ABDOMINAL CAVITY PERITONEUM

DEFINE LESSER SAC AND DESCRIBE THE BOUNDARIES, EPIPLOIC FORAMEN, EXTENT AND SURGICAL IMPORTANCE OF LESSER SAC (LE)

Lesser sac - Diverticulum of peritoneal cavity behind the stomach

Acts as a bursa to allow expansion of stomach

Boundaries:

Anterior Wall:

Caudate lobe of liver

Lesser omentum

Postero-inferior surface of stomach

Anterior 2 layers of greater omentum

Posterior wall:

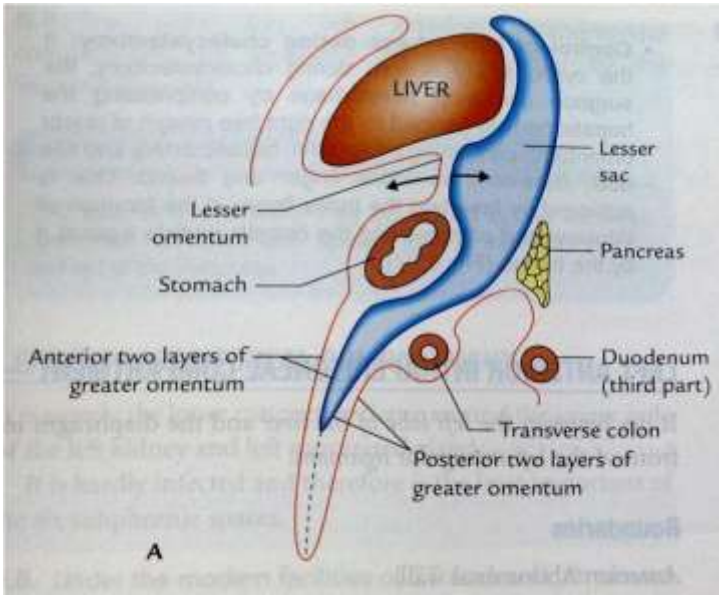
Posterior 2 layers of greater omentum

Transverse colon & transverse mesocolon

Pancreas

Left kidney & left suprarenal gland

Diaphragm

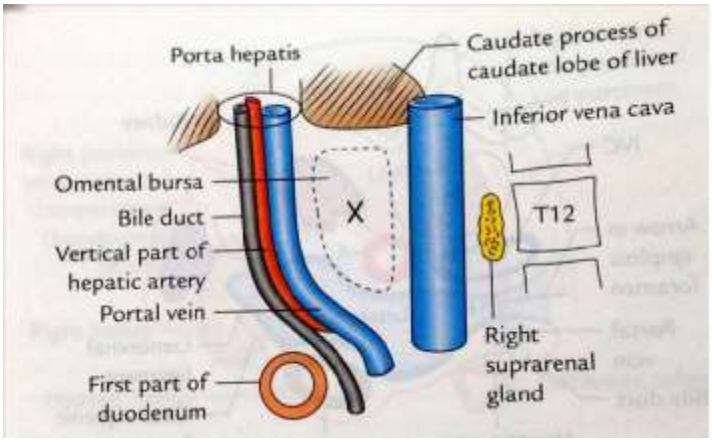


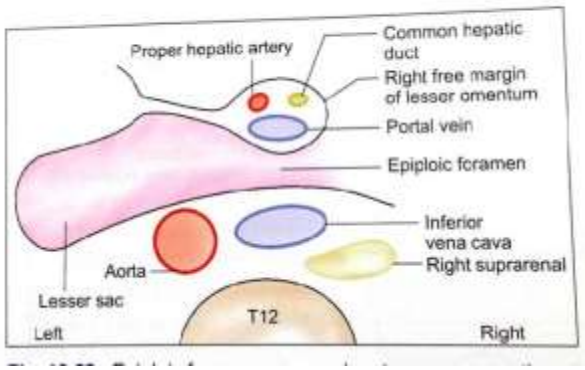
Lesser sac – sagittal view

Lesser sac is in communication with greater sac through Epiploic foramen

Epiploic foramen is also known as Foramen of Winslow and Aditus to the lesser sac.

It is a vertical slit through which lesser sac communicates with greater sac
Situated opposite T12 vertebra





Boundaries:

Anterior:

Right free margin of lesser omentum
(Portal vein, hepatic artery & bile duct)

Posterior:

Inferior vena cava

Superior:

Caudate process of liver

Inferior:

First part of duodenum

Recesses of Lesser sac:

Superior recess
Inferior Recess
Splenic recess

Surgical importance of Lesser sac:

Pseudocyst of pancreas- collection of fluid in lesser sac

Perforation of posterior wall of stomach – collection of fluid into lesser sac

And acute abdomen can arise from internal herniation of cecum,transverse colon, small intestine and gall bladder through the epiploic foramen into lesser sac.

