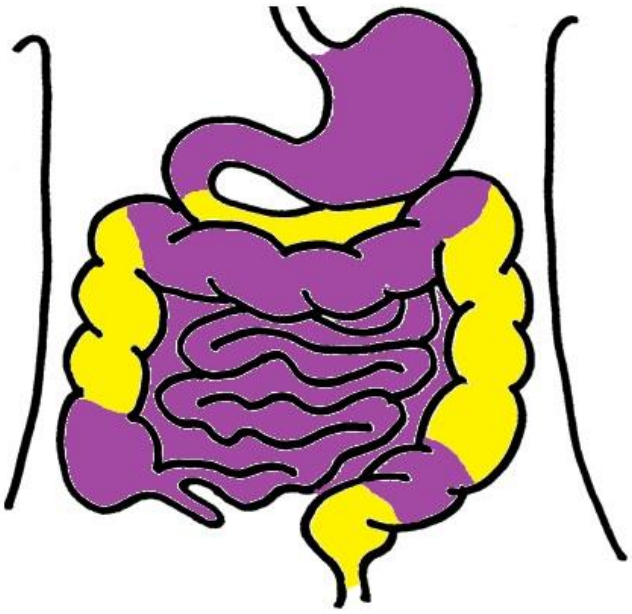
SUMMARY OF LEARNING POINTS

INTRA VS. RETROPERITONEAL SEGMENTS OF THE ABDOMINAL GI TRACT



Intraperitoneal segments:

- Stomach
- D1 part of duodenum
- Small bowel
- Cecum, transverse & sigmoid colon

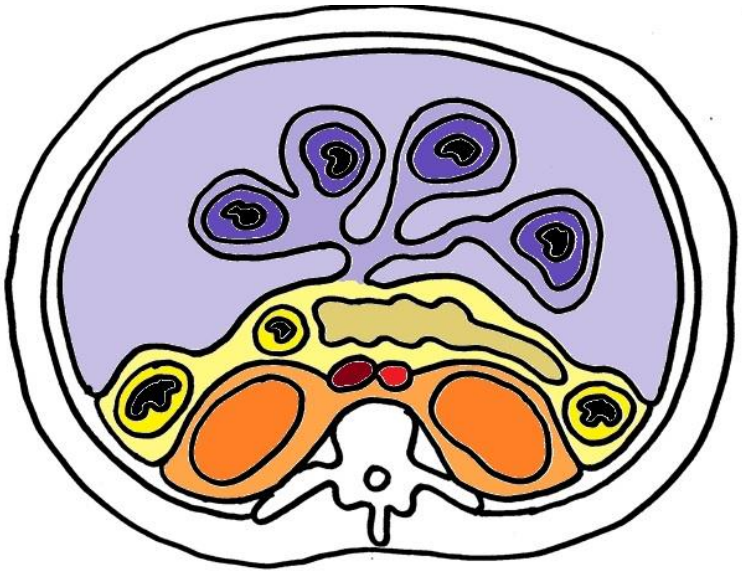
Retroperitoneal segments

- D2-3-4 parts of duodenum
- Ascending & descending Colon
- Rectum

PERITONEUM:

Peritoneal cavity

- Intraperitoneal GI tract
- Liver, gallbladder, spleen, tail of pancreas, ovaries



RETROPERITONEUM:

