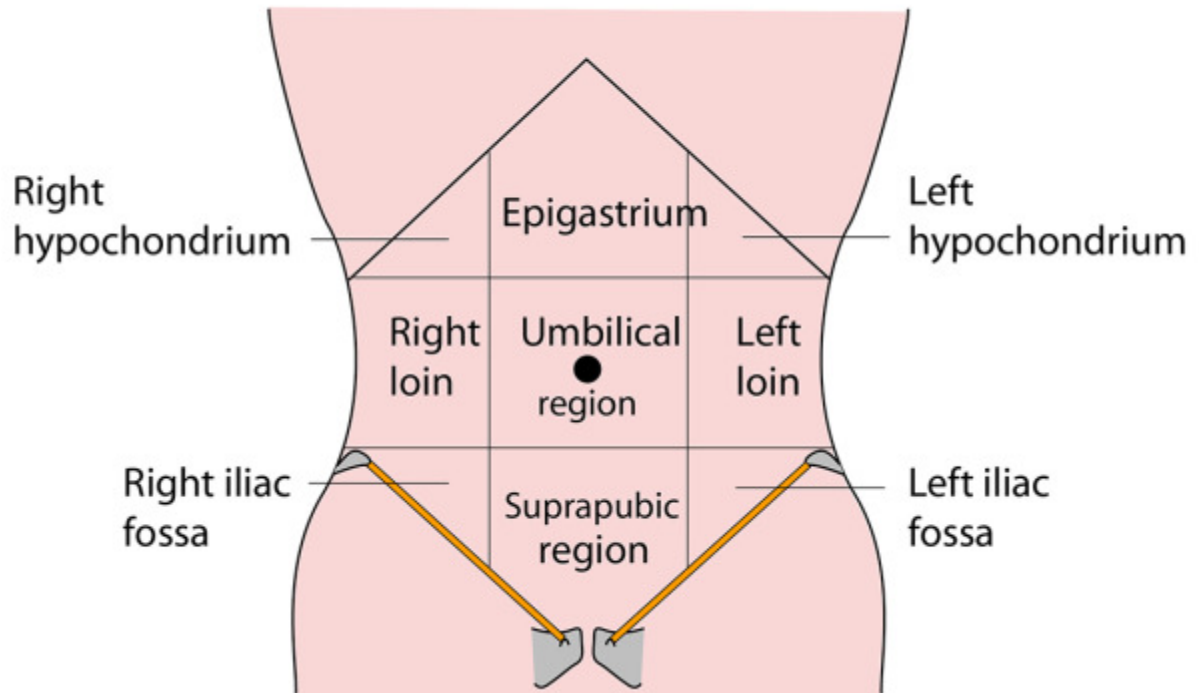


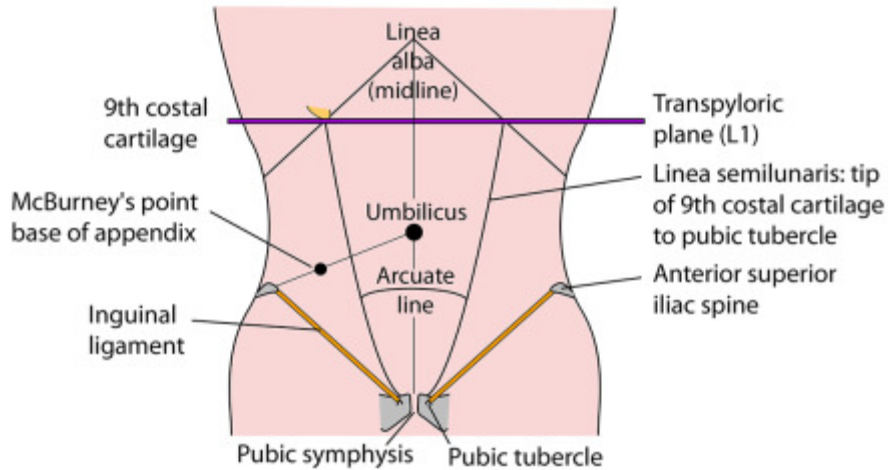
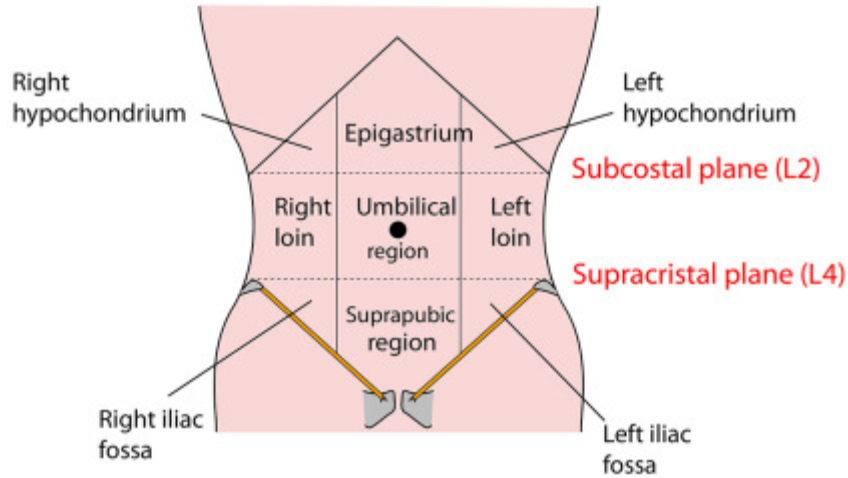
Abdomen: Surface Anatomy and Peritoneum

