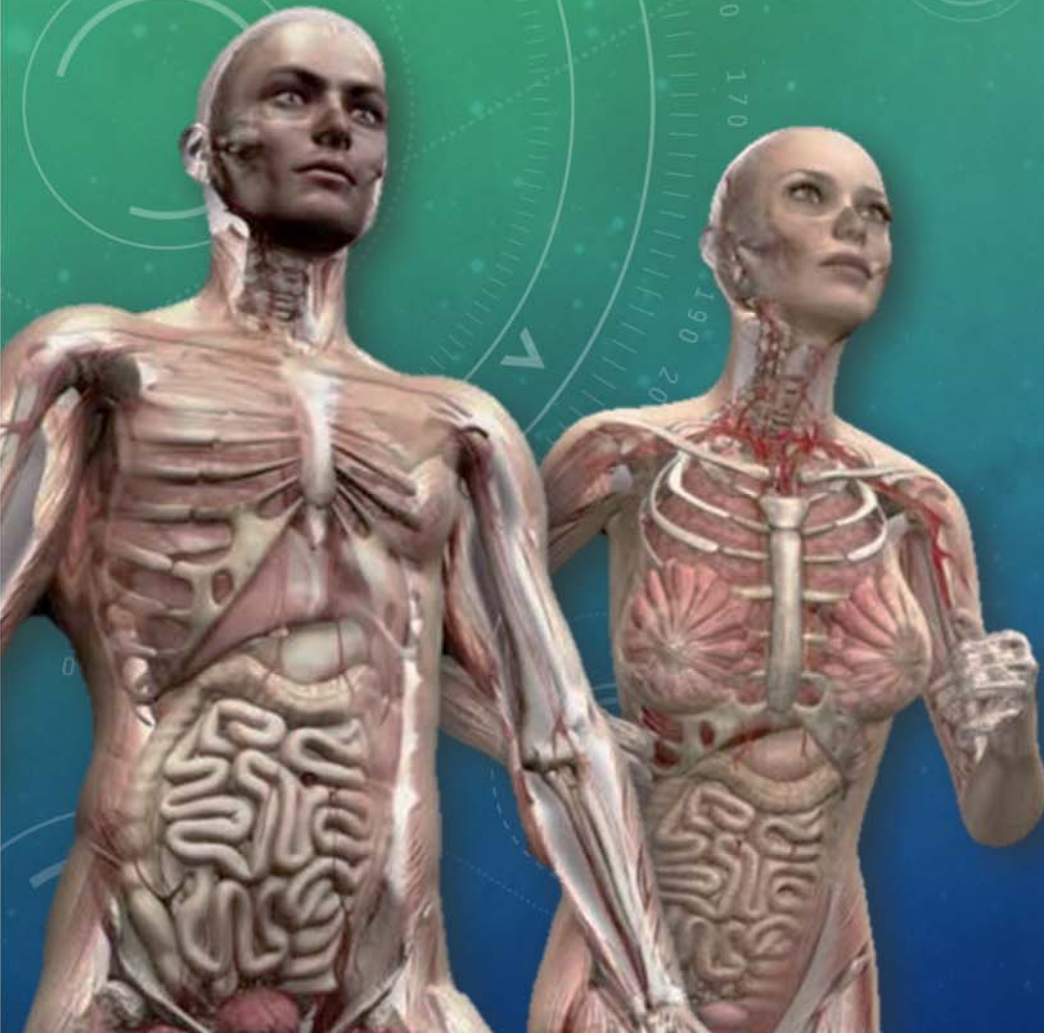


大體老師 無語良師



大體解剖學實驗

HUMAN DISSECTION

PERITONEUM & PERITONEAL CAVITY

盧家鋒 助理教授

臺北醫學大學醫學系 解剖學暨細胞生物學科

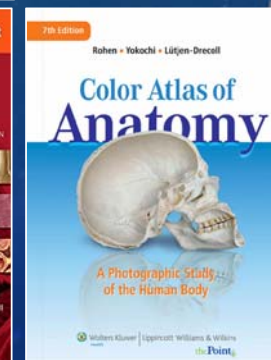
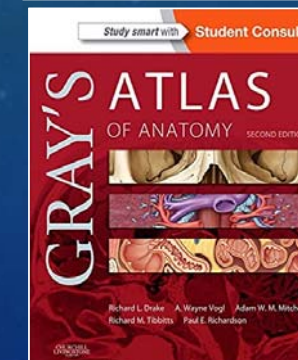
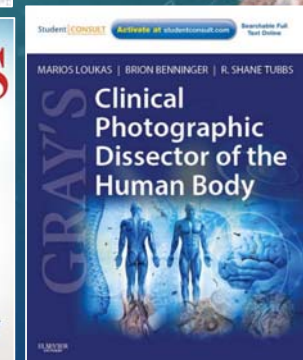
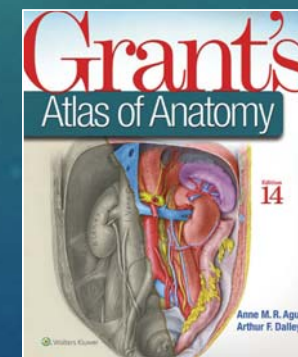
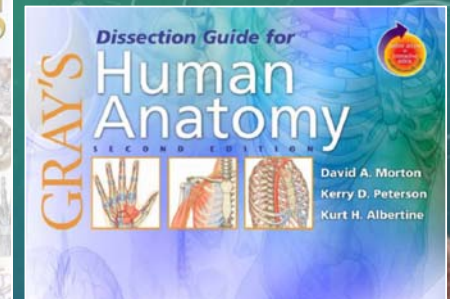
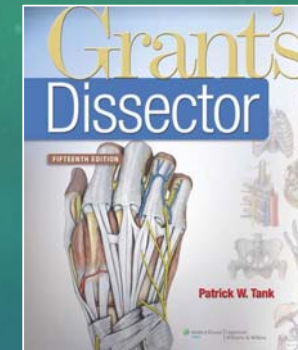
臺北醫學大學醫學院 轉譯影像研究中心

<http://www.ym.edu.tw/~cflu>

REFERENCES

- **Dissector's guide**
 - [1] Dissection Guide for Gray's Human Anatomy, 2ed, 2006
 - **[2] Grant's Dissector, 15ed, 2012**
- **Photographic Dissector**
 - [3] Gray's Clinical Photographic Dissector of the Human Body, 2013
- **Human Atlas**
 - [4] Gray's Atlas of Anatomy, 2ed, 2014
 - **[5] Grant's Atlas of Anatomy 13ed, 2012**
 - [6] Color Atlas of Anatomy: A Photographic Study of the Human Body, 7ed, 2011
 - [7] Atlas of Human Anatomy, 6ed, 2014

<http://www.ym.edu.tw/~cflu>

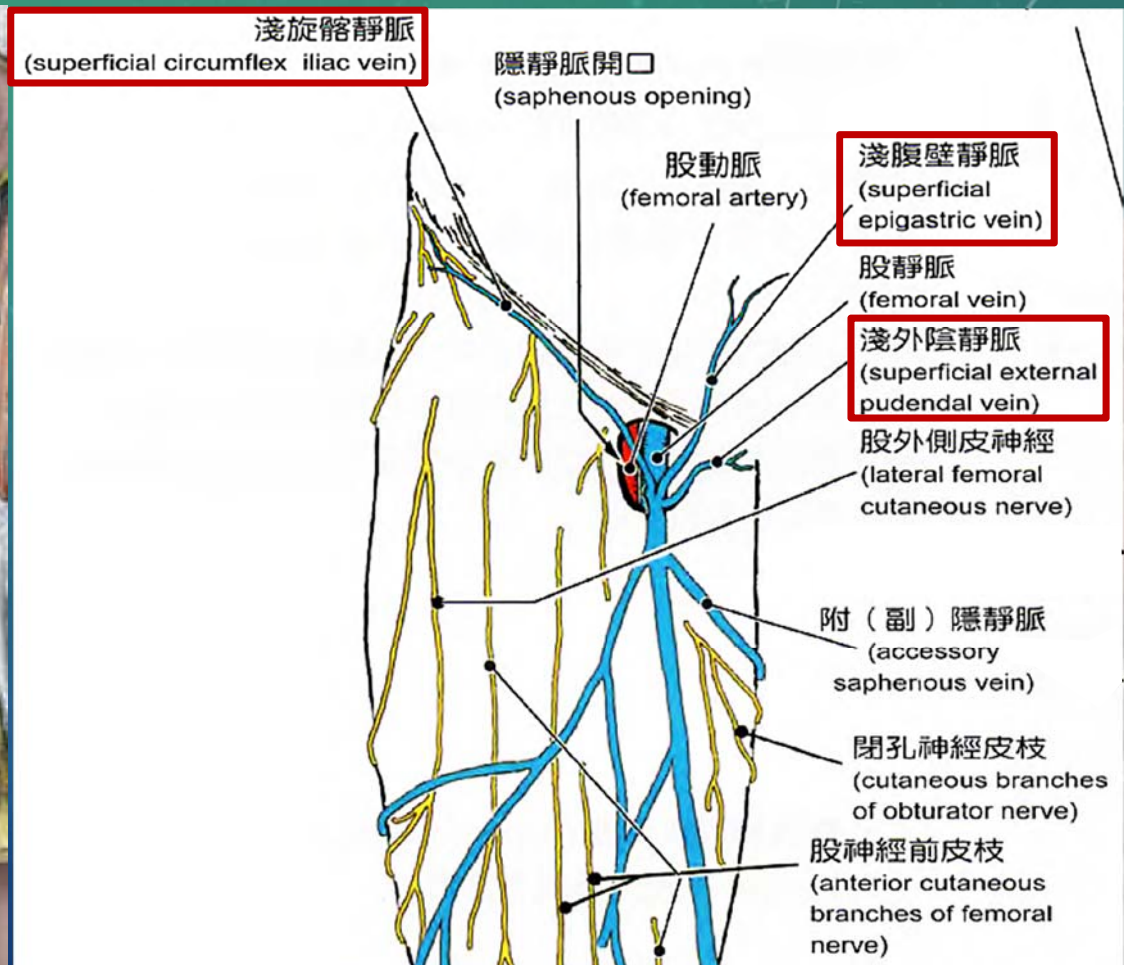
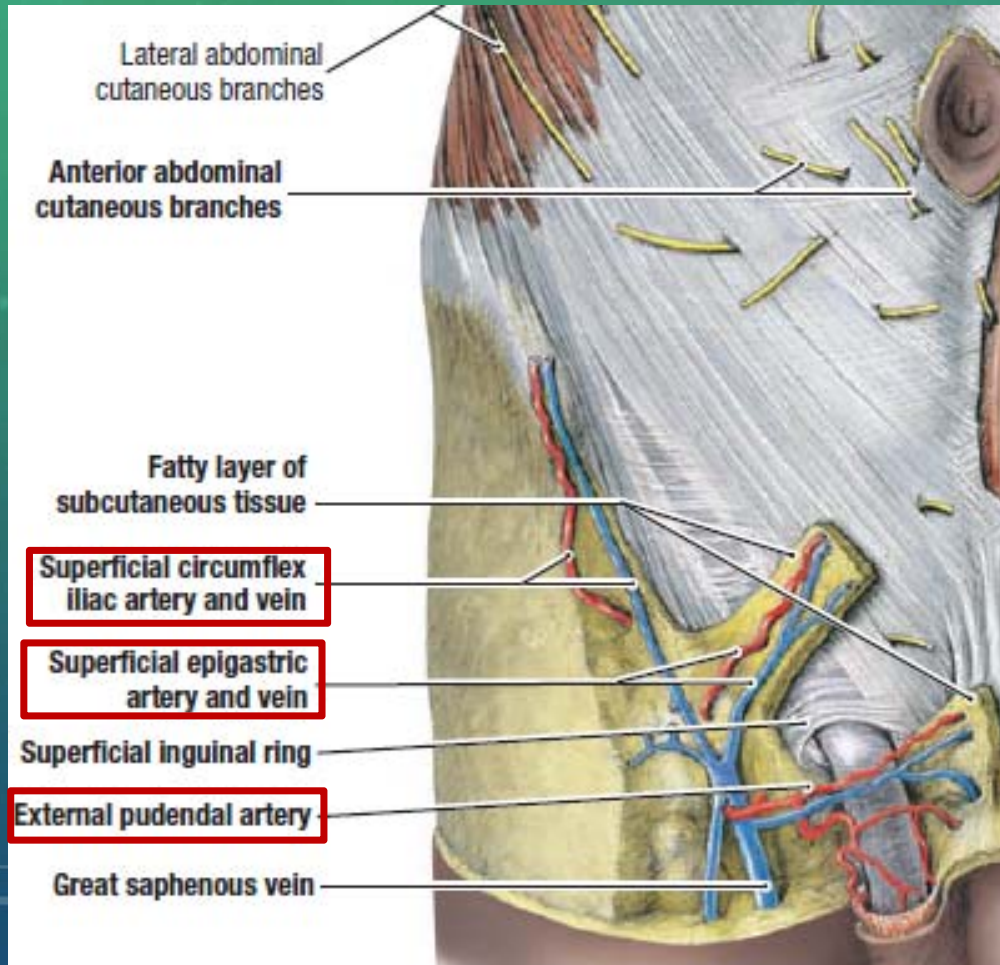


ABDOMEN (2/3)

- Peritoneum & Peritoneal Cavity
- Removal of Gastrointestinal (GI) Tract



REVIEW



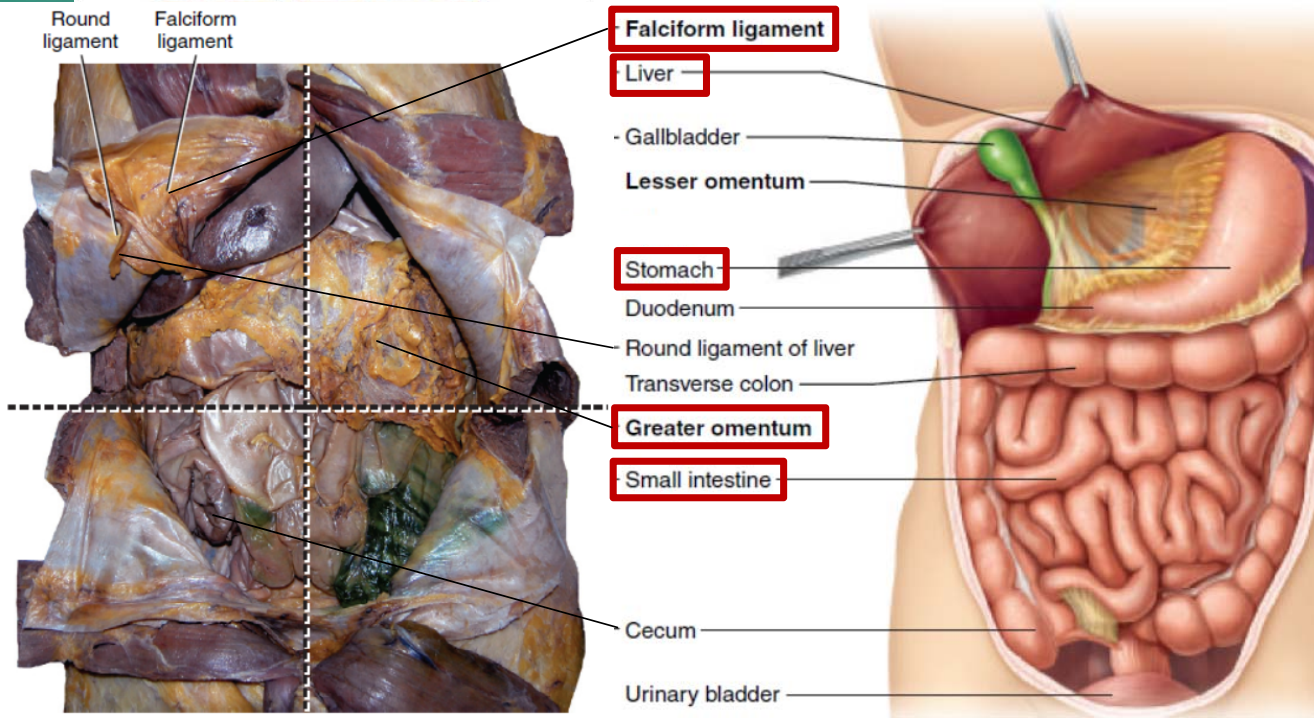
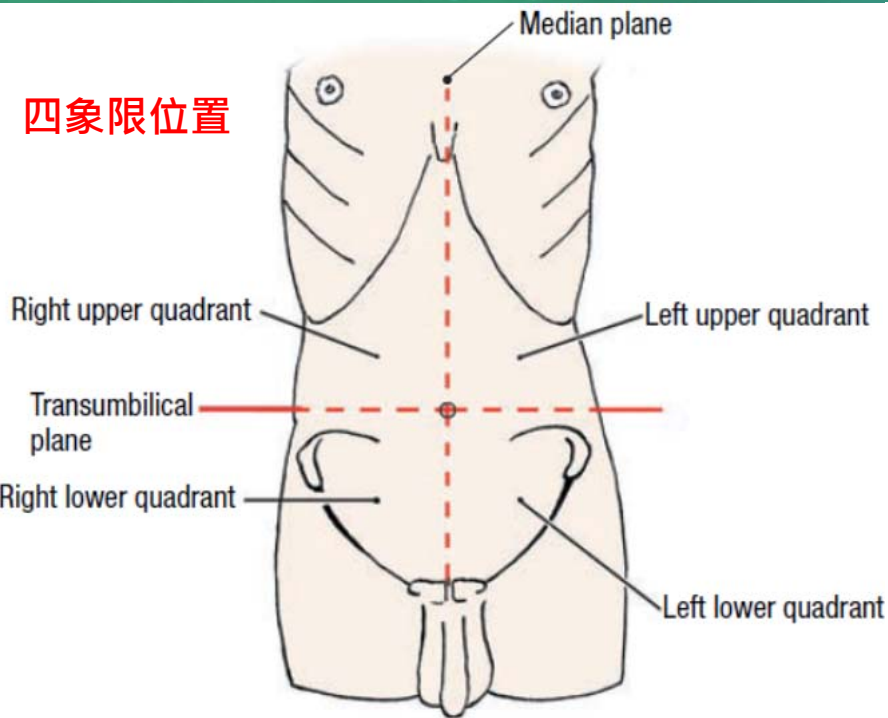
PERITONEUM & PERITONEAL CAVITY

腹膜和腹膜腔

<http://www.ym.edu.tw/~cflu>

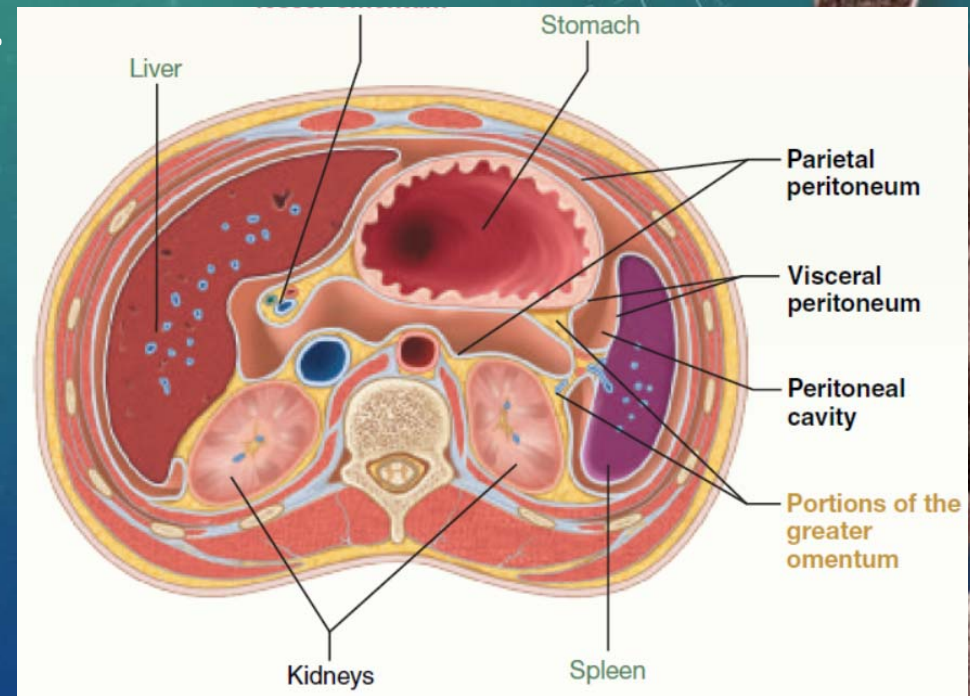
ABDOMINAL VISCERA

四象限位置



PERITONEUM

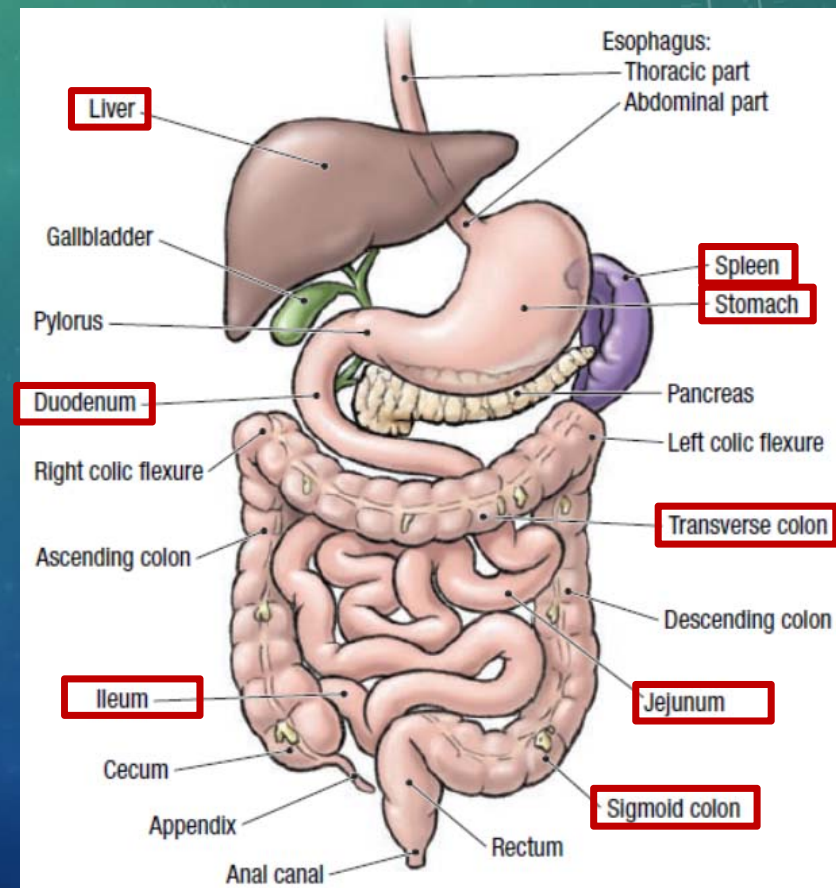
- Peritoneal cavity is lined by peritoneum.
 - Serous membranes that secrete a small amount fluid to lubricate the movements of organs.
- Peritoneum
 - Parietal peritoneum
 - Visceral peritoneum



