

Miks ma varem seda ei
teadnud?!?!!

Maks

ERÜ õppepäev 19.04.2024

Kärt Seer

Maksa kollete jaoks alati hilisarteriaalne faas

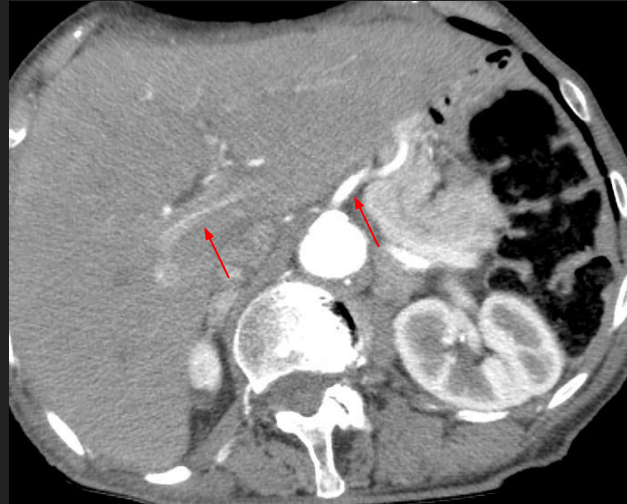
VARANE ARTERIAALNE EHK ANGIO FAAS

Aort ja suured arterid on intensiivselt kontrasteerunud, portaalveenis kontrasti veel ei ole, maksa parenhüüm on nagu natiivuurinul



HILISARTERIAALNE FAAS

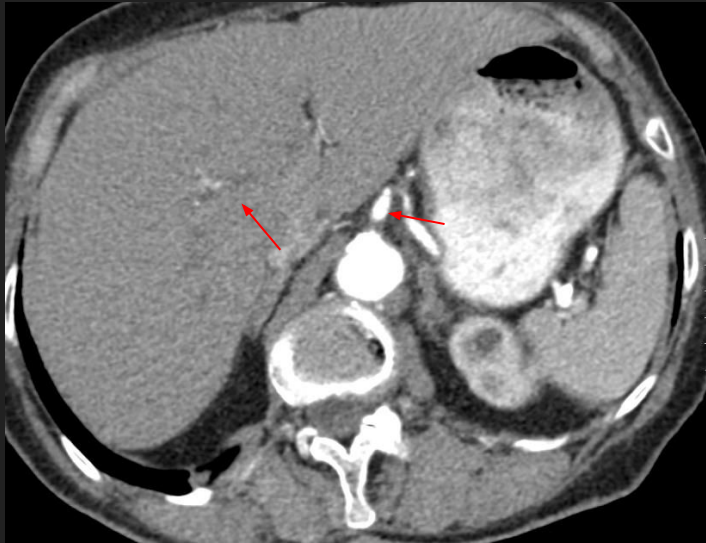
Maksaarter ja teised ülakõhu arterid on intensiivselt kontrasteerunud, portaalveenis on ka juba natuke kontrasti, aga maksaveenides kontrasti veel ei ole



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Adekvaatne KT parenhümatosne faas

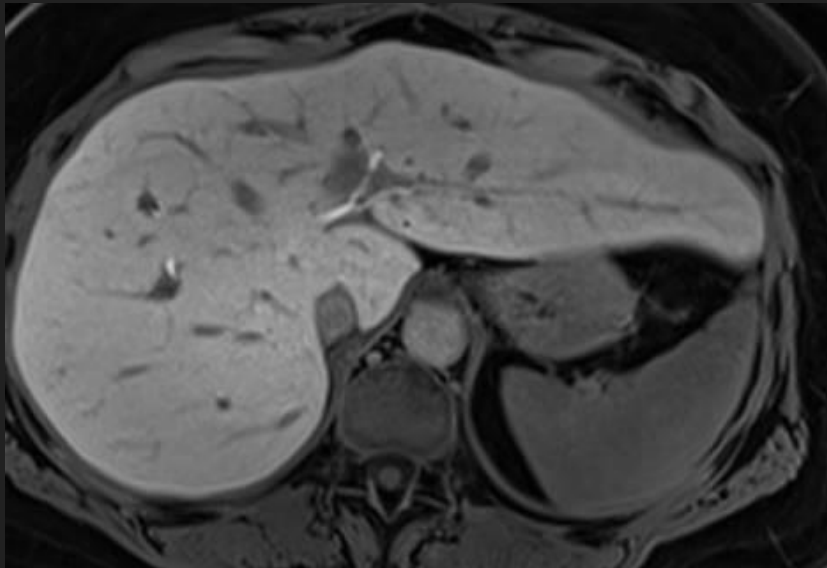
Natiiviga võrreldes tõuseb maksa tihedus vähemalt 50HU



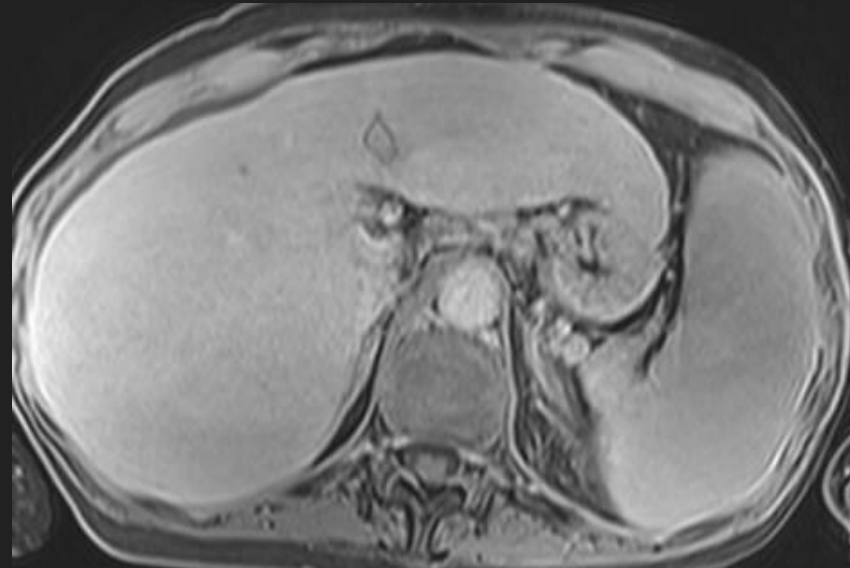
Adekvaatne Primovisti hepatobiliaarne faas