REGIONS OF THE ABDOMEN



SURFACE ANATOMY OF ABDOMINAL WALL

REGIONS OF THE ABDOMEN



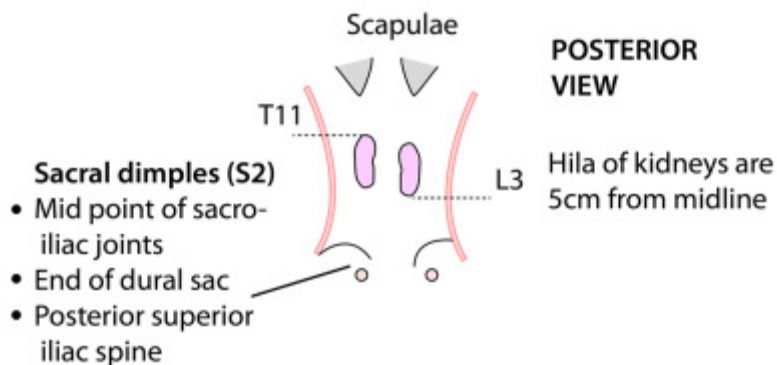
Transpyloric plane: half way between suprasternal notch & symphysis pubis

Inguinal ligament: anterior superior iliac spine to pubic tubercle

Arcuate line: 3-5cm inferior to umbilicus

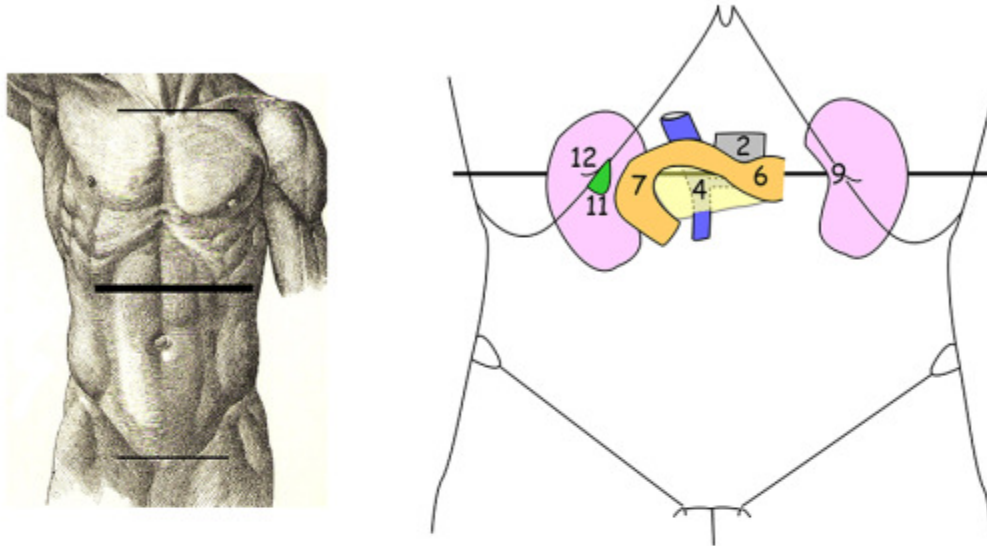
Linea semilunaris: lateral edge of rectus sheath