Mallatt, Human Anatomy 8ed, 2017, p. 715

INTRAPERITONEAL (PERITONEAL) ORGANS

- Stomach 胃
- First part of duodenum 十二指腸
- Jejunum 空腸
- Ileum 迴腸
- Transverse colon 橫結腸
- Sigmoid colon 乙狀結腸
- Liver 肝臟
- Spleen 脾臟



RETROPERITONEAL (EXTRAPERITONEAL) ORGANS

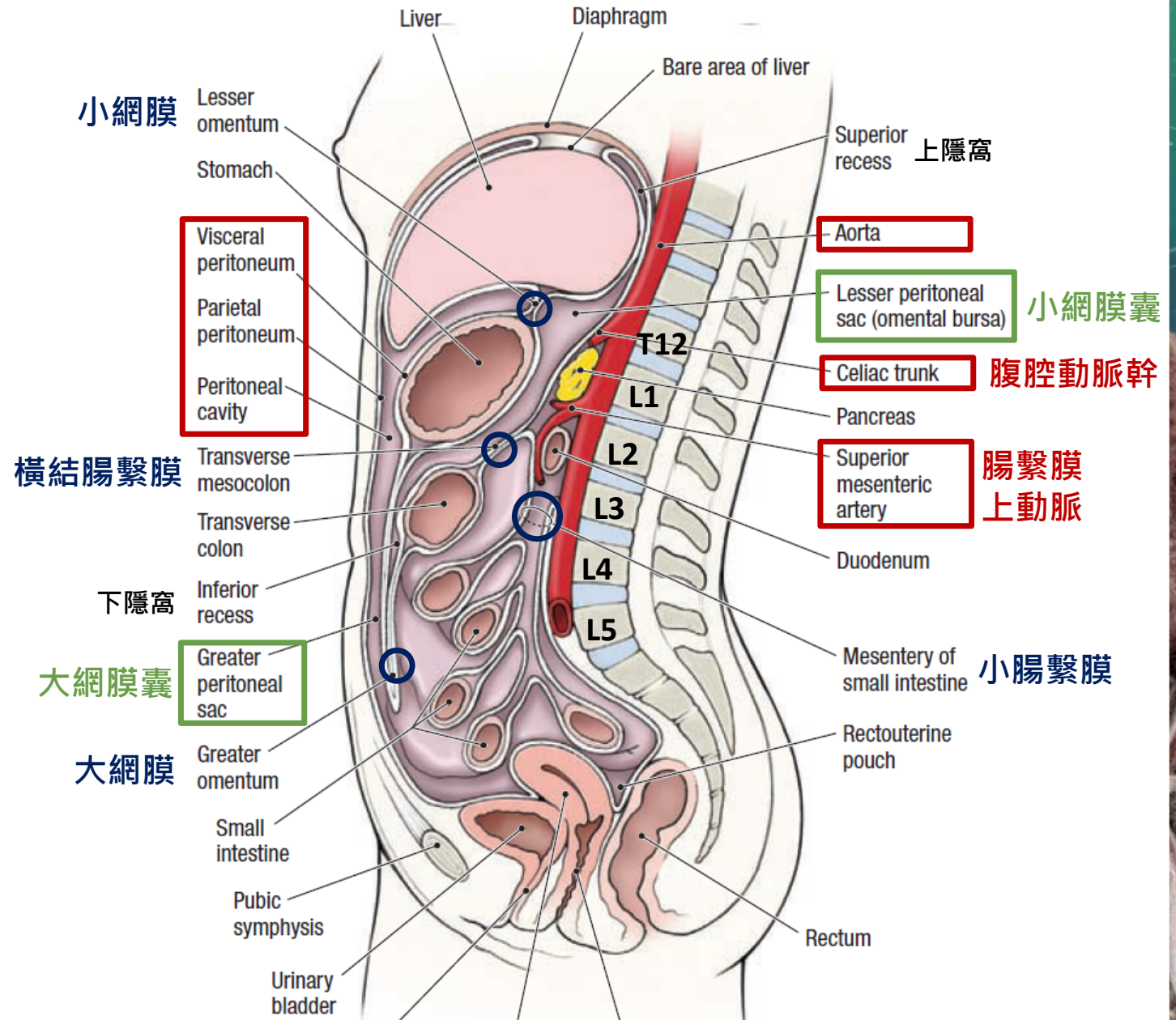
Primary

- Kidneys 腎臟
- Ureters 輸尿管
- Suprarenal glands 腎上腺
- Rectum 直腸

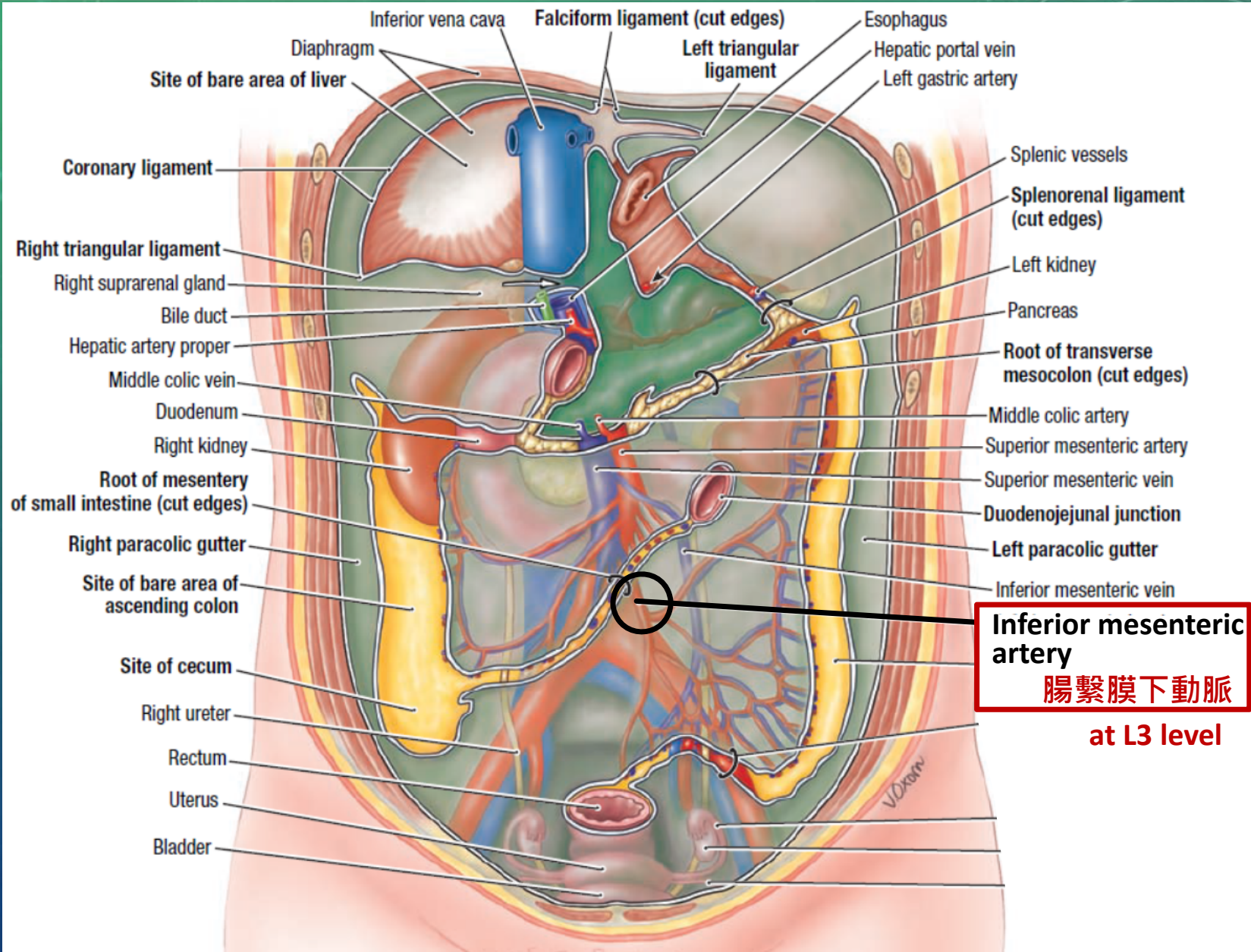
Secondary

- Duodenum (2nd through 4th parts)
- Pancreas 胰臟
- Ascending colon 升結腸
- Descending colon 降結腸

PERITONEUM



PERITONEUM



Ref. [5], p. 126

<http://www.ym.edu.tw/~cflu>

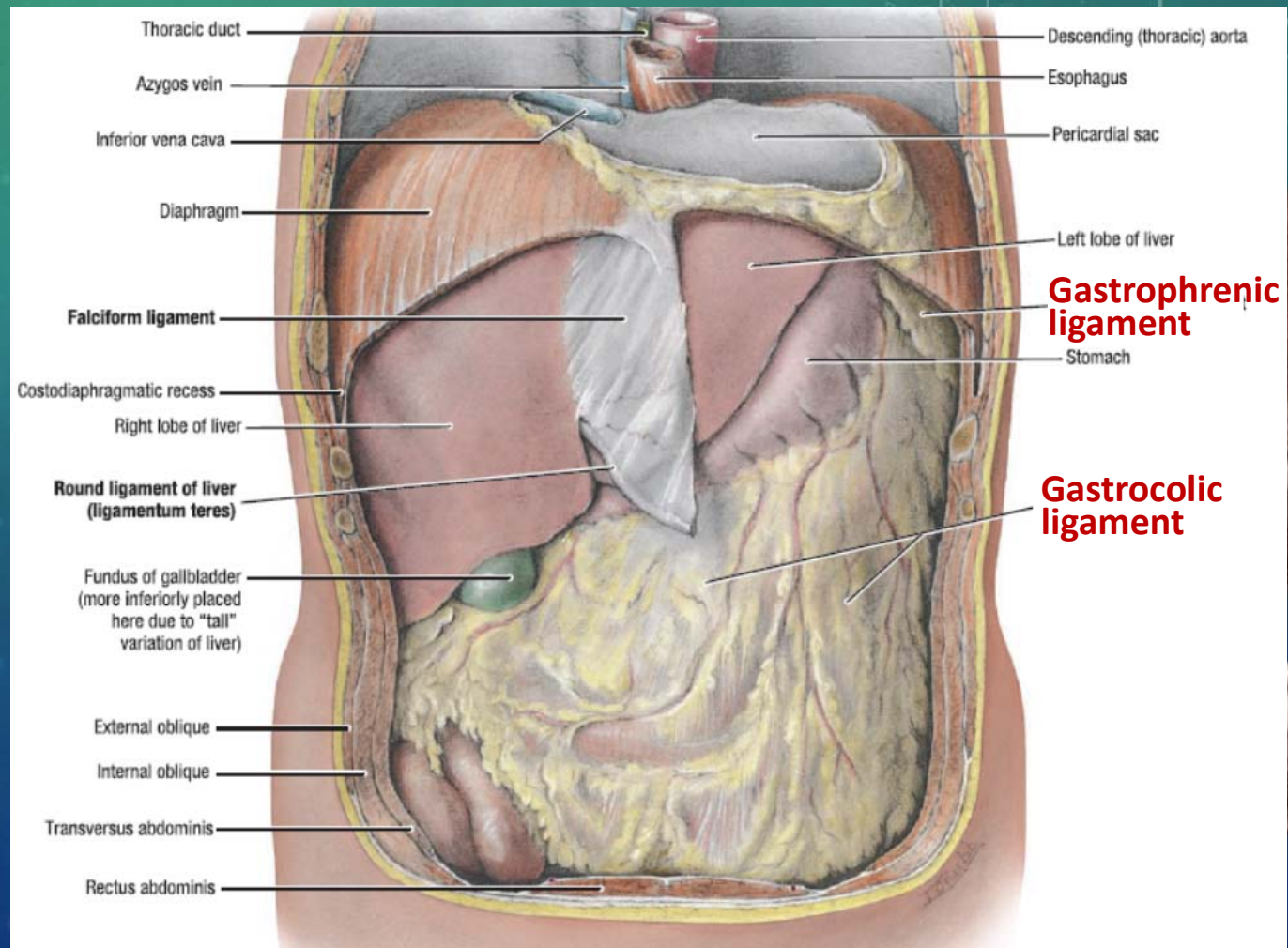
GREATER OMENTUM

大網膜

- The greater omentum is attached to the **greater curvature** of the stomach.
- Includes
 - **Gastrophrenic ligament**
 - **Gastrosplenic ligament**
 - **Gastrocolic ligament**

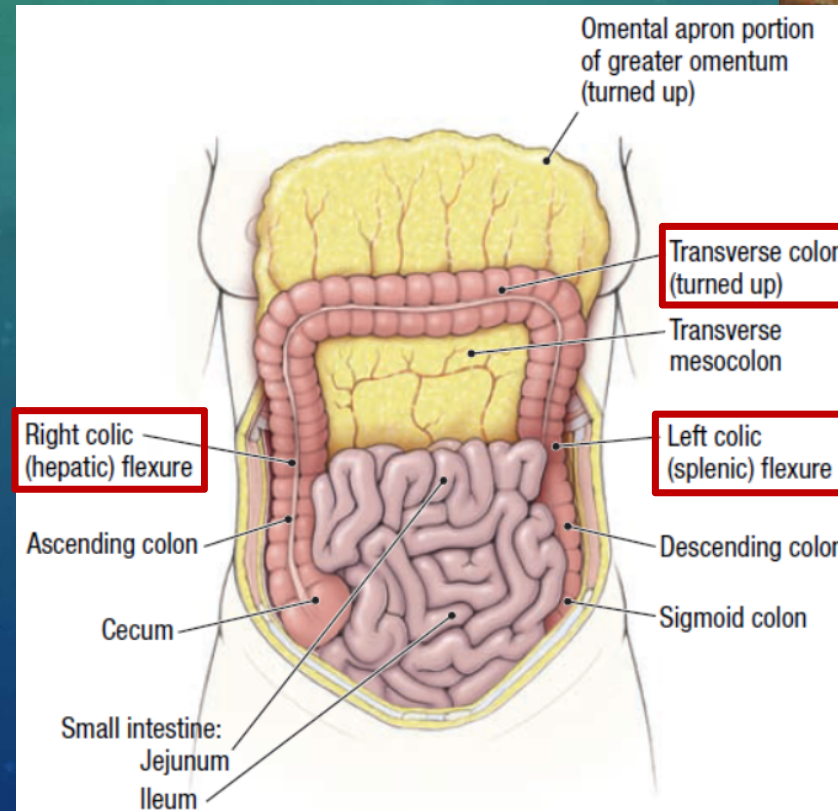
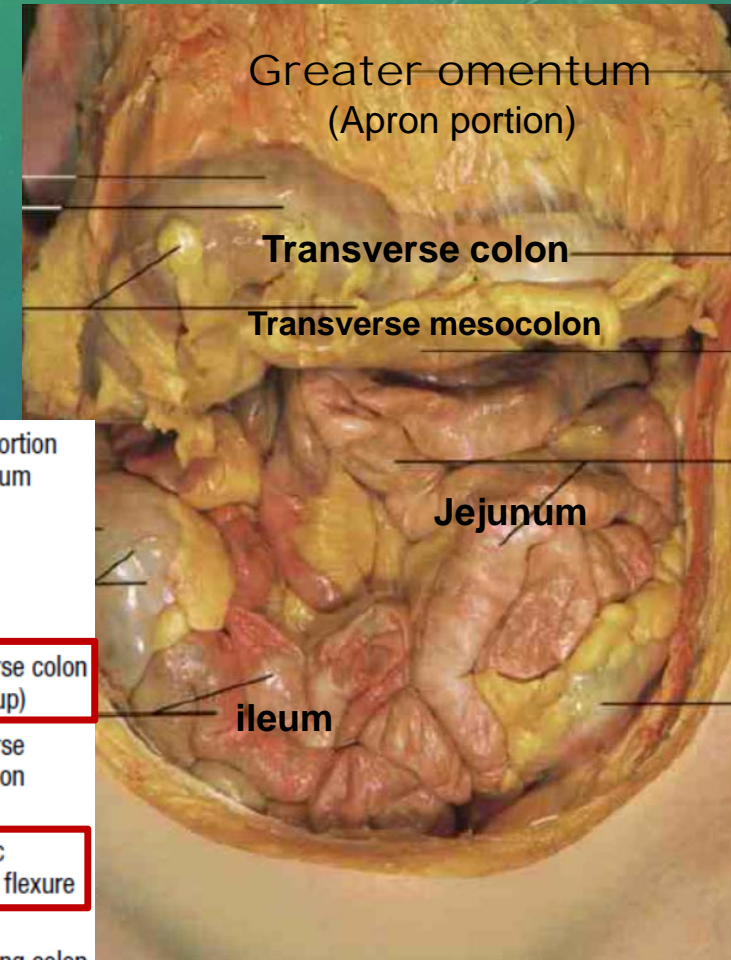
Ref. [5], p. 123

<http://www.ym.edu.tw/~cflu>



GREATER OMENTUM 大網膜

- Reflect the greater omentum superiorly over the costal margin.

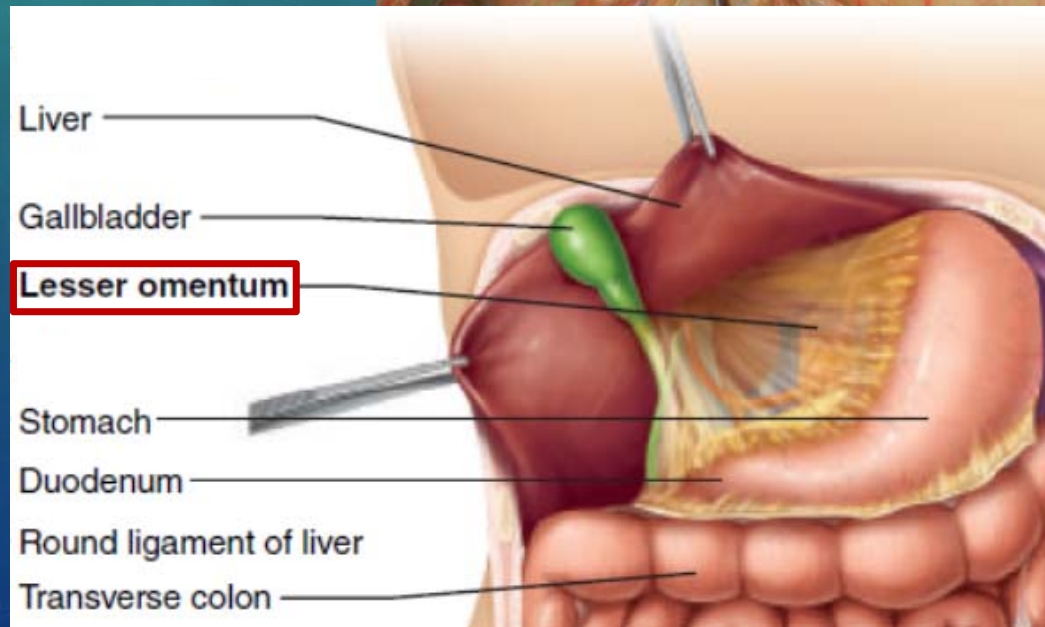
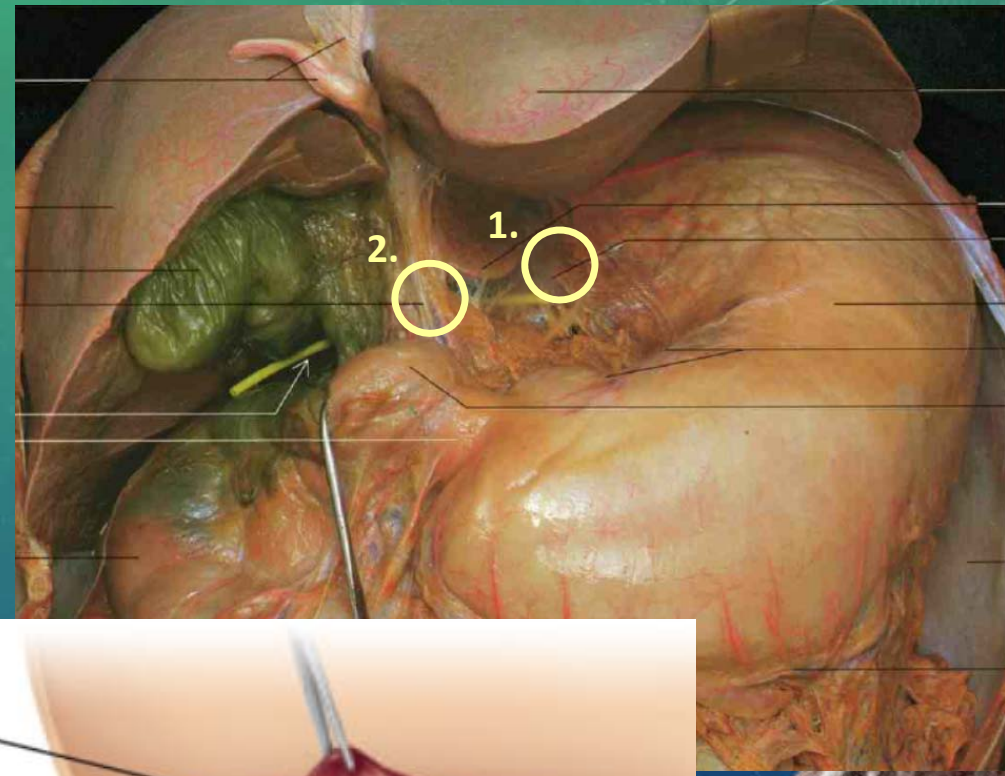