Suured veresooned peavad olema oluliselt tumedamad kui maksa parenhüüm

20 min - hea hepatobiliaarne faas



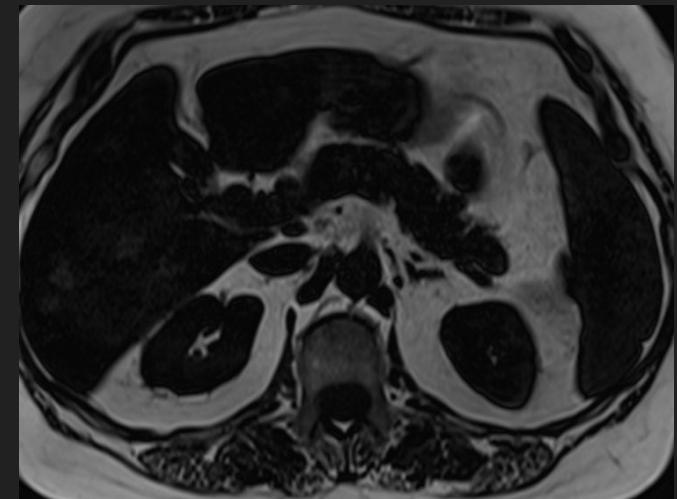
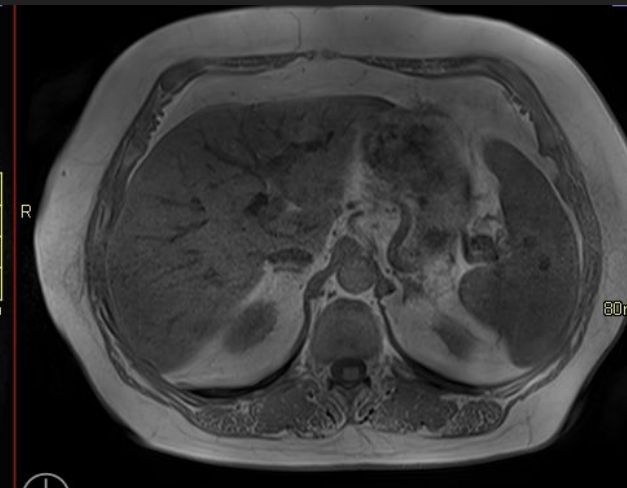
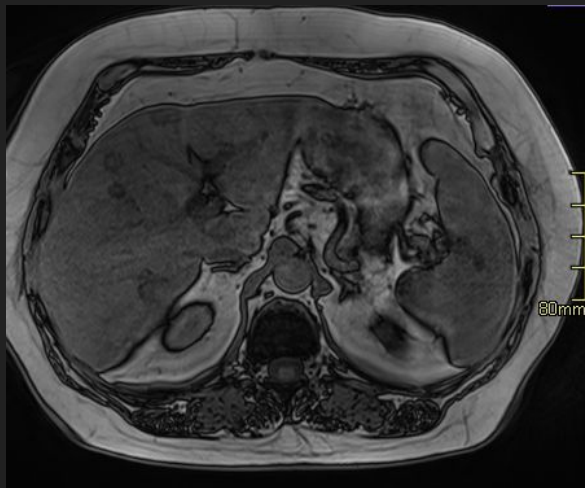
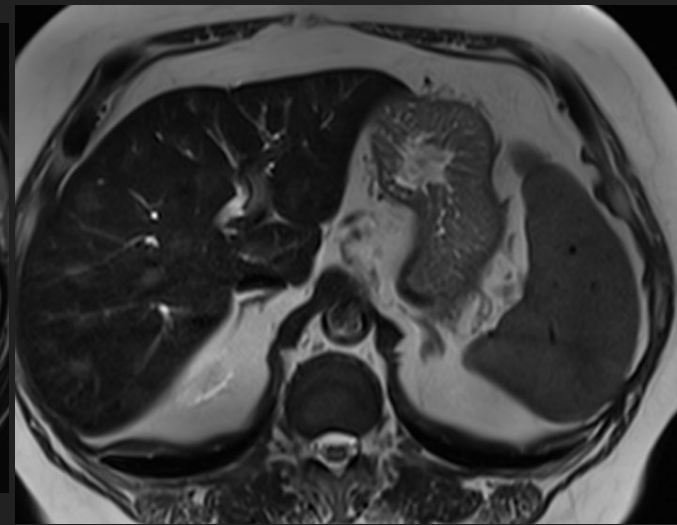
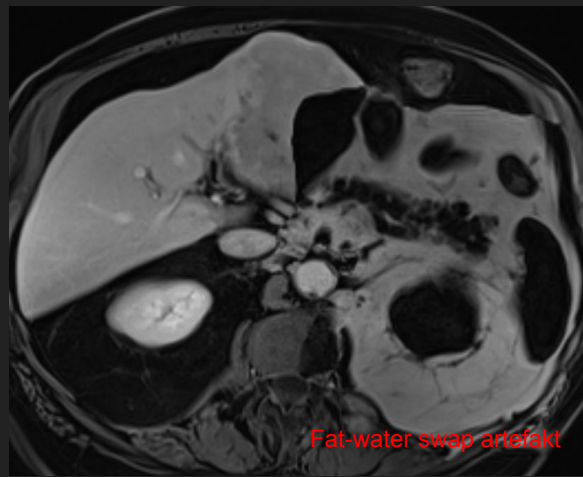
20 min - kestab alles transitoorfaas



T1 Dixon Fat - ei ole mõttetu seeria

Võib olla kasu rasva tuvastamisel

Fat ja water võivad sassi minna



KT maksa aken - koldeid kergem leida

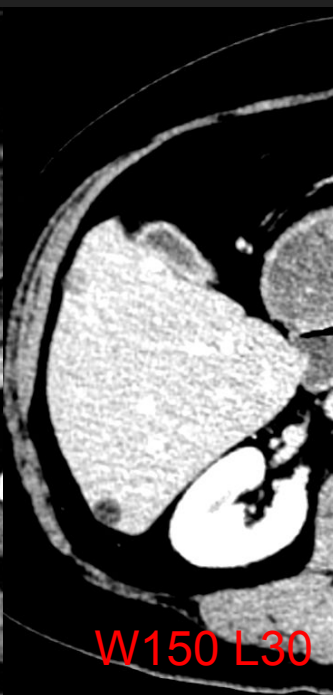
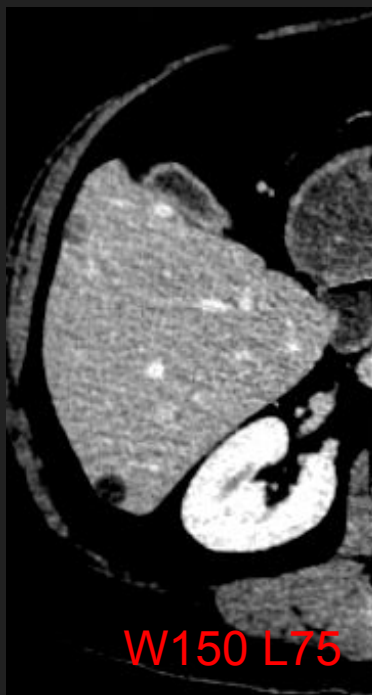
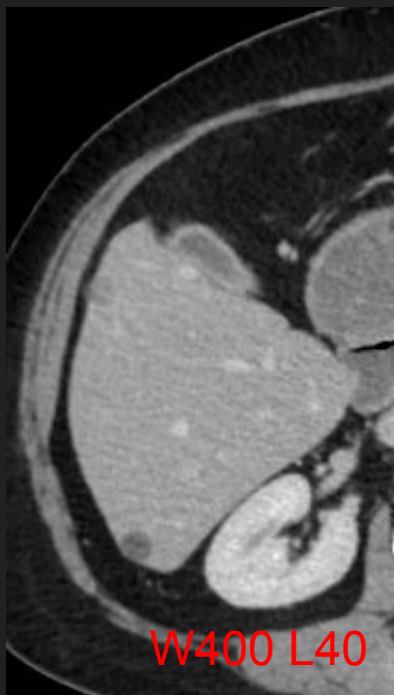
Soovitusi on erinevaid, katsetage ise:

W 150 L 30

W 150 L 75

W 160 L 60

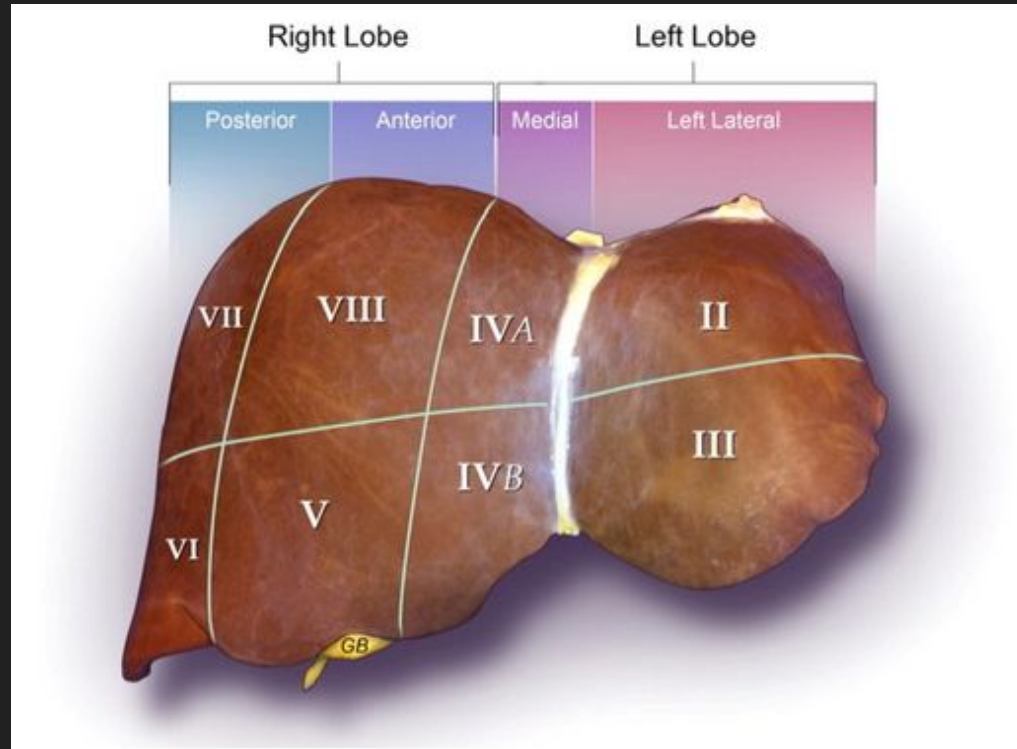
jms



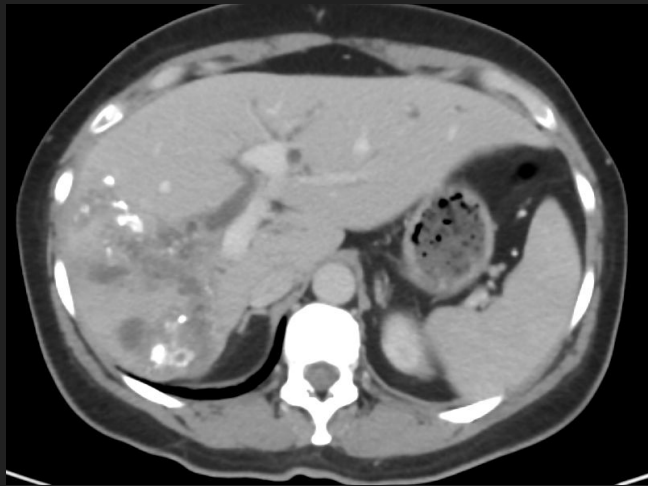
MRT tavalise või maksaspetsiifilise kontrastainega?

- Tavalise kontrastainega: ebaselge maksahaigus, sapiteede haigused, tsirroosi foonilt maliigsuse otsimine, mitteopereeritavate metastaaside otsimine
- Maksaspetsiifilise kontrastainega: maksakolde olemuse hindamine, maksa metastaaside otsimine kui on potentsiaalselt opereeritavad metastaasid (nt kolorektaalvähi korral), sapilekke otsimine
- Sapilekke küsimuse korral kui 20 min hepatobiliaarses faasis kontrastaine leket ei ole, siis masinast välja ja 90-120 min möödudes uuesti skännida

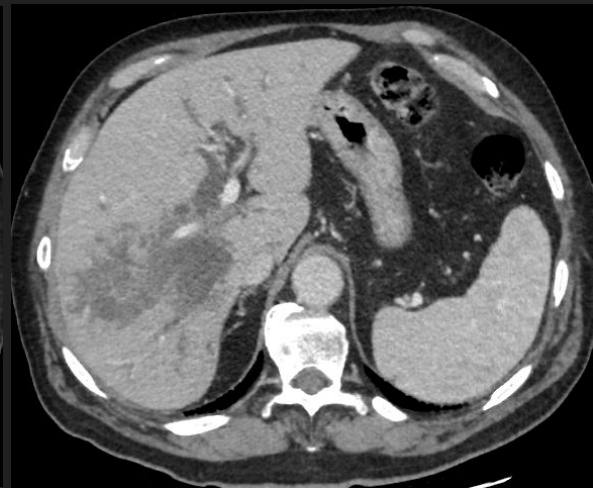
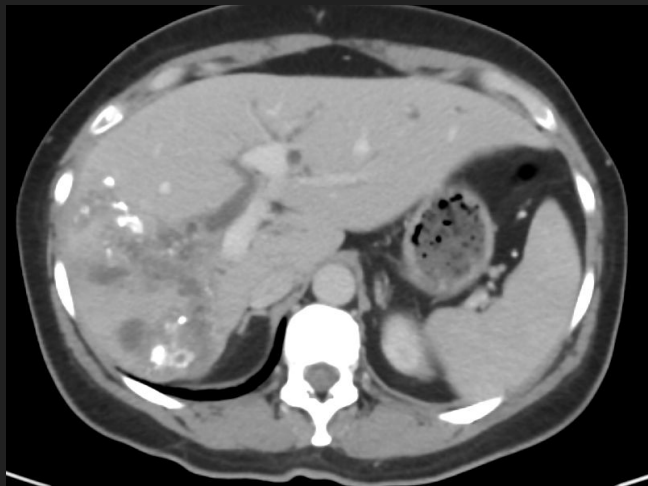
Maksa saagarad ja segmendid



Mis haigus on?

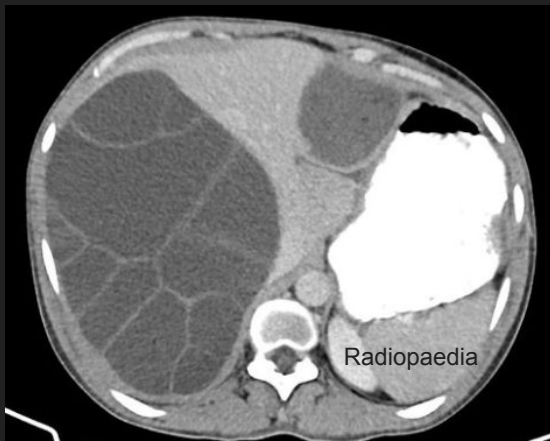


Mis haigus on?



