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DUODENUM

By

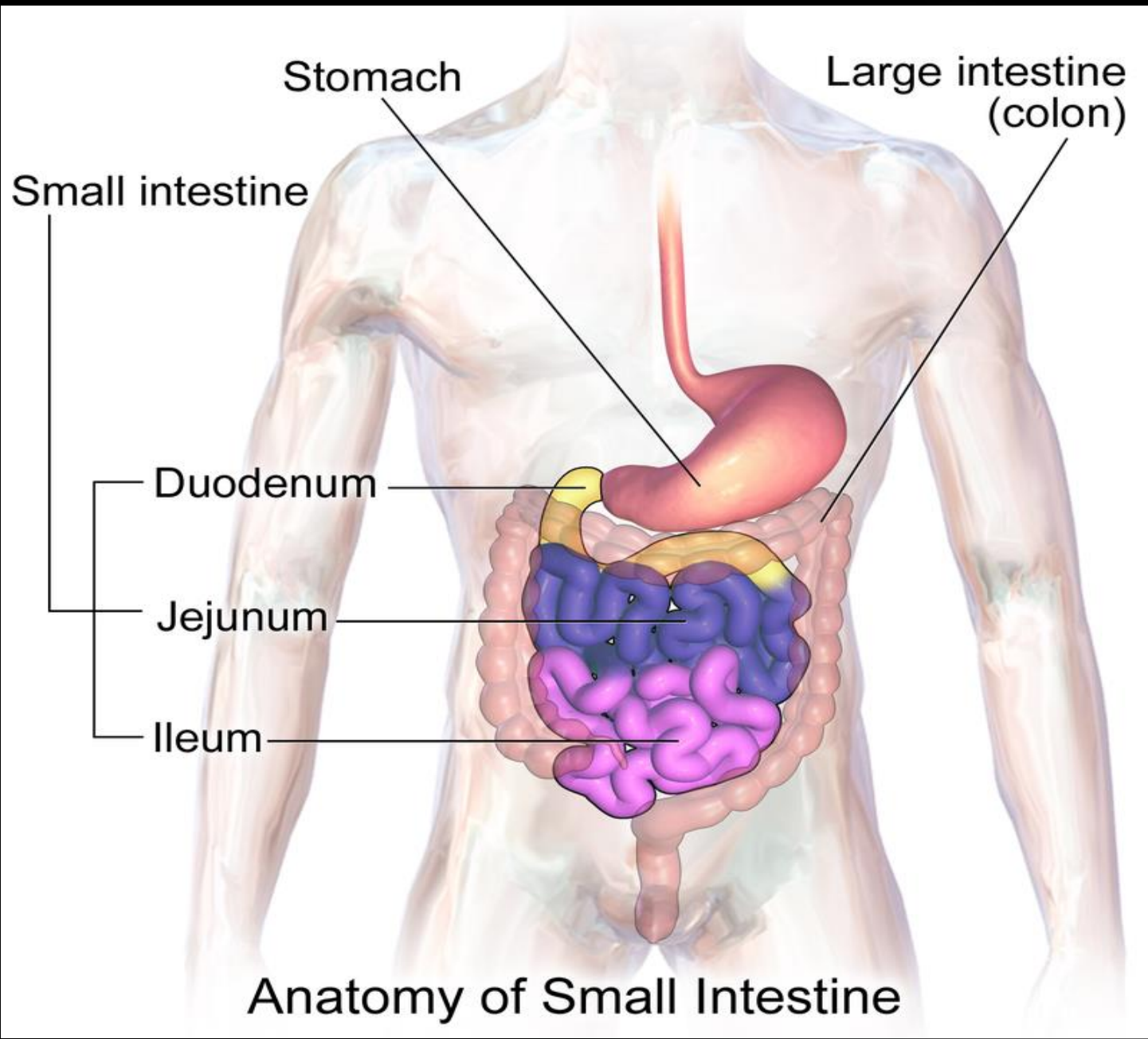
DR. MAHVISH JAVED

DUODENUM

The **duodenum** is the first section of the small intestine.

The Small intestine consists of duodenum, jejunum, ileum.

Small intestine extends from pylorus to ileocecal junction.



Stomach

Large intestine (colon)

Small intestine

Duodenum

Jejunum

Ileum

Anatomy of Small Intestine

The duodenum precedes the jejunum and ileum and is the shortest part of the small intestine.

In humans, the duodenum is a hollow jointed tube about 25–38 cm (10–15 inches) long connecting the stomach to the jejunum.

Structure

It is divided anatomically into four sections.

The first part of the duodenum lies within the peritoneum but its other parts are retroperitoneal

Duodenum

Shortest, dilated and most fixed proximal part of Small intestine.

Devoid of mesentery

Fixed to post. Abd. Wall.

C – shaped curvature

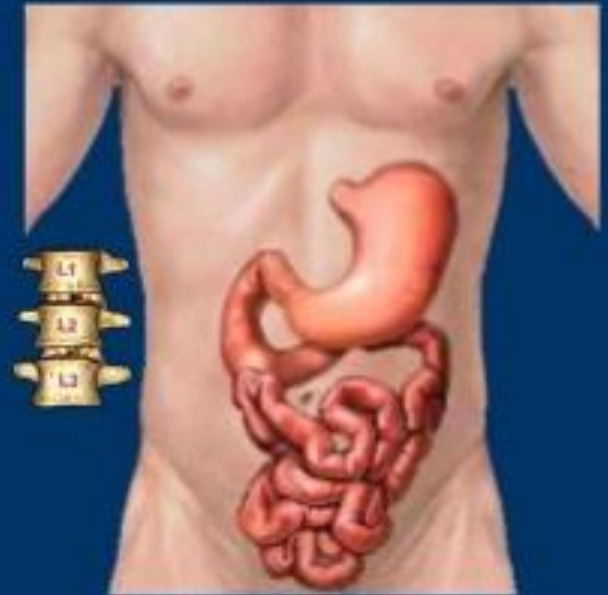
Curved around head of pancreas

Lies above umbilicus opp. to 1, 2 & 3 rd Lumbar Vertebrae

Receives Bile duct and pancreatic duct.

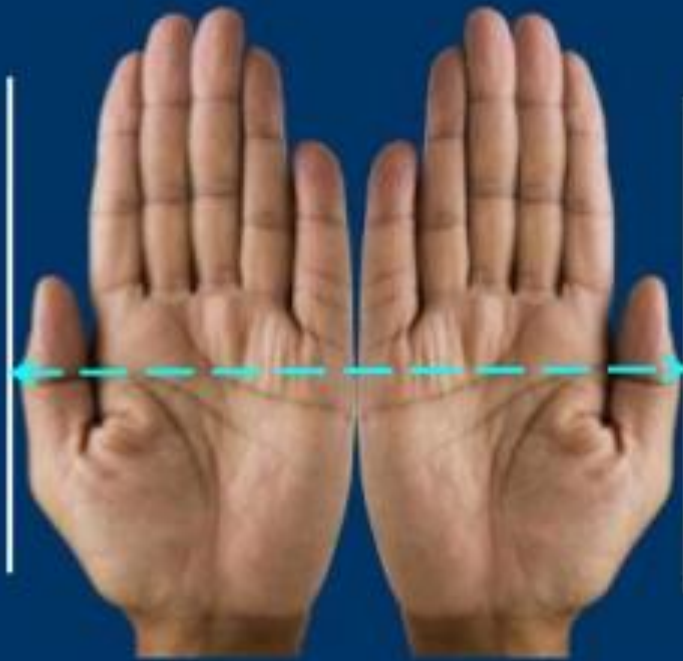
Interposed bet. Stomach and intestines

(Both are active digestive areas in GIT)