<http://www.ym.edu.tw/~cflu>

Ref. [6], p. 306

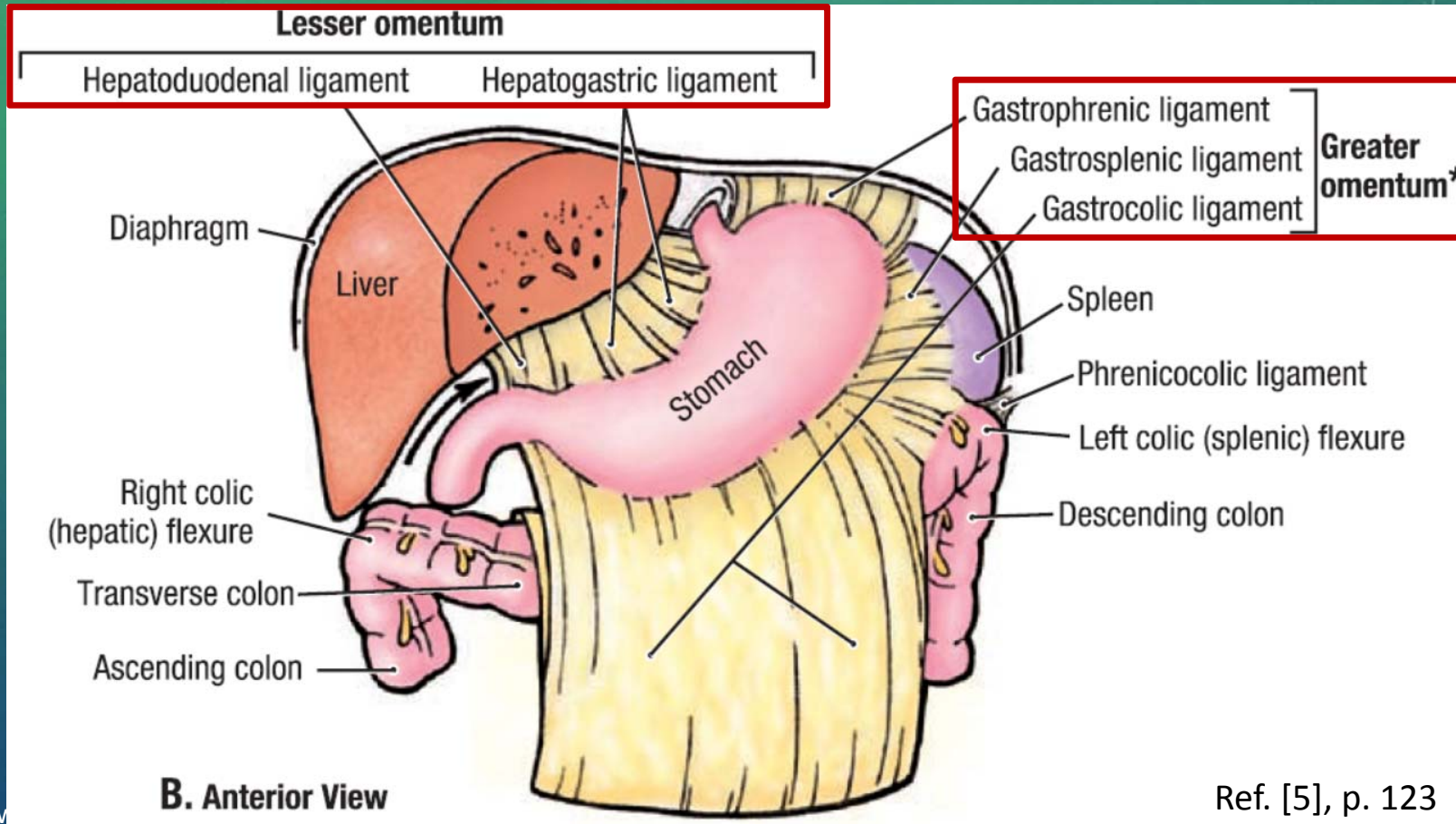
LESSER OMENTUM 小網膜

- The lesser omentum passes from the **lesser curvature** of the stomach and first part of the duodenum to the inferior surface of the liver.
- **1. Hepatogastric ligament**
胃肝韌帶
- **2. Hepatoduodenal ligament**
肝十二指腸韌帶



Ref. [6], p. 311

GREATER AND LESSER OMENTUM



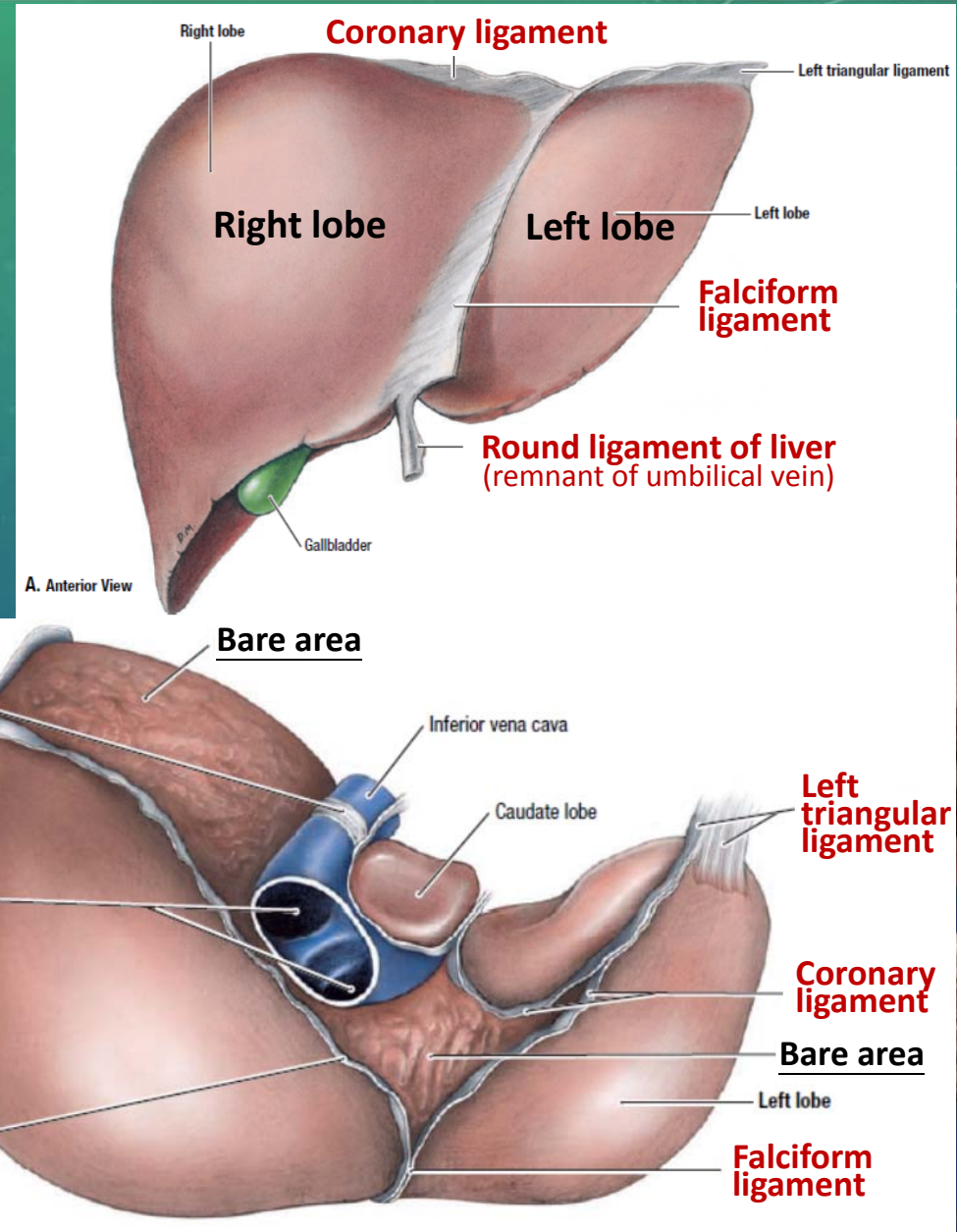
LIVER

THE LARGEST GLAND IN BODY
(2.5% OF BODY WEIGHT OF AN ADULT)

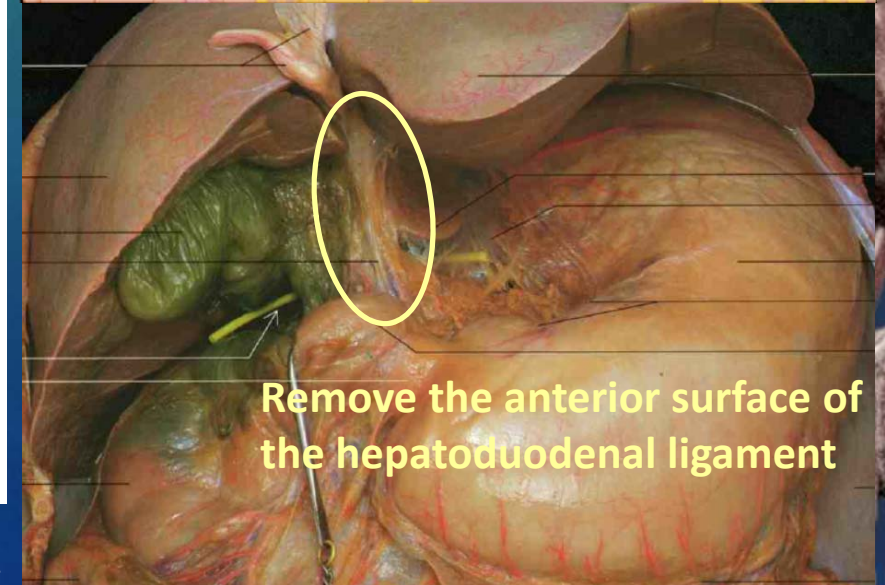
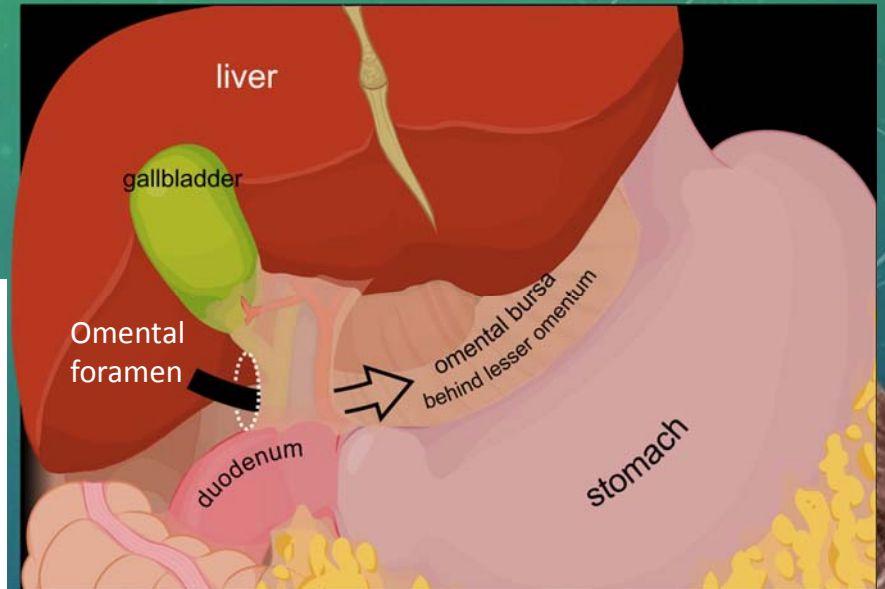
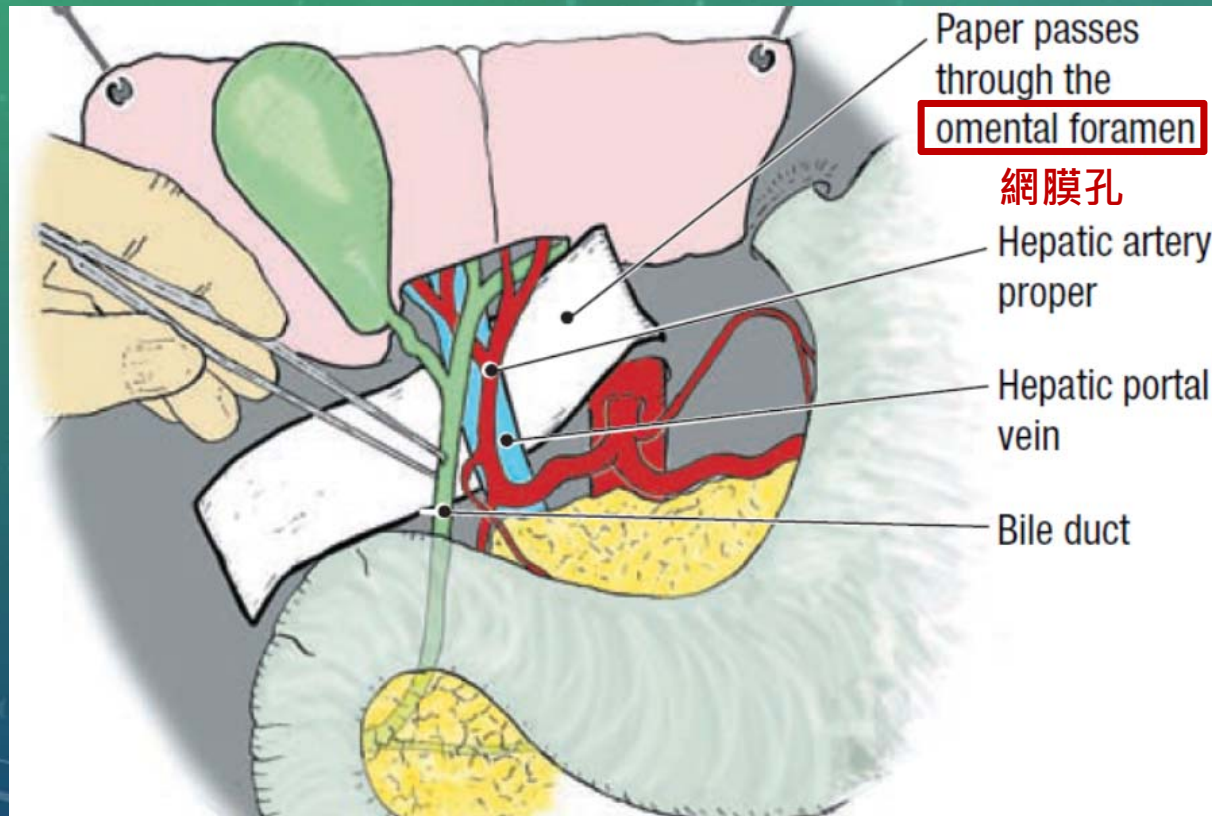
- Connects to parietal peritoneum of anterior abdominal wall
 - Falciform ligament
- Connects to diaphragm
 - Coronary ligament
 - Left triangular ligament
 - Right triangular ligament

<http://www.ym.edu.tw/~cflu>

Ref. [5], p. 150



OMENTAL FORAMEN & BURSA



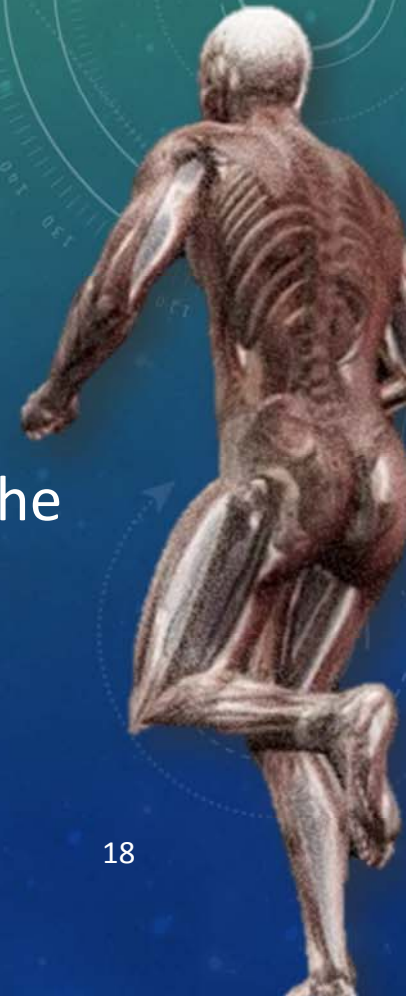
Ref. [7], p. 311

CONTENTS OF HEPATODUODENAL LIGAMENT

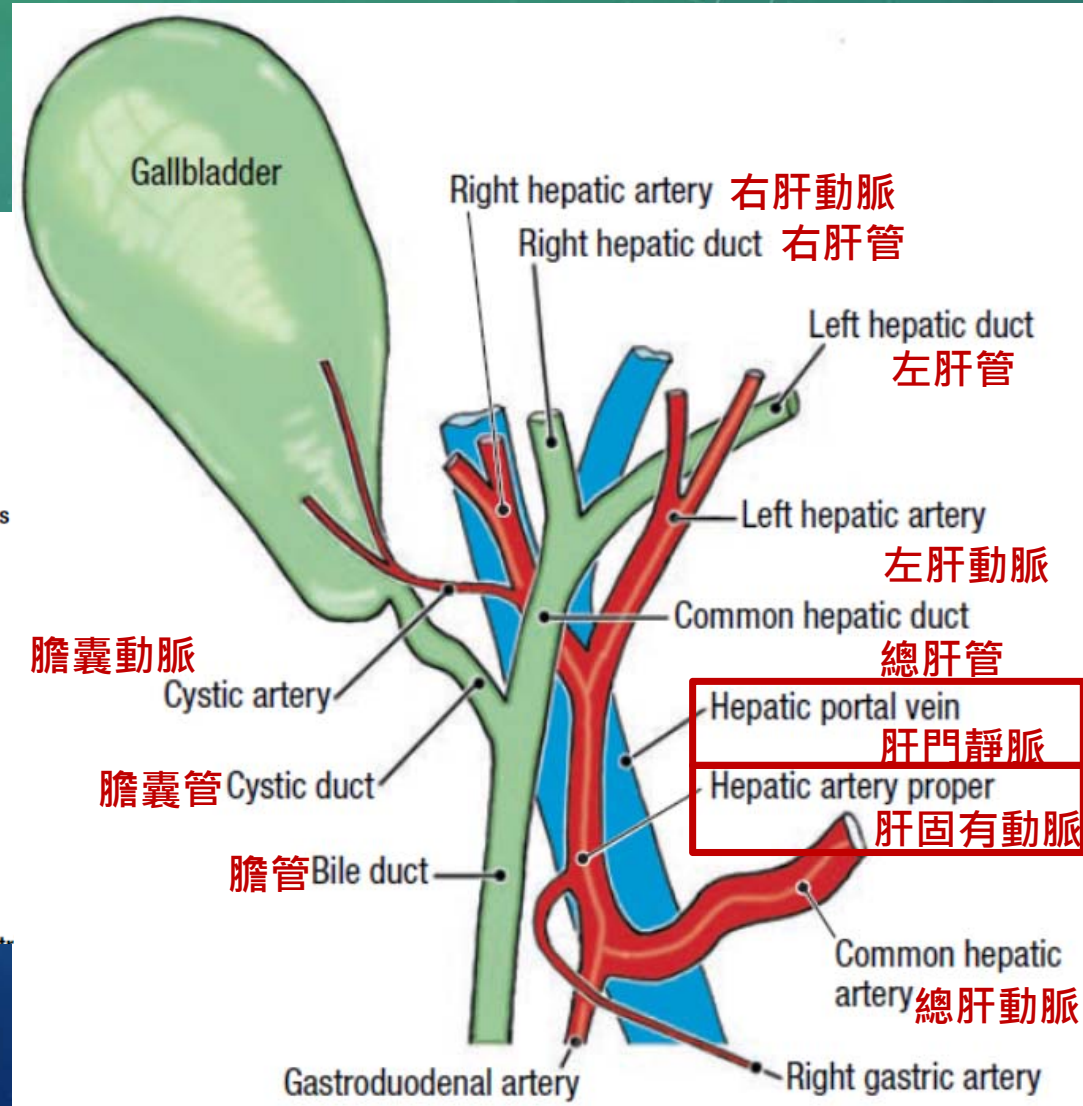
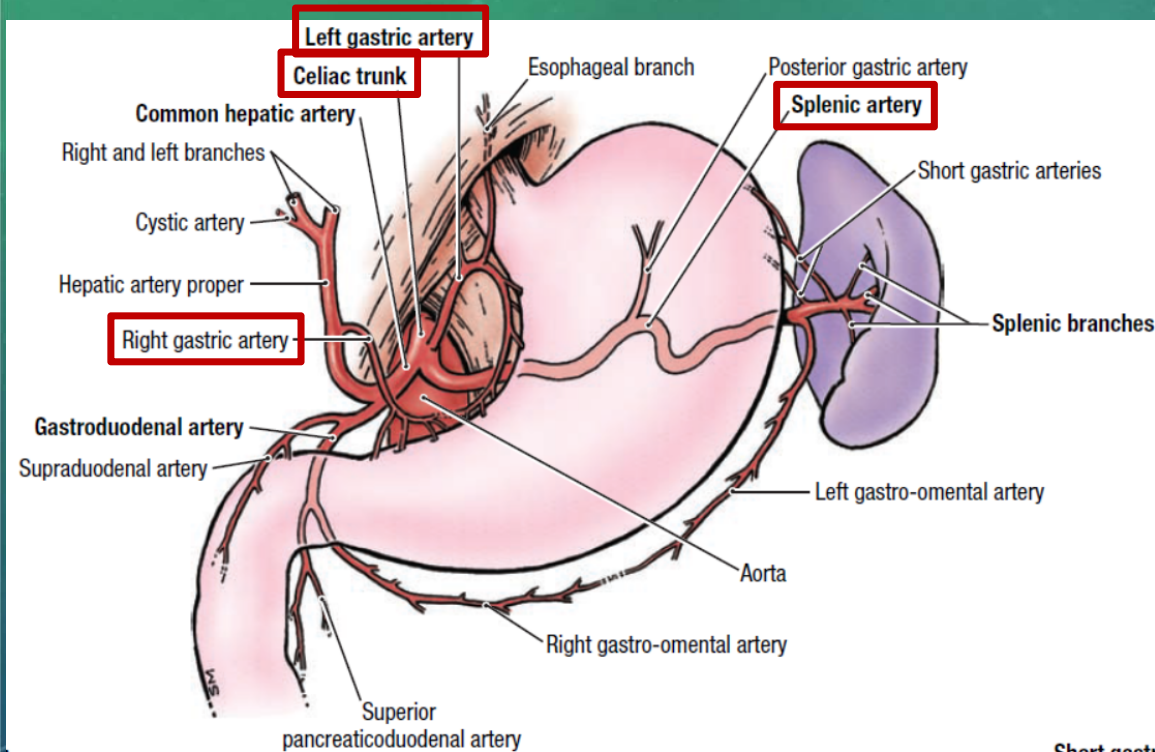
- **Common bile duct** 總膽管
- **Hepatic artery proper** 肝固有動脈
- **Hepatic portal vein** 肝門靜脈
- Autonomic nerves 自主神經
- Lymphatic vessels 淋巴管



can be removed to clear the dissection field.