GREATER OMENTUM - ATTACHMENTS, CONTENTS AND FUNCTIONS (SE)

A large fold of peritoneum which hangs from greater curvature of stomach made up of 4 layers of peritoneum

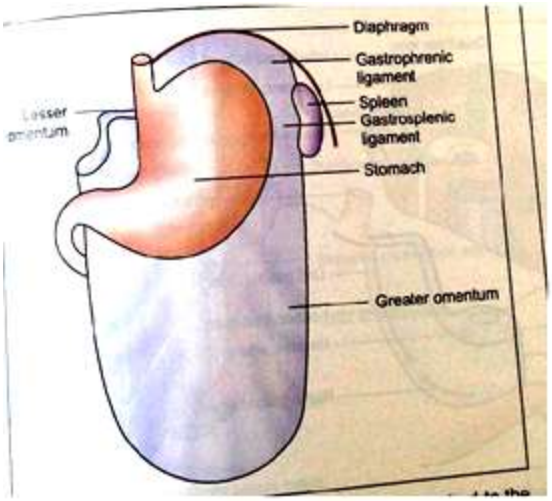
Attachments:

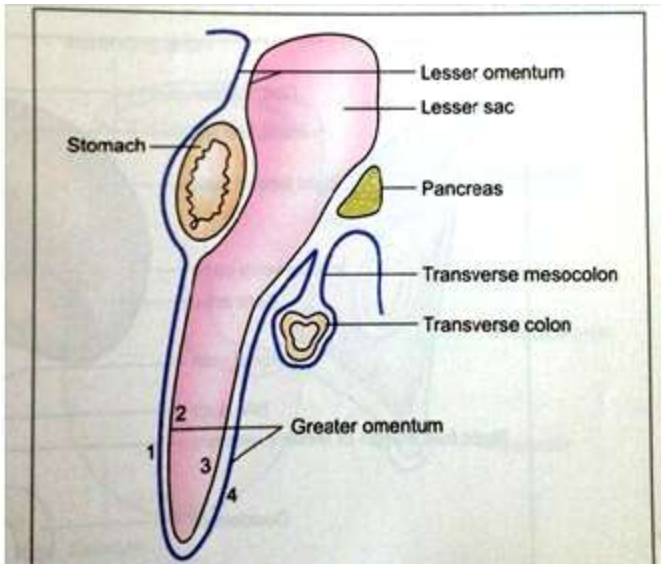
Anterior 2 layers attached to greater curvature of stomach.
They descend to a variable extent and fold on itself to form posterior 2 layers.

1st layer – forms 4th layer

2nd layer – forms 3rd layer

Posterior 2 layers ascend upto the transverse mesocolon.
3rd and 4th layers of greater omentum separate to enclose transverse colon. 3rd layer is continuous with upper layer of transverse mesocolon.
4th layer is continuous with lower layer of transverse mesocolon.





Contents:

Between the 1st & 2nd layers :
right & left gastro-epiploic vessels

Between the 2nd & 3rd layers :
part of lesser sac

Between the 3rd & 4th layers :
right & left gastro-epiploic vessels

Adipose tissue of variable amount.

Functions of greater omentum:

Acts as store house of fat

Acts as **Policeman of Abdomen**

Greater omentum wraps an inflamed organ and prevents spread of infection to general peritoneal cavity.

LESSER OMENTUM- ATTACHMENTS AND CONTENTS (SE)

Lesser omentum:

A peritoneal fold connecting lesser curvature of stomach and liver.

Attachments:

It is a double layered fold **inferiorly**- Lesser curvature of stomach

Proximal 2.5 cm of duodenum

Superiorly – 'Inverted L shaped attachment' to margins of Fissure for ligamentum venosum & porta hepatis

Right side- It forms a **right free margin**

Left side- Layers separate to enclose stomach.