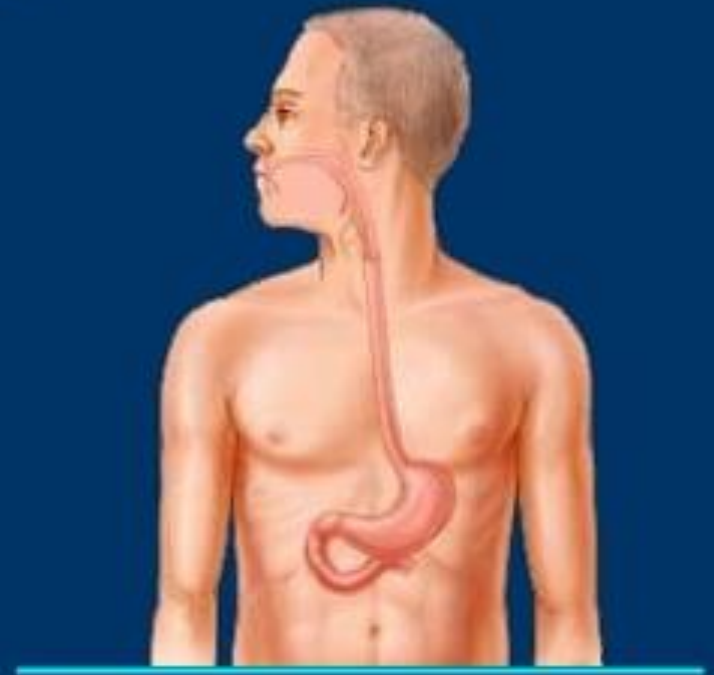


DUODENUM

Length of Duodenum = width of 12 fingers

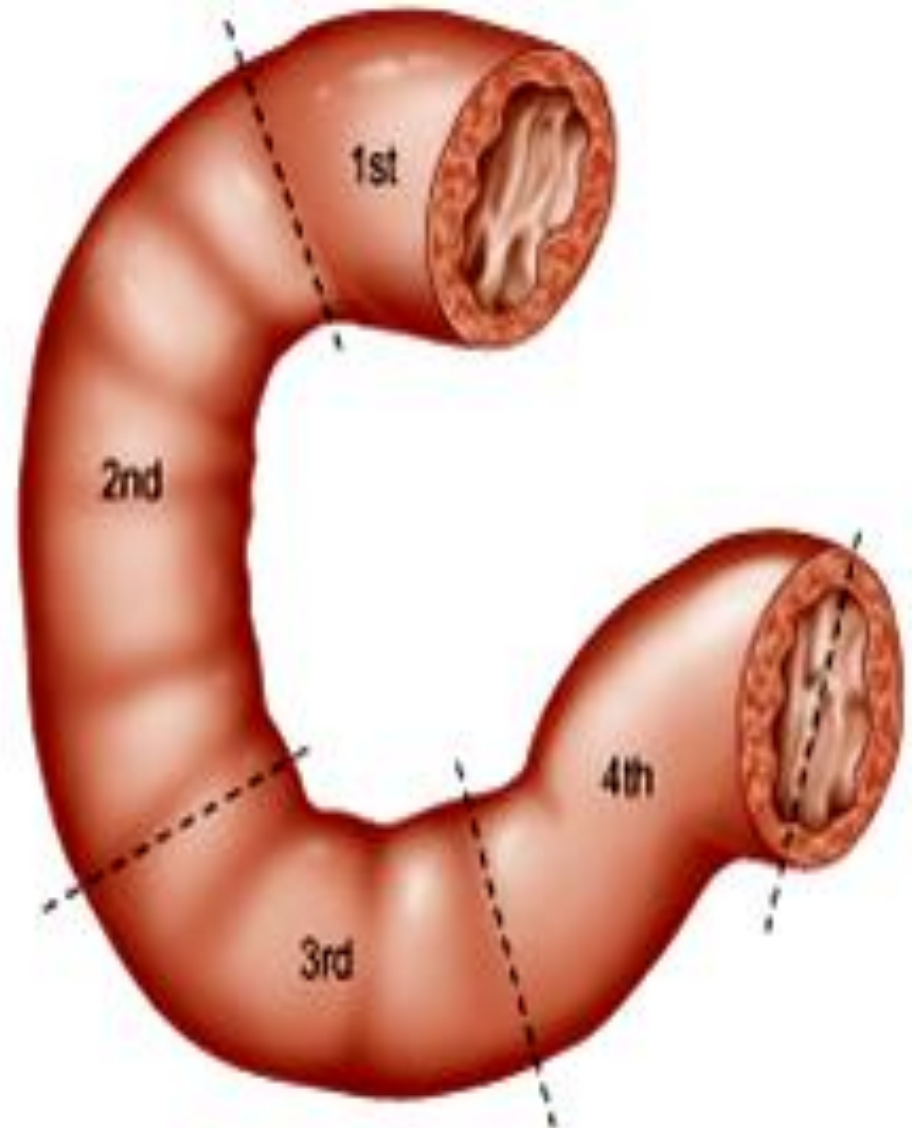


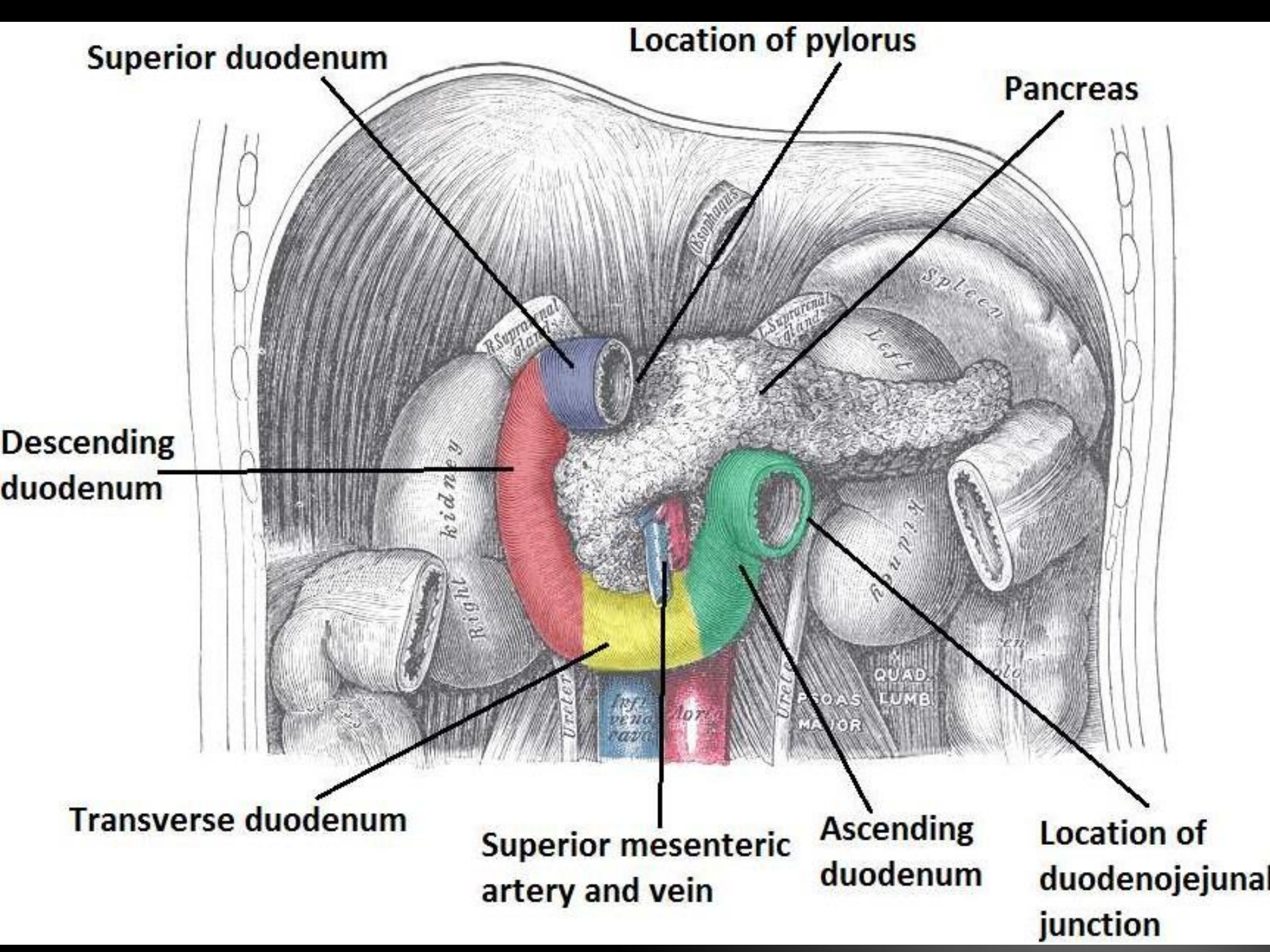
10 in /
25 cm



Structure

For the purpose of description
duodenum is
divided into four
Parts...





Duodenum – 3 flexures

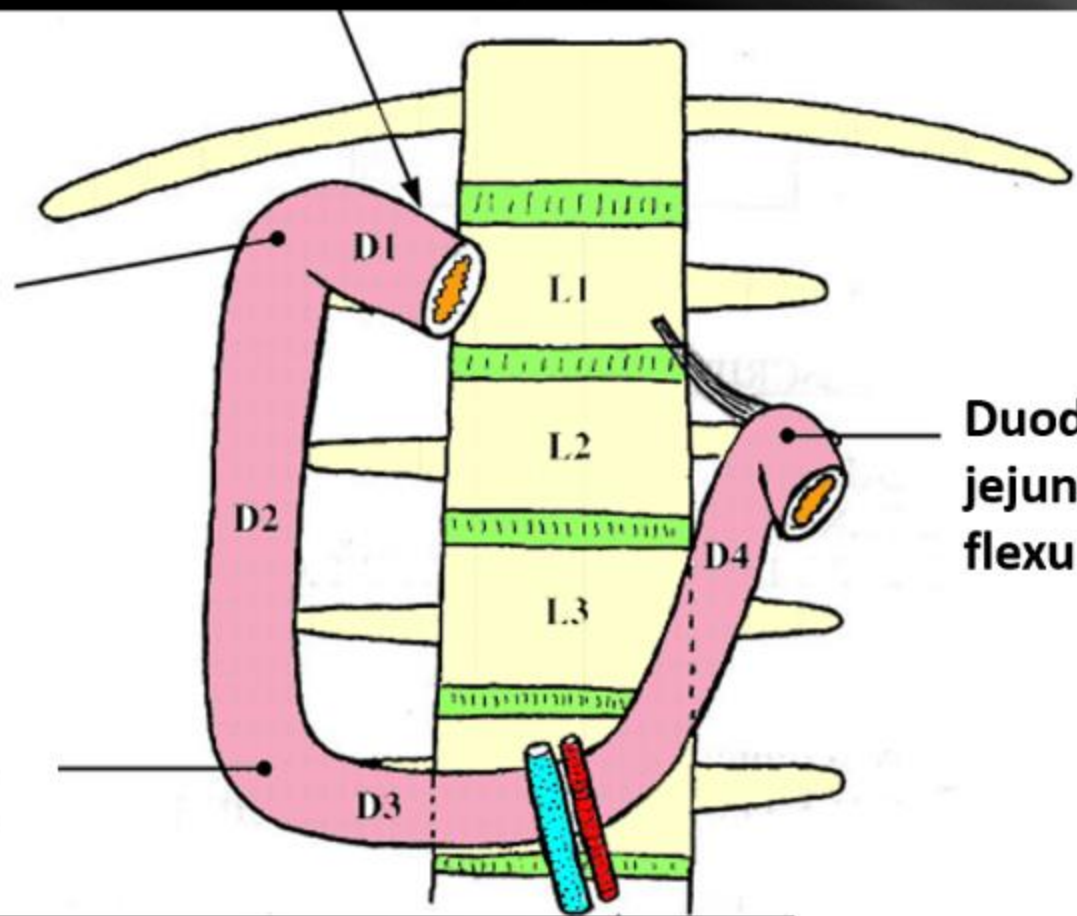
1. Superior duodenal flexure
2. Inferior duodenal flexure
3. Duodeno-jejunal flexure.



