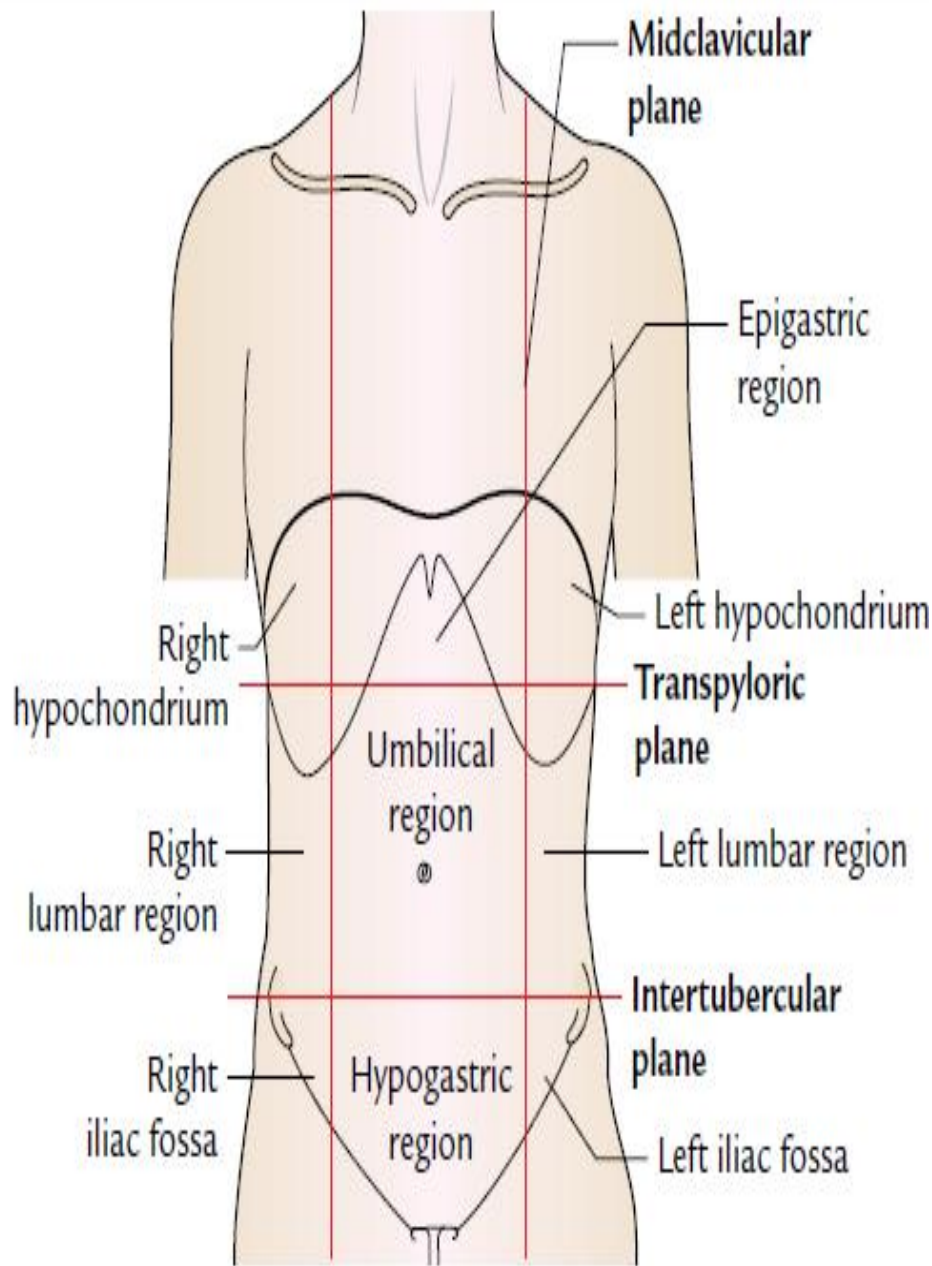


DUODENUM

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DUODENUM

- INTRODUCTION
- Duodenal recesses
- RELATIONS
- Blood supply
- Interior of duodenum
- Lymphatic drainage
- Suspensory ligaments
- Nerve supply
- of duodenum
- Applied anatomy



Region	Contents
Right hypochondrium	• Liver • Gallbladder
Epigastric region	• Stomach • Pancreas • Duodenum
Left hypochondrium	• Spleen • Left colic flexure
Right lumbar region	• Right kidney • Right ureter • Ascending colon
Umbilical region	• Loops of small intestine • Aorta • Inferior vena cava
Left lumbar region	• Left kidney • Left ureter • Descending colon
Right iliac fossa	• Caecum • Appendix
Hypogastric region	• Coils of small intestine • Urinary bladder (if distended) • Uterus (if enlarged)
Left iliac fossa	• Sigmoid colon

Duodenum -shortest, widest & most fixed

part of the small intestine.

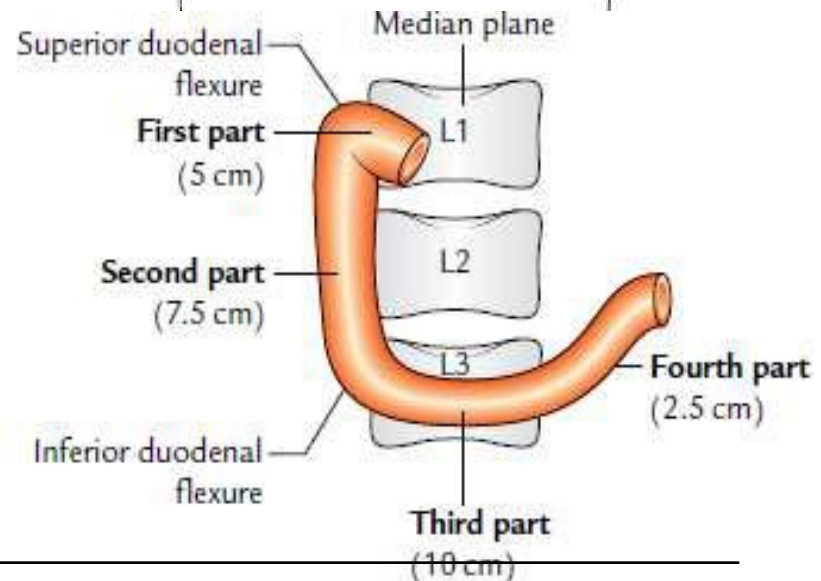
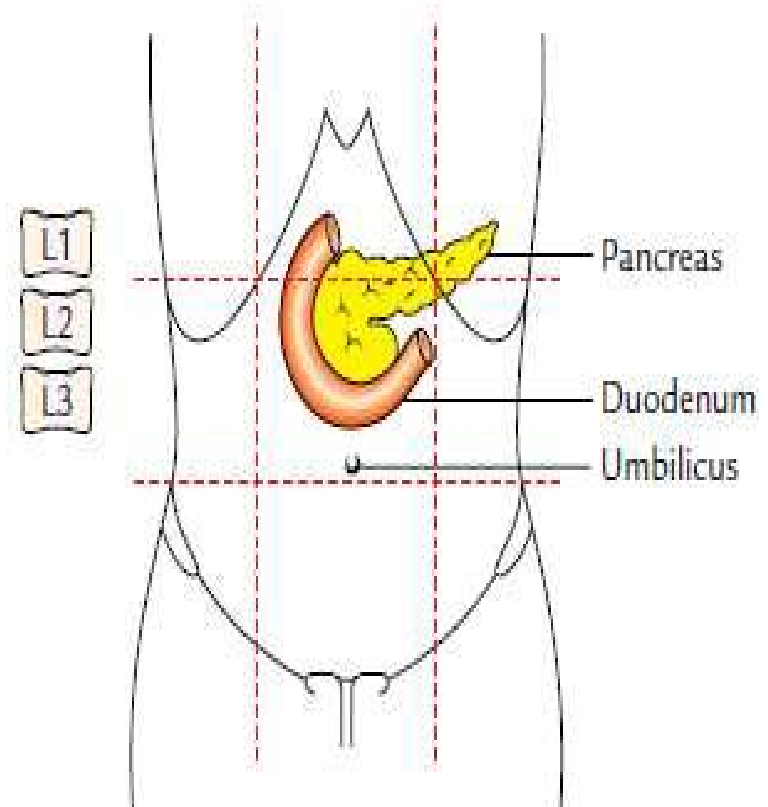
Extent: Pylorus to duodenojejunal flexure.

Shape: 'C' shaped

Location: above the level of umbilicus, opposite 1st , 2nd & 3rd lumbar vertebrae.

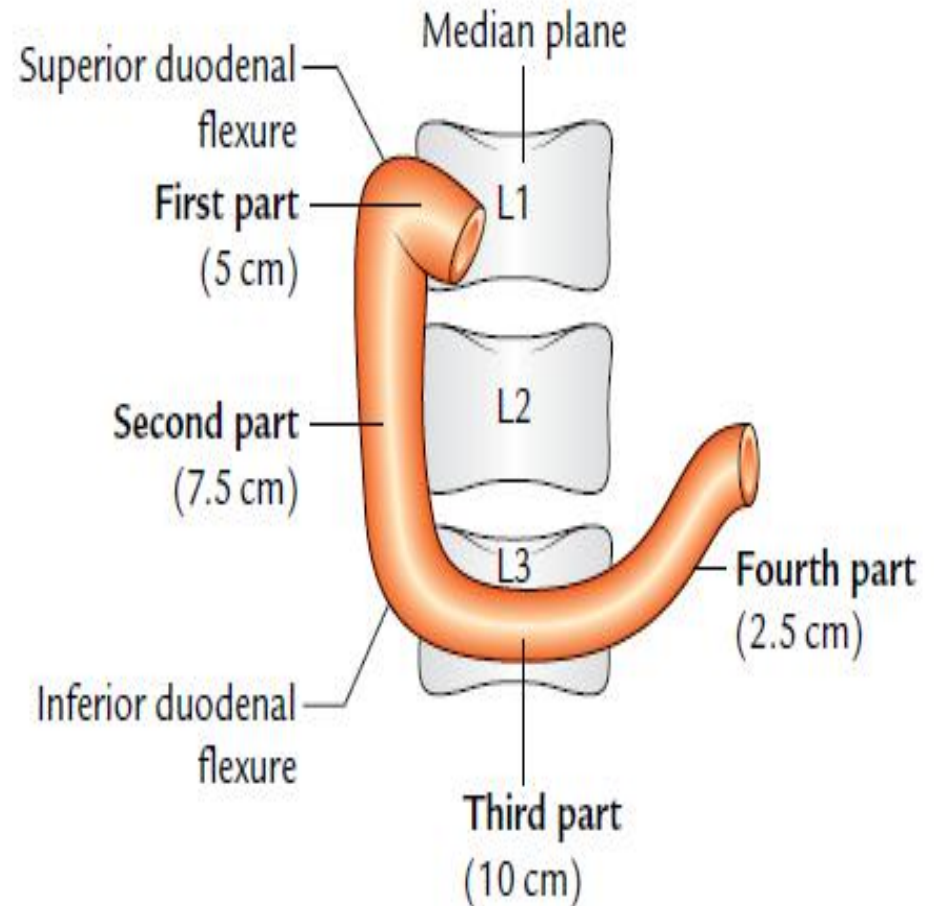
Parts:

1. Superior (1st) part: 5 cm (2 inches) long
2. Descending (2nd) part: 7.5 cm (3 inches)
3. Horizontal (3rd) part: 10 cm (4 inches)
4. Ascending (4th) part: 2.5 cm (1 inch)

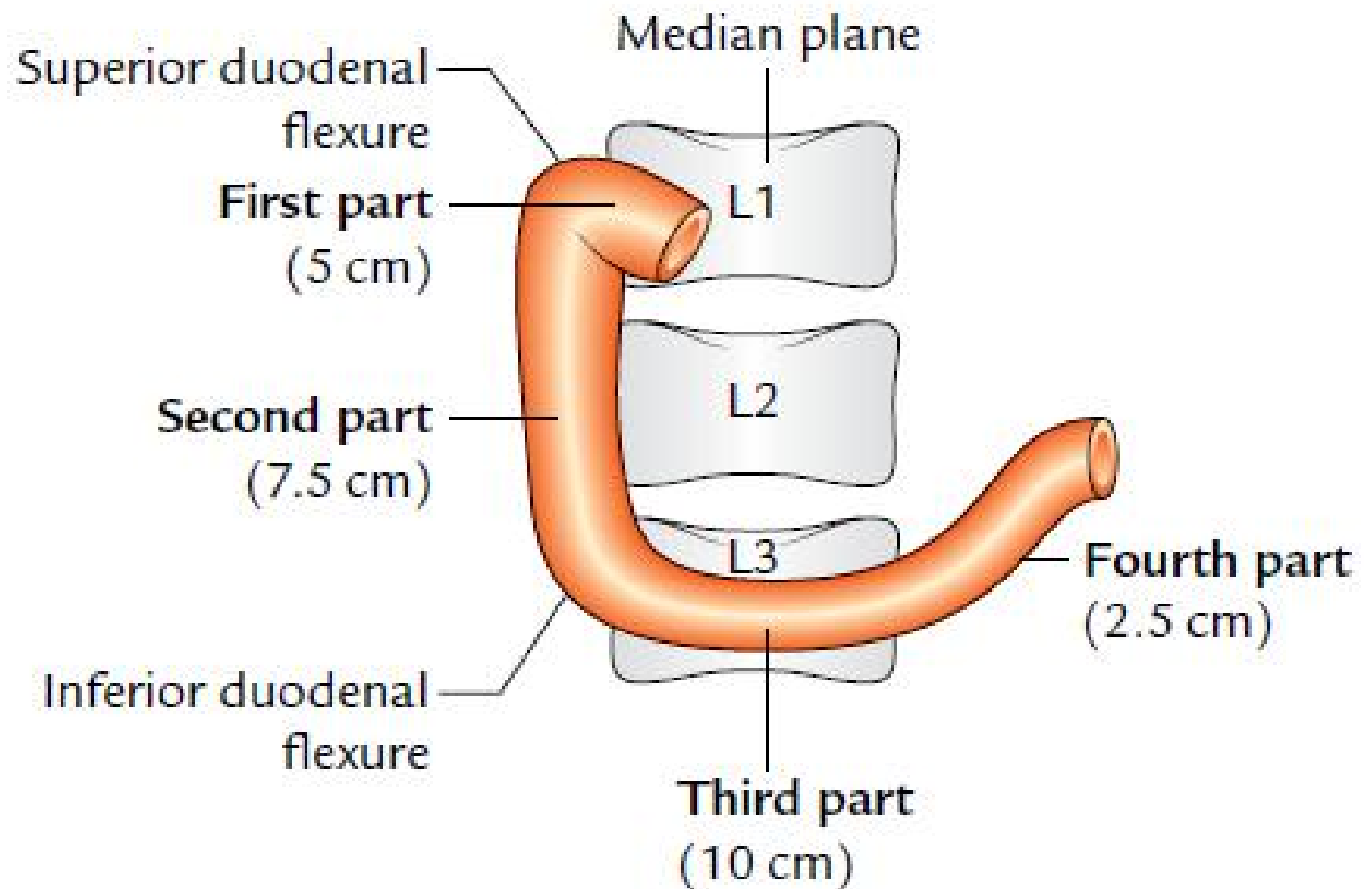


The duodenum is retroperitoneal except the proximal 2.5 cm, which is suspended above by the lesser omentum and below by the greater omentum.

The main function of the duodenum is digestion. It receives chyme from the stomach which is mixed with bile and pancreatic enzymes here.



FIRST PART



FIRST PART

Relation:

Anteriorly: Quadrate lobe of liver & GB.

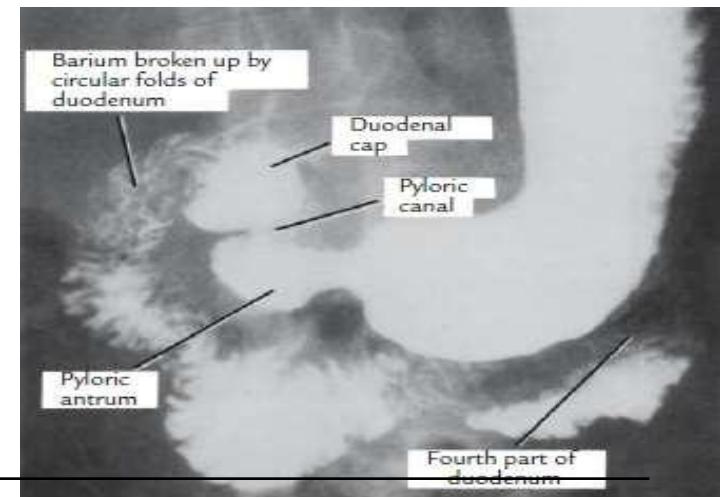
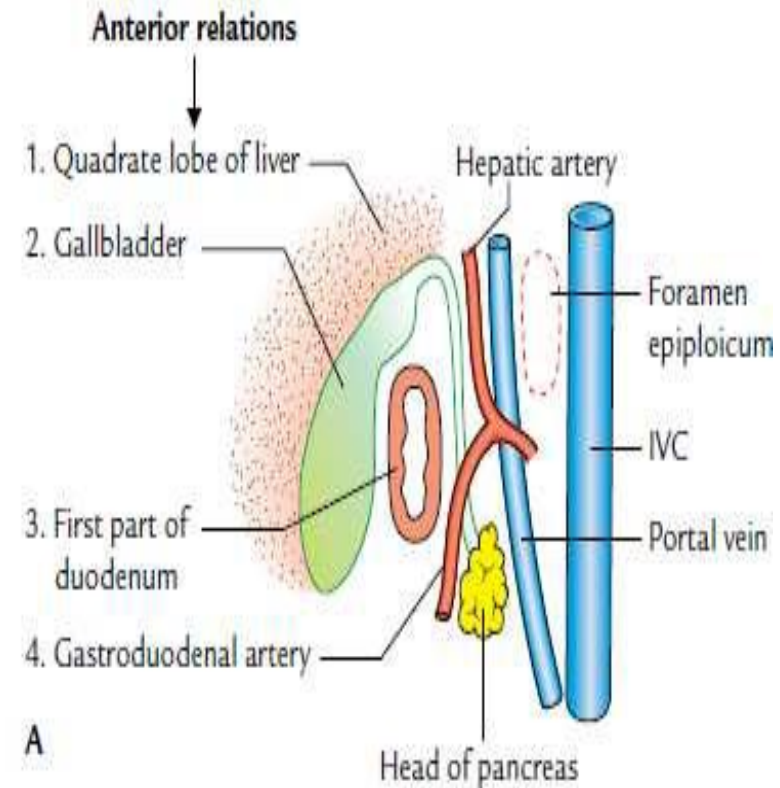
Posteriorly: Portal vein, gastroduodenal artery & common bile duct .

Superiorly: Epiploic foramen

Inferiorly: Head & neck of pancreas.

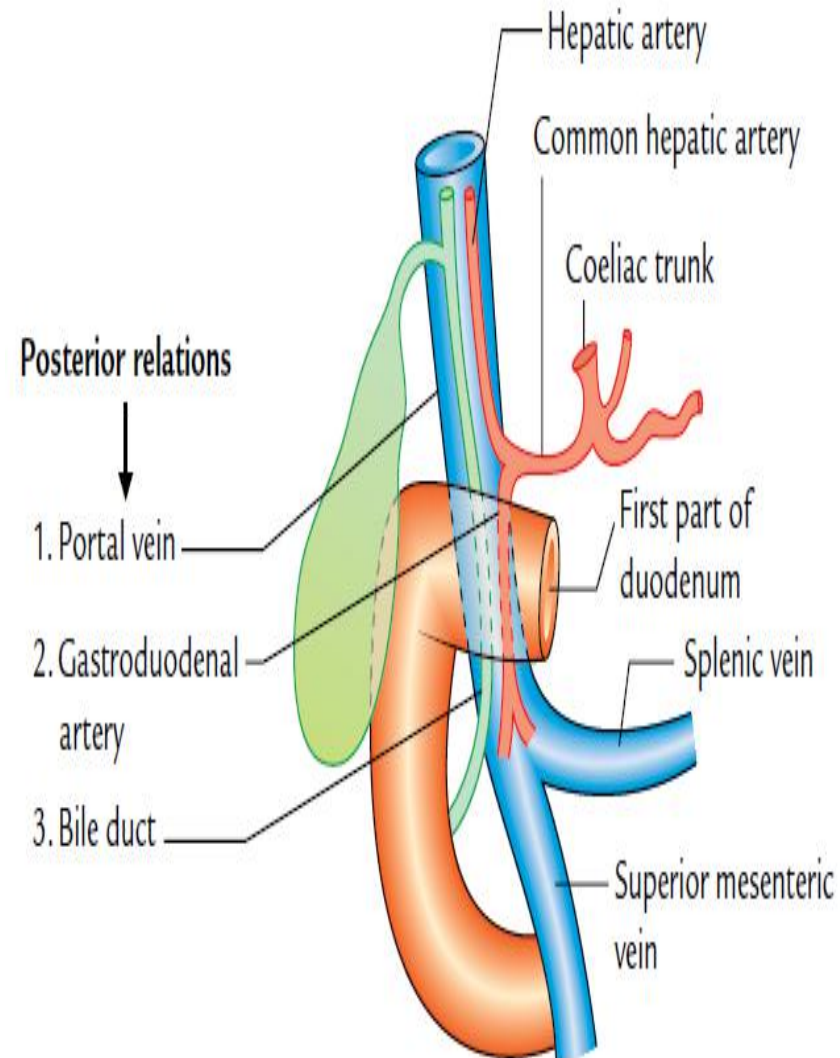
Features

- Initial 2.5 cm- no circular folds in mucous membrane - **duodenal cap**
- Proximal 2.5 cm is movable.
- 1st Part : site for duodenal ulcer- because it is supplied by end arteries and receives acidic chyme from stomach.