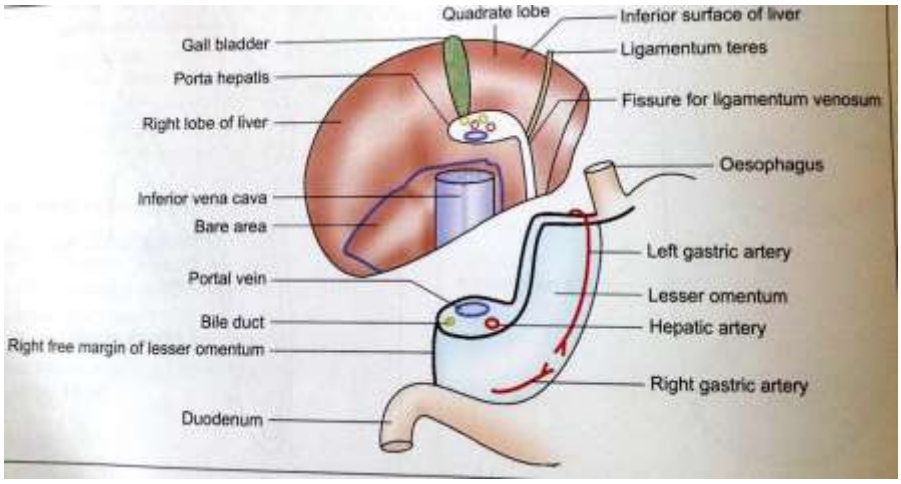


Figure showing attachments and contents of lesser omentum

Contents:

Along the lesser curvature: Right & left gastric vessels

Within the right free margin:

Portal vein, hepatic artery & bile duct (Posterior to anterior)

Applied Anatomy:

Internal hernia

Control of haemorrhage during cholecystectomy.

EPIPLOIC FORAMEN (SE)

Epiploic foramen is also known as Foramen of Winslow and Aditus to the lesser sac. It is a vertical slit through which lesser sac communicates with greater sac
Situated opposite T12 vertebra

Boundaries:

Anterior:

Right free margin of lesser omentum
(Portal vein, hepatic artery & bile duct)

Posterior:

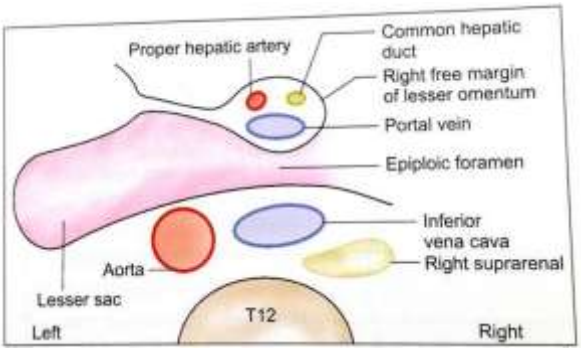
Inferior vena cava

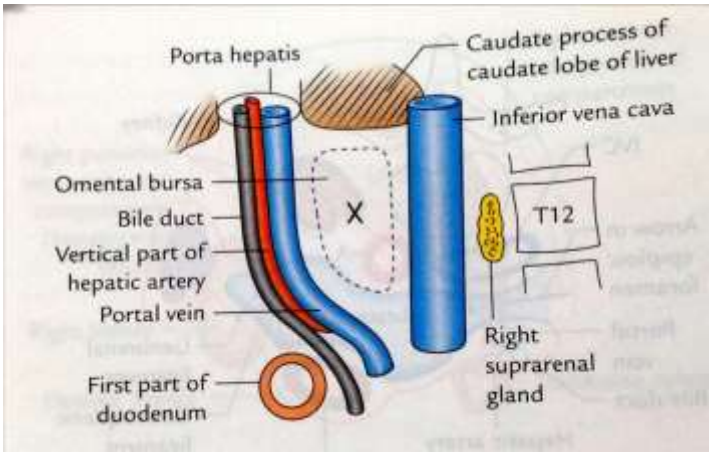
Superior:

Caudate process of liver

Inferior:

First part of duodenum





LESSER SAC (OMENTAL BURSA) – LOCATION, BOUNDARIES, OPENINGS AND APPLIED ANATOMY (SE)

Location: Diverticulum of peritoneal cavity behind the stomach
Acts as a bursa to allow expansion of stomach

Opening: It is in communication with greater sac through Epiploic foramen

Boundaries:

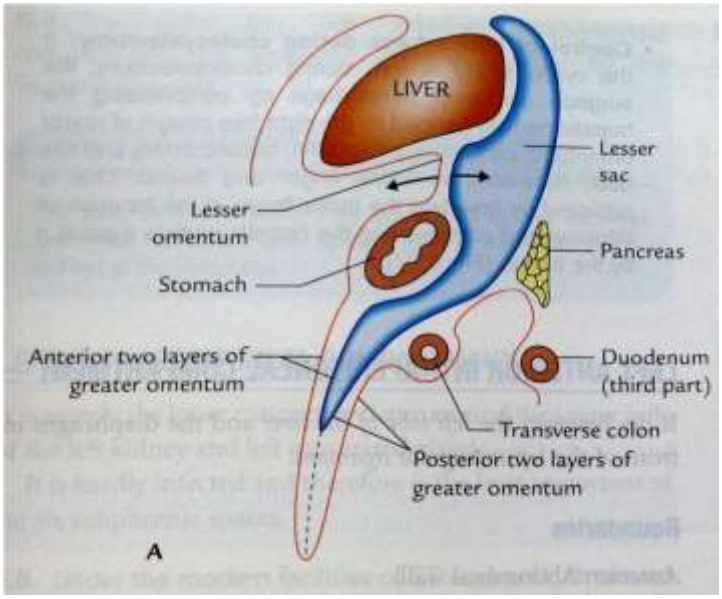
Anterior Wall:

