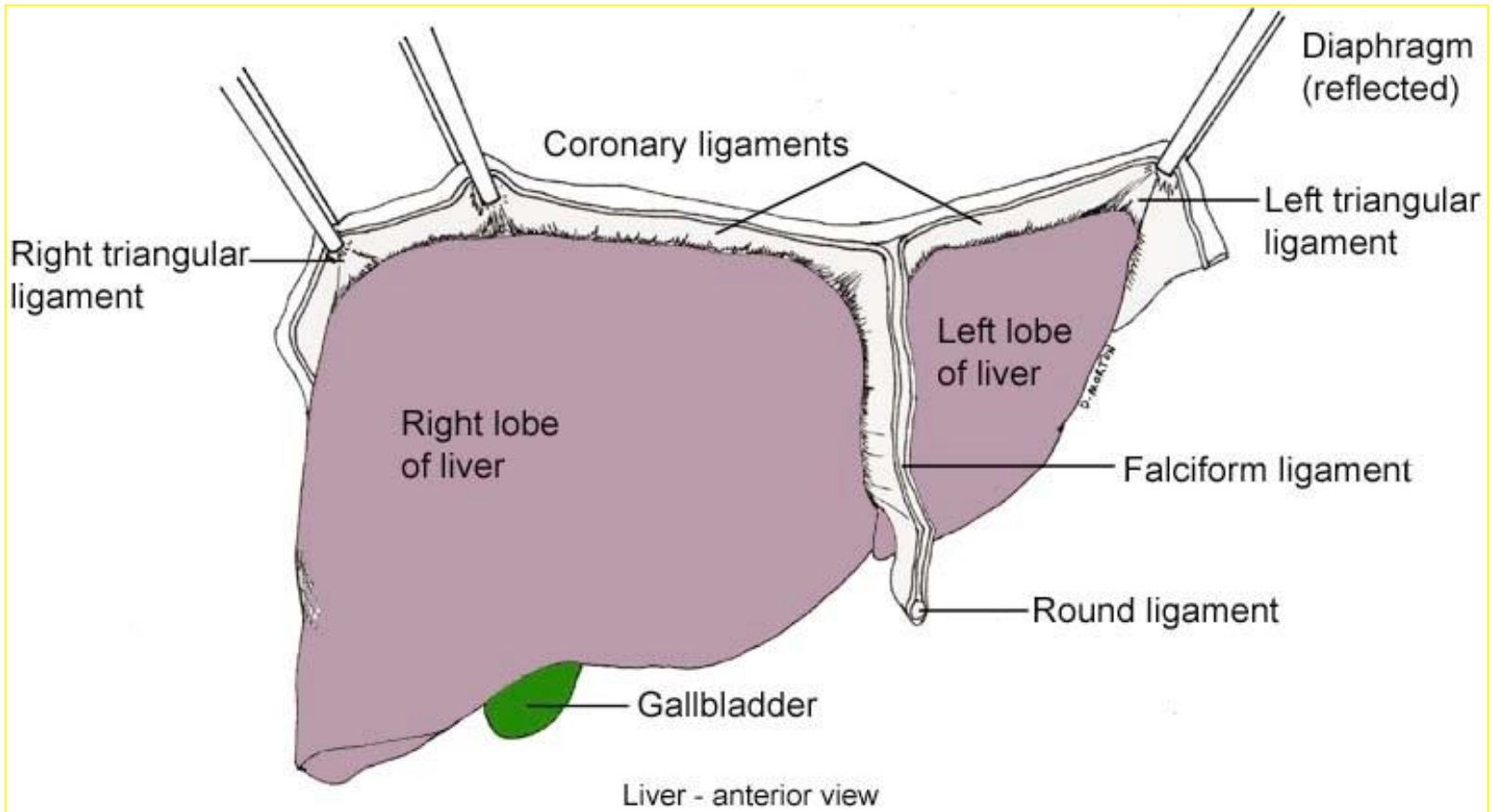
- 1st part = liver, gall bladder, bile duct, portal vein, IVC
- 2nd part = liver, gallbladder, transerve colon, right kidney and ureter, pancreas
- 3rd part = root of mesentery, superior mesenteric vessels, jejunum, right ureter, psoas, IVC, aorta, pancreas
- 4th part = jejunum, aorta, psoas