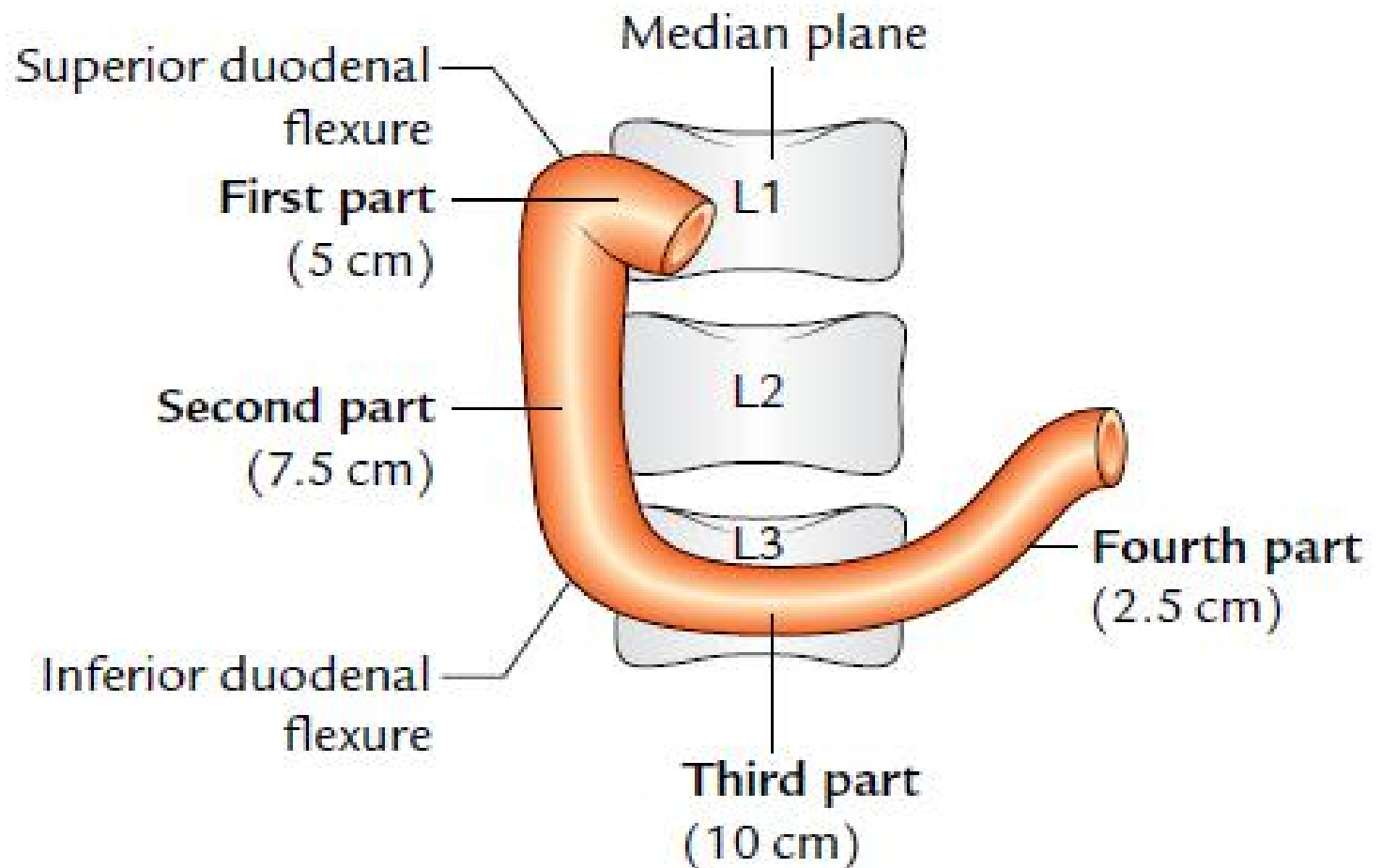


Features

1. It develops from the foregut.
2. It is only partly retroperitoneal.
3. It is freely mobile and distensible.
4. It has no circular folds in the mucous membrane of its initial 2.5 cm—seen as the **duodenal cap** in barium meal radiographs.
5. It is the site for duodenal ulcer.
6. It is supplied by the branches of coeliac trunk/artery.



SECOND PART



SECOND PART

Relations :

Anteriorly:

- Gallbladder,
- Right lobe of liver,
- Transverse colon, root of transverse mesocolon,
- coils of small intestine.

Posteriorly:

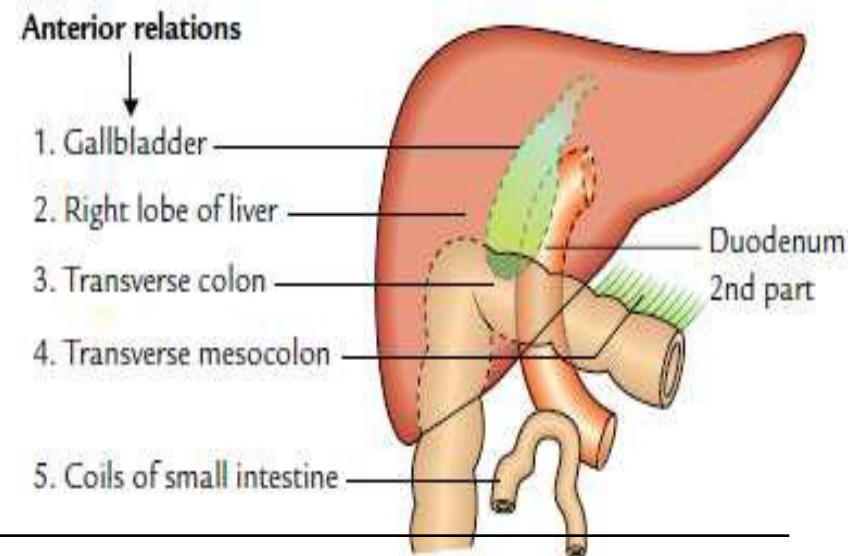
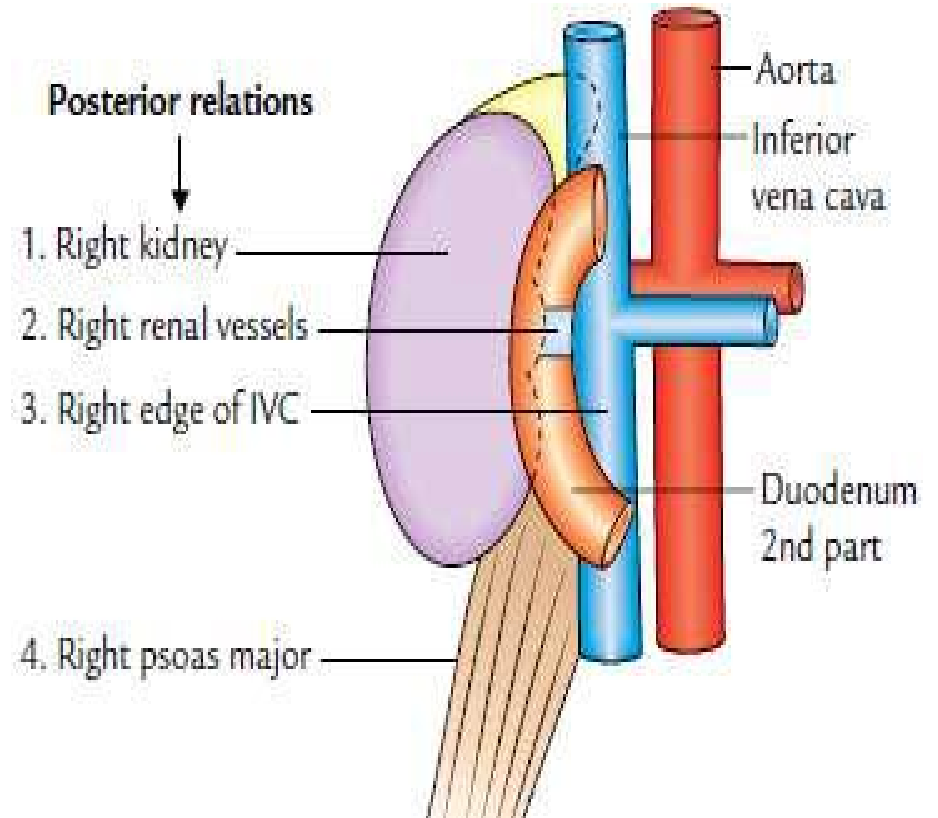
- Right kidney, right renal vessels,
- Right edge of IVC
- Right psoas major muscle.

Medially:

Head of the pancreas.

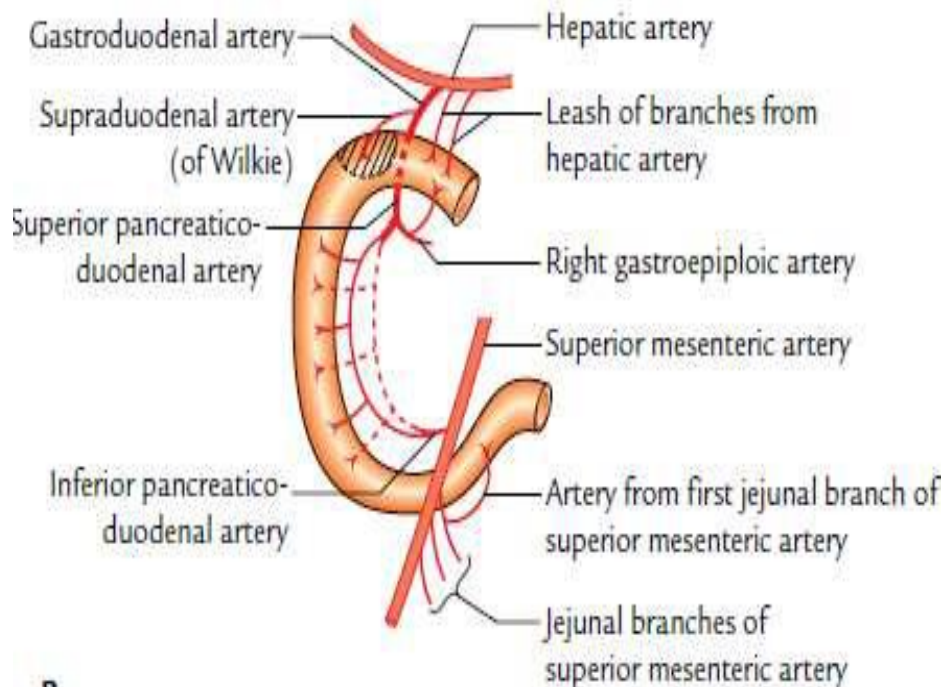
Laterally:

Right colic flexure & right lobe of liver.

