VISCERAL OSTEOPATHY

Seminar

The Pancreas

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The author of the Seminar

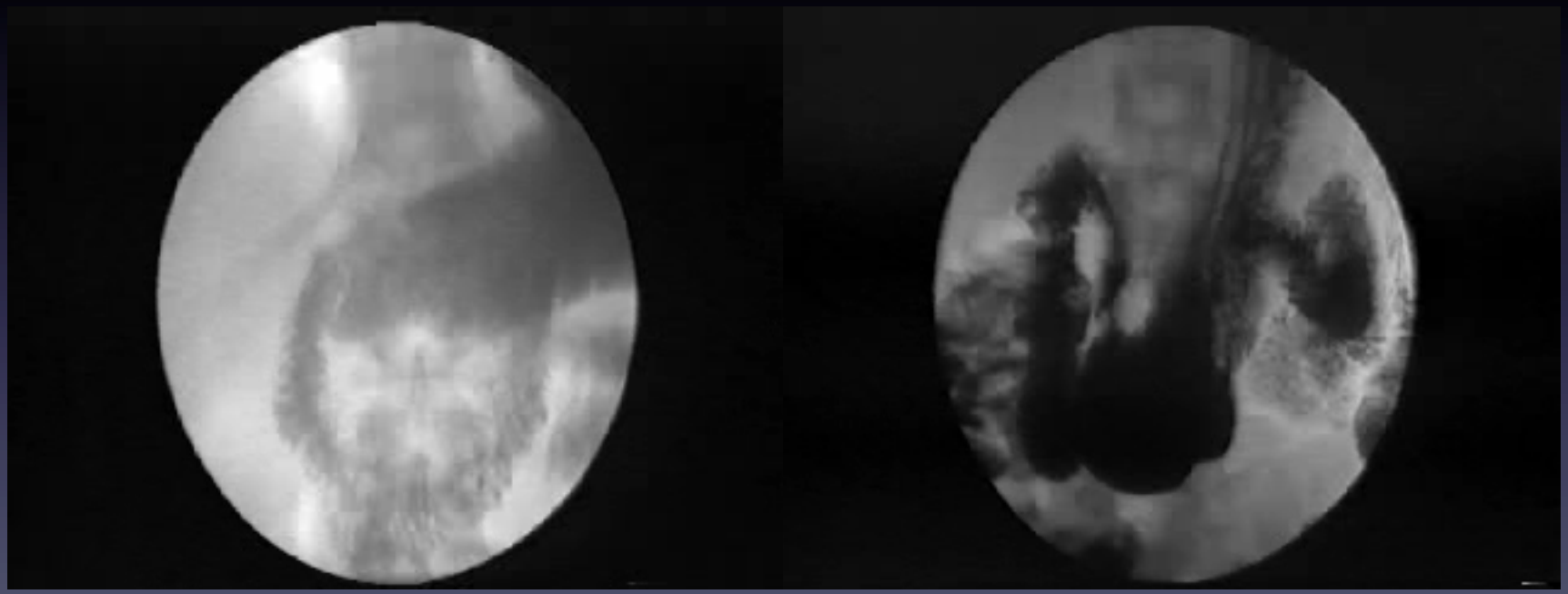
- Graduated D.O. in 2005 – 6 years full time studies
- Private practice near Lyon – FR
- Since 2018 : Anatomy teacher in Lyon
- 2006-2017 : Visceral Osteopathy teacher in Lyon
- 2011-2015 : Visceral and Urogenital Osteopathy teacher in Nantes
- Since 2014 : Collaborator of Finet and Williame D.O. : Workshops in France, Belgium, Spain, Germany… Structuring the osteopathic treatment : simplified procedure, visceral and urogenital osteopathy on Evidence Based Medicine and own Researches.
- http://deltadyn.be Instagram : osteopat_niko