Echinococcus
alveolaris/multilocularis

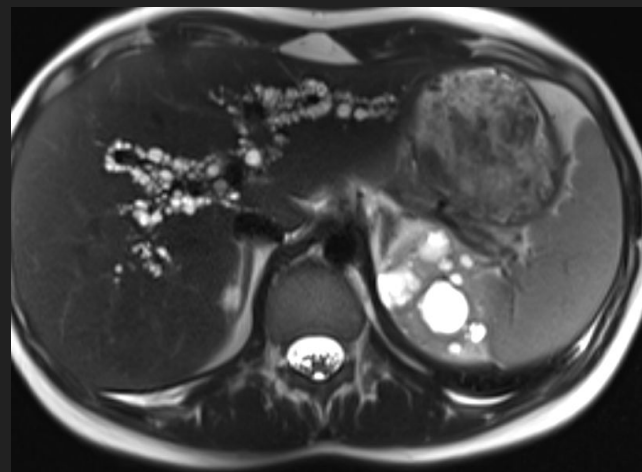
Echinococcus granulosus



Echinococcus alveolaris/multilocularis

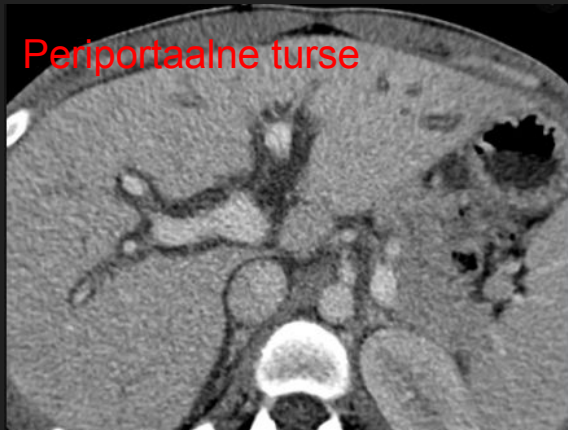


Hüpo kraam portaalveeni juures



Hüpo kraam portaalveeni harude juures

Periportaalne turse



Laienenud sapiteed



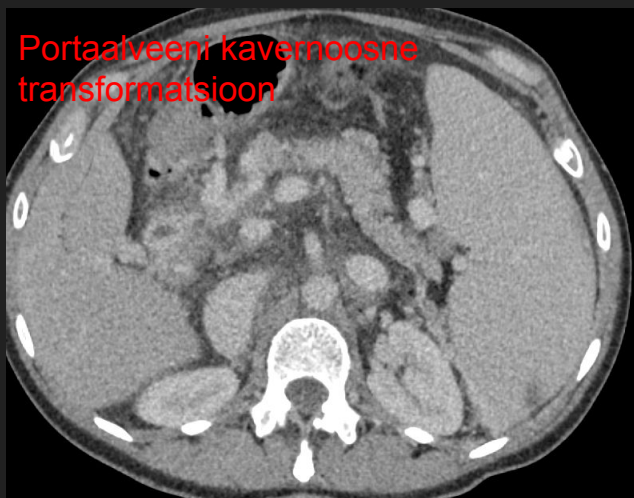
Peribiliaarsed tsüstid



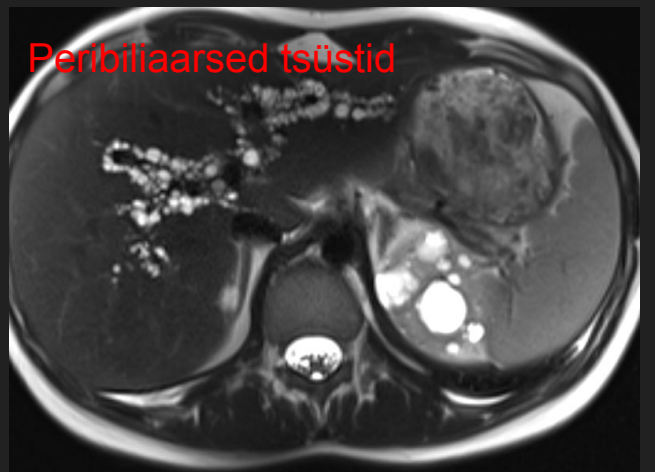
Portaalveeni kavernoosne transformatsioon



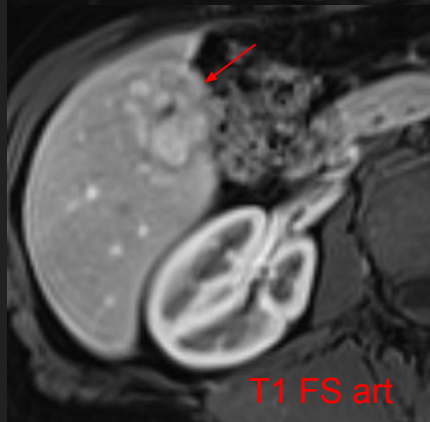
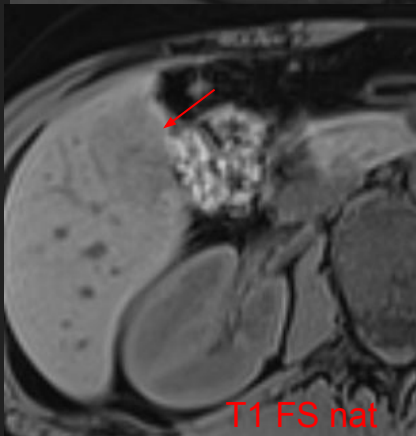
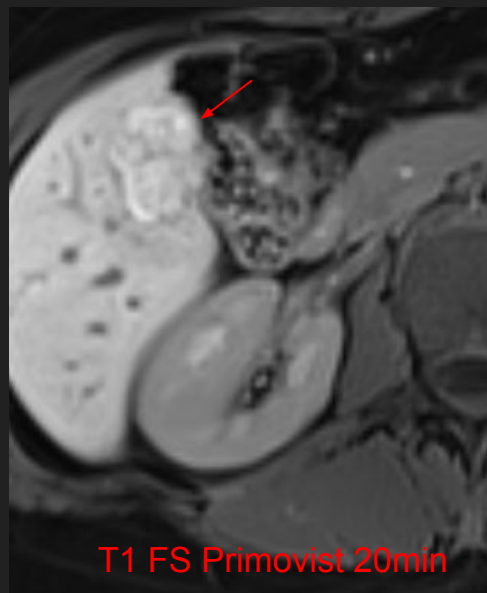
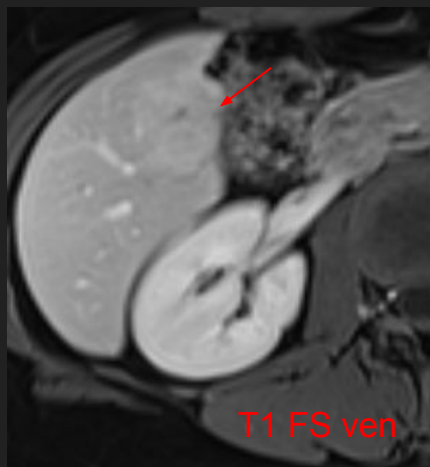
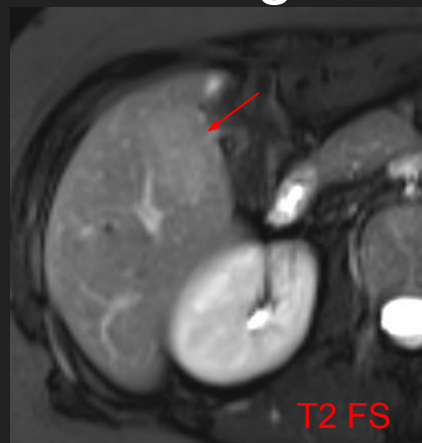
Portaalveeni kavernoosne transformatsioon