McBurney's point: one third along a line from ASIS to umbilicus



TRANSPYLORIC PLANE

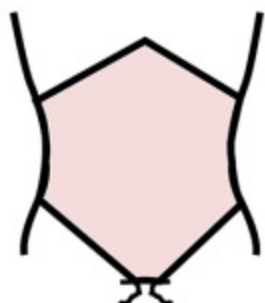
(Horizontal line half way between suprasternal notch & pubic symphysis)



Structures approximately on this line:

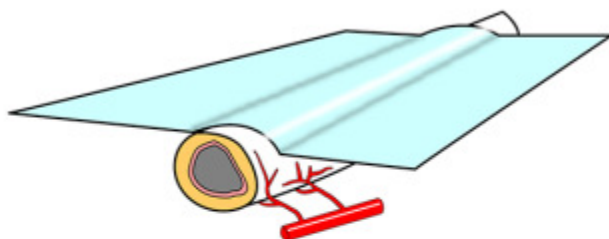
- 1 End of spinal cord
- 2 L1 vertebral body
- 3 Origin of superior mesenteric art
- 4 Origin of portal vein
- 5 Neck of pancreas
- 6 Pylorus of the stomach
- 7 Second part of duodenum
- 8 Sphincter of Oddi
- 9 Hilum of each kidney
- 10 Duodenojejunal flexure
- 11 Fundus of gall bladder
- 12 Tips of ninth costal cartilages

LAYERS OF THE ABDOMINAL WALL



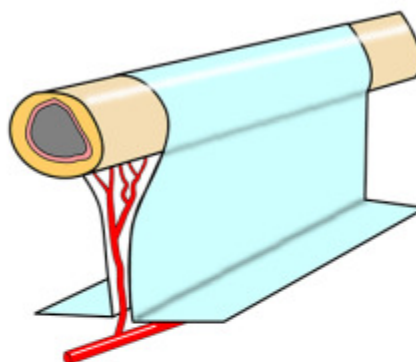
- 1 Skin
- 2 Fat
- 3 Camper's fascia (superficial layer of superficial fascia - thin)
- 4 Fat
- 5 Scarpa's fascia (deep layer of superficial fascia - thick)
- 6 Fat
- 7 Aponeurosis
- 8 Three muscles
- 9 Transversalis fascia
- 10 Peritoneum

RETROPERITONEAL



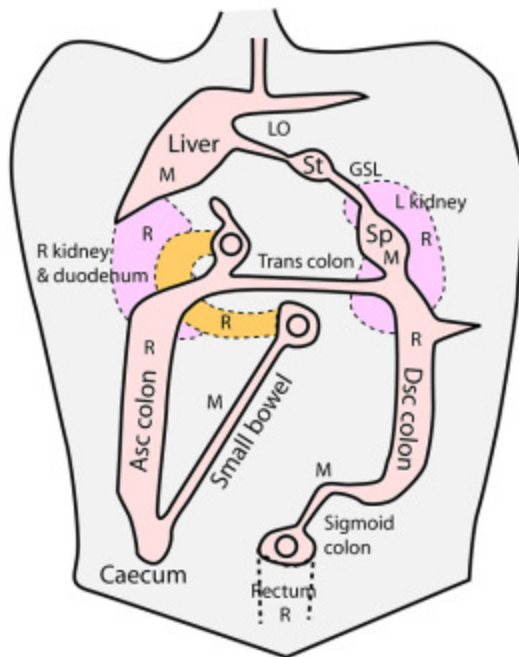
- Most of duodenum
- Ascending colon
- Descending colon
- Rectum
- Pancreas
- Kidneys

ON A MESENTERY



- Stomach
- 1st half of 1st part of duodenum
- 2nd half of 4th part of duodenum
- All small bowel
- Caecum (size dependent)
- Appendix
- Transverse colon
- Sigmoid colon

MESENTERIES 1



All the intestines have been removed as far posterior as possible leaving the cut edges of the peritoneum. If the area of denuded peritoneum is narrow then the piece of bowel was on a mesentery. If it is wide then it was retroperitoneal, the exception being the stomach.