Duodenum

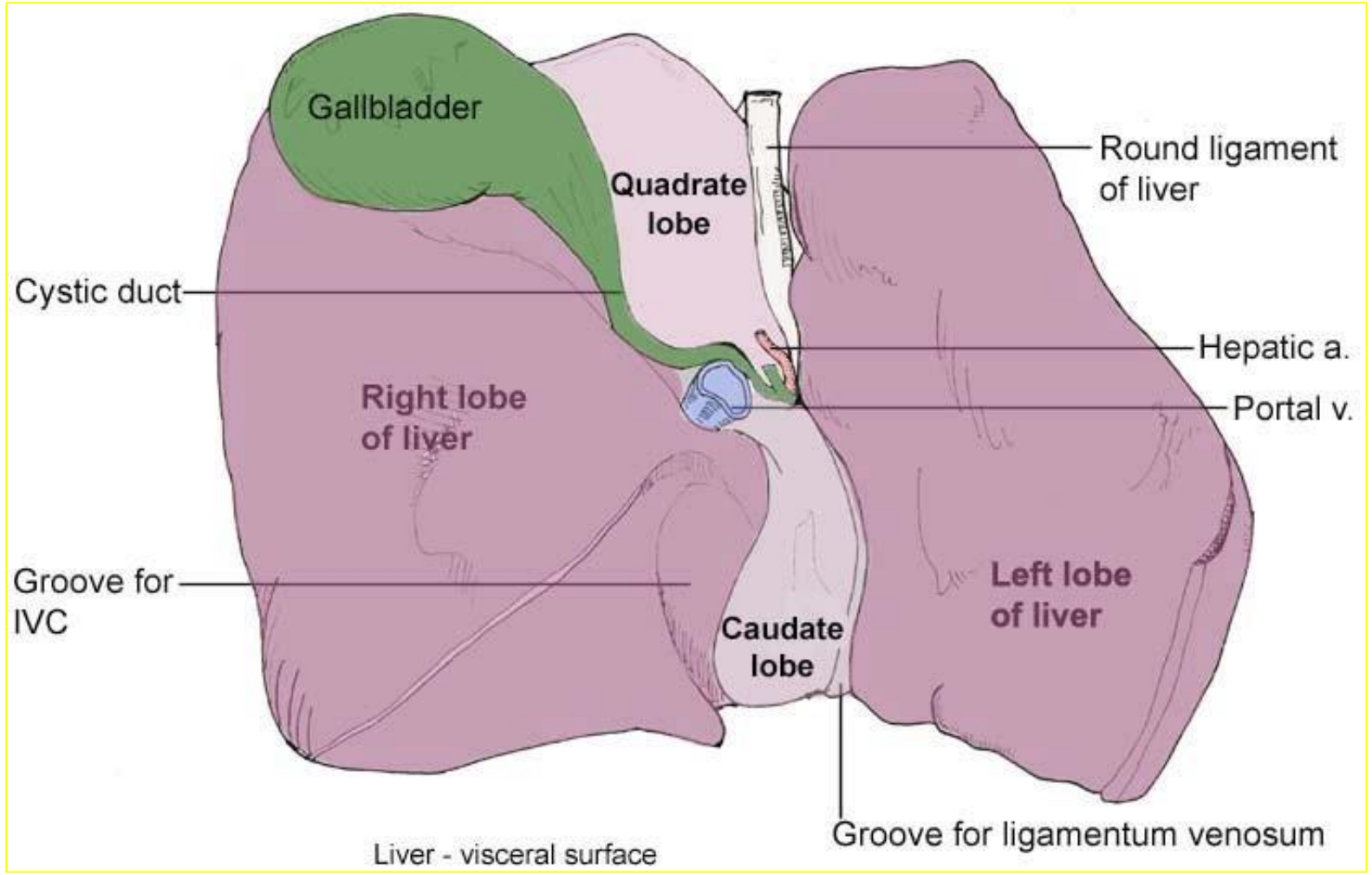
- Internal Anatomy -



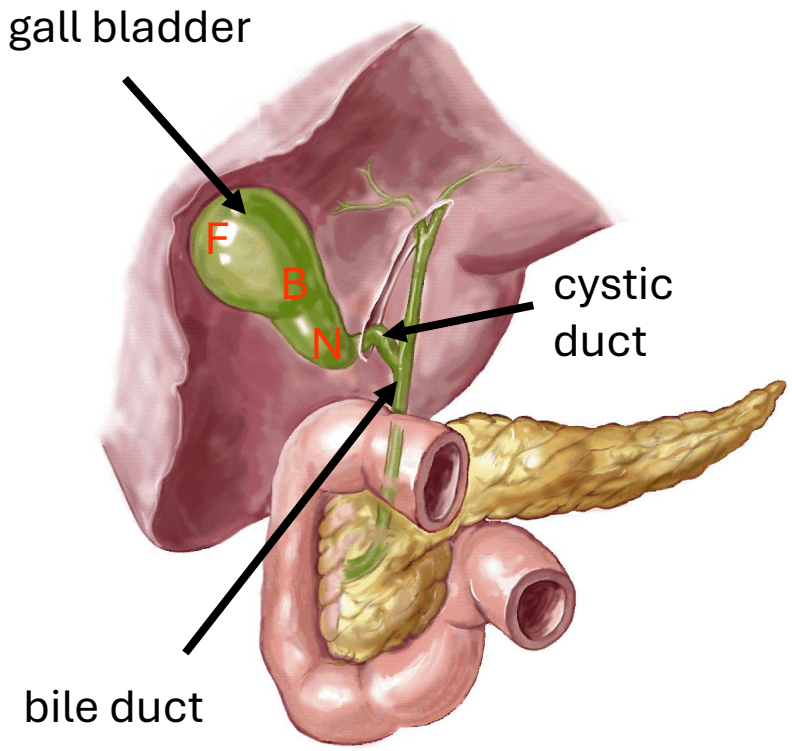
Anterior View of the Liver



Inferior View of the Liver

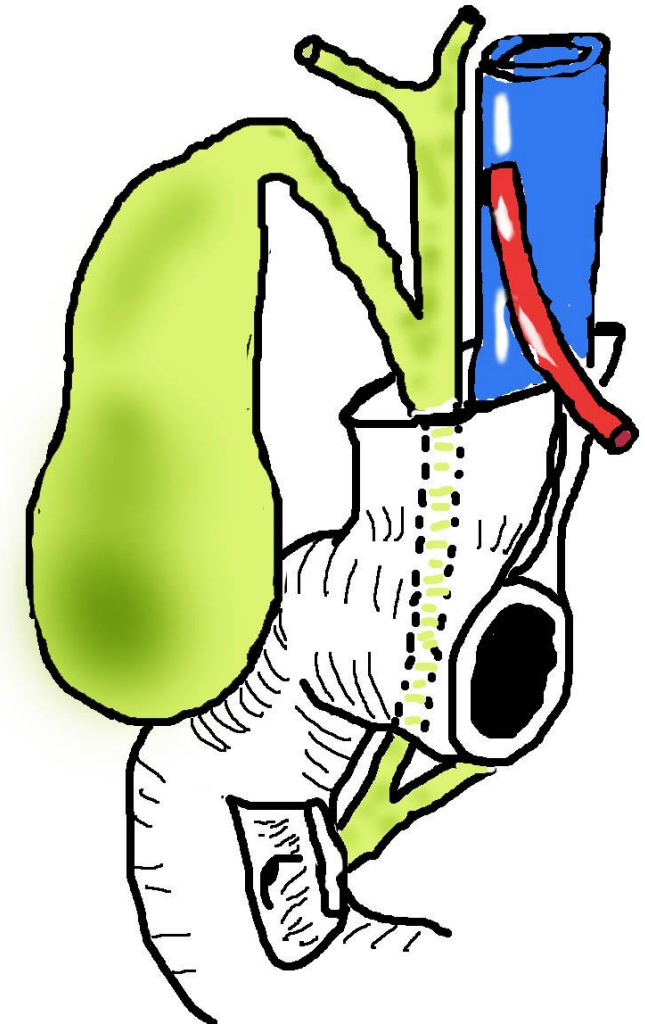


Gall bladder



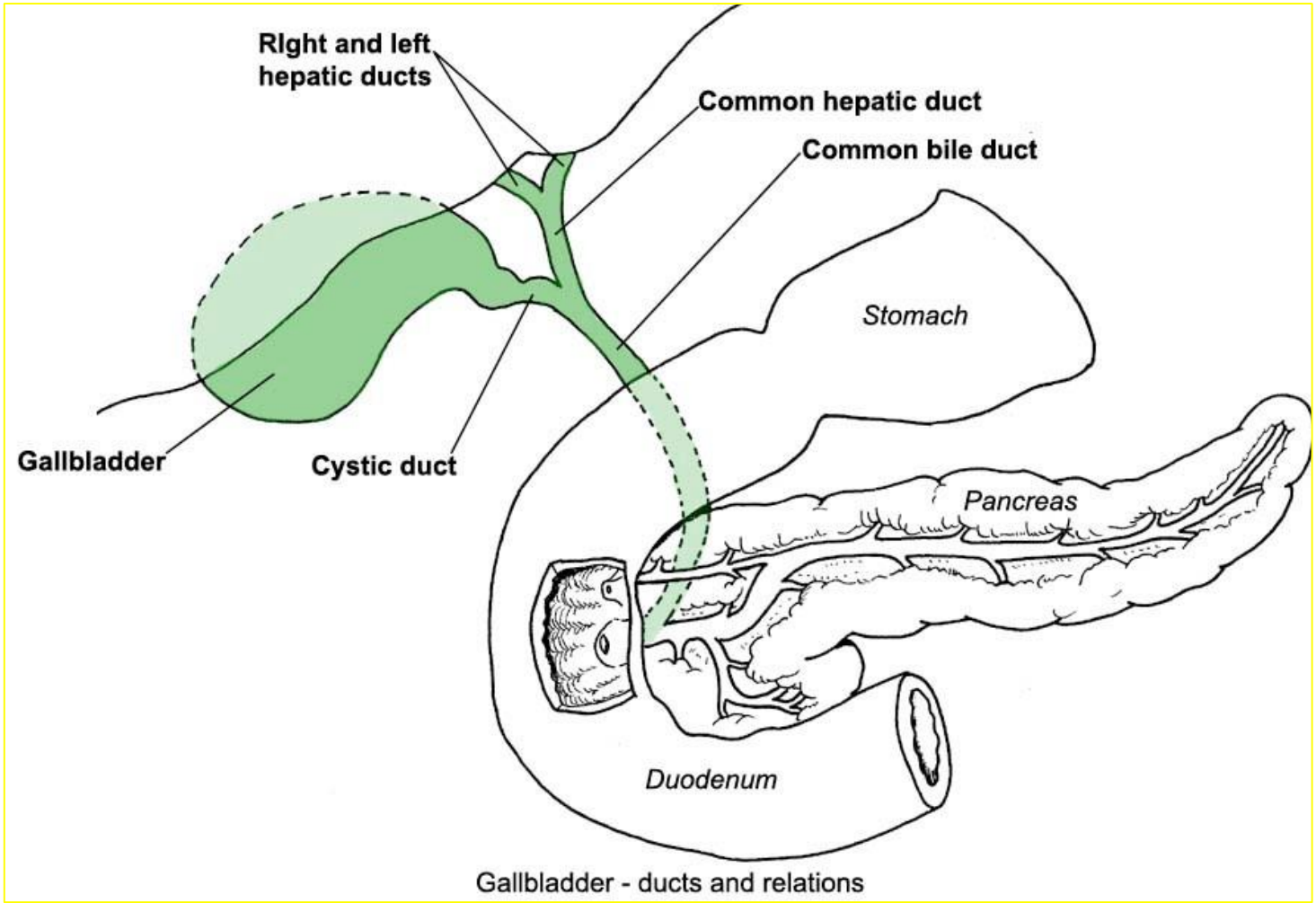
- F = fundus hangs below liver
- B = body contacts visceral surface of liver
- N = neck joins cystic duct
- Covered in visceral peritoneum
- Store and concentrate bile – folds and microvilli
- Fat in duodenum – releases cholcystokinin cause GB to contract
- Smooth muscle distal end bile duct and ampulla relax = bile into duodenum to emulsify fat

Biliary tree



- Bile secreted by liver and stored by gall bladder
- Bile duct @8cm long and ends by piercing medial wall of 2nd part of duodenum
- Joined by main pancreatic duct and open into ampulla of Vater
- Ampulla opens into duodenum via major duodenal papilla (sphincter of Oddi)

Gallbladder



Gallbladder - ducts and relations

You have the potential
to achieve great things.
Believe in yourself!