Duodenum

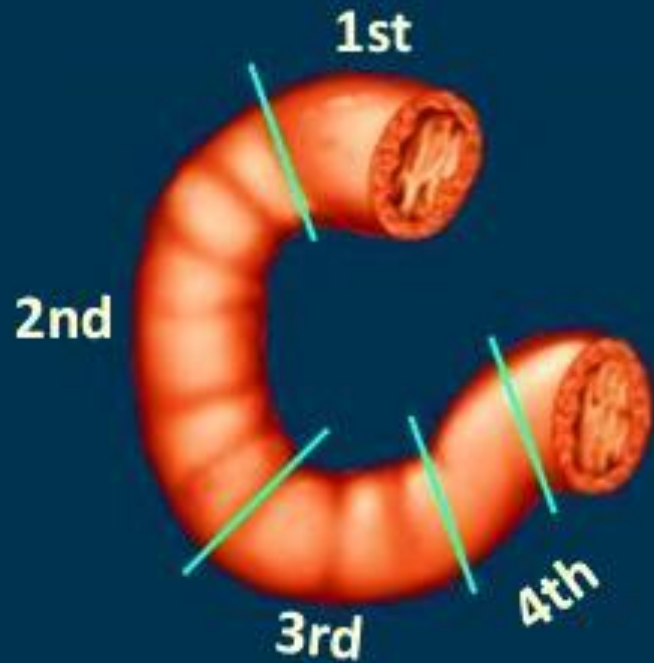
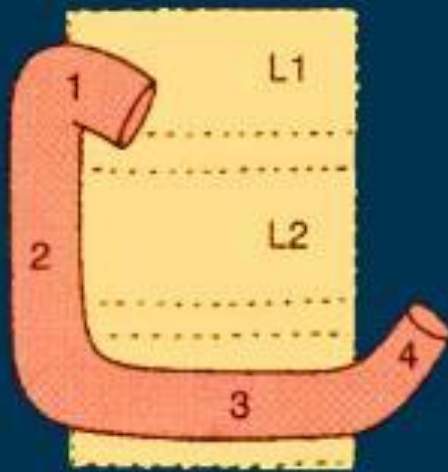
Superior duodenal flexure

Inferior duodenal flexure



Duodeno-jejunal flexure

Duodenum - parts



25 cm long & Subdivided into 4 parts

- First / upper part – 5 cm
- Second / vertical part – 7.5 cm
- Third / horizontal part – 10 cm
- Fourth / ascending part – 2.5 cm



Duodenum 1st part (5 cm)

Extends from pylorus to
Sup. Duodenal flexure,
directed upwards, backwards &
to Right

Length – 5 cm

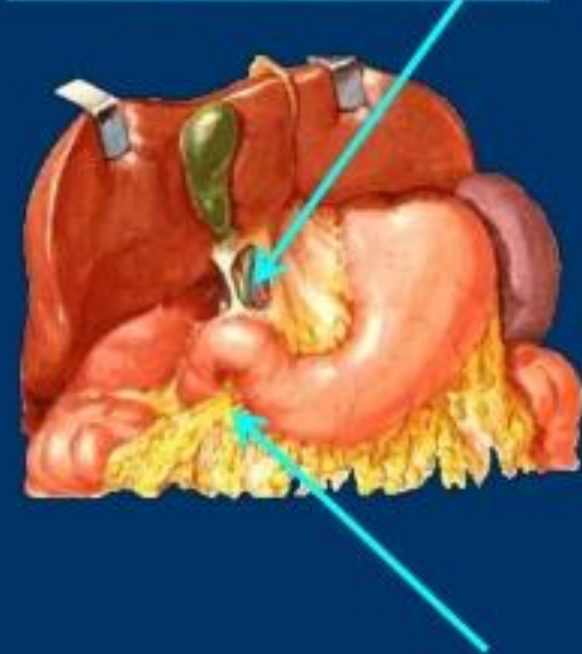
Peritoneal relations:

prox. 2.5 cm movable.

Attached to lesser omentum above and
to greater omentum below.

Distal 2.5 cm is fixed. Retroperitoneal.

Covered with peritoneum only on anterior aspect.



Duodenum 1st part

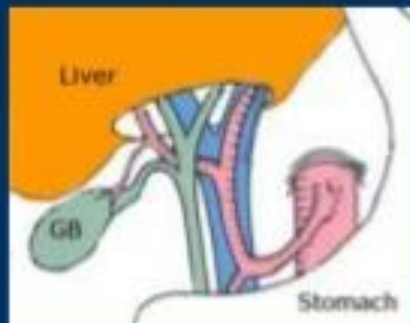
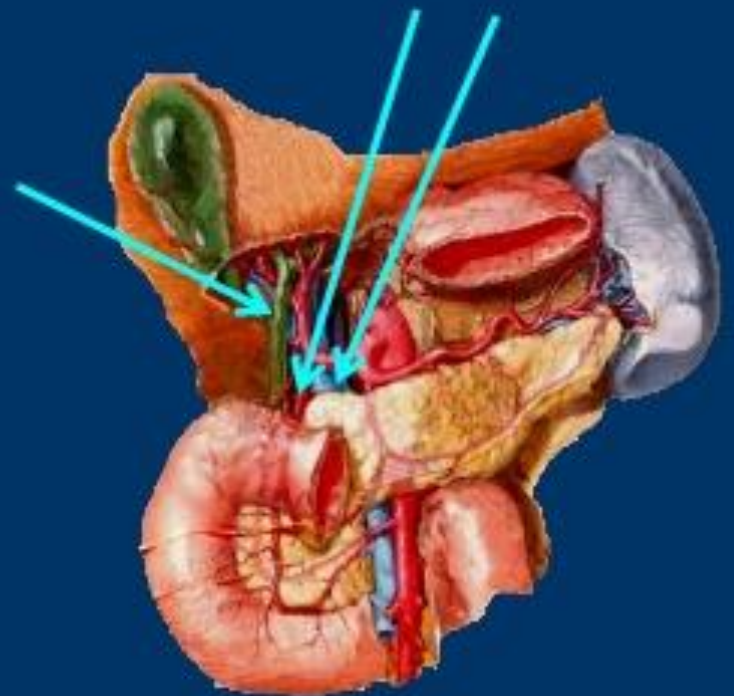
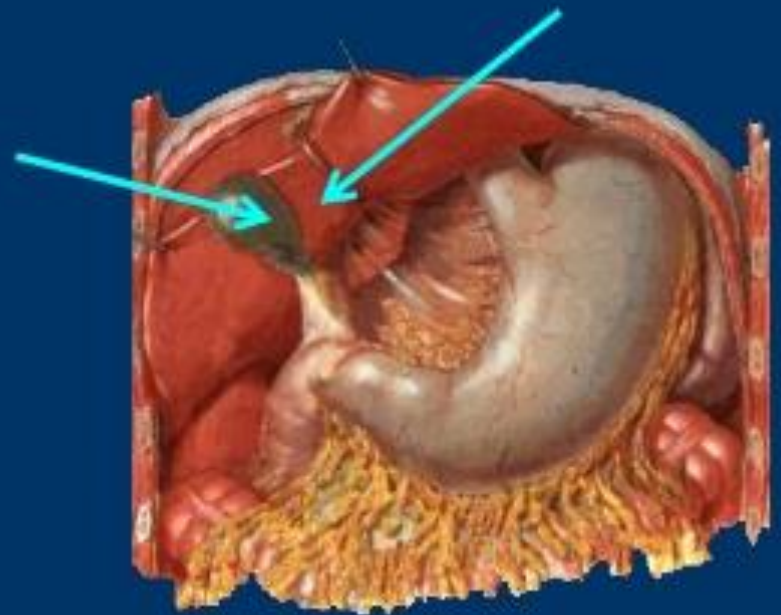
Visceral relations:

Anteriorly : Quadrate lobe of liver,
and gall bladder.

Posteriorly : Gastroduodenal art.,
bile duct, and portal vein.

Superiorly : Epiploic foramen.

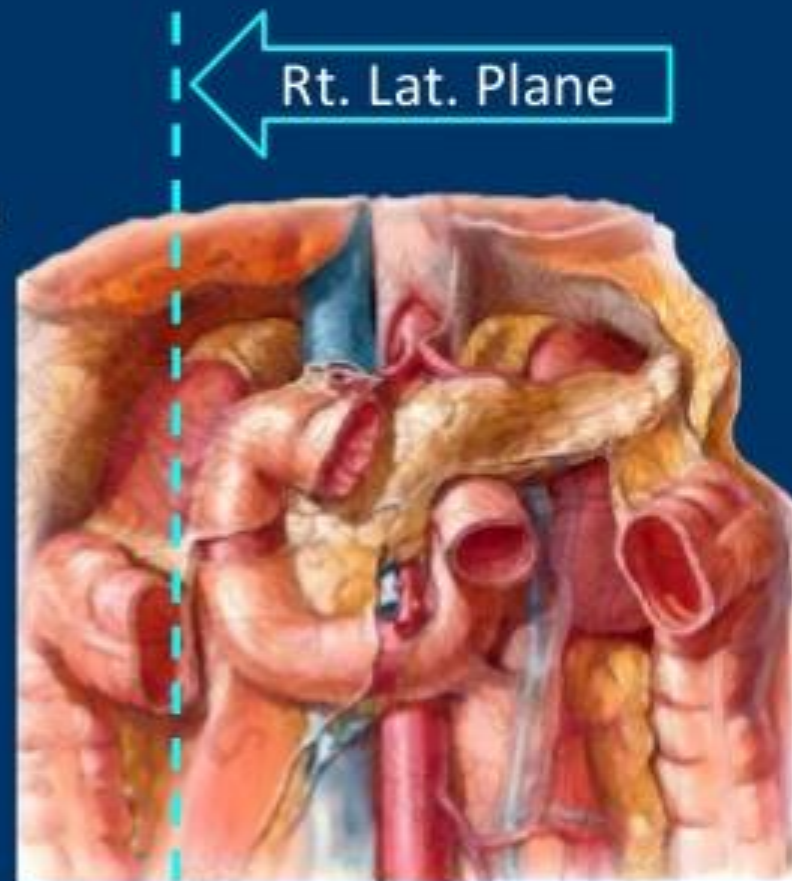
Inferiorly : Head & neck of pancreas.