Anterior pararenal space

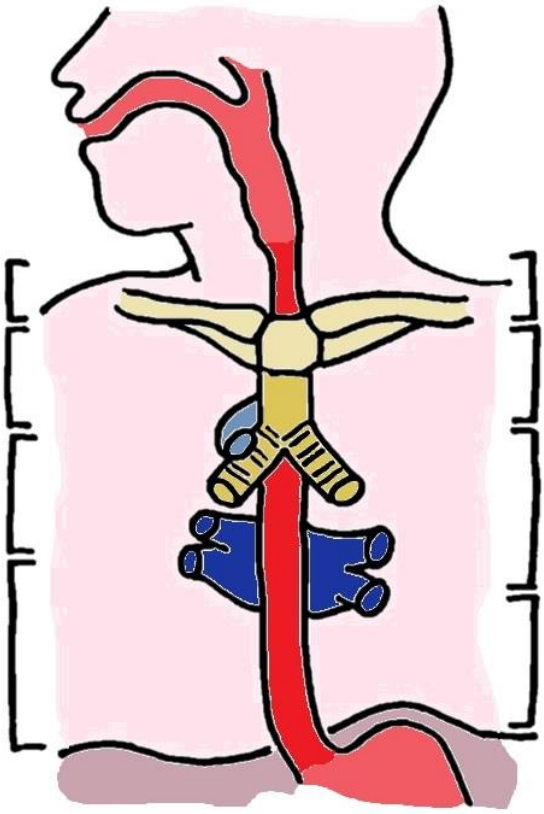
- D2-3-4 parts of duodenum, ascending & descending colon
- pancreas head, neck & body

Perirenal and vascular space

- Perirenal: kidneys & adrenals
- Vascular: aorta & inferior vena cava

SEGMENTAL ANATOMY (ESOPHAGUS, STOMACH, DUODENUM)