Caudate lobe of liver

Lesser omentum
Postero-inferior surface of stomach
Anterior 2 layers of greater omentum

Posterior wall:

Posterior 2 layers of greater omentum
Transverse colon & transverse mesocolon
Pancreas
Left kidney & left suprarenal gland
Diaphragm



Lesser sac – sagittal view

Recesses of Lesser sac:

Superior recess
Inferior Recess
Splenic recess

Applied Anatomy:

Pseudocyst of pancreas- collection of fluid in lesser sac.
Perforation of posterior wall of stomach – collection of fluid into lesser sac.

LESSER OMENTUM- CONTENTS (SA)

Contents of lesser omentum:

Along the lesser curvature of stomach:
Right & left gastric vessels Within the right free margin: (Posterior to anterior)
Portal vein,
hepatic artery &
bile duct.

EPIPLOIC FORAMEN -DRAW AND LABEL BOUNDARIES (SA)

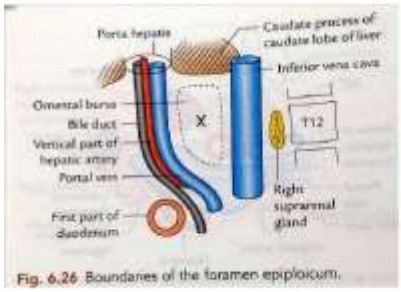


Fig. 6.26 Boundaries of the foramen epiploicum.

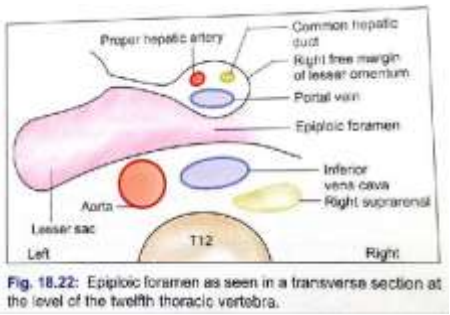


Fig. 18.22: Epiploic foramen as seen in a transverse section at the level of the twelfth thoracic vertebra.

Omental Bursa (SA)

Omntal bursa is also known **as lesser sac**

Location: Diverticulum of peritoneal cavity behind the stomach

Acts as a bursa to allow expansion of stomach

It is in communication with greater sac through **Epiploic foramen**

Boundaries:

Anterior Wall:

Caudate lobe of liver
Lesser omentum
Postero-inferior surface of stomach
Anterior 2 layers of greater omentum

Posterior wall:

Posterior 2 layers of greater omentum
Transverse colon & transverse mesocolon
Pancreas
Left kidney & left suprarenal gland
Diaphragm.

MESENTERY OF SMALL INTESTINE (SE)

It is a broad fan shaped fold of peritoneum

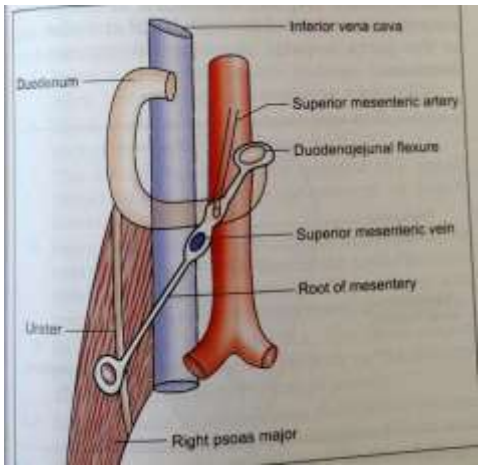
Suspends the coils of small intestine from the posterior abdominal wall.

Features:

Presents **2 borders**- Free border (intestinal border) and Attached border (Root)

Free border is 6 m long and encloses coils of jejunum and ileum

Root is 6 inches long



Root of the mesentery:

Extent:

From the duodeno-jejunal flexure to ileocaecal junction. Extends from the left side of L2 vertebra to Right sacro-iliac junction.