CONTENTS OF HEPATODUODENAL LIGAMENT

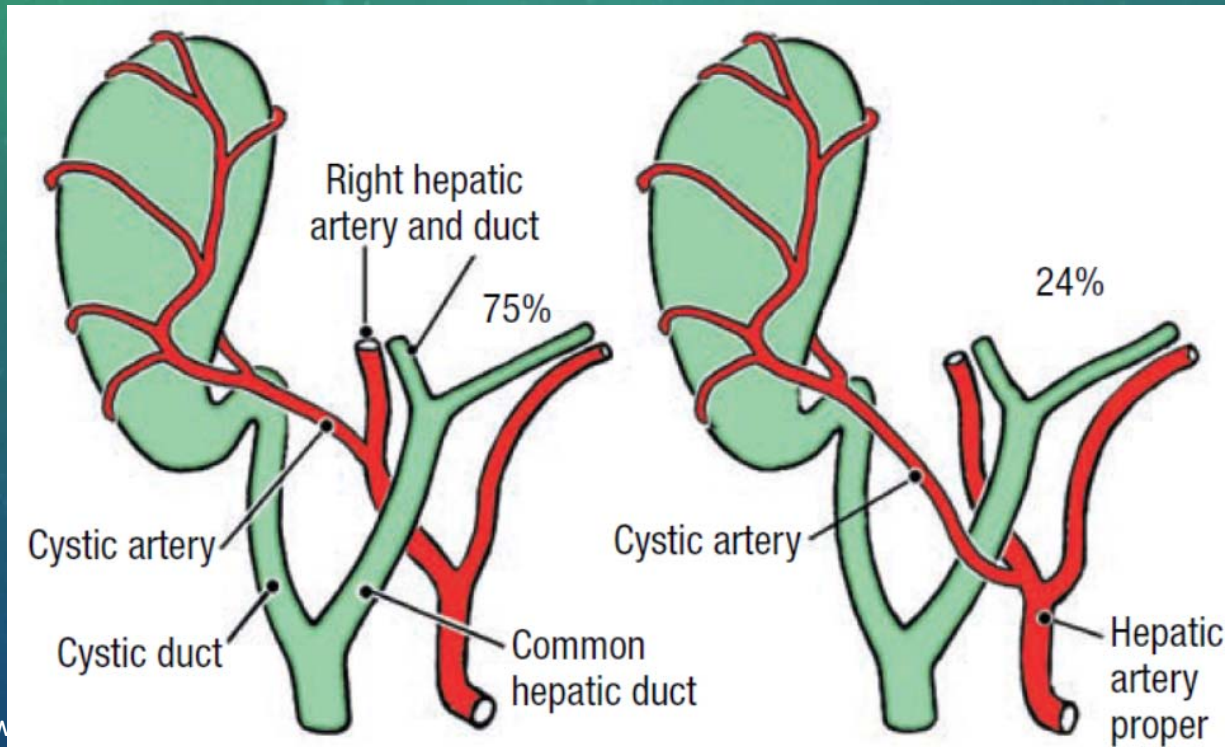


<http://www.ym.edu.tw/~cflu>

Ref. [5], p. 134

BRANCHING PATTERNS OF CYSTIC ARTERY

- The cystic artery may pass posterior (75%) or anterior (24%) to the common hepatic duct.

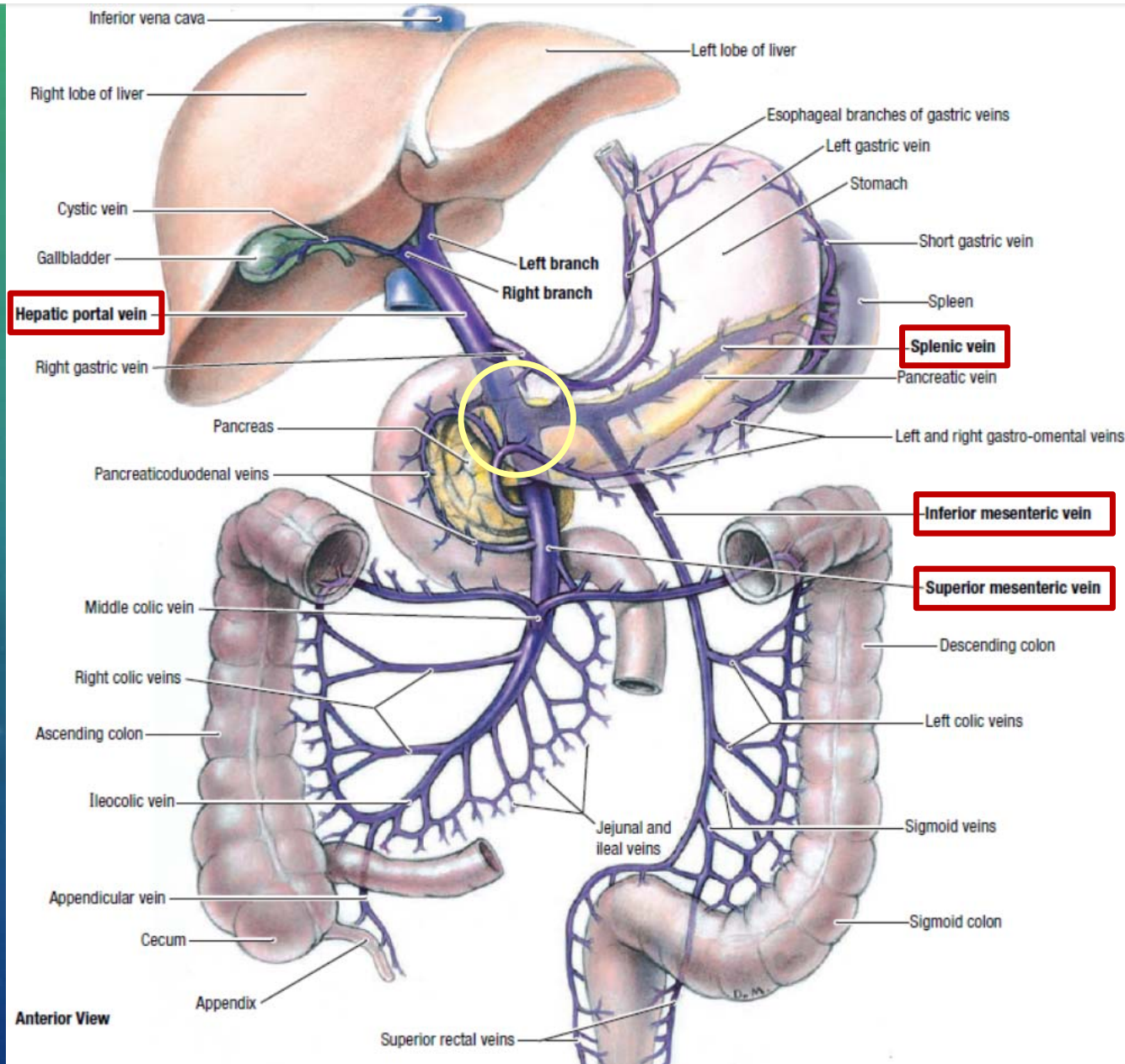


HEPATIC PORTAL VEIN

- delivers approximately 75% of the liver's blood supply.
- The superior mesenteric vein and the splenic vein join to form the hepatic portal vein posterior to the neck of the pancreas.

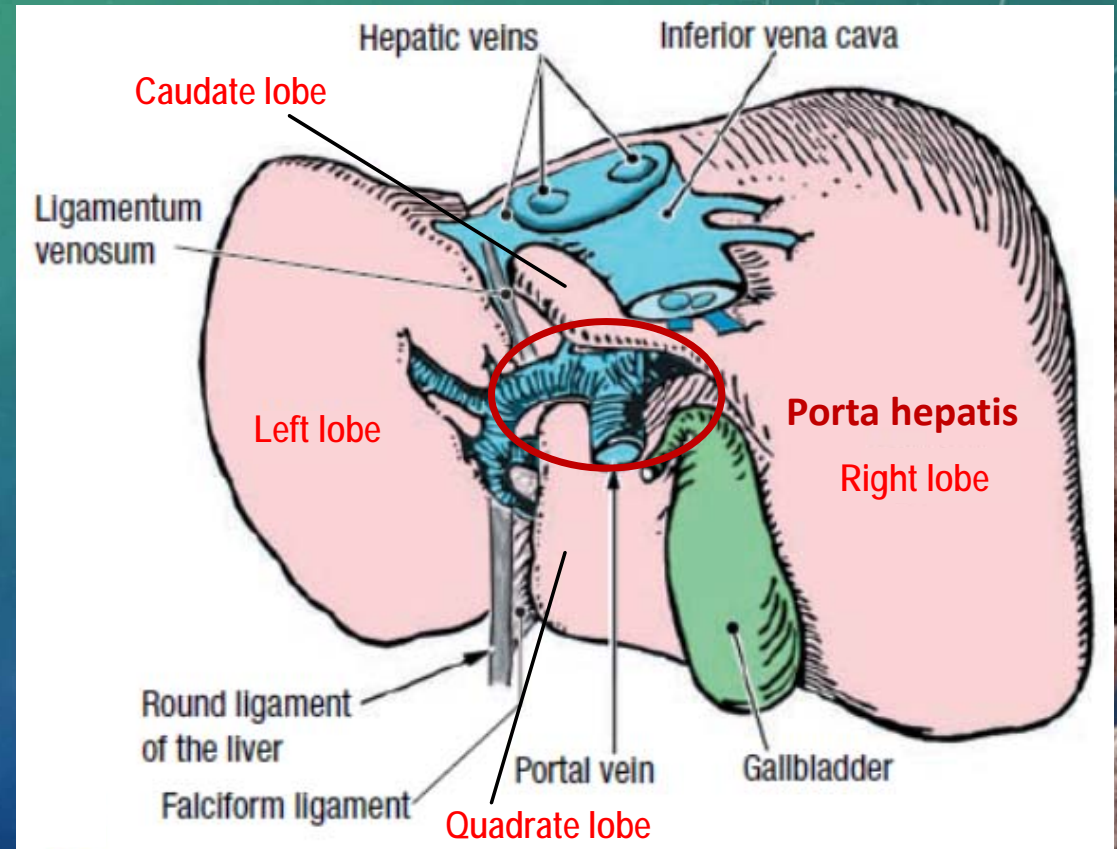
Ref. [5], p. 164

<http://www.ym.edu.tw/~cflu>



DETACH LIVER FROM DIAPHRAGM

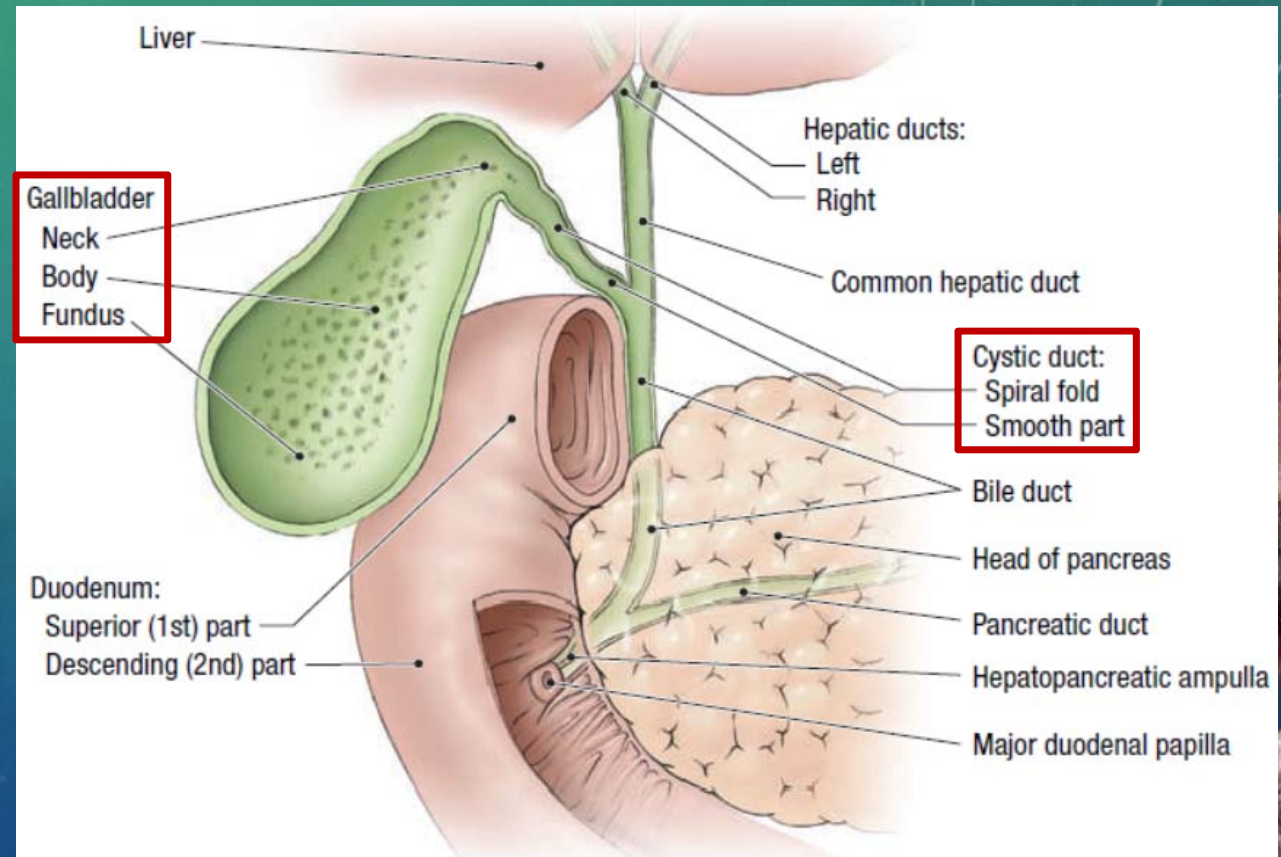
- Use scissors to cut the **falciform, coronary, and triangular ligaments**.
- Use scissors to cut the **inferior vena cava** between the liver and the diaphragm.
- Elevate the inferior border of the liver and cut the **inferior vena cava** again as close to the inferior surface of the liver as possible.



An **H-shaped** set of fissures and fossae

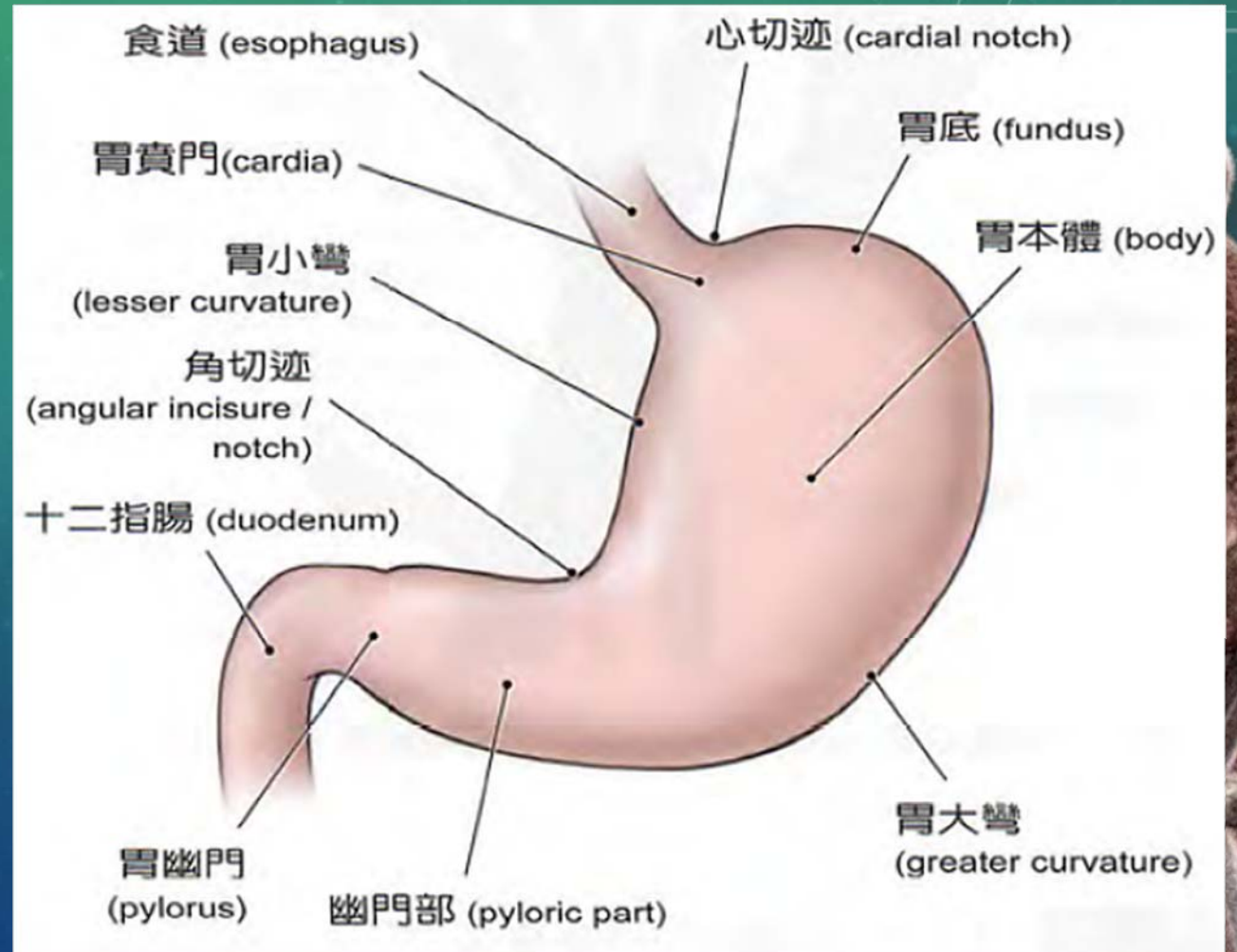
GALLBLADDER

- Use blunt dissection to remove the gallbladder from its fossa.
- Use scissors to make a longitudinal cut through the wall of the gallbladder, beginning at the fundus and continuing through the neck and into the cystic duct.