Finet and Williame

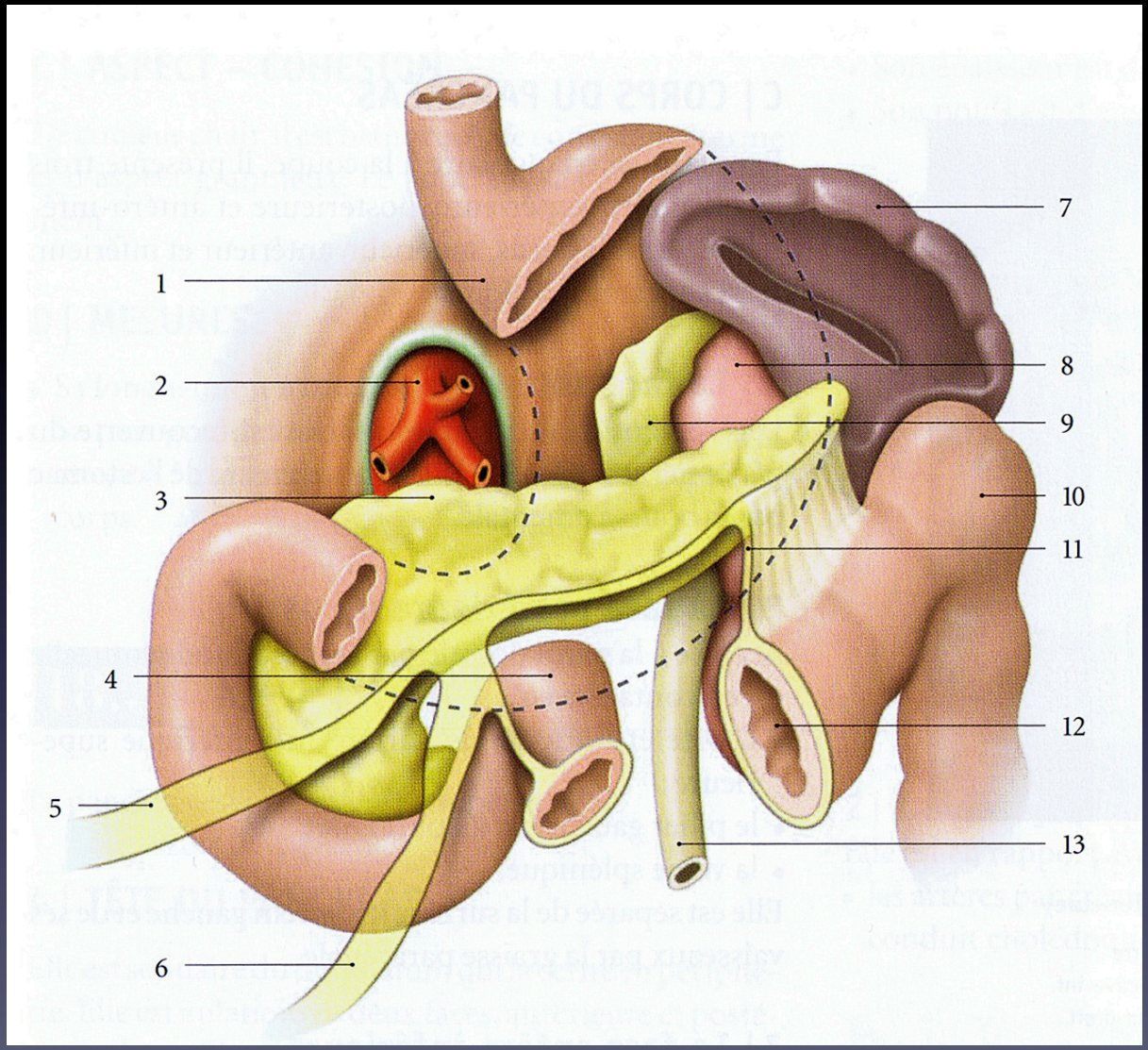
Since 1985 : Studies on the visceral movements.

Physiological and non physiological movements of the organs.

Deltadyn.be



The pancreas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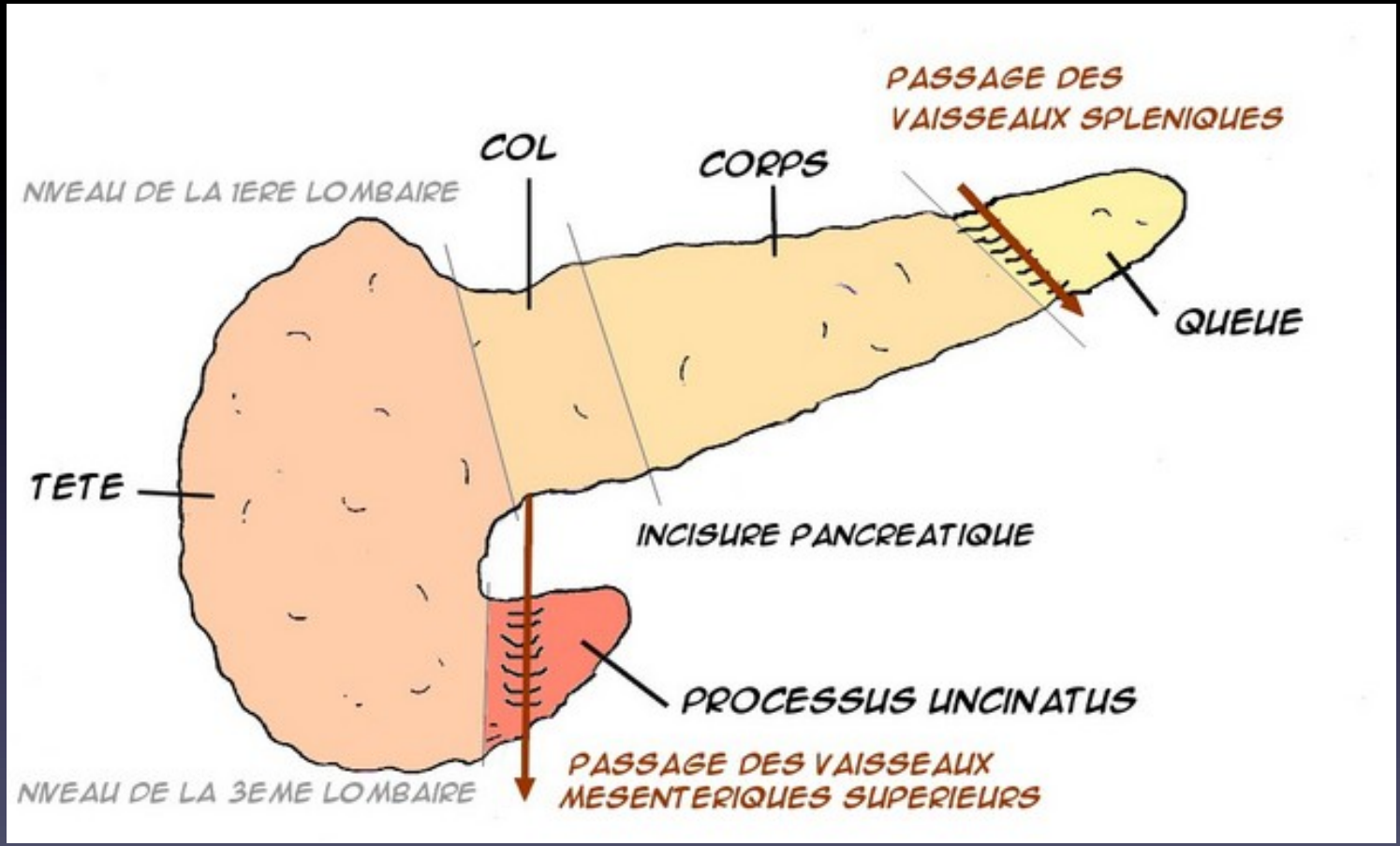
I - Anatomy