Structures crossed by the root of Mesentery:

- Third part of duodenum
- Abdominal aorta
- Inferior vena cava
- Right gonadal vessels
- Right ureter
- Right psoas major muscle
- Right genito-femoral nerve

Contents of mesentery:

- Jejunum and ileum
- Jejunal and ileal branches of superior mesenteric vessels
- Lymphatics
- Nerves
- Fat and connective tissue

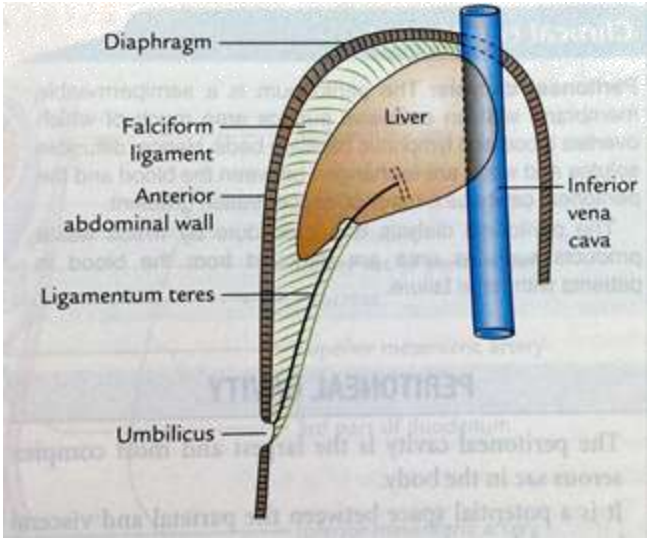
FALCIFORM LIGAMENT (SE)

- It is a **sickle shaped** peritoneal fold
- It is double layered
- Connects **Liver** to Anterior abdominal wall upto umbilicus and to the diaphragm

Attachments:

- Convex margin – attached to diaphragm and anterior abdominal wall
- Concave margin- attached to anterosuperior surface of liver between anatomical right & left Lobes
- Free margin- Lower free margin extends from umbilicus to inferior border

of liver



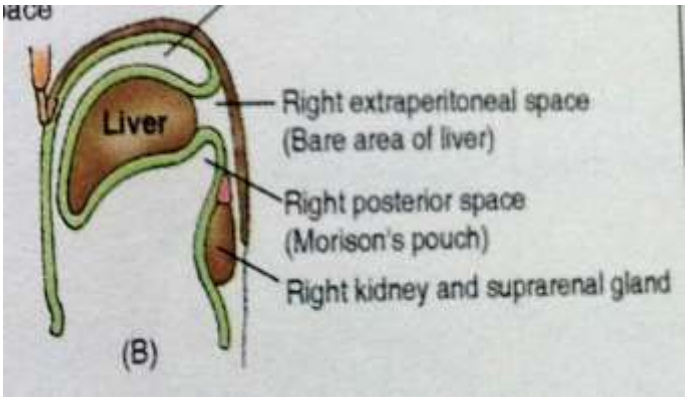
Contents- Along the inferior free border,

Ligamentum teres hepatis (obliterated left umbilical vein)
Para umbilical veins
Numerous small veins connecting para umbilical veins with diaphragmatic veins

HEPATORENAL POUCH (SE)

Also known as Hepatorenal pouch of Morison.

It is the most dependent part of pelvic cavity above the pelvic brim in supine position.



Boundaries:

Anteriorly:

Inferior surface of right lobe of liver

Posteriorly:

Anterior surface of right kidney

Above:

Inferior coronary ligament

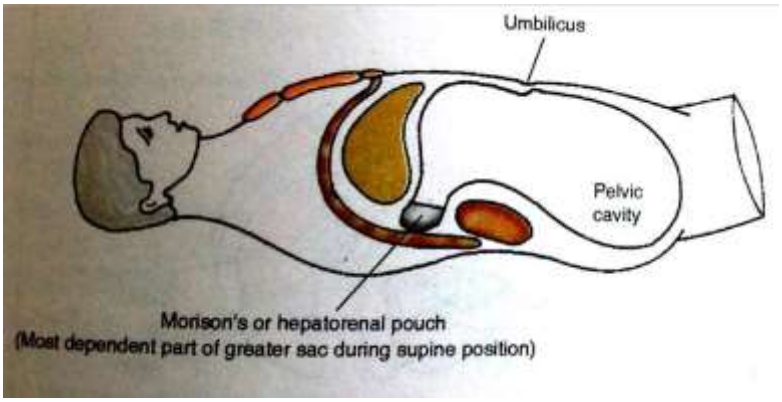
Below:

Communicates with greater sac

Left side: Communicates with lesser sac through epiploic foramen

Applied Anatomy:

It is the most dependent part of peritoneal cavity in supine position above the pelvic brim As a result pus tends to collect in this pouch following an upper abdominal surgery. Therefore following a surgery it is routine to insert a drain tube in this pouch to facilitate drainage.



