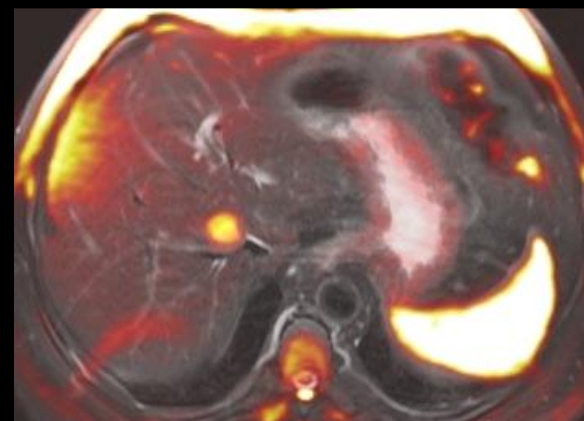




Foie, système porte, pancréas et rate



C. SELLAL

Service de Radiologie Adultes, Hôpital de Brabois

Avril 2013

E. MATHIAS

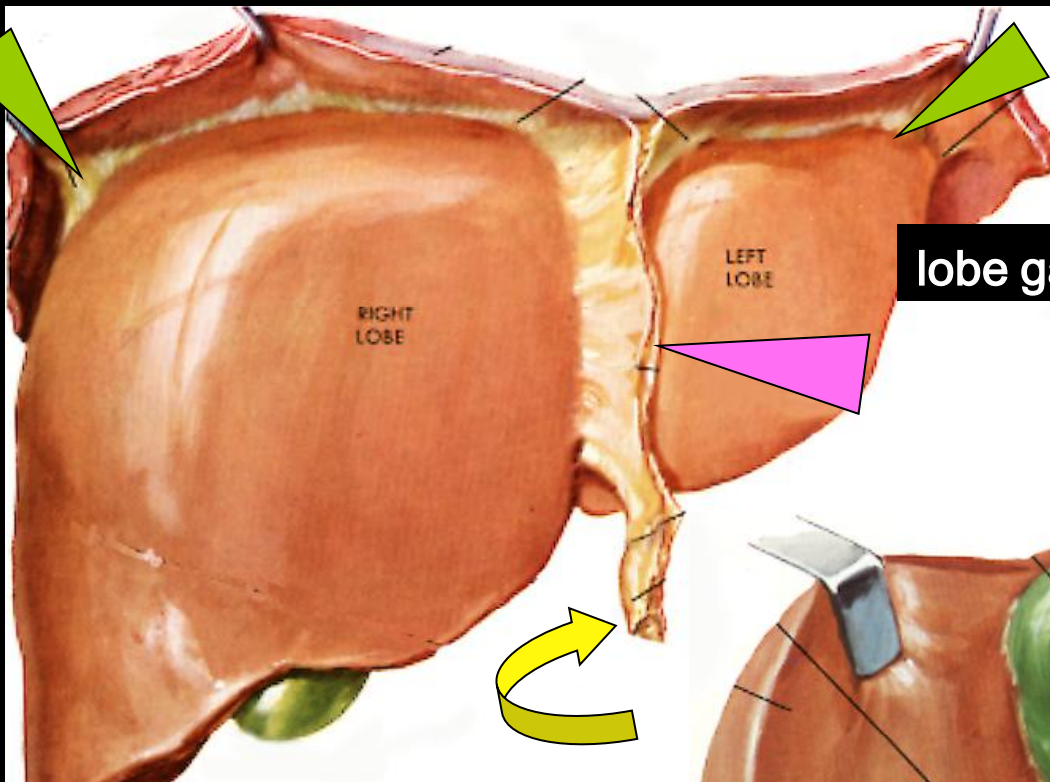
Service de Médecine Nucléaire, Hôpital de Brabois

Avril 2013

FOIE

1 Anatomie

Ligaments

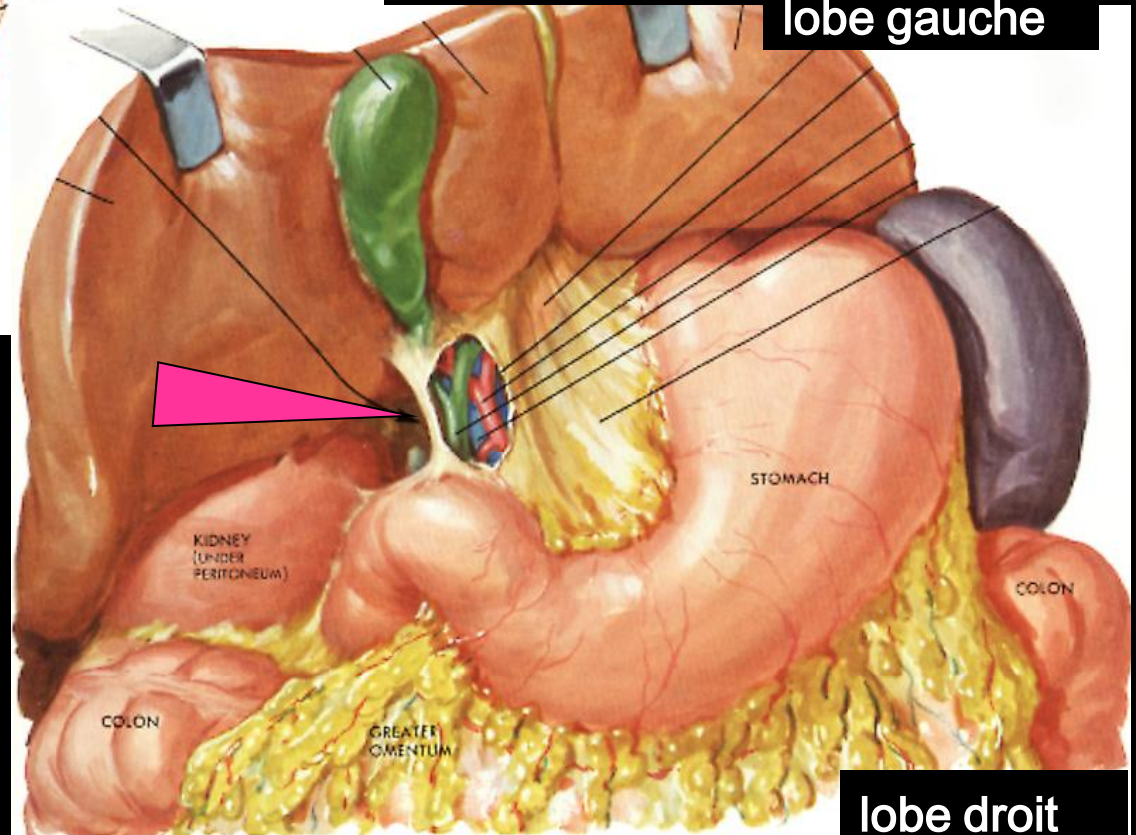


Ligament falciforme

Ligt triangulaire D et G

Ligt rond

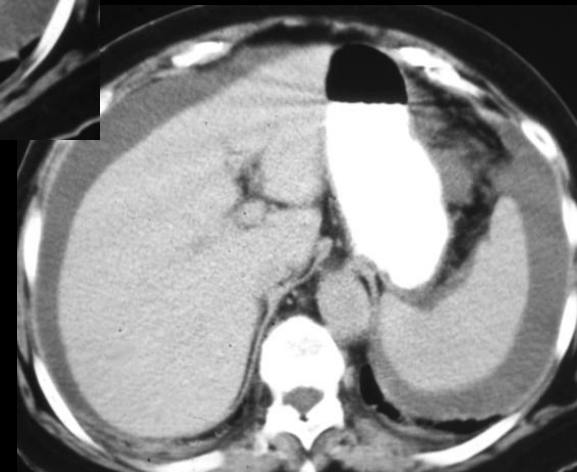
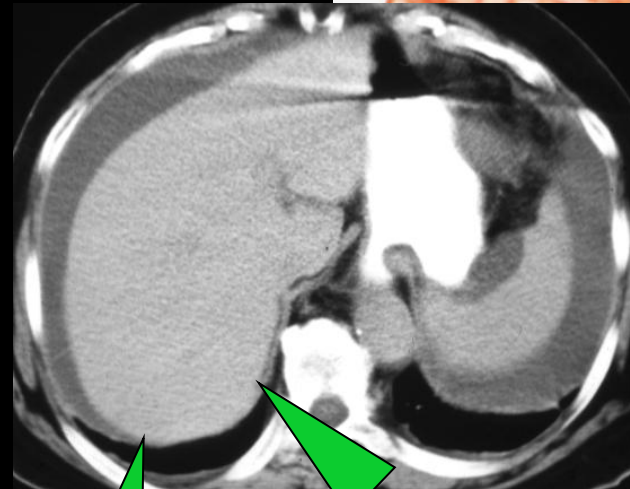
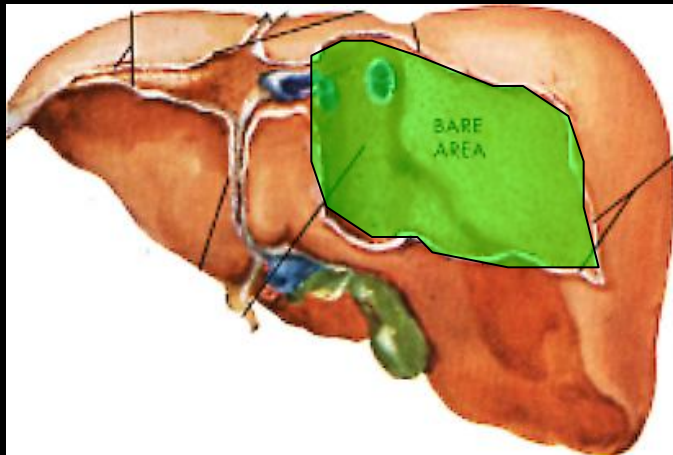
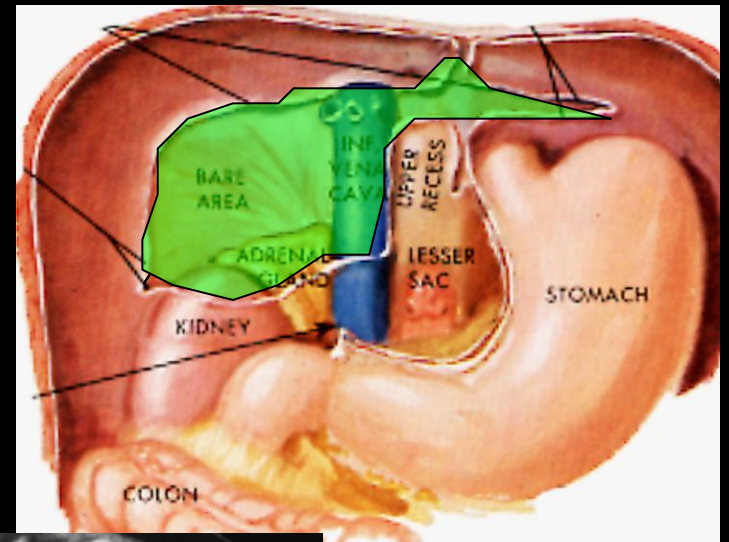
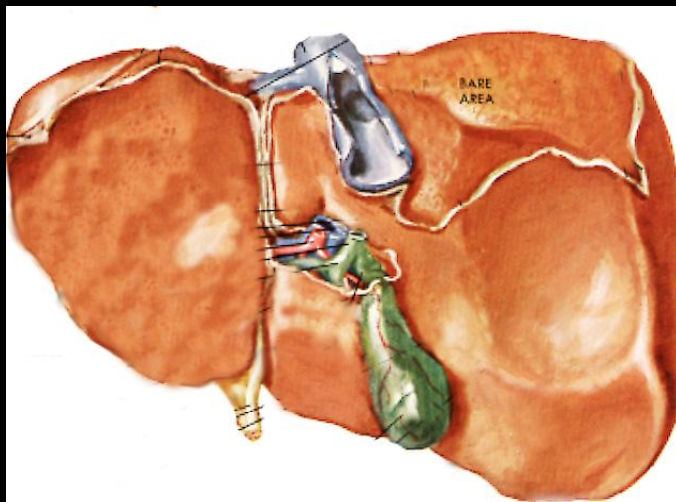
lobe gauche



lobe droit

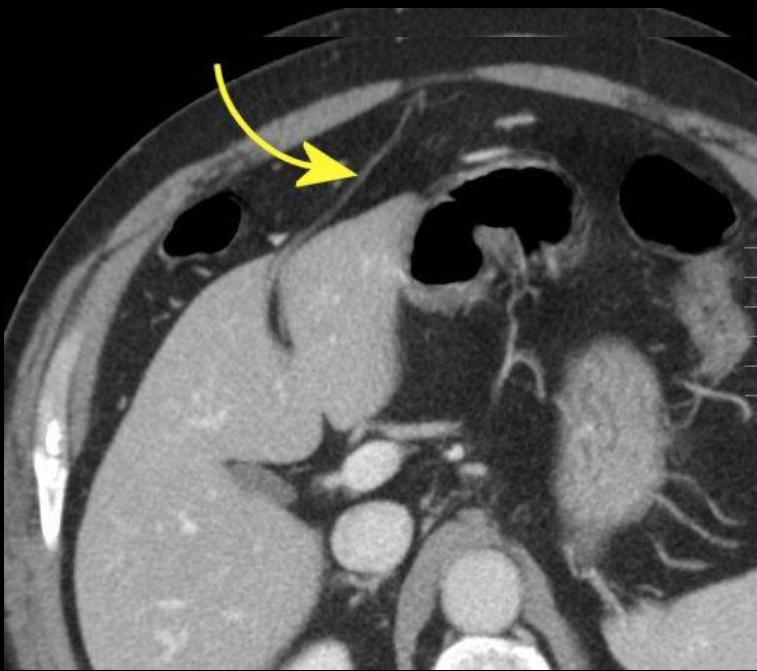
Le ligament falciforme relie la face antérieure du foie à la paroi abdominale antérieure et au diaphragme

Il renferme le ligament rond à son bord inférieur.

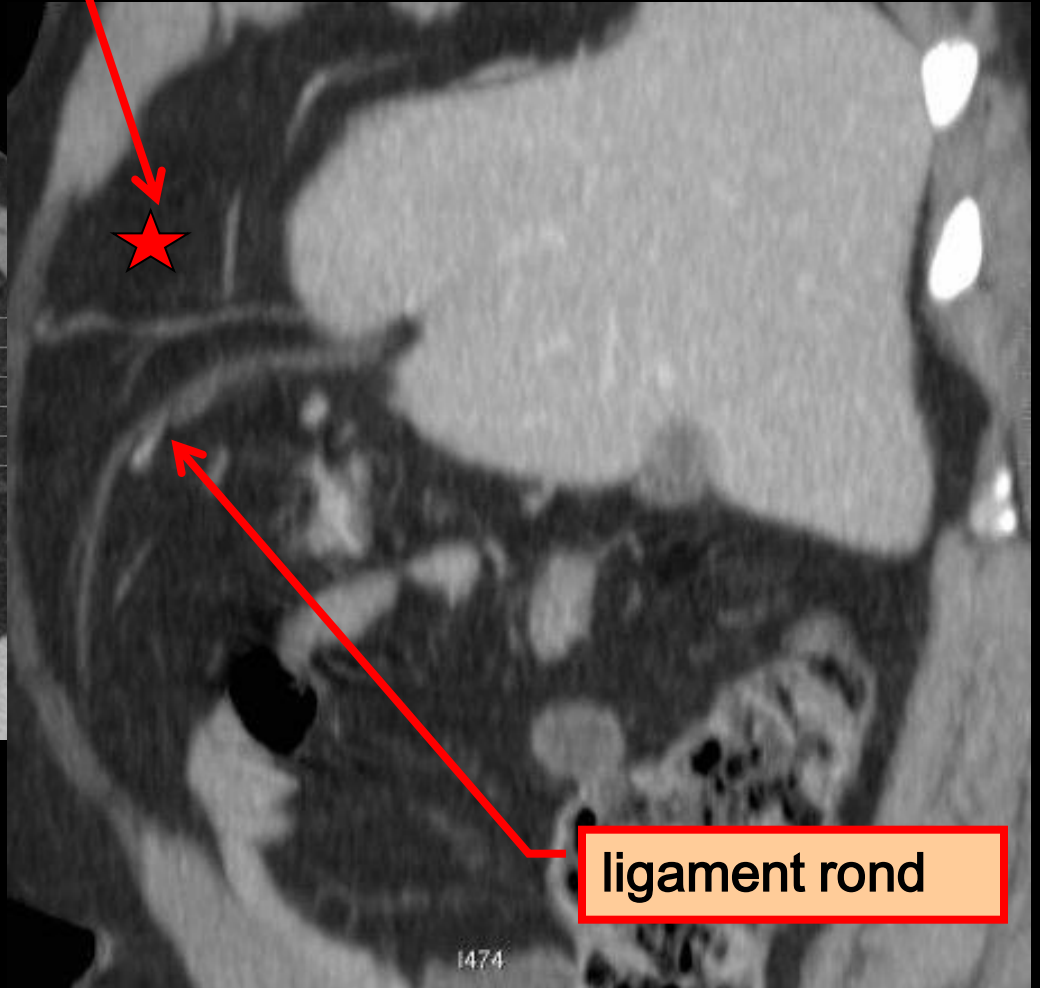


Zone dépéritonisée fixée au diaphragme, l'*area nuda* contient les ligts triangulaires, le sillon de la VCI et la fissure du ligt veineux (canal d'Arantius)

ligament
falciforme



ligament rond



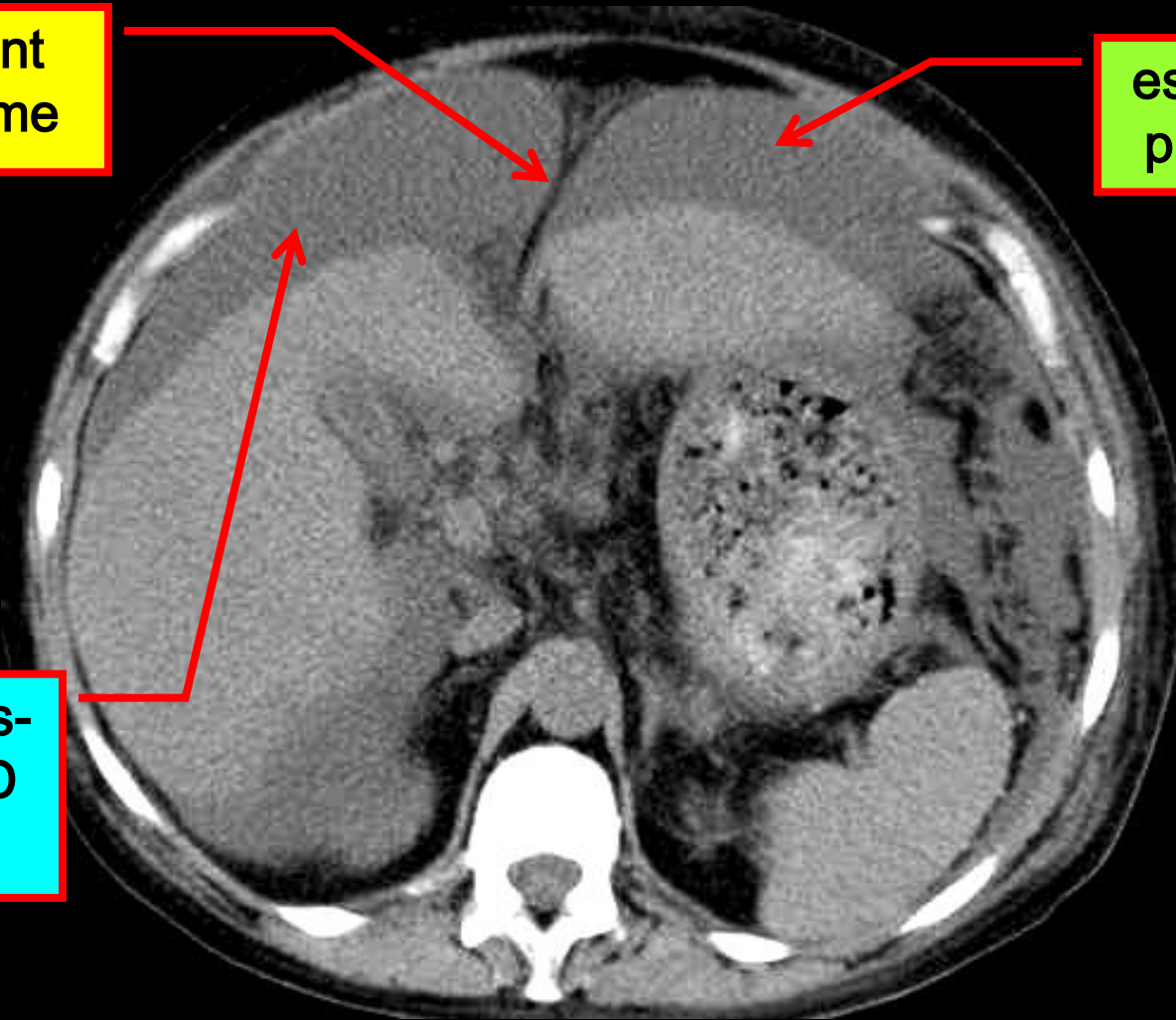
ligament rond

le ligament falciforme relie la face antérieure du foie à la paroi abdominale antérieure et au diaphragme . Il renferme le ligament rond à son bord inférieur.

ligament
falciforme

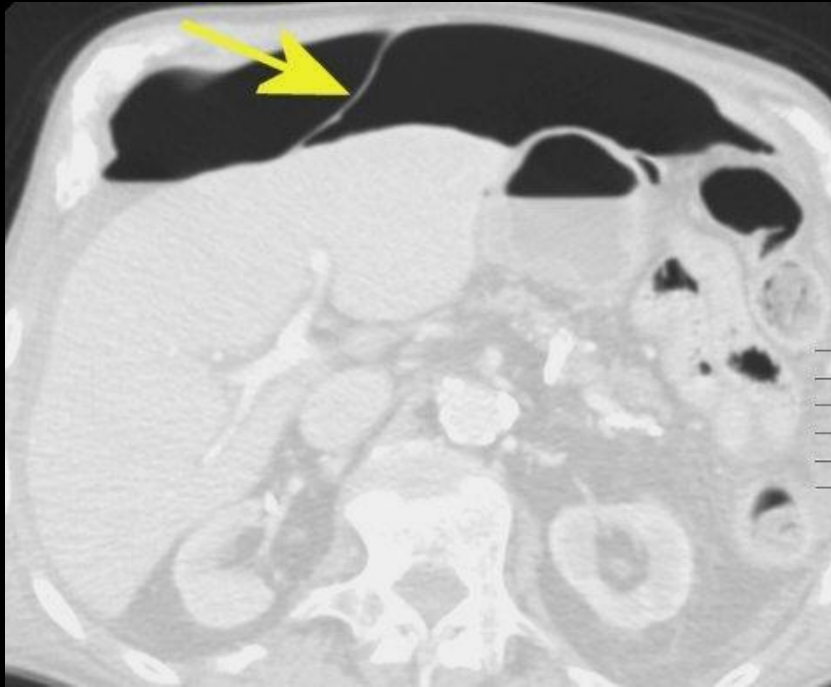
espace sous-
phrénique G

espace sous-
phrénique D



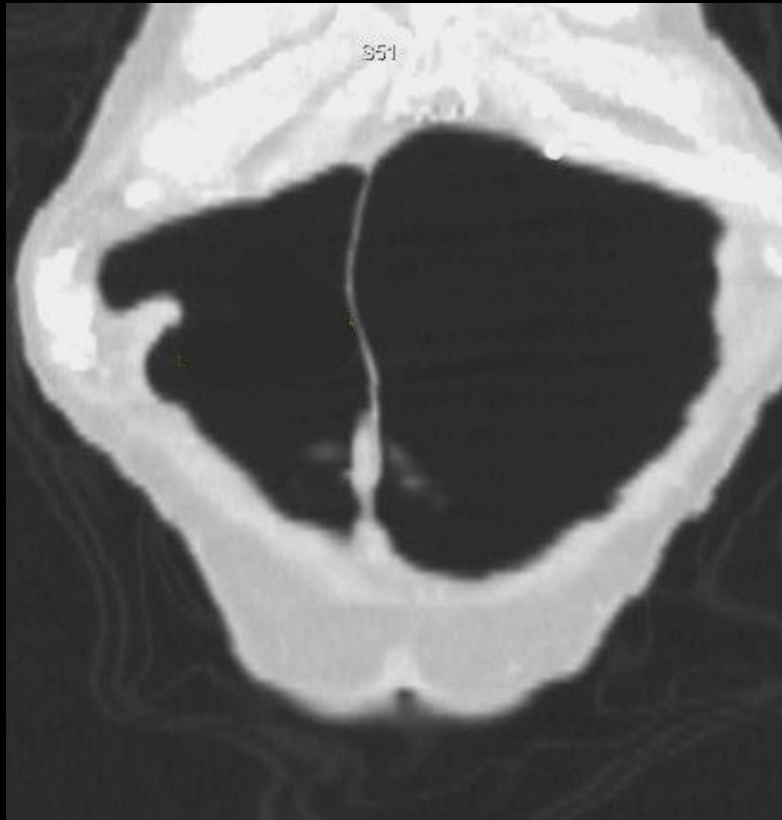
en cas d'ascite abondante, on aperçoit facilement le ligament falciforme qui s'étend de la paroi abdominale antérieure vers la scissure du ligament rond et qui sépare les espaces sous-phréniques droit et gauche.

Le « silhouettage » du ligament falciforme



En cas de pneumopéritoine volumineux, le gaz libre intra péritonéal se collecte vers le haut et vers l'avant de l'abdomen en décubitus, de part et d'autre du ligament falciforme, le "silhouette" et le rend particulièrement bien visible.

Pneumopéritoine massif



lig. falciforme, en situation antérieure, en décubitus (CT MPR coronale et sagittale)

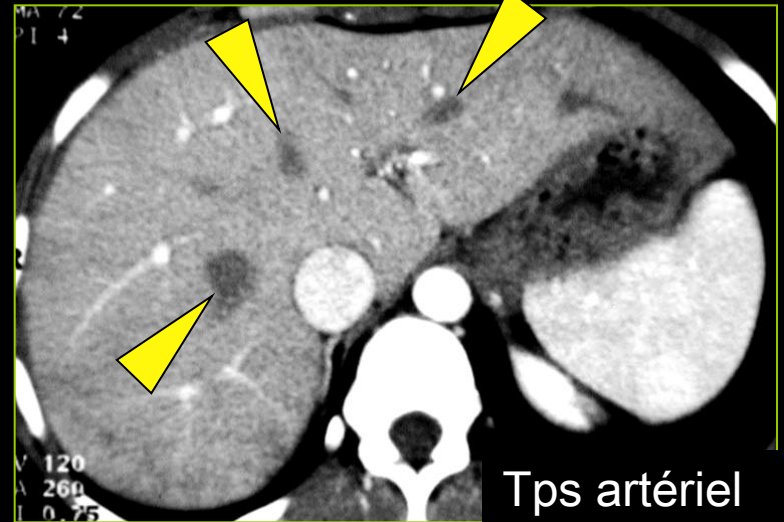
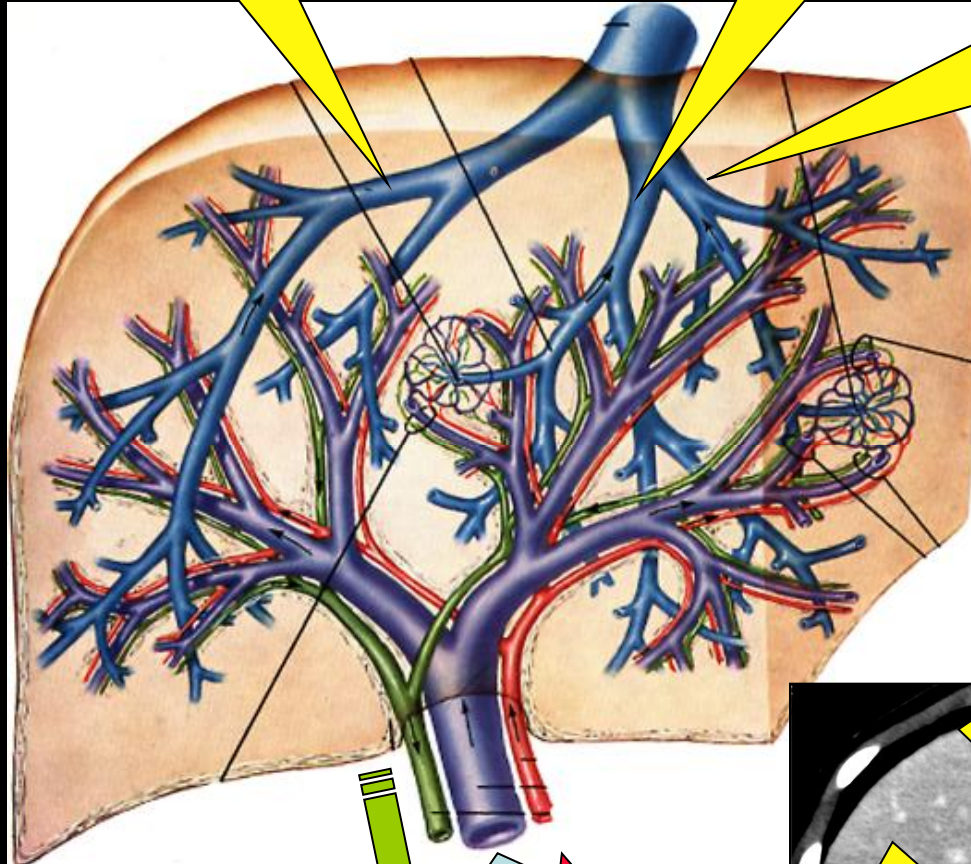
veine hépatique droite

veine hépatique médiane

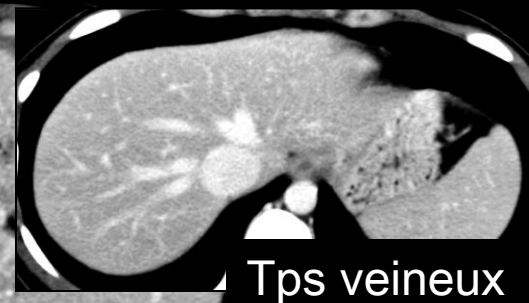
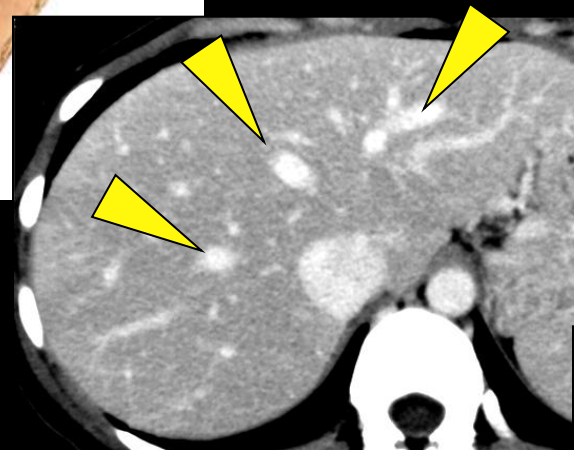
1 Anatomie

Vascularisation

veine hépatique gauche



Tps artériel

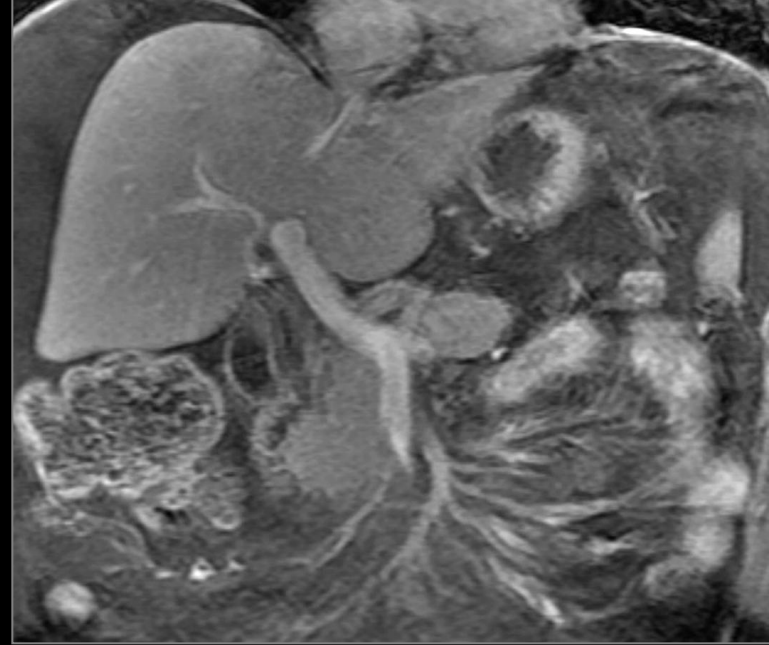
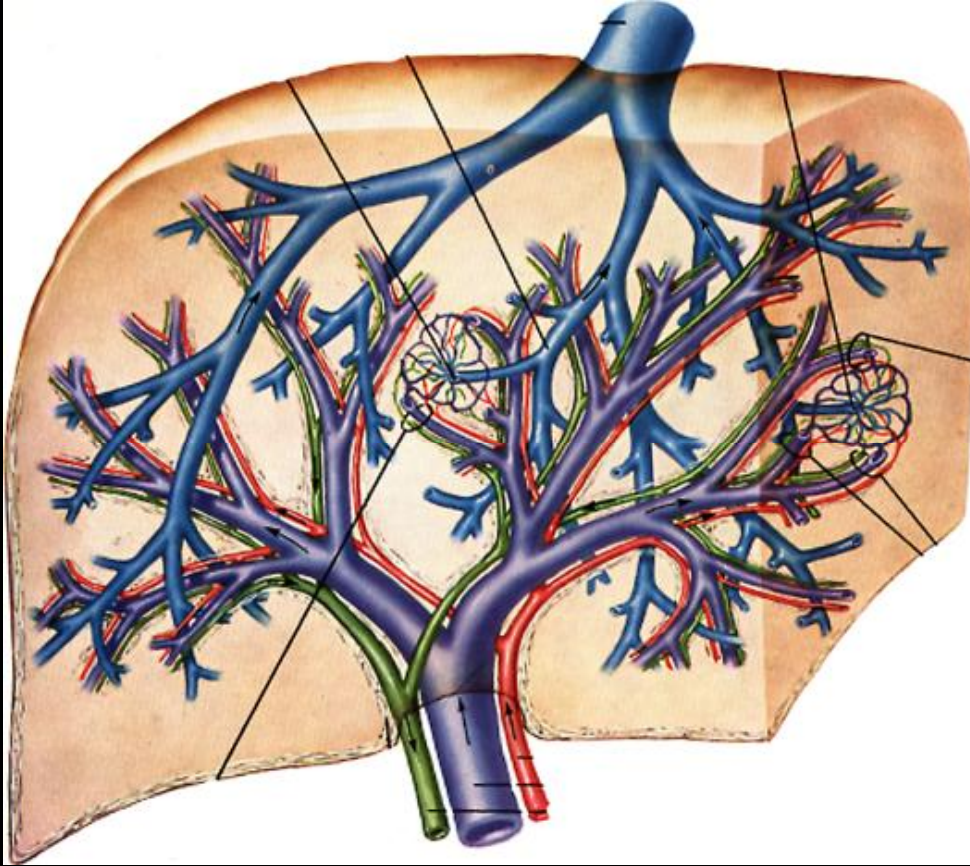


Tps veineux



20%

80%

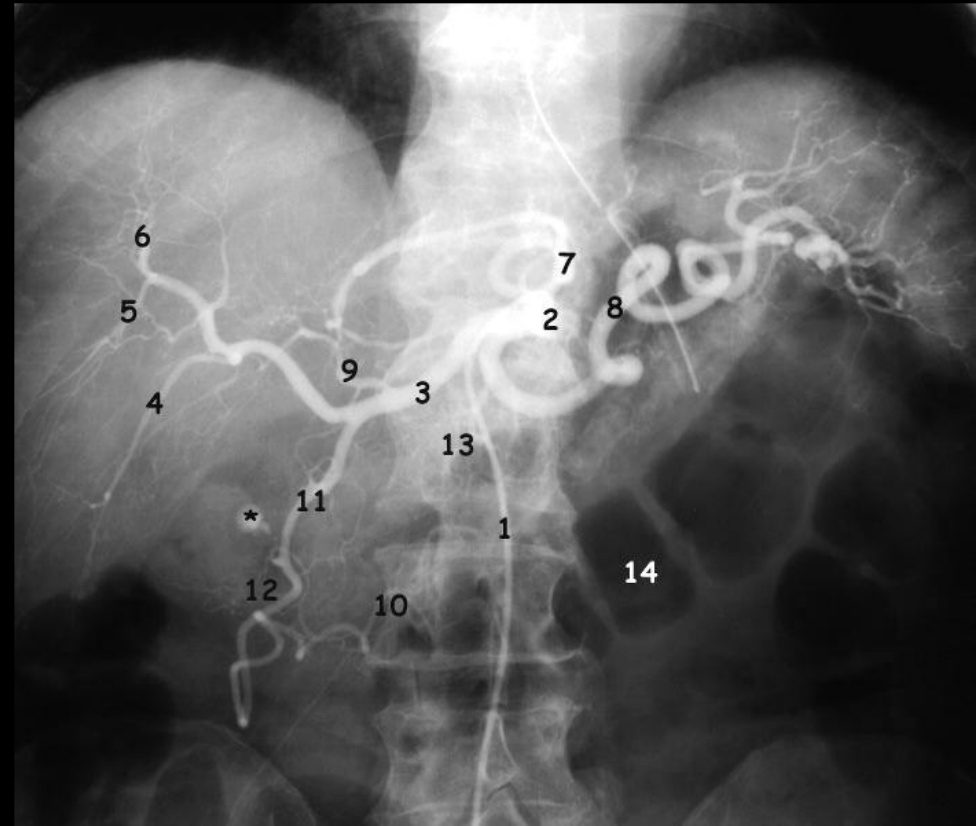
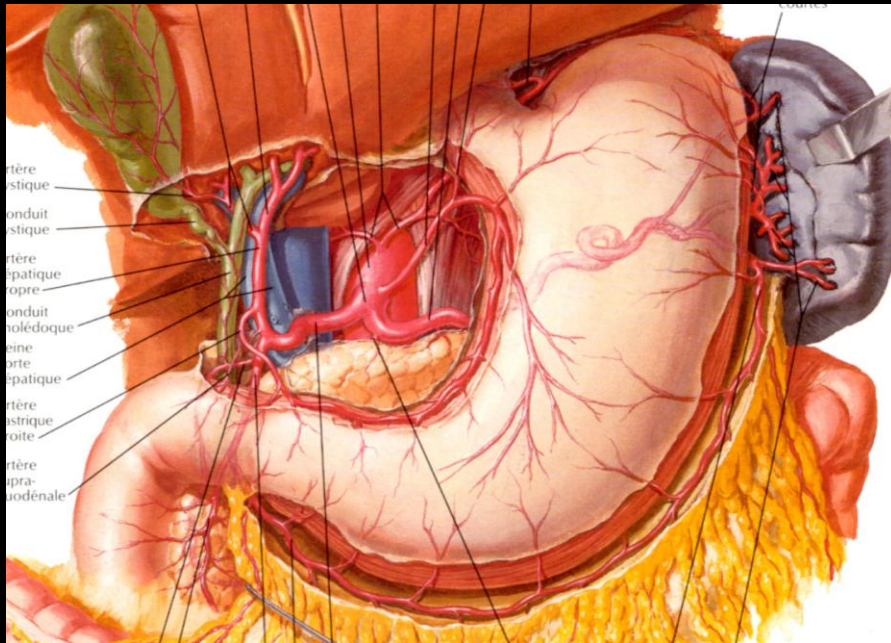