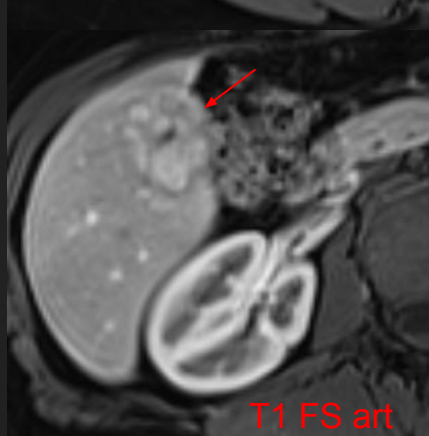
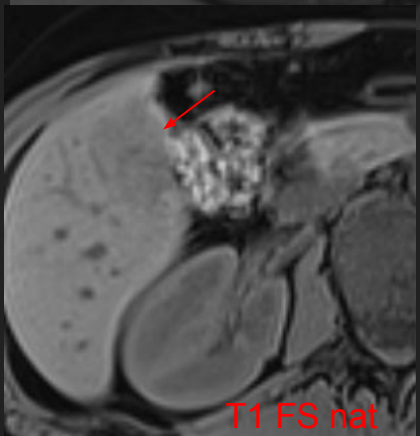
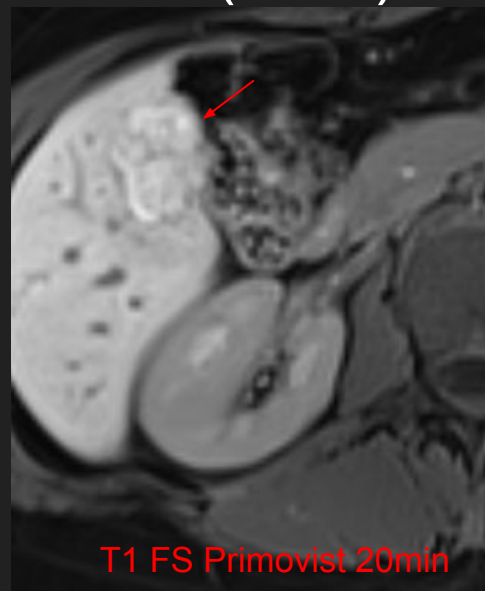
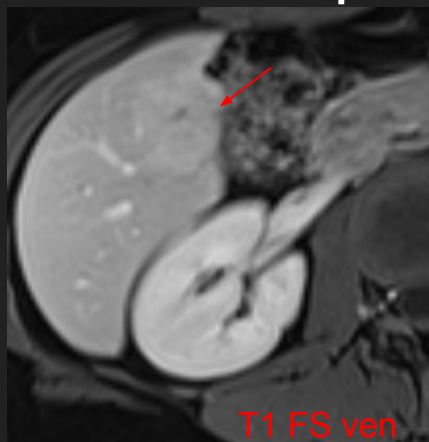
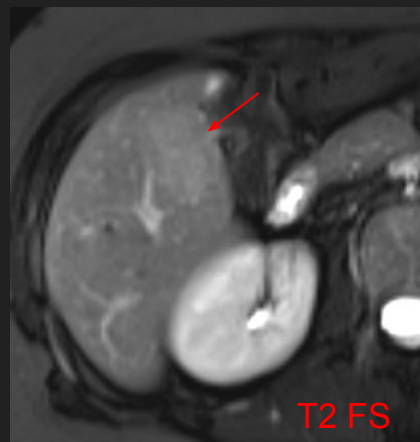
Peribiliaarsed tsüstid



Mis haigus on?



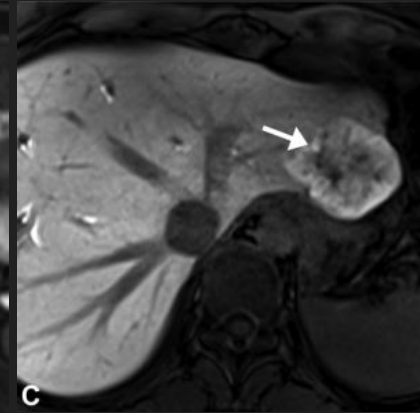
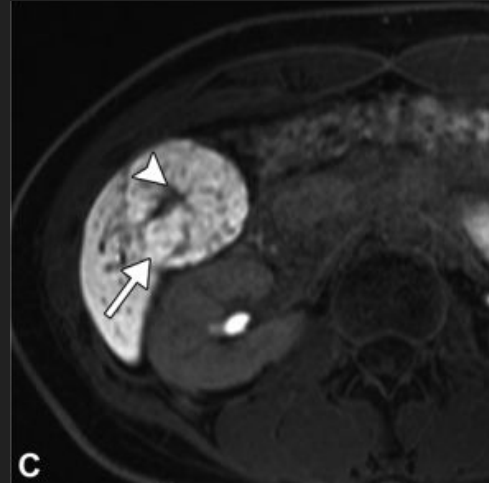
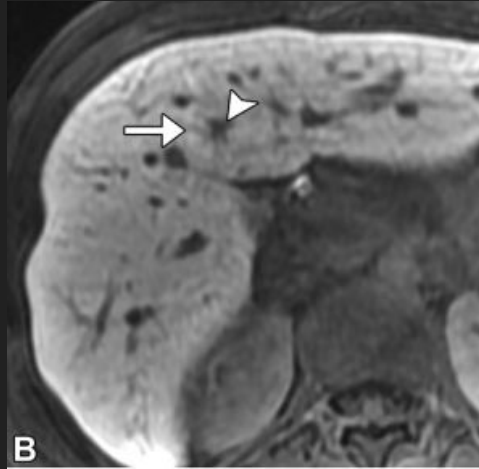
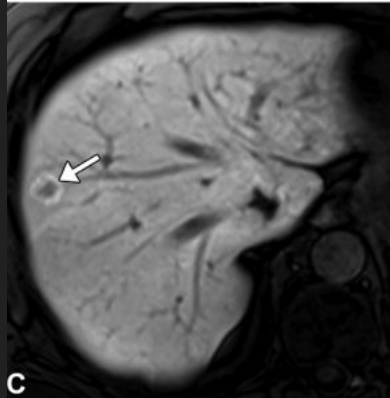
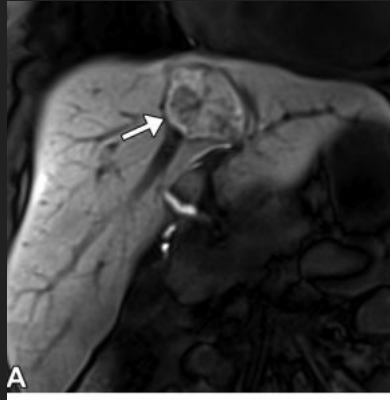
Fokaalne nodulaarne hüperplaasia (FNH)



Natiivis vaevu aimatav.
Kontrastaine väljapesu ei ole.
Primovisti hepatobiliaarses faasis kontrasteerub sama palju või rohkem kui maks.
Sageduselt kolmas tsüsti ja hemangioomi järel

Fokaalne nodulaarne hüperplaasia

Erinevad FNH-d Primovisti 20 min hepatobiliaarses faasis



LeGout, J. D., Bolan, C. W., Bowman, A. W., Caserta, M. P., Chen, F. K., Cox, K. L., Sanyal, R., Toskich, B. B., Lewis, J. T., & Alexander, L. F. (2022). Focal Nodular Hyperplasia and Focal Nodular Hyperplasia-like Lesions. *RadioGraphics*.