A - Overview

- In the epigastrium, in front of L1-L2, surrounded by the duodenum and the spleen, behind the stomach,
- Concave posteriorly : hugging the lumbar vertebrae,
- Shows : head, neck, body, tail,
- Uncinate process at the lower part of the pancreas' head : gives the pancreatic notch.


PASSAGE DES
VAISSEAUX SPLENIQUES
COL
CORPS
NIVEAU DE LA 1ERE LOMBAIRE
QUEUE
TETE
INCISURE PANCREATIQUE
PROCESSUS UNCINATUS
PASSAGE DES VAISSEAUX
MESENTERIQUES SUPERIEURS
NIVEAU DE LA 3EME LOMBAIRE

- Firm consistency, granular aspect, easily torn : be careful at the palpation !!
- L = 15 cm,
- H = 7 cm (head), 3 cm (neck), 4 cm (body),
- Thickness = 1 – 2 cm,
- 80 g. about.

B – Fixing structures

- Interdependent and locked with the duodenum,
- Fixed to the posterior wall by the mesoduodenum/mesopancreas (Treitz fascia),
- The tail is the only moving part,
- The pancreas is considered retroperitoneal.

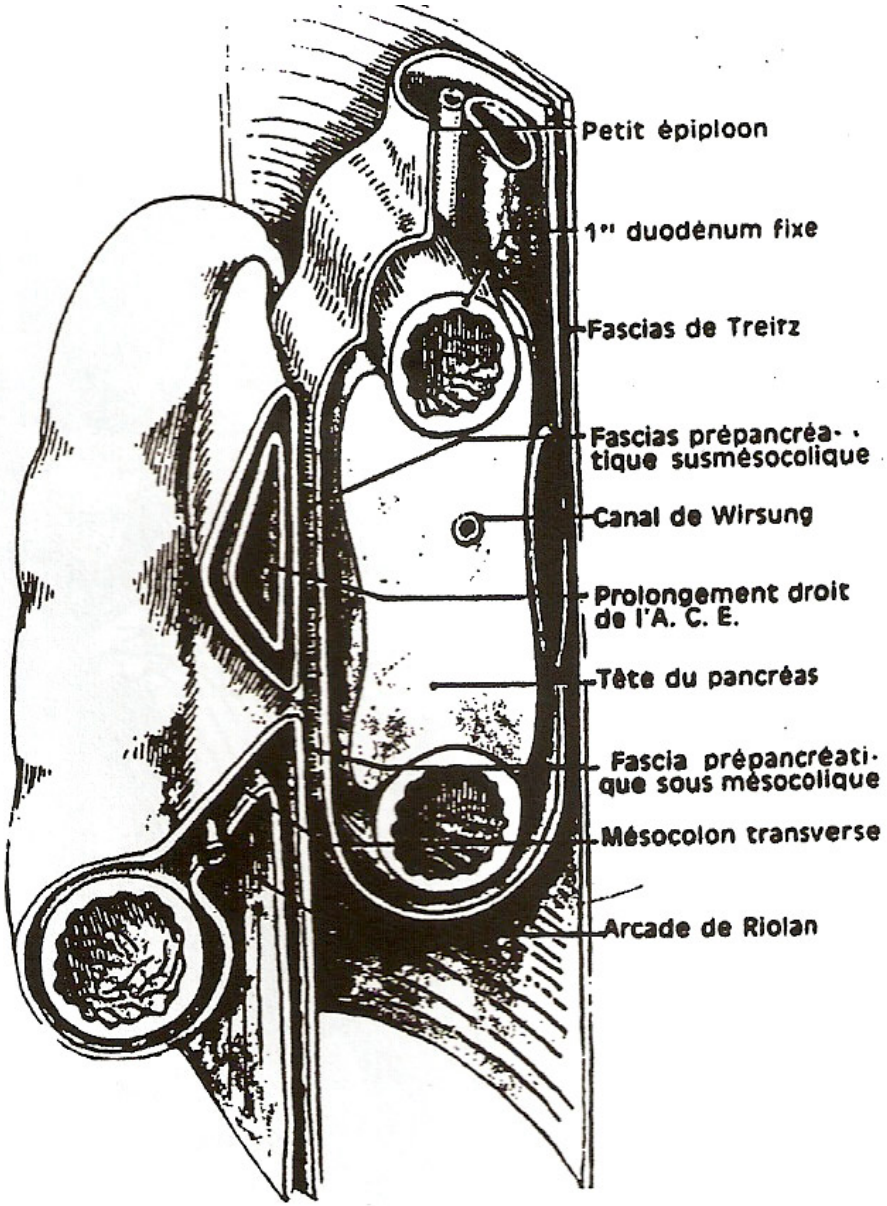
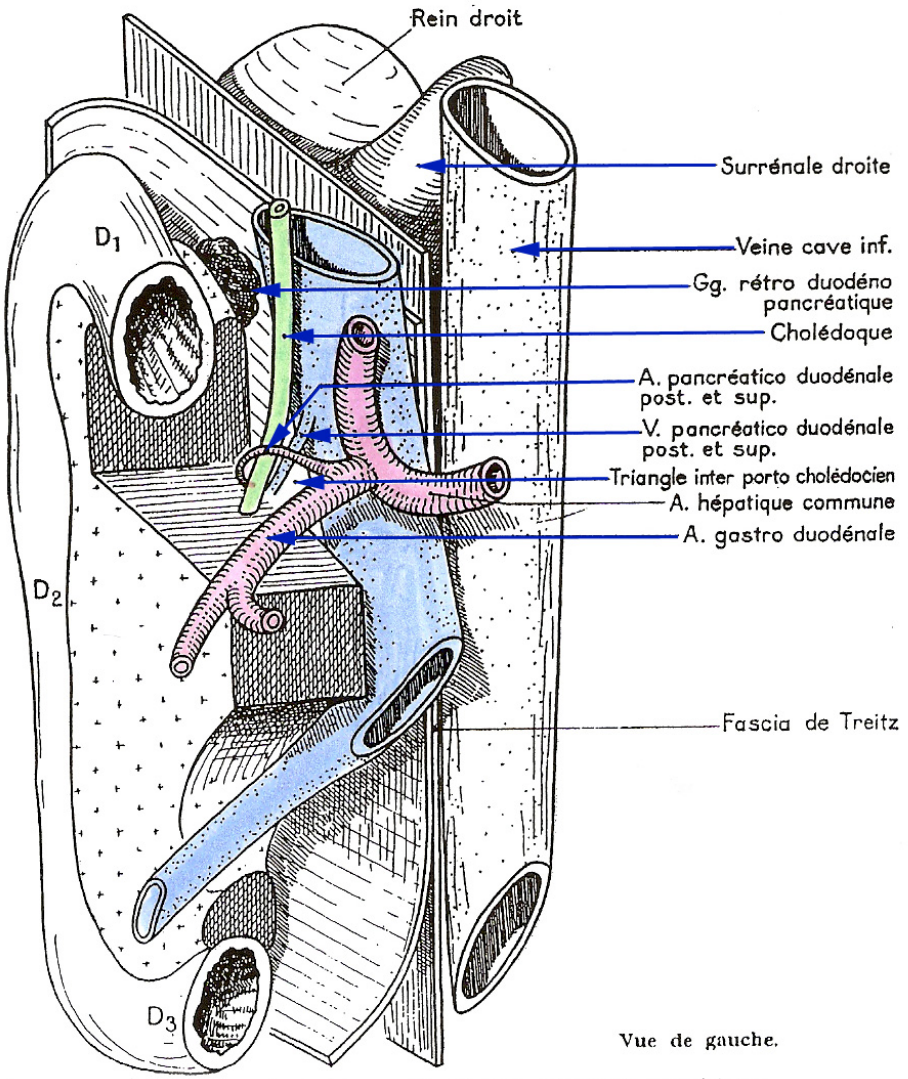