La veine porte

Branche droite : deux veines segmentaires antérieure et postérieure

Branche gauche : rameaux caudés, veines segmentaires latérales et médiales
fixation au ligt rond

Artère hépatique commune naissant du tronc coeliaque donnant l'artère hépatique propre qui se divise en deux branches et donne les artères cystique et gastrique droite

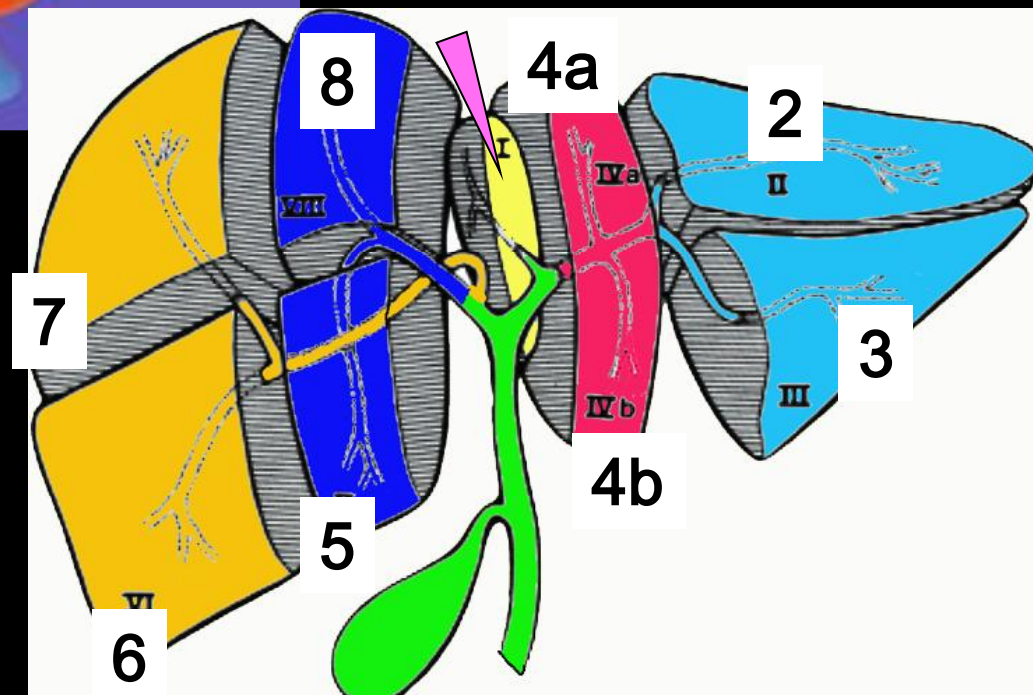


1 Anatomie

Segmentation

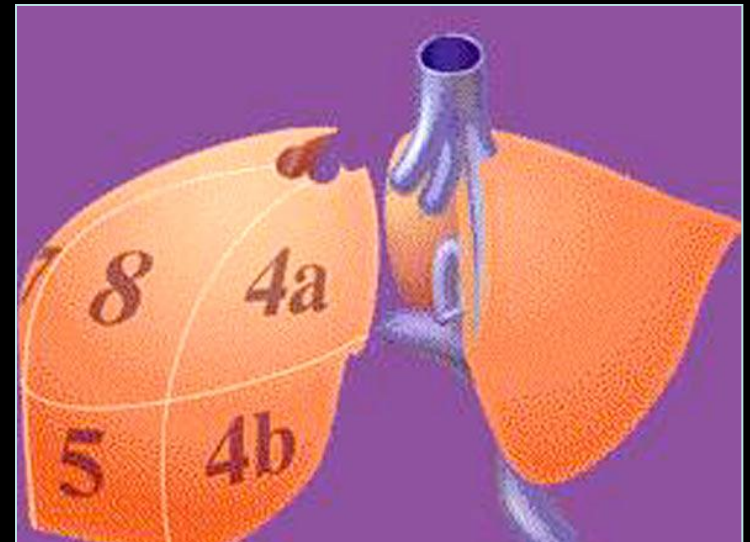
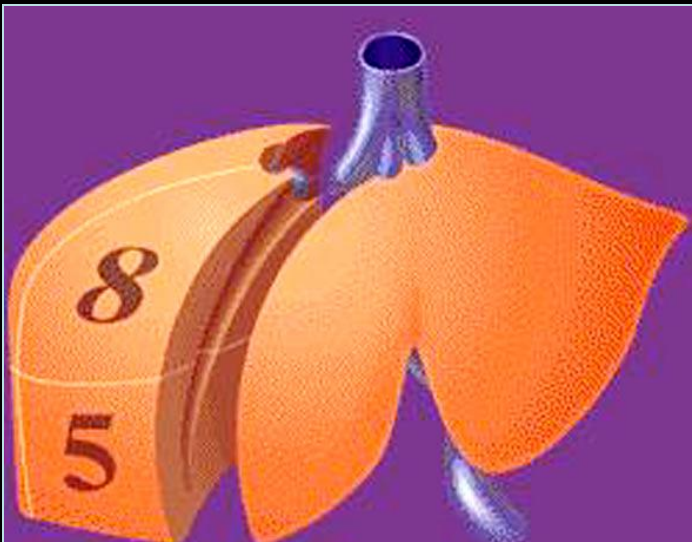
Division hépatique en 8 segments selon Bismuth

1



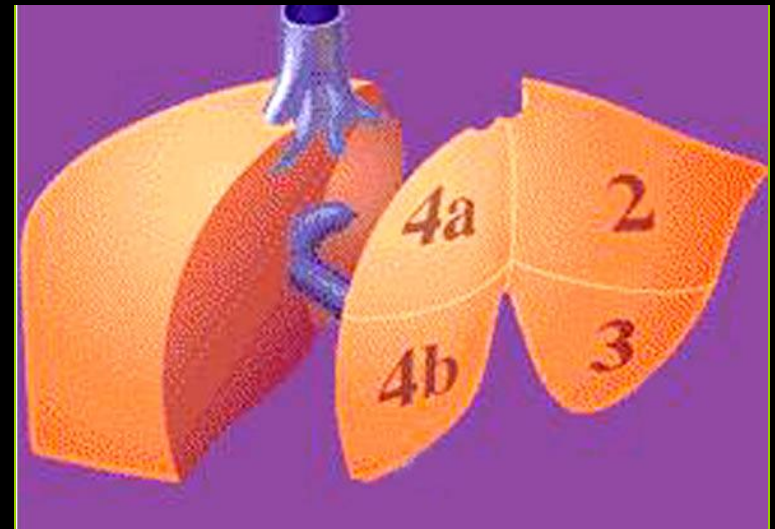
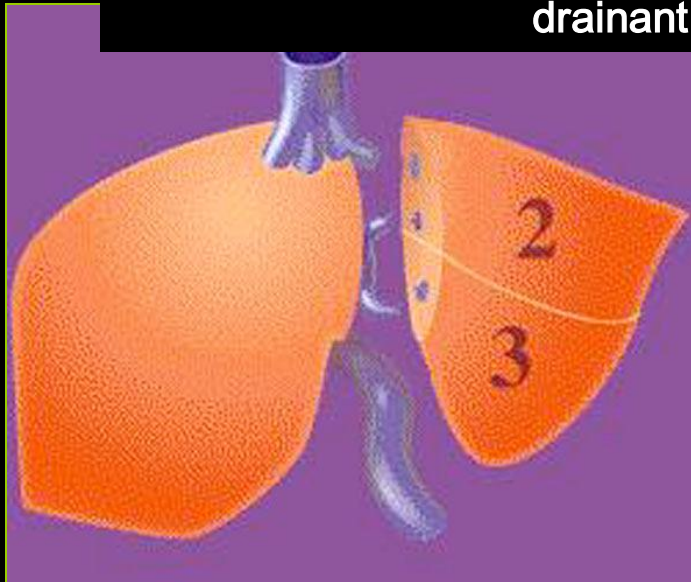
Plan vertical selon les veines hépatiques

Plan horizontal selon les branches portales



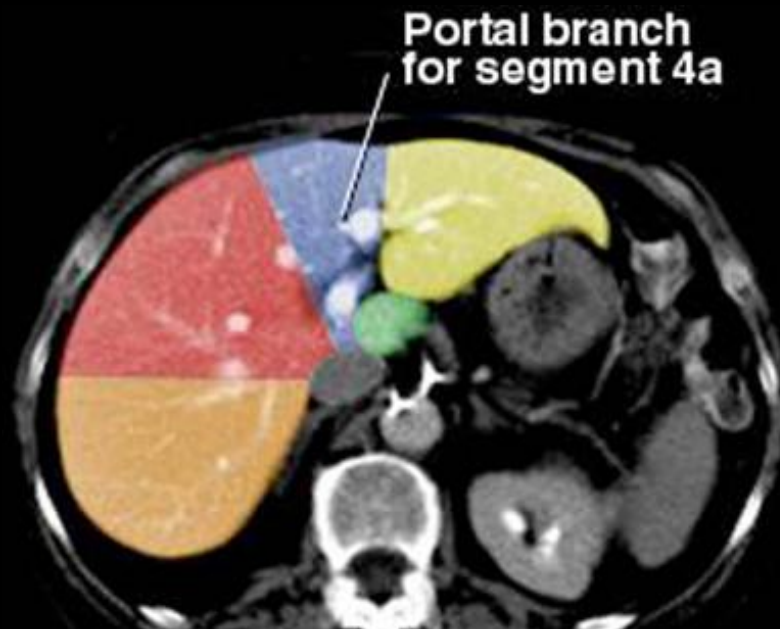
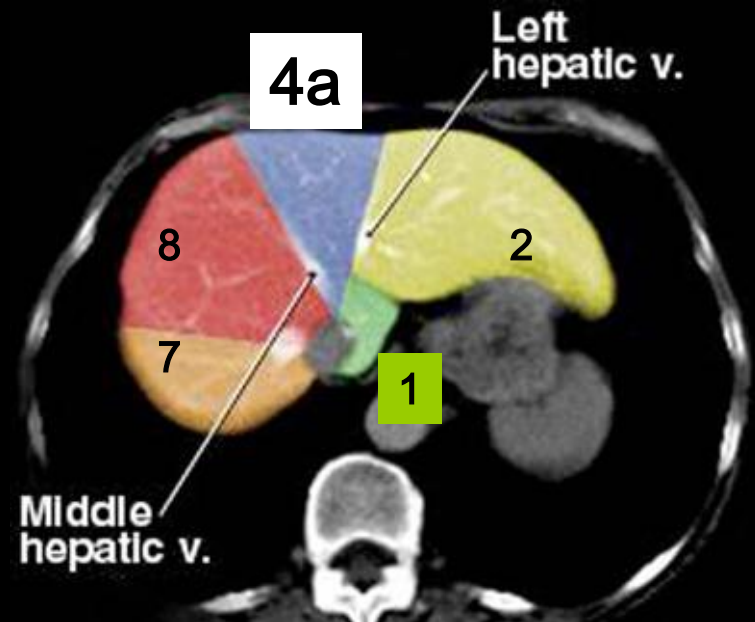
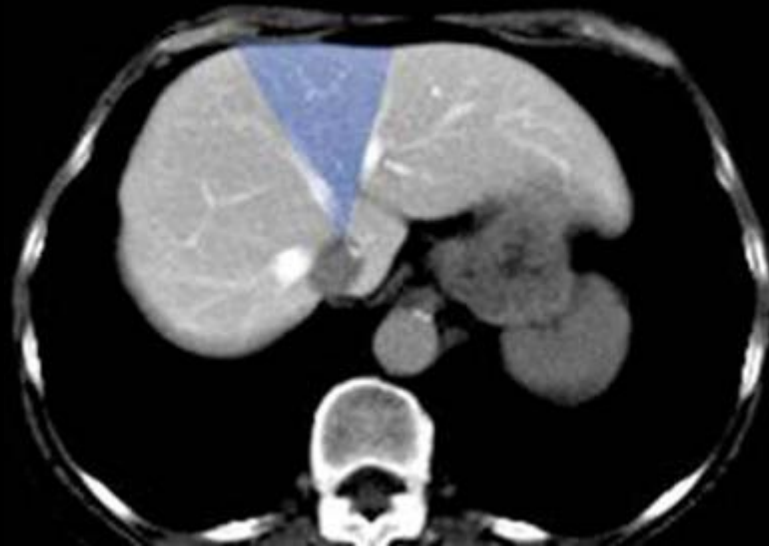
hépatectomies droites

variante veine hépatique inférieure droite accessoire
drainant le 6 dans hépatectomies partielles

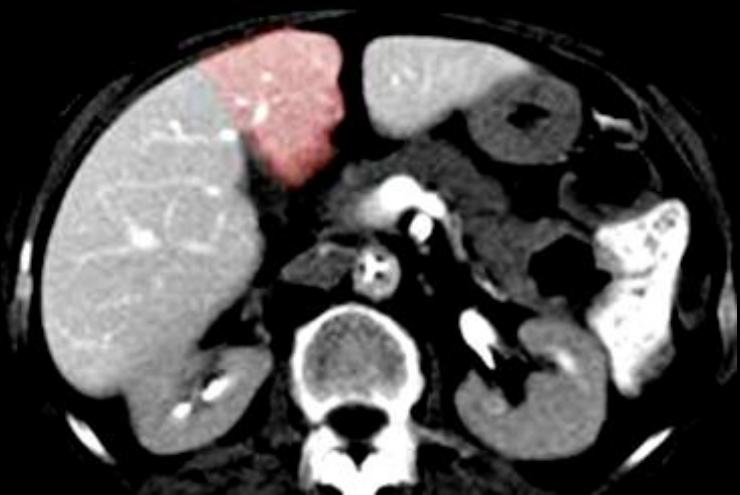


hépatectomies gauches

Segment 4a

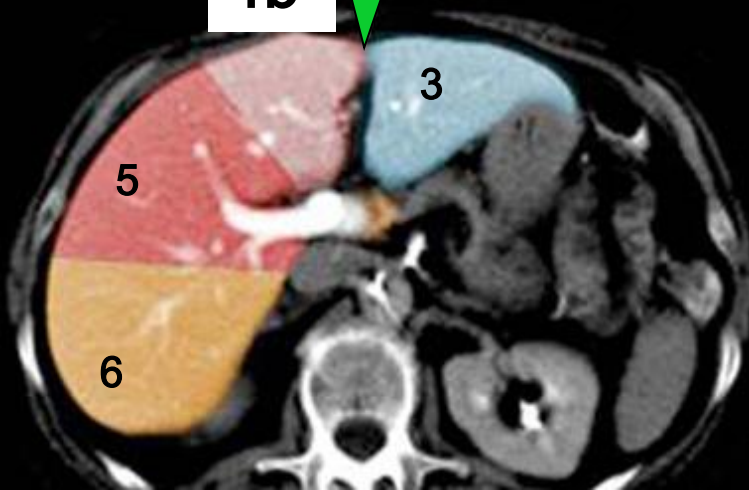


Segment 4b



sillon du ligament rond

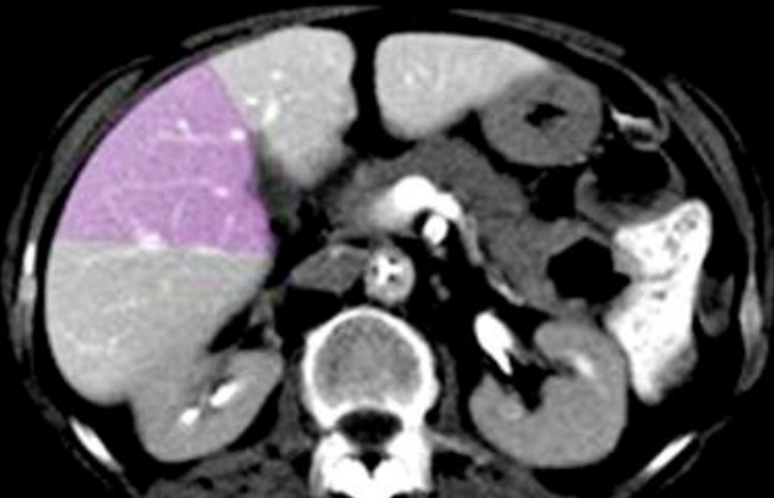
4b



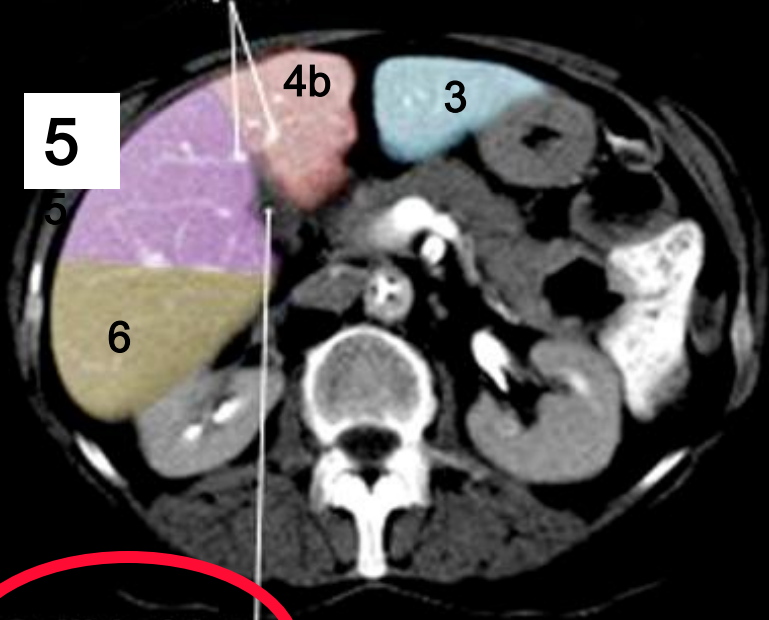
Portal branch



Segment 5



Beginning of
middle hepatic v.

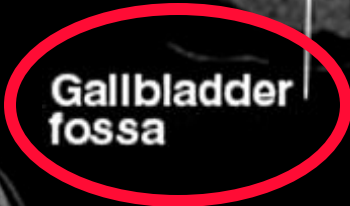


Middle
hepatic v.

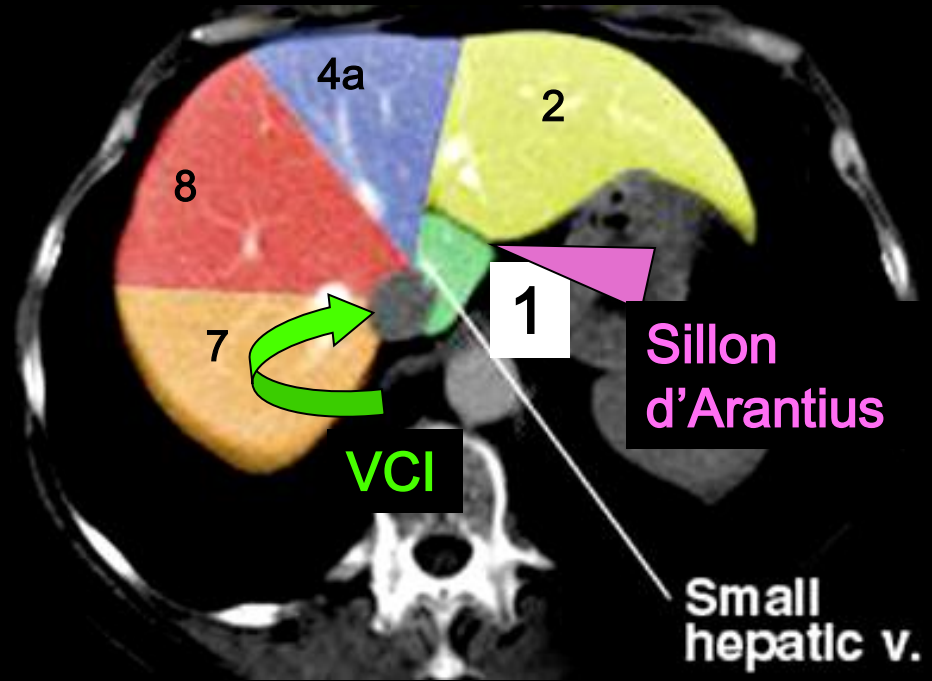
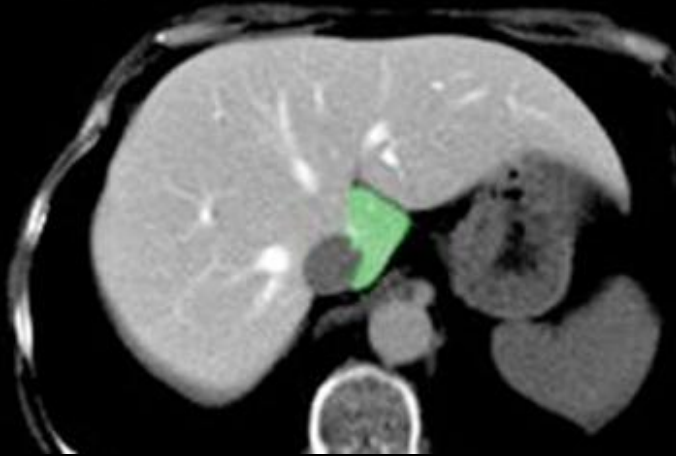


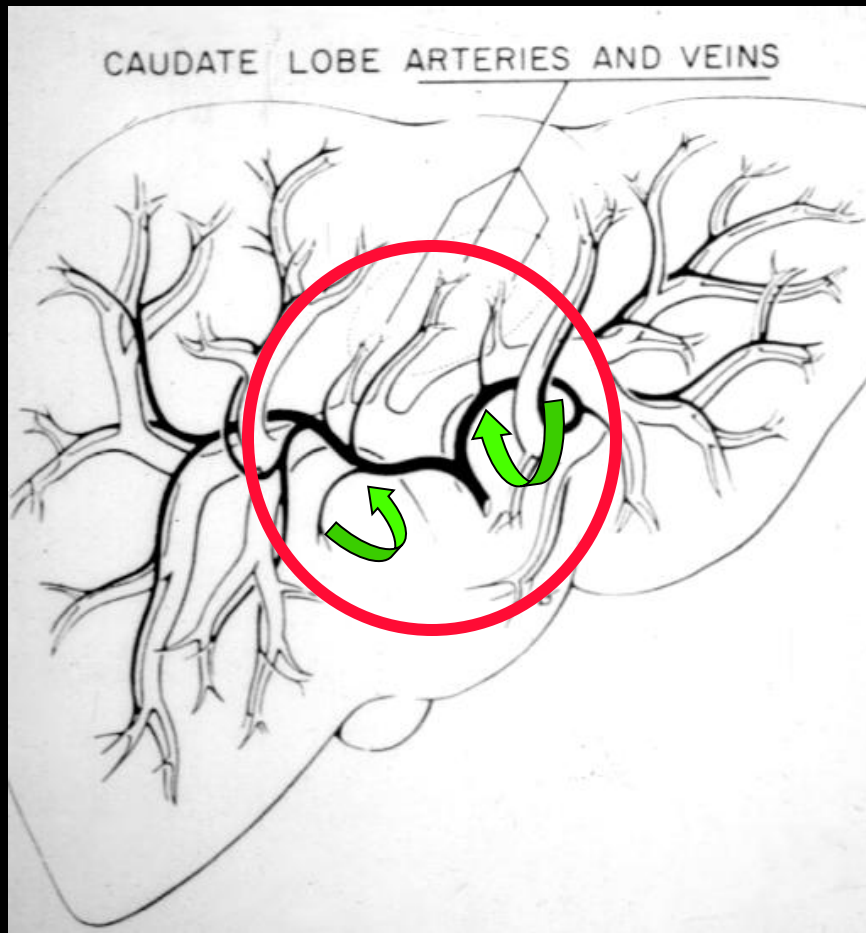
Right
hepatic v.

Gallbladder
fossa

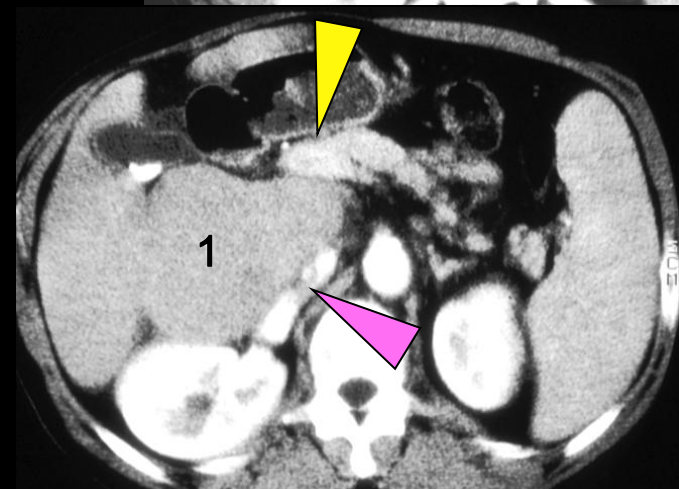
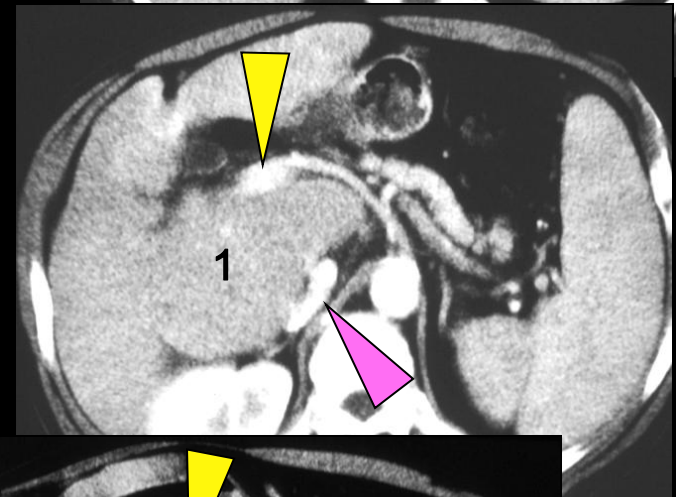


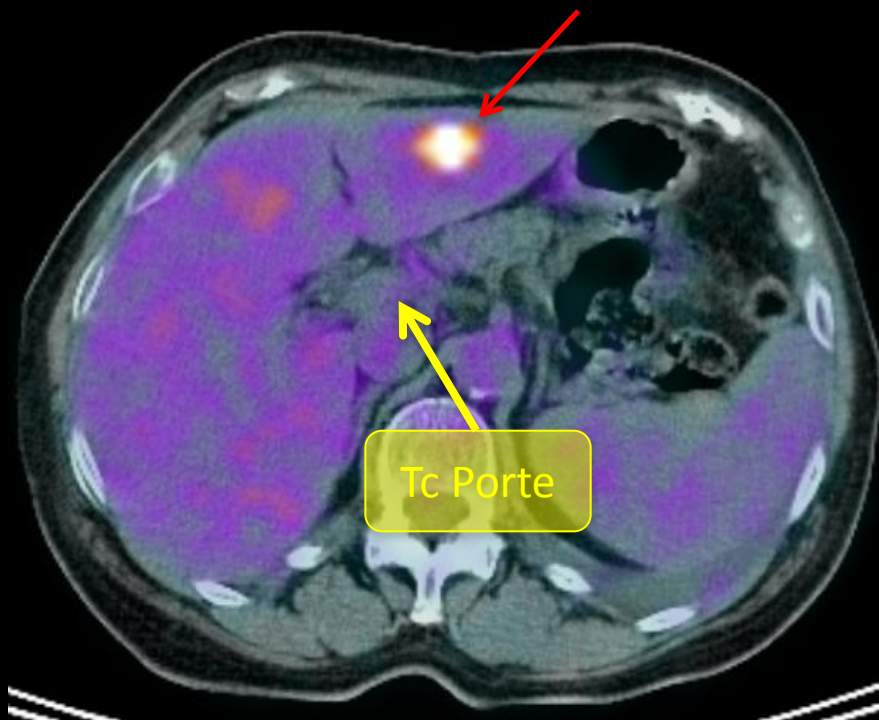
Segment 1 = lobe caudé





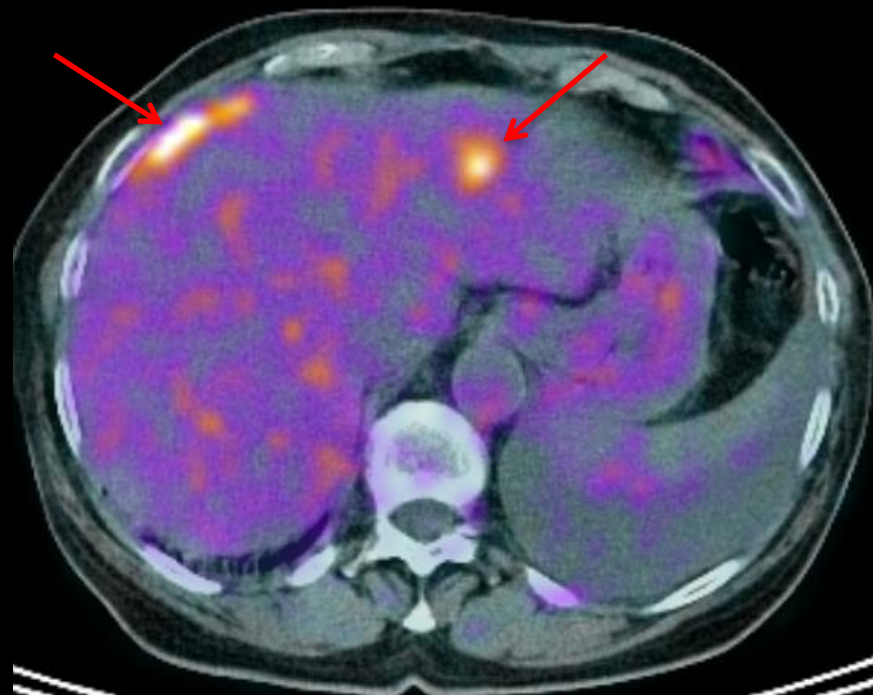
Hypertrophie du segment 1





Localisation ?

Segment III

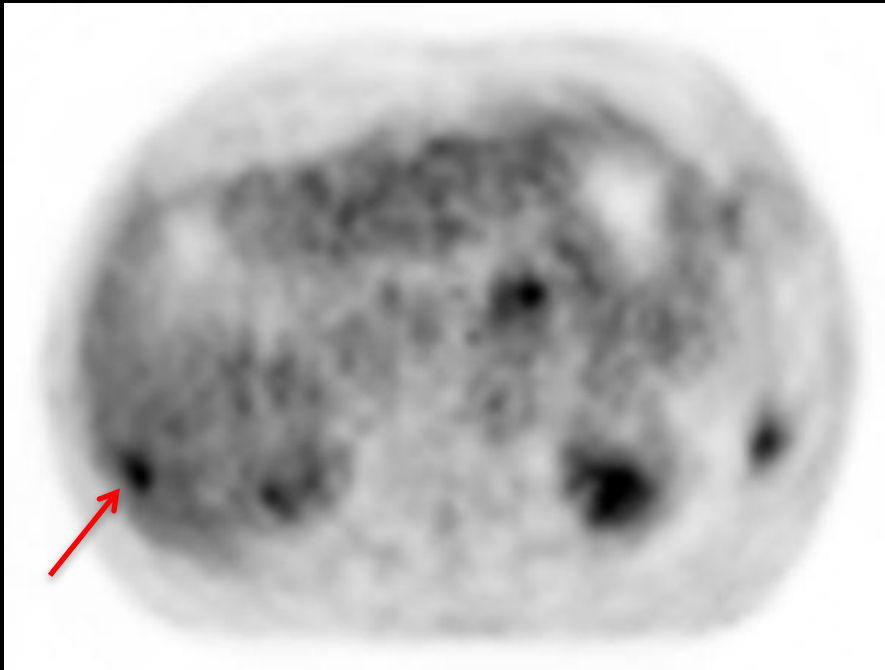
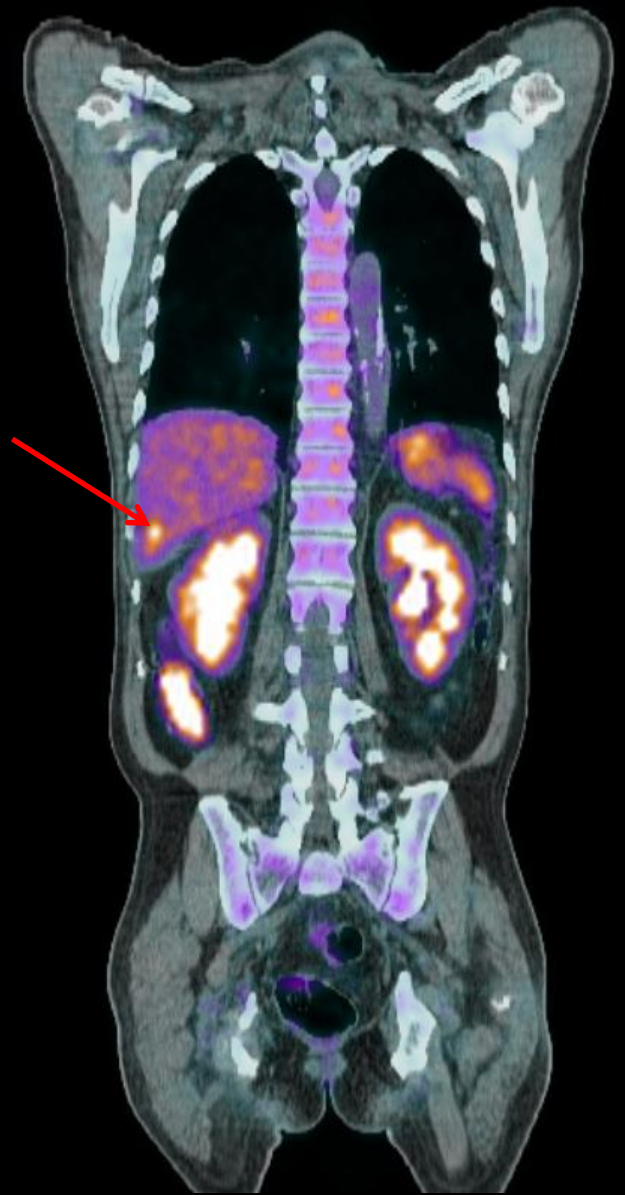
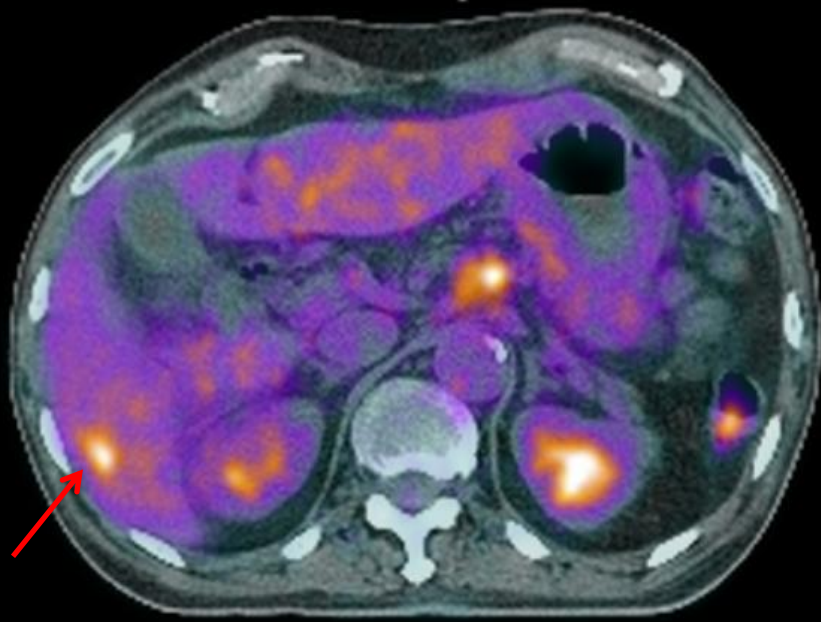


Localisation ?

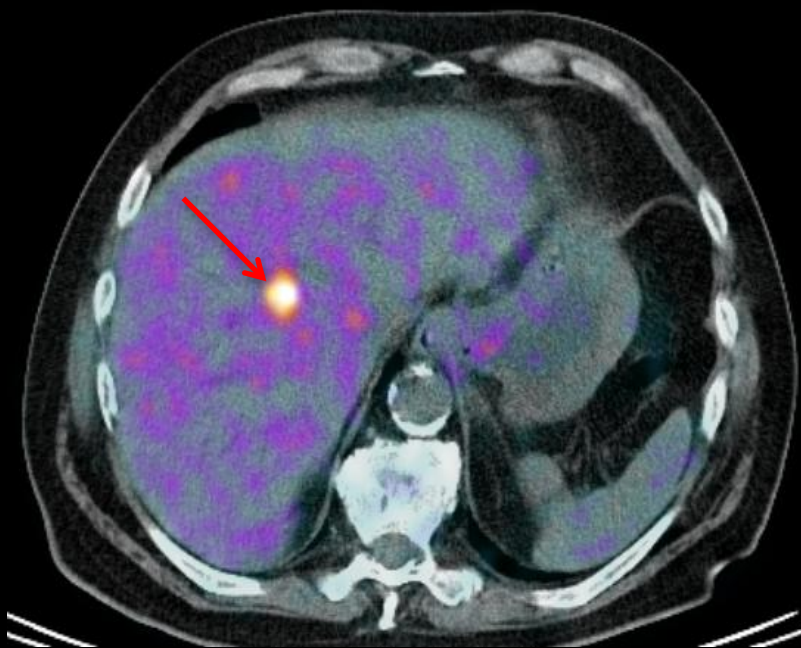
Segment II

Diagnostic ?