Astsiit ja muud vedelikud

Tavaline astsiit ei deformeeri maksa (*liver scalloping*), enamasti on pseudomüksoom või muud mutsinoossed peritoneaalsed metastaasid

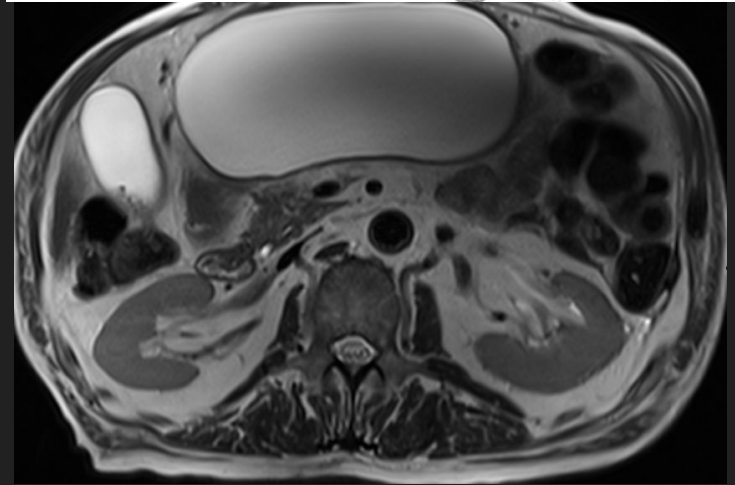
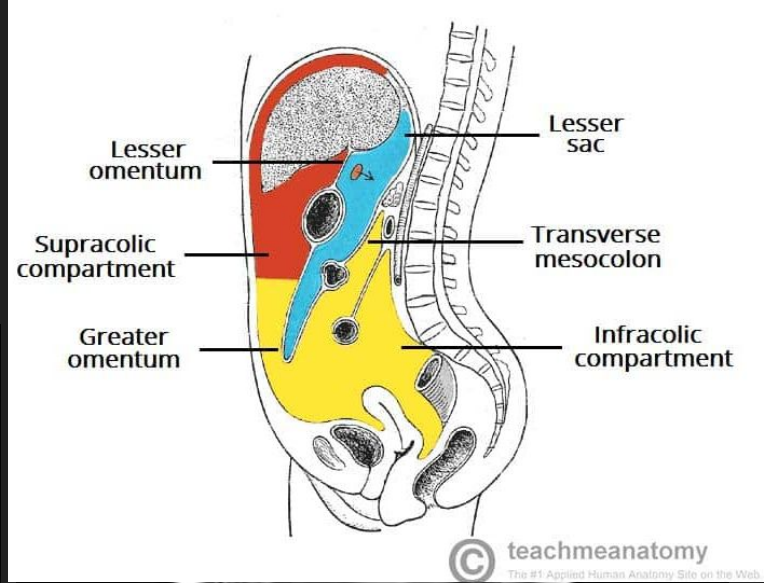
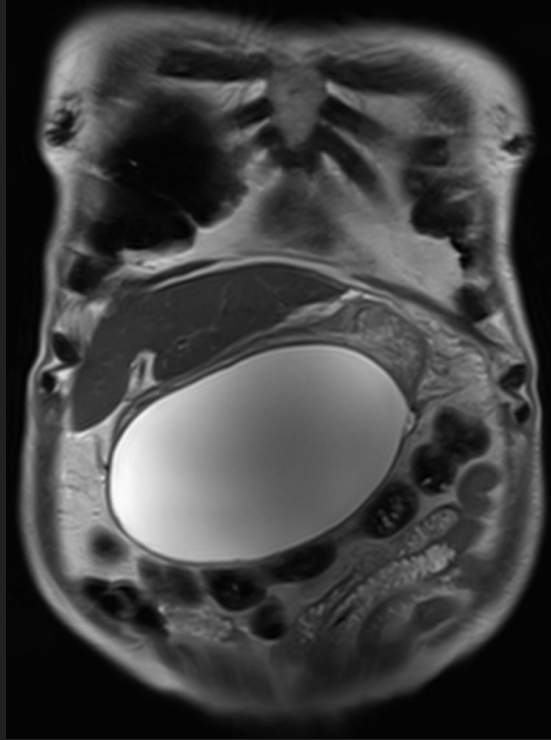
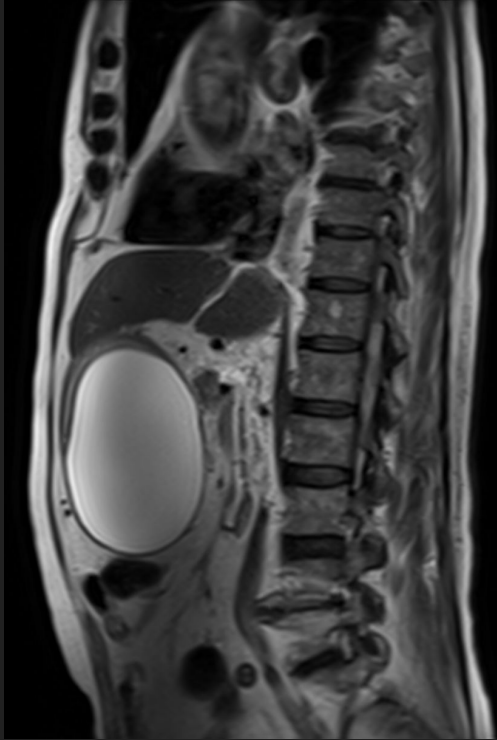


Astsiit/vedelik S1 kõrval asub bursa omentalise ülemises retsessis



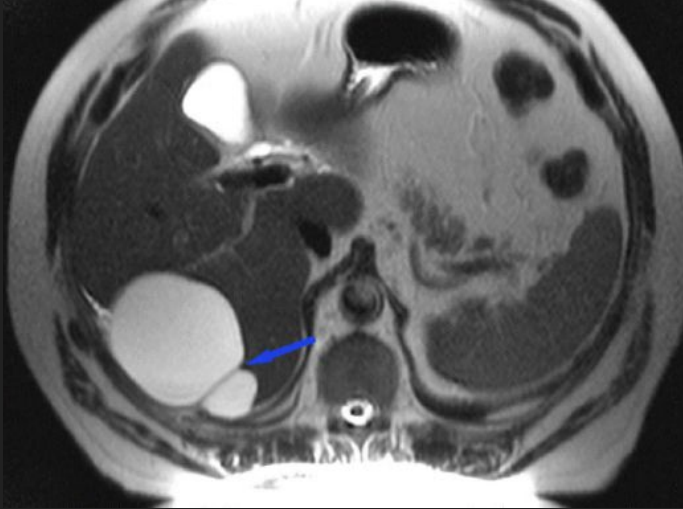
Astsiit ja muud vedelikud

Piirdunud vedelik piki mao suurt kõverikku asub *bursa omentalis*



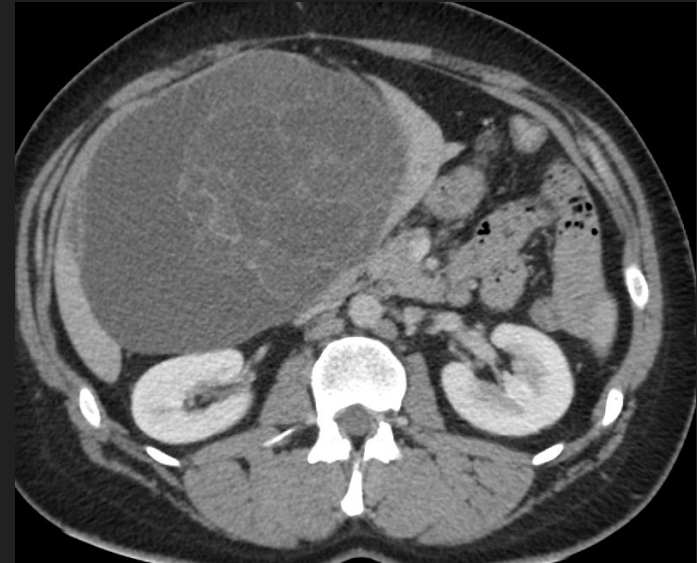
Tsüstide kogum vs tsüstjas tuumor

Lihtsate tsüstide kogum või komplekstsüst -
igale septile vastab kontuuri
sissetõmme/lobulaarsus