FIG. 74. — *Duodénum*. Fascias d'accolement.



Vue de gauche.

Partie fixe. Rapports postérieurs.

C – Links

- Head : Fixed to the duodenum :
  - Anterior face : Covered by peritoneum (except the root of the transverse mesocolon),
  - Posterior face : Link with the posterior pancreatico-duodenal arteries, the choledocus, right renal vessels, Inferior vena cava, right gonadal vessels.

- The neck :
  - Superior edge : indented, link with the superior part of the duodenum,
  - Inferior edge : separated from the uncinate process by the pancreatic notch,
  - Anterior face : separated from the pylorus by the foramen bursae omentalis,
  - Posterior face : superior mesenteric vein, and portal vein.

- Body : 3 faces and 3 edges
  - Anterior superior face : convex, separated from the stomach by the foramen bursae omentalis,
  - Posterior face : Applied against the posterior abdominal wall through the mesoduodenum, link with the aorta, superior mesenteric artery, left diaphragm pillar, splenic vein, left kidney,
  - Anterior inferior face : Link with the transverse mesocolon and jejunum/ileum,
  - Superior edge : Link with the celiac trunk, hepatic artery (right) and splenic artery (left),
  - Anterior edge : Answers to the root of the transverse mesocolon,
  - Inferior edge : Link with the inferior mesenteric artery.

- The tail of the pancreas :
  - Flat and narrow,
  - Contained in the pancreatico-splenic omentum,
  - Answers to the pancreatic hilum.