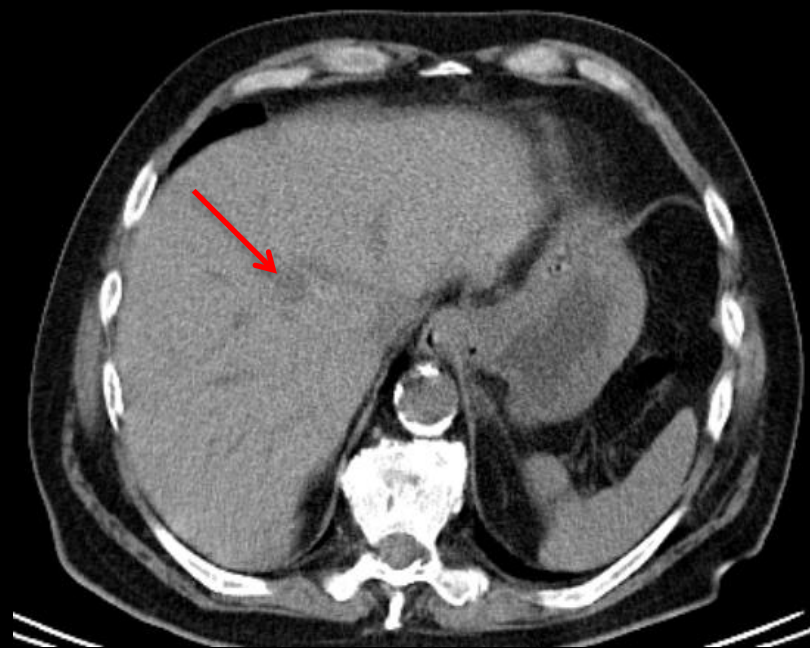
Carcinose



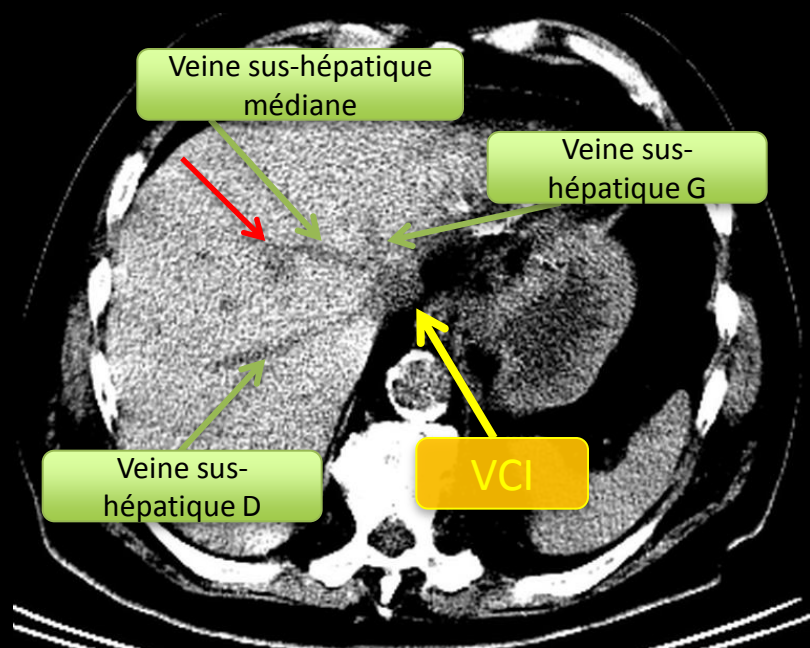
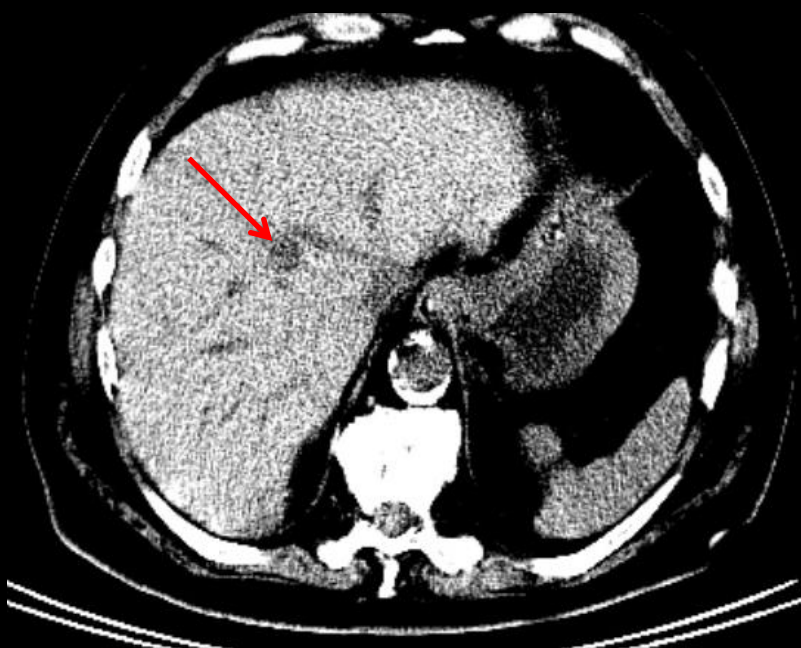
Localisation ? Segment VI

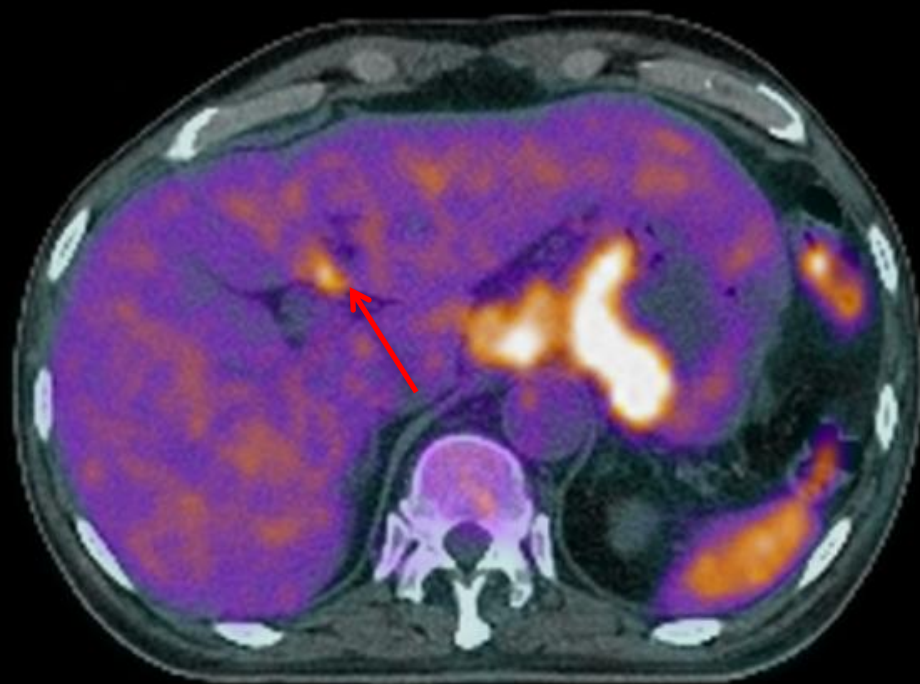
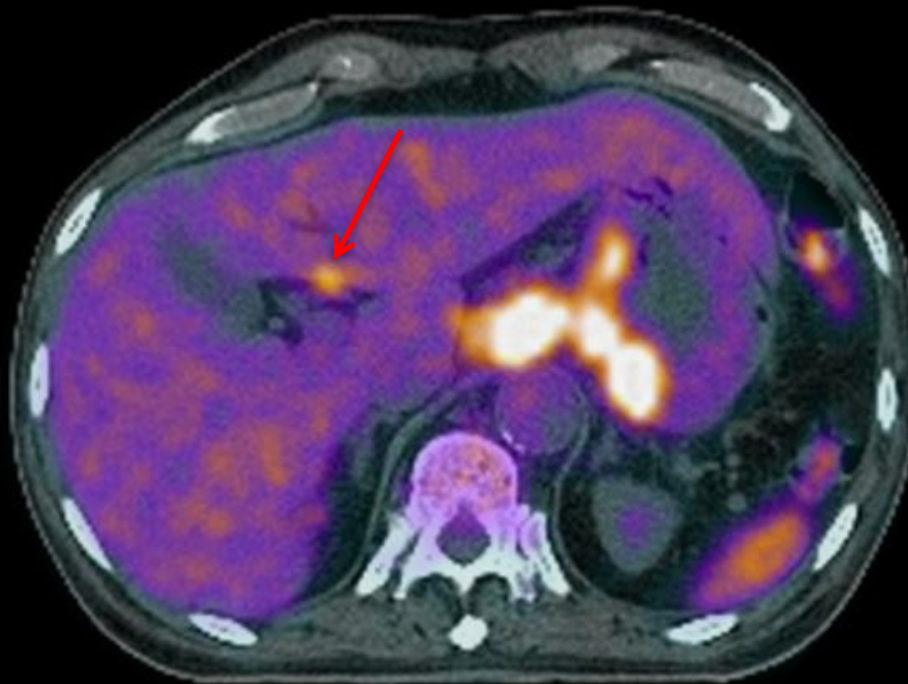


Localisation ?

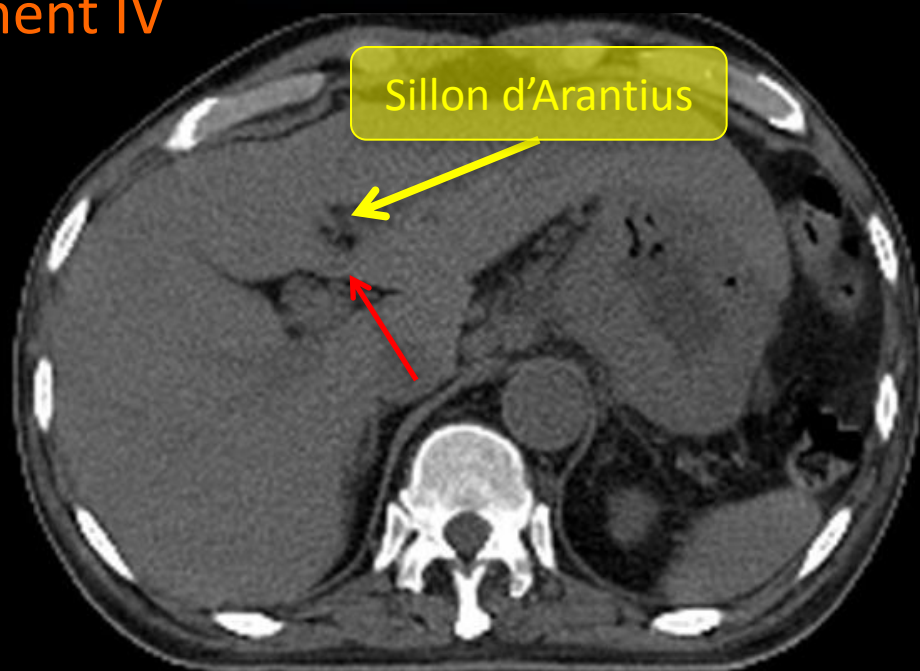
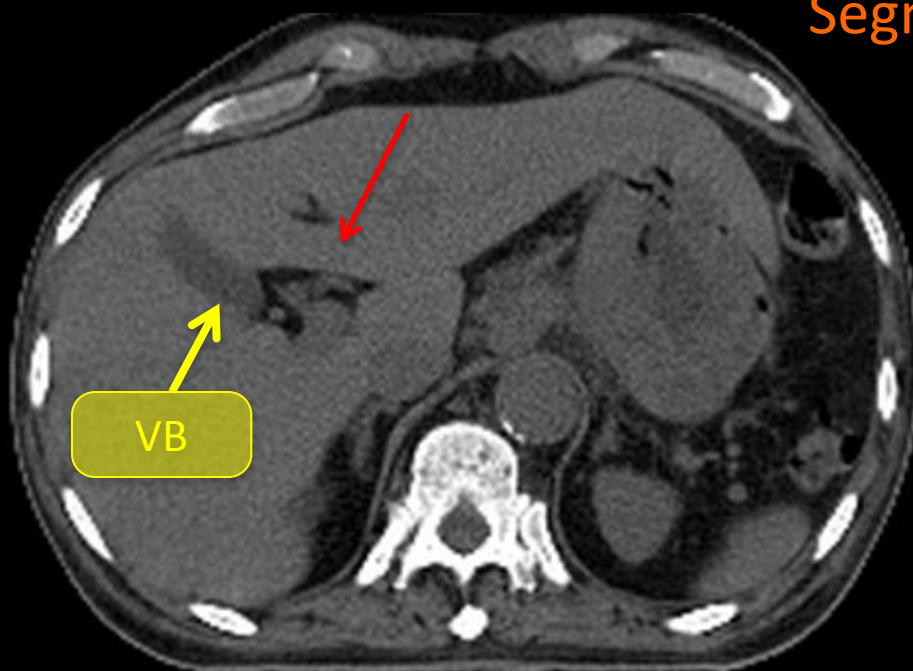


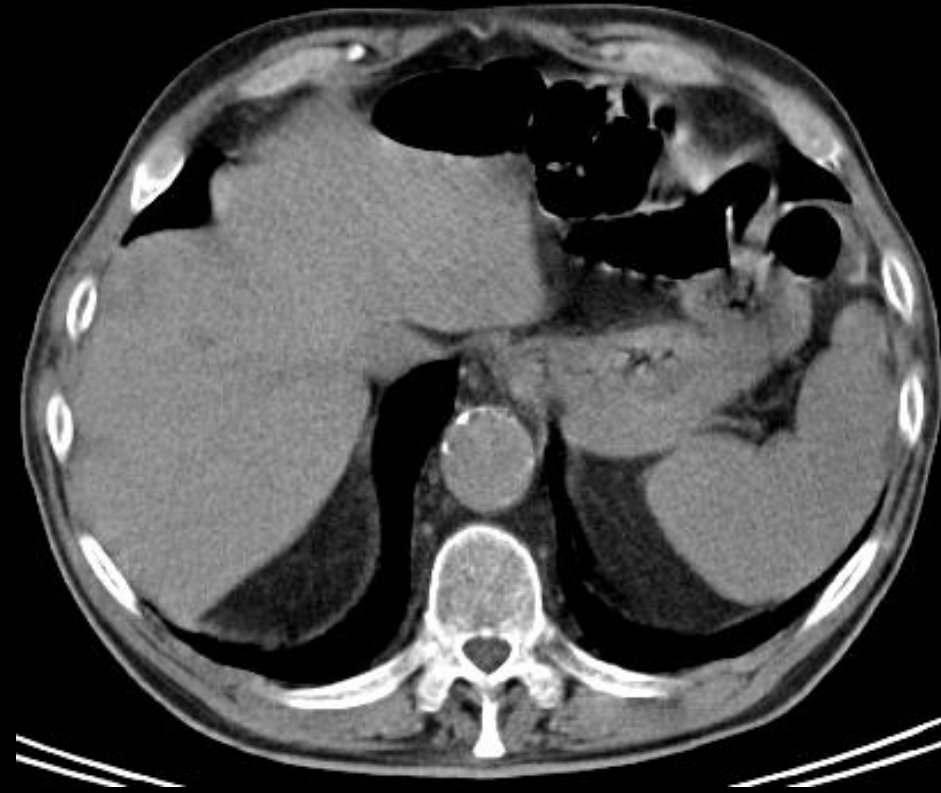
Segment VIII



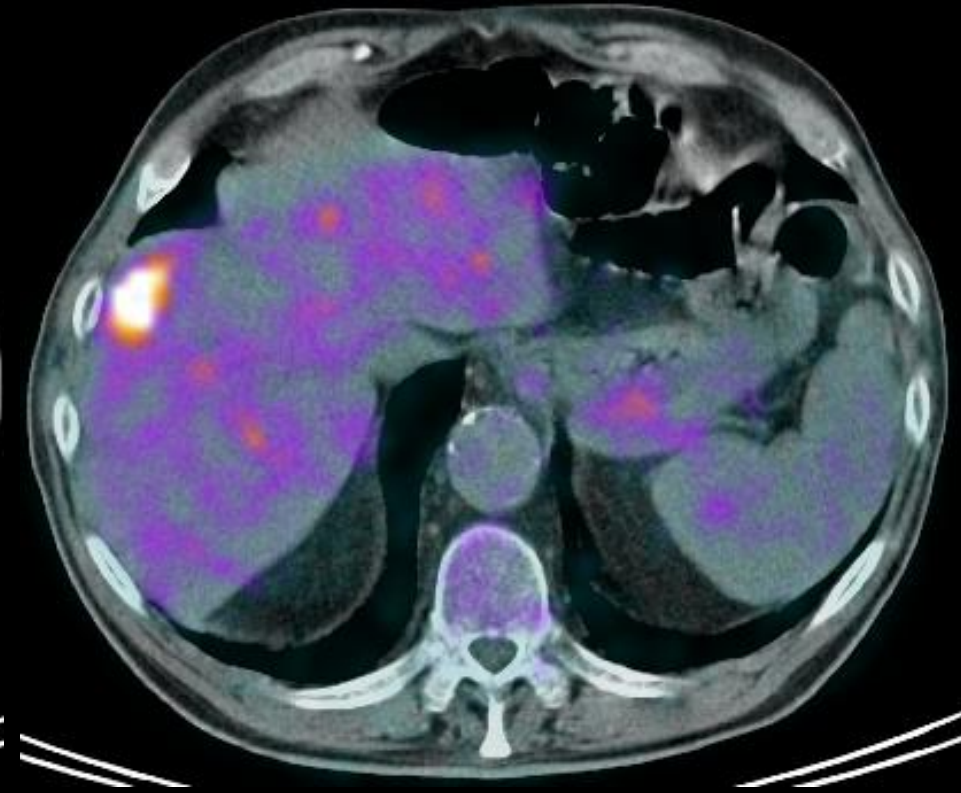


Segment IV

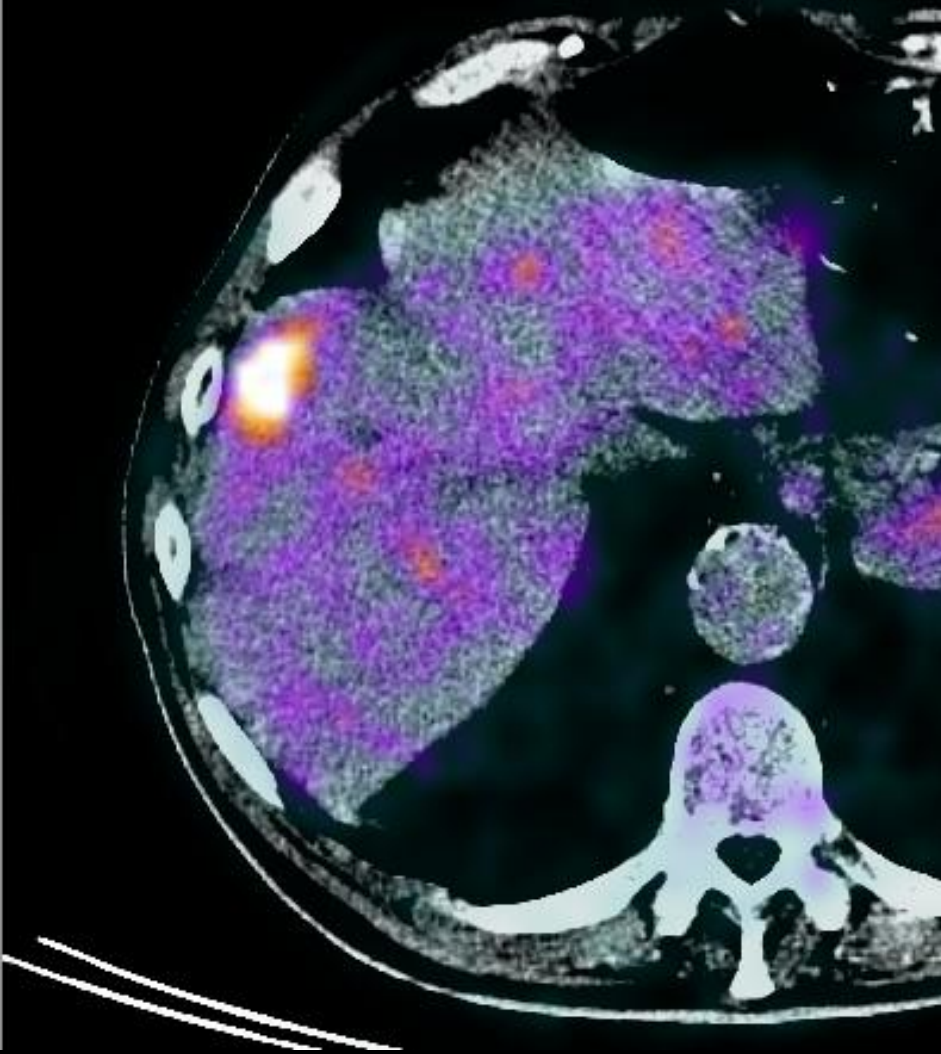
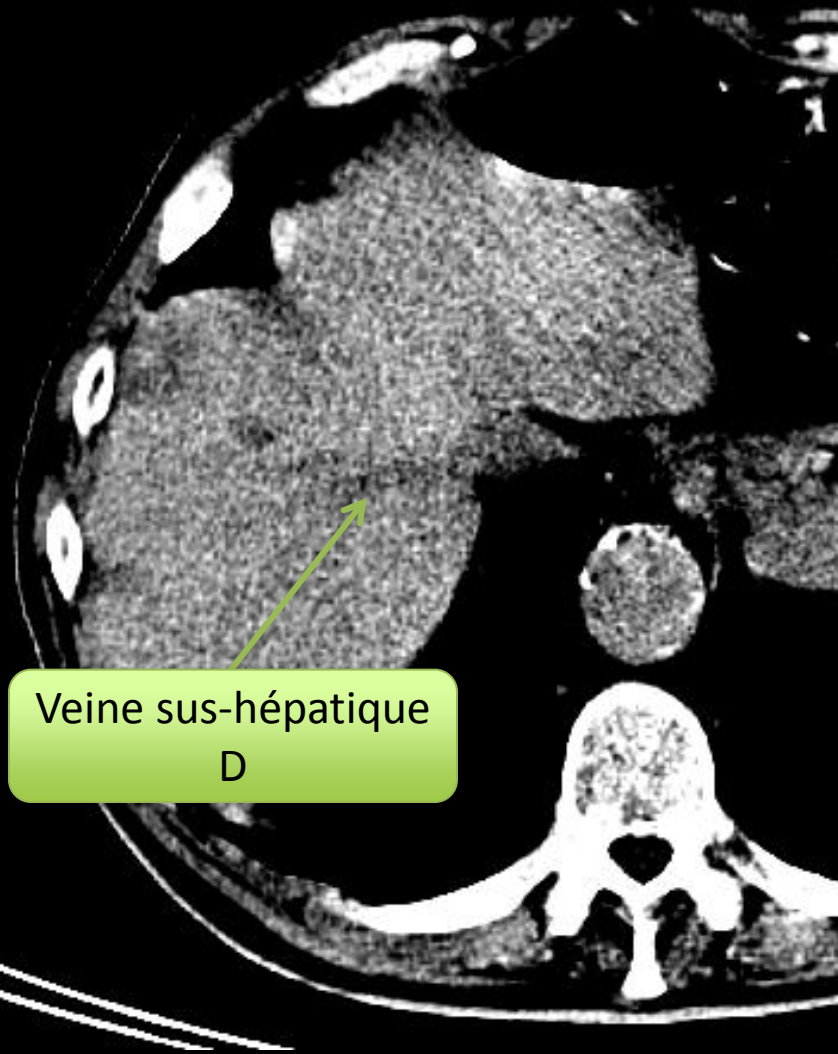




Localisation ?



Segment VIII



SCANNER

Etude morphologique



Cirrhose + CHC

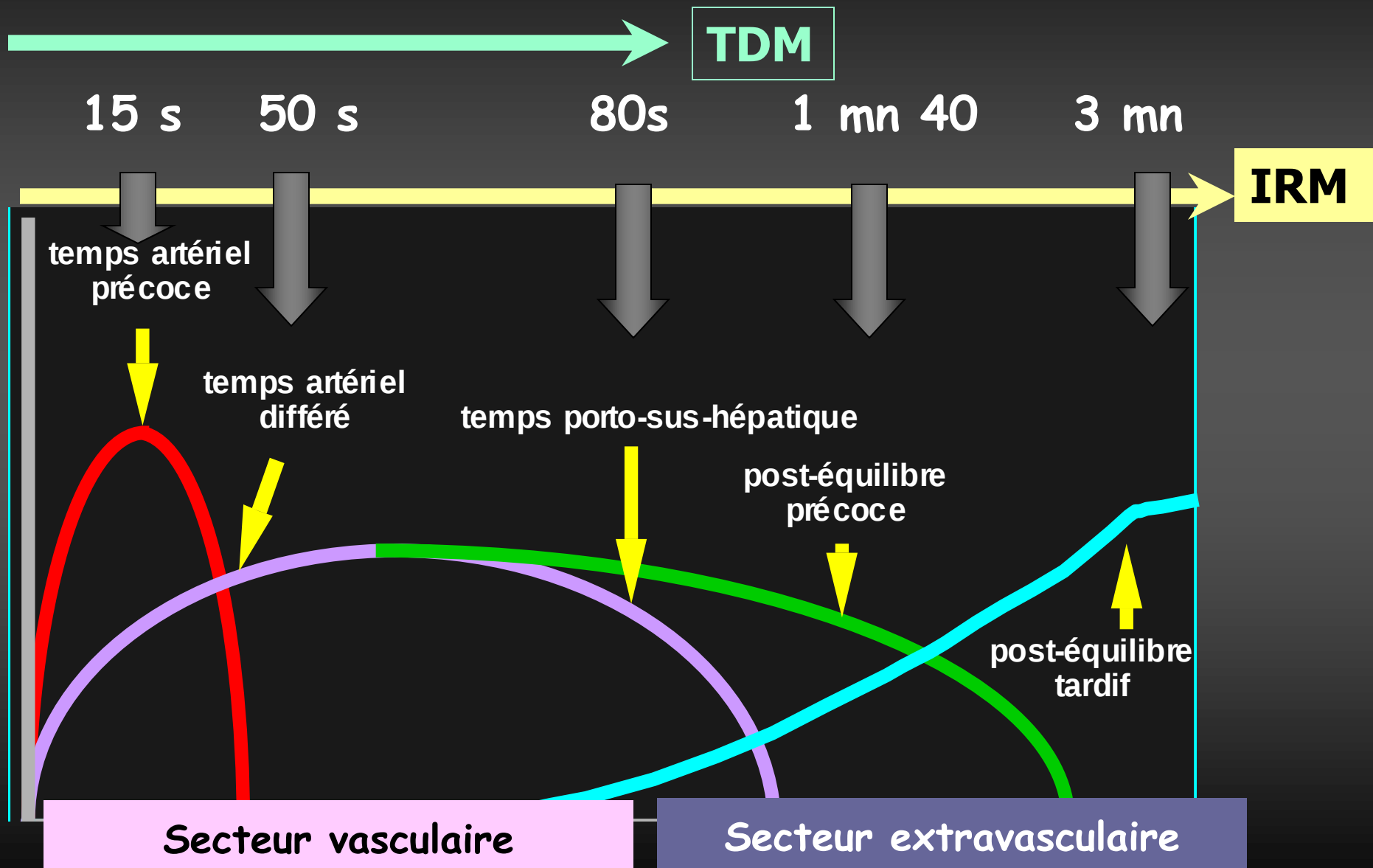
SCANNER

Etude morphologique

Détection et caractérisation de lésions focales : cinétique de rehaussement

- Spirale artérielle : intérêt pour bilan vasculaire pur
- Spirale artérielle tardive (35s) : rehaussement des lésions hypervasculaires
- Spirale portale (70-80s) : lésions hypovascularisées et étude portale
- Spirale tardive : lésions fibreuses

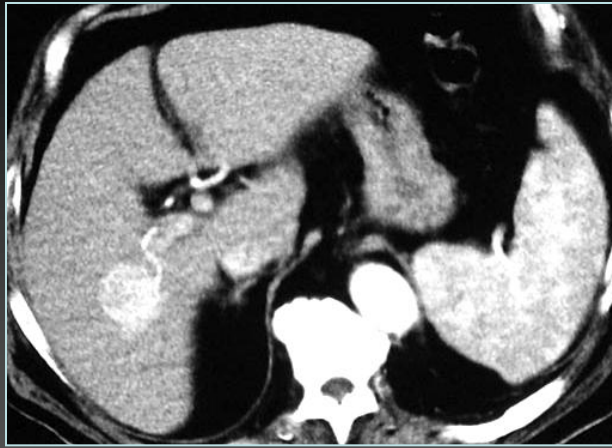
Signification « tissulaire » du rehaussement



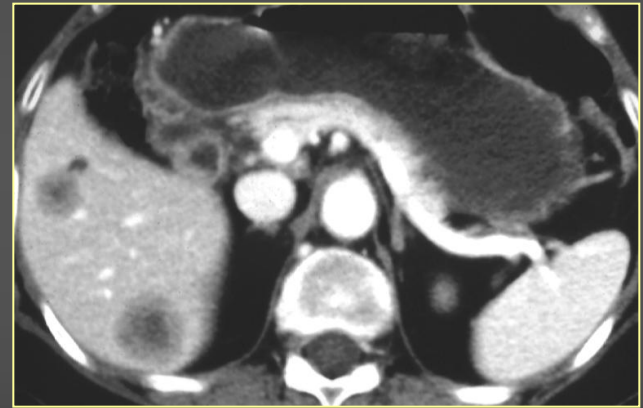
1er passage

2ème passage

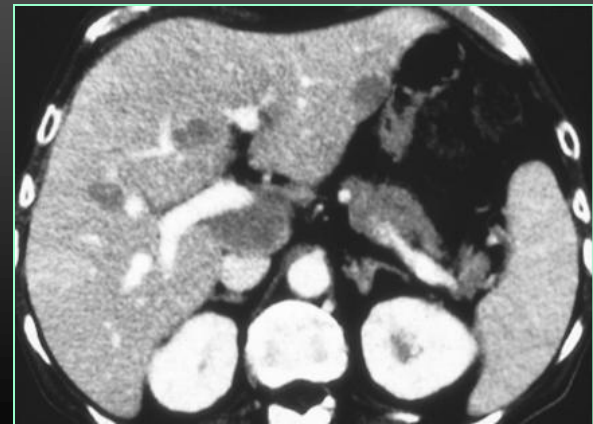
CHC

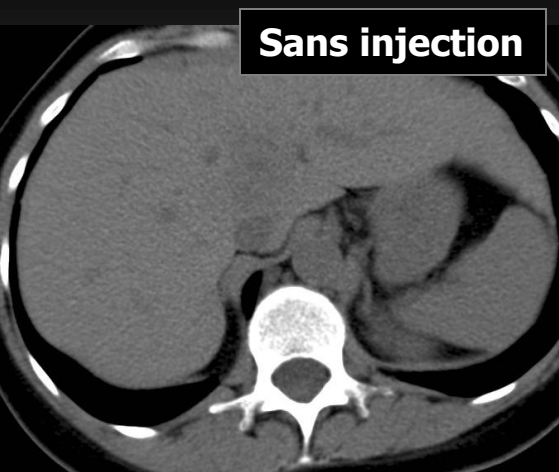


métastases

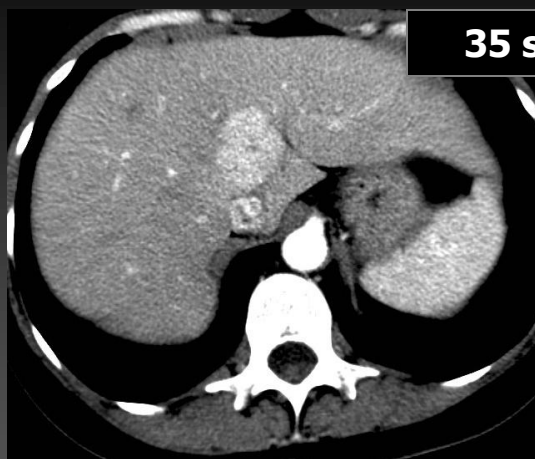


LMNH

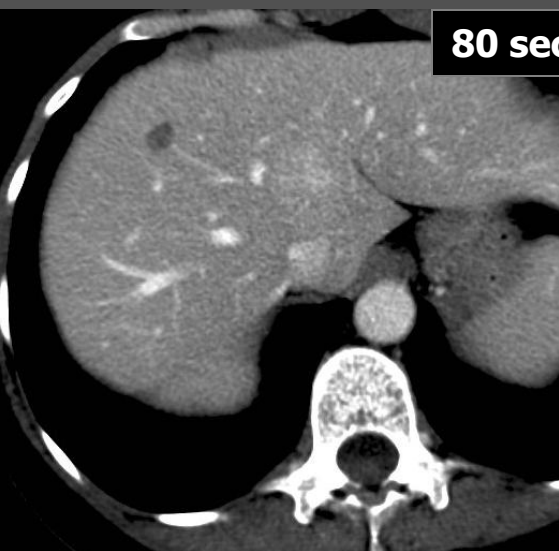
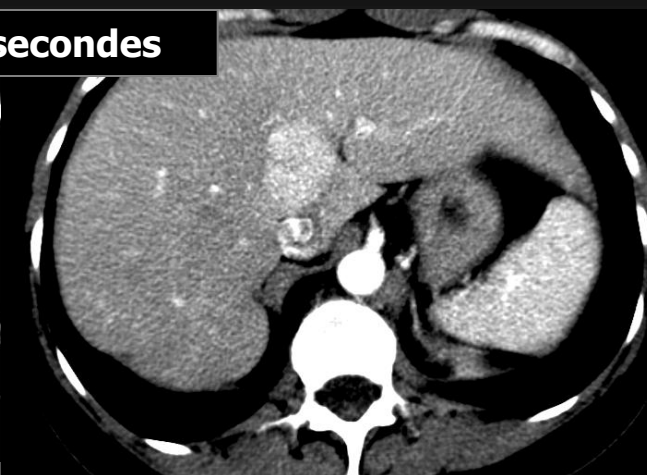




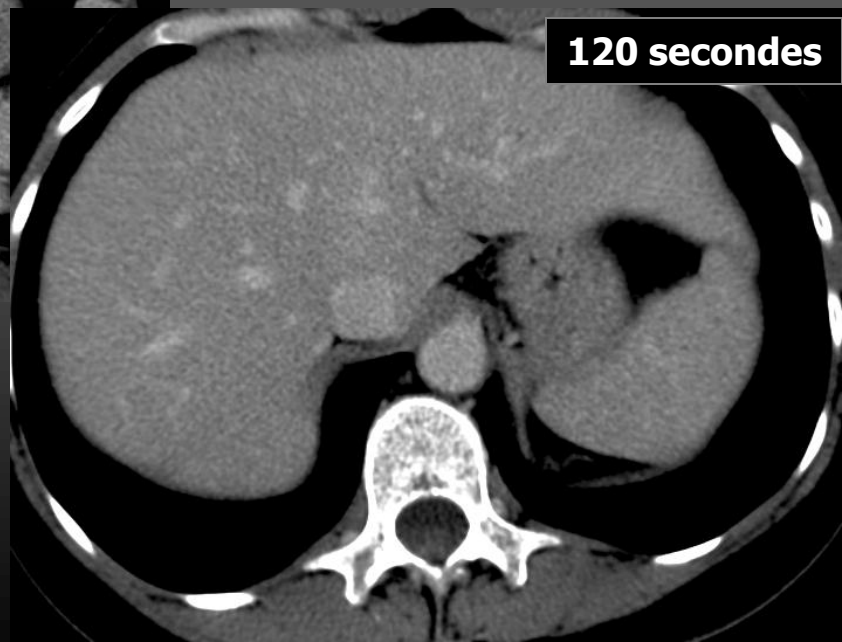
Sans injection



35 secondes

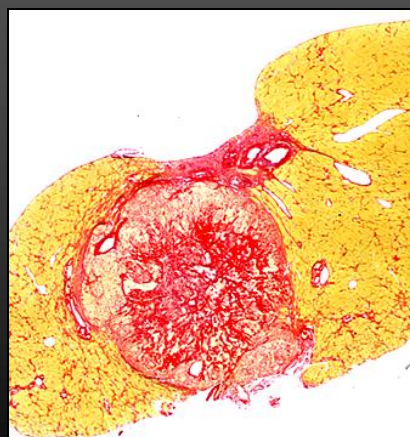
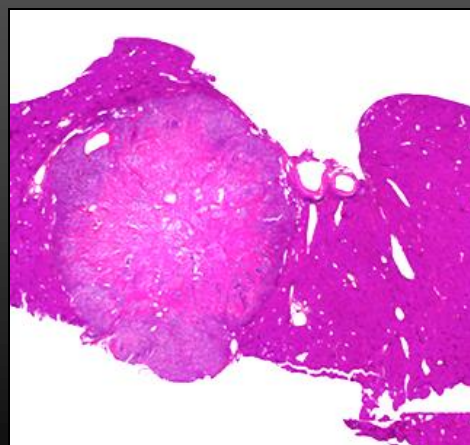
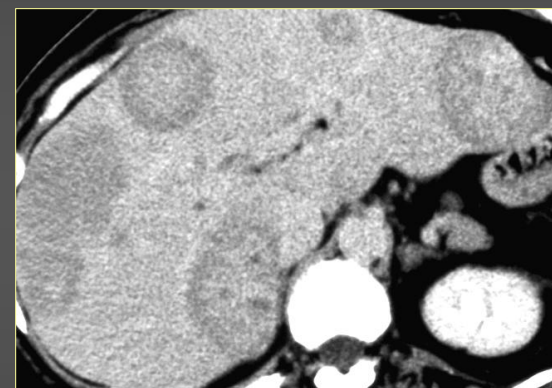
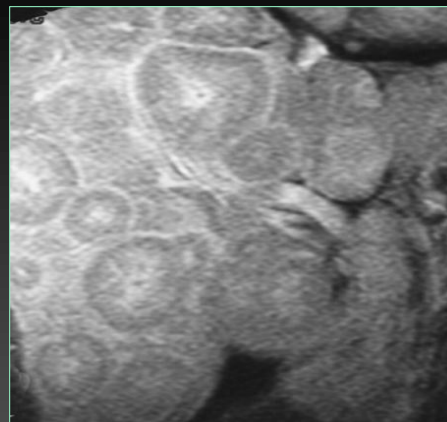
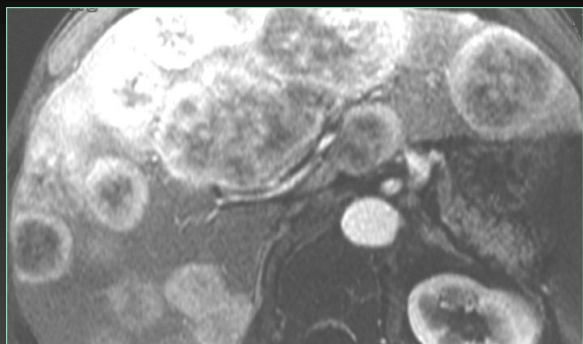


80 secondes



120 secondes

HNF



**métastases
« fibreuses »**

IRM: Protocole d'exploration

- **Les indispensables :**

- Séquences en pondération **T2**
- Séquences en pondération **T1**
 - Echo de gradient
 - In Phase/Out of Phase
 - Avec et sans saturation de graisse
- Séquences en pondération **T1 après injection de chélate de gadolinium** non spécifique
 - En 2D
 - En 3D : Lava
 - Acquisitions dynamiques temps artériel, portal
 - Acquisitions tardives voire ultratardives

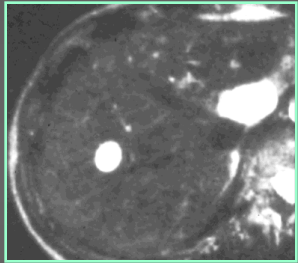
- **Les options**

- Séquences fortement pondérées T2
- Diffusion
- Produits de contraste hépatospécifiques

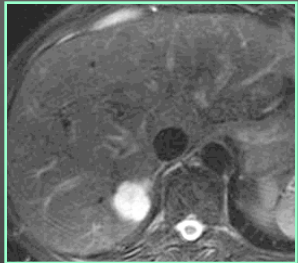
Séquences en pondération T2

Intérêt fondamental dans la **caractérisation tissulaire** +++

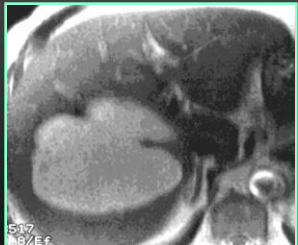
Hypersignal T2 liquidien



1. Angiome

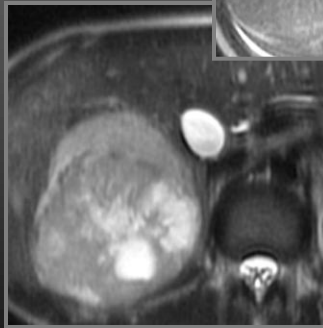
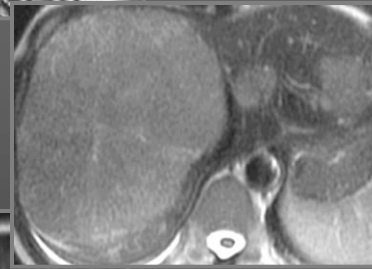
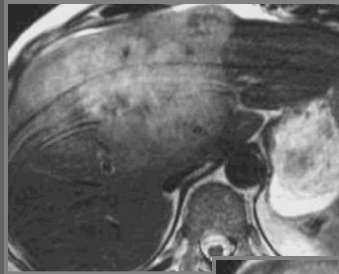