RECTOUTERINE POUCH -POUCH OF DOUGLAS (SE)

It is pouch of peritoneum situated between rectum and uterus

Boundaries:

Anteriorly:

Posterior surface of Uterus and

Upper 1/3rd of posterior wall of vagina

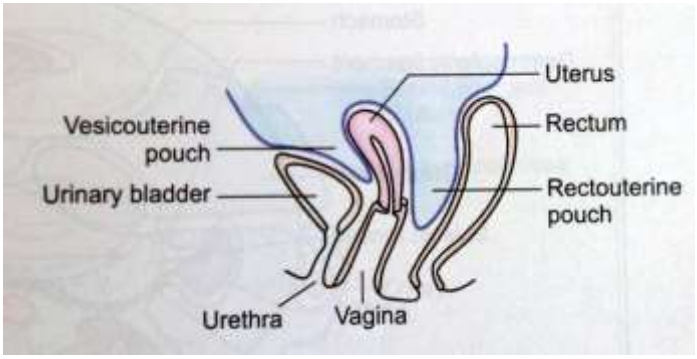
Posteriorly:

Rectum

Inferiorly:

Rectovaginal fold of peritoneum

The bottom of this pouch lies about 5.5cm above the anus and 7.5 cm above vagina



Clinical significance:

Rectouterine pouch is the most dependent part of peritoneal cavity.

Pus tends to collect here and forms the pelvic abscess.

Pus/ fluid from the pouch can be drained through rectum or through posterior fornix of vagina. (Posterior colpotomy)

MESENTERY- ATTACHMENTS, BORDERS & CONTENTS (SA)

Attachment: Root of the mesentery:

Extent:

From the duodeno-jejunal flexure to ileocaecal junction.

Extends from the left side of L2 vertebra to Right sacro-iliac junction.

2 borders- Free border (intestinal border) and Attached border (Root)

Contents of mesentery:

Jejunum and ileum
Jejunal and ileal branches of superior mesenteric vessels
Lymphatics
Nerves
Fat and connective tissue.

ROOT OF MESENTERY (SA)

Root of mesentery is the attached border of the mesentery

Extent:

From the duodeno-jejunal flexure to ileocaecal junction.

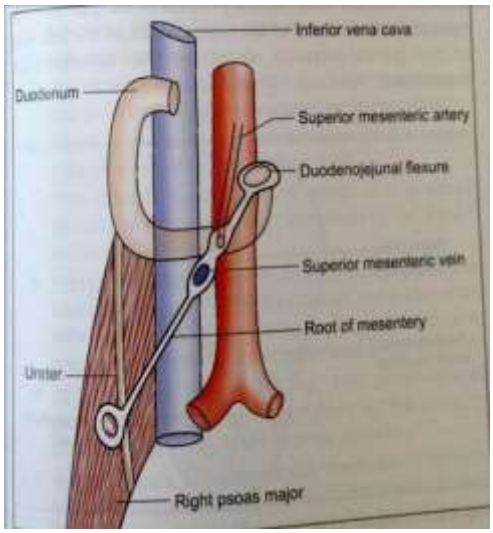
Extends from the left side of L2 vertebra to Right sacro-iliac junction.

Structures crossed by the root of Mesentery:

Third part of duodenum
Abdominal aorta
Inferior vena cava
Right gonadal vessels
Right ureter
Right psoas major muscle
Right genito-femoral nerve

LIST THE STRUCTURES CROSSED BY ROOT OF MESENTERY (SA)

Structures crossed by the root of Mesentery:



Third part of duodenum
Abdominal aorta
Inferior vena cava
Right gonadal vessels
Right ureter
Right psoas major muscle
Right genito-femoral nerve

FALCIFORM LIGAMENT (SA)

It is a **sickle shaped** peritoneal fold
It is double layered
Connects **Liver** to Anterior abdominal wall upto umbilicus and to the diaphragm

Contents- Along the inferior free border,
Ligamentum teres hepatis (obliterated left umbilical vein)
Para umbilical veins
Numerous small veins connecting para umbilical veins with diaphragmatic veins

HEPATORENAL POUCH (SA)

Also known as Hepatorenal pouch of Morison.
It is the most dependent part of pelvic cavity above the pelvic brim in supine position.

Boundaries:

Anteriorly:
Inferior surface of right lobe of liver. Posteriorly:
Anterior surface of right kidney.

Above:

Inferior coronary ligament

Below:

Communicates with greater sac.

Left side:

Communicates with lesser sac through epiploic foramen.