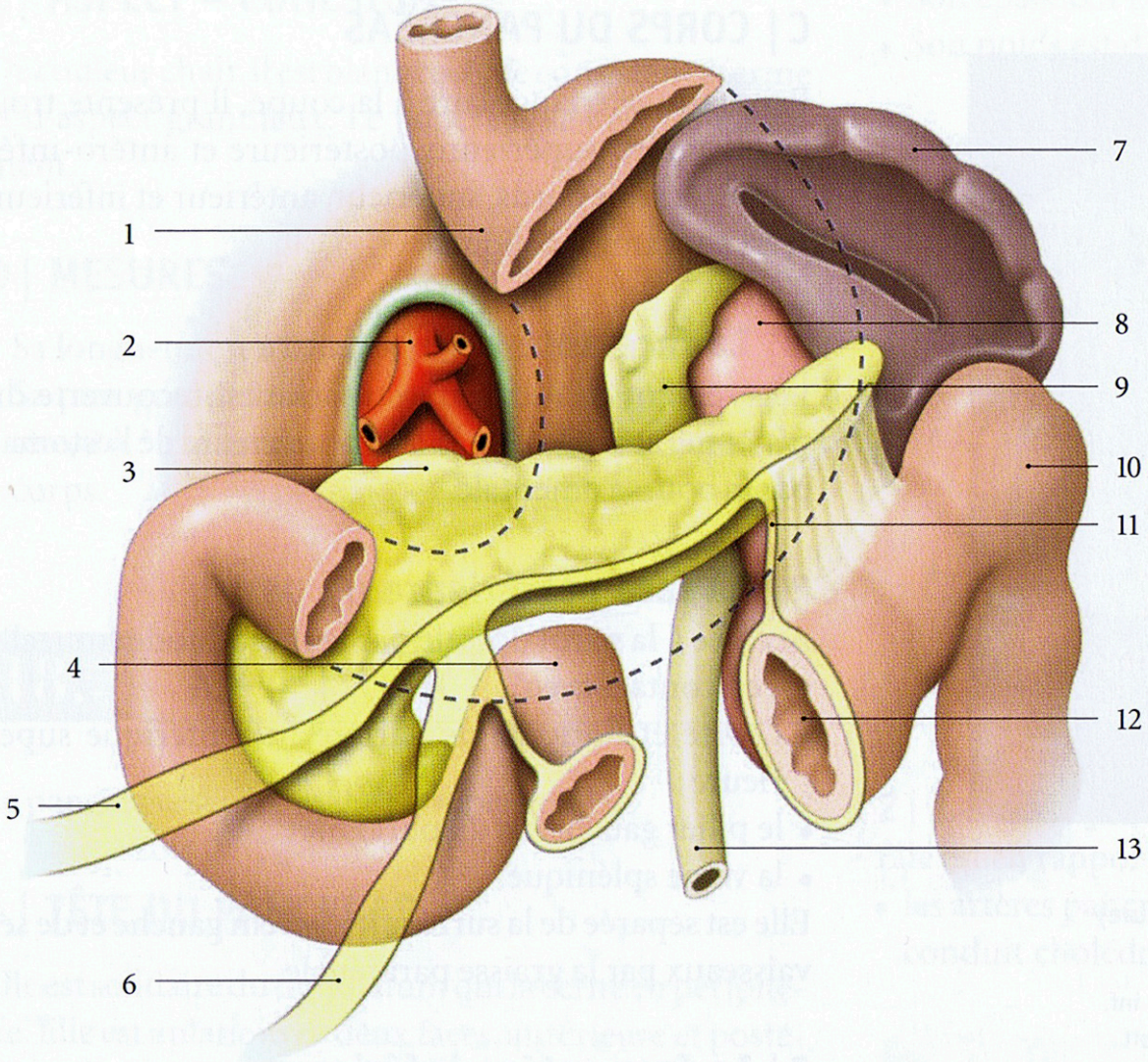


FIG. 18.8. Rapports viscéraux et péritonéaux : vue antérieure
(Les rapports postérieurs de la tête du pancréas ne sont pas représentés.)

1. estomac
2. tronc cœliaque
3. pancréas
4. angle duodéno-jéjunal
5. racine du mésocôlon transverse
6. racine du mésentère
7. rate
8. rein gauche
9. surrénale gauche
10. angle colique gauche
11. mésocôlon transverse
12. côlon transverse
13. uretère gauche

D – Blood supply

- Arteries : The pancreas is supplied by :
  - Gastro-duodenal artery,
  - Superior mesenteric artery,
  - Splenic artery.

- Gastro-duodenal artery :
  - Comes from the hepatic artery,
  - Supplies the head of the pancreas,
  - Passes between the head of the pancreas and the superior part of the duodenum,
  - Collateral arteries supply the pancreas, great curvature of the stomach and duodenum.
  - Anastomosis with collateral coming from the superior mesenteric and splenic arteries.