2. Lésion
liquidienne



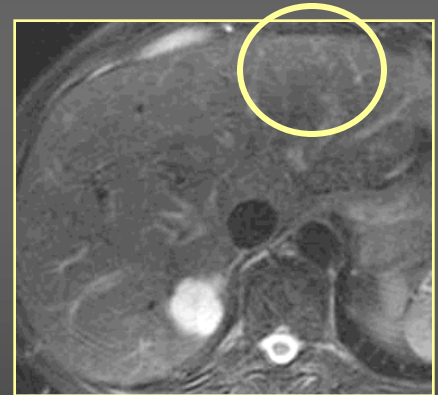
3. Lipome

Hypersignal T2
modéré



Nature tissulaire

Isosignal T2



Séquences en pondération T1

Séquence EG T1 sans injection

- Détection des lésions : en **hyposignal** par rapport au foie
- Base avant injection de gadolinium
- Lésions en **hypersignal** :

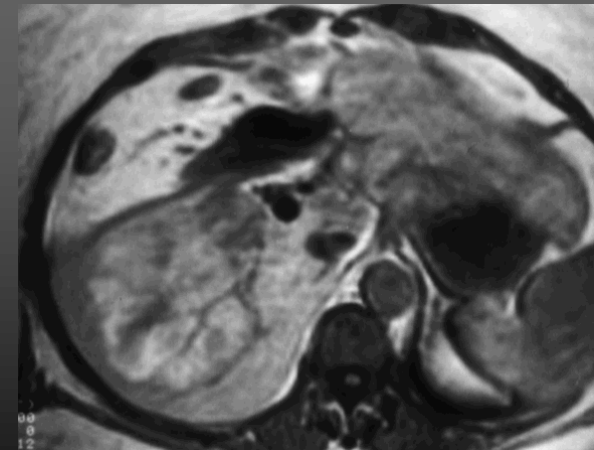
Hémorragie



Graisse



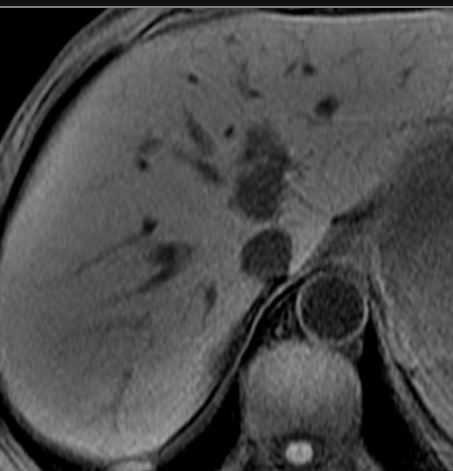
Mélanine



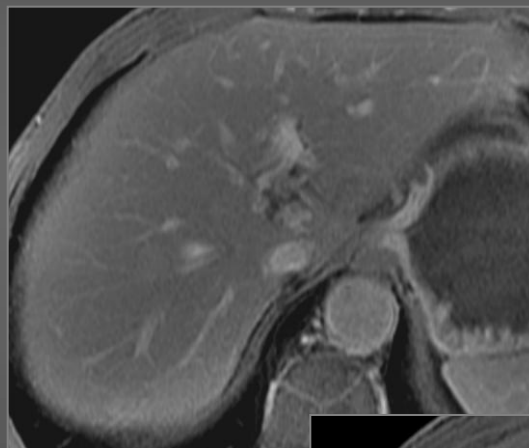
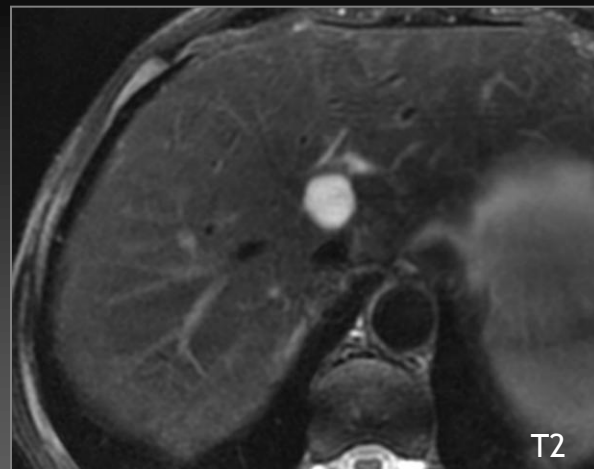
Séquences en pondération T1

Séquence EG T1 avec injection

- Deux possibilités
 - En 2D
 - En 3D
- Intérêts :
 - Caractérisation lésionnelle
 - Etude de la cinétique de rehaussement

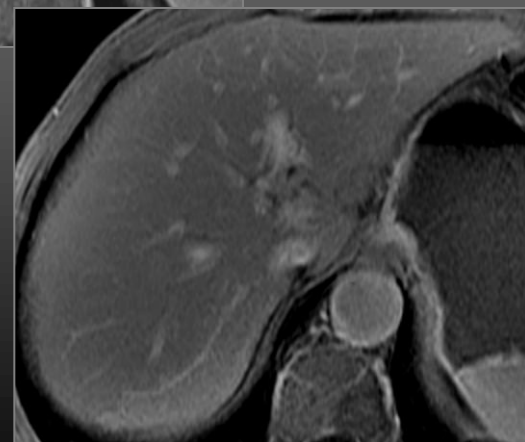


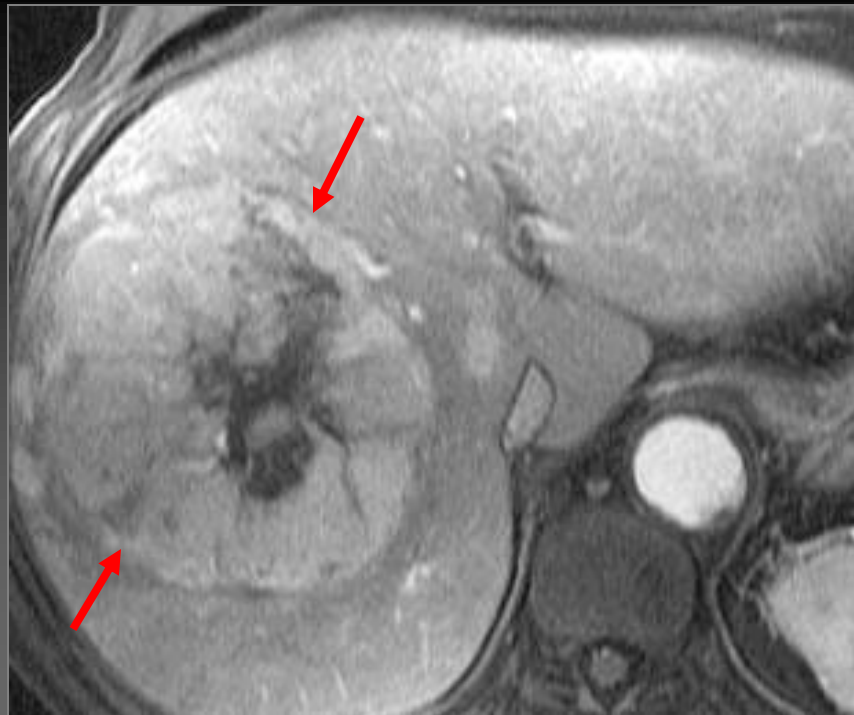
Séquence 3 D dynamique



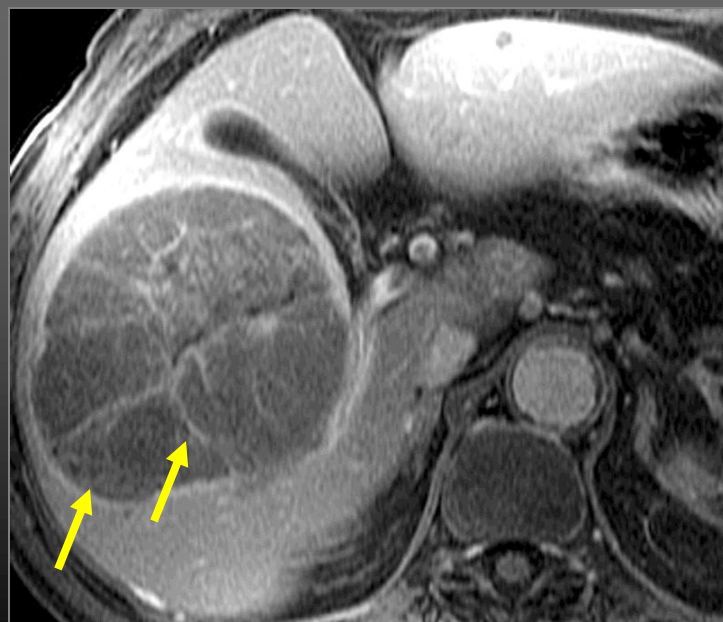
Étude de la cinétique
de rehaussement

angiome



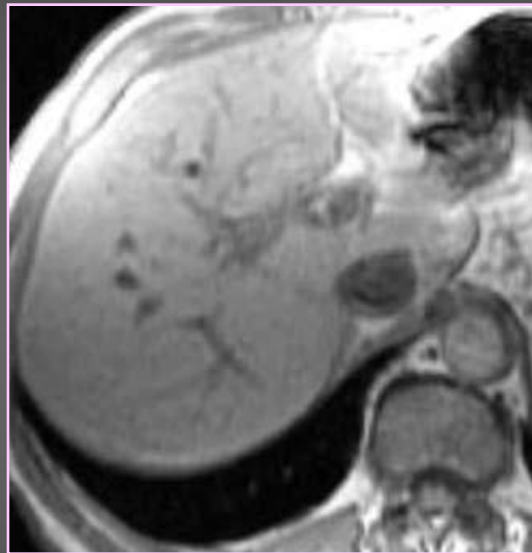
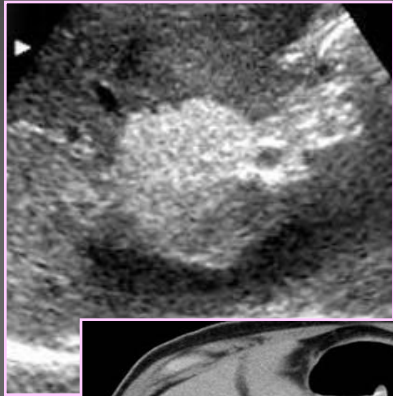


CHC

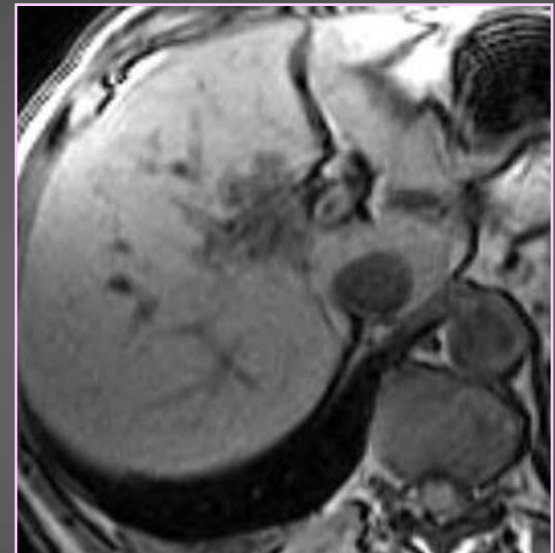


Séquences en pondération T1

Séquence In Phase/ Out of Phase



In Phase (TE 4.2)



Out of Phase(TE 2.1)

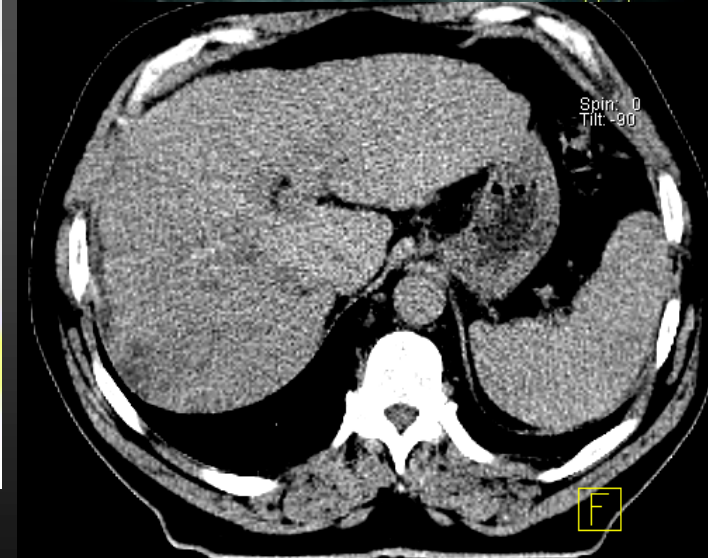
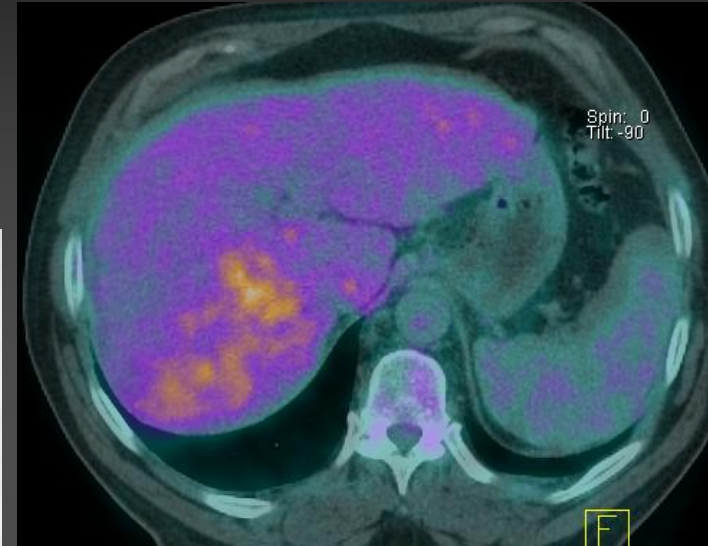
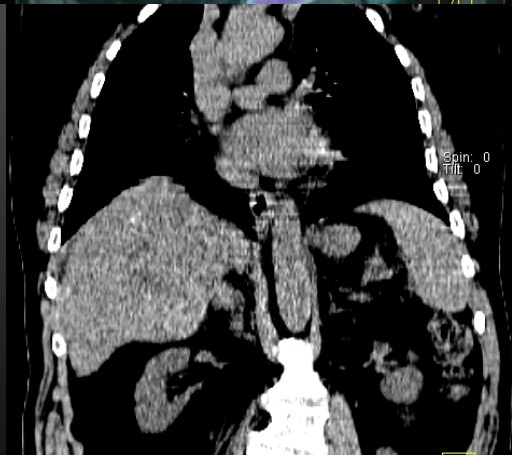
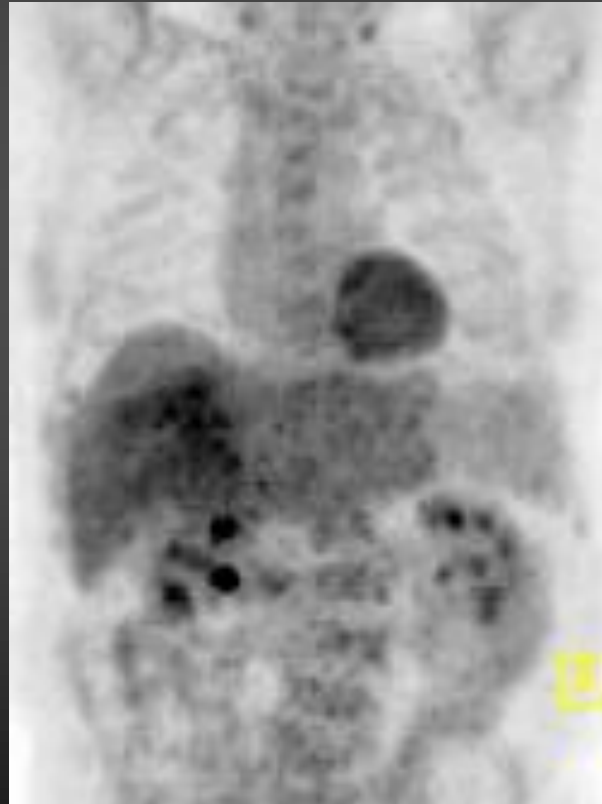
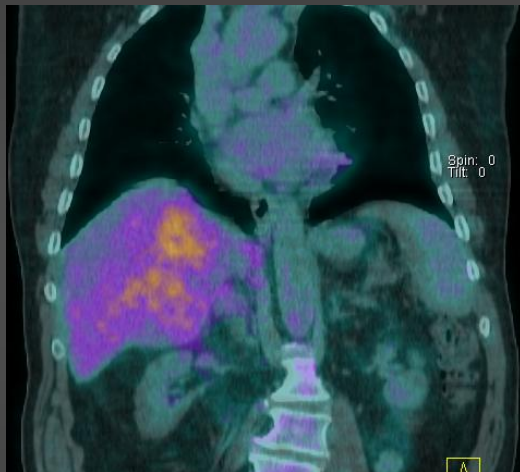
- Stéatose** focale ou diffuse
- Adénome
- CHC bien différencié

TEP FDG - Carcinome hépato-cellulaire

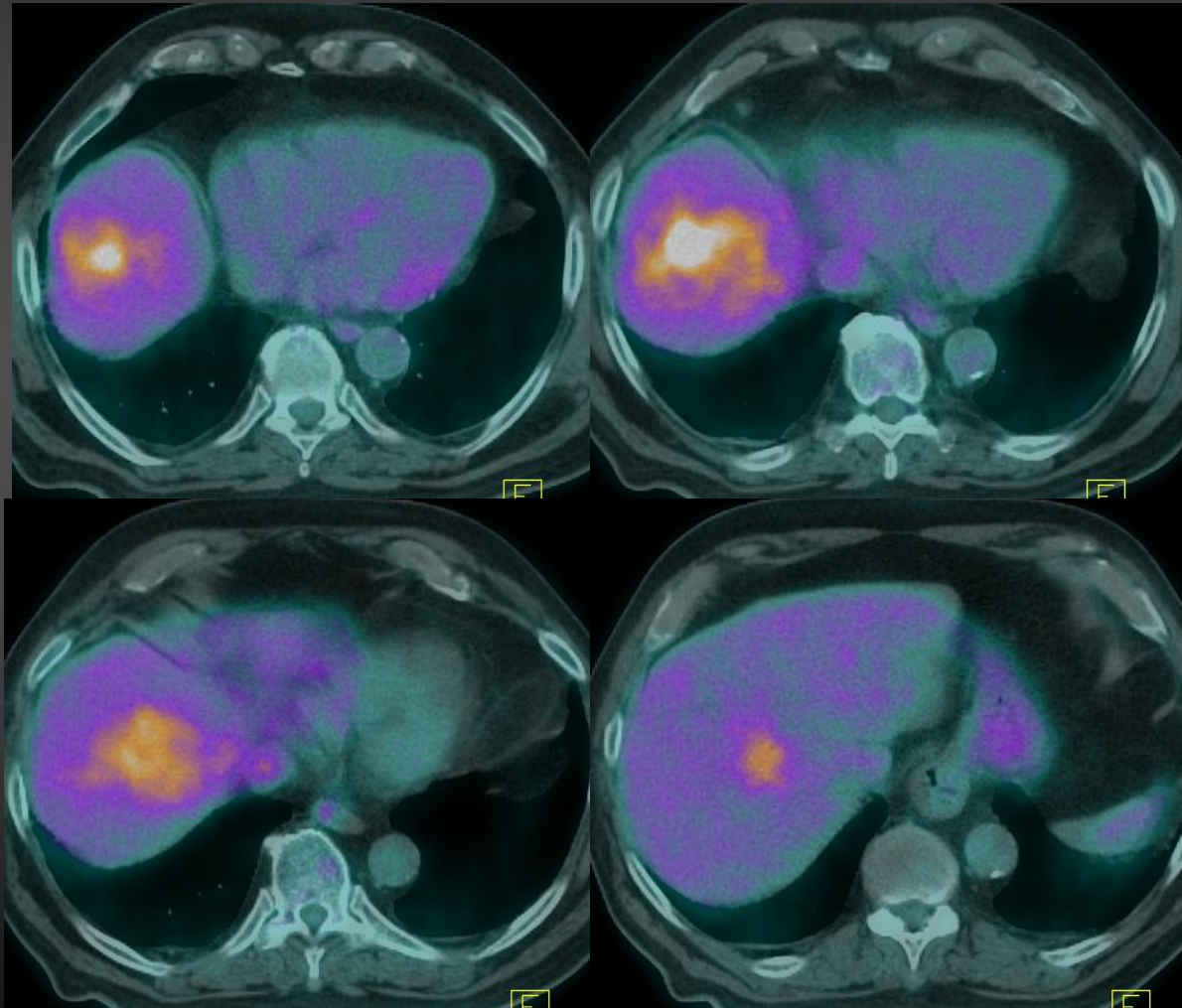
- Captation de FDG inconstante (Se environ 50-60%) par la lésion primitive, ce qui rend cet examen peu discriminant
- Souvent, la captation de FDG est plus importante au niveau des nodules de régénération qu'au niveau du CHC
- Intérêt dans le bilan d'extension pour la recherche de lésions à distance (en vue d'une transplantation)

The role of [18F]fluorodeoxyglucose positron emission tomography imaging in the evaluation of hepatocellular carcinoma, Wudel et al, Am Surg. 2003 Feb;69(2):117-24

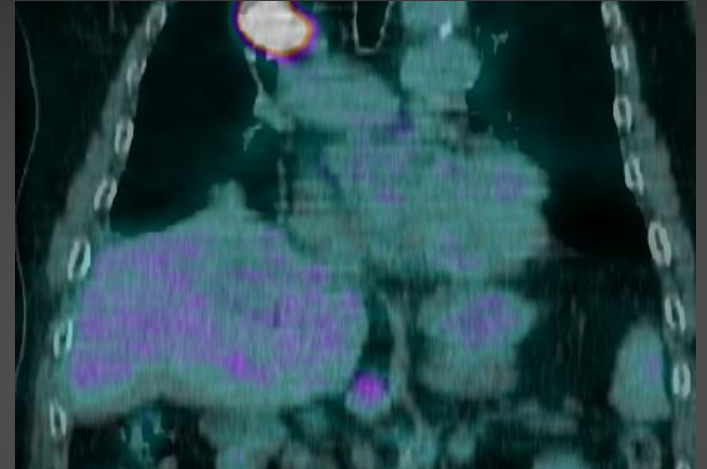
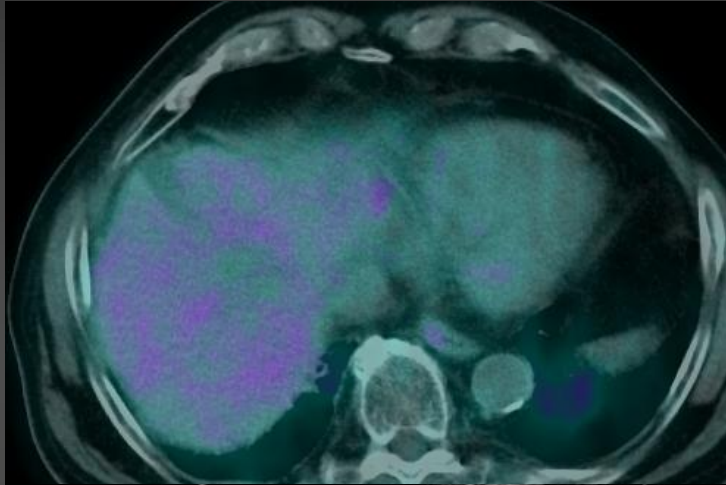
Carcinome hépato-cellulaire



Carcinome hépato-cellulaire : centrage RTH conformationnelle

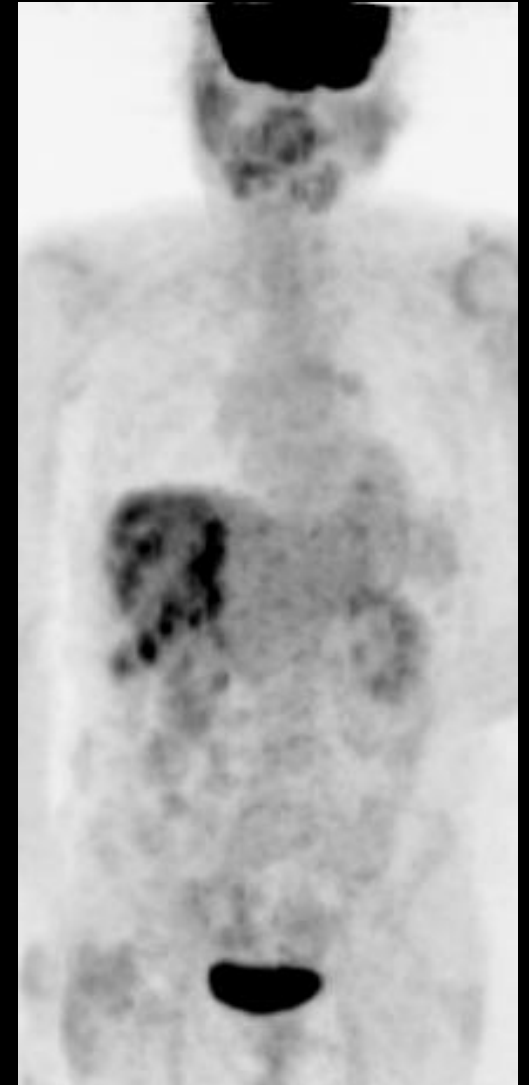
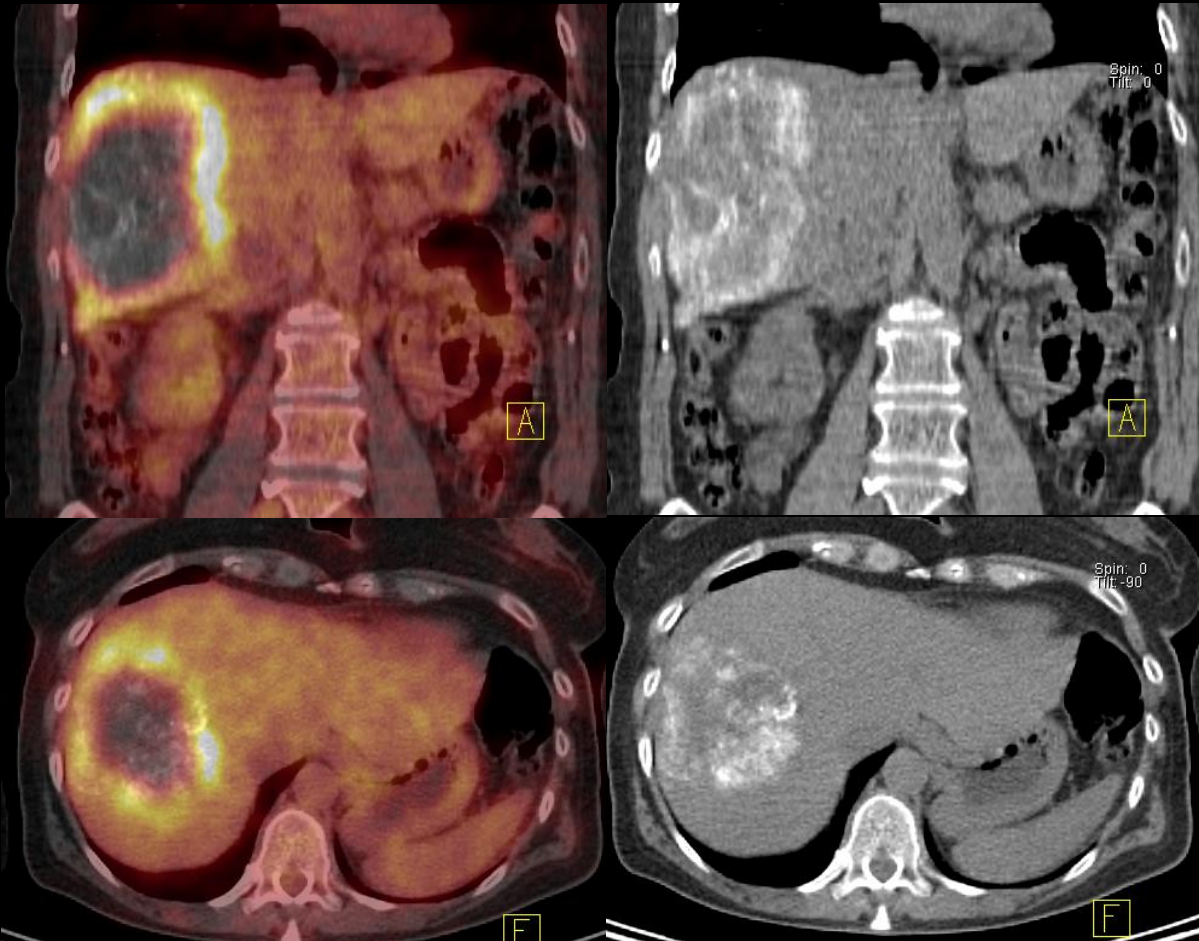


Carcinome hépato-cellulaire : réévaluation post RTH



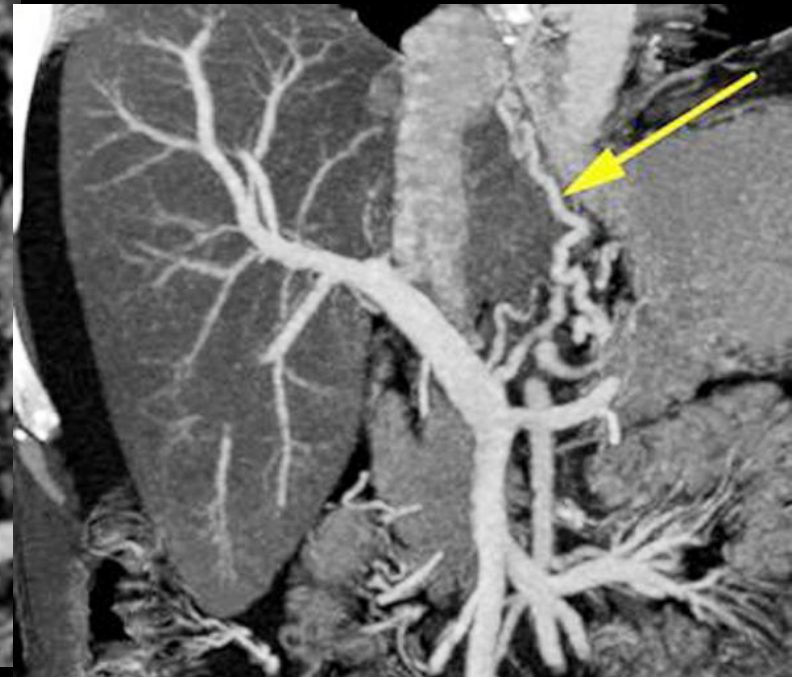
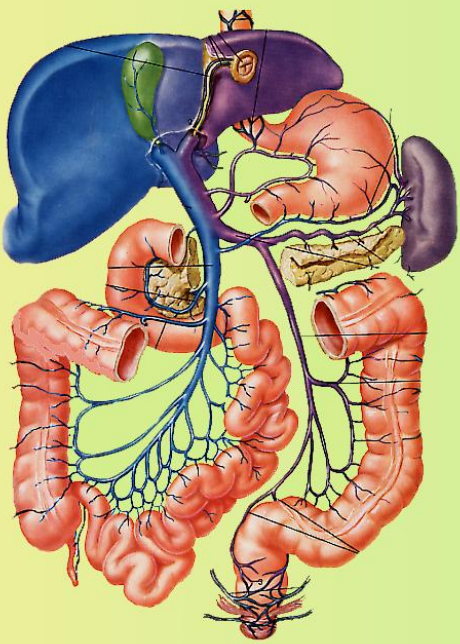
Autres Pathologies : Echinococcose alvéolaire

Patiente traitée depuis 8 ans, recherche d'évolutivité



TRONC PORTE

Veine porte



Aéroportie

Présence de gaz dans le système porte et / ou mésentérique

Aéroportie:

- . foie gauche préférentiellement
- . aspect tubulé, ramifié aérique
- . distribution périphérique jusqu'à la capsule

Diagnostic différentiel

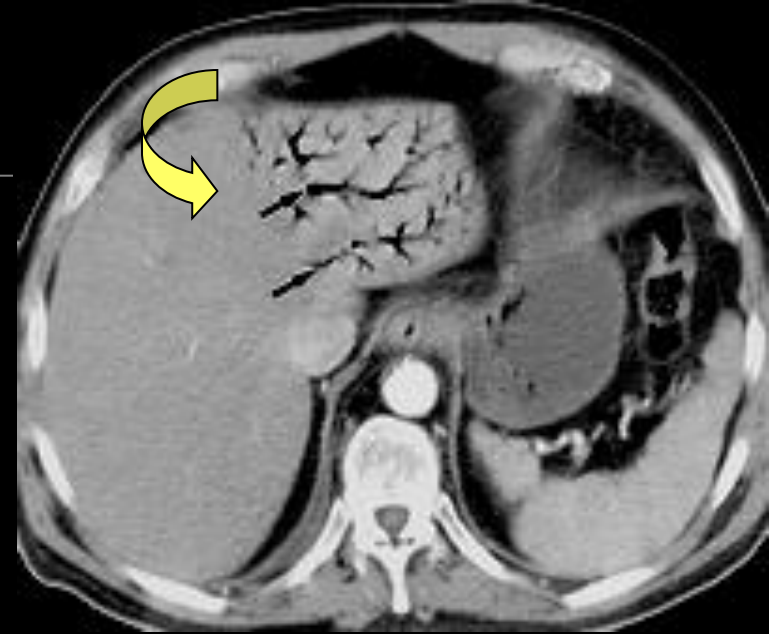
Aérobilie:

- . localisation plus centrale
- . respect de la périphérie
- . foie gauche

Physiopathologie mal comprise

Facteurs favorisants donnant 4 groupes étiologiques:

1. Altérations de la barrière intestinale
2. Distensions digestives
3. Infections intra-abdominales
4. Inconnues

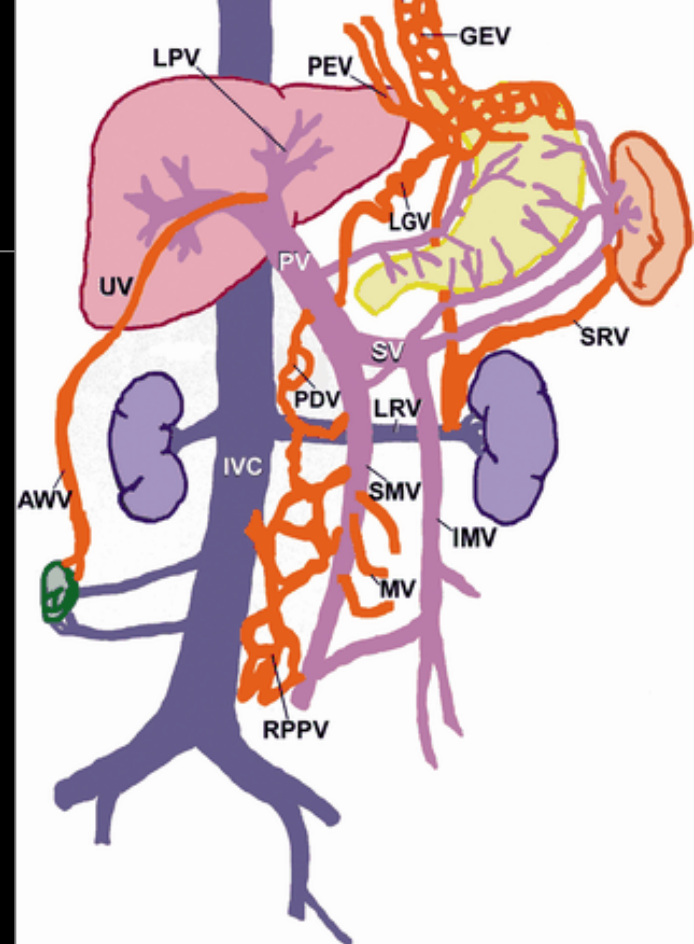


Hypertension portale

**P portale > 15 mm Hg ou
gradient porto cave > 5 mm Hg**

- bloc intra hépatique en cas de cirrhose
- bloc supra hépatique (VCI VH)
- bloc infra hépatique (TP)

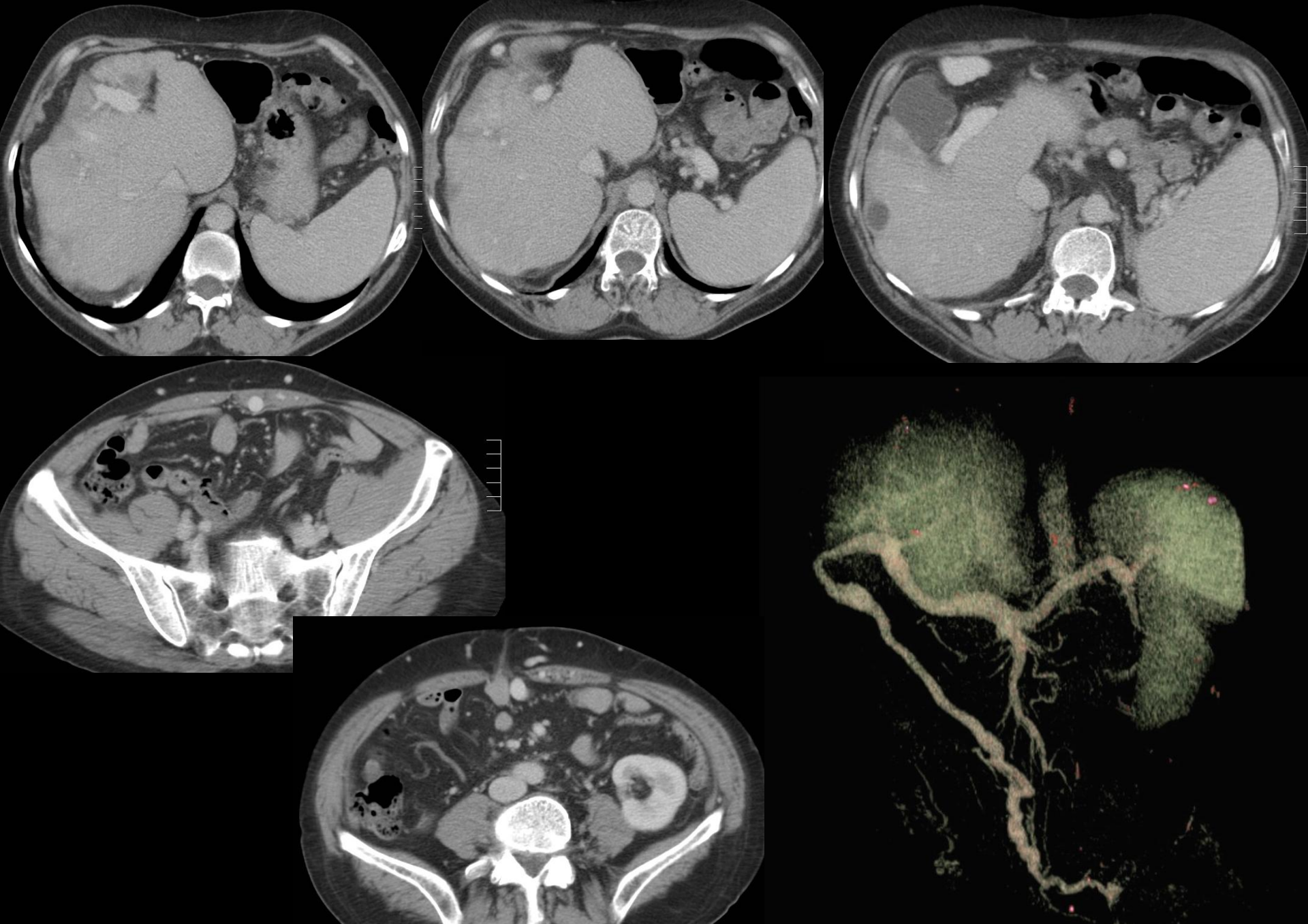
HTP segmentaire si l'obstacle siège sur le trajet
du tronc spléno mésentérique