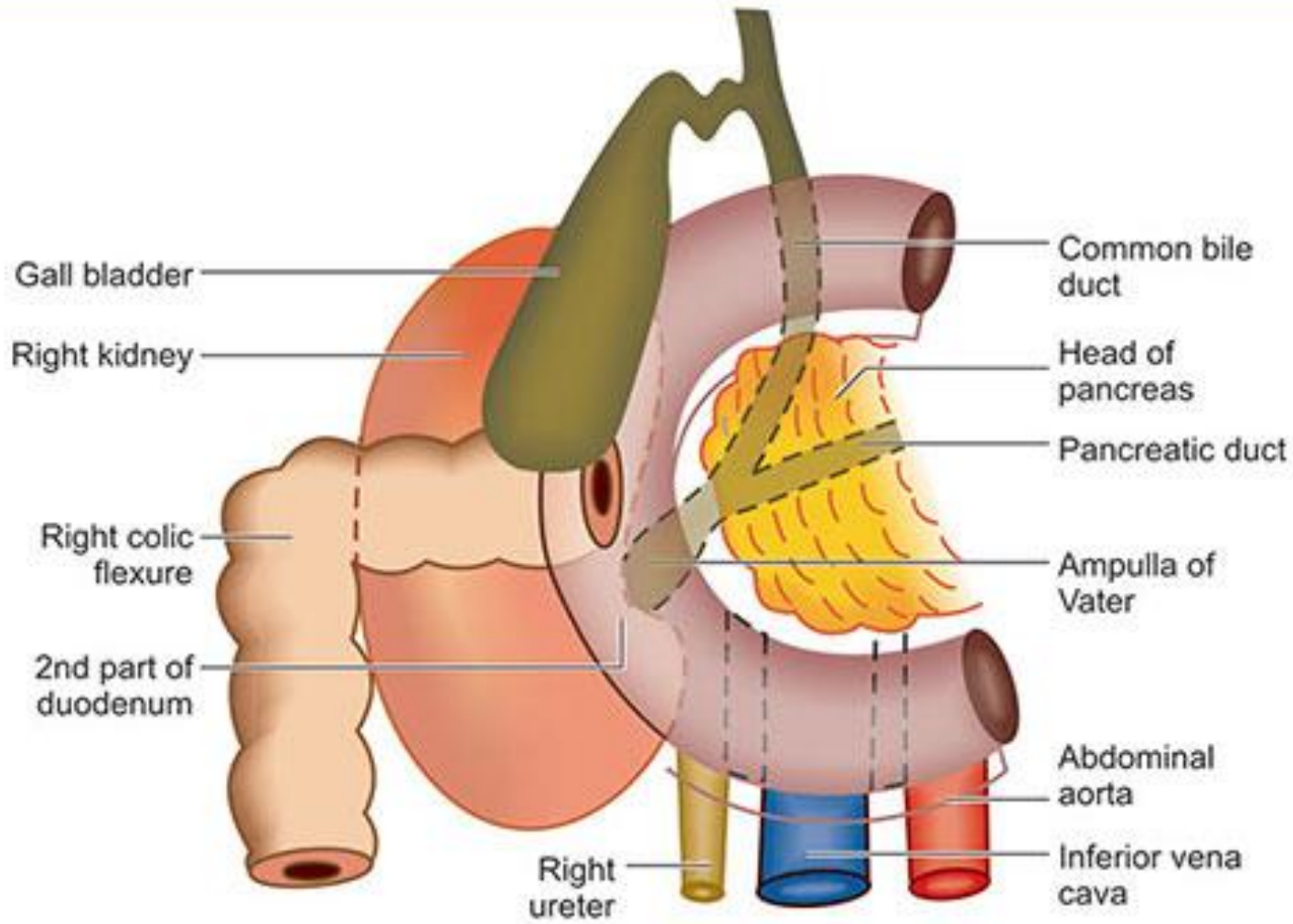


Duodenum – second part (7.5 cm)

Begins at superior duodenal flexure opp. L1 vertebra
passes vertically downwards

- in front of hilum of Rt. Kidney
- along Rt. Side of vertebral column
in para vertebral gutter
- Within Rt. Lateral plane
- ends in inferior duodenal flexure
opp. Lower border of L3
- continues with 3rd part





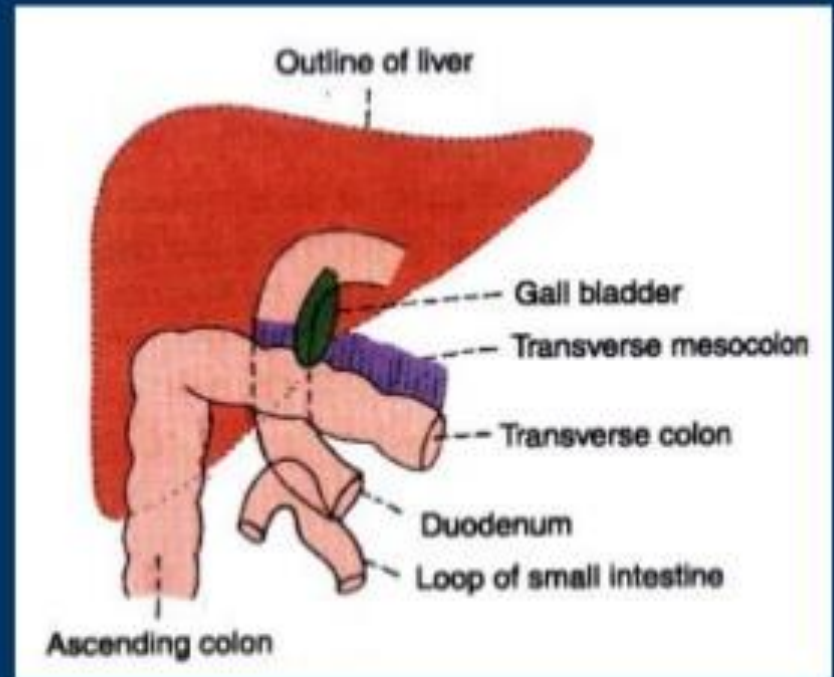
Duodenum – second part

Peritoneal relations:

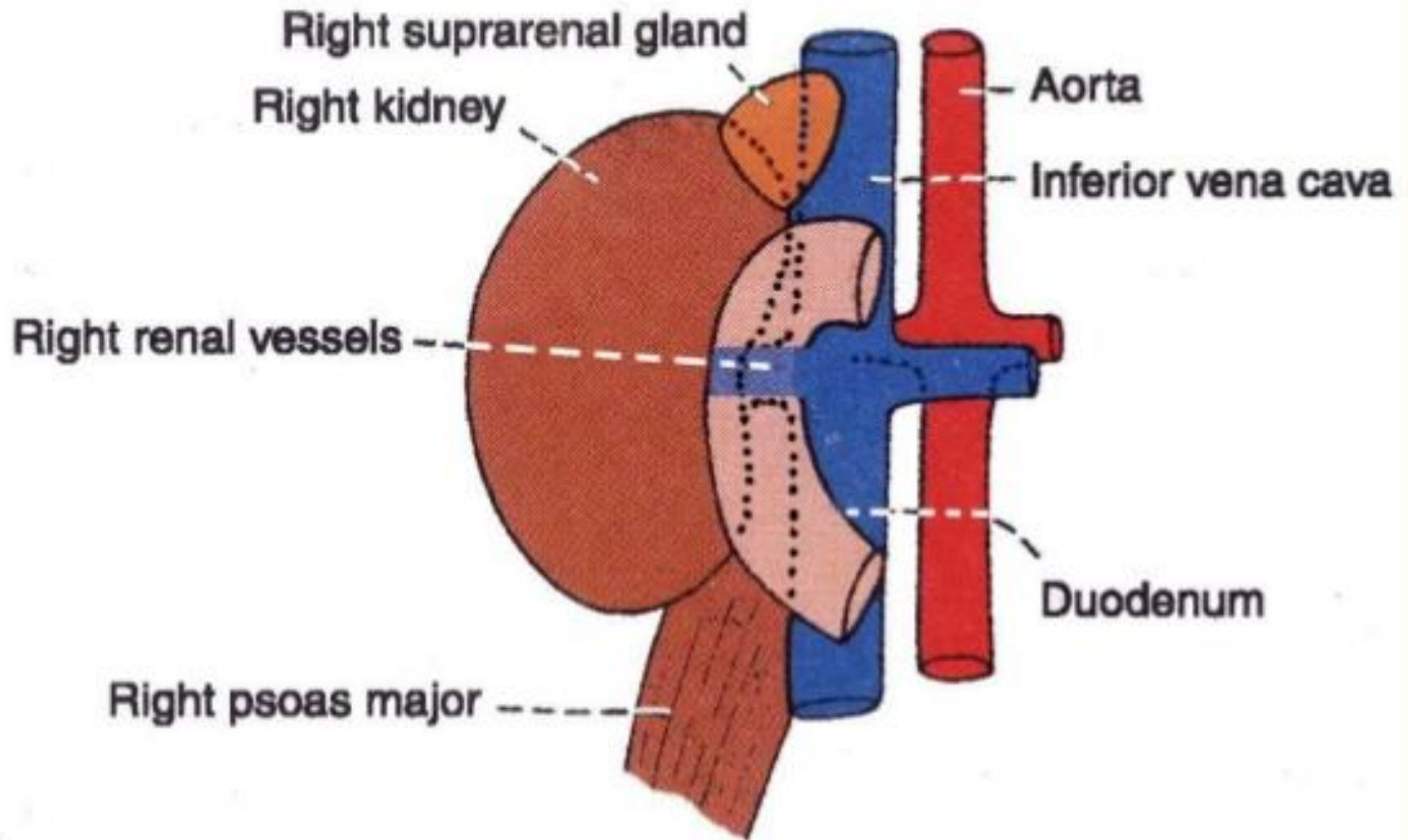
It is retroperitoneal and fixed.
Ant. Surface is covered with peritoneum, except near the middle where it is directly related to colon.

Visceral relations:

Anteriorly: Right lobe of liver,
Transverse colon,
Root of transverse mesocolon,
Small intestine.