THE ESOPHAGUS



Cervical

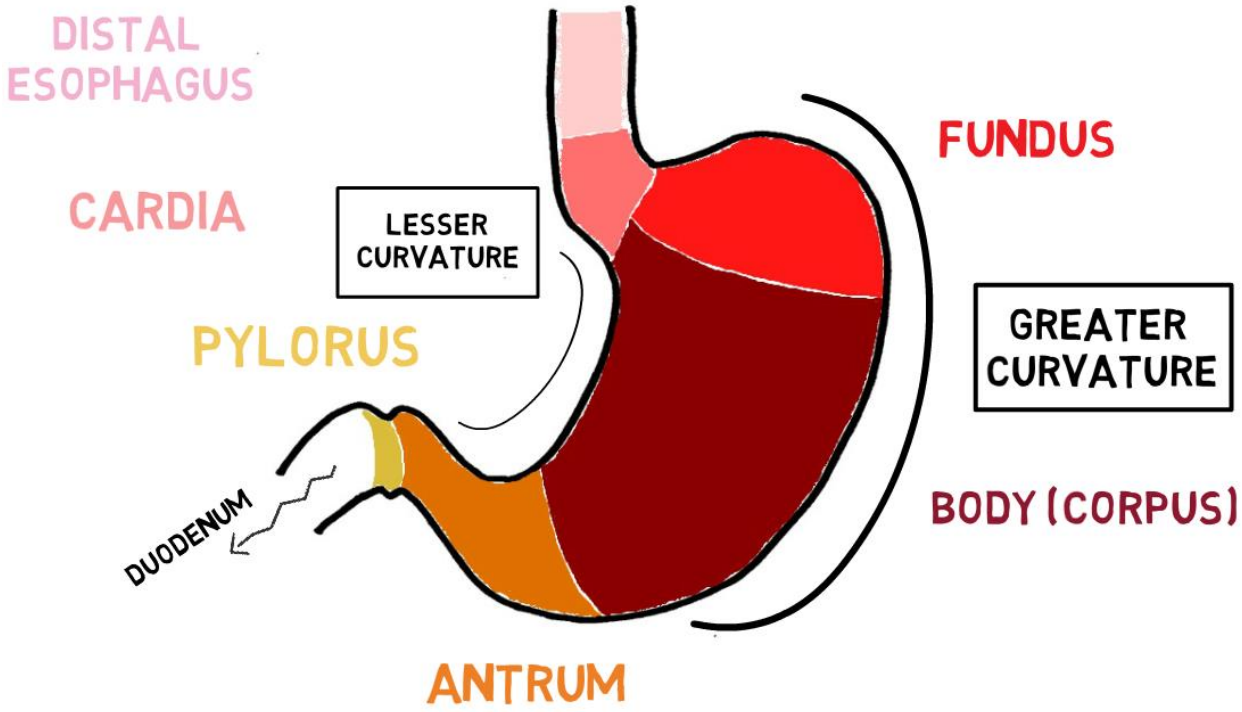
Upper thoracic

Middle thoracic

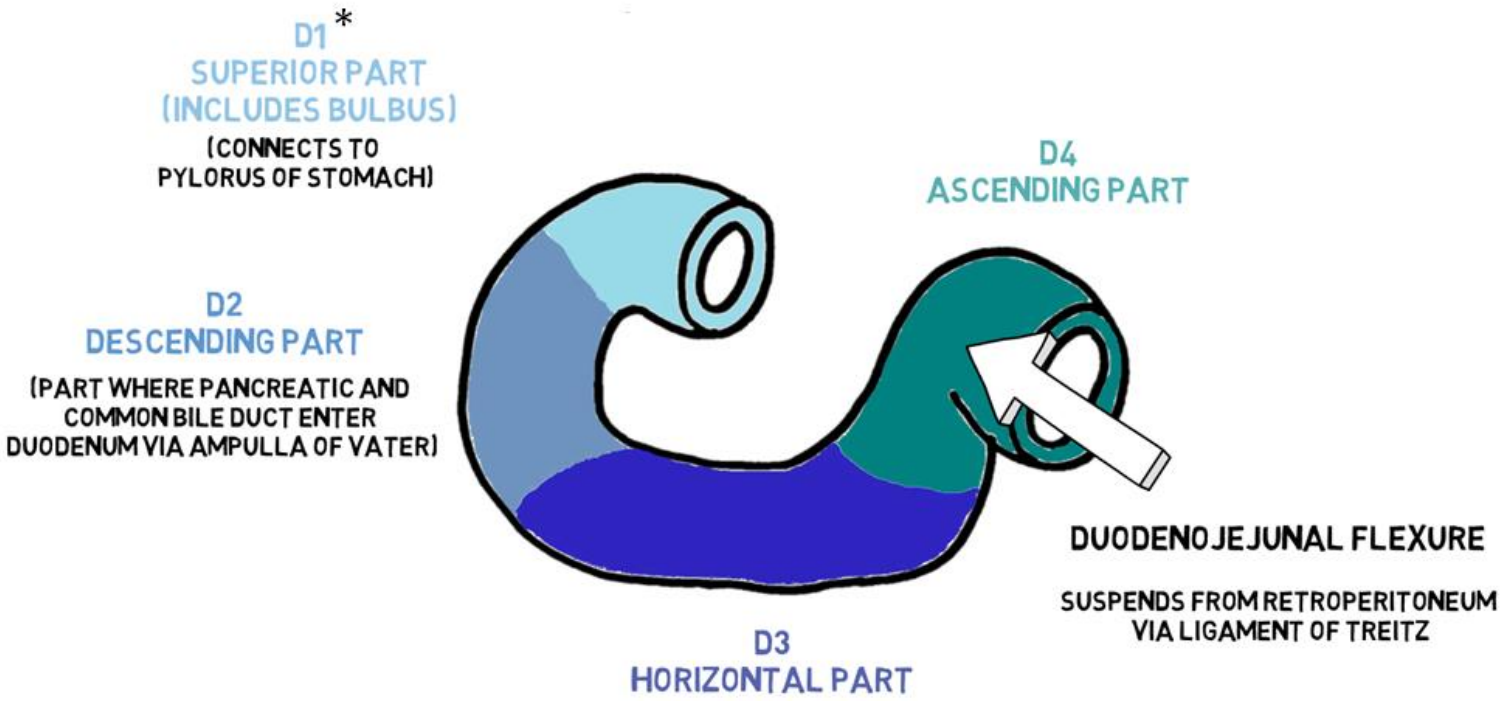
Lower thoracic

- **Cervical:** From cricopharyngeus muscle to sternal notch
- **Upper thoracic:** From sternal notch to azygos vein
- **Middle thoracic:** From azygos vein to inferior pulmonary vein
- **Lower thoracic:** From inferior plulmonary vein to gastroesophageal junction