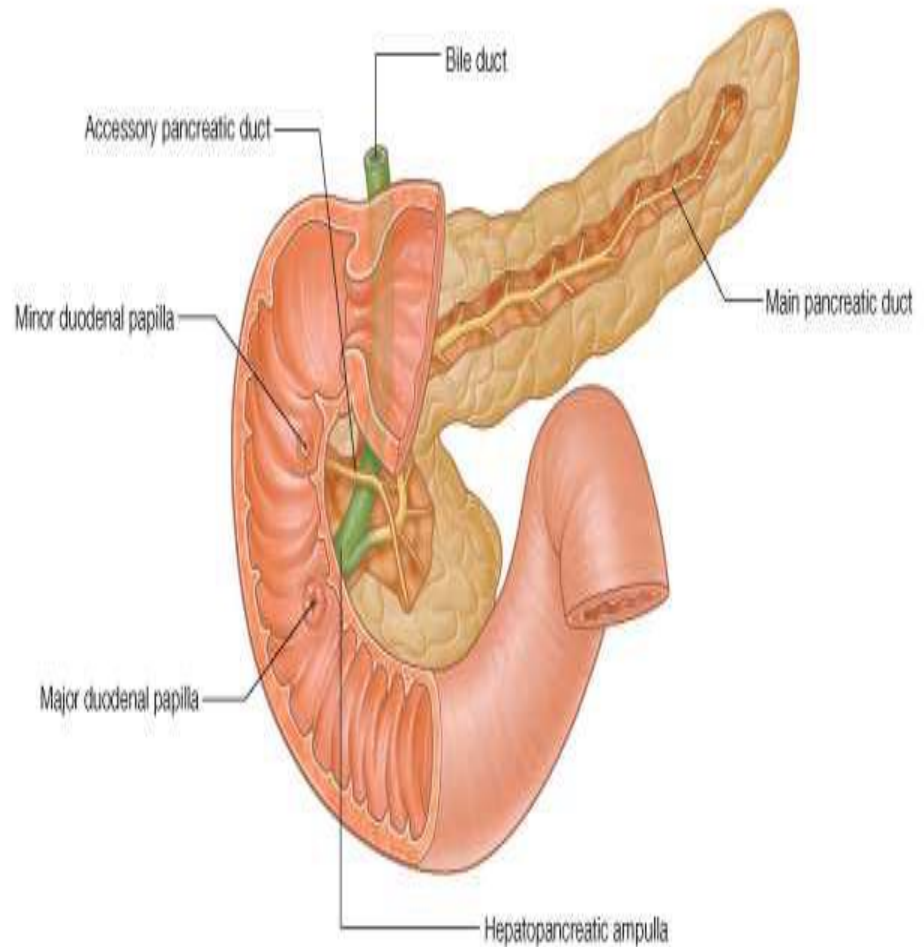


Features

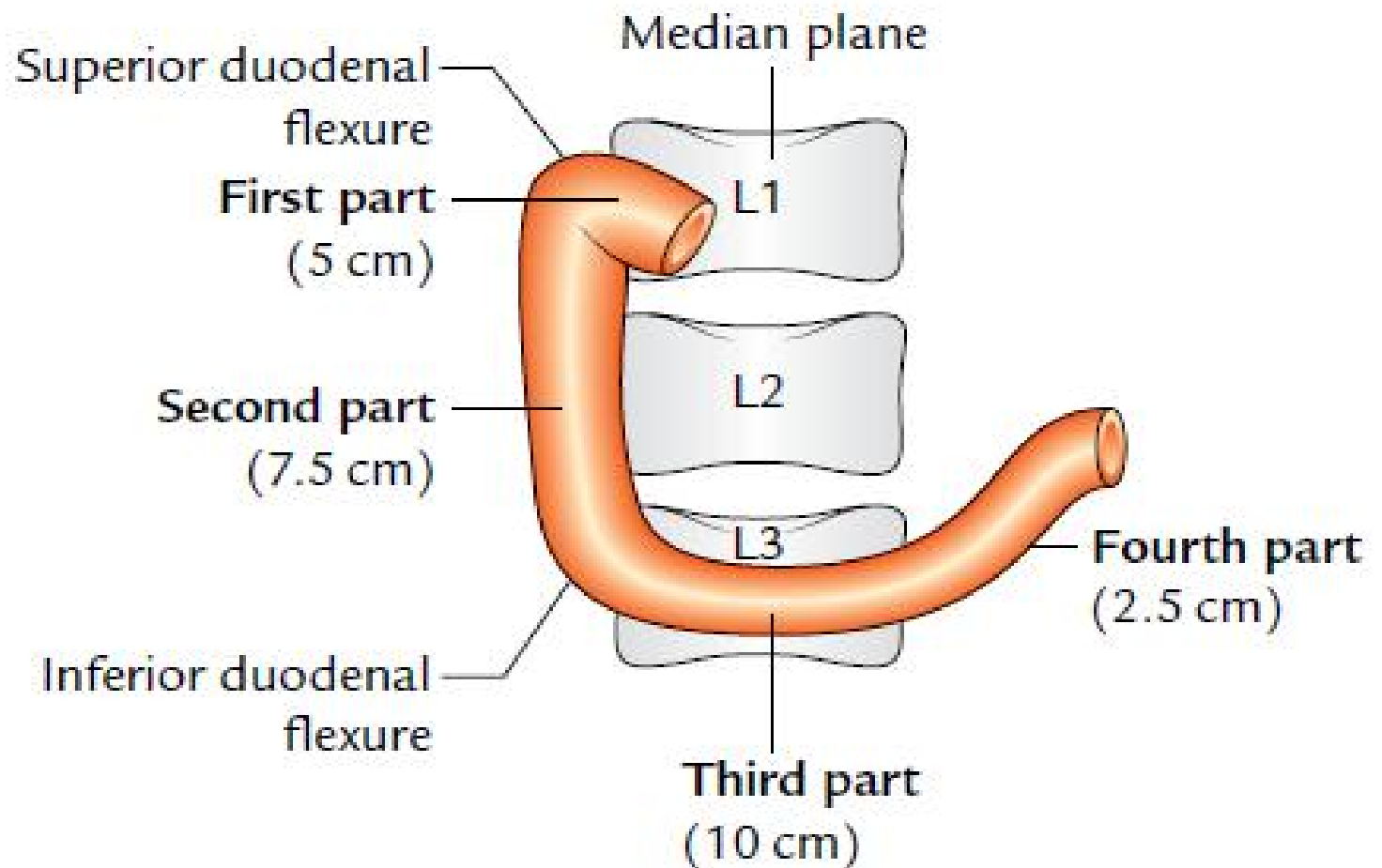
1. Its upper half develops from the foregut and lower half from the midgut.
2. It lies behind the transverse mesocolon.
3. It receives the bile duct, the chief and accessory pancreatic ducts.
4. It is the only part of the intestine supplied by double rows of vasa recta, arising from anterior and posterior pancreaticoduodenal arterial arcades.



B



THIRD PART



**Third Part:
Relations**

Anteriorly:

Root of the mesentery, superior mesenteric vessels & coils of jejunum.

Posteriorly:

Right psoas major, right ureter, IVC, abdominal aorta & right gonadal vessels.

Superiorly:

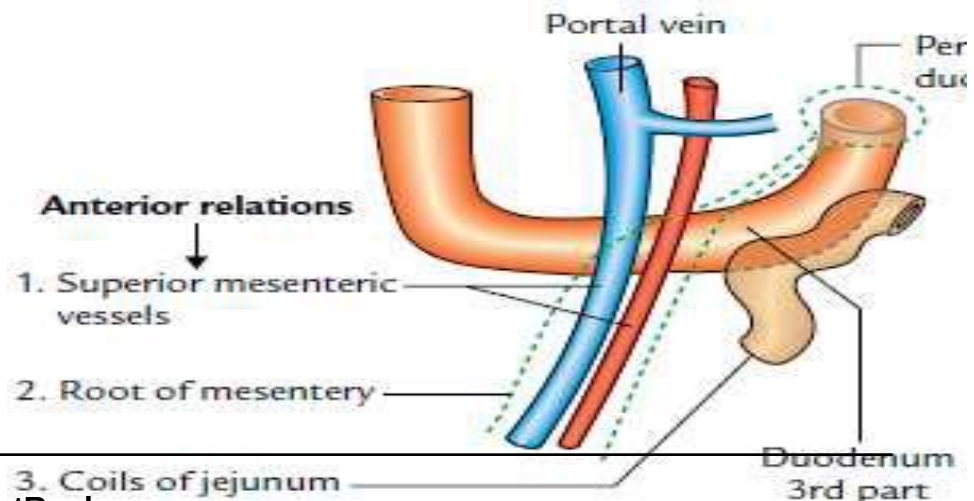
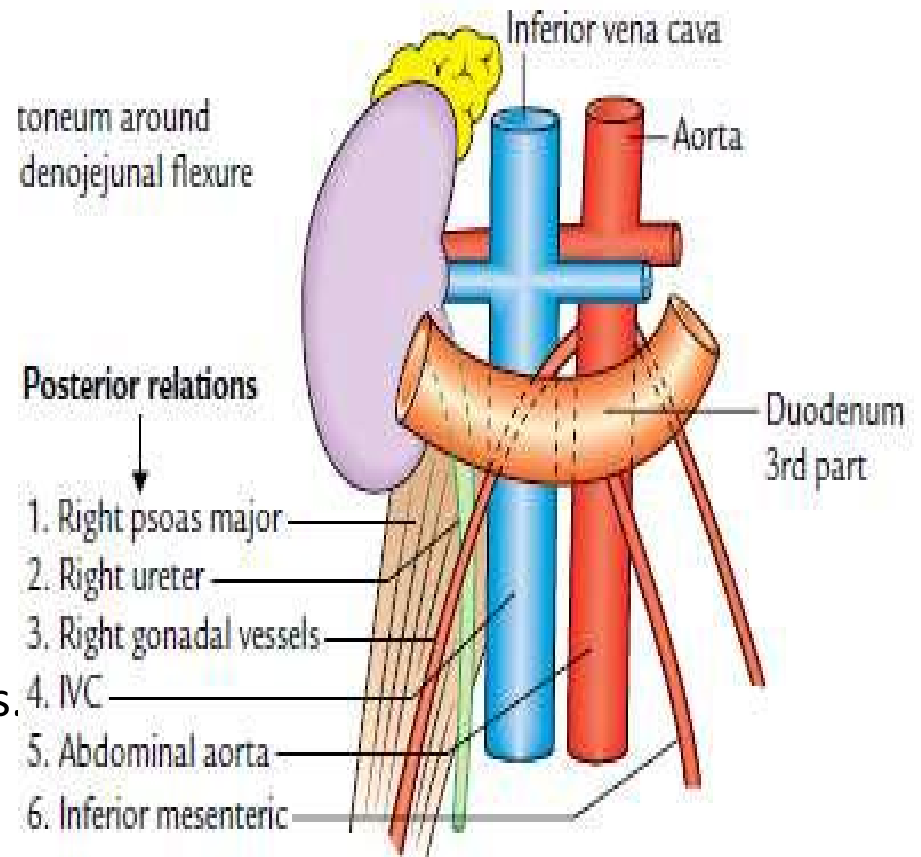
Head of the pancreas & uncinate process.