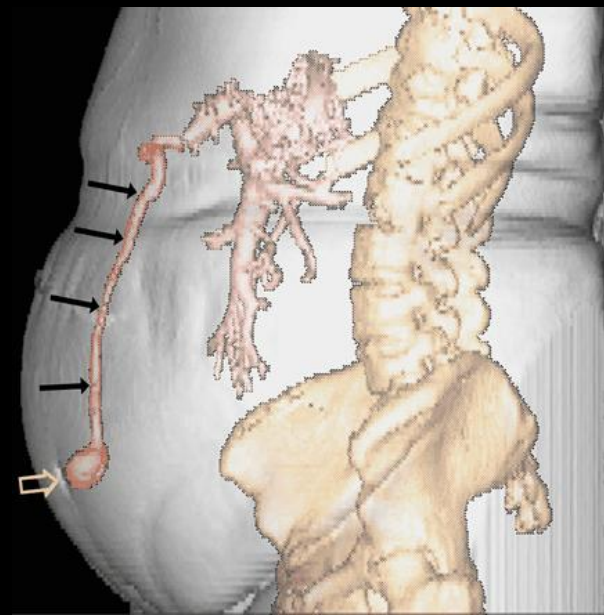
>>> anastomoses porto systémiques (porto-caves) vers le milieu basse pression

>>> anastomoses vers le lit portal dites hépatopètes

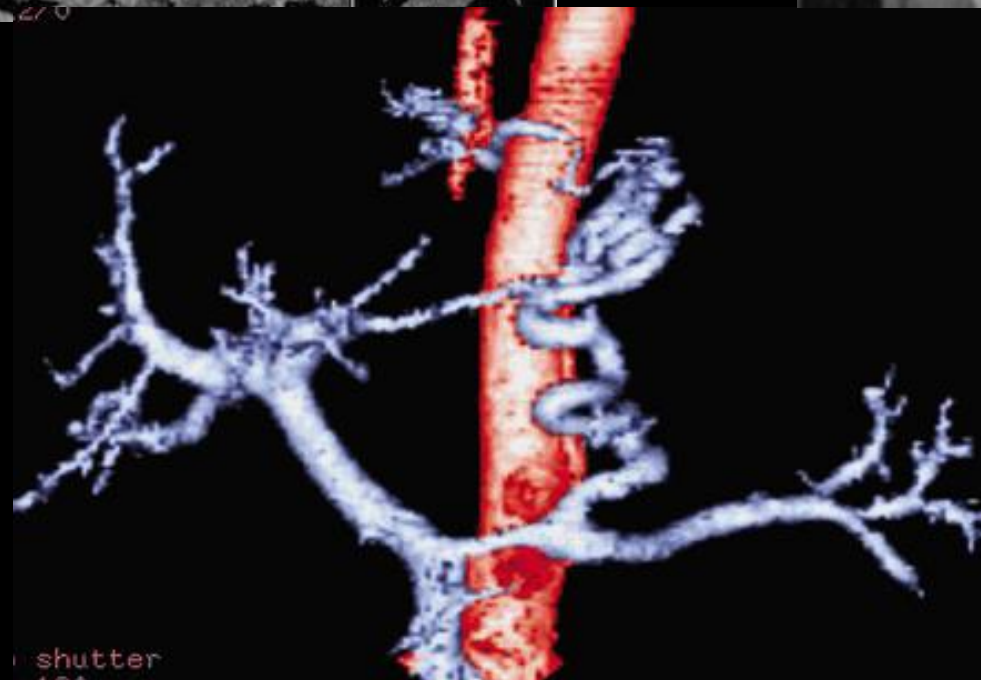
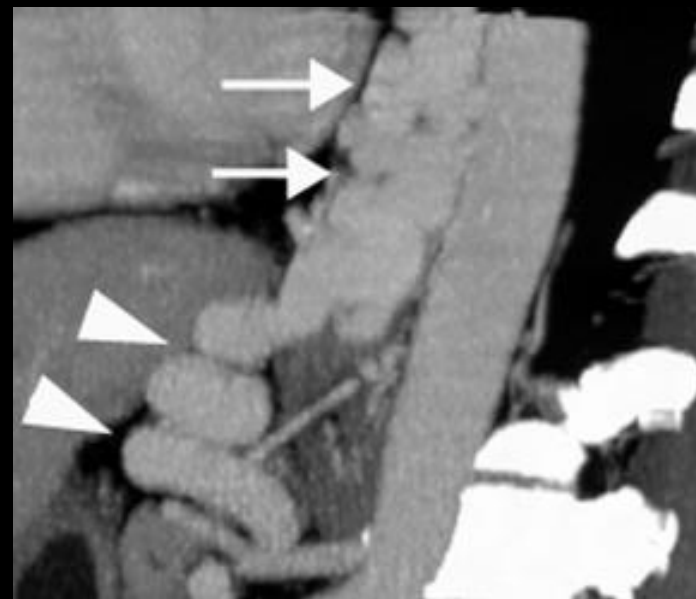
>>> complications ascite hémorragie digestive encéphalopathie



Reperméabilisation de la veine paraombilicale



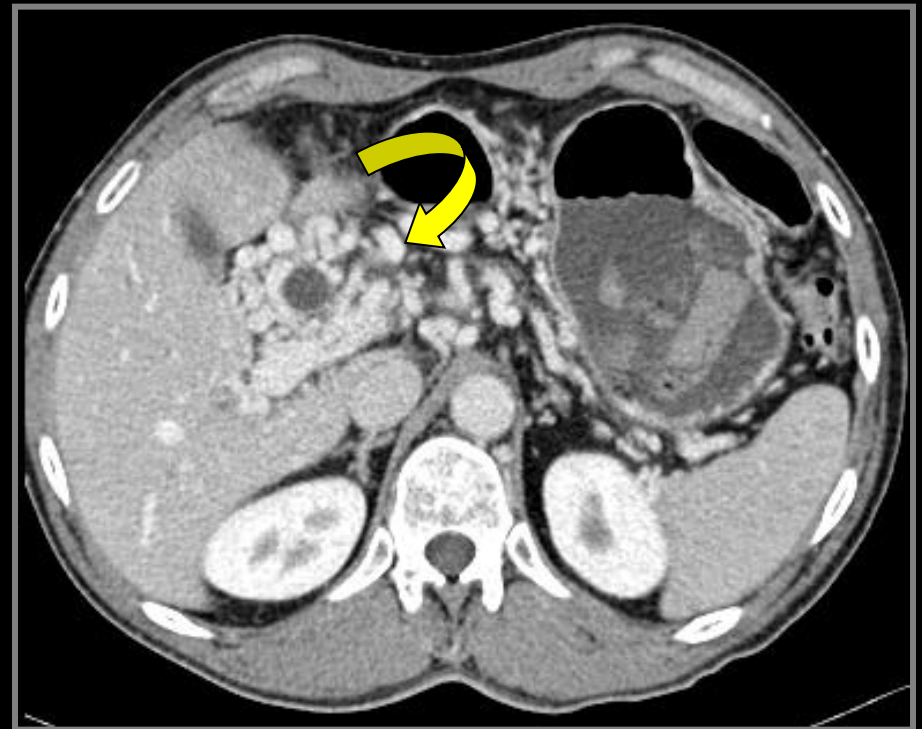
Sd clinique de Cruveilhier Baumgarten



colite d'HTP

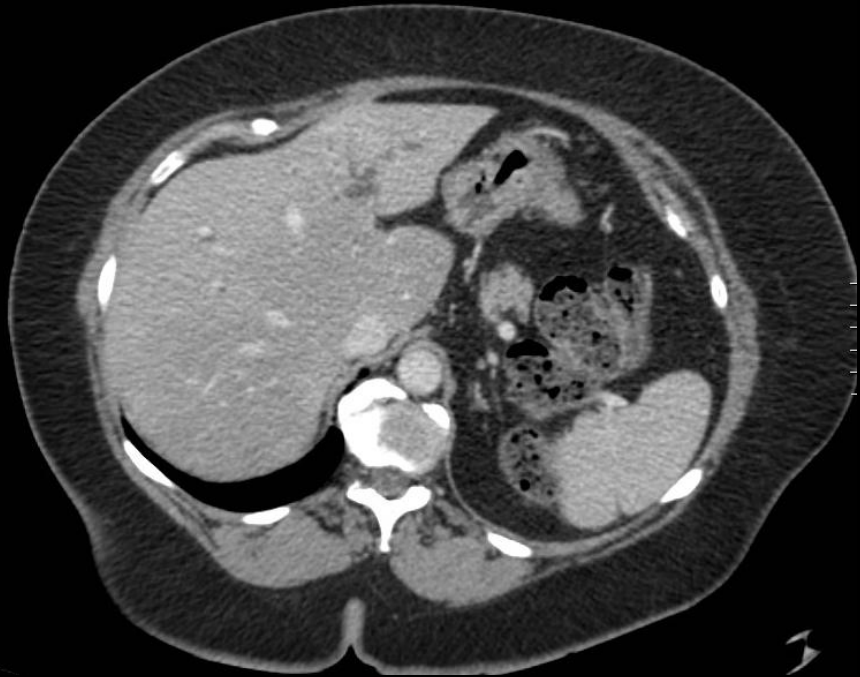


Cavernome porte



Thrombose mésentérique portale et ischémie veineuse

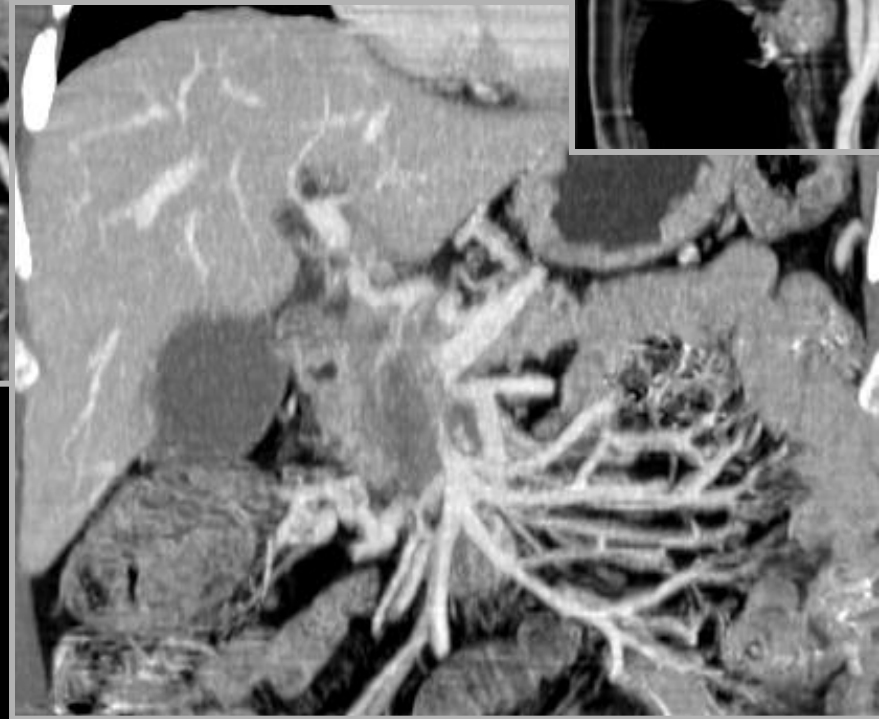
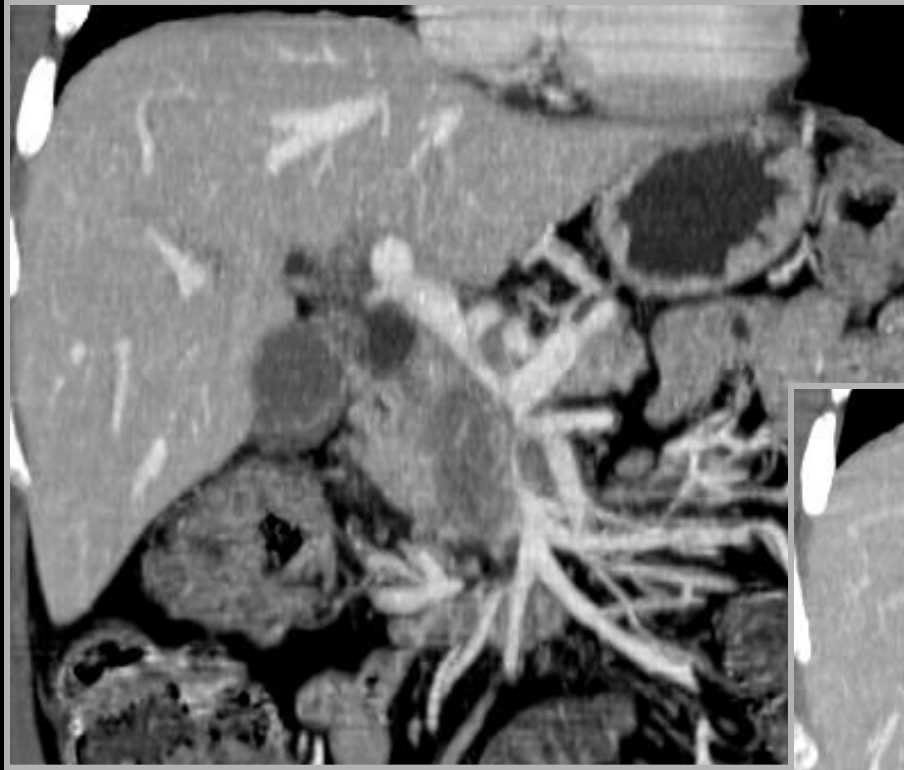


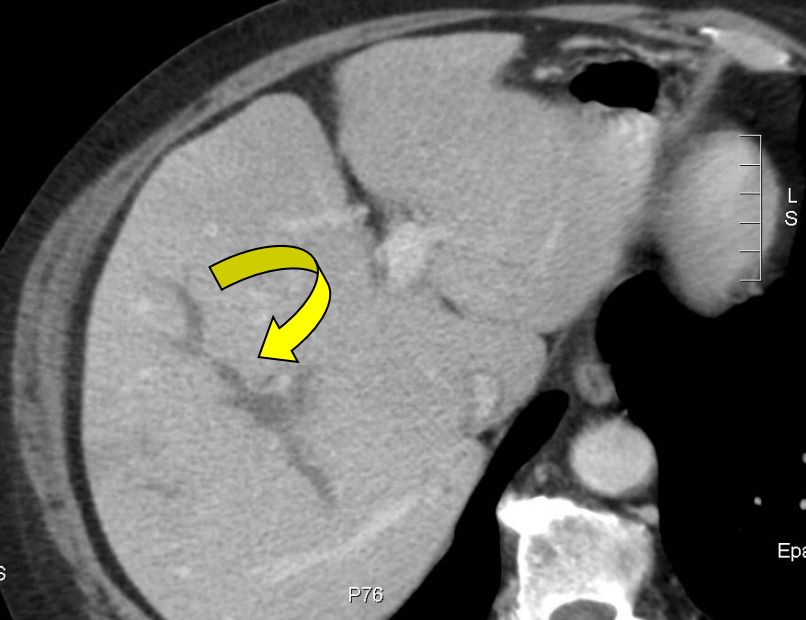


CHC + bourgeon tumoral portal

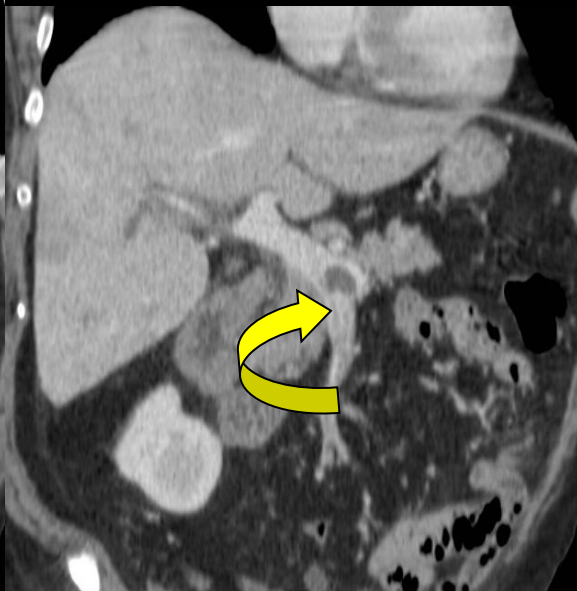


Cancer du pancréas envahissant le tronc porte

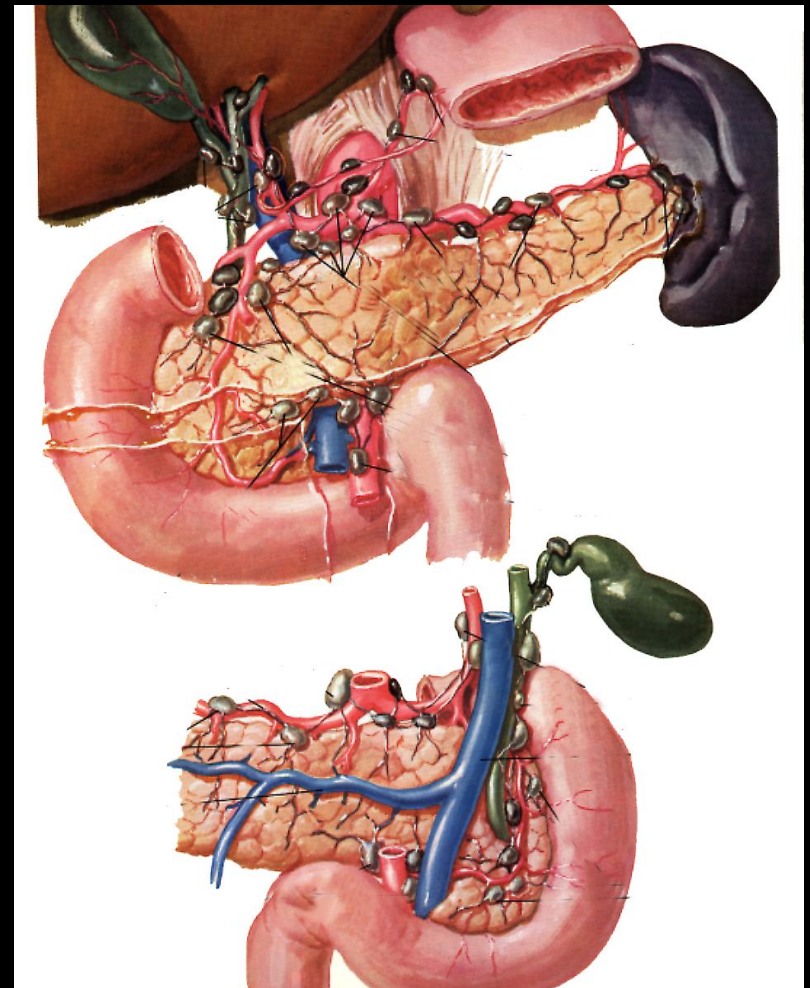
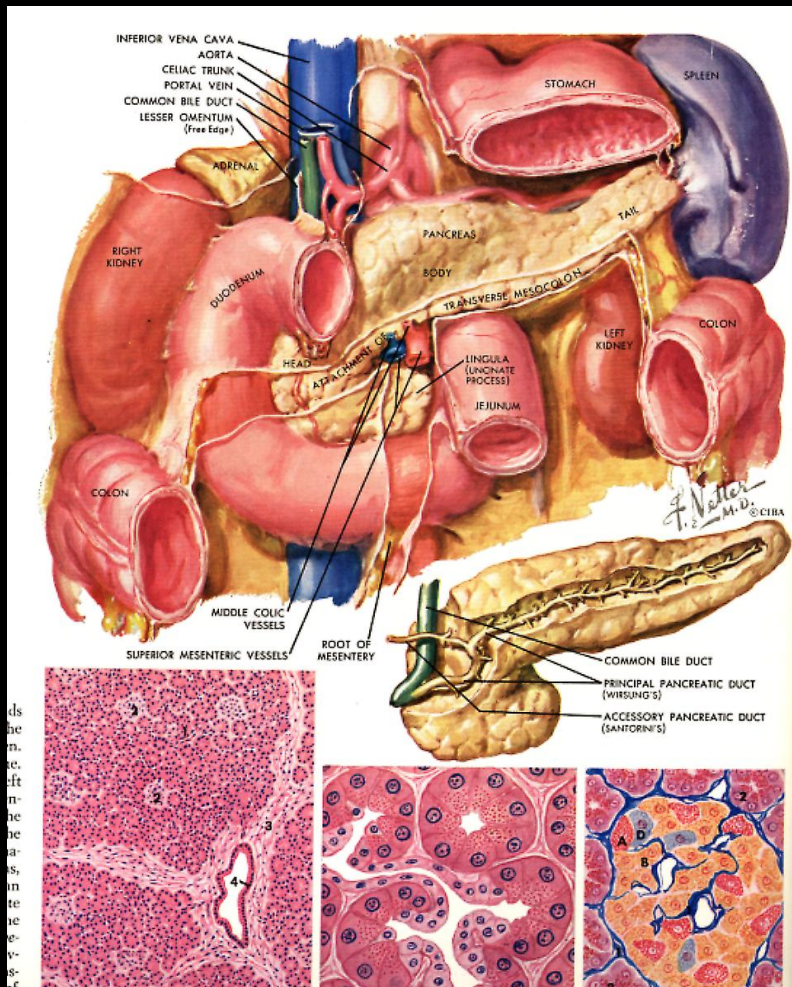




Pyléphlébite du tronc et de la branche portale droite sur diverticulite sigmoïdienne



Pancreás



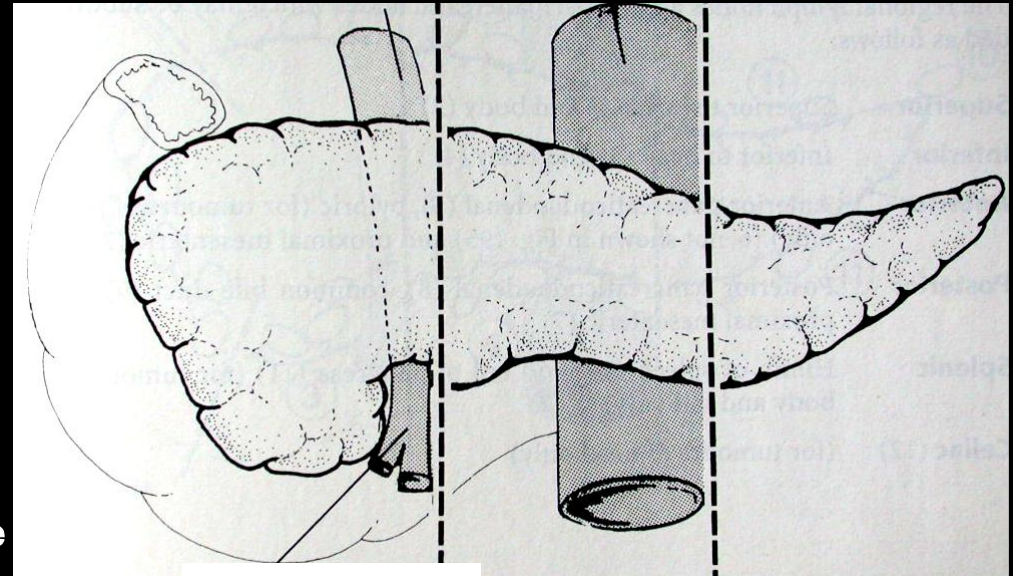
segmentation du pancréas

v. porte

aorte

« Petit
pancréas de
Winslow » =
processus
unciné =
uncus =
crochet

Partie rétro-mésentérique
de la tête



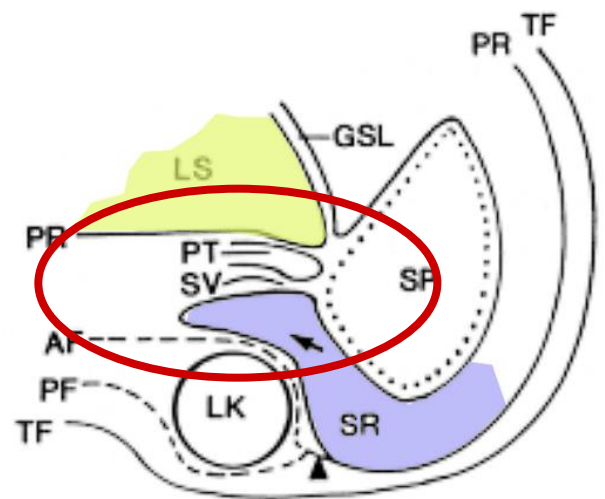
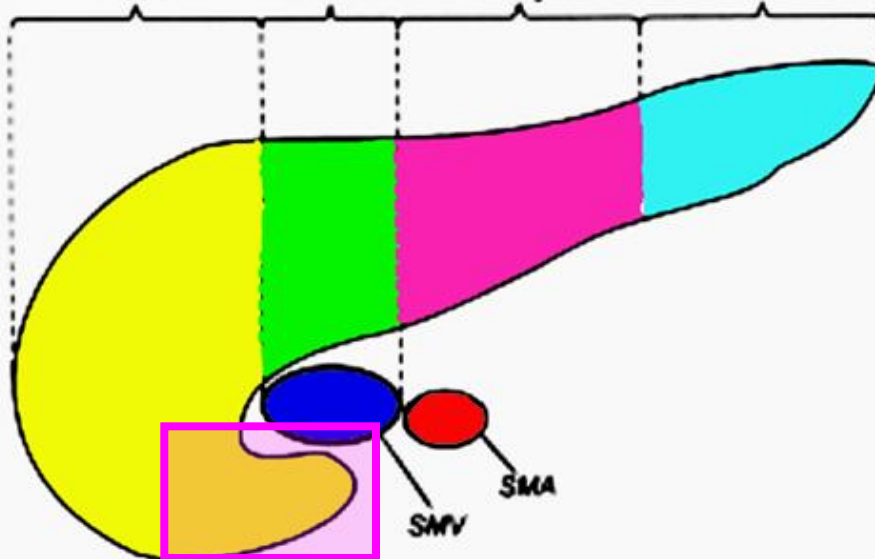
v. més. sup.

tête

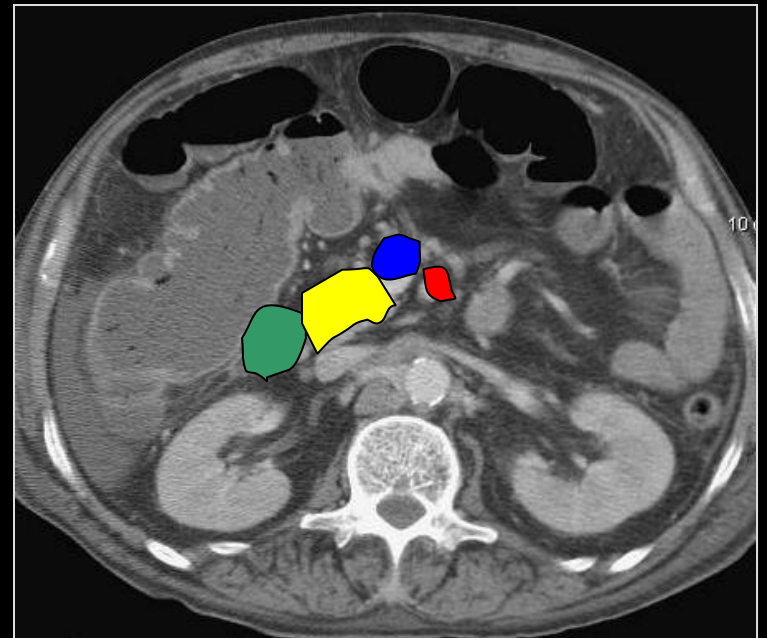
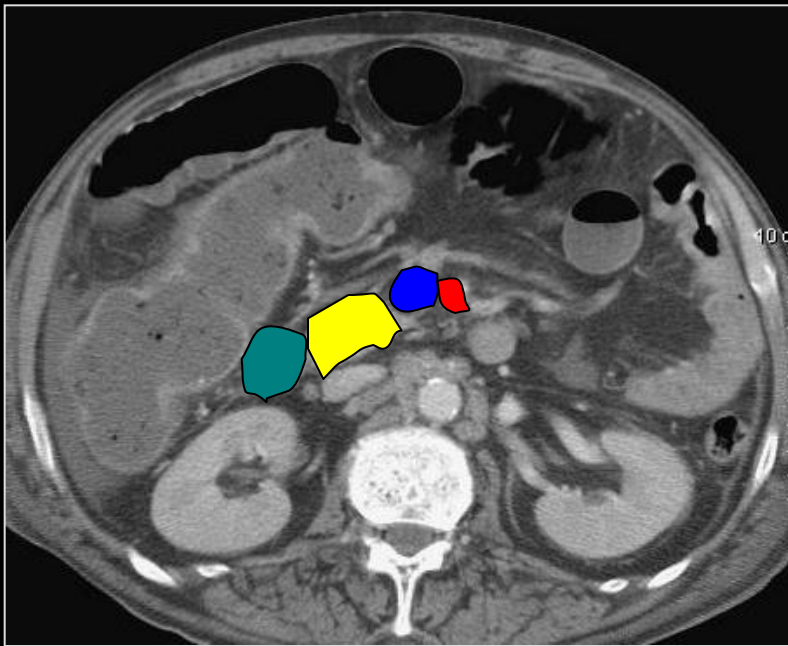
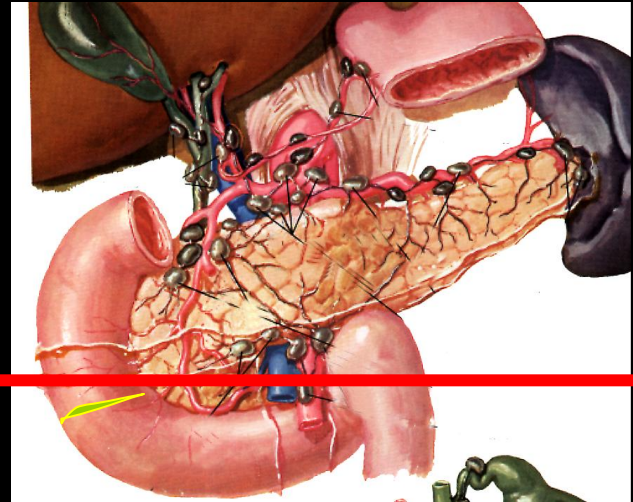
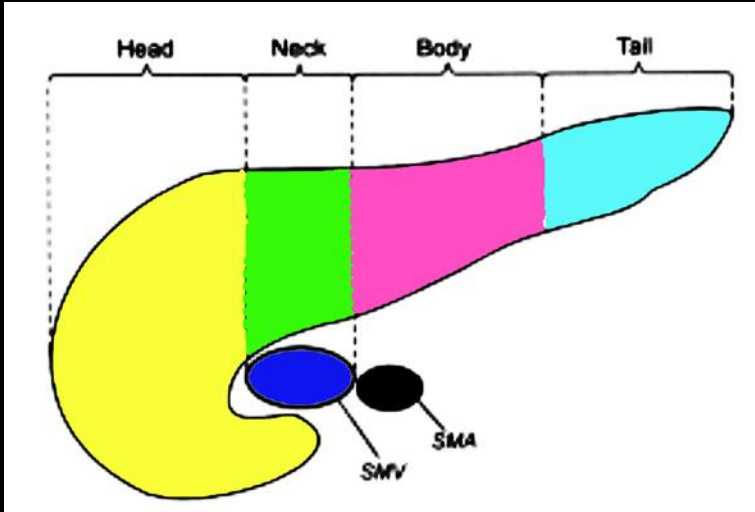
isthme

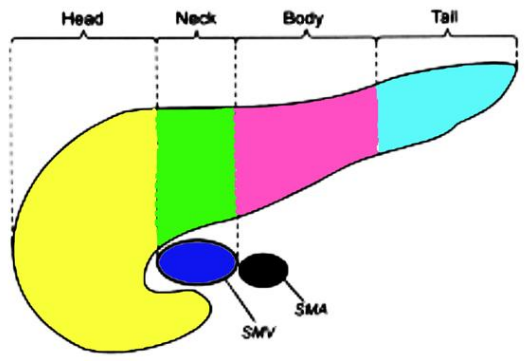
corps

queue



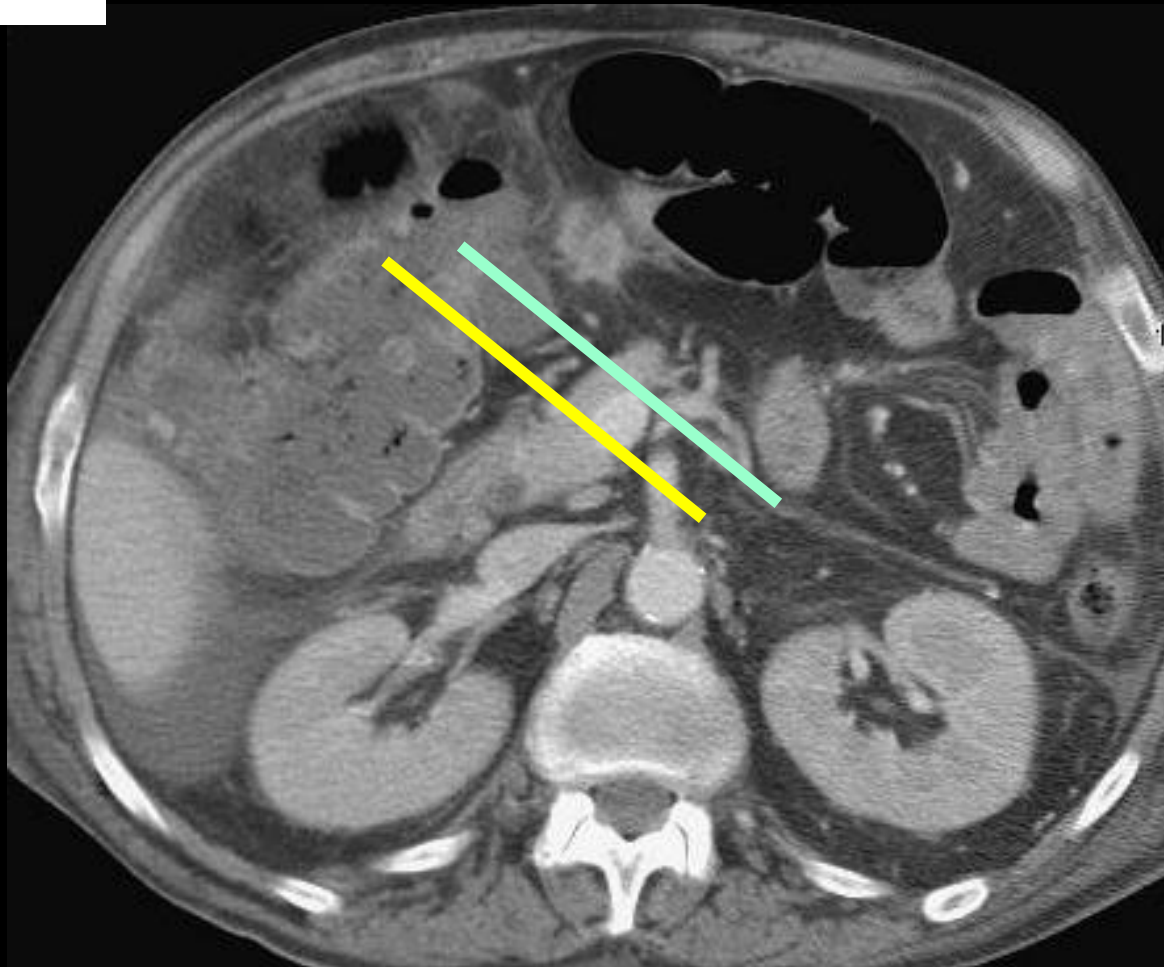
récessus splénique

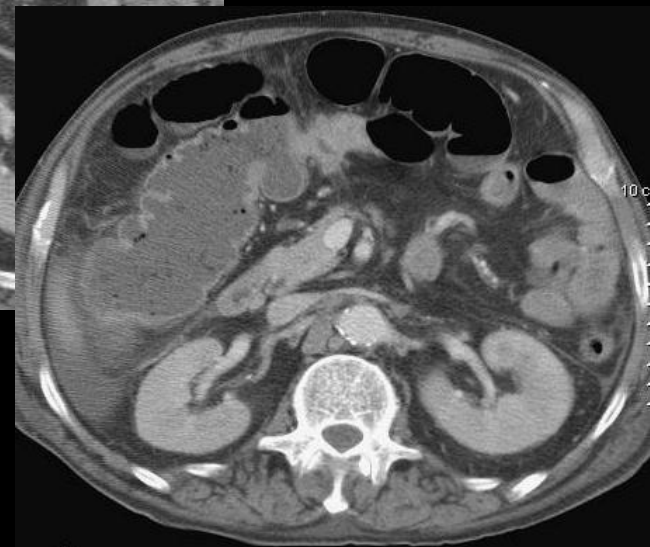
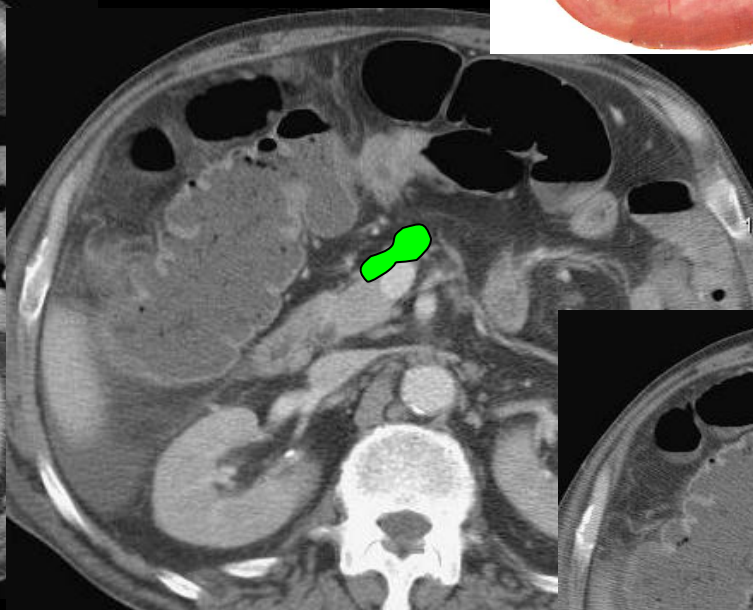
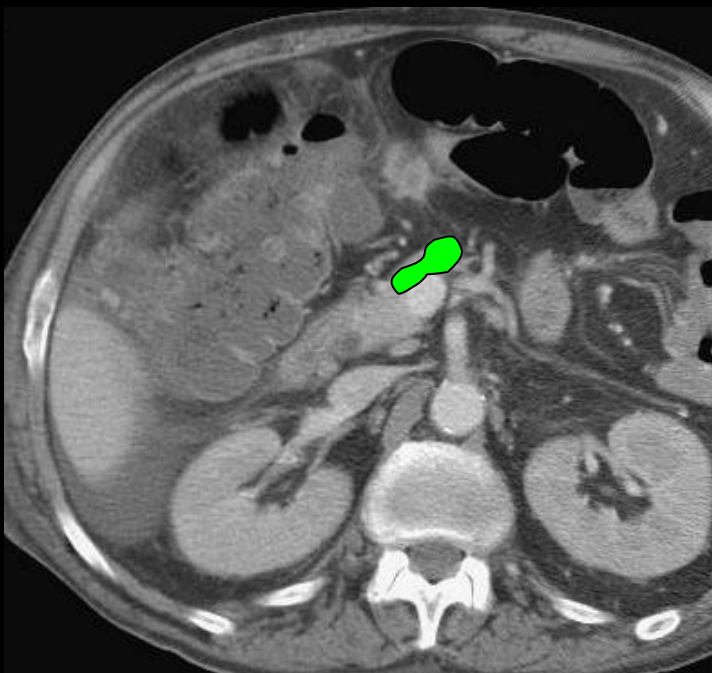
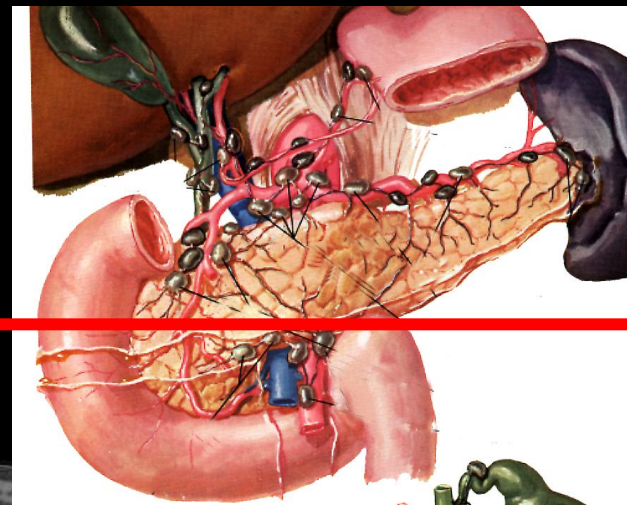
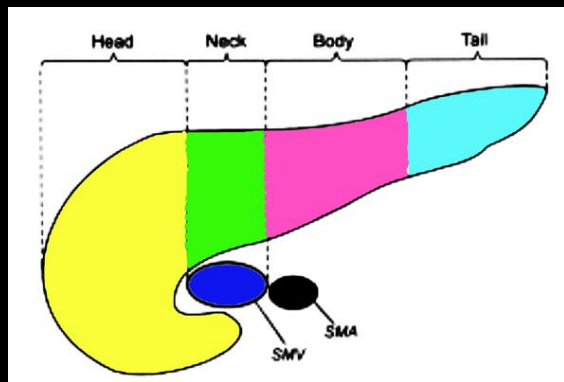