Duodenum – second part – posterior relations



Interior of 2nd part

Plicae Circulares:

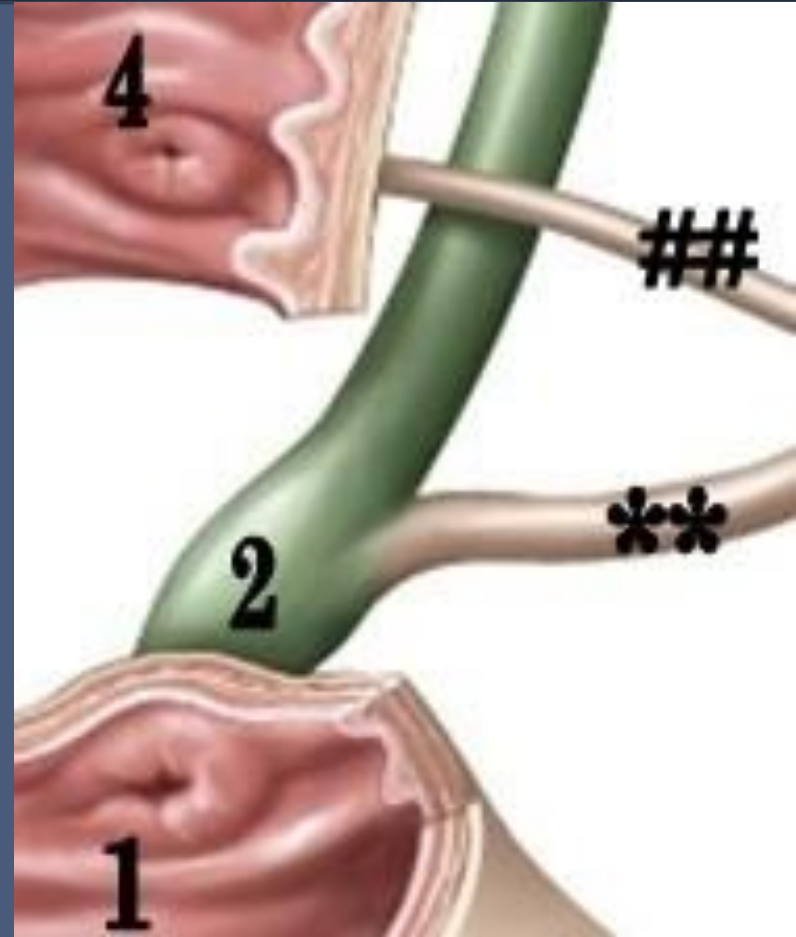
The mucous membrane of the duodenum is thrown into numerous circular folds

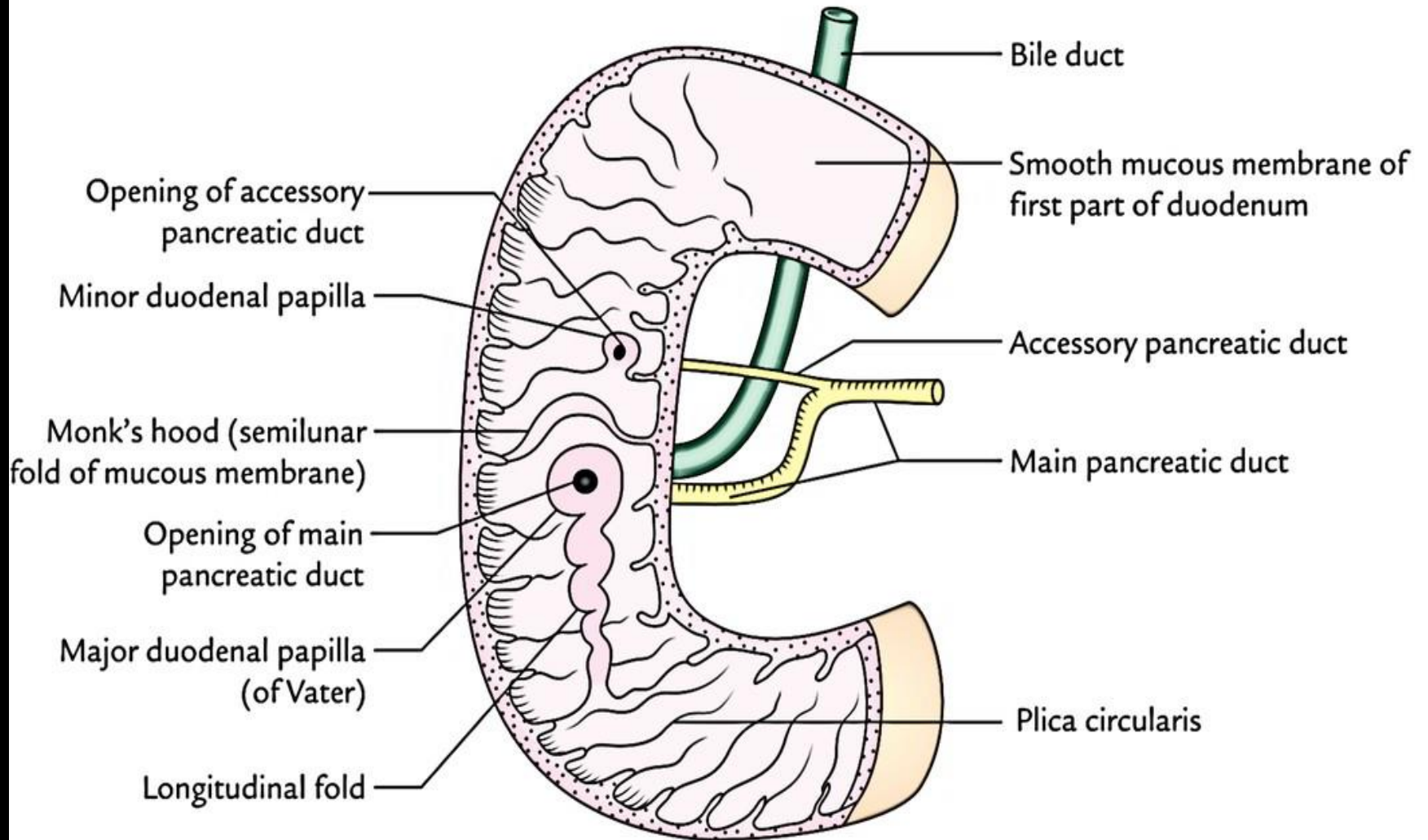
Major duodenal papilla:

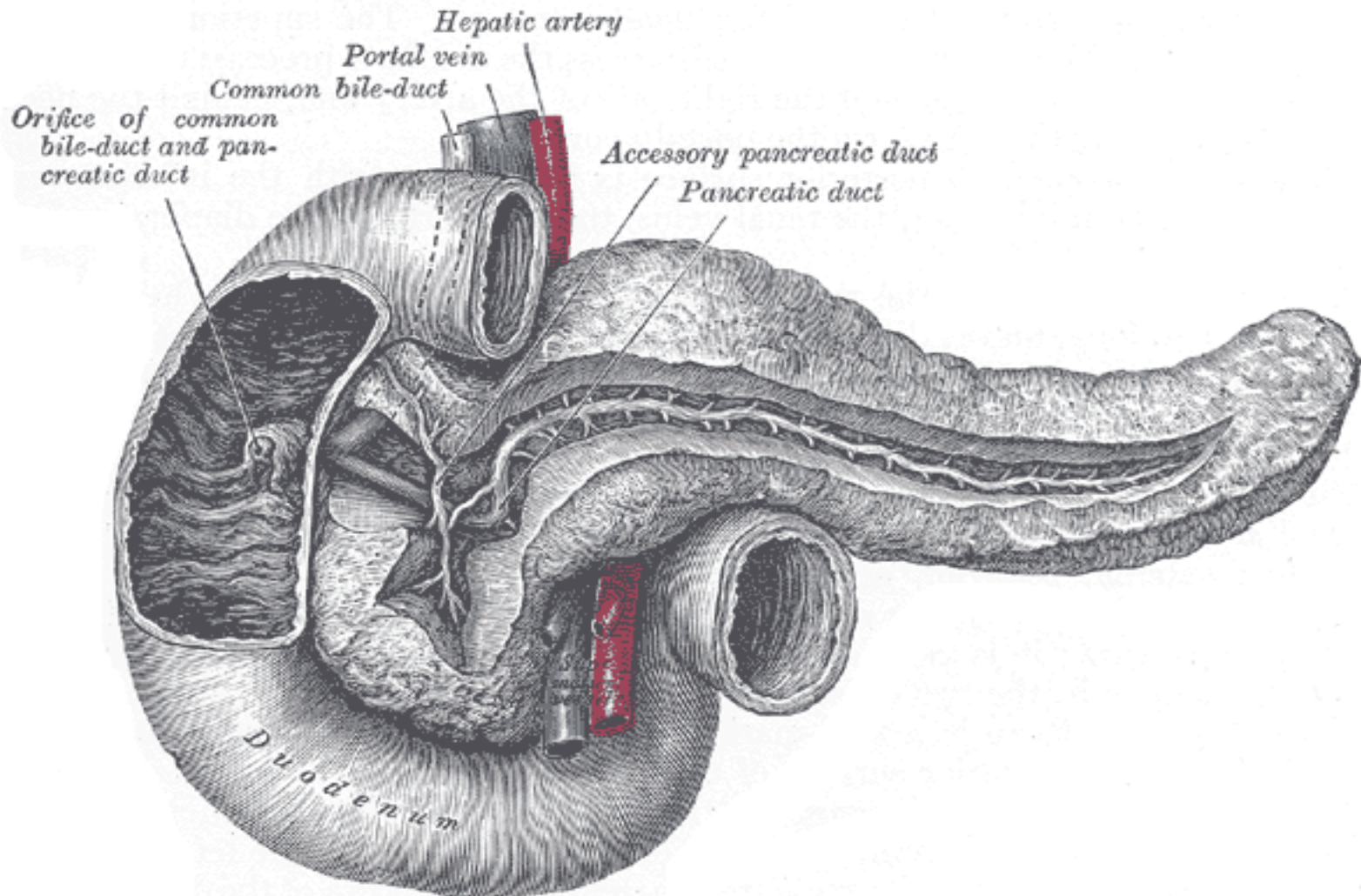
In the medial wall it is a small rounded elevation. This is the site where bile duct along with main pancreatic duct pierce..