THE STOMACH



THE DUODENUM



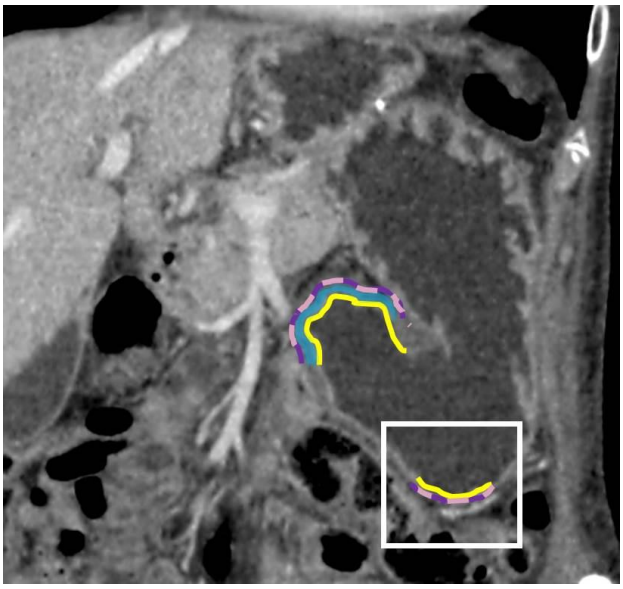
* D1 part of the duodenum is intraperitoneal (D2-3-4 are retroperitoneal)

CROSS-SECTIONAL ANATOMY

The wall of the digestive tract consists of 4 main layers:

- Mucosa: epithelium, lamina propria, muscularis mucosae
- Submucosa
- Muscularis externa
- Outer layer called either **Adventitia** or **Serosa**

ADVENTITIA		**SEROSA**
- Loose connective tissue - Forms outer layer of organs <u>outside</u> the peritoneum	VS	- Layer of mesothelium - Forms outer layer (=visceral peritoneum) of intraperitoneal organs
(esophagus, ascending & descending colon)		(stomach, small bowel transverse & sigmoid colon)



Coronal CT image of the stomach:

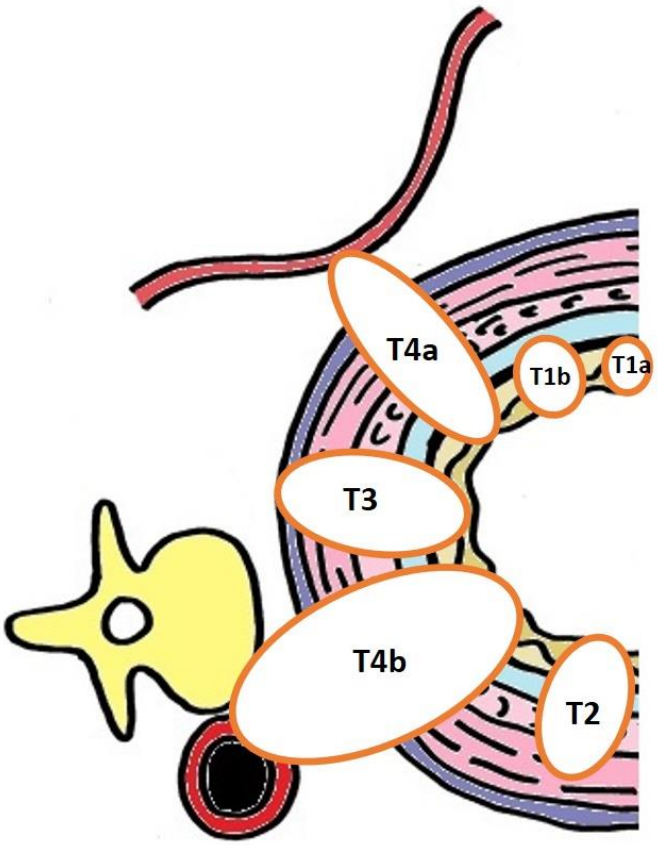
On CT the muscularis and **serosa** (or adventitia in retroperitoneal organs) are typically visualized together as one single layer.