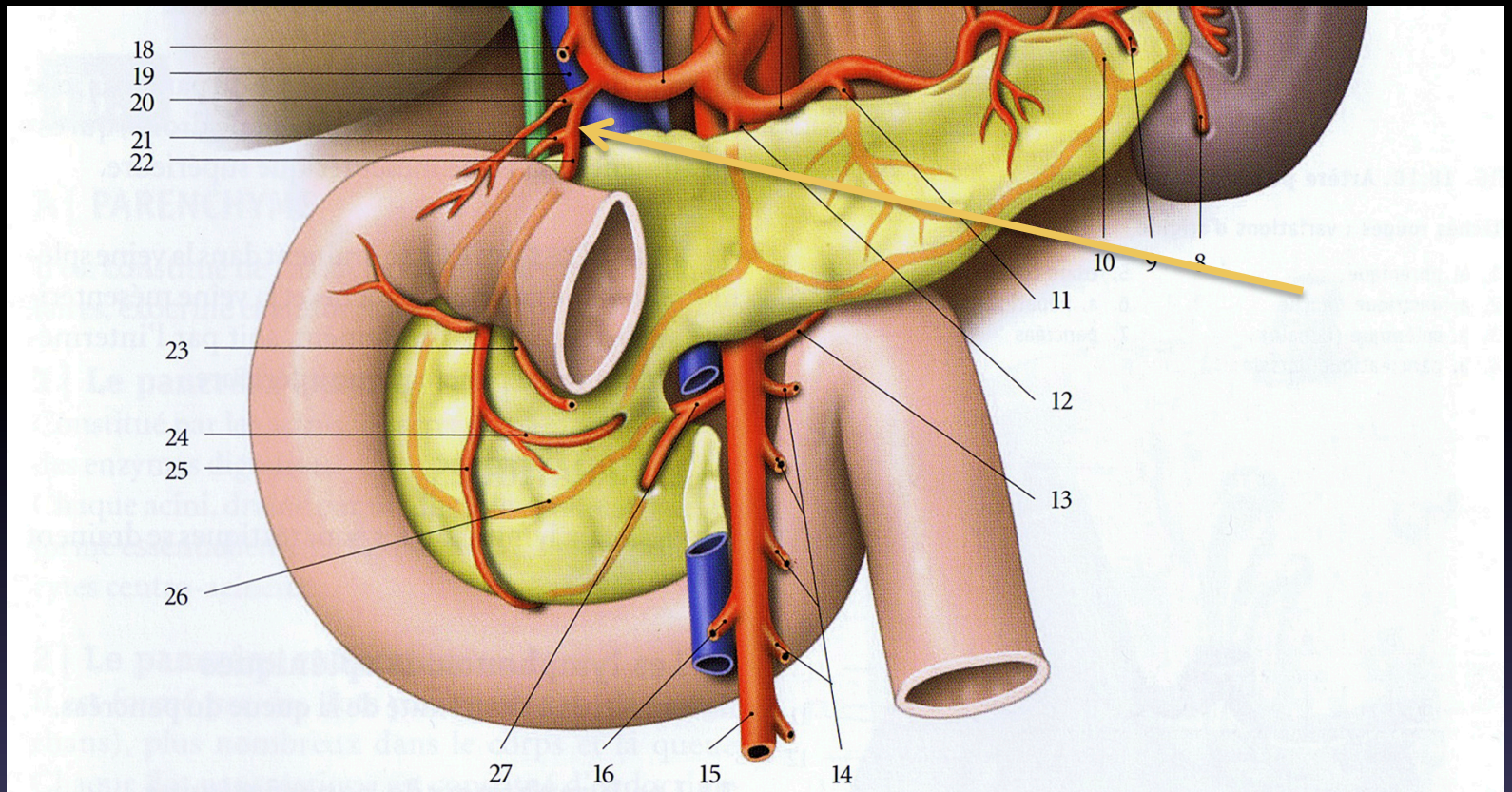
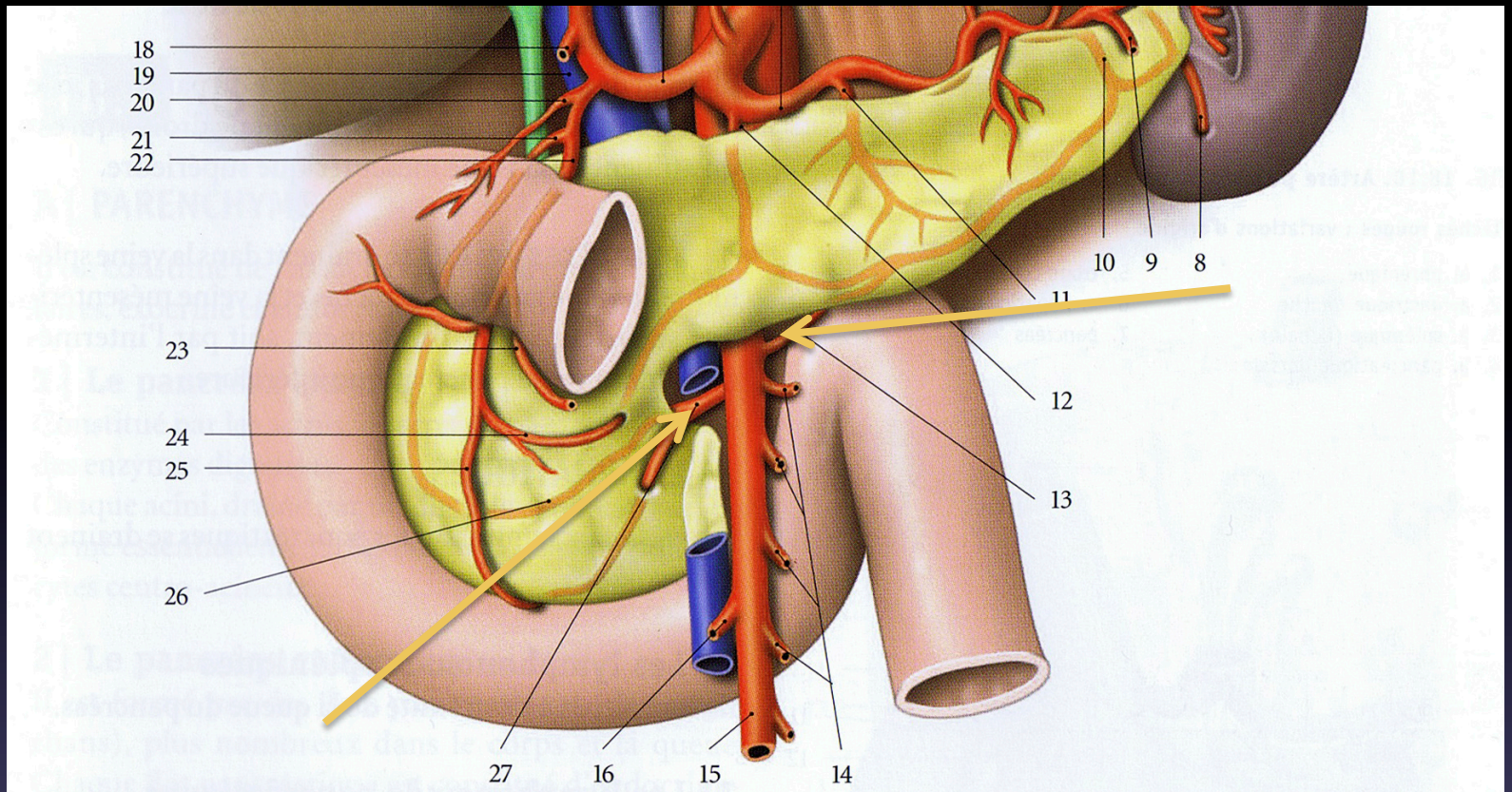