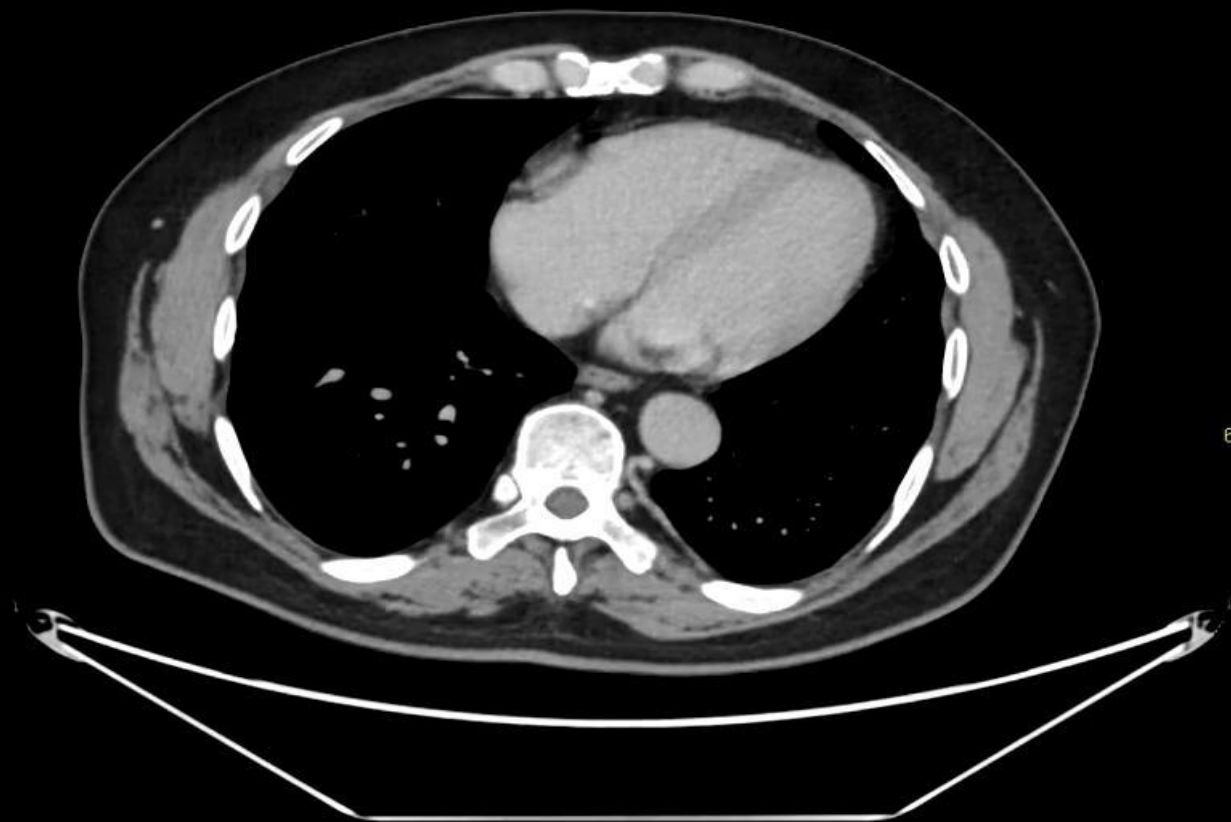
Hardie et al. (2021) Multi-Center Follow-up Study to Develop a Classification System Which Differentiates Mucinous Cystic Neoplasm of the Liver and Benign Hepatic Cyst Using Machine Learning. *Academic Radiology*

Mutsinoosne tsüstiline neoplaasia (varem biliaarne tsüstadenoom) - igale septile ei vasta kontuuri lobulaarsust

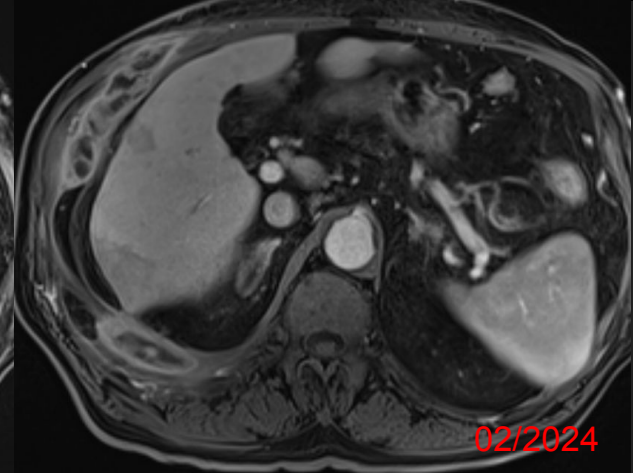
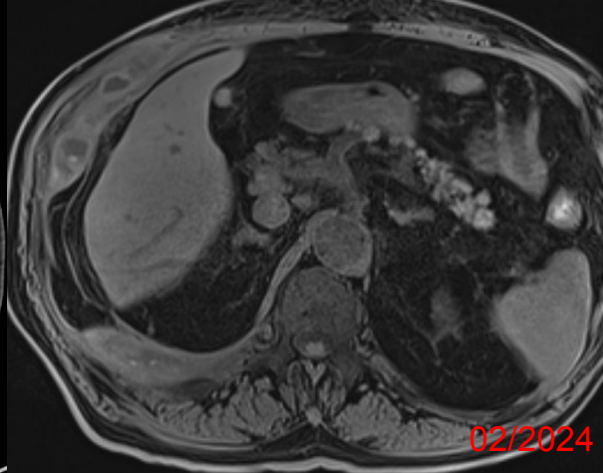
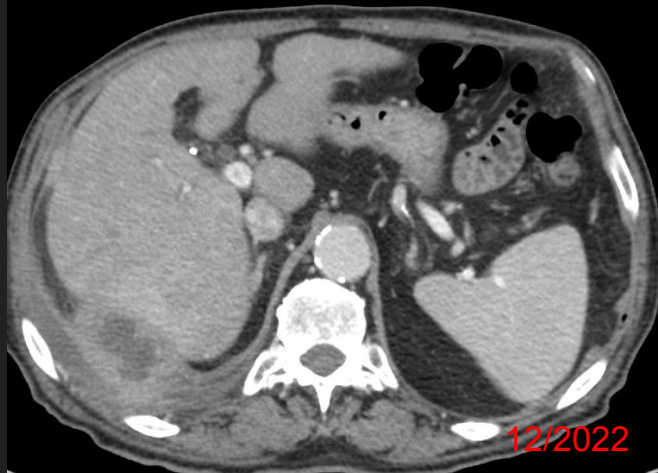
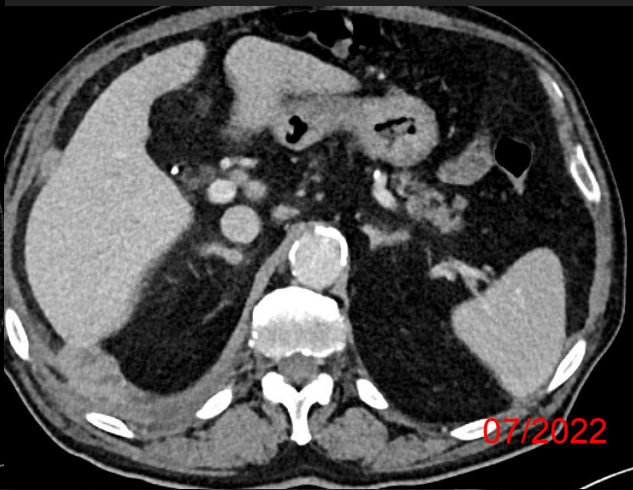
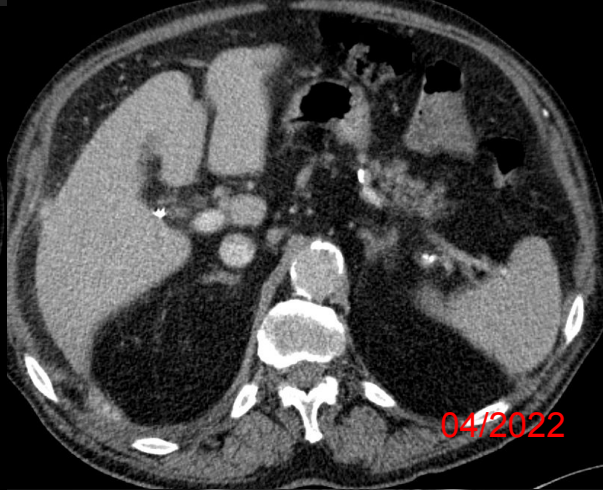
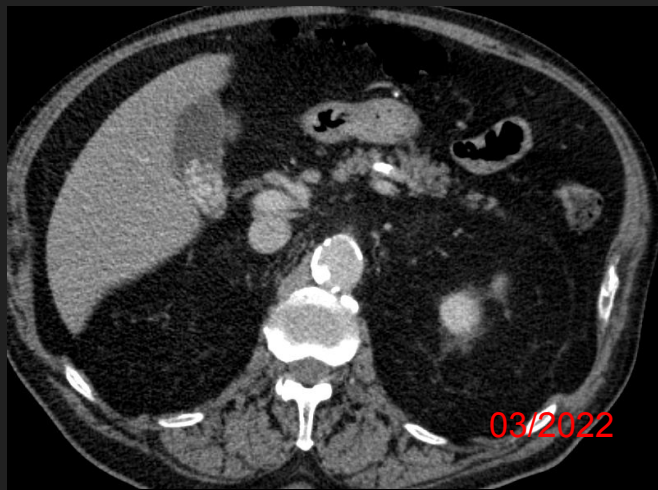