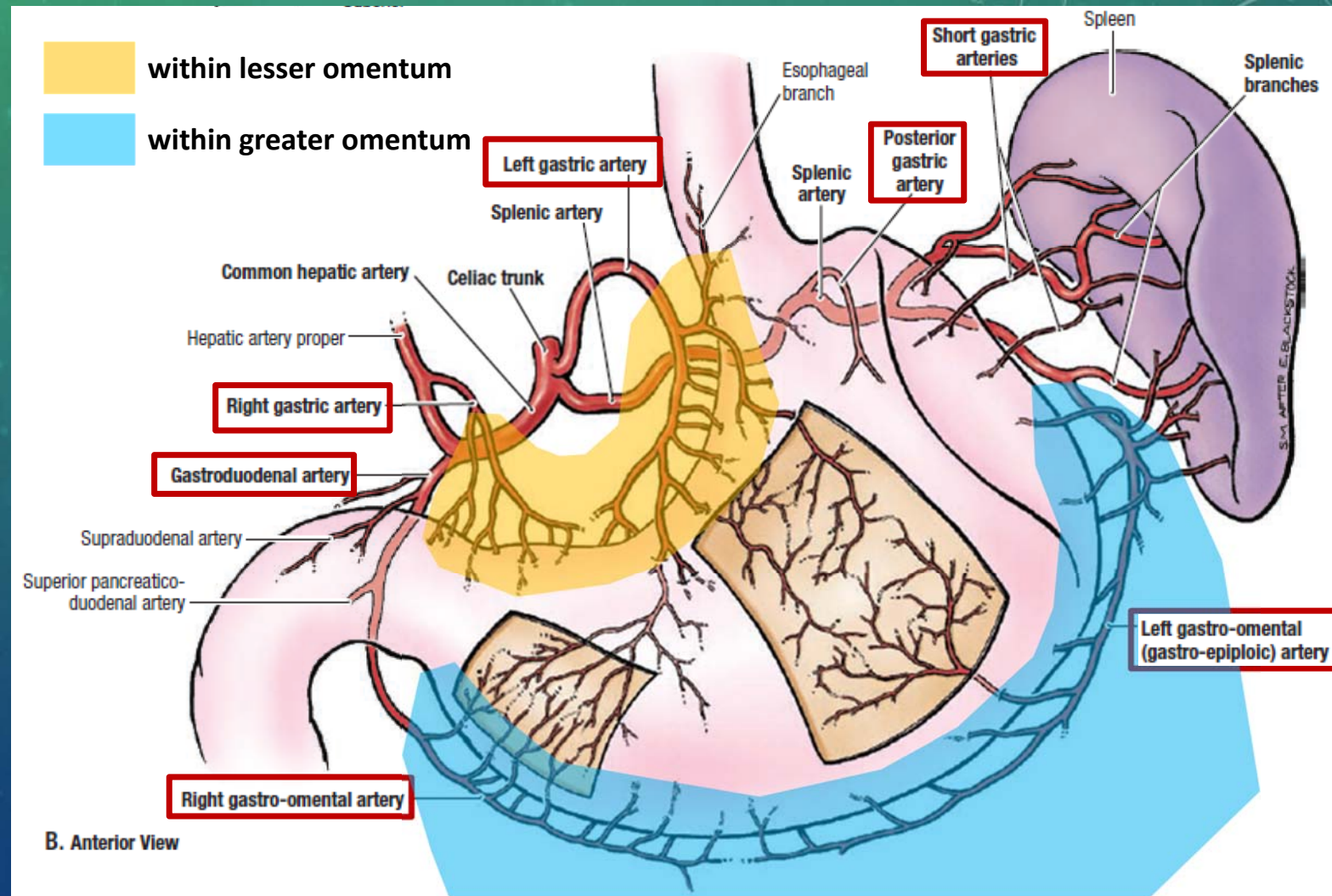


STOMACH

- Body
- Greater curvature
- Lesser curvature
- Cardia
- Cardia notch
- Fundus
- Angular incisure/notch
- Pyloric part & pylorus



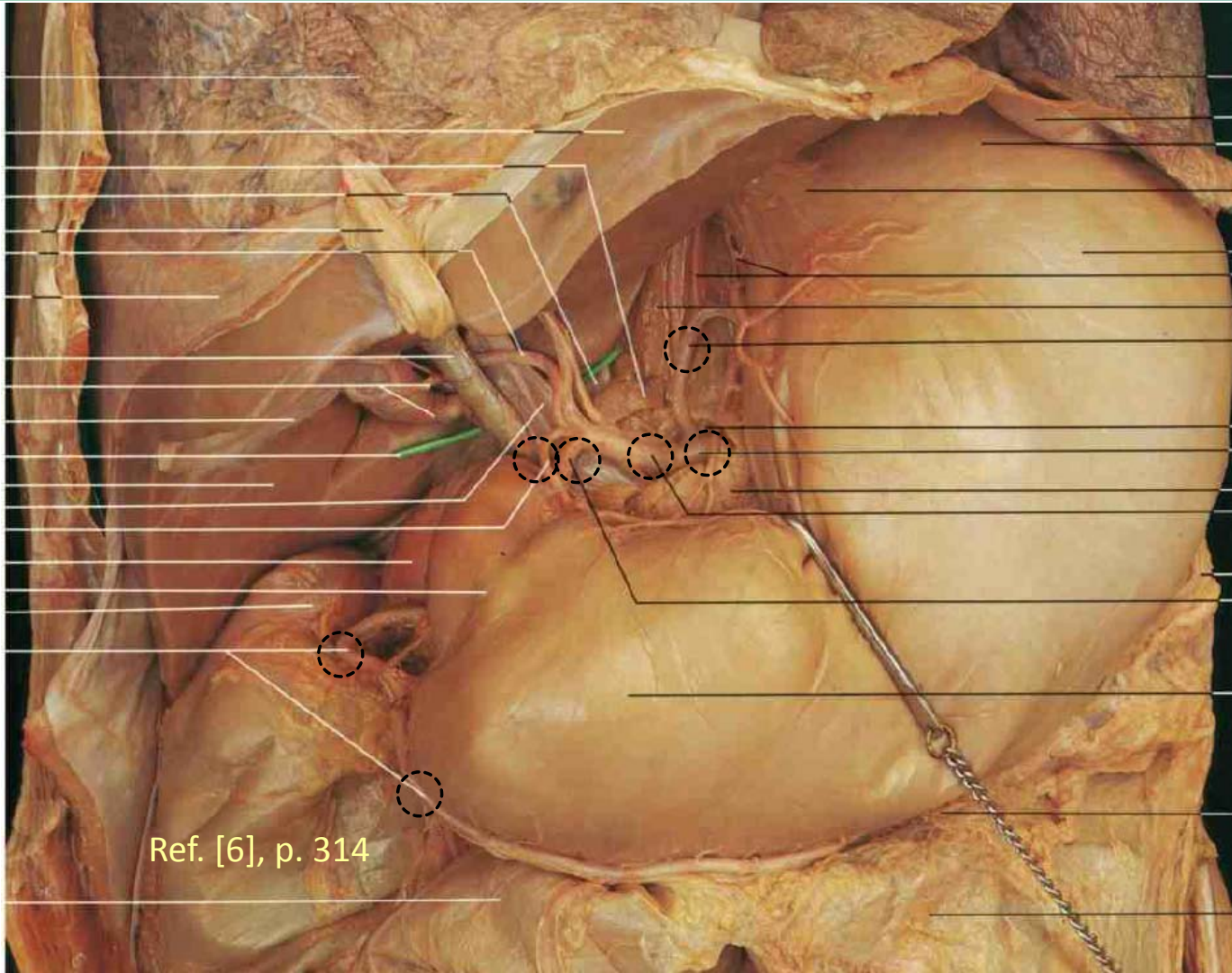
BLOOD SUPPLY OF STOMACH



Ref. [5], p. 134

<http://www.ym.edu.tw/~cflu>

Lesser omentum has been removed.



Right gastric artery

Right gastro-omental artery

Ref. [6], p. 314

Left gastric artery

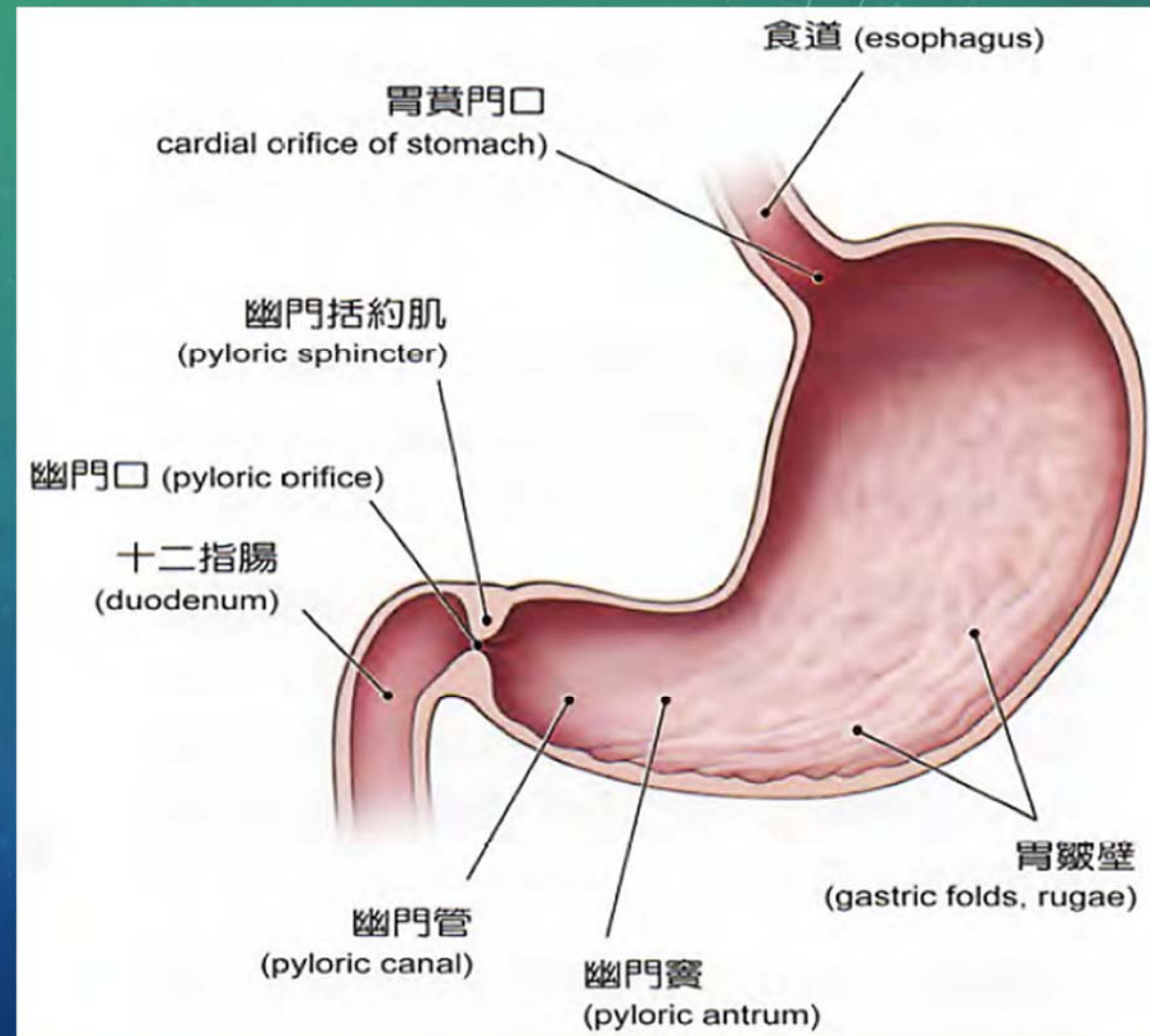
Splenic artery

Common hepatic artery

Gastrooduodenal artery

INTERNAL FEATURES

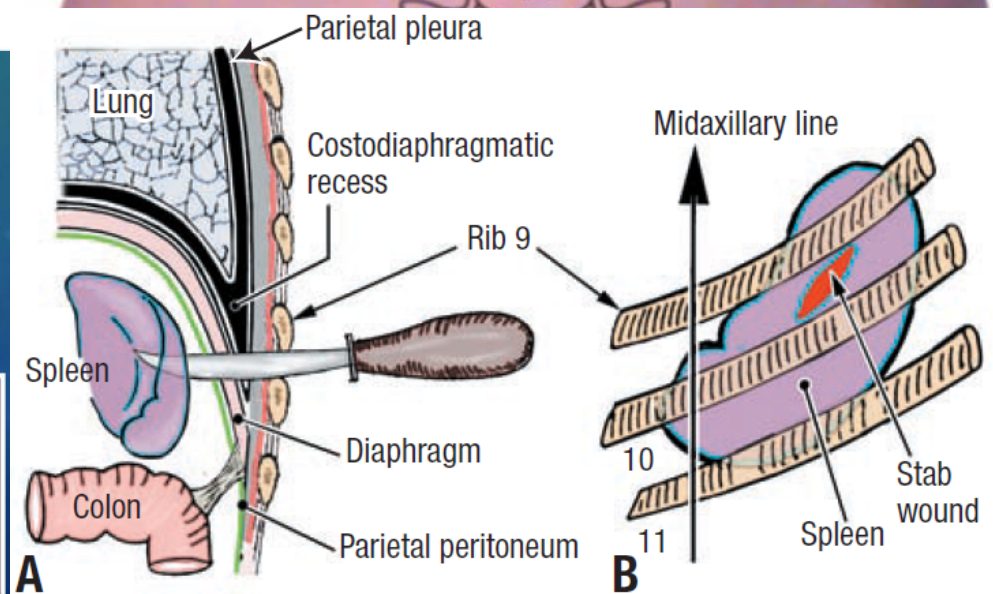
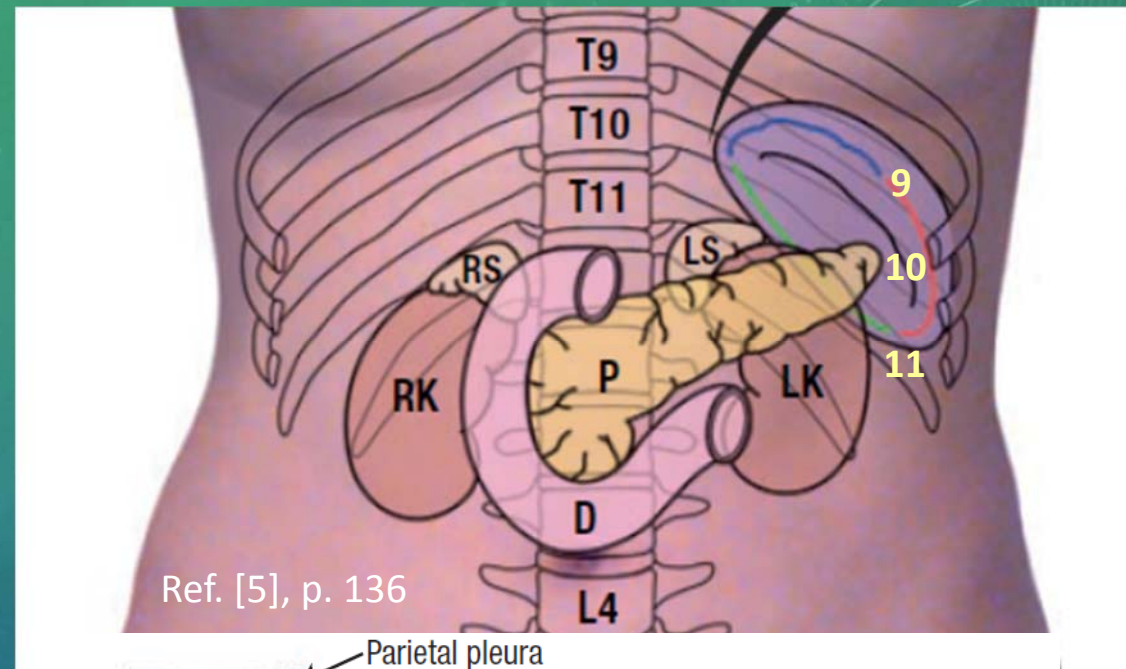
- Use scissors to open the stomach along its anterior surface.
- Extend the cut into the first part of the duodenum.
- Rinse the mucosa and observe the internal features.



SPLEEN

- the largest hematopoietic organ in the body.
- The visceral surface of the spleen is related to four organs:
 - Stomach
 - Left kidney
 - Transverse colon (left colic flexure)
 - Pancreas

D	Duodenum	P	Pancreas
LK	Left kidney	RK	Right kidney
LS	Left suprarenal gland	RS	Right suprarenal gland



DUODENUM

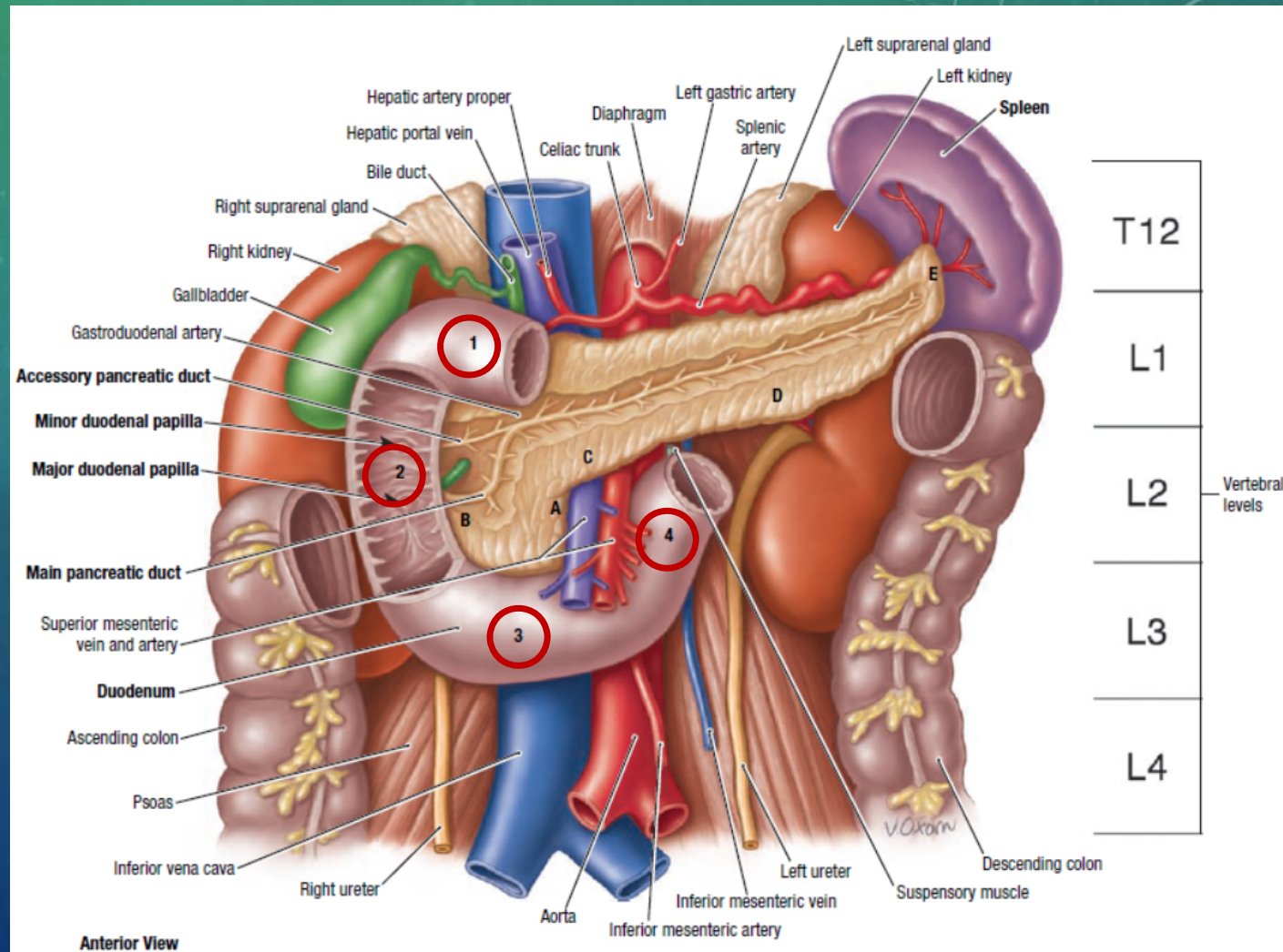
Intraperitoneal 腹膜内

- Superior 1st part
 - At L1 vertebral level

Retroperitoneal 腹膜後

- Descending 2nd part
 - At L2 vertebral level
- Horizontal 3rd part
 - At L3 vertebral level
- Ascending 4th part
 - At L2 vertebral level

Ref. [5], p. 137



PANCREAS

Located against vertebral bodies L1 to L3.

A. Uncinate process

B. Head

Inferior vena cava lies posterior to it.