Inferiorly:

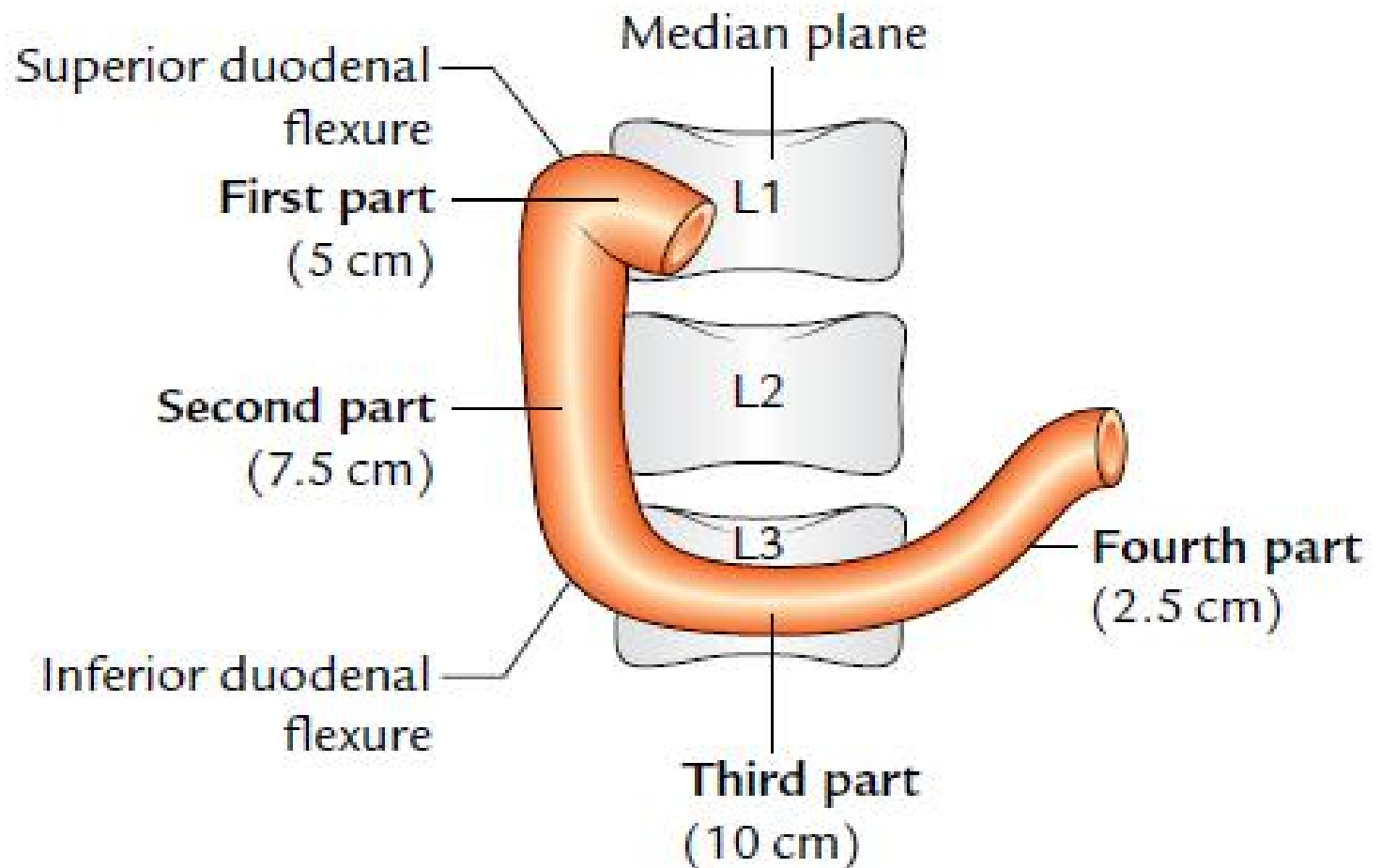
Coils of the jejunum.

Applied Anatomy:

Obstruction of the third part -pressure of superior mesenteric artery over aorta



FOURTH PART



Fourth part:

Relations

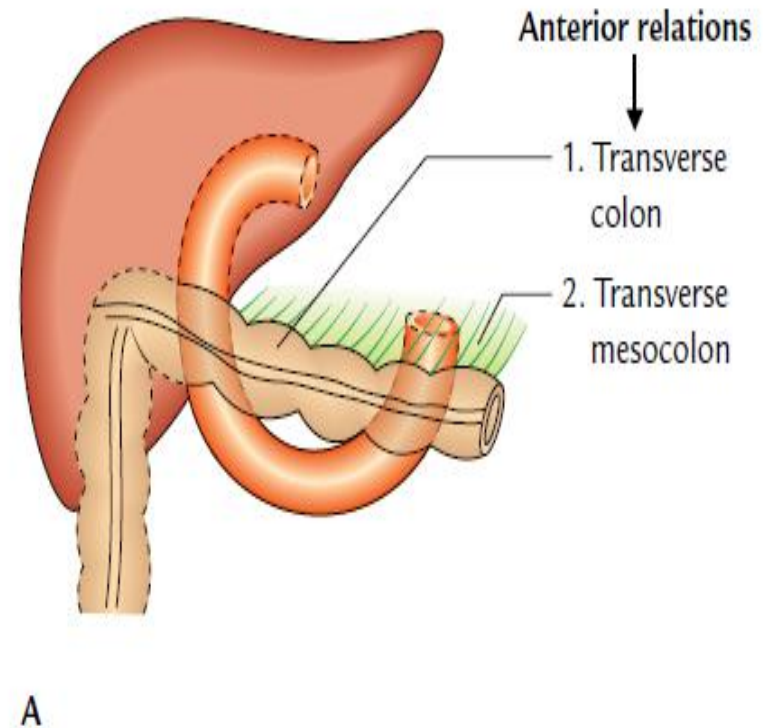
Anteriorly: Transverse colon and transverse mesocolon.

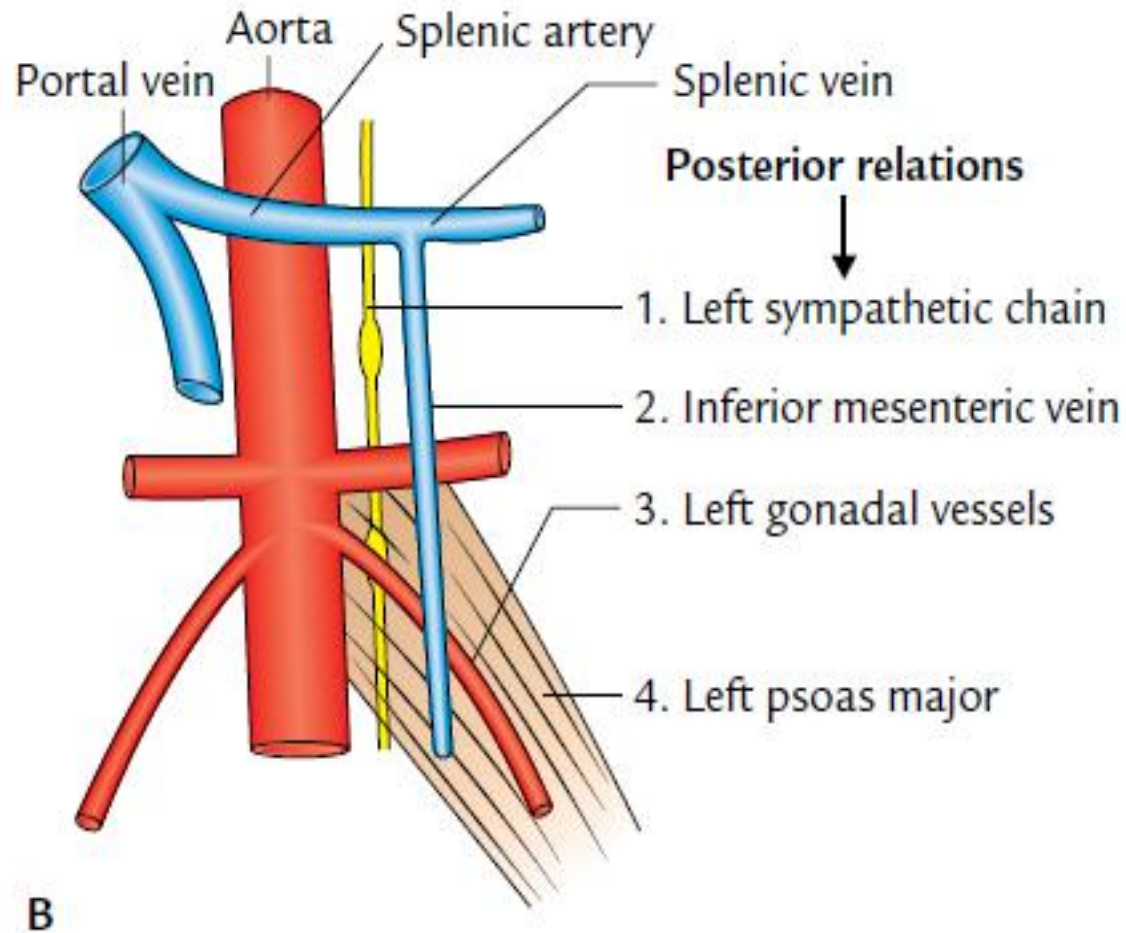
Posteriorly: Left psoas major muscle, left sympathetic chain, left gonadal vessels & inferiormesenteric vein.

Superiorly: Body of the pancreas.

To the left: Left kidney and left ureter.

To the right: Upper part of root of mesentery.

