

## Development of the General Peritoneal Cavity

### RETROPERITONEAL



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

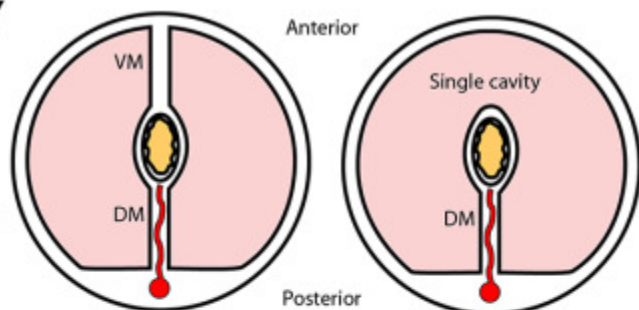
### ON A MESENTERY



- 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

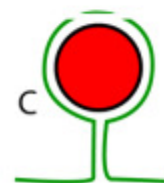
### PRINCIPLES OF MESENTERY DEVELOPMENT

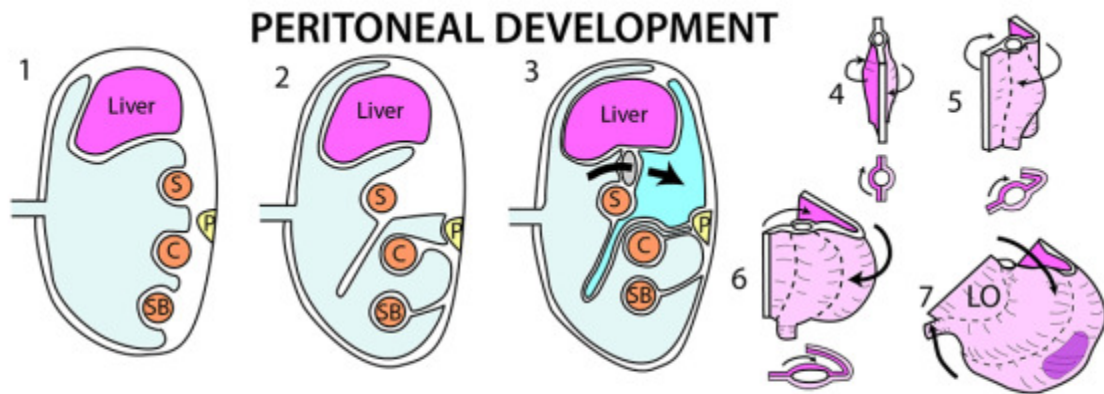
1. At the level of the developing foregut which includes the stomach there are two peritoneal cavities separated by a dorsal and ventral mesentery. The stomach is covered by, and suspended between, the two. Note the access for the blood supply in the dorsal mesentery



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

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.





This description is a useful way at looking at peritoneal development but it is NOT the way that it actually happens. Imagine that a large, soft balloon is inserted through the umbilicus & blown up within the abdominal cavity so that it covers all the organs (1,2). It extends around the liver as far as it can but is limited by the attachments of the IVC posteriorly & the bare area. It covers stomach (S), colon (C), small bowel (SB) & pancreas (P).

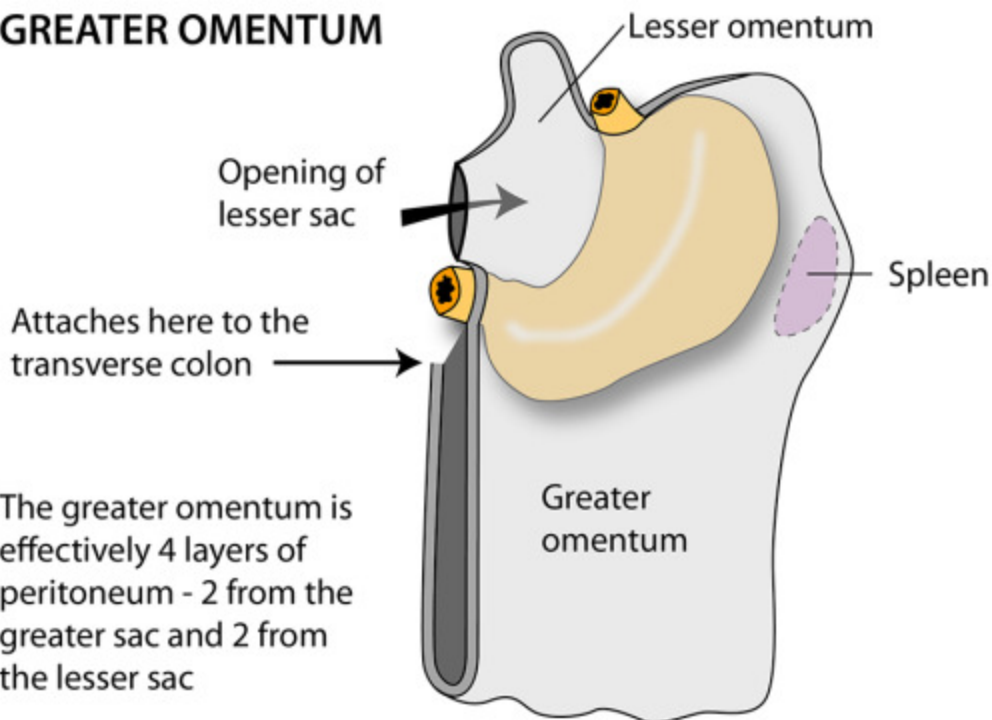
Between the stomach & the colon there is a prolapse of peritoneum - the greater omentum. As the SB moves anterior its peritoneal covering becomes its mesentery.

The stomach rotates so that its right side is now facing posteriorly (4-7). The peritoneum that was on its right side expands posterior to the stomach to become the lesser sac & continues to expand up behind the liver, over the posterior wall of the stomach, onto the superior wall of the transverse colon & half the pancreas. Finally it pushes down between the two layers of the greater omentum to give it four layers.

As the stomach also rotates in a coronal plane (7), the opening of the lesser sac (3) becomes a small hole posterior to the lesser omentum (LO) which is called the aditus (opening) of the lesser sac (foramen of Winslow or epiploic foramen).

The LO is the remnant of the ventral mesentery, joining the stomach to the liver (3) which has developed in this mesentery. Note that the spleen develops in the dorsal mesentery of the stomach & thus must finally be in the far left wall of the lesser sac.

### GREATER OMENTUM



The greater omentum is effectively 4 layers of peritoneum - 2 from the greater sac and 2 from the lesser sac