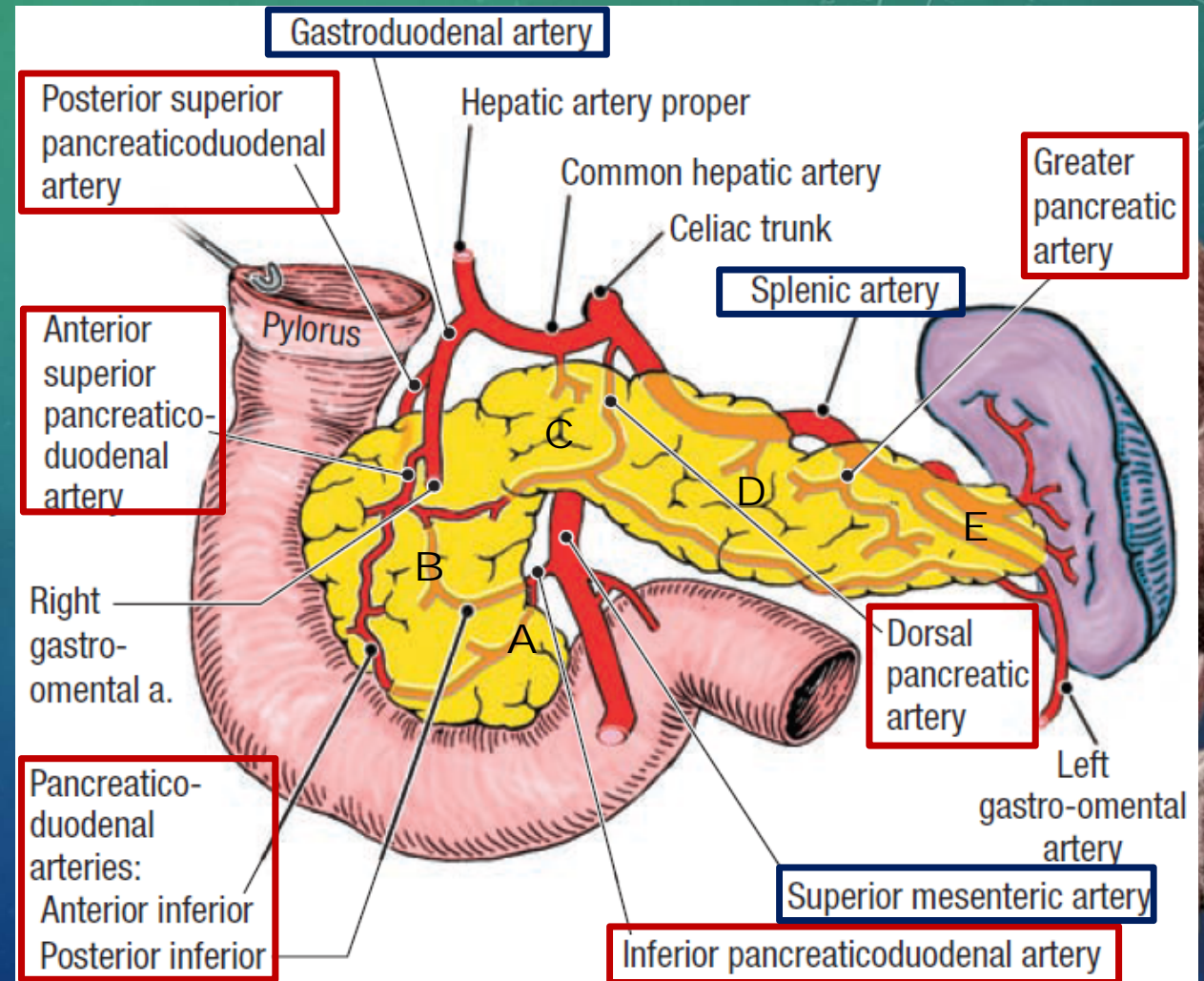
C. Neck

D. Body

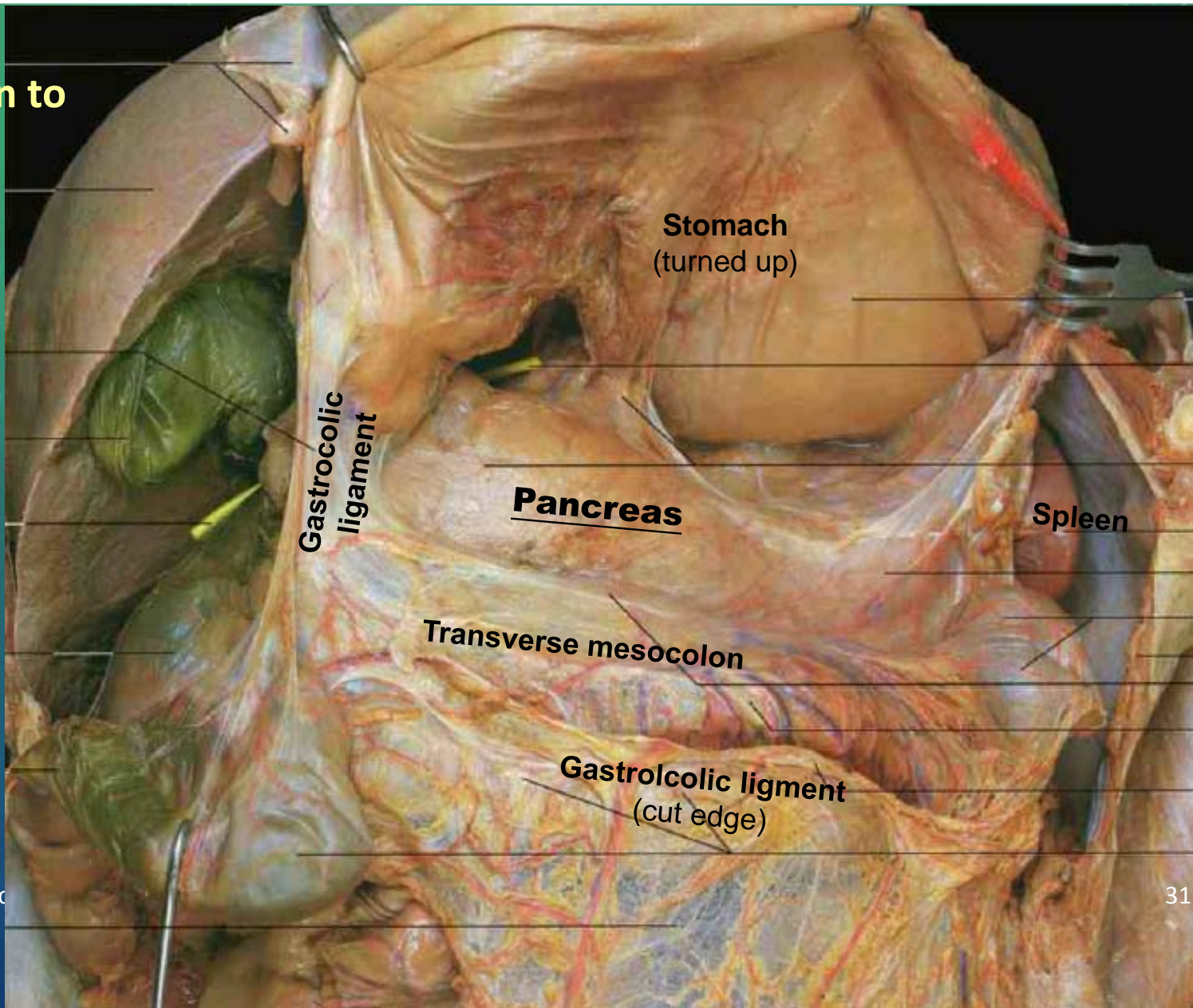
Abdominal aorta lies posterior to it.

E. Tail

<http://www.ym.edu.tw/~cflu>



Use blunt dissection to clean the Pancreas

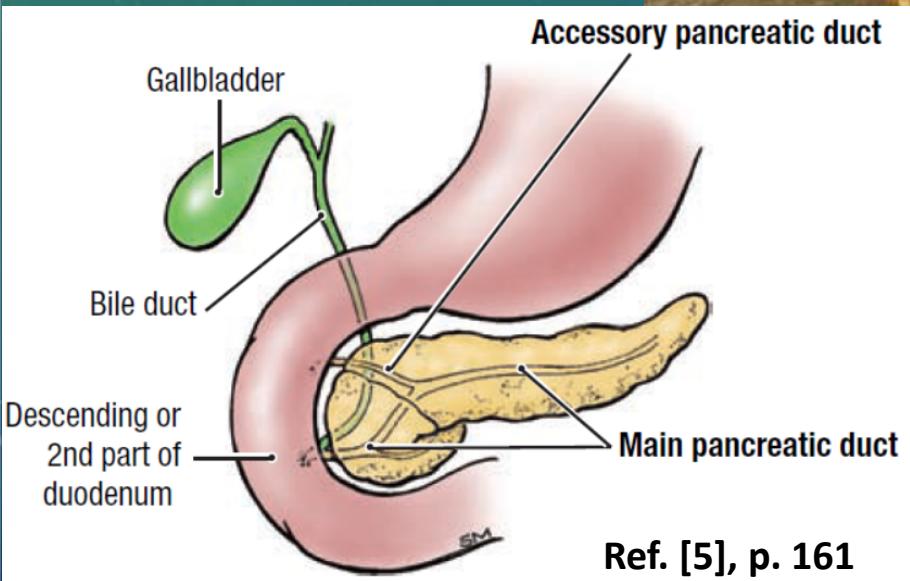
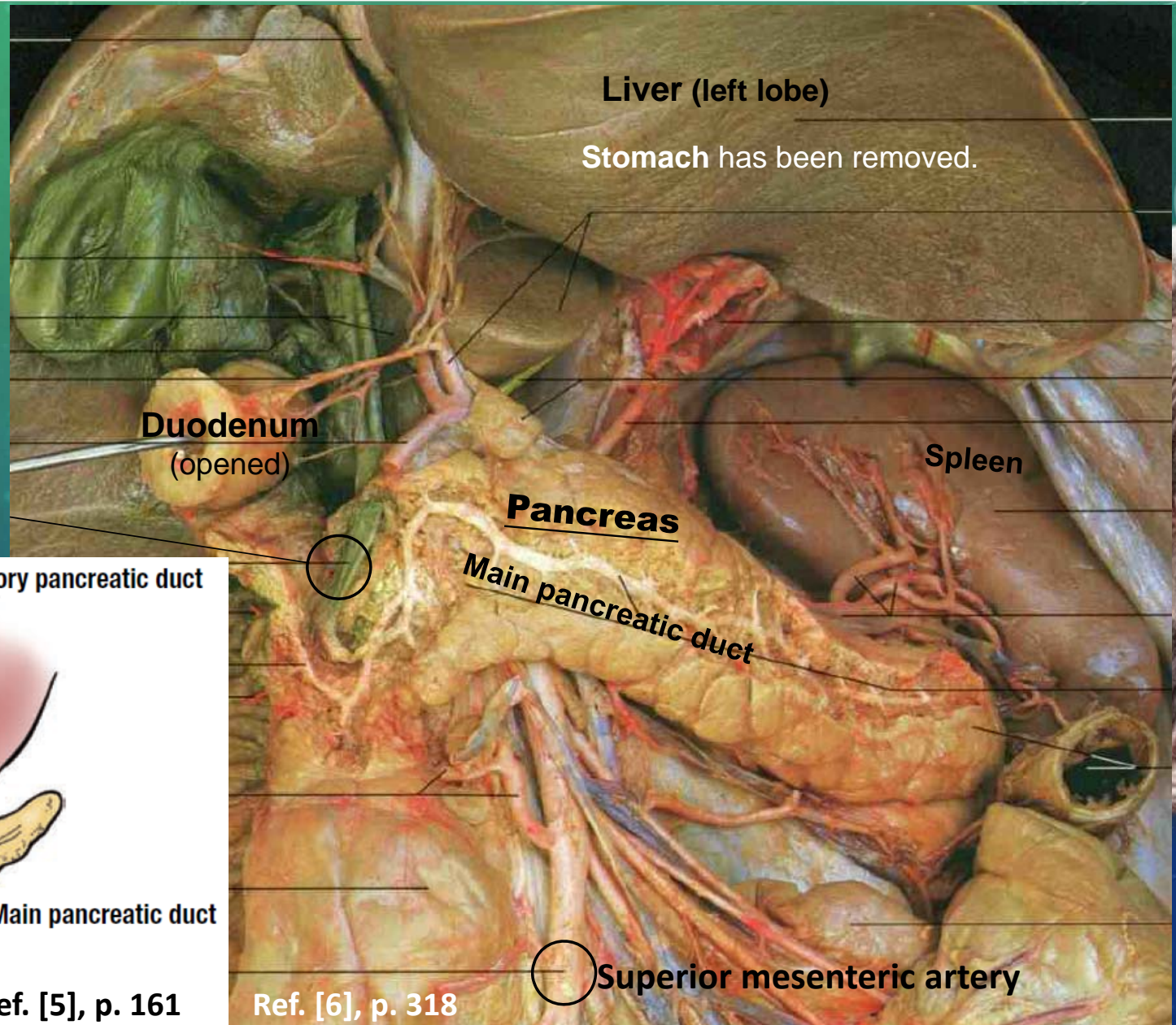


Ref. [6], p. 317

<http://www.ym.edu.tw/~c>

WARNING !

Common bile duct

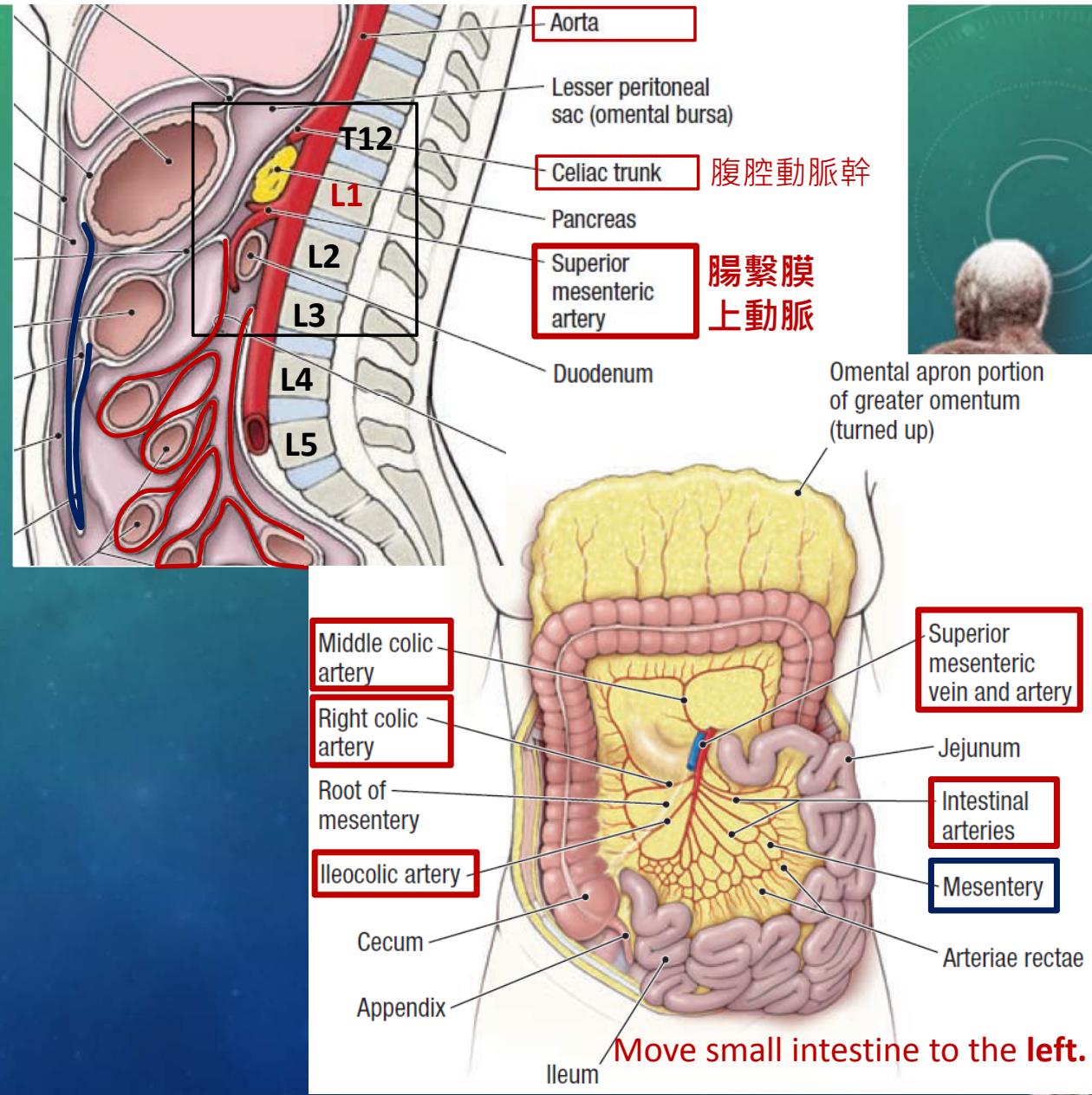


Ref. [6], p. 318

SMALL INTESTINE & SUPERIOR MESENTERIC ARTERY

- Dduodenum, jejunum, ileum
- The superior mesenteric artery then enters the mesentery. Within the mesentery, into the right lower quadrant, toward the terminal end of the ileum.
- **Intestinal arteries** are 15 to 18 arteries to the jejunum and the ileum.

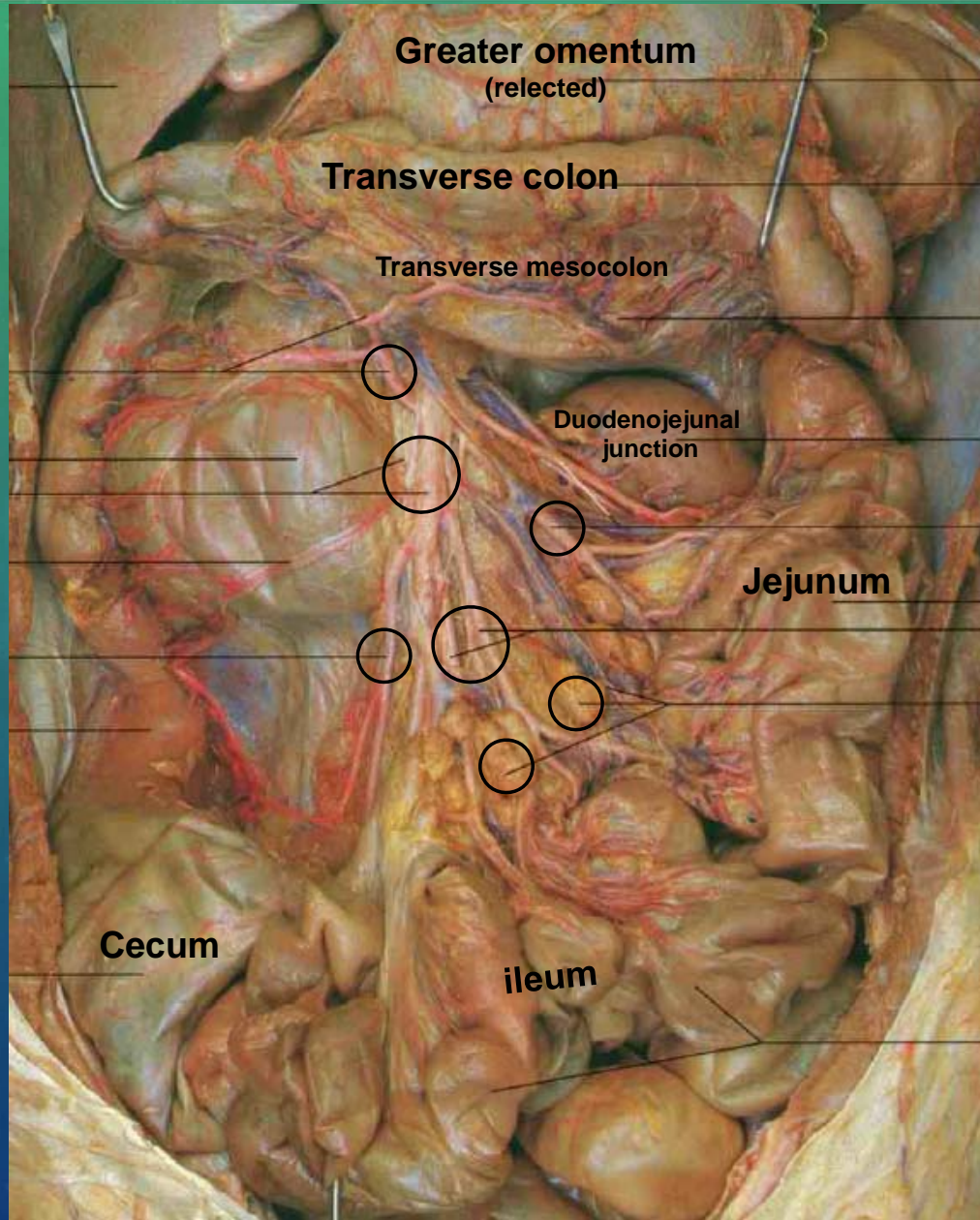
<http://www.ym.edu.tw/~cflu>



Use blunt dissection to clean the branches of the superior mesenteric artery

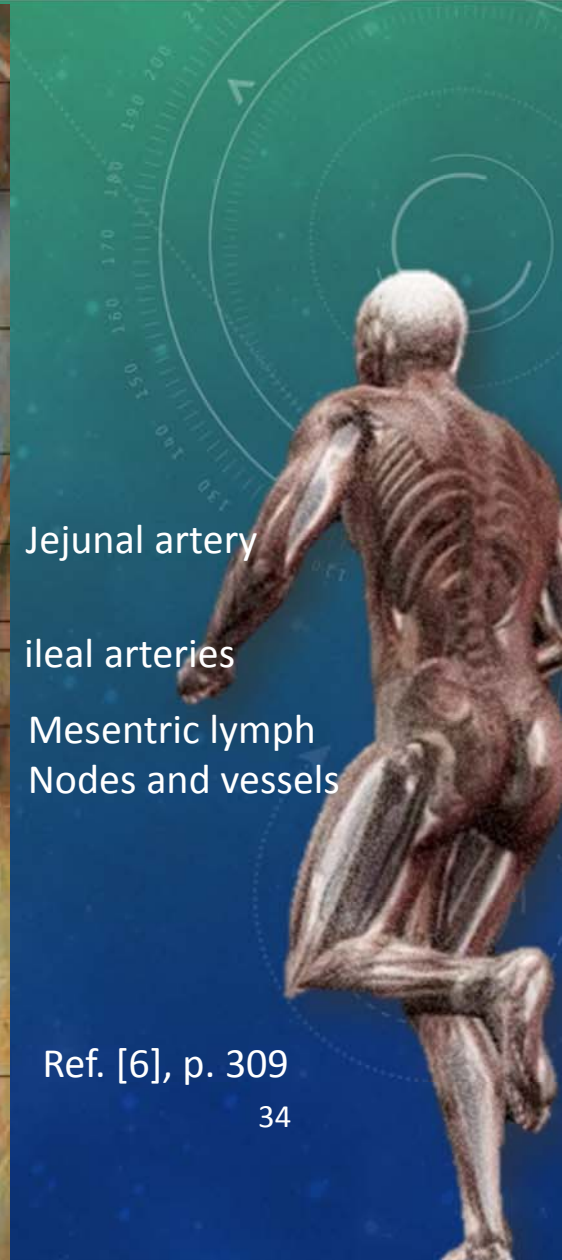
- Middle colic artery
- Superior mesenteric artery and vein
- Right colic artery
- ileocolic artery

Note the dense autonomic nerve network surrounding the blood vessels. This is the superior mesenteric plexus of nerves. Remove the nerve fibers as necessary to clean the vessels.