RECTOUTERINE POUCH (SA)

It is pouch of peritoneum situated between rectum and uterus

Boundaries:

Anteriorly:

Posterior surface of Uterus and

Upper 1/3rd of posterior wall of vagina

Posteriorly:

Rectum

Inferiorly:

Rectovaginal fold of peritoneum

The bottom of this pouch lies about 5.5cm above the anus and 7.5 cm above vagina

Clinical significance:

Rectouterine pouch is the most dependent part of peritoneal cavity

Pus/ fluid from the pouch can be drained through rectum or through posterior fornix of vagina (Posterior colpotomy).

PERITONEAL RECESSES(SE)

Peritoneal recesses (or peritoneal gutters) are the spaces formed by peritoneum draping over viscera.

These are small pockets or fossae in the peritoneal cavity, which are bounded by folds of peritoneum called peritoneal recesses

There are other smaller recesses including those around the duodenojejunal flexure, cecum, and the sigmoid colon.

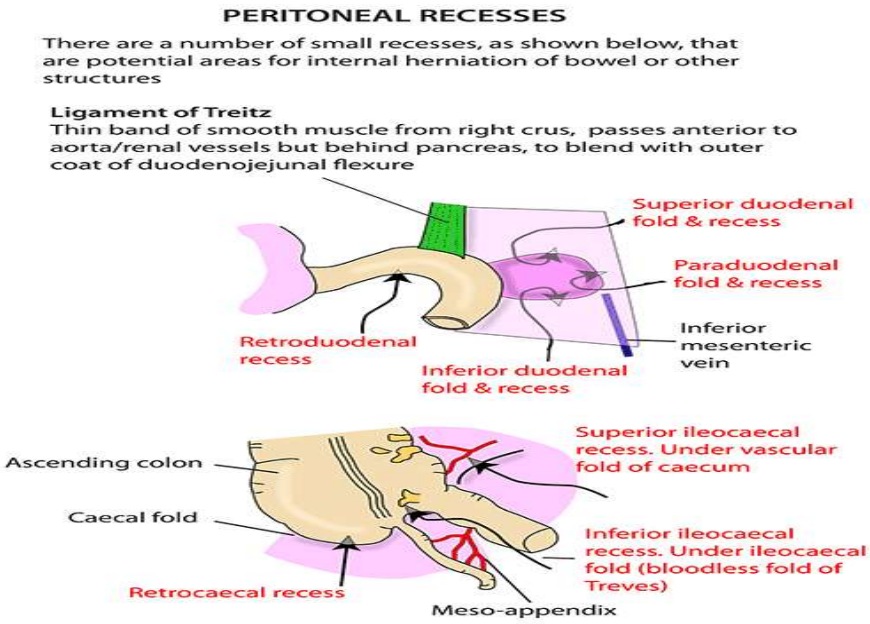
These are potential areas for internal herniation of bowel or other structures.

These gutters are clinically important because they allow a passage for infectious fluids from different compartments of the abdomen. For example; fluid from an infected appendix can track up the right paracolic gutter to the hepatorenal recess.

The four peritoneal recesses are the:

The left and right paracolic gutters.

The left and right paramesenteric gutters.



ILEOCECAL FOLDS(SA)

This is the fold of peritoneum bounding the ileocecal or ileoappendicular fossa.

It is also known as plica ileocecalis , or Treves fold.

two flaps surrounding the opening of the ileum into the large intestine where the c ecum and

ascending colon join together.

The flaps project into the lumen of the large intestine and come together at their end, forming

ridges.

Musculature fromthe ileum continues into each flap, forming a sphincter.

Possible functions of the ileocecal fold include preventing refluxfrom the cecum t o the ileum

and regulating the passage of contents from the ileum to the cecum.

OVARIAN BURSA(SA)

The peritoneal recess between the medial aspect of the ovary and the mesos alpinx.

Other name is **bursa ovarica**

The **ovarian bursa** shields the **ovary** from the peritoneal environment and provides a fluid chamber for oocytes development and **ovarian function**.

PROPERTIES OF PERITONEUM THAT MAKES PERITONEAL DIALYSIS POSSIBLE(SA)

Size 1.5 – 2 m2; approximates BSA •

The greater absorptive power of upper abdomen is due to its larger surface area & because respiratory movements aid absorption.

Highly Vascular •

Semi-permeable/bi-directional • Thus the peritoneum can absorb fluid effusions from the peritoneal cavity.

Water & crystolloids are absorbed directly into the blood capillaries.

Colloids pass into lymphatics with the aid of phagocytes."Lymphatic" drainage through diaphragmatic stomata •

Continuous with Fallopian Tubes in females.