M = Mesentery
 R = Retroperitoneal
 St = Stomach
 Sp = Spleen
 Lo = Lesser omentum

Note: Small bowel mesentery runs from the left L2 transverse process to the right sacro-iliac joint (S2). It is 6 inches (15cm) long and crosses left psoas, aorta, IVC, right psoas, right ureter, right common iliac bifurcation & into right iliac fossa

PERITONEUM

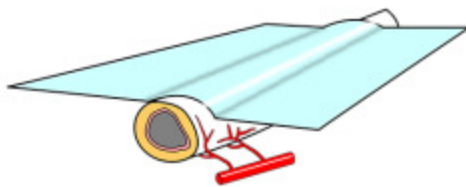
PARIETAL

Serous membrane
 Lines abdominal cavity
 Nerve: somatic, intercostals

VISCERAL

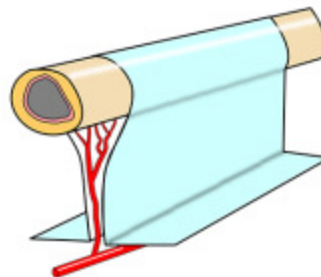
Serous membrane
 Forms all mesenteries
 Covers all retroperitoneal organs
 Nerve: Probably has general visceral afferents, carried by sympathetics detecting stretch and inflammation

RETROPERITONEAL



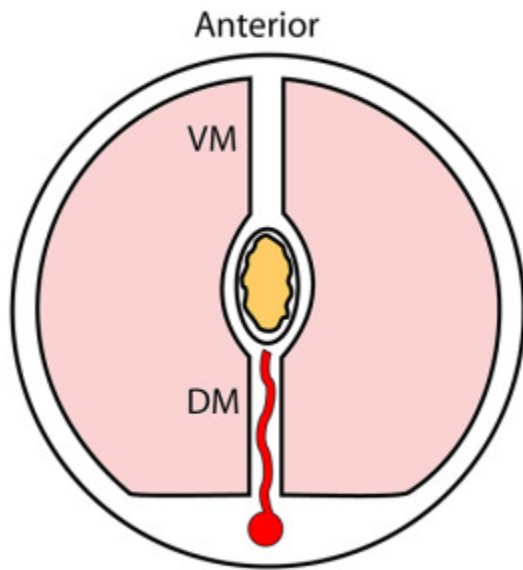
- Most of duodenum
- Ascending colon
- Descending colon
- Rectum
- Pancreas
- Kidneys

ON A MESENTERY



- Stomach
- 1st half of 1st part of duodenum
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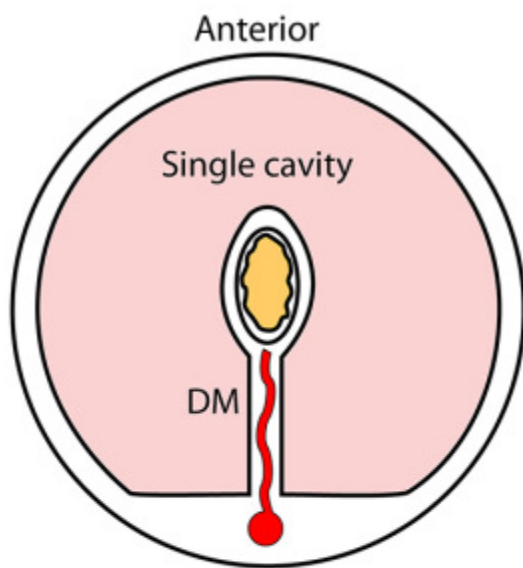
PRINCIPLES OF MESENTERY DEVELOPMENT



Posterior

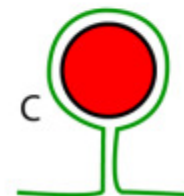
1. At the level of the developing foregut which includes the stomach there are two peritoneal cavities separated by a dorsal and ventral mesentery. The stomach is covered by, and suspended between, the two. Note the access for the blood supply in the dorsal mesentery

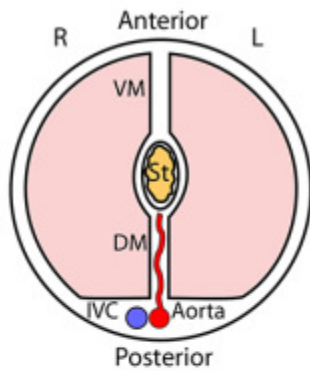
2. There is no ventral mesentery below the foregut and thus the primitive bowel is surrounded by the dorsal mesentery only.