- Jejunal artery
- ileal arteries
- Mesenteric lymph Nodes and vessels

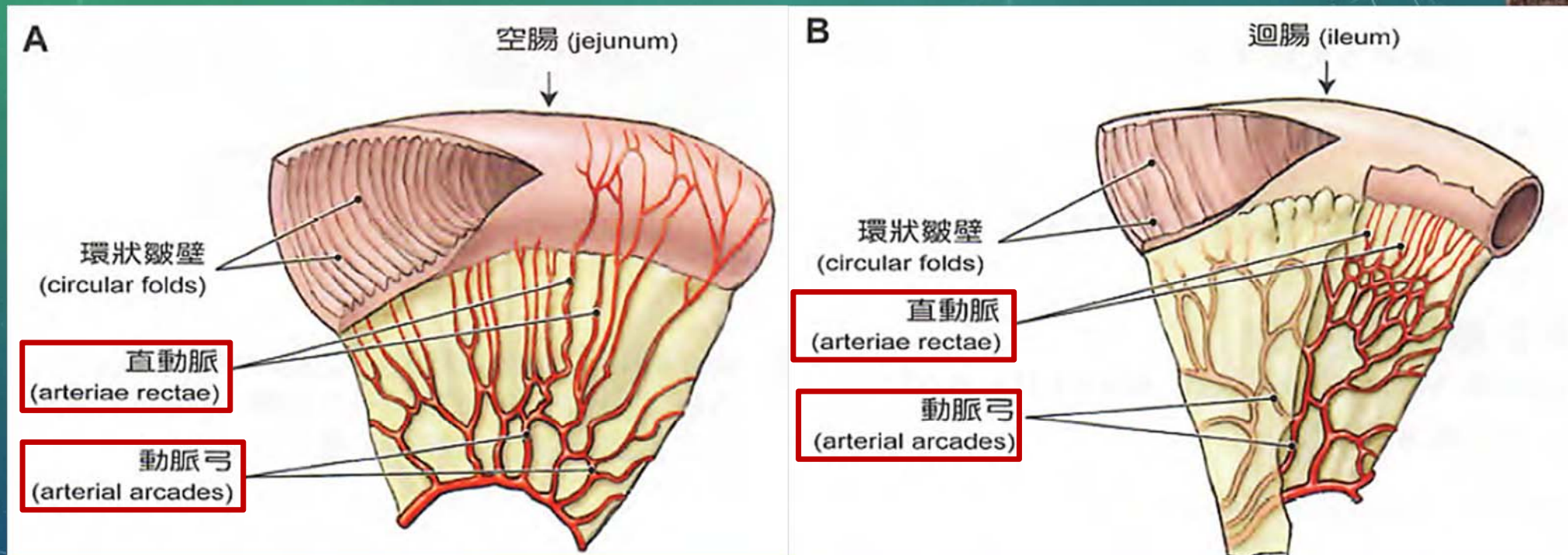
Ref. [6], p. 309



COMPARISON OF INTESTINAL ARTERIES

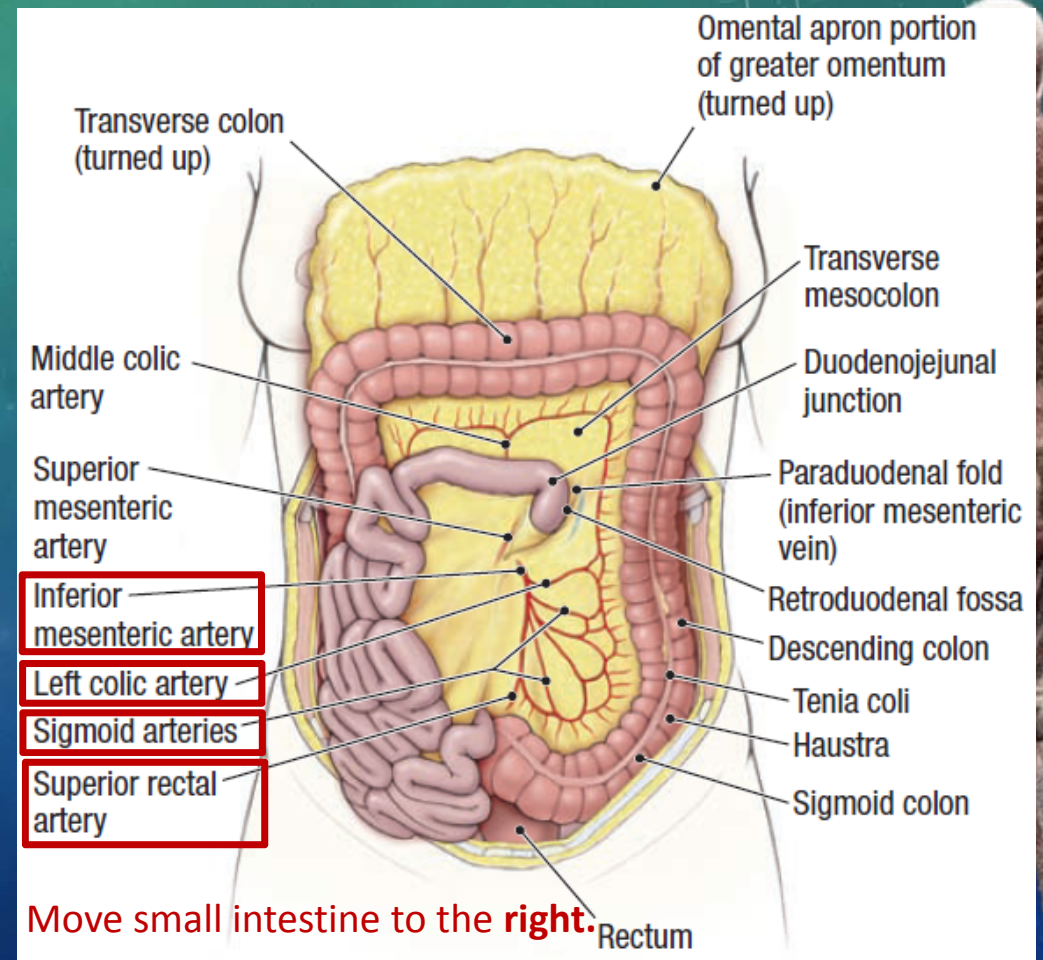
Two-fifths of the small intestine

Three-fifths of the small intestine



INFERIOR MESENTERIC ARTERY

- The inferior mesenteric artery arises from the anterior surface of the abdominal aorta at the **L3 vertebral level**.



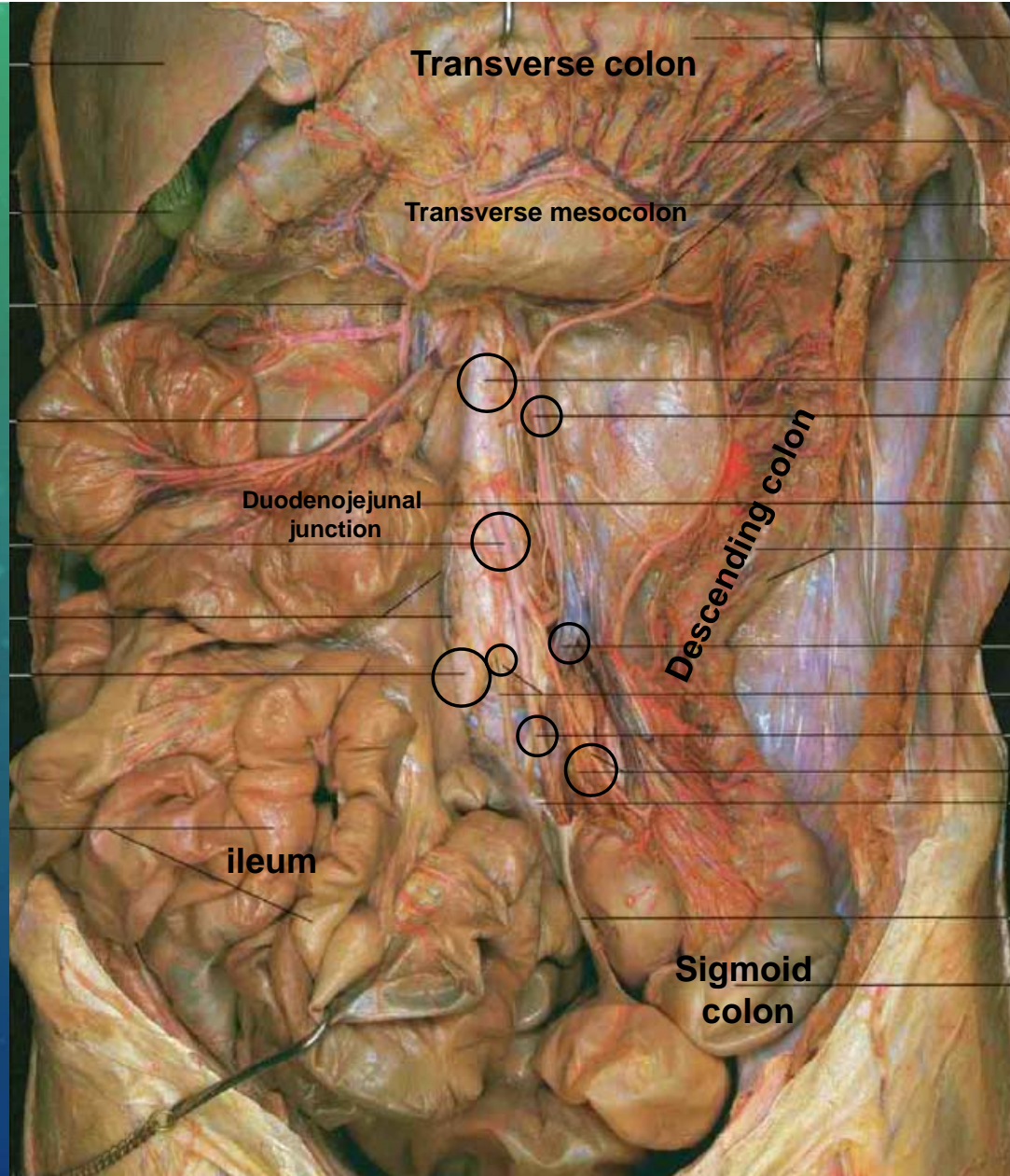
Use blunt dissection to clean the branches of the inferior mesenteric artery

Inferior mesenteric artery

Right common iliac artery

Ref. [6], p. 308

<http://www.ym.edu.tw/~cflu>

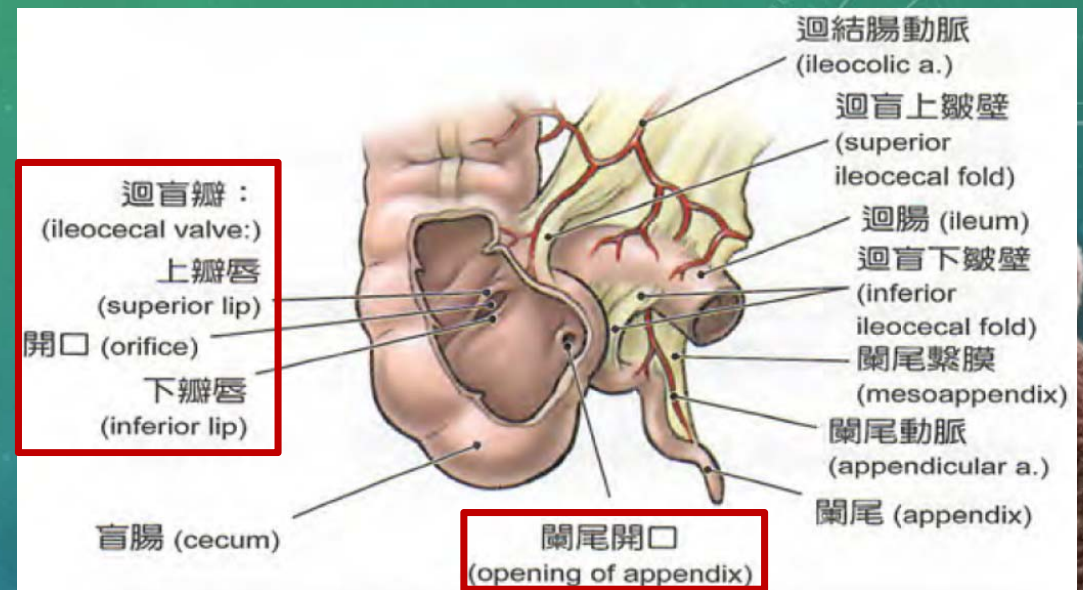


LARGE INTESTINE

Six parts

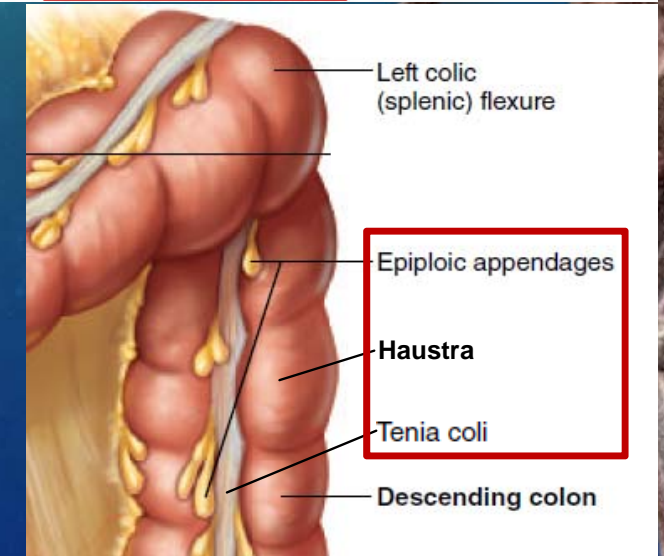
- Cecum
 - The appendix is attached to the inferior end of the cecum.
- Ascending colon
- Transverse colon
- Descending colon
- Sigmoid colon
- rectum

<http://www.ym.edu.tw/~cflu>

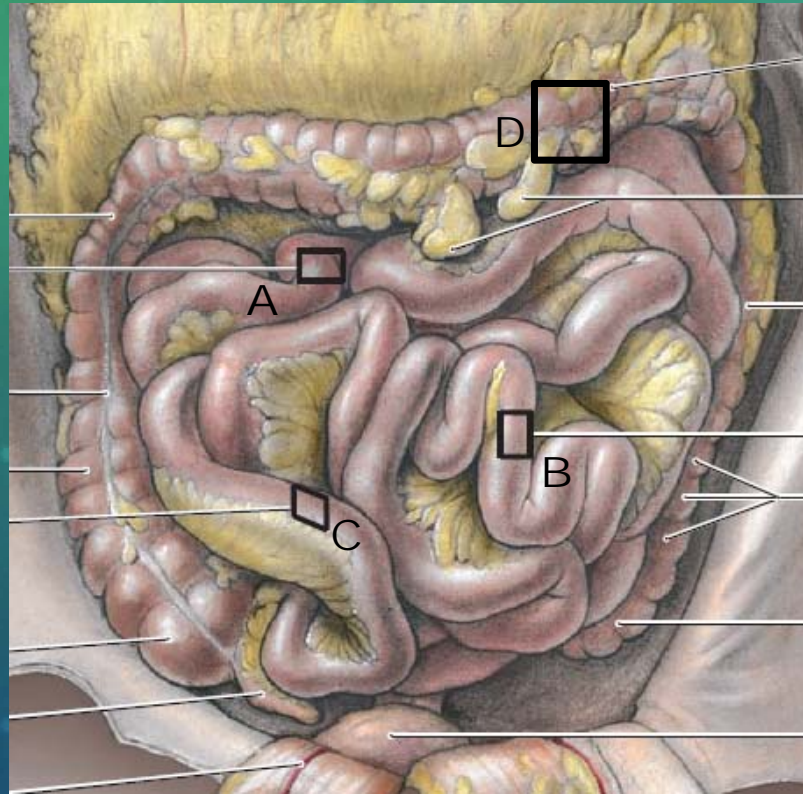


Three features

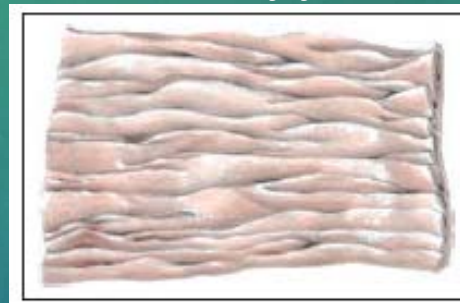
- Teniae coli 結腸帶
- Haustra 結腸袋
- Omental appendices (epiploic appendages) 腸脂垂



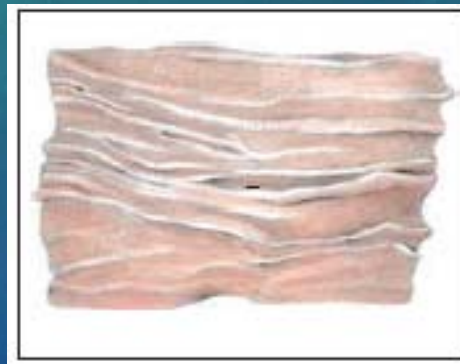
COMPARISONS OF FOLDS



A. Proximal jejunum



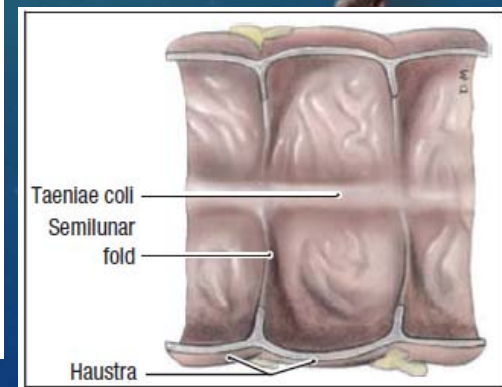
B. Proximal ileum



C. Distal ileum



D. Transverse colon

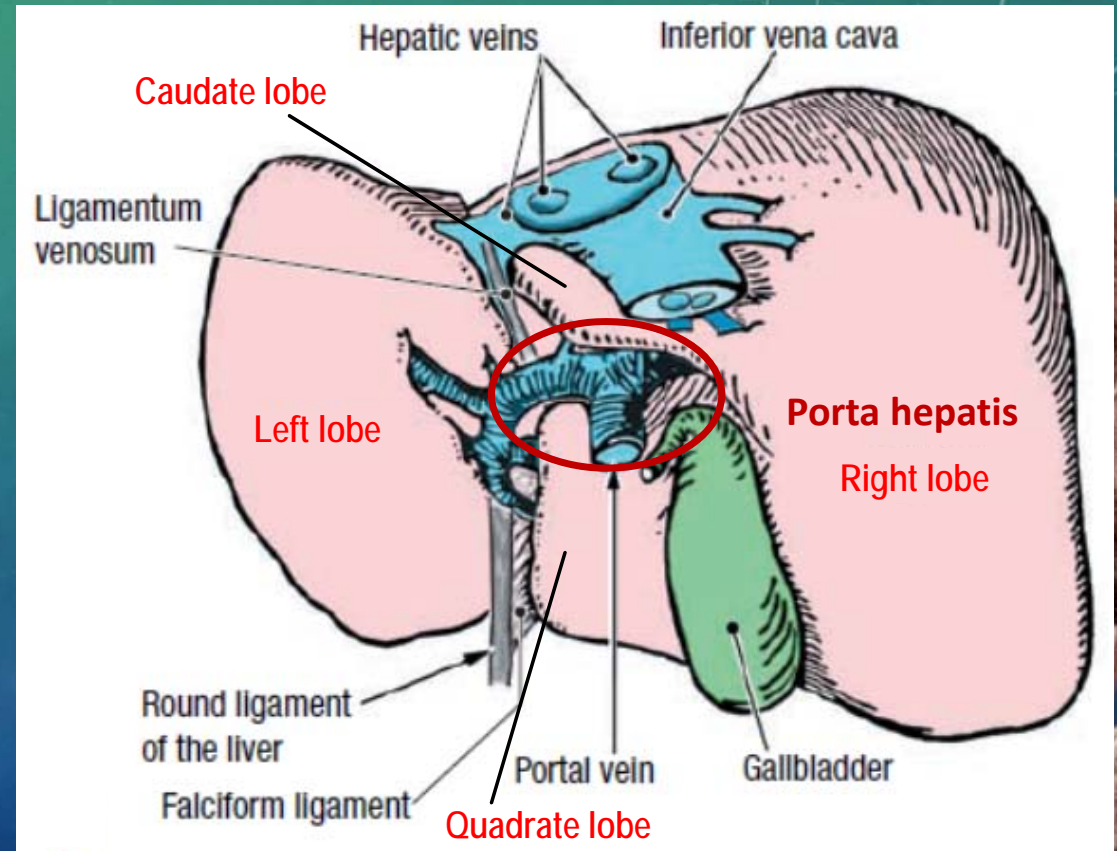


REMOVAL OF GASTROINTESTINAL (GI) TRACT

胃腸道移除

REMOVAL STEP 1/9

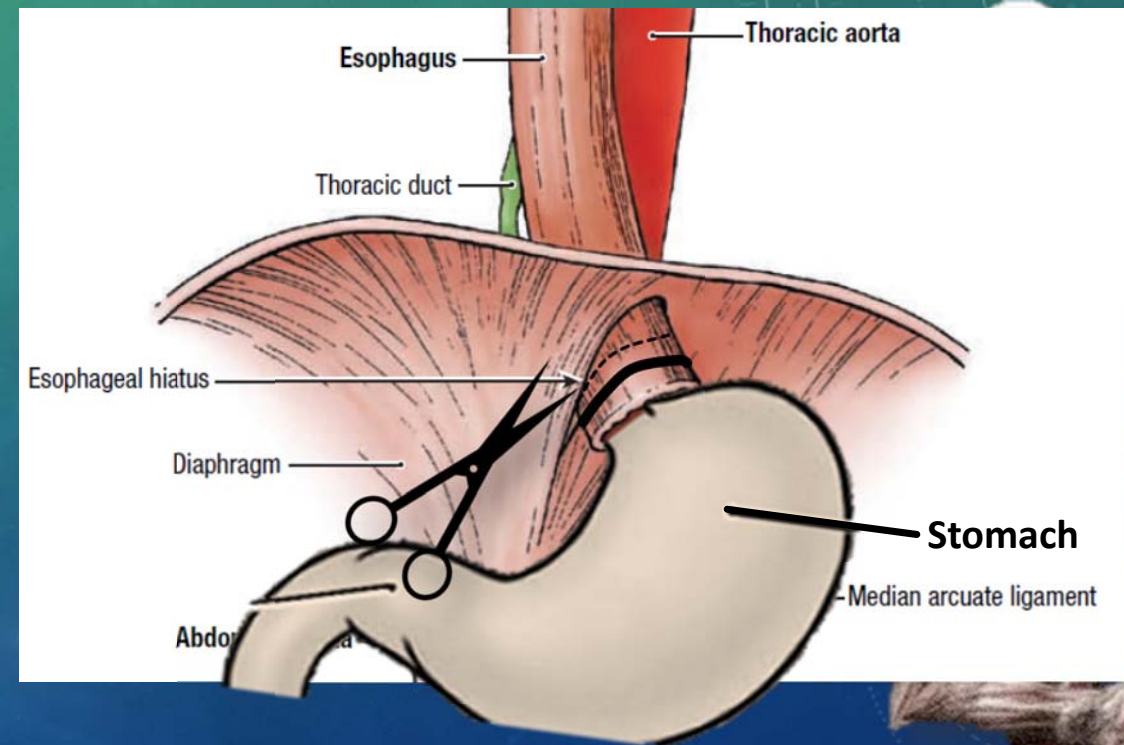
- Use scissors to cut the **falciform, coronary, and triangular ligaments**.
- Use scissors to cut the **inferior vena cava** between the liver and the diaphragm.
- Elevate the inferior border of the liver and cut the **inferior vena cava** again as close to the inferior surface of the liver as possible.