STRUCTURES ATTATCHED TO ROOT OF THE TRANSVERSE MESOCOLON(SA)

Transverse mesocolon is the broad fold of peritoneum connecting the transverse colon to the posterior wall of the abdominal cavity.

The root is attatched to the anterior surface of the head and the anterior border of the body of the pancrease.

Contents

Blood vessels, lymphatics, and nerves supplying the transverse colon.

SIGMOID MESOCOLON(SA)

The **sigmoid mesocolon** is a fold of peritoneum that attaches the sigmoid colon to the pelvic wall.

It is one of the four mesenteries in the abdominal cavity.

Attatchment:

It has an "inverted V" line of attachment, the apex of which is near the division of the left common iliac artery.

The left limb descends medially to the left psoas muscle; the right limb descends into the pelvis and ends in the midline anterior to the third sacral segment.

Contents:

The sigmoid and superior rectal vessels run between the layers of the sigmoid mesocolon .

The left ureter descends into the pelvis behind its apex.

PERTITONEAL LIGAMENTS/FOLDS ATTATCHED TO THE LIVER(SA)

Falciform ligament:

This two layered fold of peritoneum ascends from the umbilicus to the liver. It has a sickle shaped free margin containing the ligamentum teres, which represents the remains of umbilical vein.

Ligamentum teres

This ligament represents the remains of the umbilical vein of fetus.

It passes into a fissure on the visceral surface of liver and joins the left branch of portal vein in the porta hepatis.

Ligamentum venosum

It represents the remains of the ductus venosus of fetus and is attached to the left branch of the portal vein.

It ascends in a fissure on the visceral surface of liver to be attached above to the inferior vena cava.

Lesser omentum

The lesser omentum is also attached to the liver.

It arises from the edges of the porta hepatis and the fissure for ligamentum venosum.

Afterwards, it passes down to the lesser curvature of the stomach.

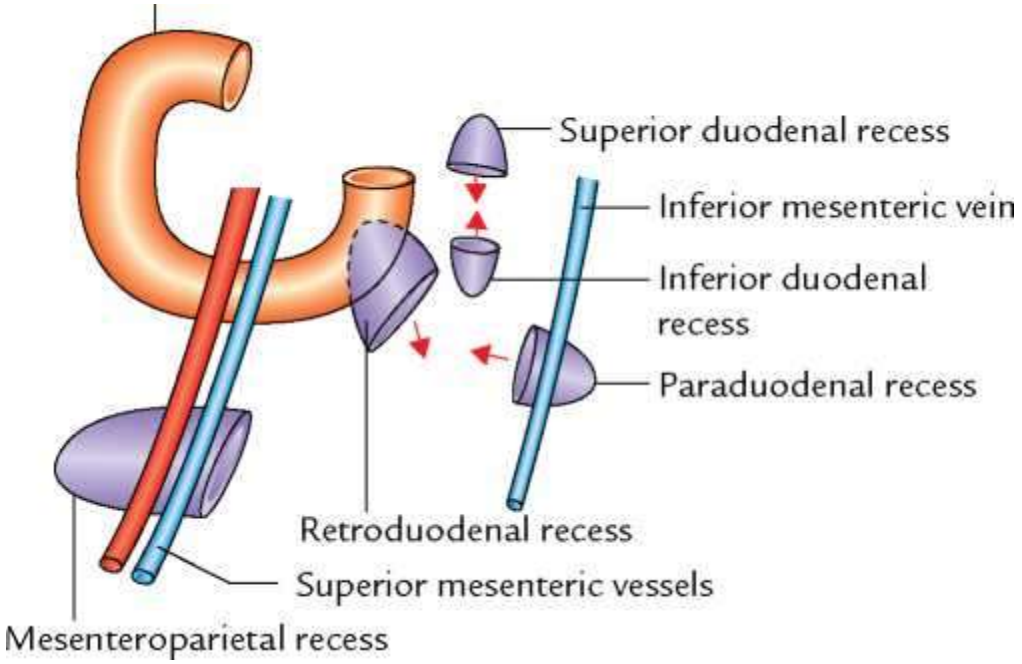
PARADUODENAL RECESS(SA)

There are small pockets or fossae in the peritoneal cavity, which are bounded by folds of peritoneum called peritoneal recesses.

Duodenal recesses are peritoneal recesses surrounding duodenum.

Applied importance:

Sometimes coils of small intestine may enter these recesses, known as internal hernia and may get strangulated.


Superior duodenal recess
Inferior mesenteric vein
Inferior duodenal recess
Paraduodenal recess
Retroduodenal recess
Superior mesenteric vessels
Mesenteroparietal recess