Posterior

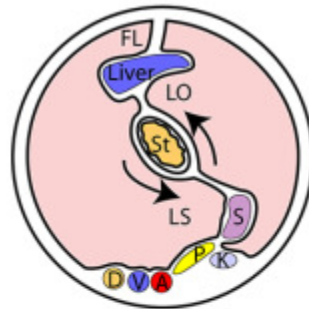
3. This dorsal mesentery can do one of three things. It can regress posteriorly so that the bowel is then retroperitoneal (A), the majority of the duodenum is a good example. Or the bowel can fall on its side and the mesentery is absorbed (B), such as the ascending and descending colons. This can be called a pseudo-mesentery. The third alternative is that the mesentery persists (C), such as with the small bowel, and this is described as being "on a mesentery". The length of the mesentery varies throughout the intestine.



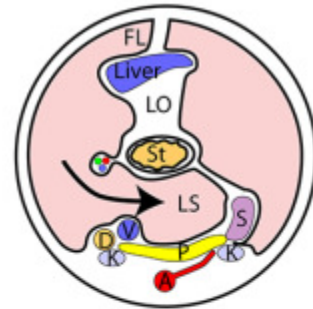


1. Fetus viewed from below. Ventral mesentery (VM) joins the stomach to anterior wall. Dorsal mesentery (DM) joins stomach to posterior wall

ROTATION OF THE STOMACH AND THE FORMATION OF THE LESSER SAC

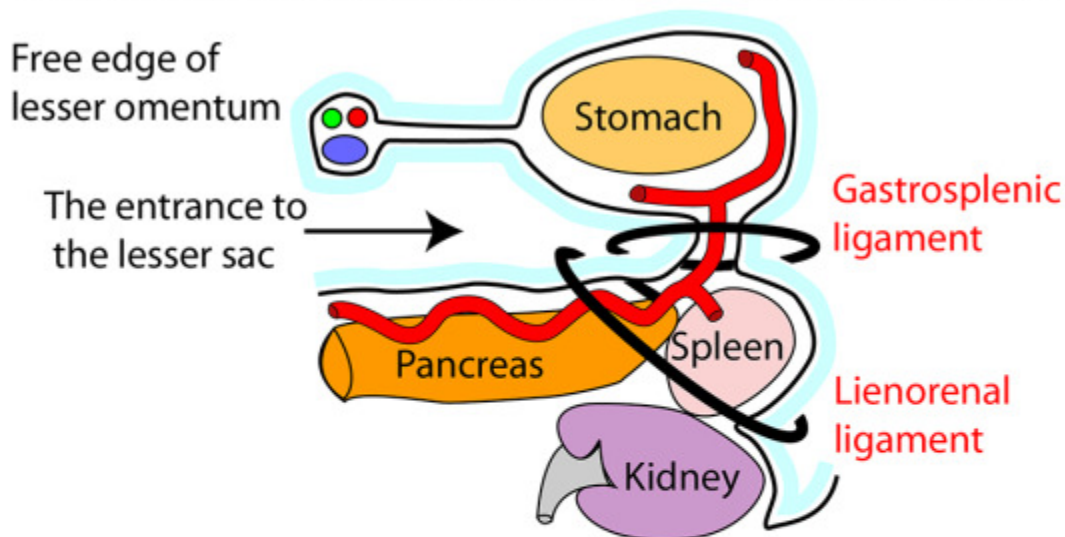


2. The stomach rotates anticlockwise. VM with developing liver in it is thrown to the right & DM with developing spleen in it to the left. Duodenum (D) is pushed retroperitoneally & pancreas is formed posterior to the developing lesser sac (LS) alongside the IVC (V) & the aorta (A). The left kidney (K) lies just posterior to the spleen



3. As the liver enlarges the remnant of the VM between it & the stomach widens to give the lesser omentum (LO) with its free edge holding the bile duct, portal veins & hepatic artery. The anterior remnant of the VM becomes the falciform ligament (FL). The stomach completes its rotation dragging the peritoneum posteriorly to give the lining of the LS. The IVC moves anteriorly to narrow the opening of the lesser sac.