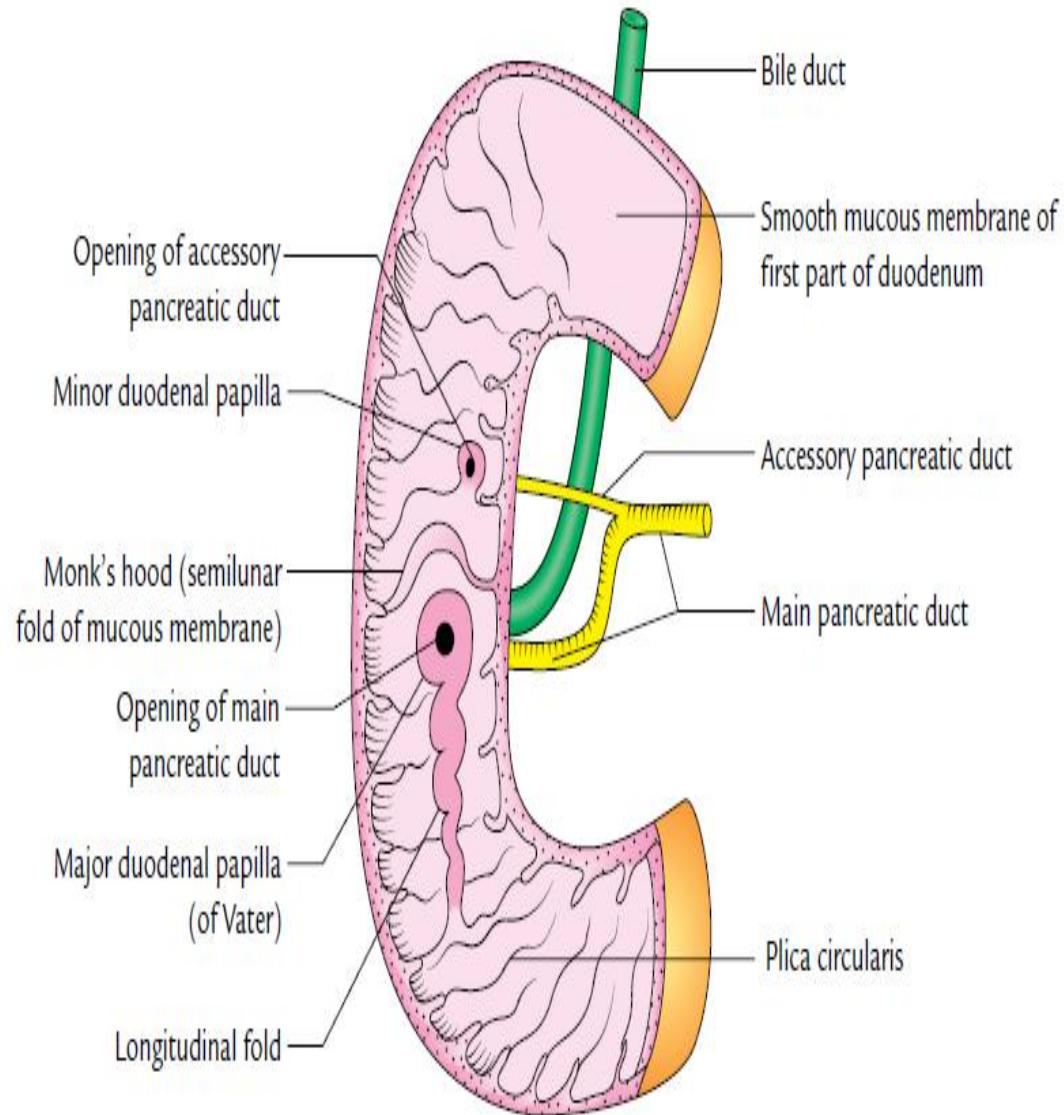




INTERIOR OF THE DUODENUM

circular folds (**valves of Kerckring**)- begin in second part and become large & closely set below of major duodenal papilla.

1. **Major duodenal papilla:**
2. **Minor duodenal papilla:**
3. **Arch of plica semicircularis**
4. **Plica longitudinalis:**



1. Major duodenal papilla: Conical projection on posteromedial wall , 8–10 cm distal to pylorus.

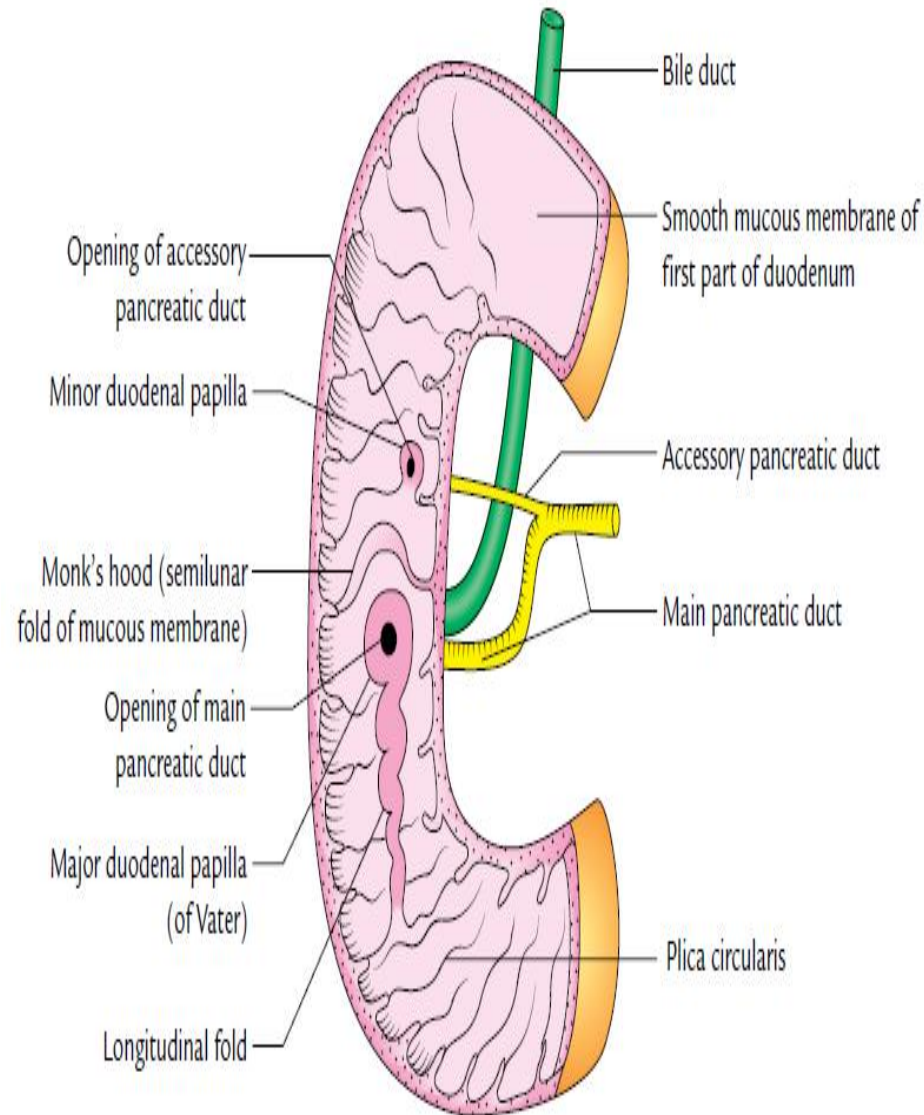
Site for opening of common hepatopancreatic duct

2. Minor duodenal papilla: small conical projection, situate 6-8 cm distal pylorus.

Accessory pancreatic duct opens on its summit.

3. Arch of plica semicircularis: forms an arch above major duodenal papilla like a hood

4. Plica longitudinalis: vertical tortuous fold of mucous membrane extending downward from major duodenal papilla.



SUSPENSORY MUSCLE OF DUODENUM (LIGAMENT OF TREITZ)

- Fibromuscular band- suspends duodenojejunal flexure from right crus of the diaphragm.

Attachment:

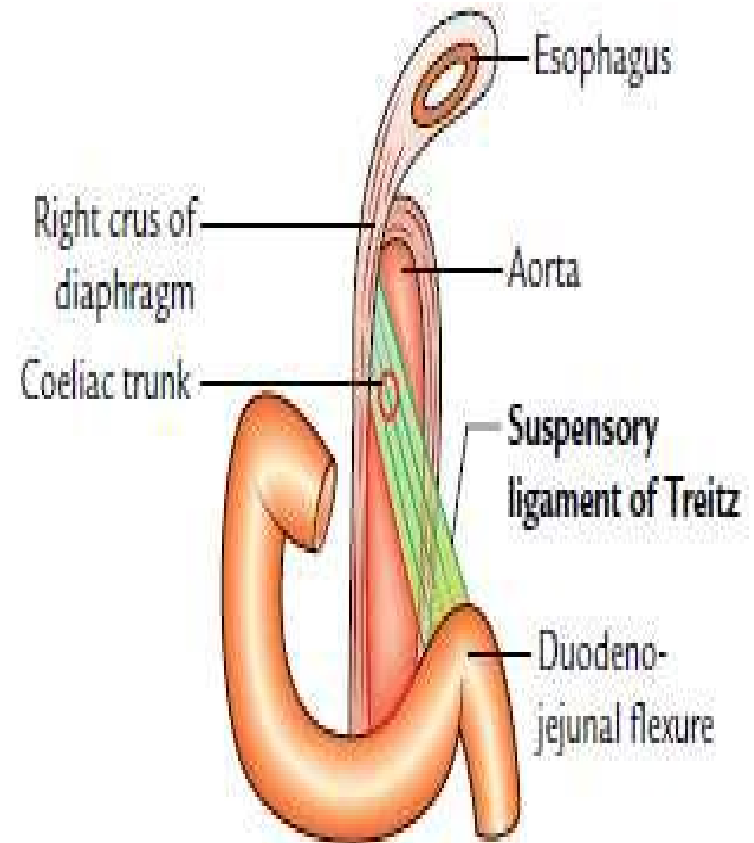
- Upper end- attached to right crus of diaphragm
- Lower end- attached to posterior surface of duodenojejunal flexure, third & fourth part of duodenum

made up of :

- (a) Striated muscle fibres - upper part.
- (b) Elastic fibres - middle part.
- (c) Smooth muscle fibres - lower part

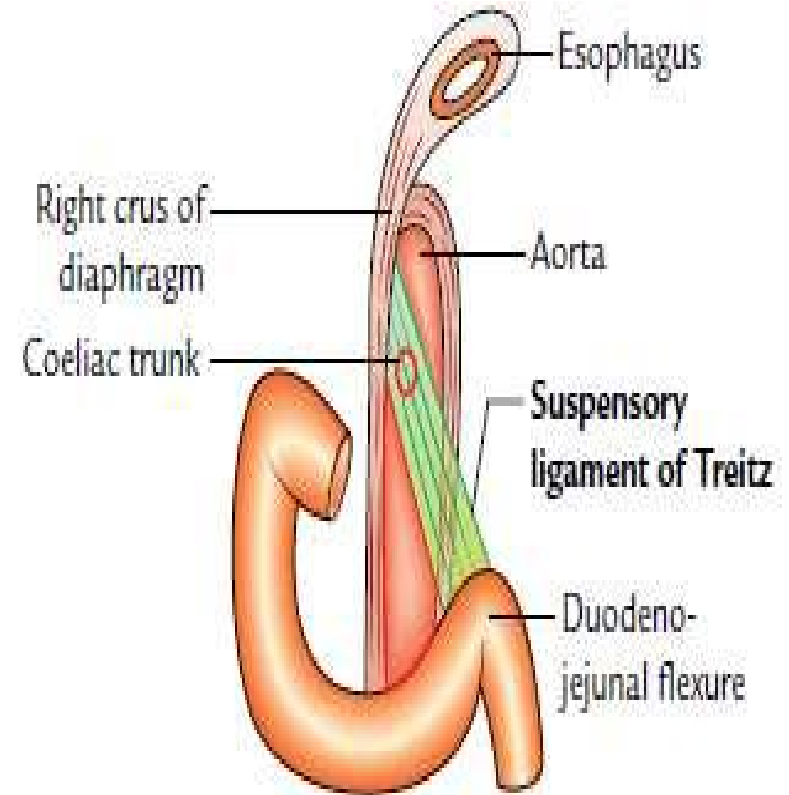
Function:

Fixes duodenojejunal flexure & prevents it from being dragged down by weight of small intestine.