FIG. 18.9. Tronc cœliaque et artères du pancréas

1. a. cystique
2. rr. hépatiques droit et gauche
3. a. hépatique commune
4. a. gastrique gauche
5. a. splénique (liénale)
6. a. polaire sup.
7. aa. courtes de l'estomac
8. a. polaire inf.
9. a. gastro-épiploïque gauche
10. a. de la queue du pancréas
11. a. grande pancréatique
12. a. pancréatique dorsale
13. a. pancréatique inf.
14. aa. iléales et jéjunales
15. a. mésentérique sup.
16. a. colique droite
17. a. hépatique propre
18. a. gastrique droite
19. v. porte
20. a. supraduodénale
21. a. pancréatico-duodénale supéro-post.
22. a. gastro-duodénale
23. a. gastro-épiploïque droite
24. a. pancréatico-duodénale supéro-ant.
25. a. pancréatico-duodénale inféro-ant.
26. a. pancréatico-duodénale inféro-post.
27. a. pancréatico-duodénale inf.

- Superior mesenteric artery :
  - Supplies the pancreas by the inferior pancreatic and pancreatico-duodenal arteries,
  - Supplies also the duodeno-jejunal angle and beginning of the jejunum,
  - Anastomosis with branches of the gastro-duodenal and splenic arteries.



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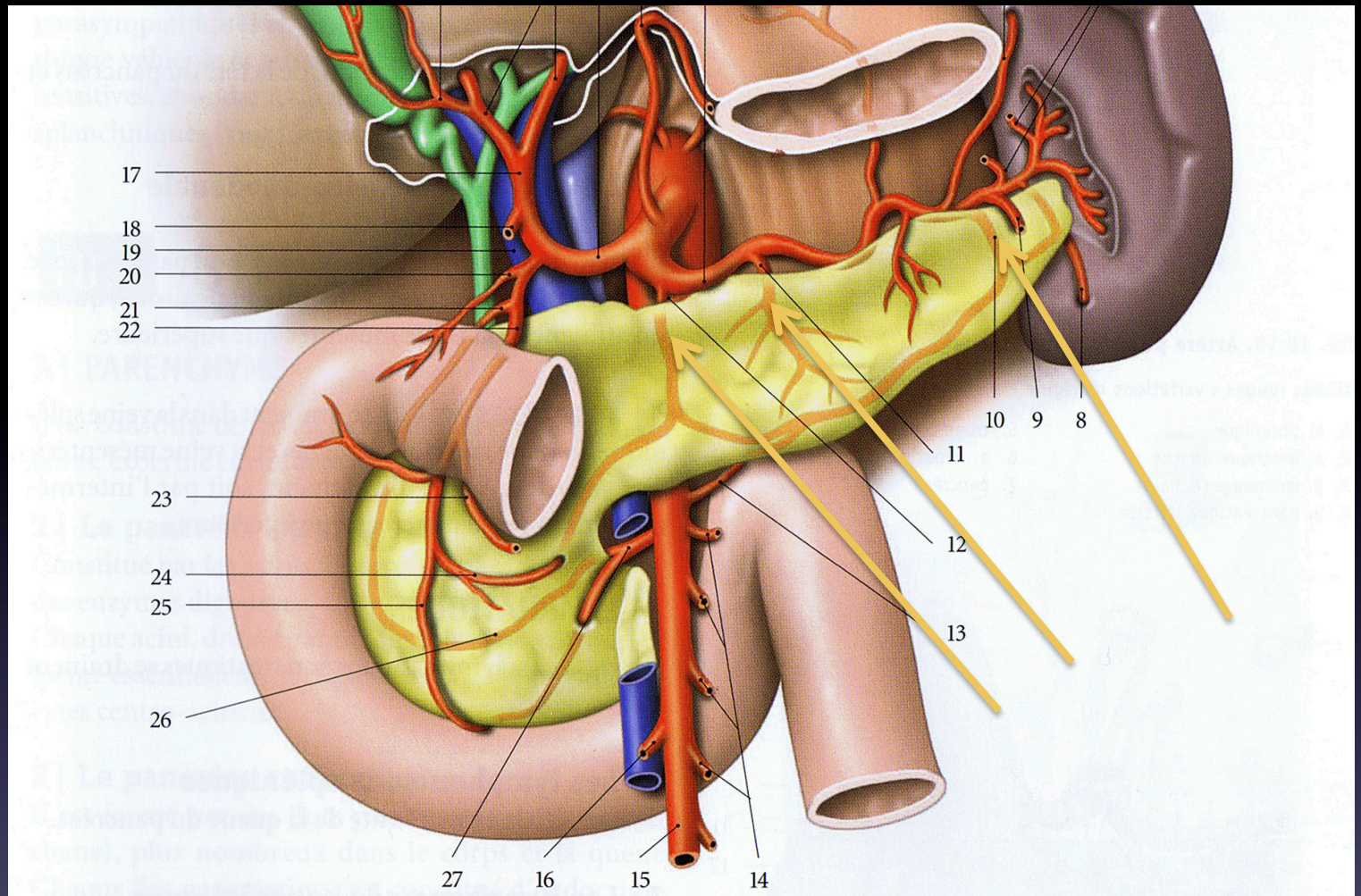
- Splenic artery :
  - Supplies the body and tail of the pancreas,
  - Gives the dorsal pancreatic, great pancreatic arteries, and arteries of the pancreas' tail,
  - Anastomosis with branches of the gastro-duodenal and superior mesenteric arteries.