AXIAL SECTION ACROSS FAR LEFT SIDE OF LESSER SAC



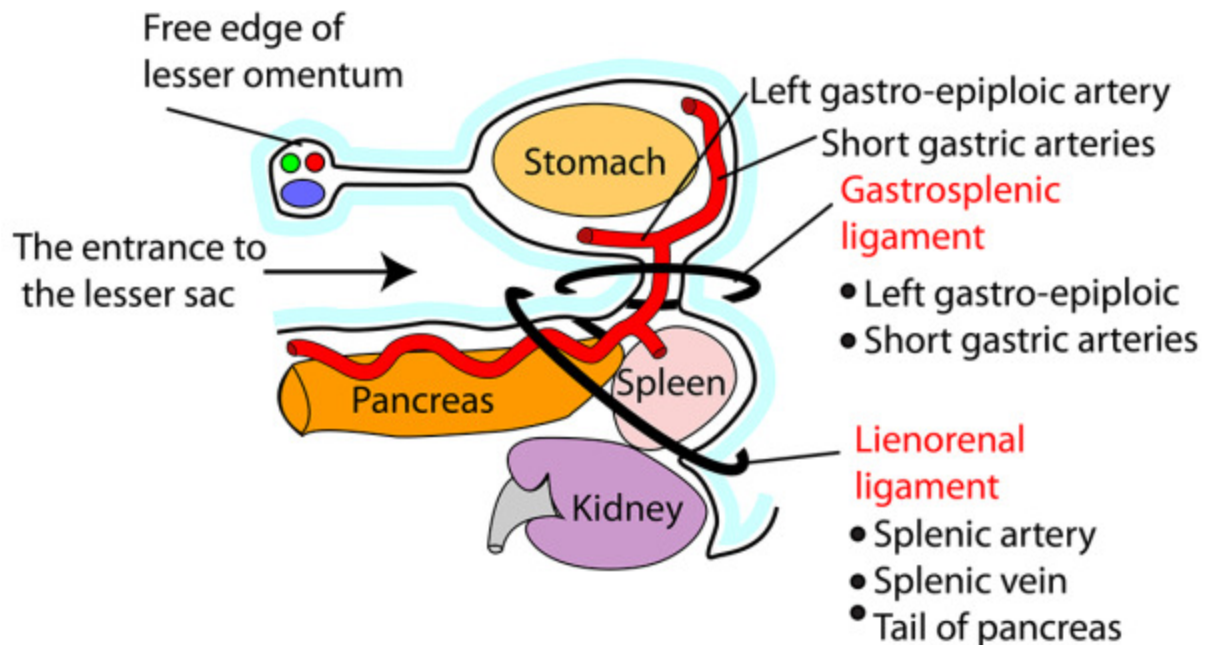
The **gastrosplenic ligament** contains the short gastric & left gastro-epiploic vessels

The **lienorenal ligament** contains the tail of pancreas & splenic vessels)

The two ligaments are the remnants of the the dorsal mesentery of the stomach. The ventral mesentery is the lesser omentum and the falciform ligament