The submucosa can sometimes be recognized separately from the mucosa

In many cases the wall of the digestive tract only has a two-layered appearance on CT (white box) and the submucosa is not separately visible.

T-STAGING IN ESOPHAGEAL CANCER

T-STAGING IN ESOPHAGEAL CANCER		
	PATHOLOGY	CT
T1a	Invades lamina propria or muscularis mucosa	Asymmetric wall thickening of the esophagus Note, T1-2 tumours can be difficult to detect on CT (better detected with endoscopic US and PET)
T1b	Invades submucosa	
T2	Invades muscularis propria	
T3	Invades adventitia	Wall thickening or mass ± luminal obstruction Ill-defined wall, infiltration of surrounding fat
T4a	Invades <u>resectable</u> adjacent structures: pleura, pericardium, azygos vein, diaphragm or peritoneum	Direct invasion of adjacent T4a structures
T4b	Invades <u>unresectable</u> adjacent structures: aorta, trachea or vertebral body	Direct invasion of adjacent T4b structures

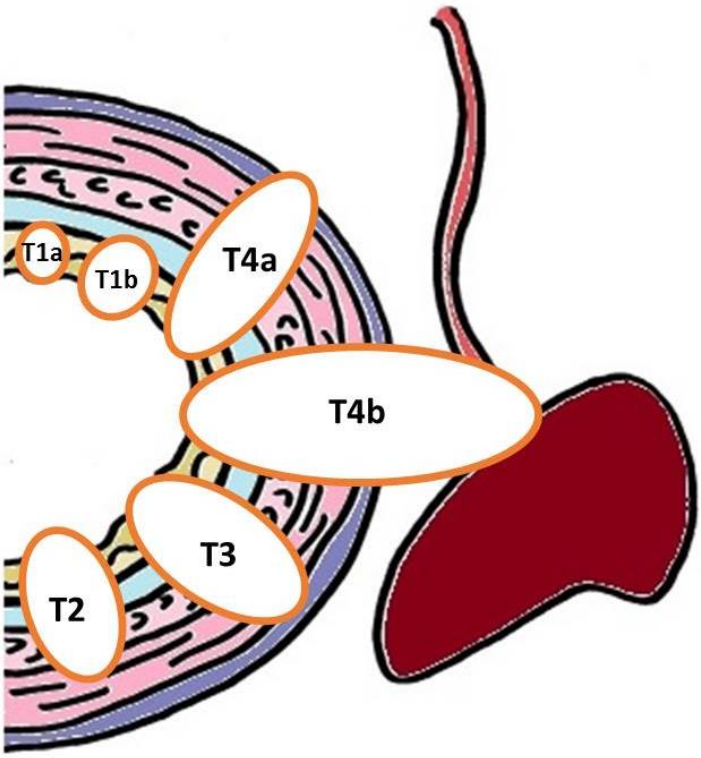


Note that T3 disease in esophageal cancer resembles T4a disease in gastric cancer (see below)

Invasion of pleura and/or diaphragm is still considered T4a disease in esophageal cancer. In gastric cancer (see below) this constitutes T4b disease.

STAGING OF GASTRIC CANCER

T-STAGING IN GASTRIC CANCER		
	PATHOLOGY	CT
T1a	Invades lamina propria or muscularis mucosa	Not visible
T1b	Invades submucosa	Wall thickening, smooth outer gastric wall (preserved hypoattenuating submucosa favors T1b)
T2	Invades muscularis propria	
T3	Penetrates subserosal connective tissue	Mildly blurred outer gastric wall / minor stranding
T4a	Invades serosa	Nodular or irregular surface, infiltration of surrounding fat
T4b	Invades adjacent structures: spleen, colon, liver, diaphragm, pancreas, abdominal wall, adrenal gland, kidney, small intestines, retroperitoneum	Direct invasion of adjacent organs or structures



Note that T4a disease in gastric cancer resembles T3 disease in esophageal cancer (see above)

Invasion of the diaphragm is considered T4b disease in gastric cancer. In esophageal cancer (see above) this still constitutes T4a disease.