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- Veins : Drain in the portal vein (behind the pancreas).
  - Superior pancreatico-duodenal vein : From the posterior face of the pancreas to the portal vein,
  - Inferior pancreatico-duodenal vein : From the anterior face of the pancreas, drains in the gastroepiploic vein (superior mesenteric vein),
  - Other veins : Drain in the splenic, left gastric or superior mesenteric vein directly.

E – Nerve supply

- Through the celiac and superior mesenteric plexuses,
- Parasympathetic origin : Vagus nerve,
- Sympathetic origin : Greater splanchnic nerves.

II - Histology

- 2 glandular tissues :
  - Exocrine pancreas : Pancreas acini with exocrinocytes and epitheliocytes pouring in the pancreatic duct,
  - Endocrine pancreas : 2%, Langerhans islets especially in the body and tail, formed by endocrinocytes around capillary vessels. Alpha produce Glucagon, Beta produce insulin, Delta : Growth Hormone inhibiting factor.

- Common pancreatic duct (Wirsung) :
  - Sinuous,
  - Fuses with the common bile duct (choledochus) in the hepatopancreatic ampulla,
  - Has its own sphincter,
- The hepatopancreatic ampulla drains in the second duodenum (around middle) with a sphincter (Oddi sphincter).

- Accessory pancreatic duct (Santorini) :
  - More superficial,
  - Ends in the minor papilla above the hepatopancreatic ampulla.

III - Physiology

- Exocrine pancreas :
- Production of pancreatic juice (1-2L / d) :
  - HCO_3^- (bicarbonate),
  - Proteolysis enzymes : Trypsinogen, chymotrypsinogen, pro-elastase, pro-carbopeptidase : activated in the intestine,
  - Alpha-amylase : digestion of carbohydrates,
  - Pancreatic lipase : breaking triglycerides,
  - Pro-phospholipase A2, RNases, DNases…

- Endocrine pancreas :
- Secretion :
  - Insulin (alpha cells) : hypoglycemic,
  - Glucagon (Beta cells) : hyperglycemic,
  - Growth hormone inhibiting factor : inhibition of GH, TSH, gastrin, CCK, motilin, insulin, glucagon, pancreatic juice…

IV - Pathology

- Acute pancreatitis :
  - Inflammation of the pancreas with alteration of the endocrine and exocrine functions.
  - Result : auto-digestion of the pancreas.
- Etiologies :
  - Gallstones,
  - Alcohol,
  - Medicines,
  - Trauma,
  - Other…

- Symptoms :
  - Acute pain, radiation to the back, like a belt, often after an important meal, or meal with alcohol,
  - Analgesic position in flexion,
  - Vomiting (often),
  - Bloated abdomen,
  - Poor clinical examination compared to the pain.
- Complementary examination :
  - Increase of pancreatic enzymes, white blood cells, abdominal tomodensitometry (injection).

- Chronical pancreatitis :
  - Inflammatory calcific pancreatitis, by modification of the pancreatic parenchyma.
  - Heterogeneous fibrosis, progressive destruction of the exocrine pancreas (irreversible).
- Etiologies :
  - Alcoholism (80-90%),
  - Idiopathic.

- Symptoms :
  - Pain by crises, from few hours to few days, with quiet episodes (days, weeks or years).
  - Progressive start, in the epigastrium, acute posterior radiations.
  - Analgesic position in trunk flexion. Pain is increased immediately after meal.
  - Pain is relieved by analgesics usually.
  - Mainly men 35-40.

- Evolution :
  - After 10-15 years : pancreatic insufficiency : exocrine (steatorrhea) and endocrine (diabetes). Pain stops at this moment.
- Complementary examinations :
  - Xray : calcifications on the pancreas,
  - Ultrasound : Increase or decrease of the pancreas size (part, or total), calcifications, distension of the pancreatic canal, cysts…
  - Endoscopic ultrasound : Modification of the canals and the parenchyma : not necessary for diagnosis.

- Pancreas cancer :
  - Mainly exocrine pancreas is touched.
  - Especially men > 40 years old. Head of pancreas is touched in 80% of cases.
- Etiologies :
  - Unknown. Seems higher frequency in diabetic people or after chronical pancreatitis.
  - Contributing factors : smoking, high fat diet, high protein diet.

- Symptoms :
  - Icterus if compression of the biliary tract by the tumor.
  - Violent pains radiating to the back and left hypochondrium, sometimes relieved by flexion of the trunk or aspirin.
  - Loss of weight.
  - If on head or tail of the pancreas : usually hepatomegaly and splenomegaly.

- Complementary examinations :
  - Signs of tumor compression : Xray of the biliary tract.
  - Tomodensitometry.

V - Osteopathy

- Treatment of the pancreas : mainly in exocrine troubles.
- Symptoms : maldigestion of fat, steatorrhea, discoloured feces (with biliary tract).
- Epigastric troubles after meals : nausea, bloating/pressure feeling.
- Pain during digestion, starting 30 min to 1 hour after meal, with analgesic position in flexion. Breathing increases the pain (patient breathes in small amplitude).
- We usually do NOT mobilize directly the pancreas, because of its crispy structure. We treat the environment.

Practice

Mobility test of the mesopancreas (Treitz)

Test of the second part of the duodenum

Test and correction of Oddi sphincter

Test of the pancreas-duodenum junction

Corrections

- Mecanical links
- Vascular links
- Neurological links

Global correction of the Treitz fascia

Correction of the pancreas/duodenum junction