LIENORENAL & GASTROSPLENIC LIGAMENTS

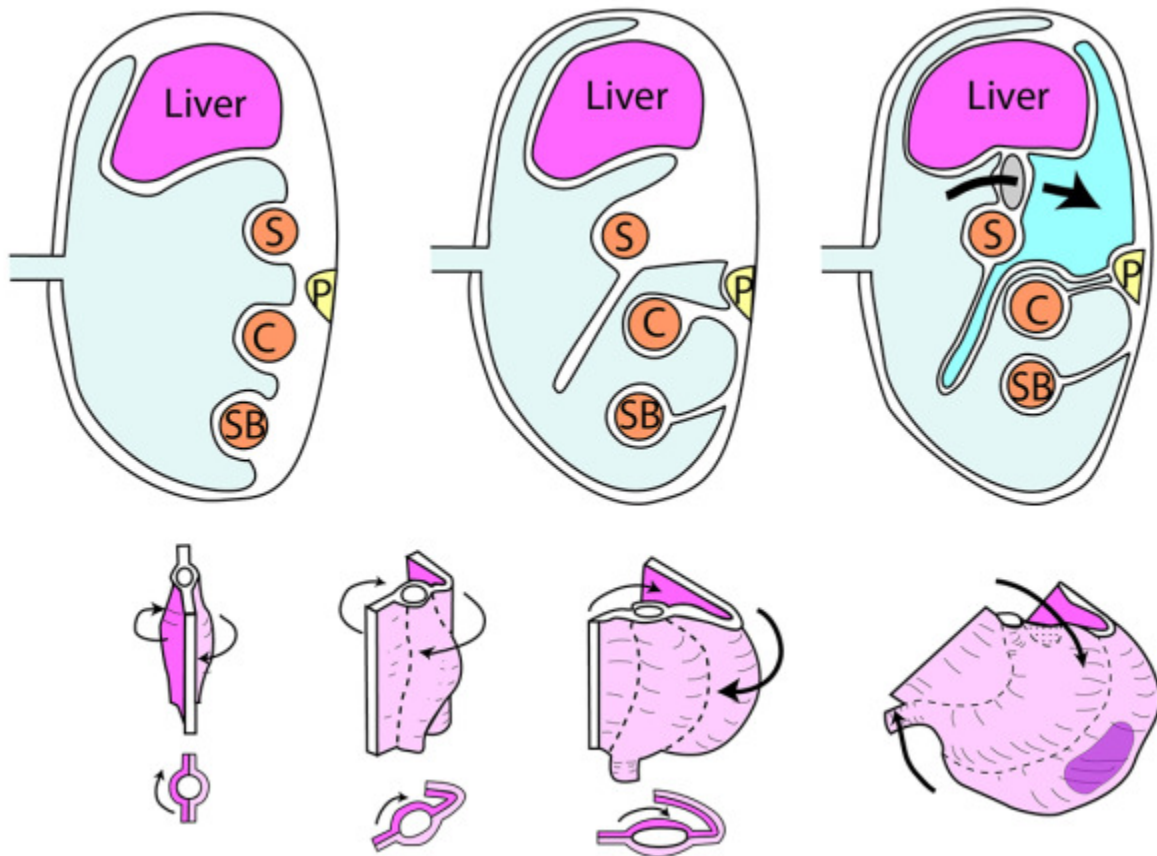
AXIAL SECTION ACROSS FAR LEFT SIDE OF LESSER SAC



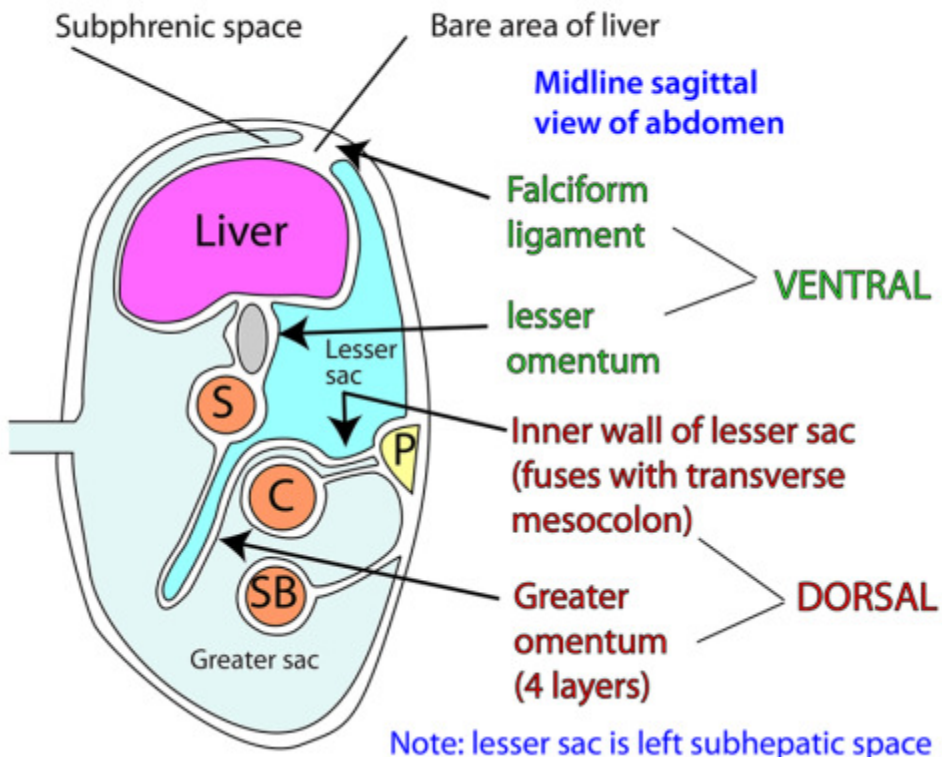
The **gastrosplenic ligament** contains the short gastric & left gastro-epiploic vessels