An **H-shaped** set of fissures and fossae

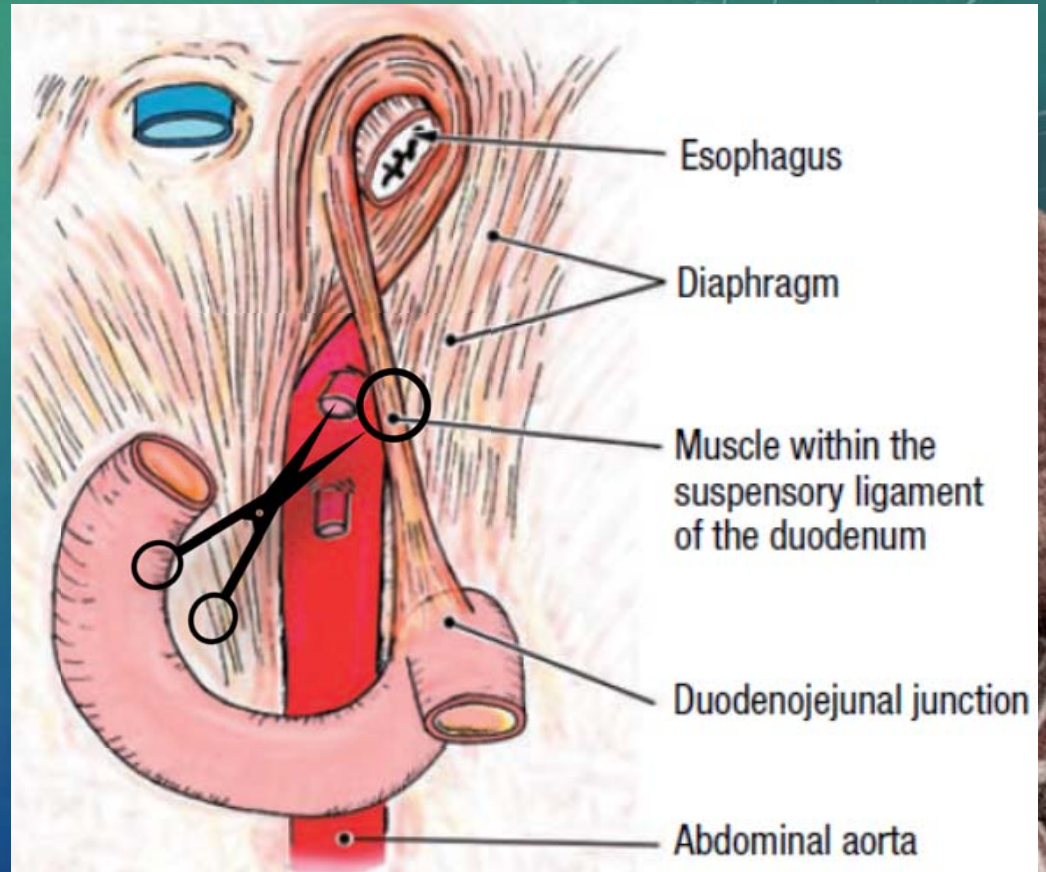
REMOVAL STEP 2/9

- Inferior to the diaphragm, tie one string around the esophagus (black line).
- Cut the esophagus superior to the string (*dashed line*).
- Cut the vagus nerve trunks at the same level.



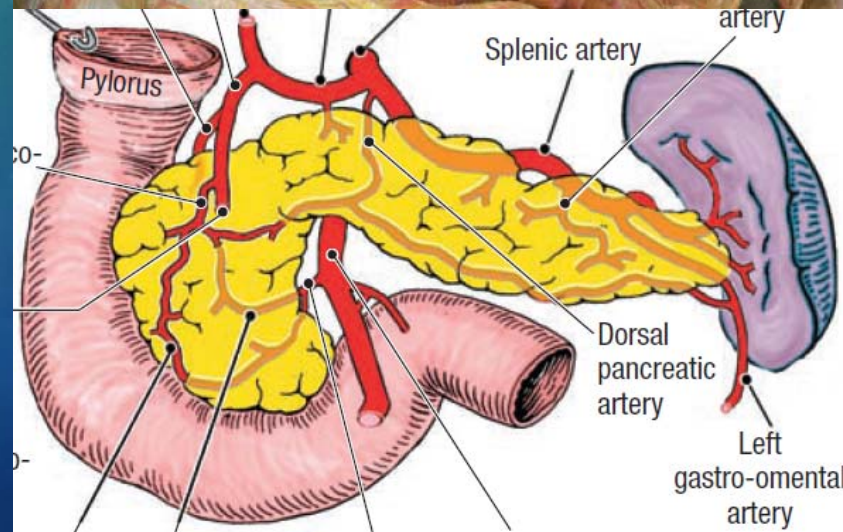
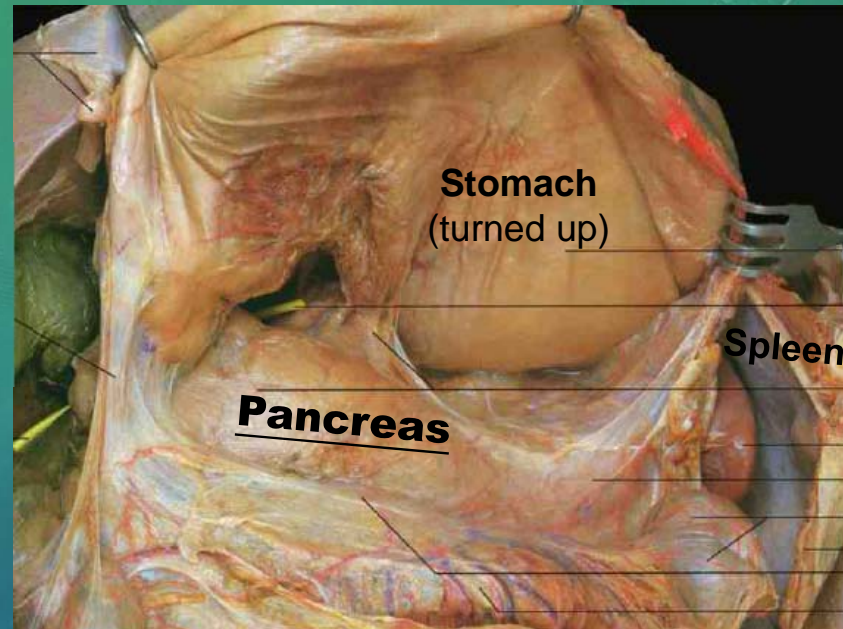
REMOVAL STEP 3/9

- Use scissors to cut the **suspensory ligament of the duodenum** (十二指腸懸吊韌帶) close to the duodenojejunal junction.



REMOVAL STEP 4/9

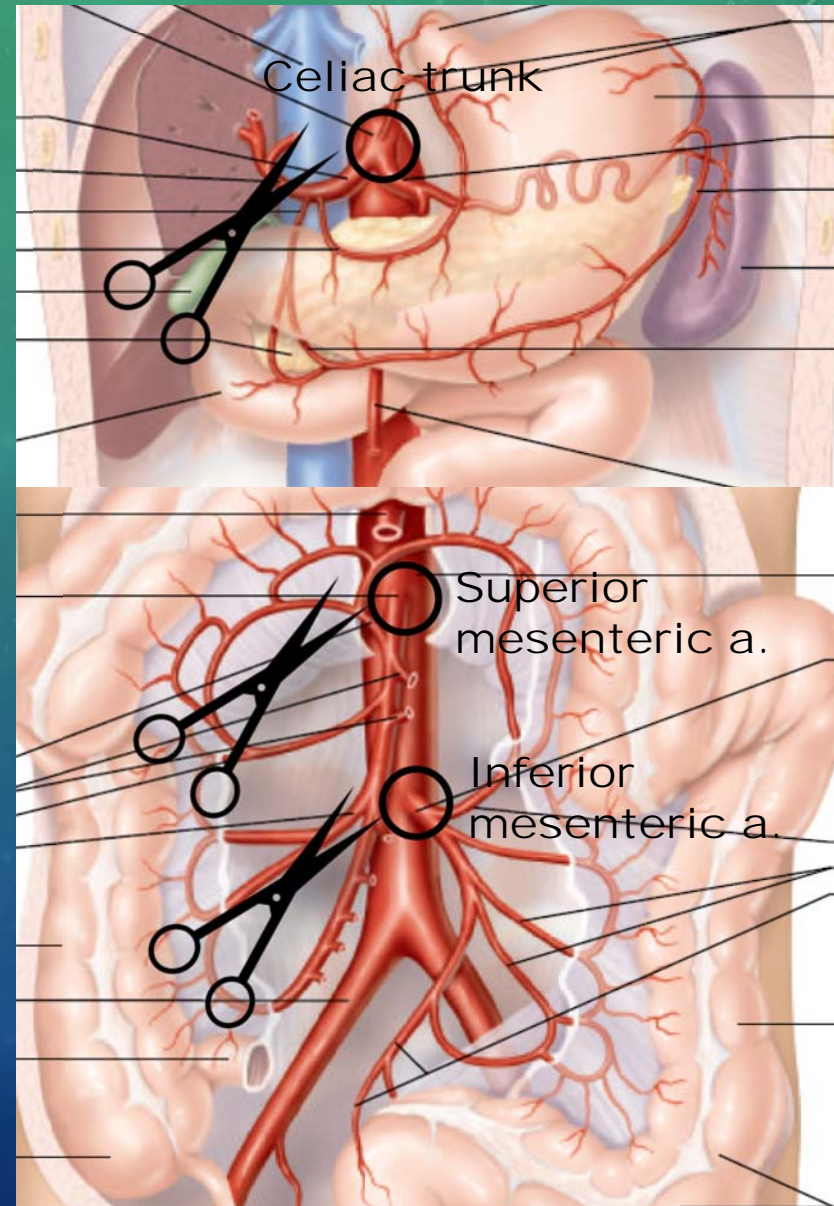
- Free the stomach from any peritoneal attachments it may still have to the posterior abdominal wall.
- Insert your fingers posterior to the spleen and carefully free the splenic vessels, tail of the pancreas, and body of the pancreas from the posterior abdominal wall.
- Free the duodenum and the head of the pancreas from the posterior abdominal wall.



REMOVAL STEP 5/9

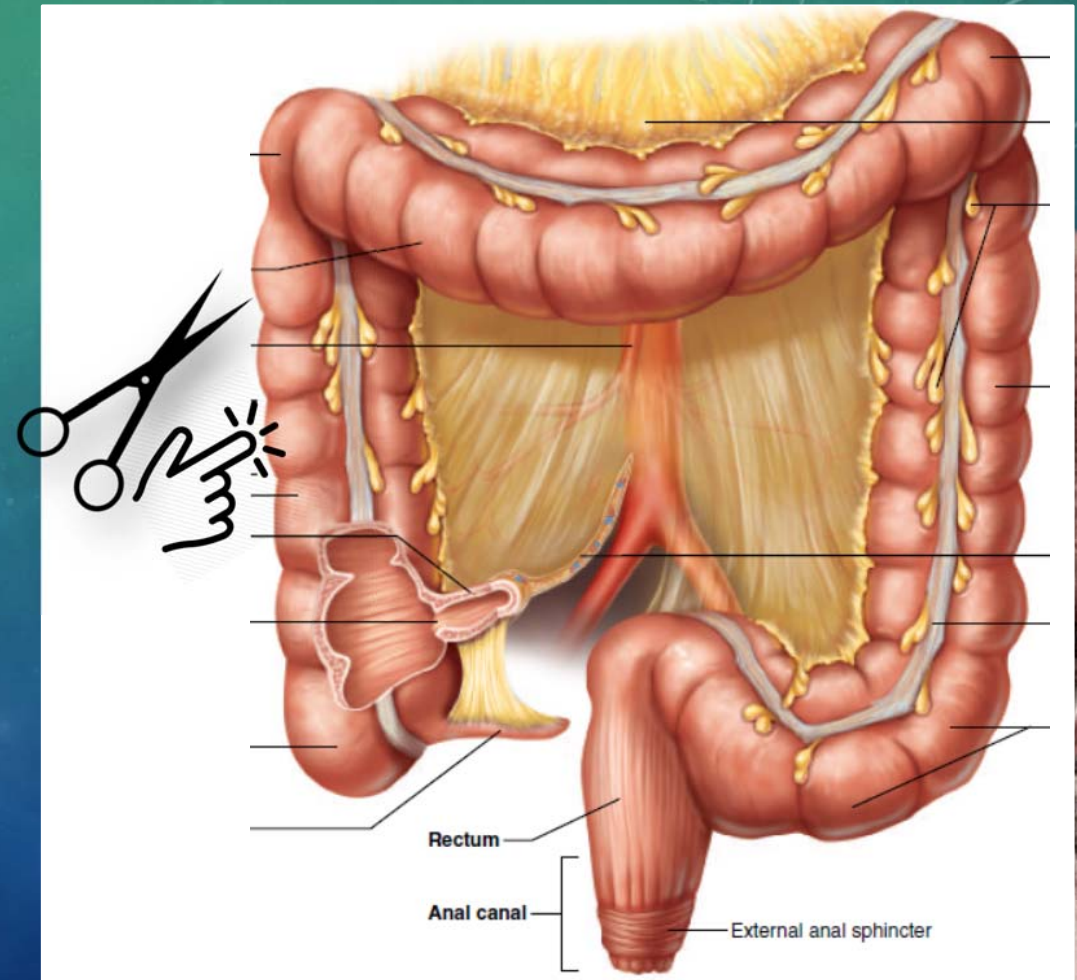
- Use scissors to cut the **celiac trunk** close to the aorta, leaving no stump (殘根).
- Use scissors to cut the **superior mesenteric artery** near the aorta, leaving a 1-cm stump.
- Use scissors to cut the **inferior mesenteric artery** near the aorta, leaving a 1-cm stump.
- 提示：將所有器官往右側翻，由右側剪血管。

<http://www.ym.edu.tw/~cflu>



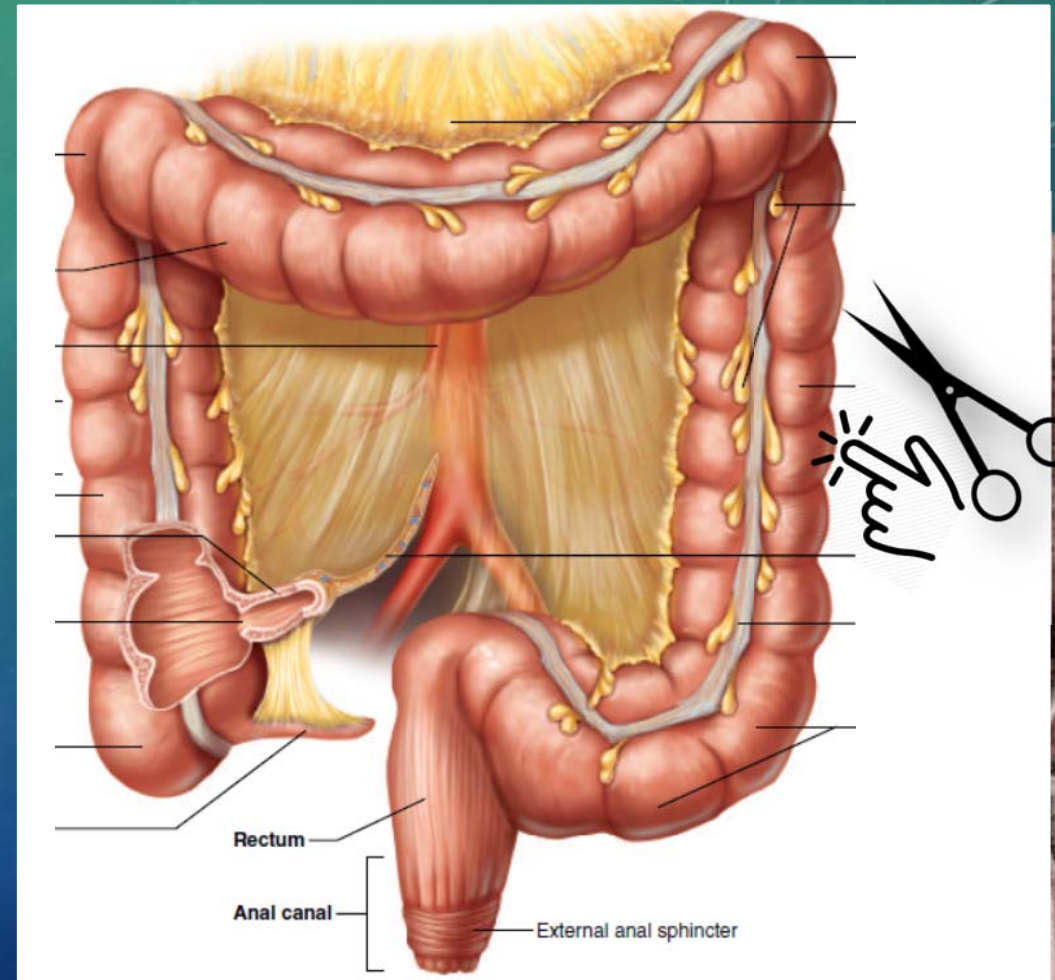
REMOVAL STEP 6/9

- Use scissors to cut the parietal peritoneum lateral to the **ascending colon**.
- Use your fingers to free the ascending colon from the posterior abdominal wall.
- Roll the ascending colon toward the midline and use your fingers to loosen its blood vessels from the posterior abdominal wall.



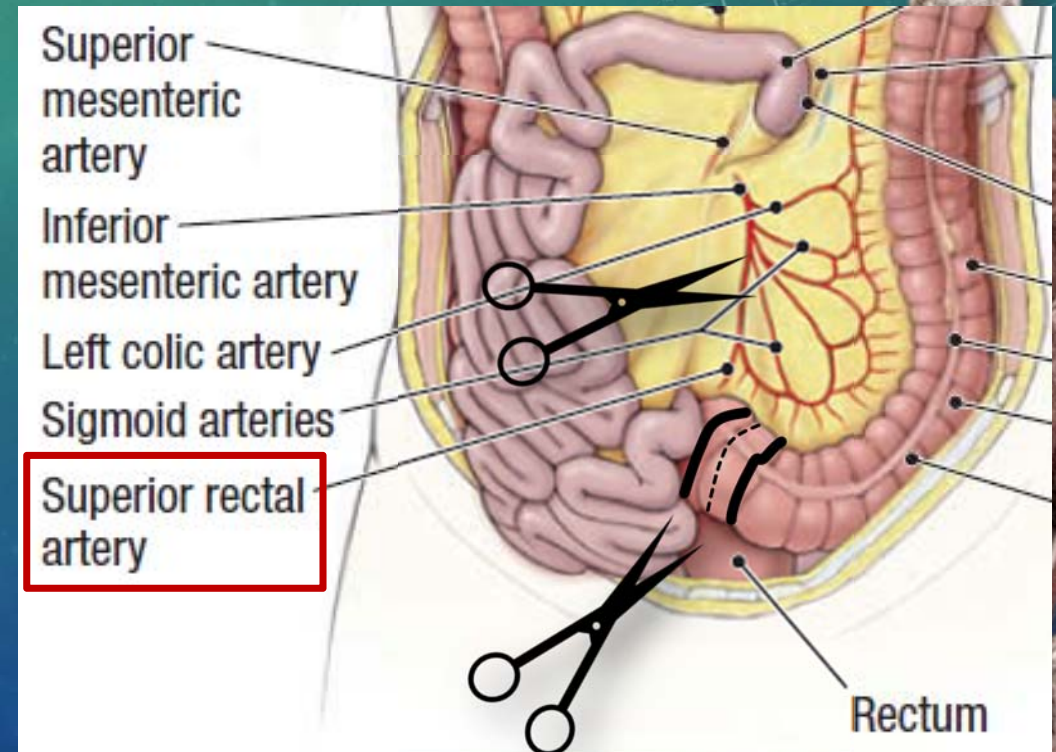
REMOVAL STEP 7/9

- Cut the parietal peritoneum lateral to the **descending colon**.
- Use your fingers to free the descending colon from the posterior abdominal wall.
- Roll the descending colon toward the midline and use your fingers to loosen its blood vessels from the posterior abdominal wall.



REMOVAL STEP 8/9

- Tie two strings 4 cm apart around the distal end of the sigmoid colon, close to the rectum (black lines).
- Use scissors to cut the sigmoid colon *between the strings (dashed line)*.
- Cut the superior rectal artery.



REMOVAL STEP 9/9

- The gastrointestinal tract, liver, pancreas, and spleen should now be free of attachments. **Remove them from the abdominal cavity.**
- Support the liver and be careful not to twist or tear the structures in the hepatoduodenal ligament.



NOTES

- 各組取出的腹部內臟，請**“整套”**放置在一塊大紗布上，移置後方空的解剖台做解剖觀察。
- 無法使用空解剖台的組別，可將紗布放置在2~3托盤上，在後方空的大木桌上觀察。
- 下課前，請同樣將腹部內臟以紗布包裹，放置於橘色儲存桶中浸泡。
- 使用的解剖台與大木桌，請清理乾淨方能離開。



THE END

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