Minor duodenal papilla:

About 2cm above the major papilla this is the site where accessory pancreatic duct opens..if present







Duodenum – 3rd part (10 cm)

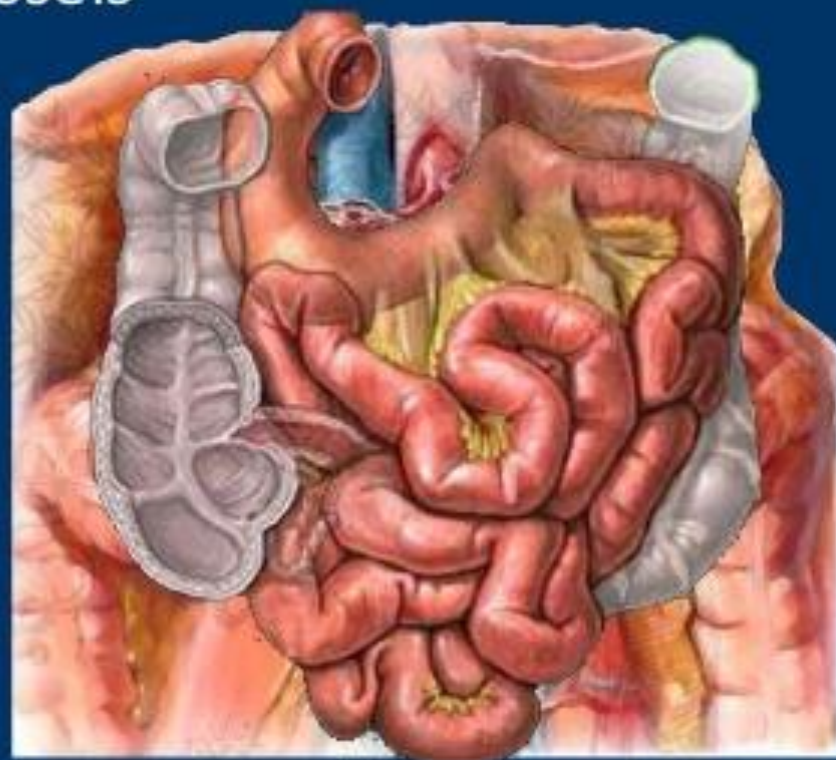
Extends from inf. Duodenal flexure to front of aorta at L3 level

Relations – Superiorly :

Head of pancreas with uncinete process.
Inferior pancreatico duodenal vessels

Inferiorly :

Few coils of jejunum



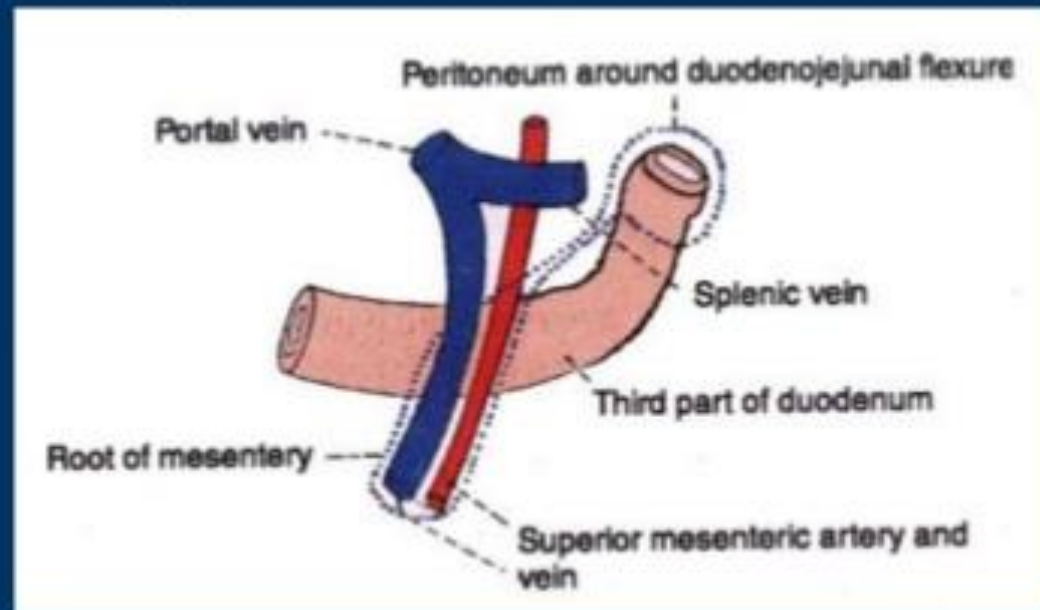
Duodenum – 3rd part (10 cm)

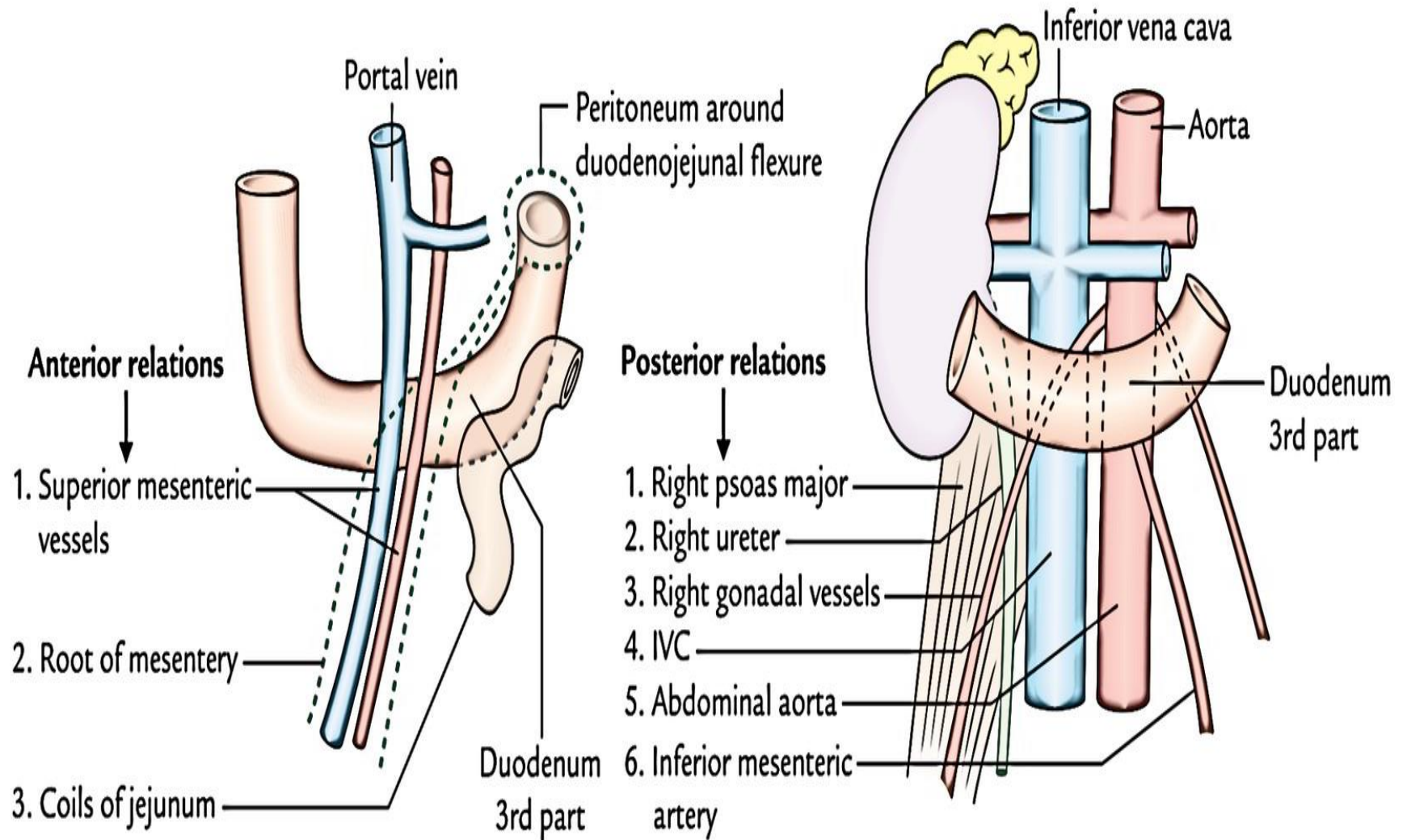
Extends from inf. Duodenal flexure to front of aorta at L3 level

Relations - Anteriorly :

Covered by peritoneum except attachment of root of mesentery

Ant. Surface crossed by
Sup. Mesenteric vessels
and root of mesentery





DUODENUM 4th PART

It extends from front of aorta to the duodeno jeujenal flexure .

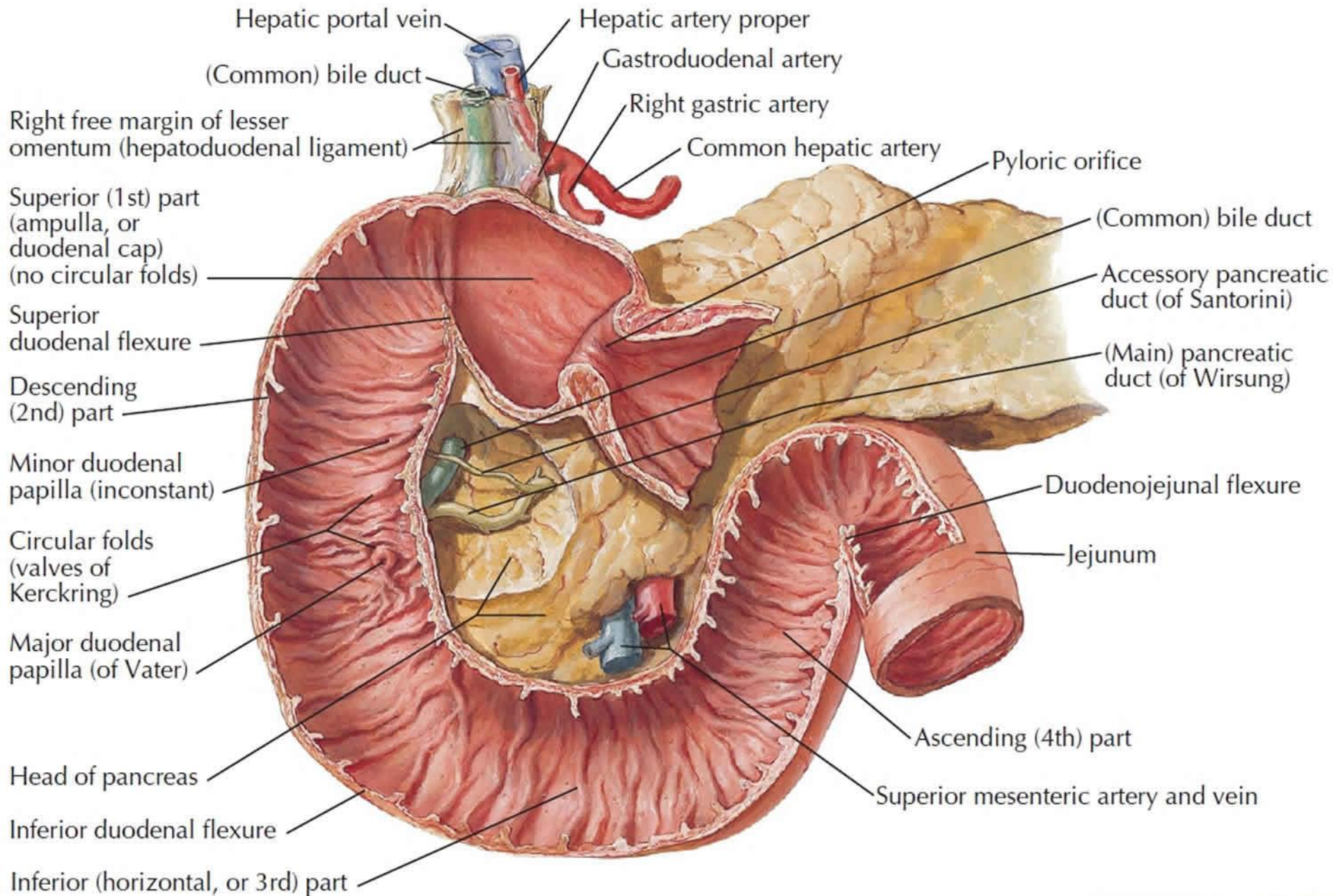
RELATIONS

ANTERIORLY:

Root of mesentry ,coils of jeujenum

POSTERIORLY

- **Left margin of aorta ,left psoas muscle**



Duodenum – 4th part (2.5 cm)

Right side :

Uncinate process of pancreas

Left side :

Left kidney and ureter

Superiorly :

Body of pancreas



TABLE 2.8. RELATIONSHIPS OF DUODENUM

Part of Duodenum	Anterior	Posterior	Medial	Superior	Inferior	Vertebral Level
Superior (1st part) (A & B)	Peritoneum Gallbladder Quadrante lobe of liver	Bile duct Gastroduodenal artery Hepatic portal vein IVC	Pylorus	Neck of gallbladder	Neck of pancreas	Anterolateral to L1 vertebra
Descending (2nd part) (C)	Transverse colon Transverse mesocolon Coils of small intestine	Hilum of right kidney Renal vessels Ureter Psoas major	Head of pancreas Pancreatic duct Bile duct	Superior part of duodenum	Inferior part of duodenum	Right of L2-L3 vertebrae
Inferior (horizontal) (3rd part) (D)	SMA SMV Coils of small intestine	Right psoas major IVC Aorta Right ureter		Head and uncinate Process of pancreas Superior mesenteric vessels	Coils of small intestine (ilium)	Anterior to L3 vertebra
Ascending (4th part) (E)	Beginning of root of mesentery Coils of jejunum	Left psoas major Left margin of aorta	SMA, SMV, uncinate process of pancreas	Body of pancreas	Coils of jejunum	Left of L3 vertebra

IVC, inferior vena cava; *SMA*, superior mesenteric artery; *SMV*, superior mesenteric vein.

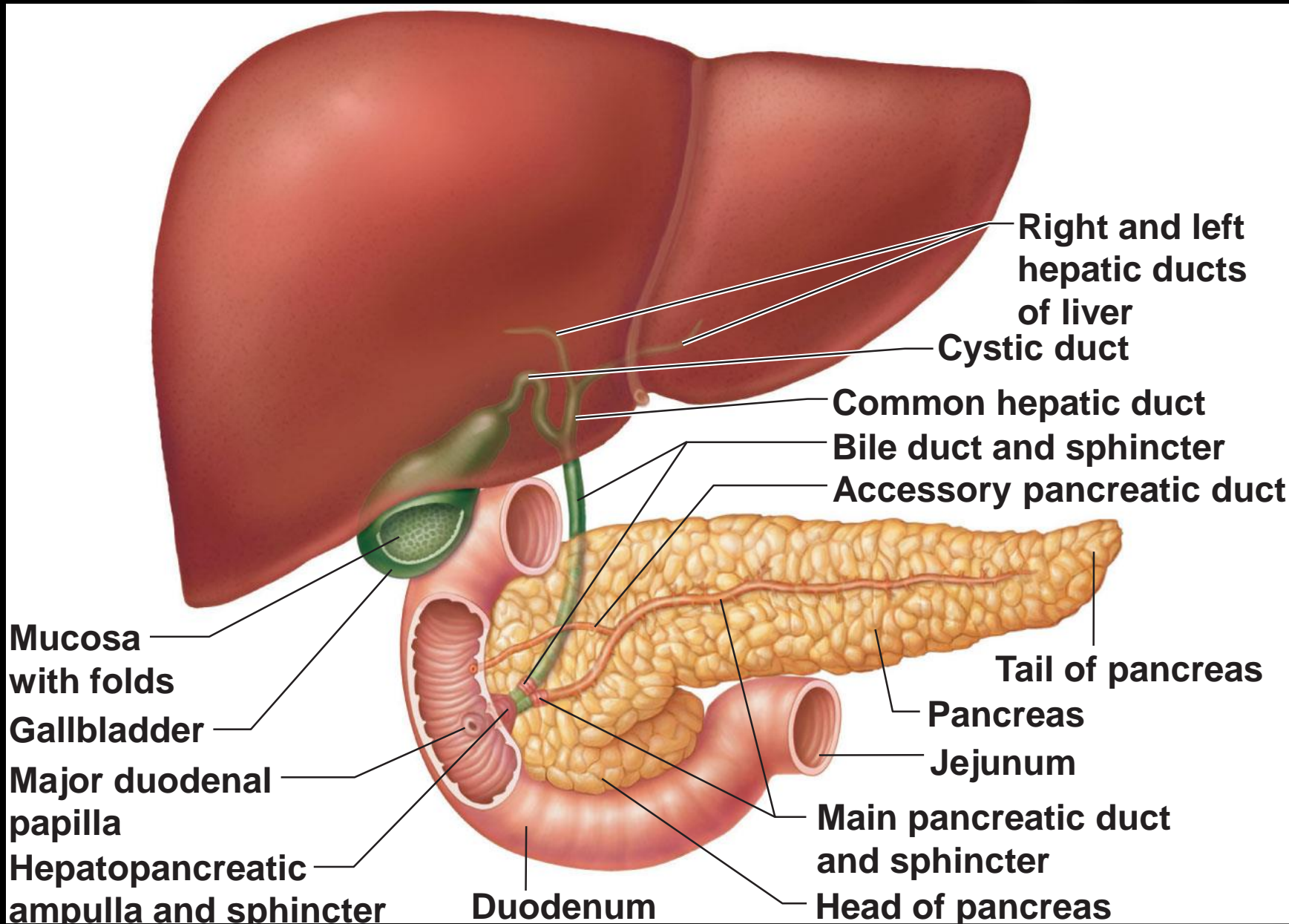
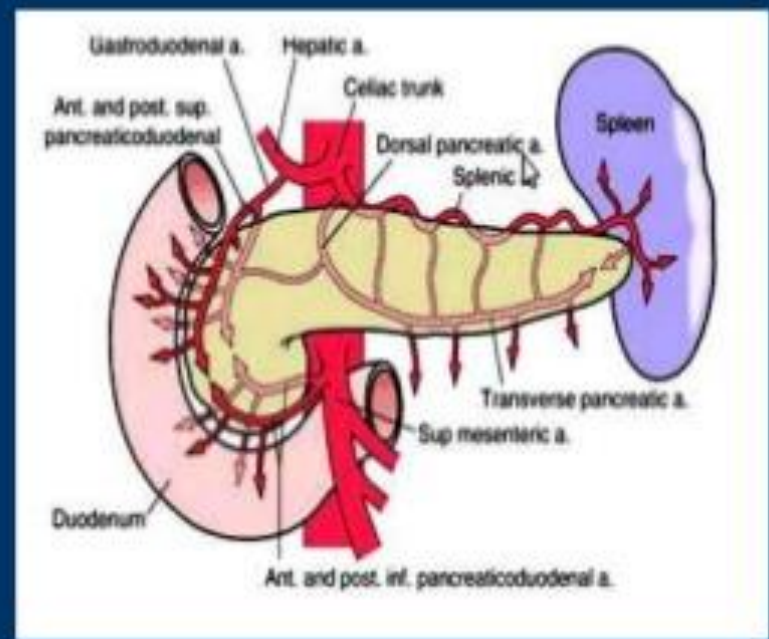
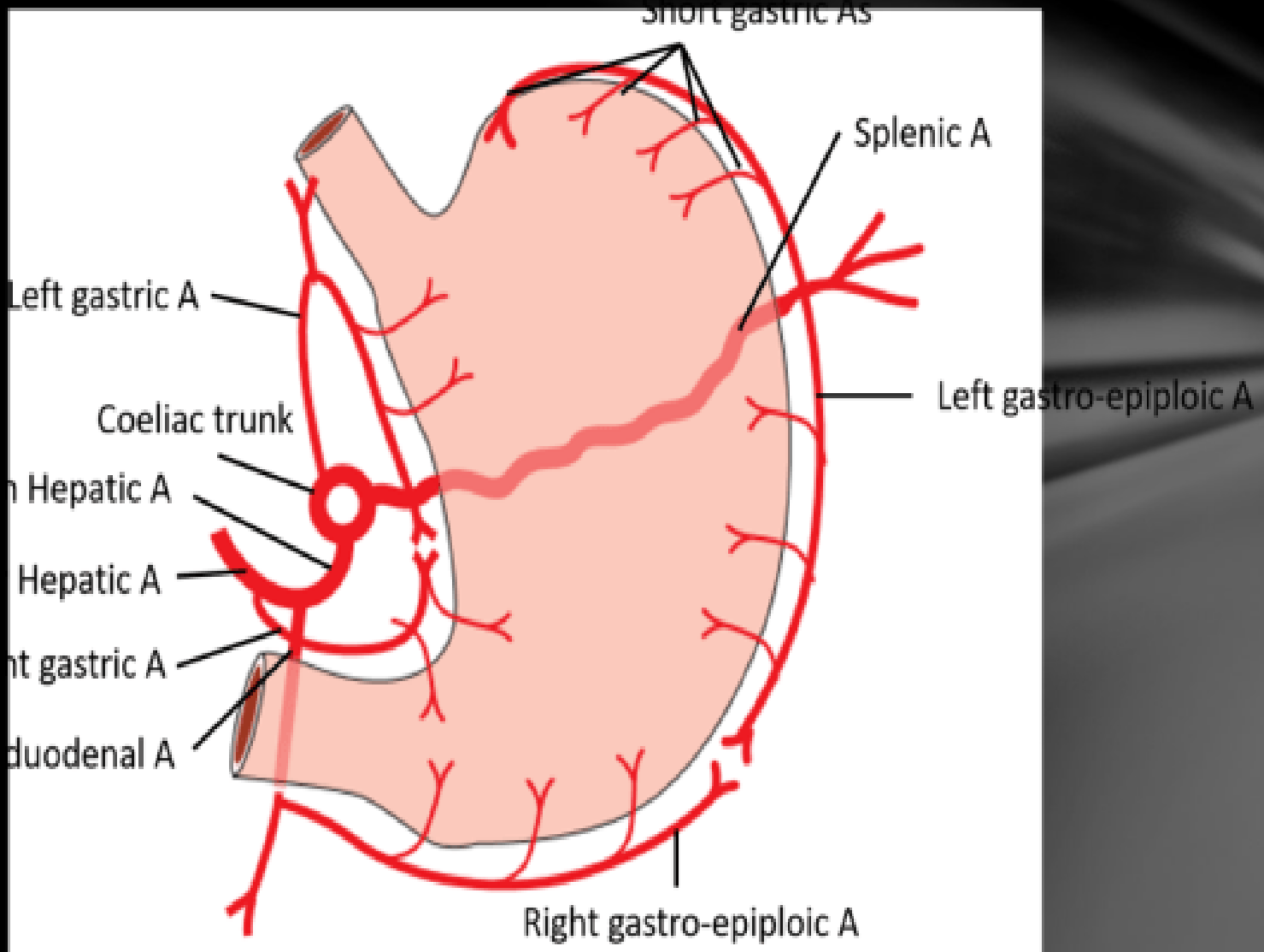