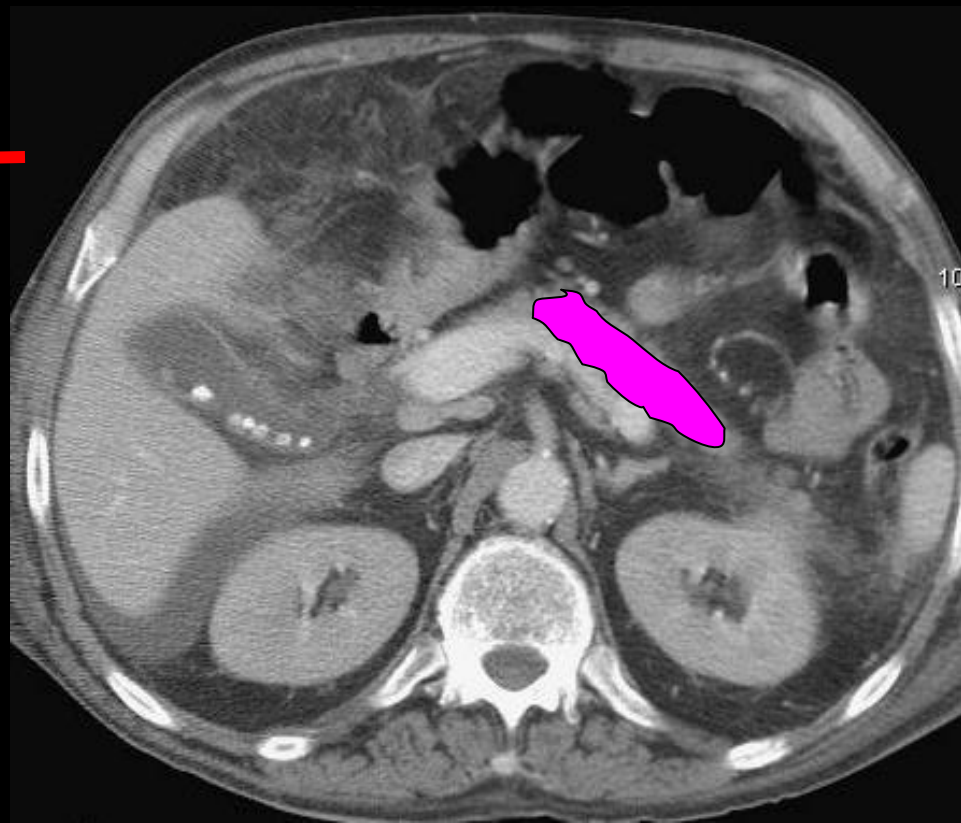
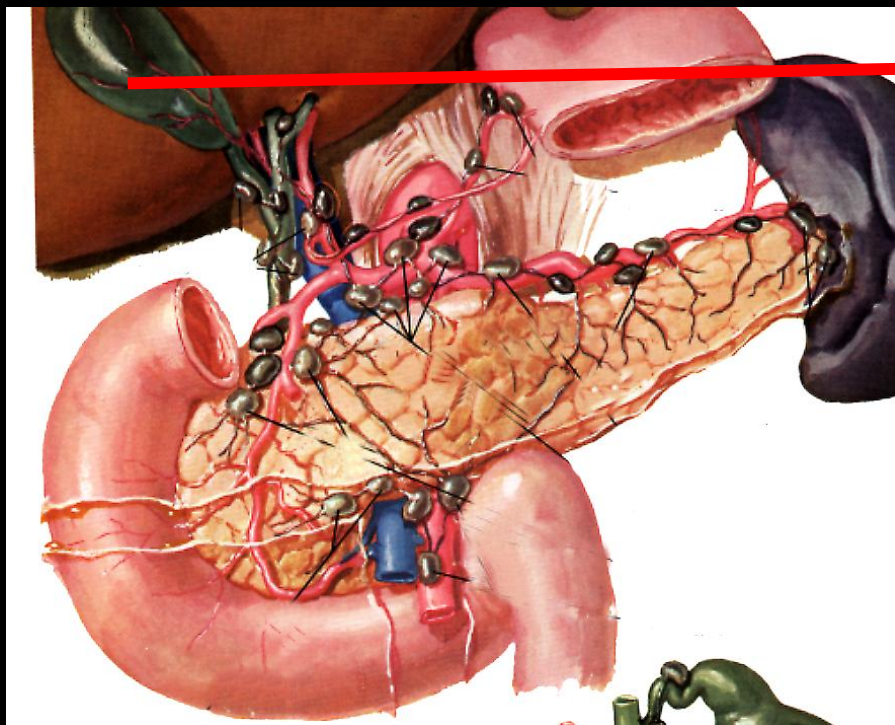
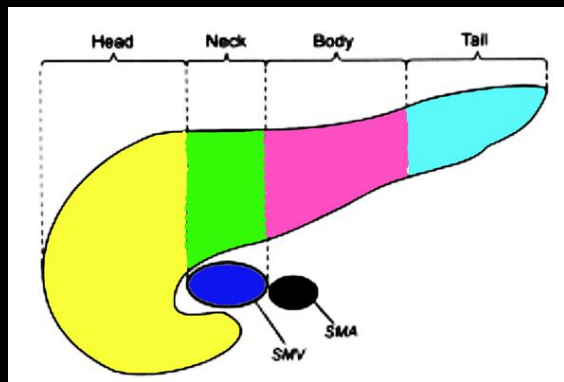


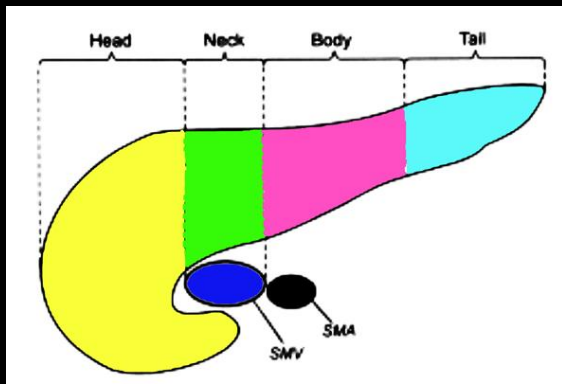
AGD – bord
droit de la
VMS

bord gauche
de la VMS





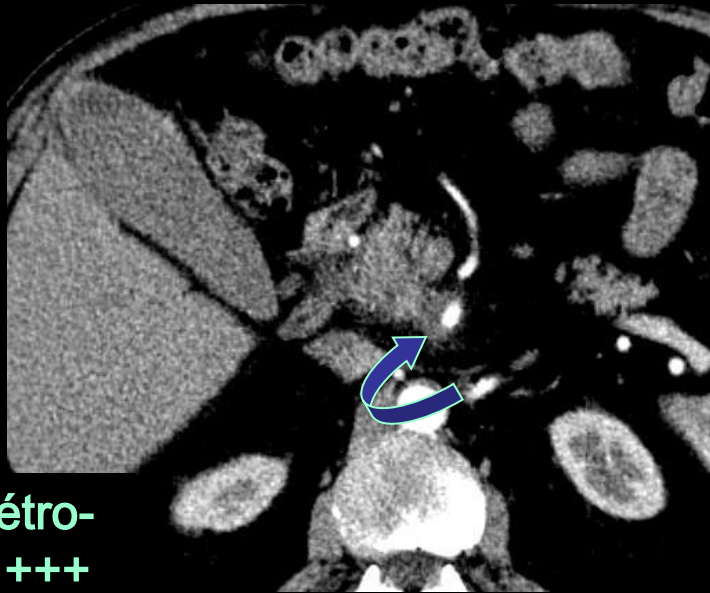




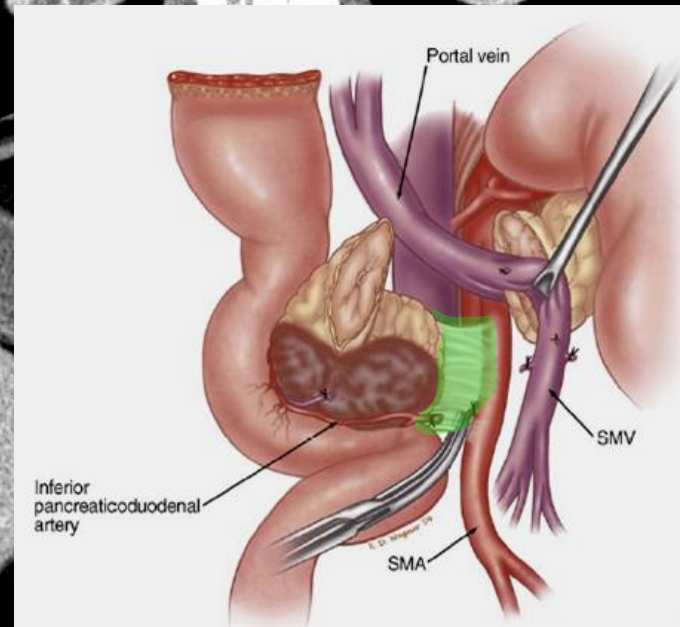
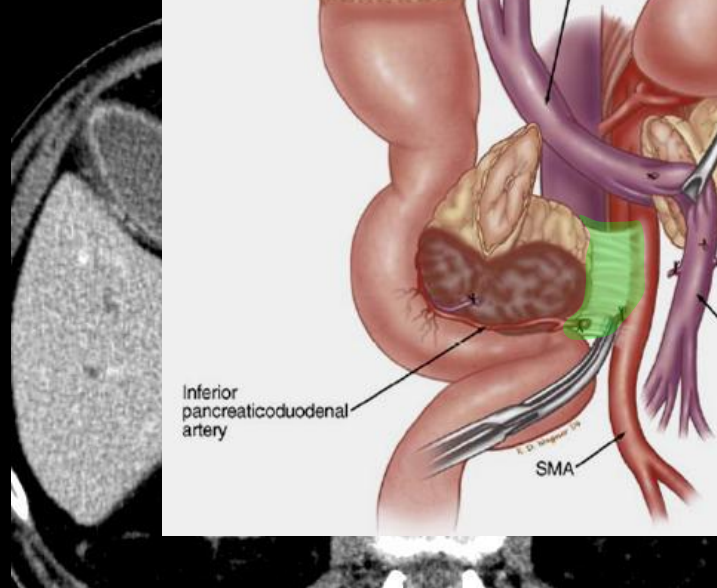
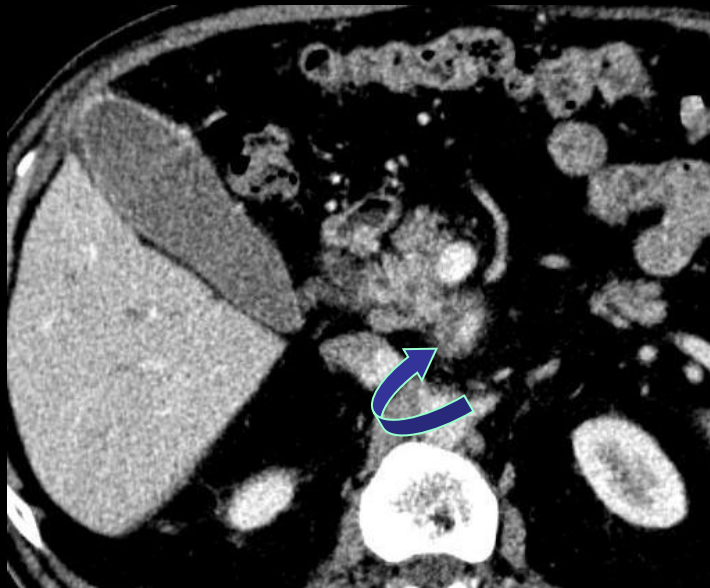
Théoriquement, la queue débute à gauche du croisement de l'artère splénique avec la face supérieure du pancréas



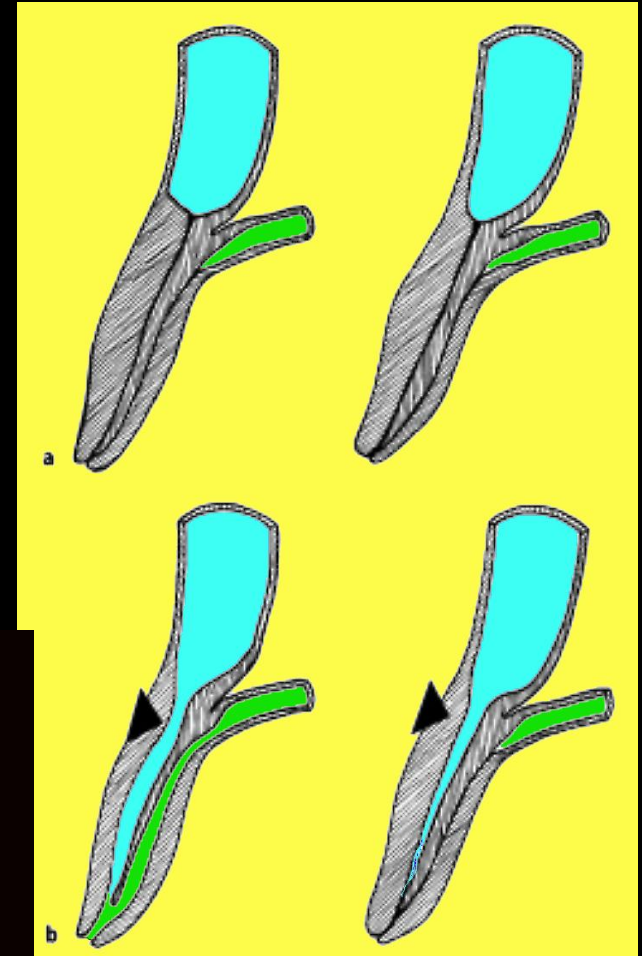
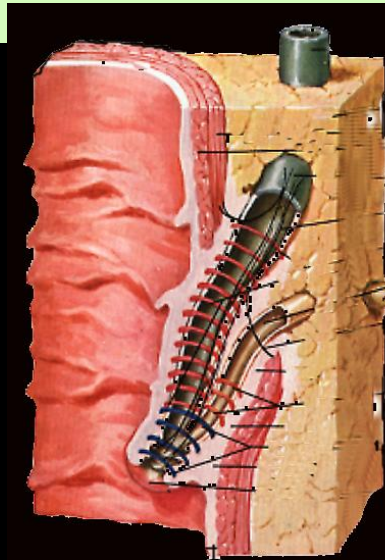
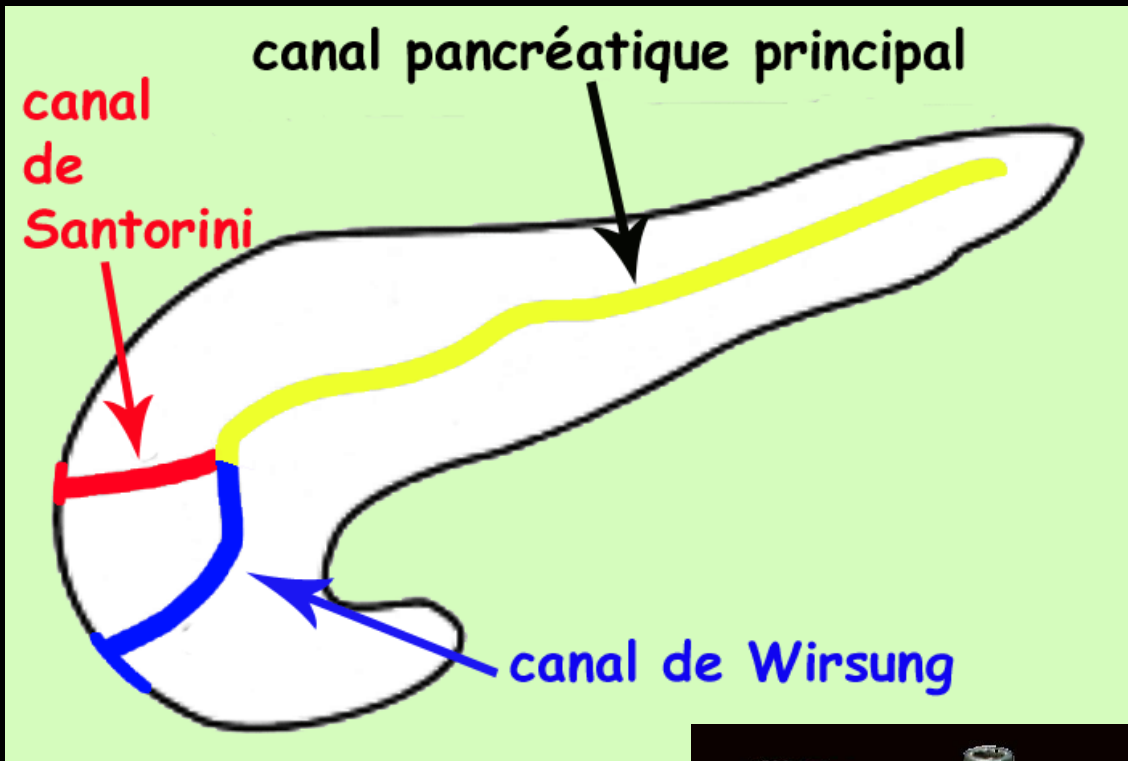
Uncus du pancréas : cancer / TIPMP



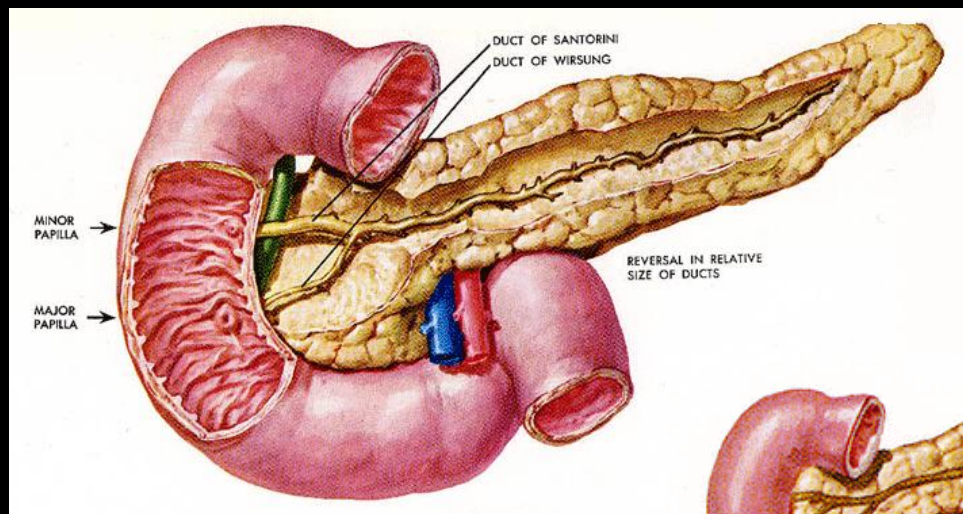
Lame rétro-portale +++



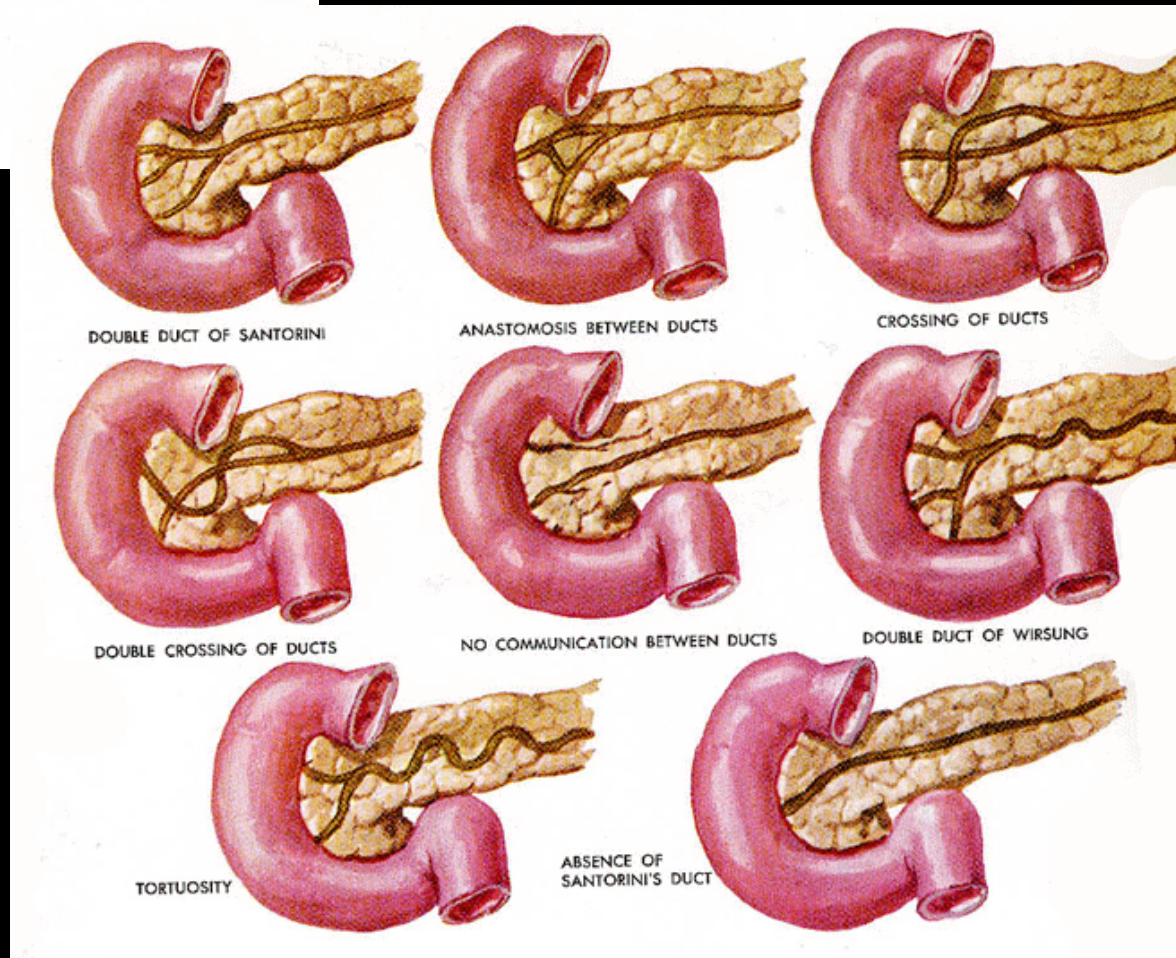
canaux excréteurs du pancréas

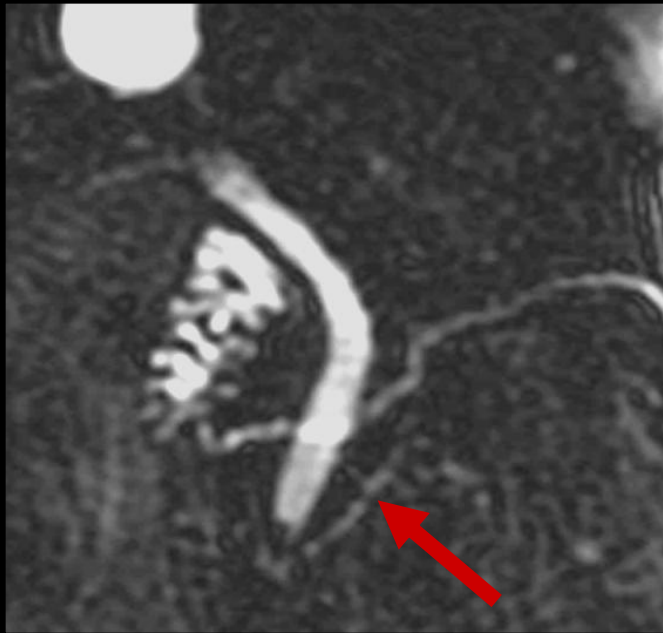


ampoule de Vater et
sphincters propres
bilio-pancréatiques

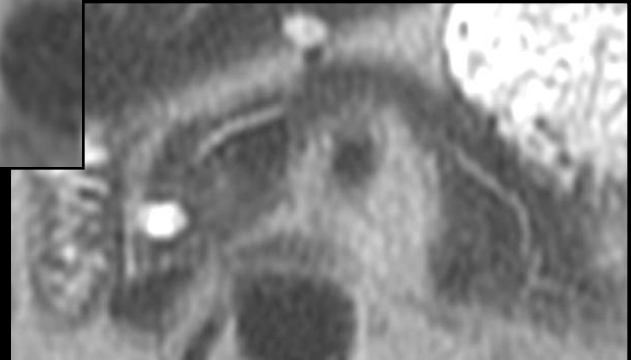
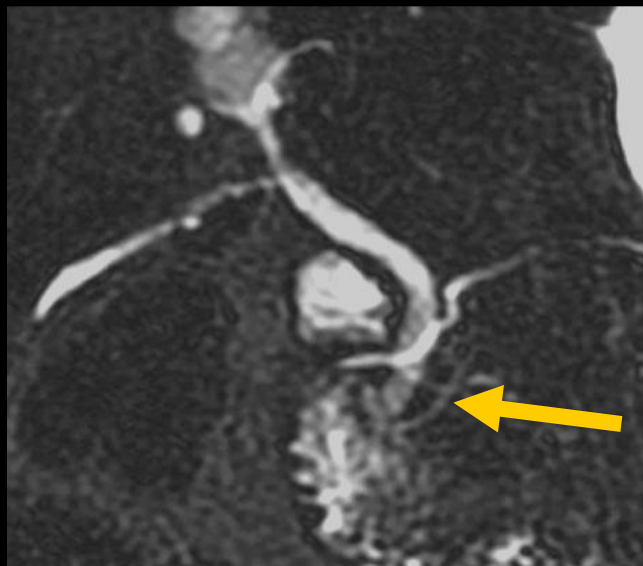
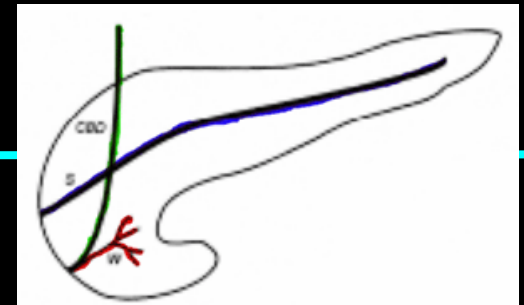


Variations canales pancréatiques

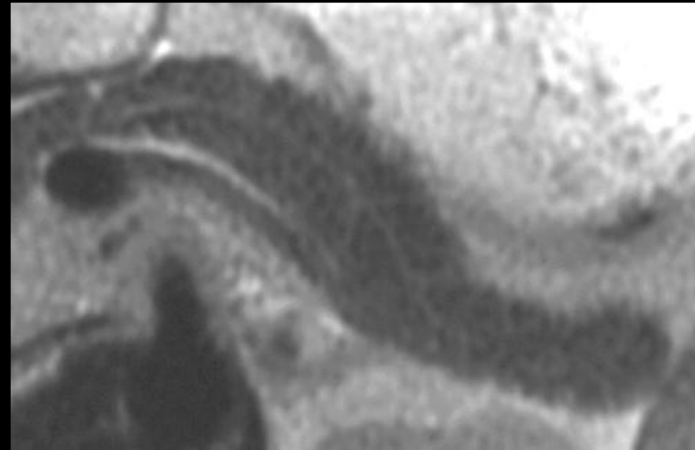
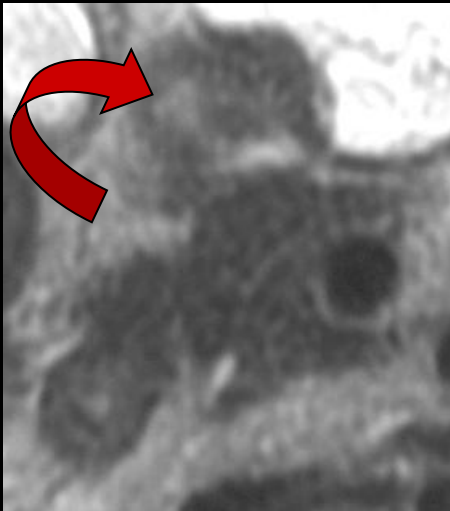
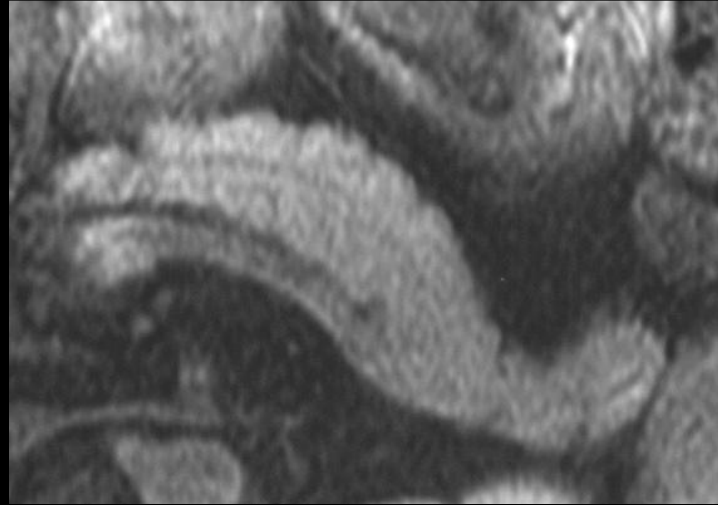
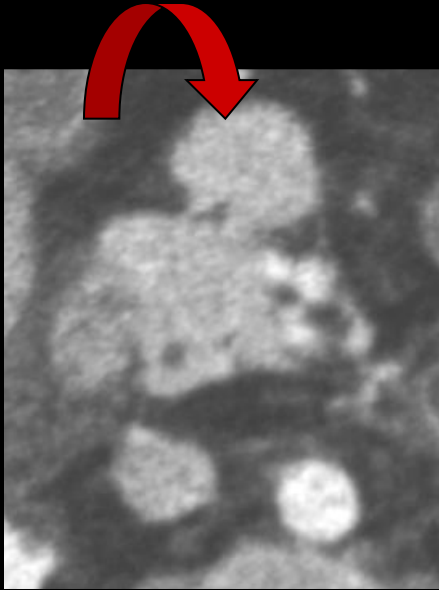




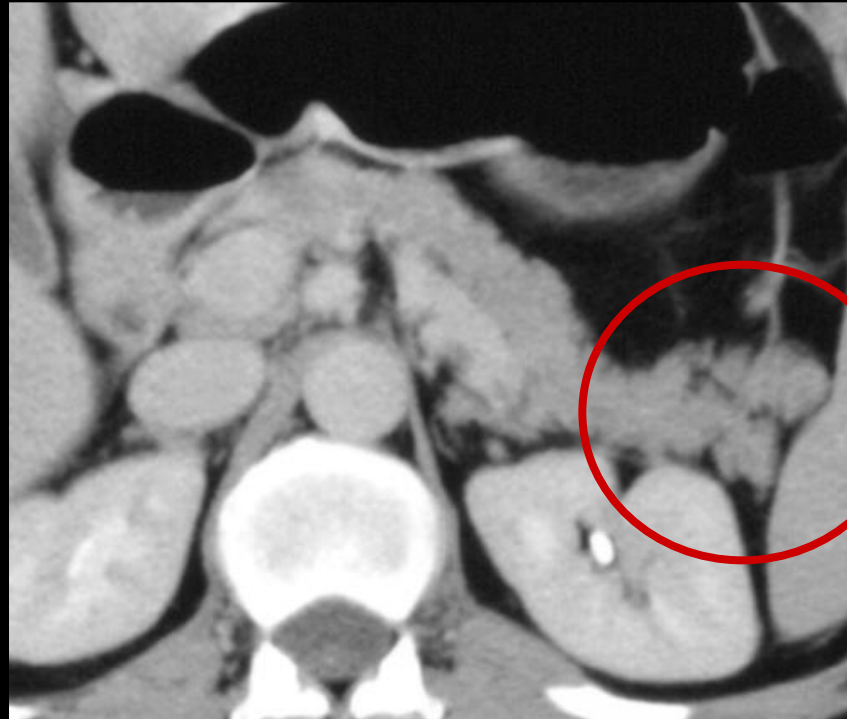
pancréas divisum



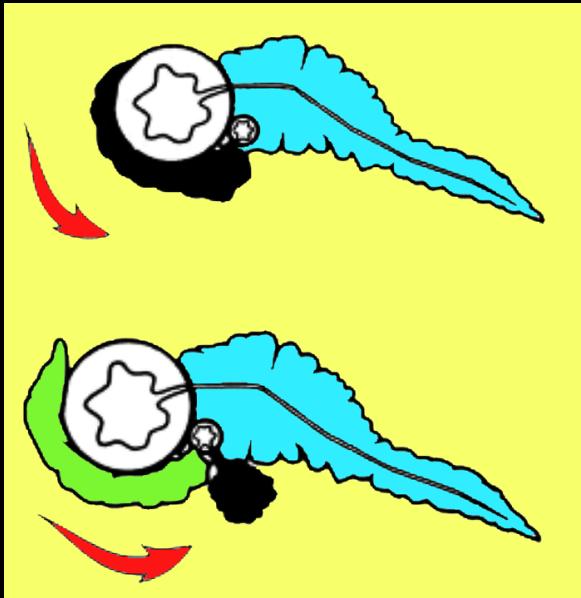
variantes morphologiques du pancréas



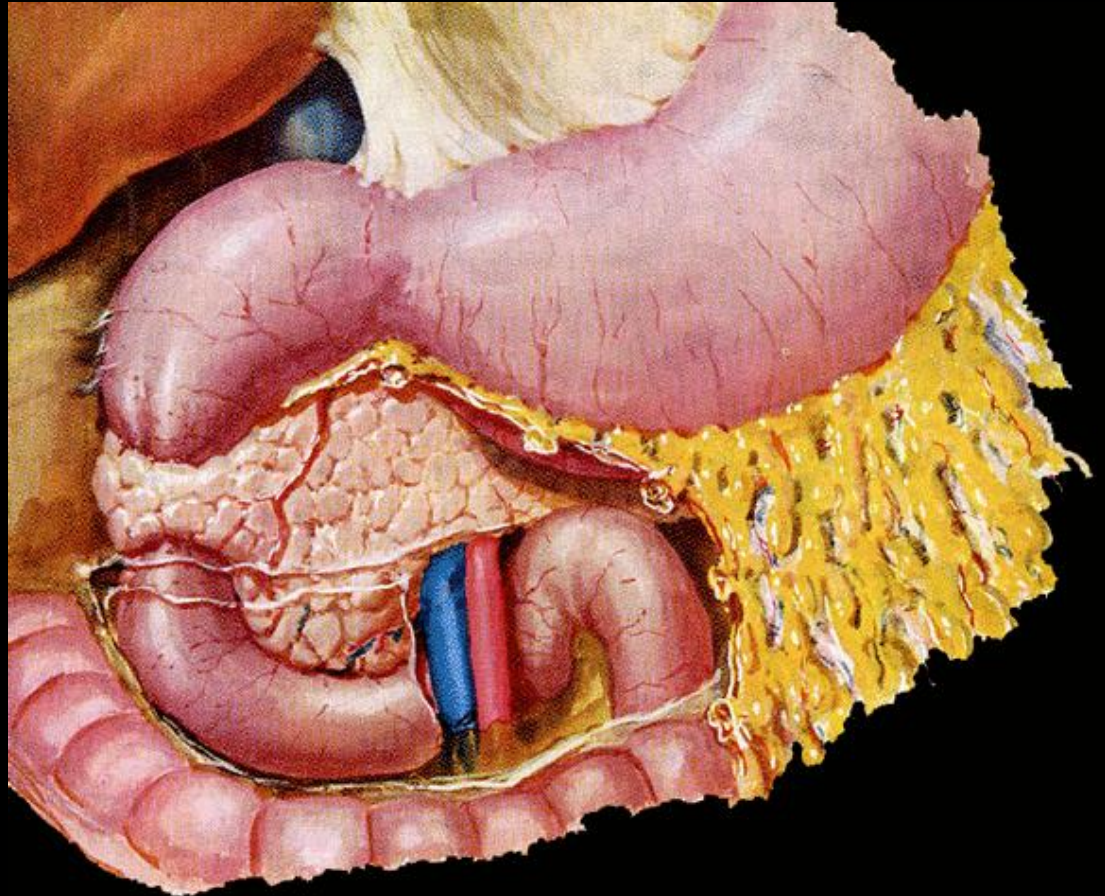
tubercule omental du pancréas

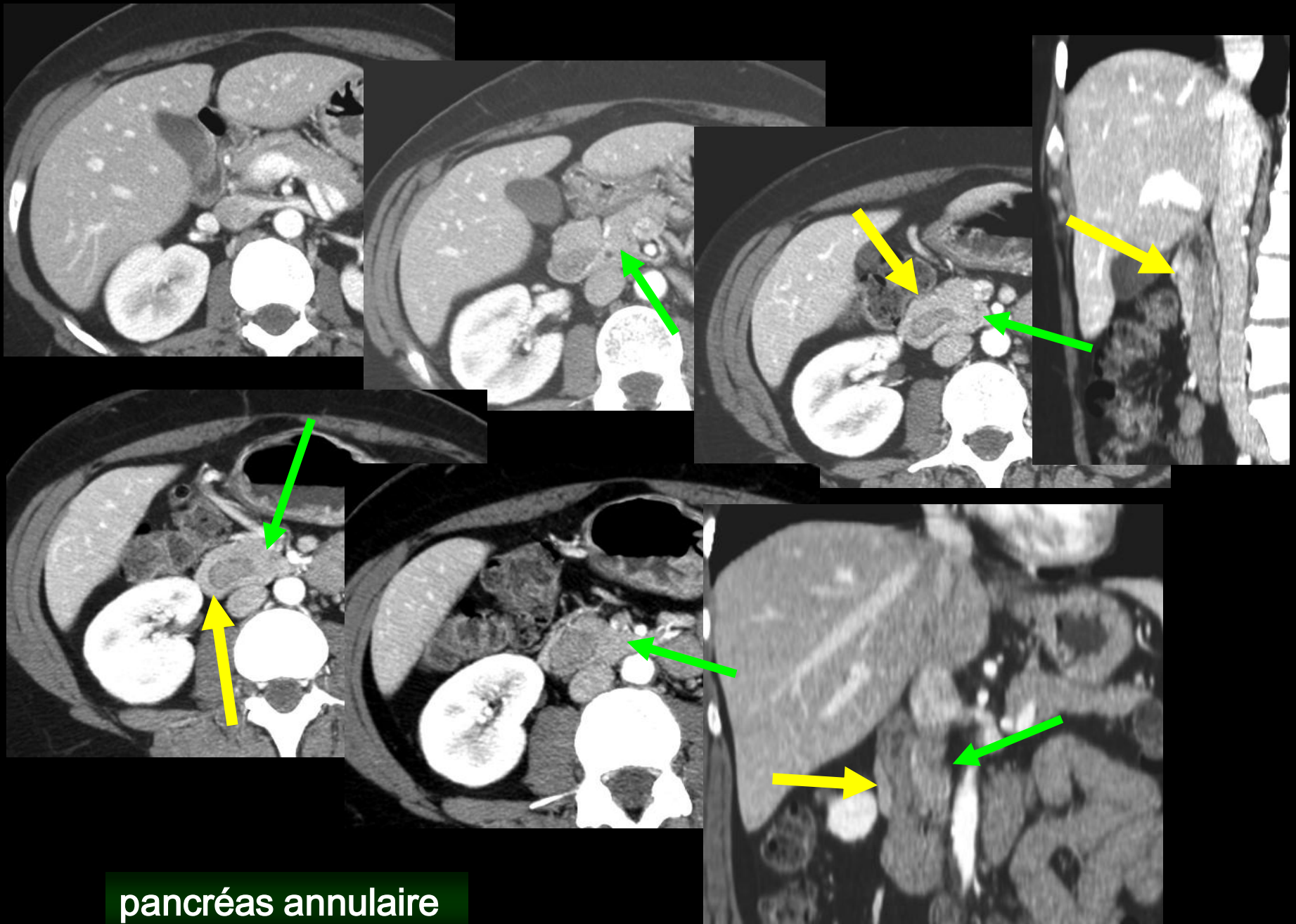


pancréas caudal bifide



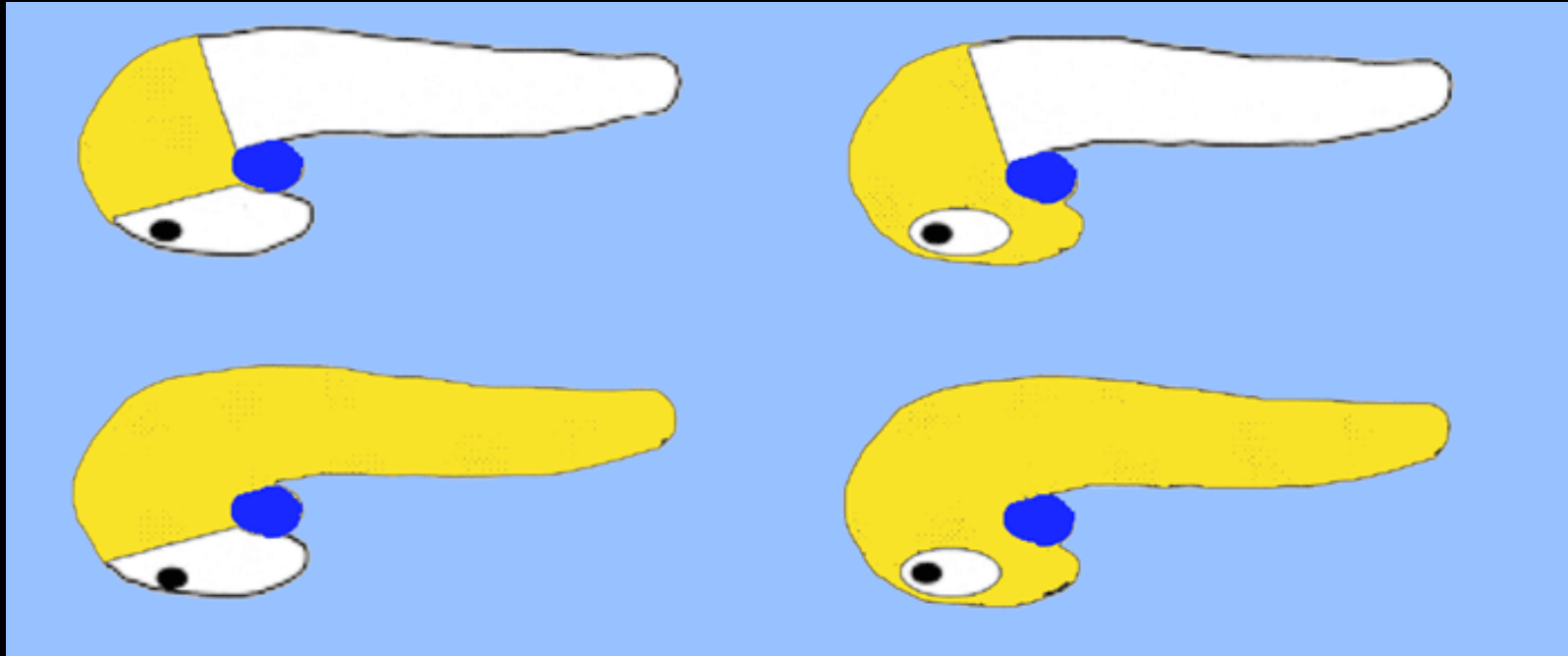
le **pancréas annulaire** se développe à partir de l'ébauche ventrale qui comporte elle-même 2 bourgeons ,antérieur et postérieur