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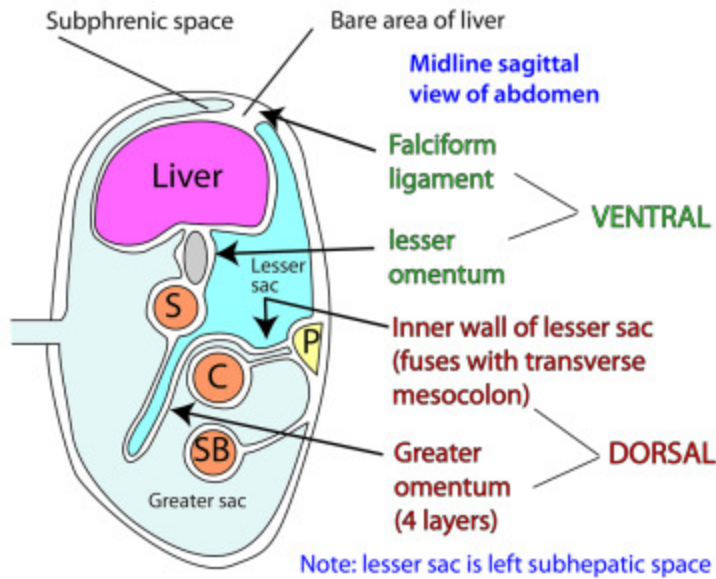
The two ligaments are the remnants of the the dorsal mesentery of the stomach. The ventral mesentery is the lesser omentum and the falciform ligament



PERITONEAL CAVITIES AND LESSER SAC



PERITONEAL CAVITIES AND LESSER SAC

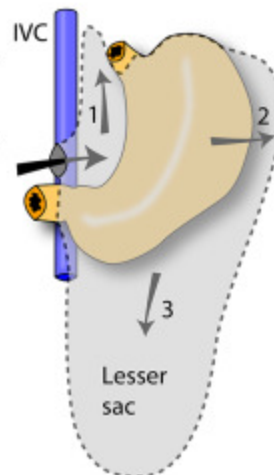


LESSER SAC

The arrows indicate the direction of expansion of the lesser sac -

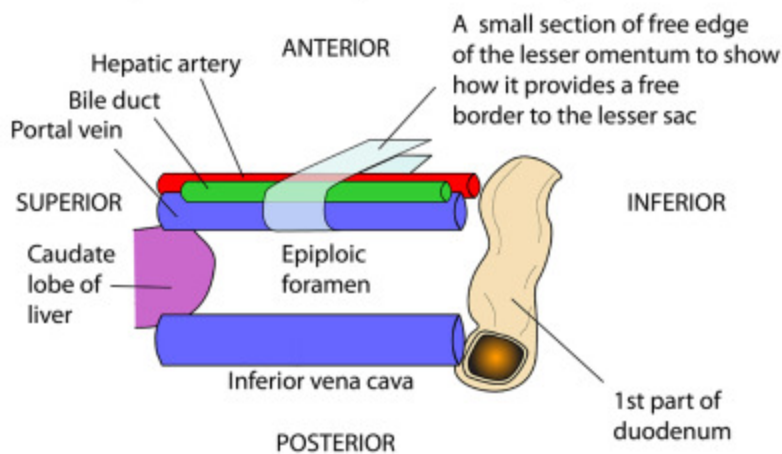
1. Up under the left lobe of the liver
2. Across to the spleen on the left
3. Down within the 2 layers of the greater omentum inferiorly

Note: perforation of posterior wall gastric ulcers can fill the lesser sac with gastric contents



EPILOIC FORAMEN

(Foramen of Winslow, aditus to lesser sac)



Simplified diagram looking left into the lesser sac from the right side of the abdomen