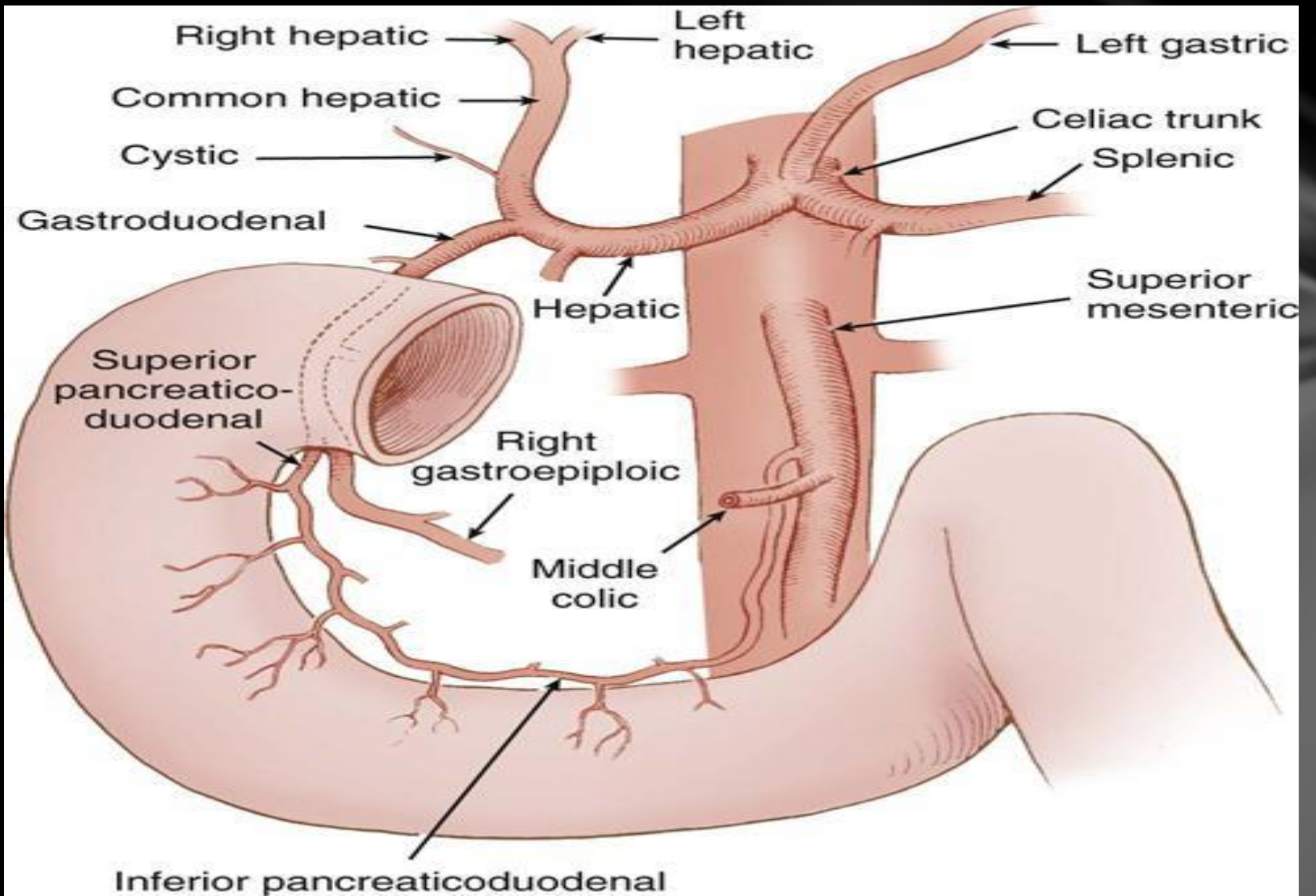
Figure 23.21

Duodenum – Arterial supply

Most of the duodenum except 1st part is supplied by Ventral & dorsal anastomoses of Sup & Inf Pancreaticoduodenal arteries.







1. Superior pancreatico-duodenal - a branch of gastro duodenal artery which is br of hepatic artery - a branch of celiac trunk.

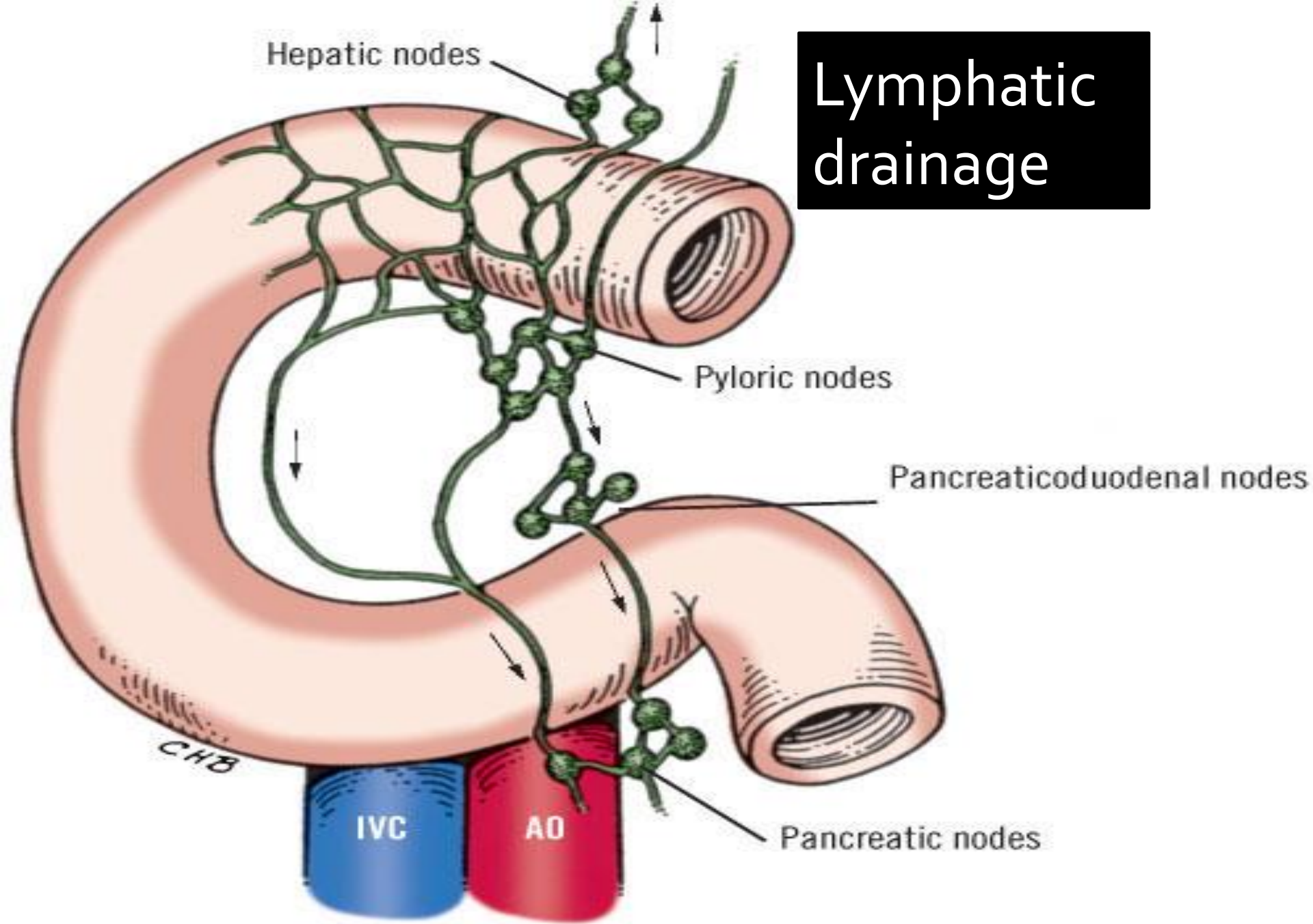
2. Inferior pancreatico-duodenal – a branch of superior mesenteric artery.

venous drainage

THE SUPERIOR PANCREATICODUODENAL VEIN drains into portal vein..

INFERIOR PANCREATICODUODENAL VEIN DRAINS INTO SUPERIOR MESENTERIC VEIN

Lymphatic drainage



Nerve Supply of Duodenum

The duodenum receives both sympathetic and parasympathetic innervation.

The vagus nerve (CN X), provides parasympathetic fibers via the celiac and superior mesenteric plexuses, while the sympathetic trunk also gives fibers to the intestinal plexuses that travel along the pancreaticoduodenal arteries.

Thank you...!!