pancréas annulaire

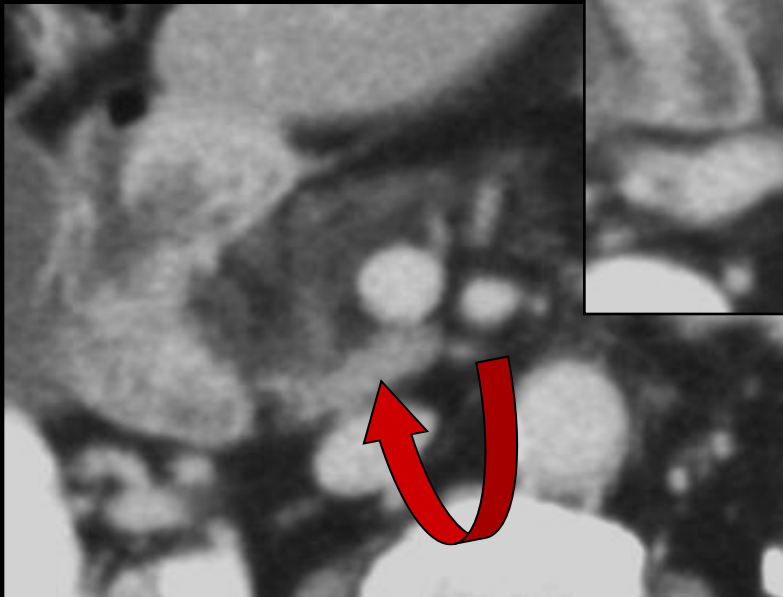
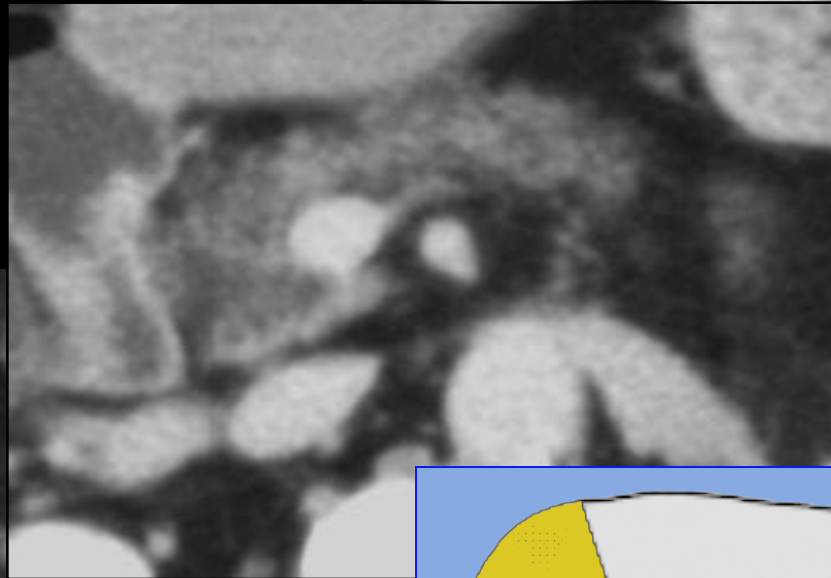
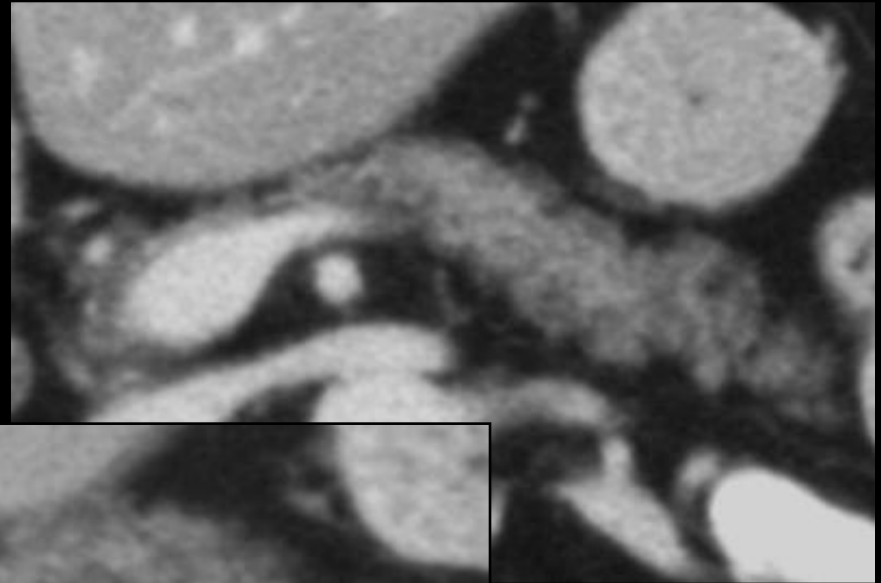
involution graisseuse (uneven lipomatosis) du pancréas

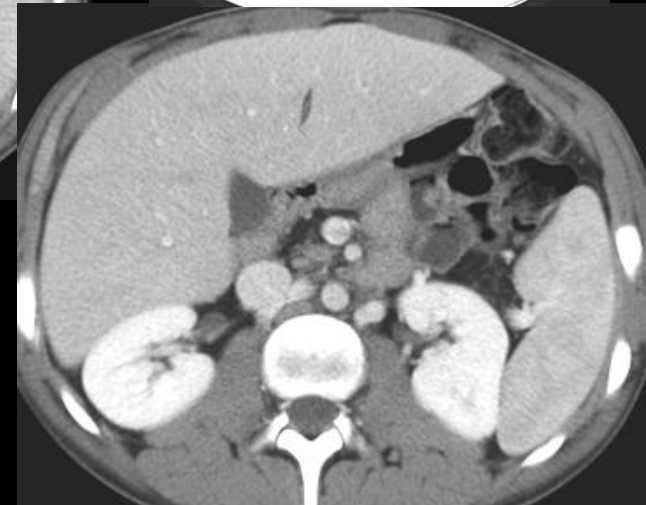
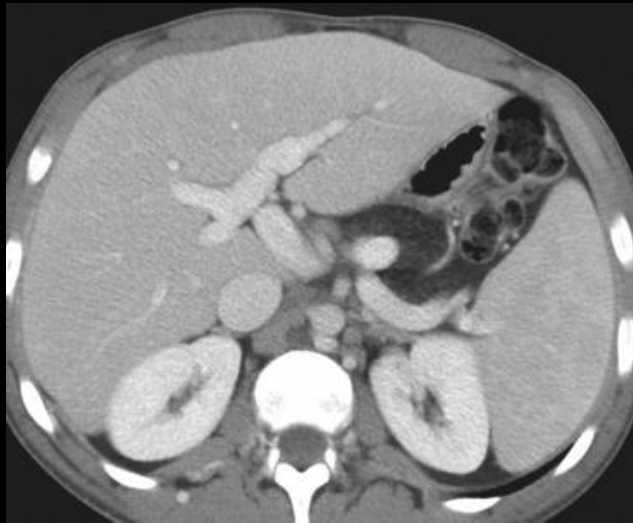
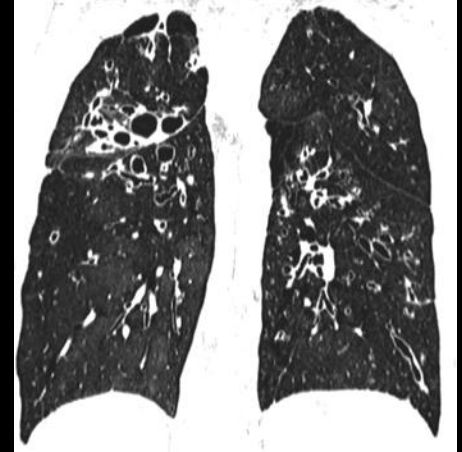
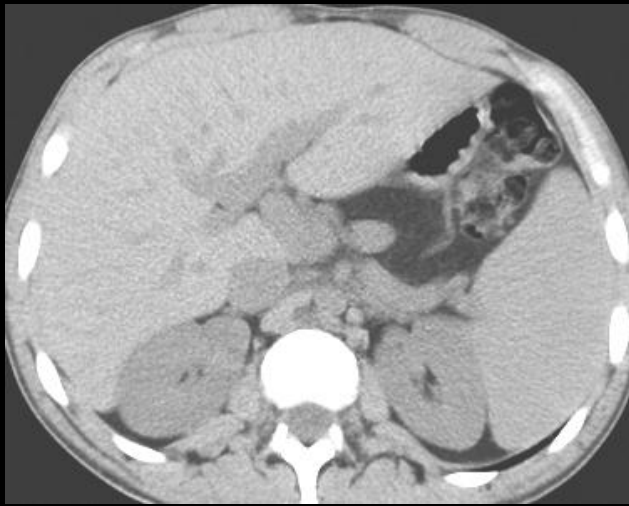


type 1

type 2

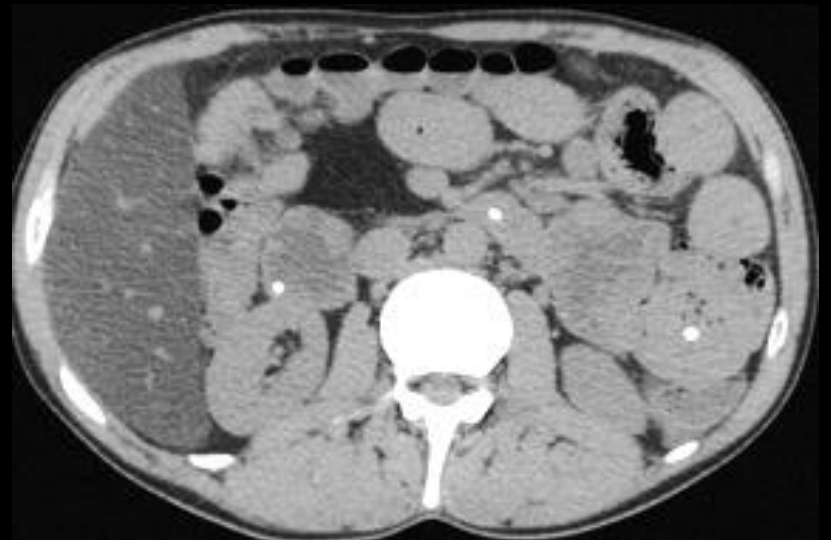
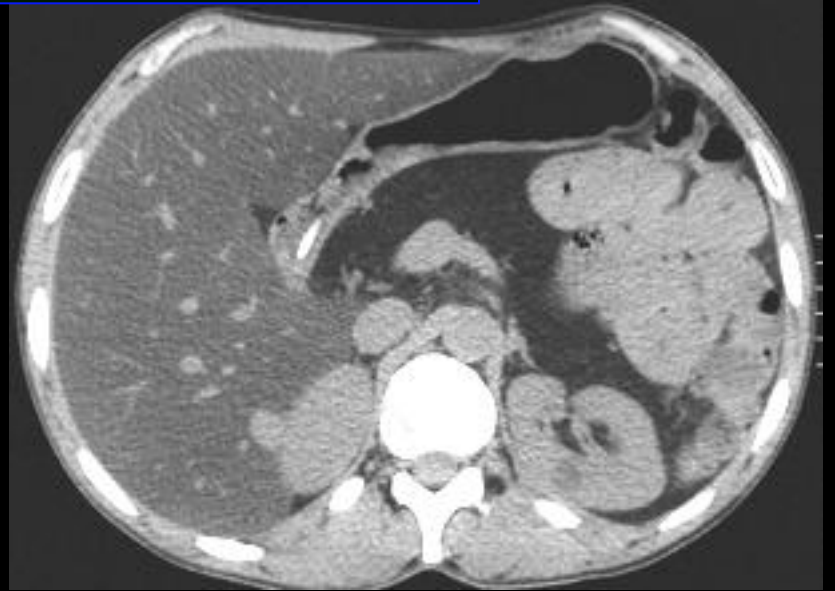
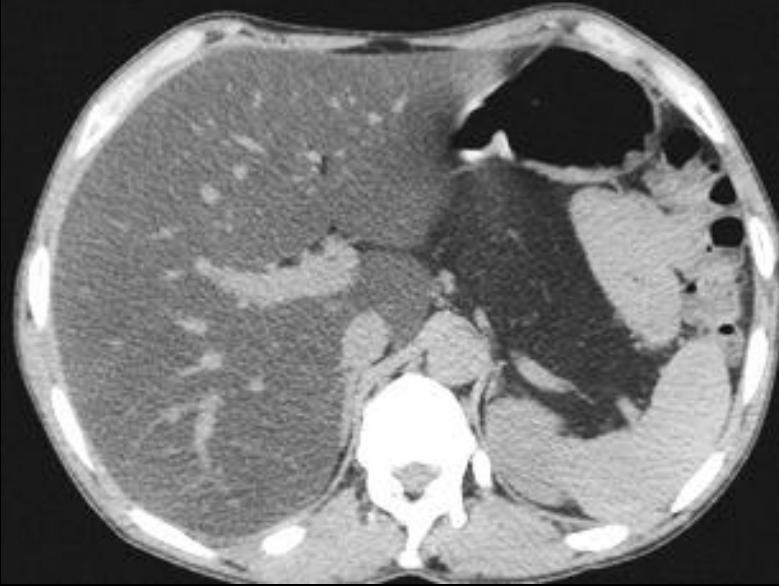
Lipomatose Ia



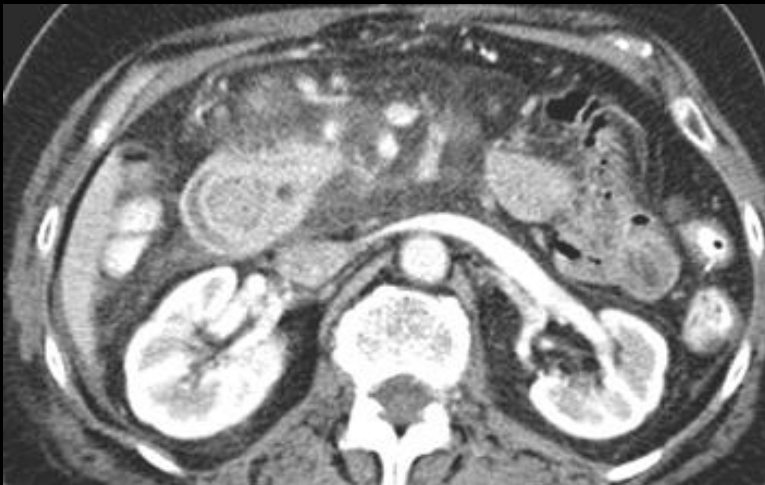
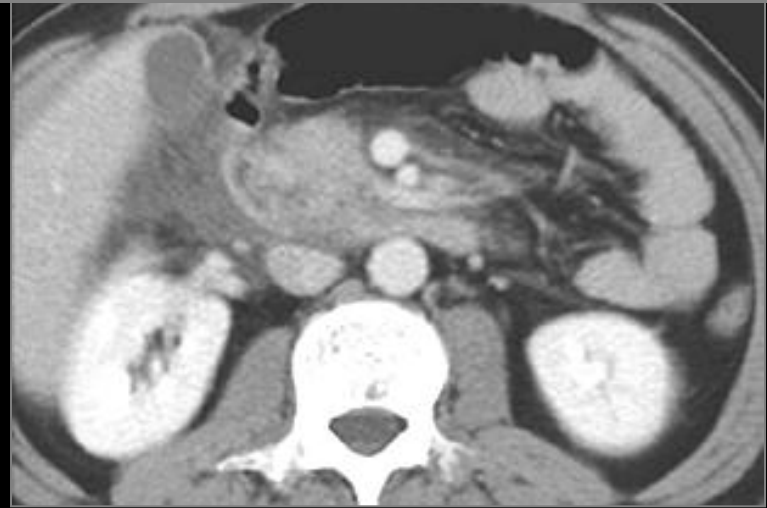
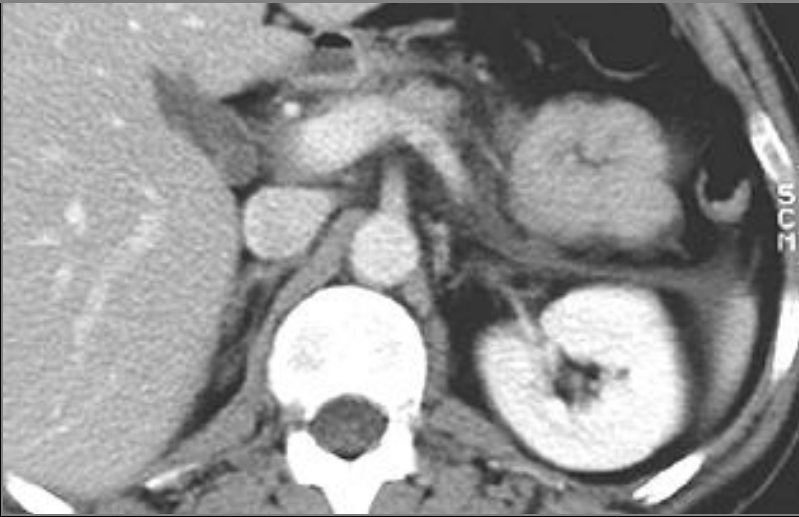


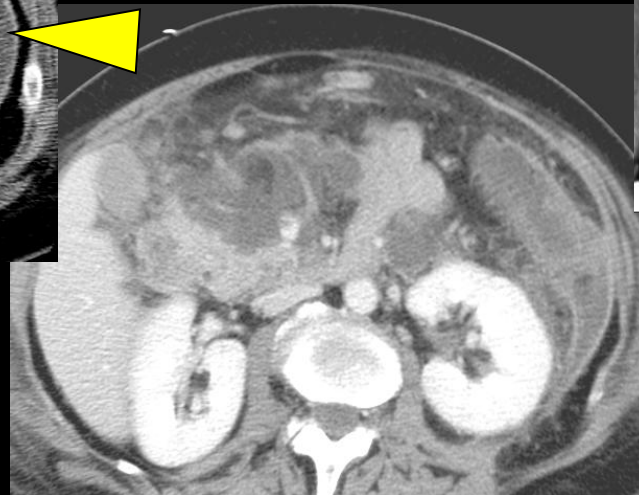
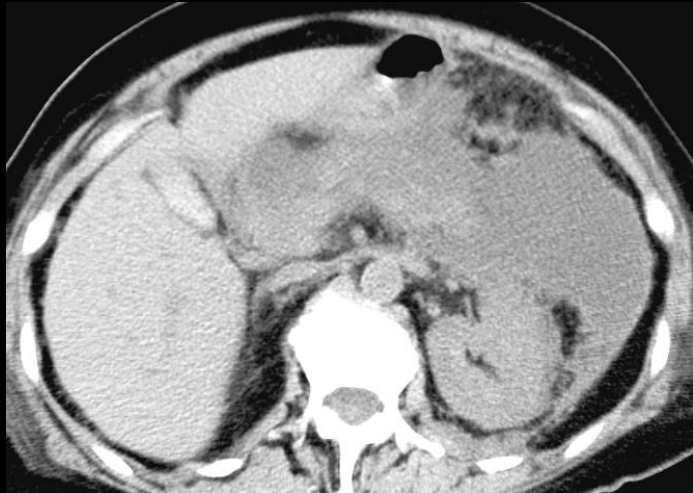
involution graisseuse
massive du pancréas au
cours d'une mucoviscidose

involution graisseuse massive du pancréas au cours d'une
maladie coeliaque (et stéatose hépatique massive)



Pancréatite

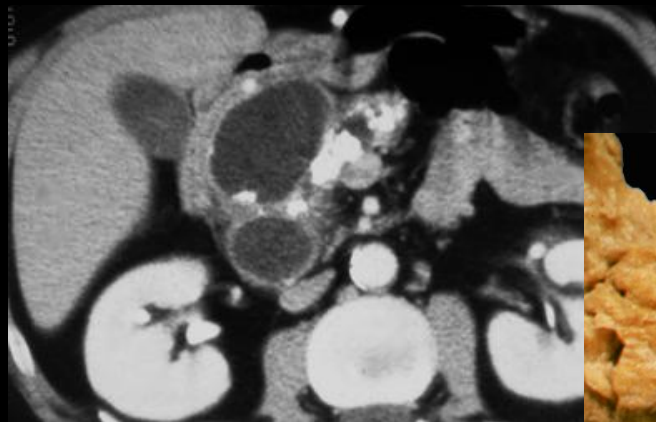
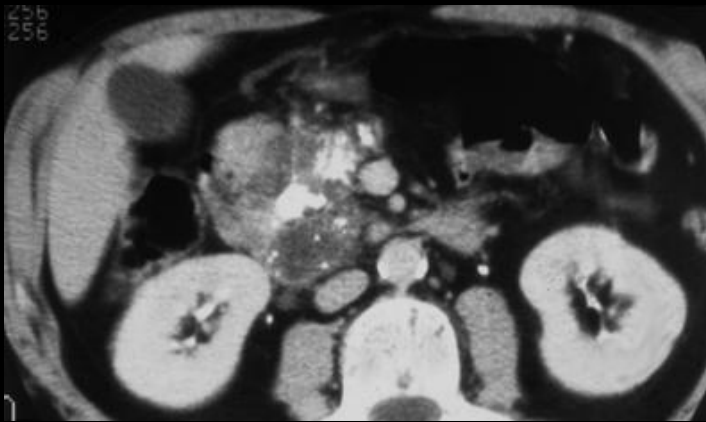




PA nécrotique

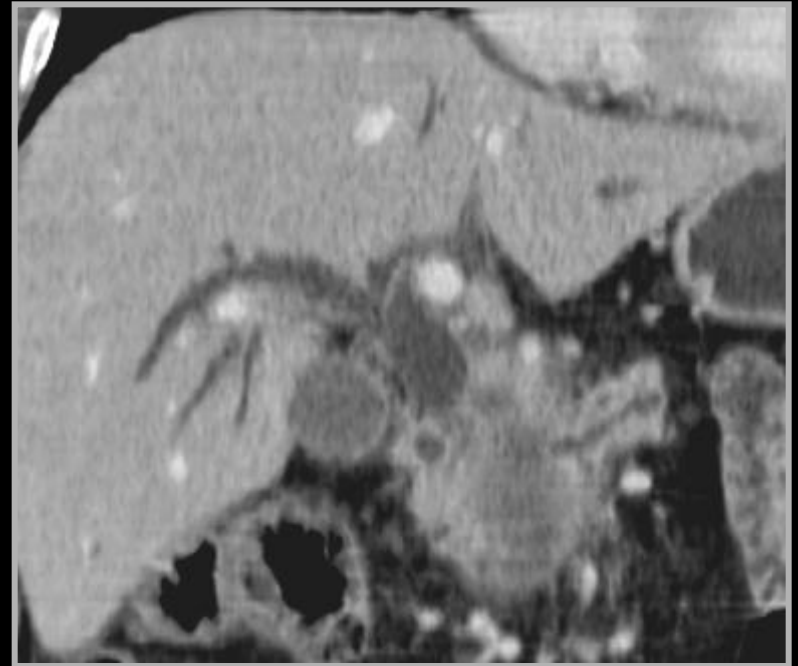
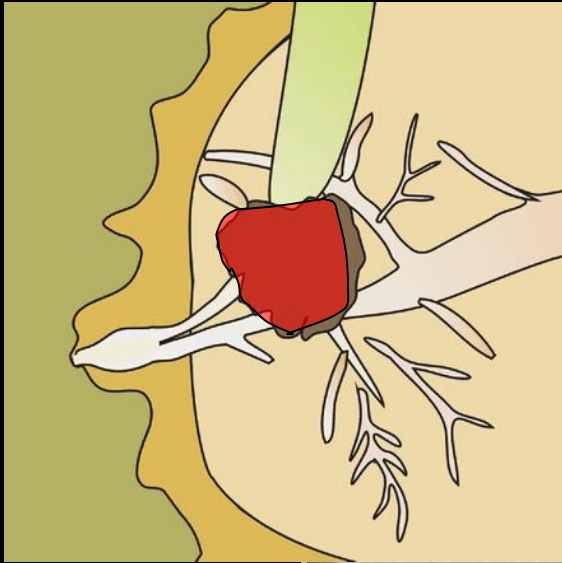


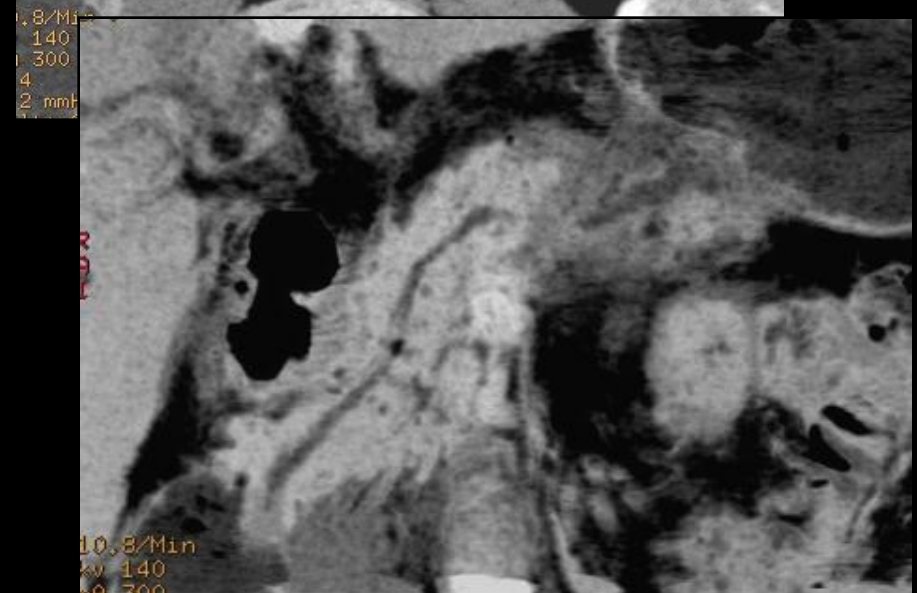
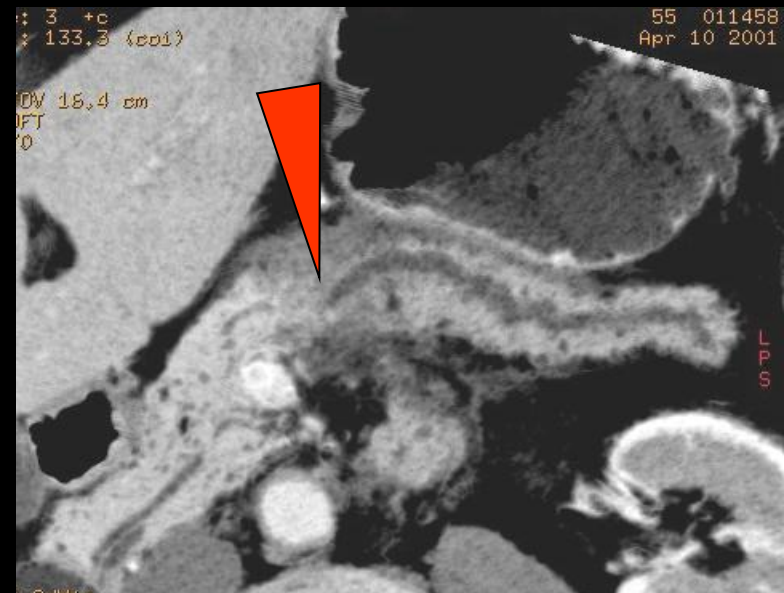
**pancréatite aiguë + faux
anévrisme**



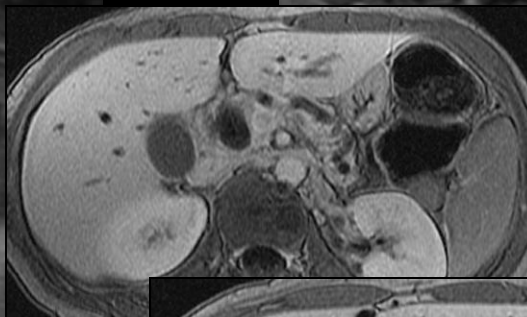
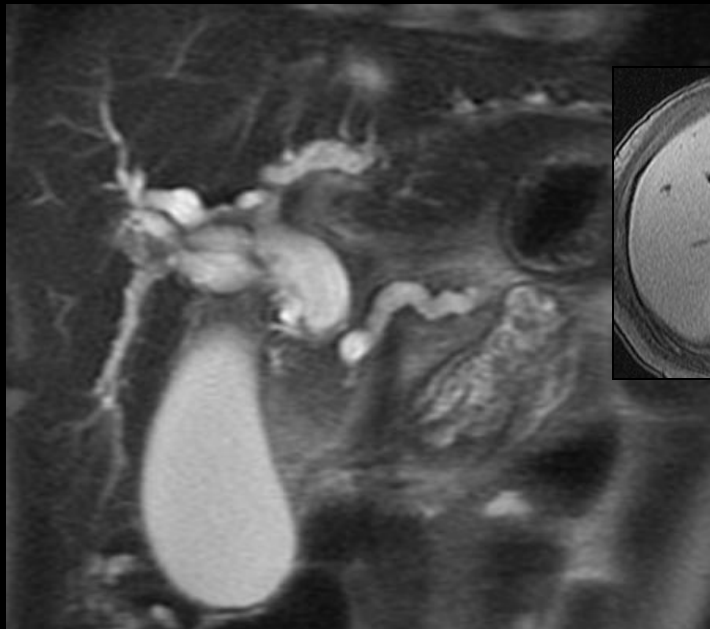
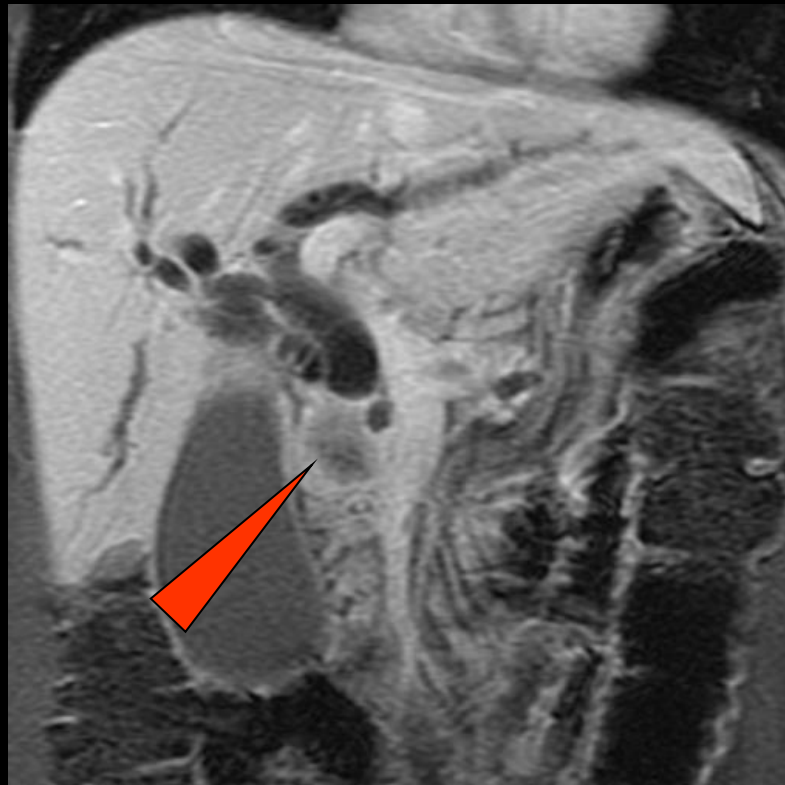
pancréatites chroniques calcifiantes

adénocarcinome du pancréas





**adénocarcinome du corps du
pancréas et pancréatite d'amont**



**adénocarcinome du pancréas
céphalique sans extension
veineuse mésentérico-portale
évidente**

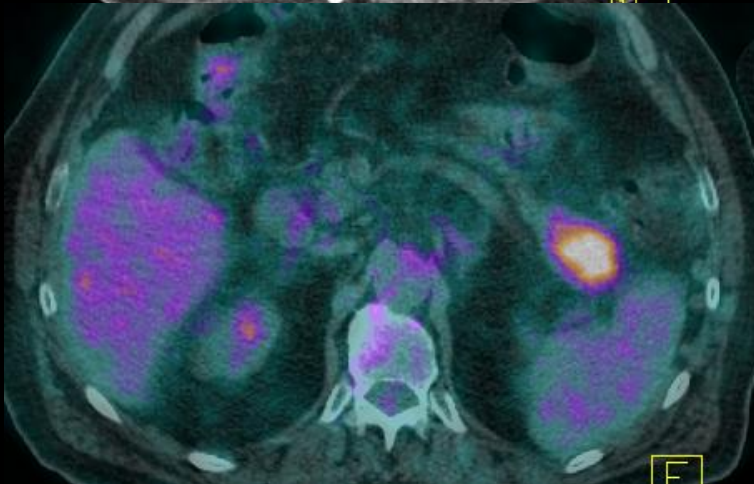
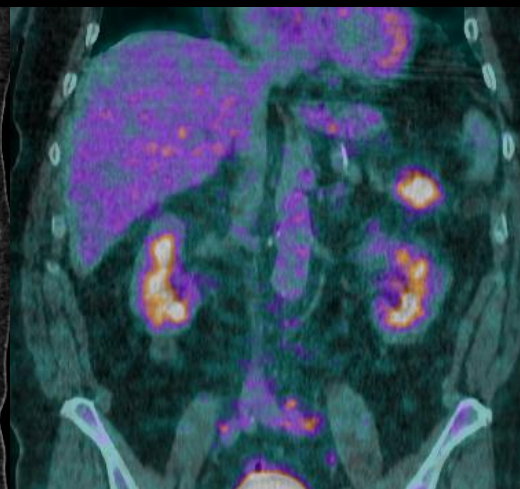
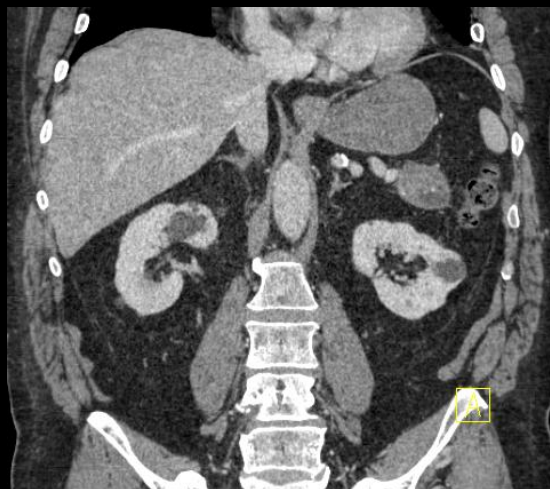
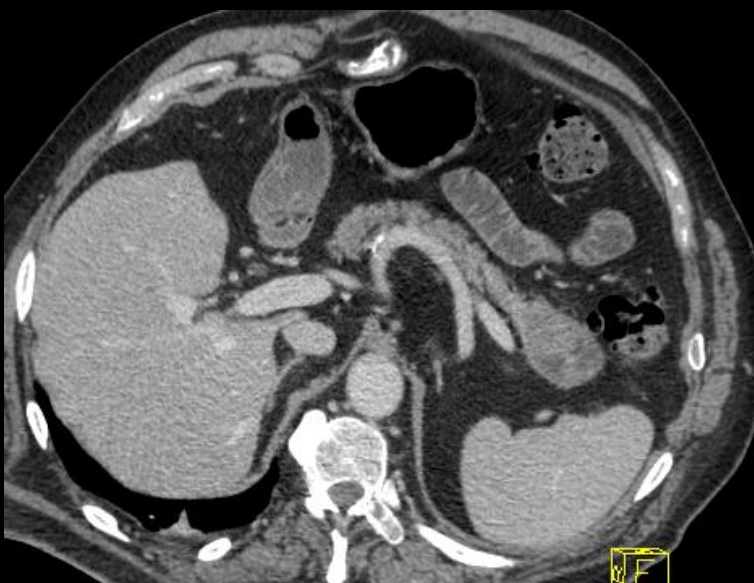
TEP FDG - Adénocarcinome pancréatique