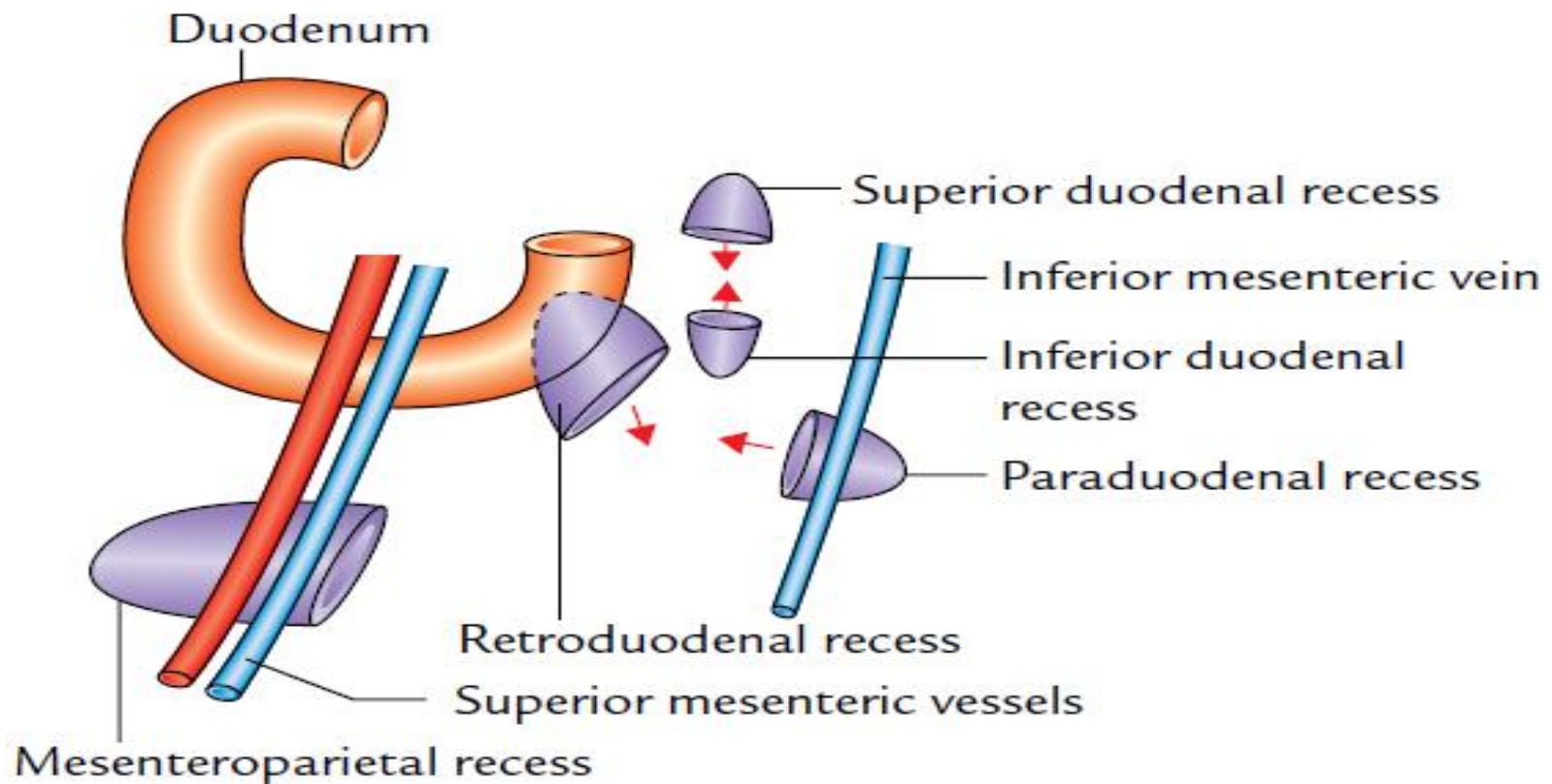
Applied Anatomy:

- Normally its contraction increases the angle of duodenojejunal flexure.
- Sometimes it is attached only to flexure, and then its contraction may narrow the angle of the flexure, causing **partial obstruction of the gut.**

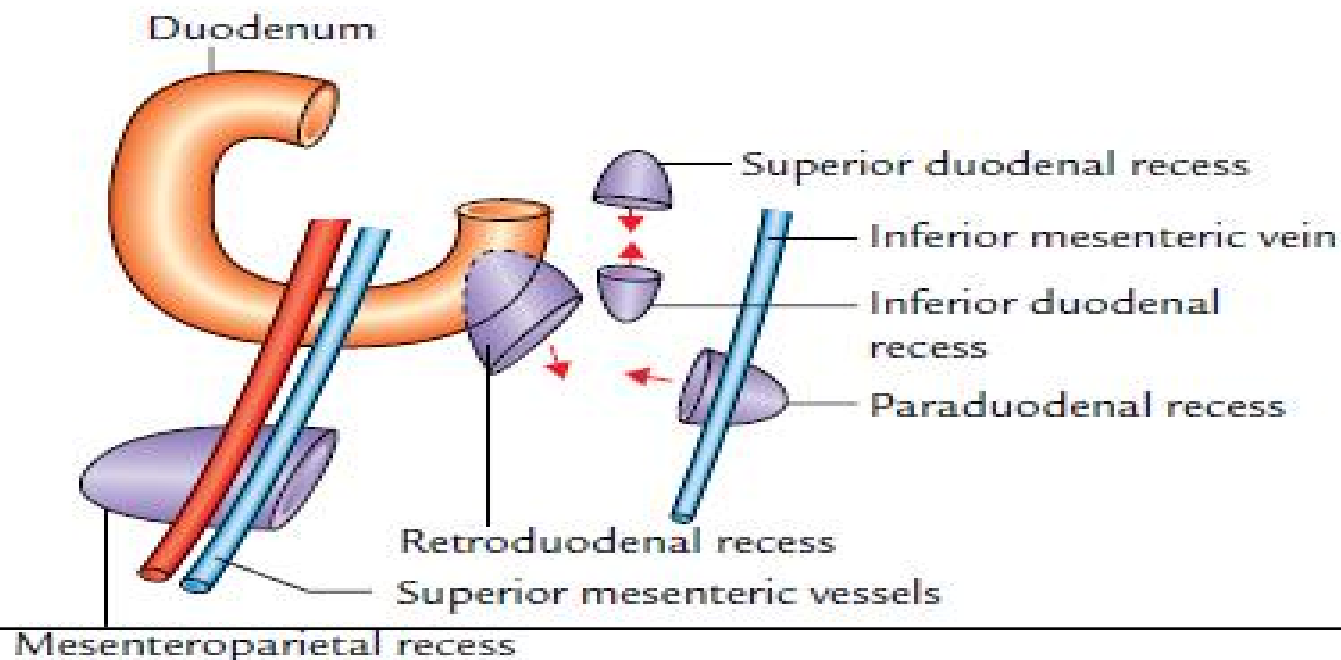


DUODENAL RECESSES(FOSSAE)

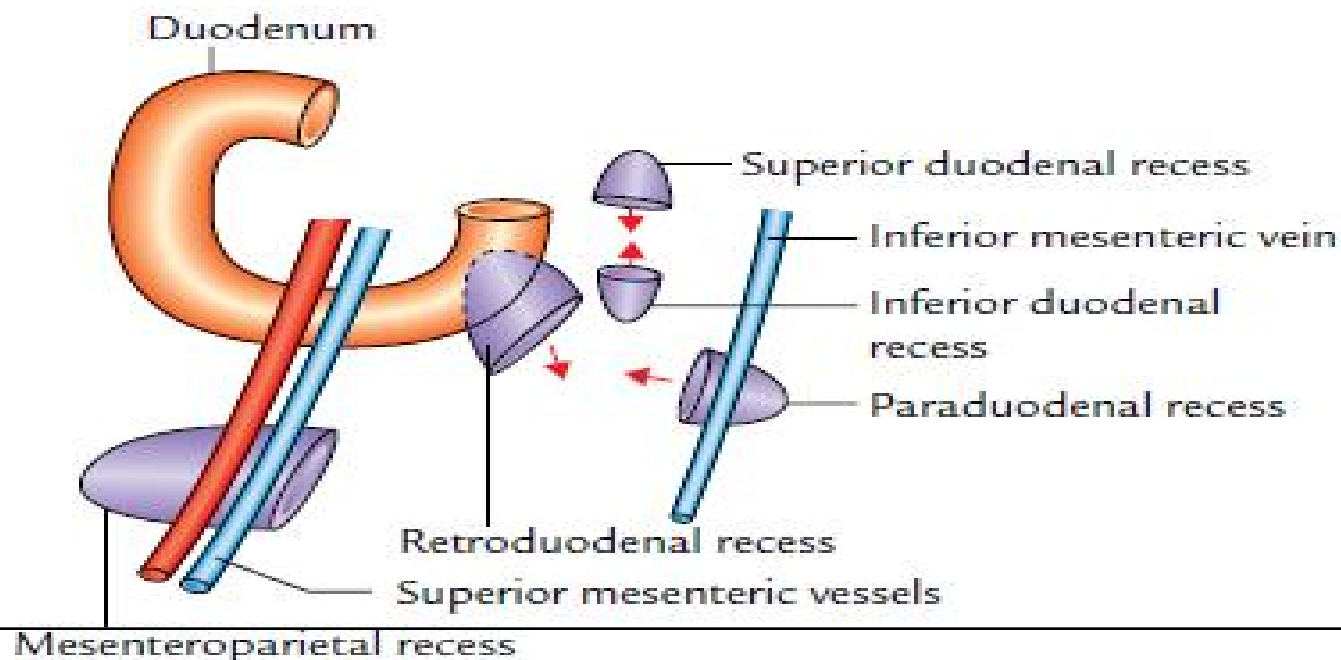
In the region of duodenojejunal junction, small pocket like pouches of peritoneum called duodenal recesses do occur



