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**: 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 pulmonary vein to gastroesophageal junction
* D1 part of the duodenum is intraperitoneal (D2-3-4 are retroperitoneal)
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**
- Loose connective tissue
- Forms outer layer of organs outside the peritoneum

**SEROSA**
- 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.
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

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

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.