- Diagnostic lésion primitive (Se 90-95% Sp 82-100%)
- Bilan d'extension : modification de la stadification dans 10 à 20% des cas
- Envahissement ganglionnaire et métastases à distance
- Différentiation entre pancréatite chronique et adénocarcinome

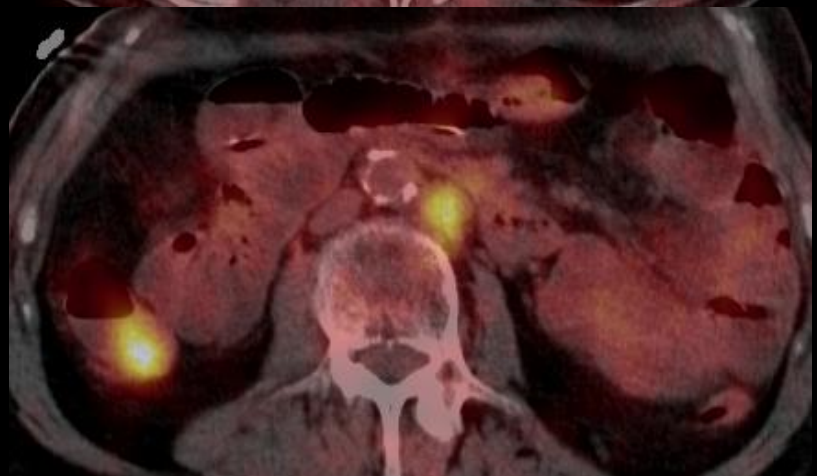
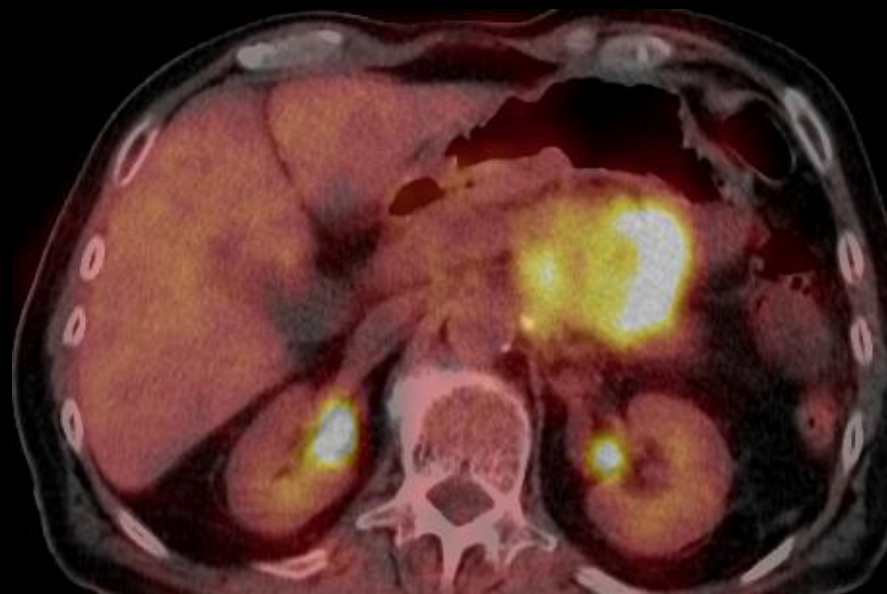
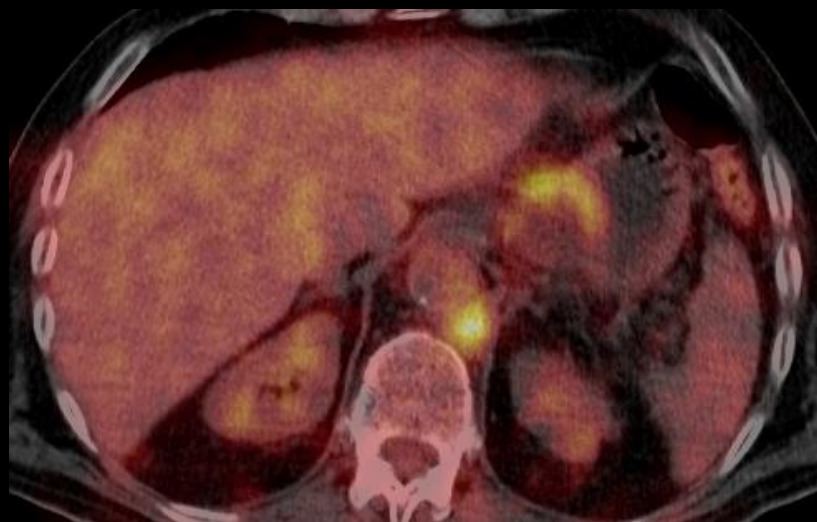
Pancreatic tumors: role of imaging in the diagnosis, staging and treatment, Delbeke et al, J Hepatobiliary Pancreat Surg 2004 11(1):4-10

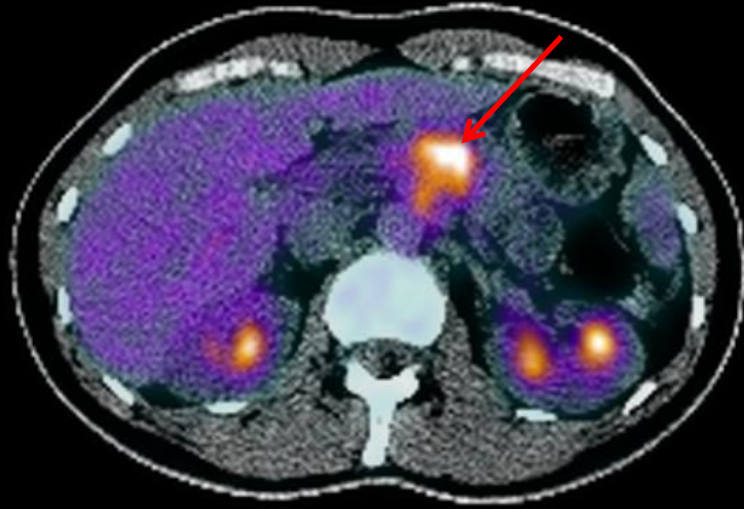
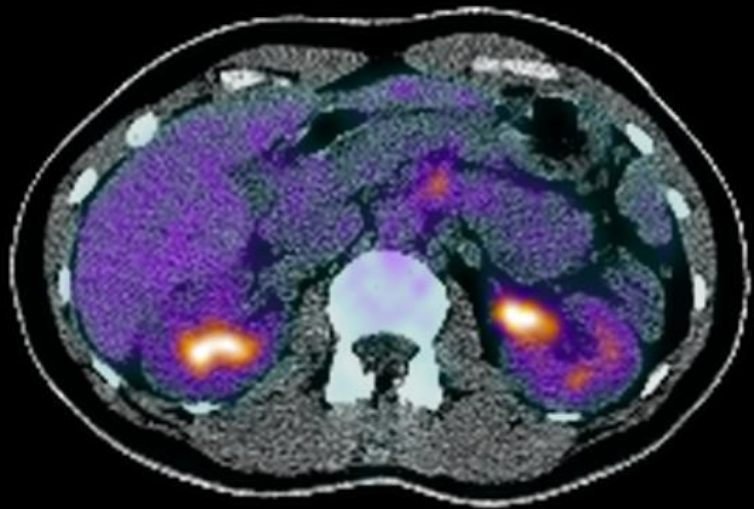
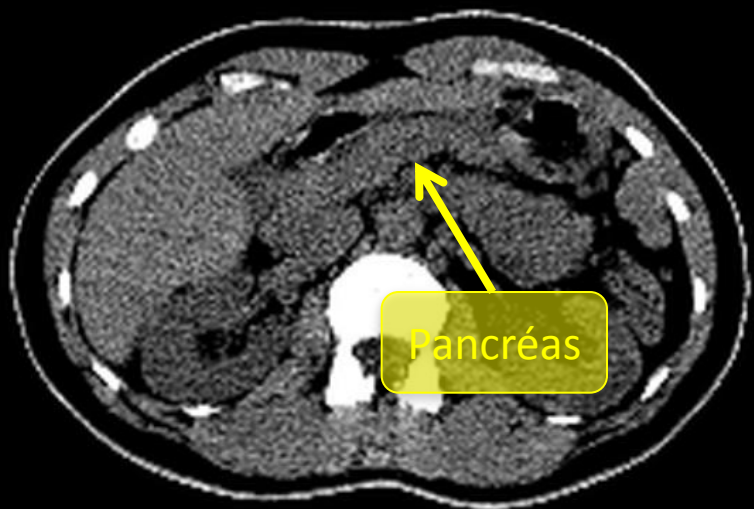
Positron emission tomography/computed tomography influences on the management of resectable pancreatic cancer and its cost-effectiveness, Heinrich et al, Ann Surg 2005 Aug;242(2):235-43

Adénocarcinome de la queue du pancréas

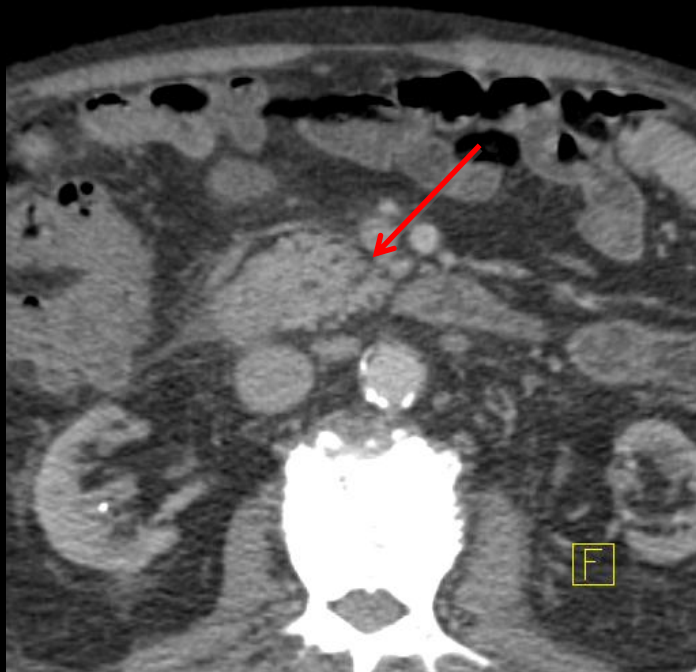
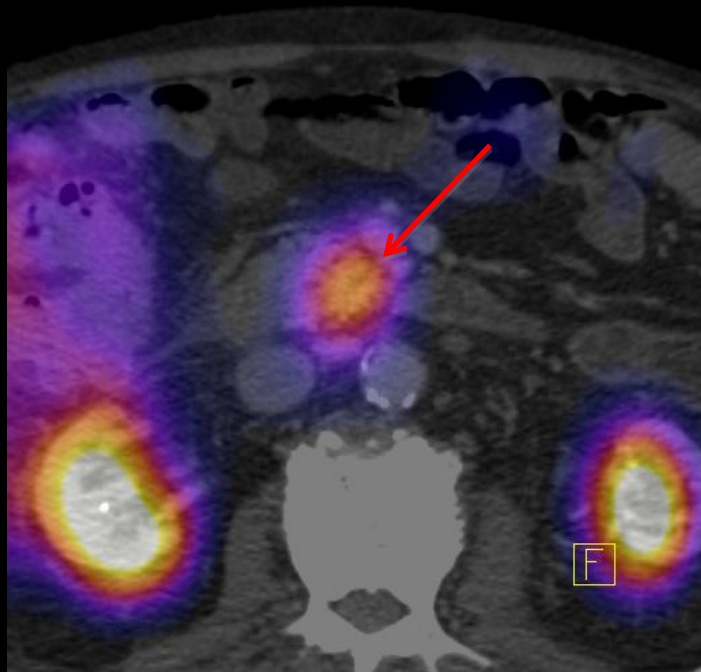


Adénocarcinome pancréatique N+

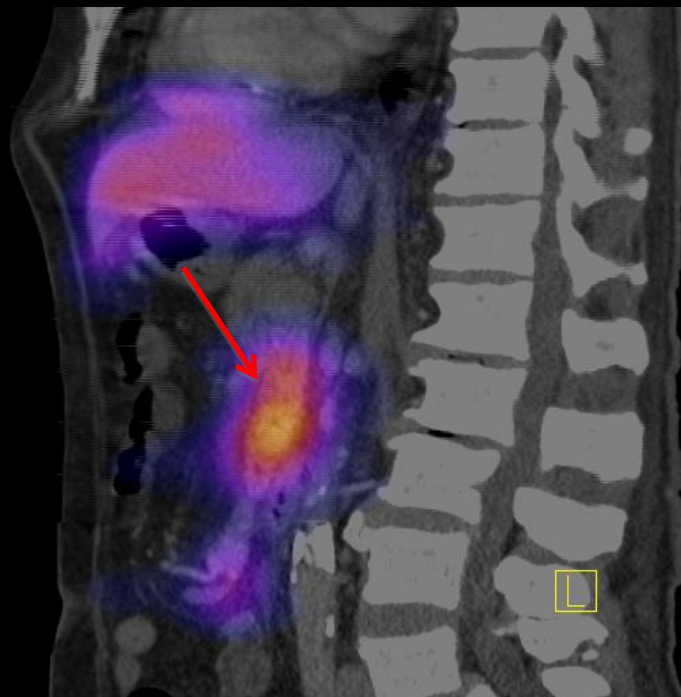




Tumeur du pancréas

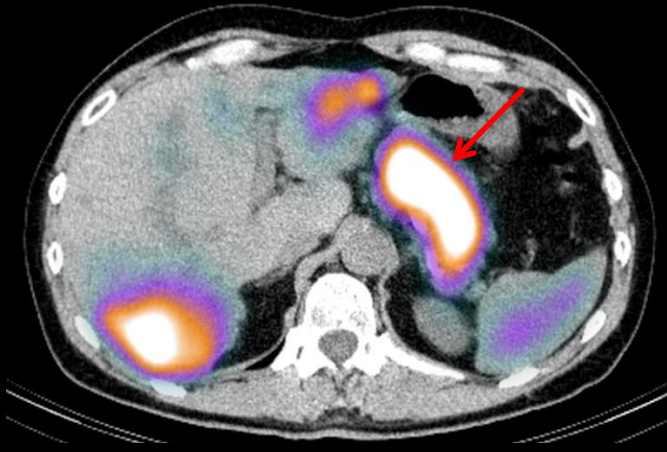


Octréoscan



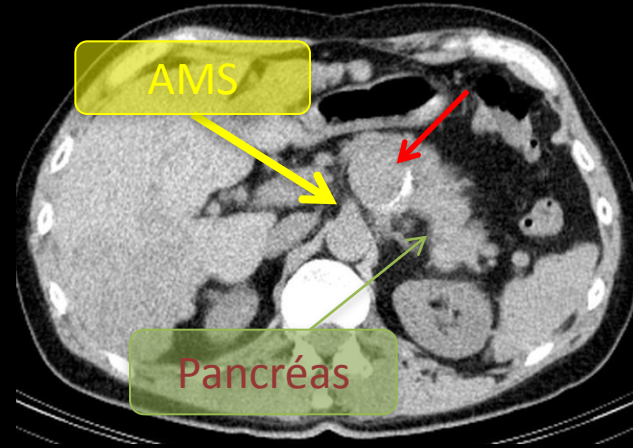
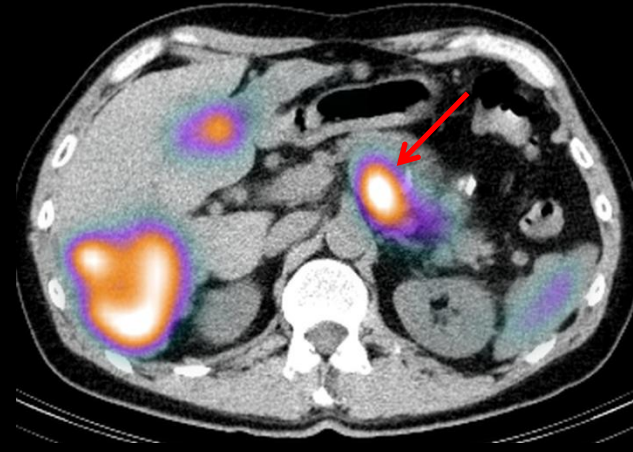
TNE Pancréas

Octréoscan



Diagnostic ?

TNE pancréas



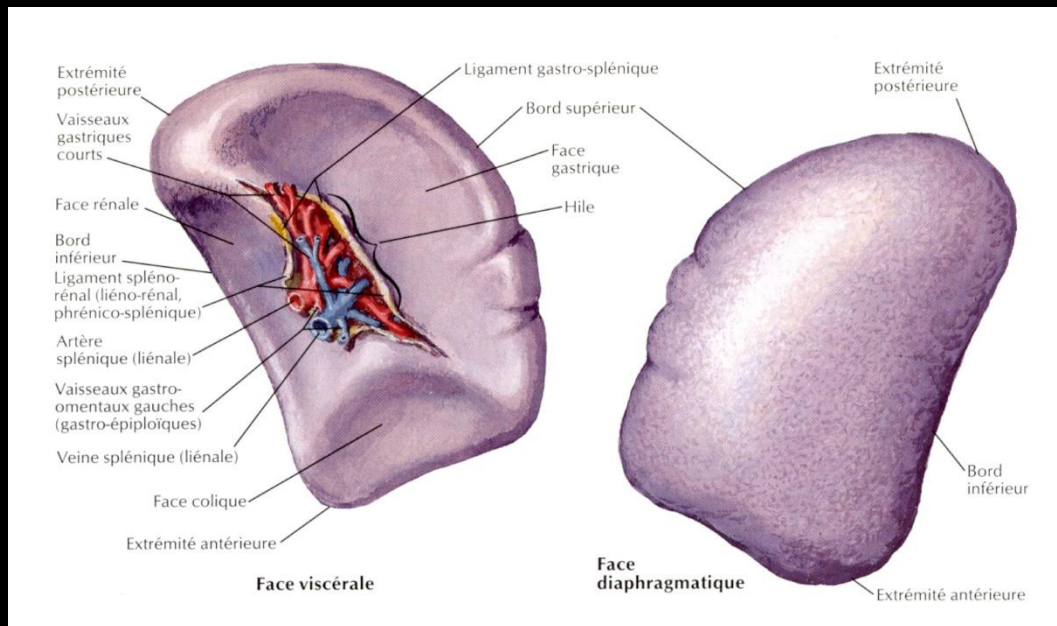
Localisation ?

Rétro-pancréatique

Rate

Introduction

- Pathologies vastes mais peu de pathologie primitive: importance du contexte!!
- Caractérisation des lésions focales difficile car peu spécifique: importance du suivi !!



Splénomégalie:

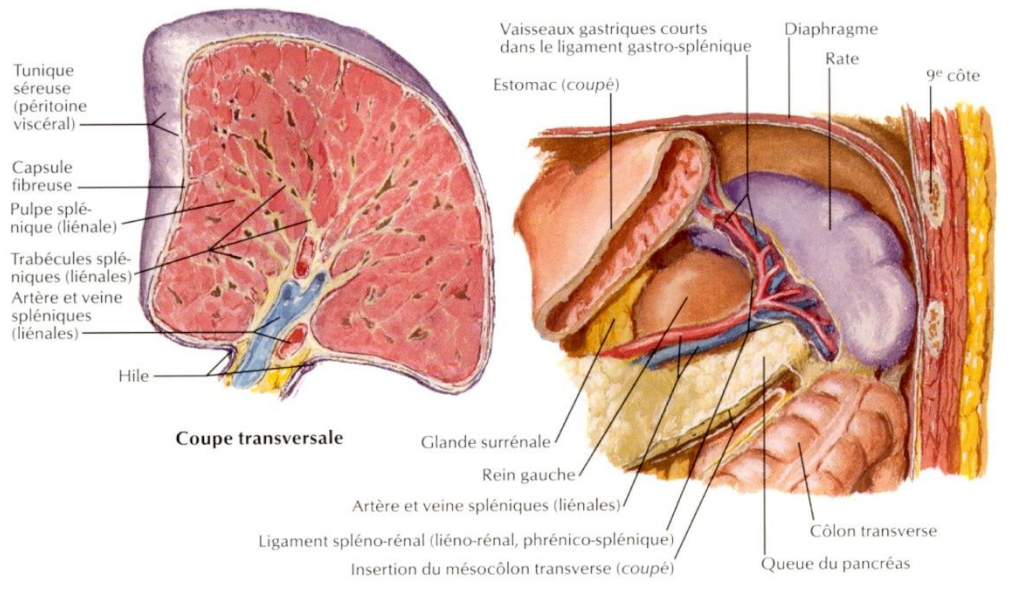
Classiquement sup à 13 cm de grand axe

- Perte de la concavité des faces viscérales
- Déborde le pôle inférieur du rein

◆ Face viscérale concave

◆ Face pariétale convexe

Introduction



- Position intra-péritonéale.
- Ligaments spléno-pancréatique et spléno-colique qui maintiennent la rate dans l'hypocondre gauche.
- Nombreuses anastomoses vasculaires notamment avec les vaisseaux gastriques courts.

❑ Pulpe rouge: Renouvellement cellulaire

- sinus vasculaires (cordons de Billroth où sont détruites les hématies altérées).

❑ Pulpe blanche: immunité

- follicules lymphoïdes et cellules réticulo-endothéliales
« la rate est le plus gros ganglion du corps »

❑ Zone marginale: entre les 2, rôle dans le déclenchement de la réponse immune primitive. Lymphocytes, macrophages.

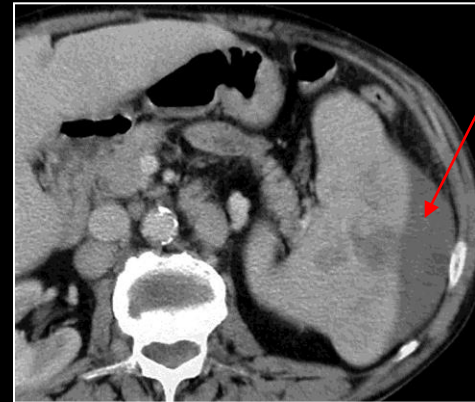
Lymphome



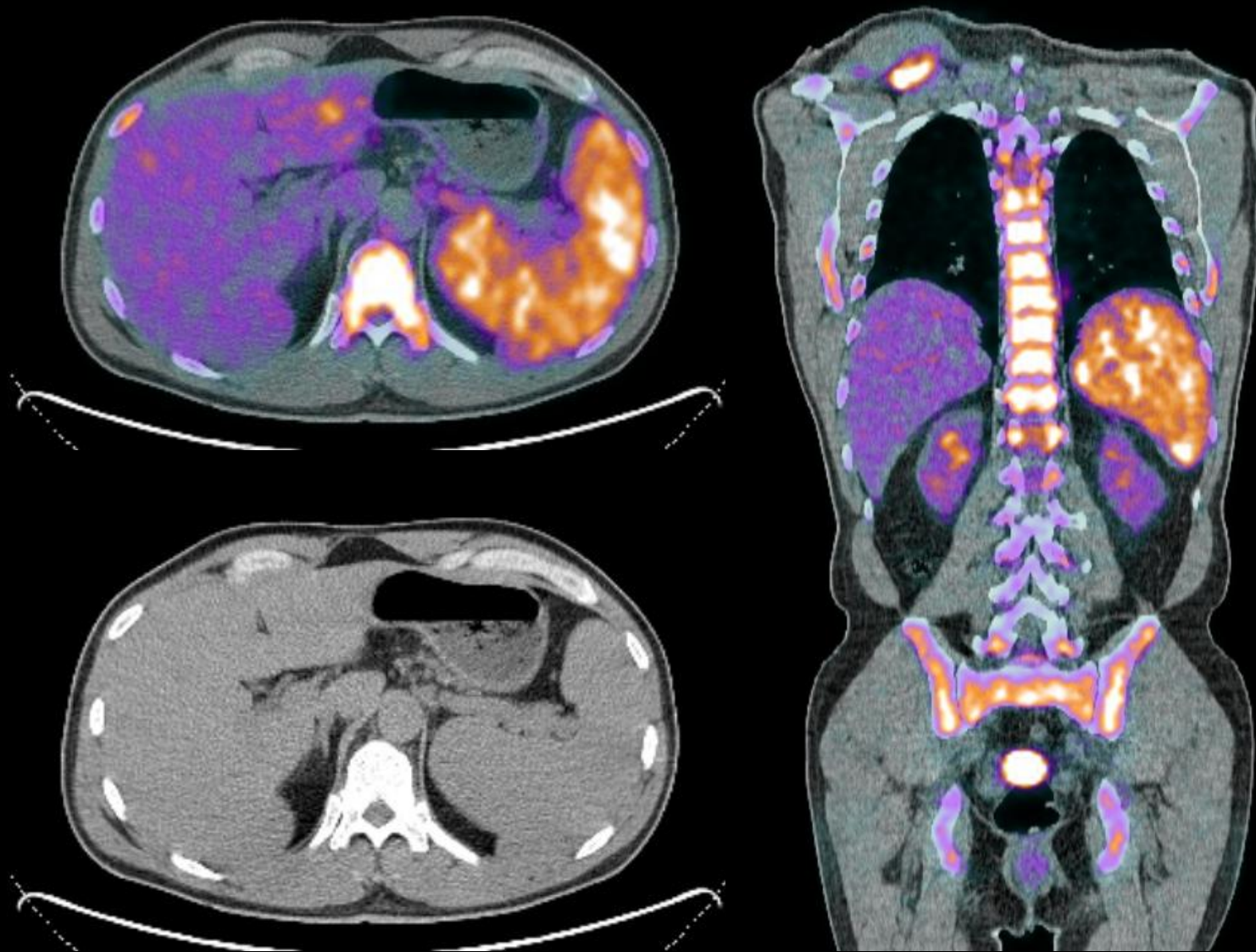
Infiltration micro-nodulaire diffuse



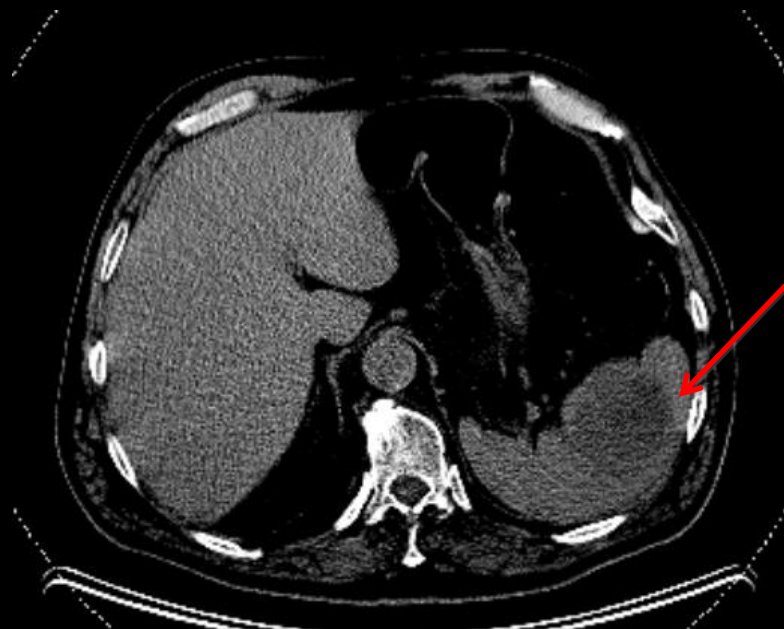
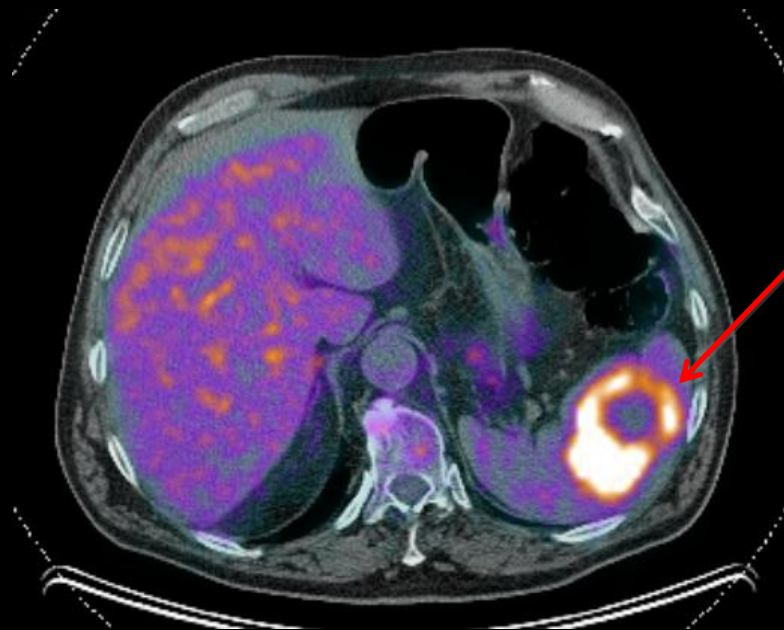
Macro nodules



Lymphome compliqué d'hémopéritoine

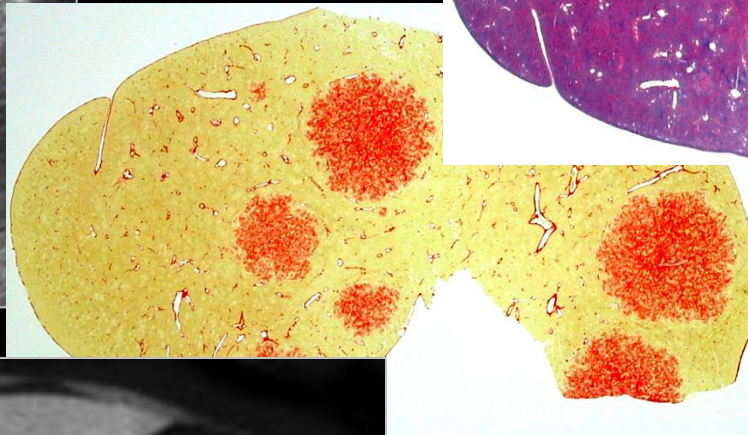
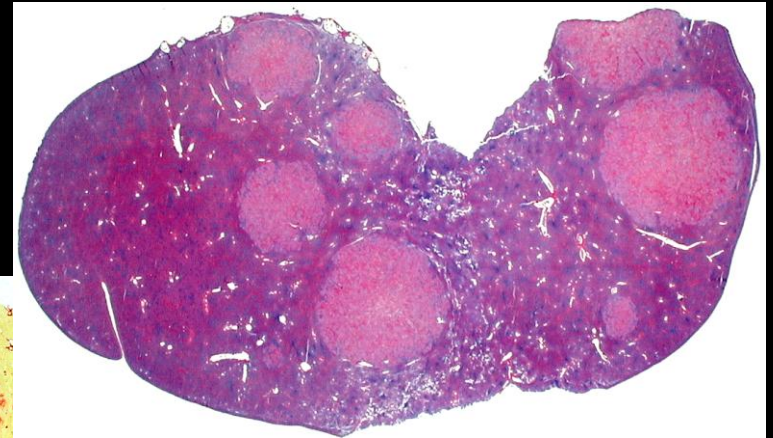
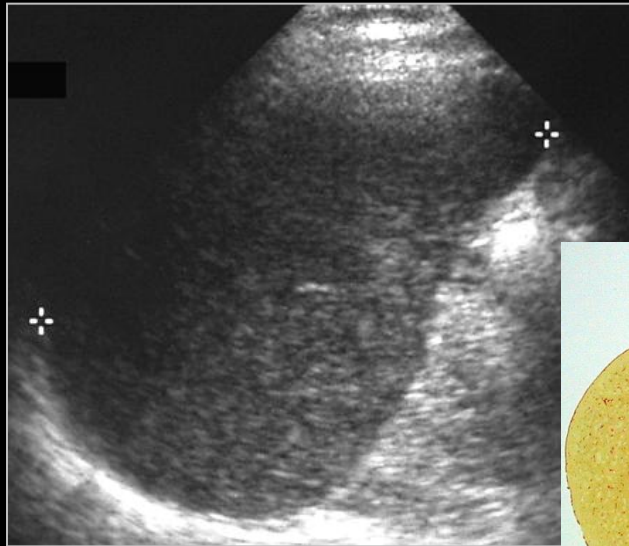


Atteinte splénique

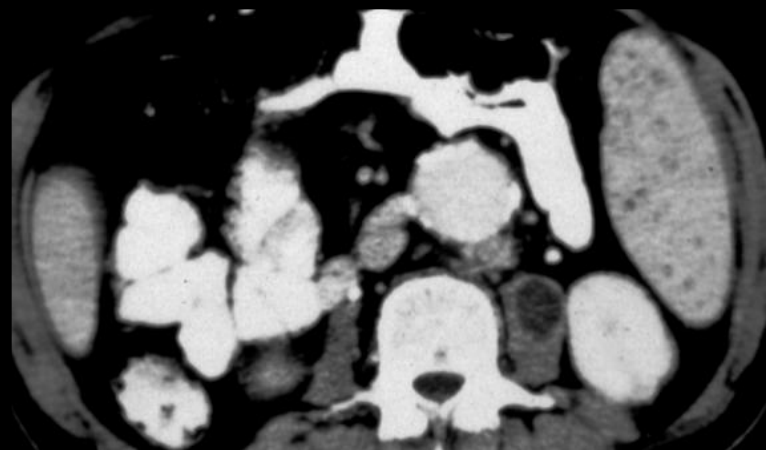
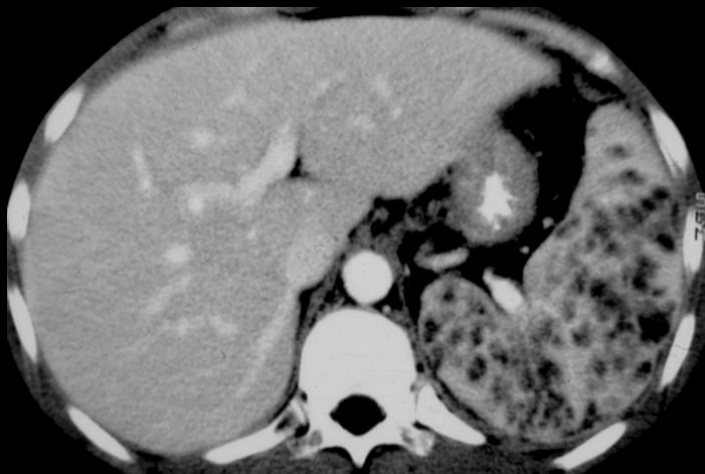


Métastase splénique

Sarcoïdose



Tuberculose



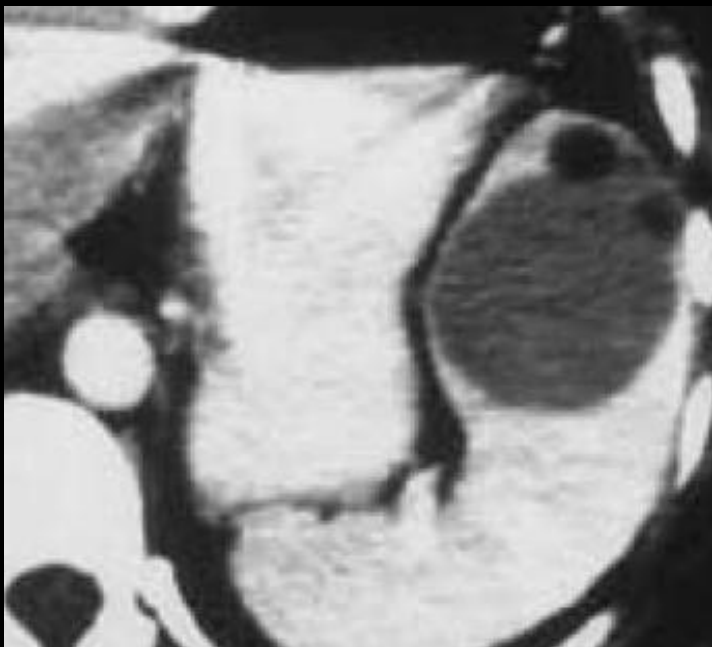
Infiltration micro-nodulaire

Rechercher adénopathies à centres claires ++ (nécrose caséuse)

Rechercher autres localisations: poumons ++



kyste splénique



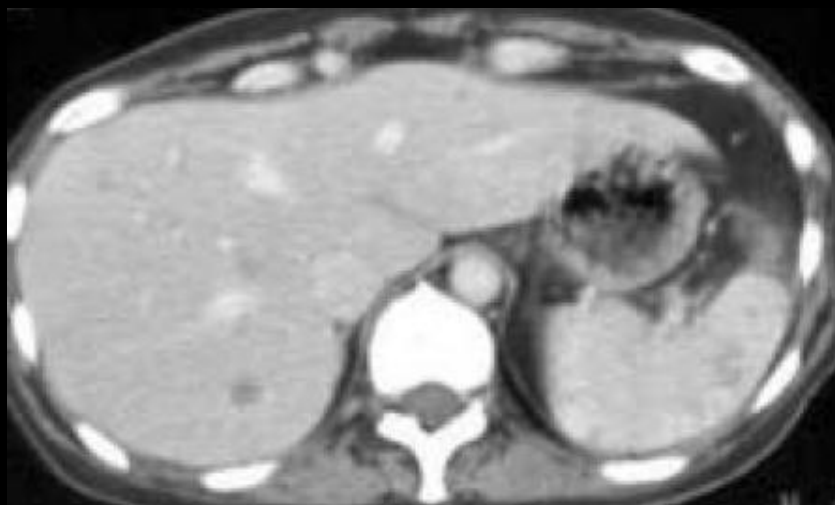
kyste splénique



angiome



Abcès fungiques et ID



Merci de votre attention