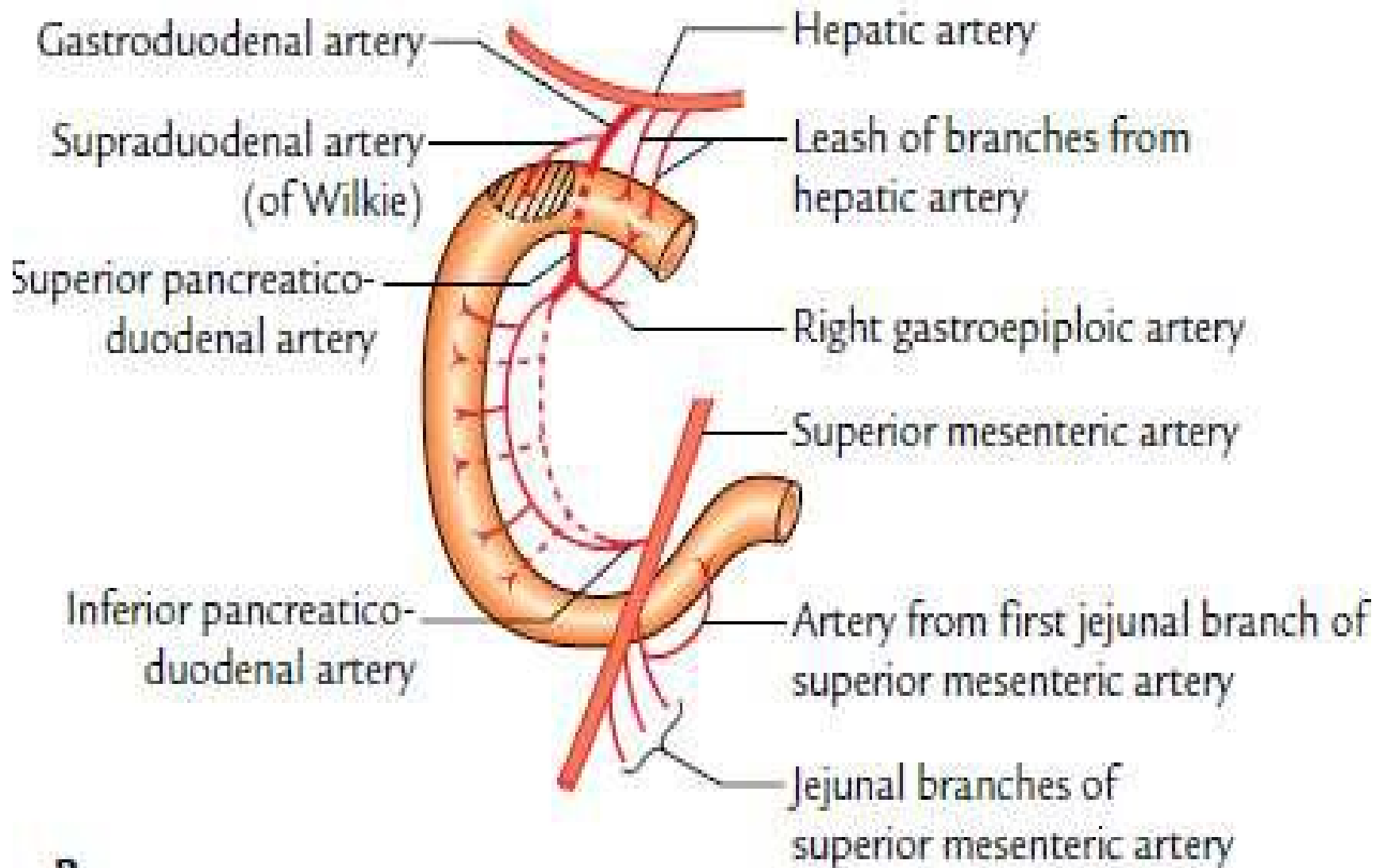
1. *Superior duodenal recess:* It lies to the left upper end of the fourth part of the duodenum, behind the superior duodenojejunal peritoneal fold with its mouth looking downward.
2. *Inferior duodenal recess:* It lies a little below the superior recess behind the inferior duodenojejunal peritoneal fold with its orifice looking upward.



3. *Paraduodenal recess:* It is the lowest when present. It lies to the left of the fourth part of the duodenum behind the paraduodenal fold of the peritoneum with its orifice facing medially. The paraduodenal fold contains **inferior mesenteric vein** in its free border edge.
4. *Retroduodenal recess:* It is the largest of duodenal recesses, but is rarely present. If present, it lies behind the third and fourth parts of the duodenum. Its orifice looks downward and to the left.



ARTERIAL SUPPLY

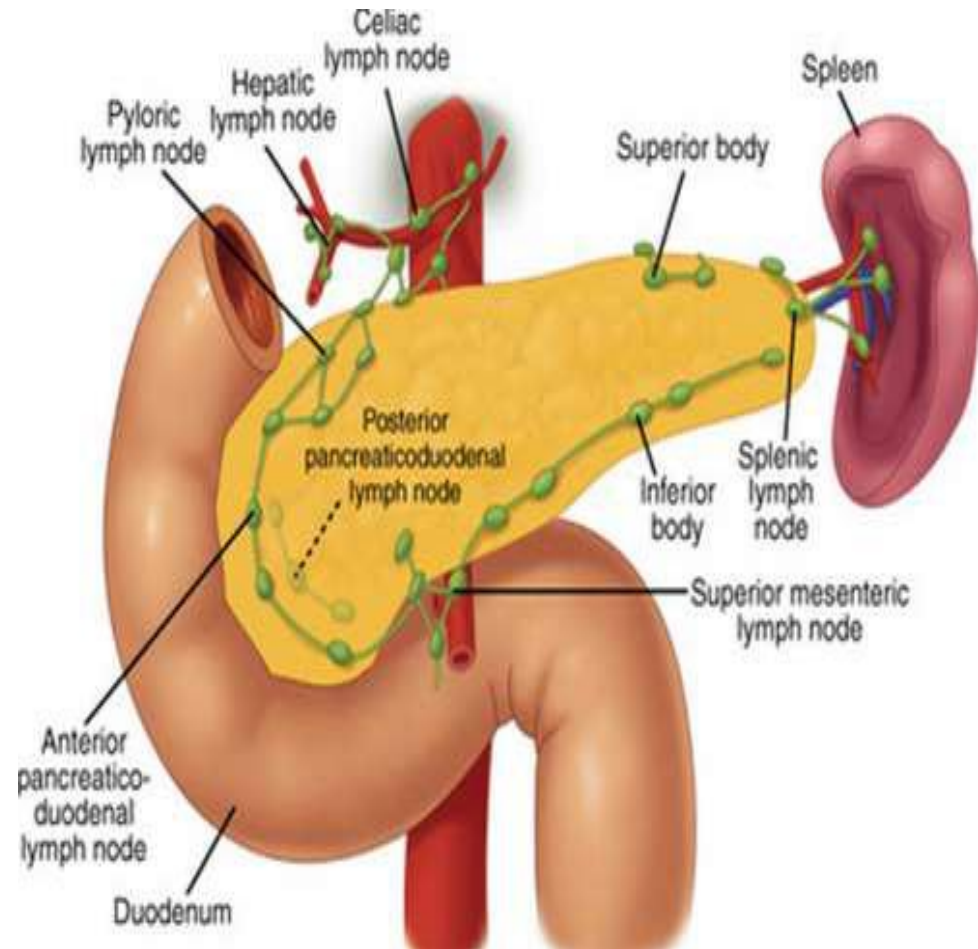


VENOUS DRAINAGE

The veins correspond to the arteries & drain into the splenic, superior mesenteric, and portal veins.

LYMPHATIC DRAINAGE

Most lymph vessels drain to **pancreaticoduodenal nodes**. **coeliac** and **superior mesenteric lymph nodes** intestinal lymph trunk cisterna chyli.



NERVE SUPPLY

**Sympathetic nerves :T9–T10
segments of the spinal cord**

**Parasympathetic nerves : vagus
through coeliac and superior
mesenteric plexuses. From these
plexuses, fibres run along arteries
of the duodenum to supply it**

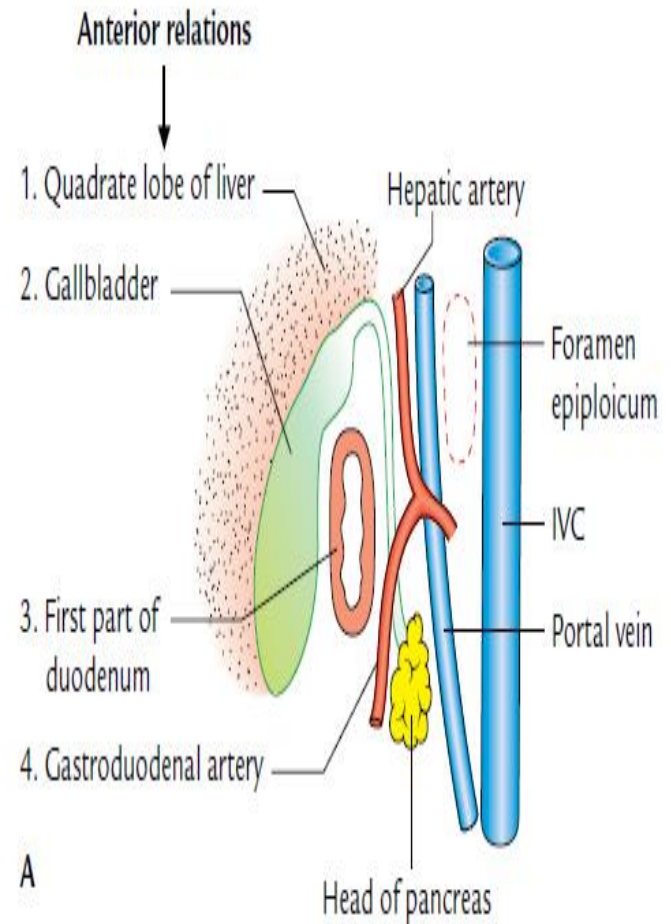
APPLIED ANATOMY

Kissing ulcer-1st part of duodenum presents ulcer on the anterior and posterior walls .

If anterior wall perforate:
content enter grater sac.

If posterior wall perforates: **erodes gastroduodenal artery** leading to fatal haemorrhage.

If posterior wall perforates: contents enter the lesser sac.



APPLIED ANATOMY

Peptic Ulcer: occur in site of pepsin & HCL secretion - lower end of oesophagus, stomach, 1st part of duodenum, meckel's diverticulum

Blood group O- duodenal ulcer.

Duodenal ulcer:

- epigastric pain – due to hunger
- pain relieved by food
- pain shows periodicity for number of weeks.
- pain wakes patient at night at 2-3 am

Gastric ulcer:

- epigastric pain – due to hunger
- pain is made worse by food – pt. become anorexic and shows weight loss.
- periodicity is less marked