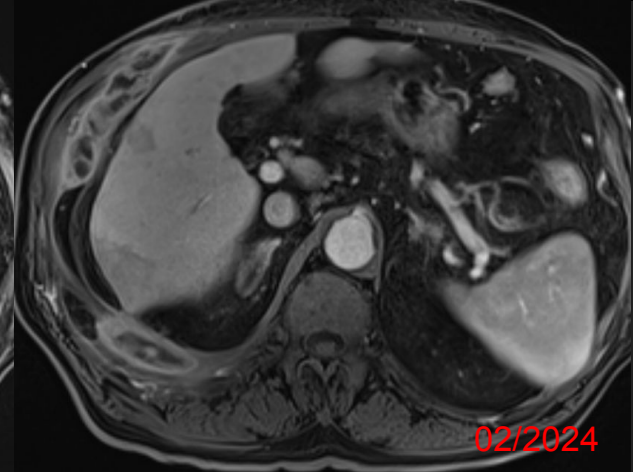
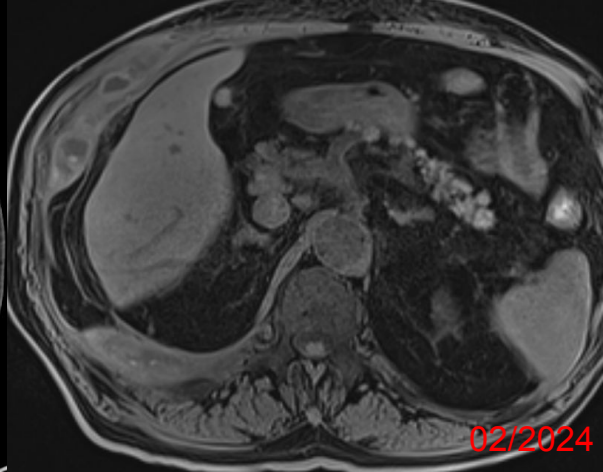
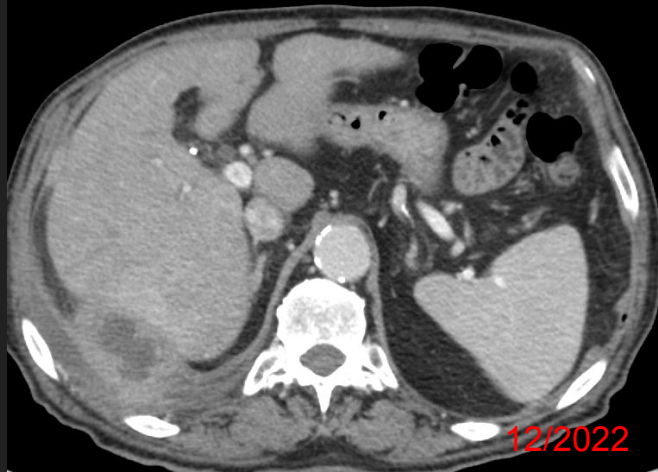
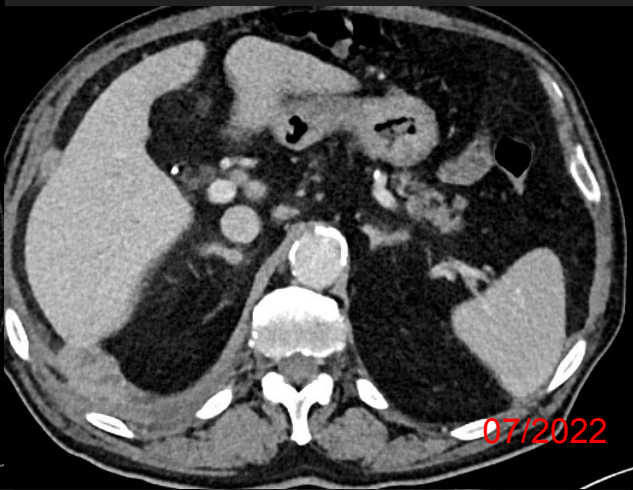
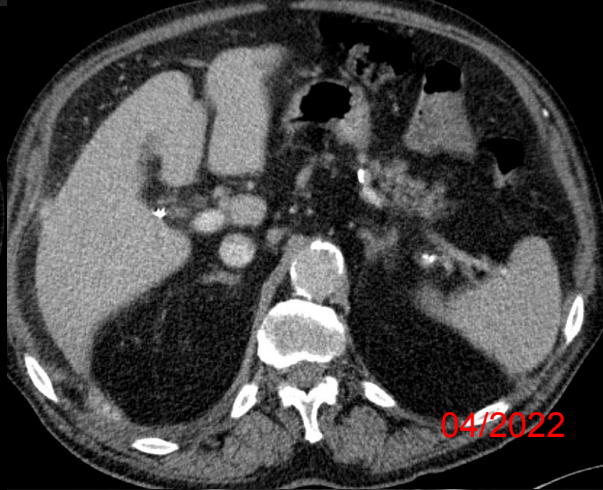
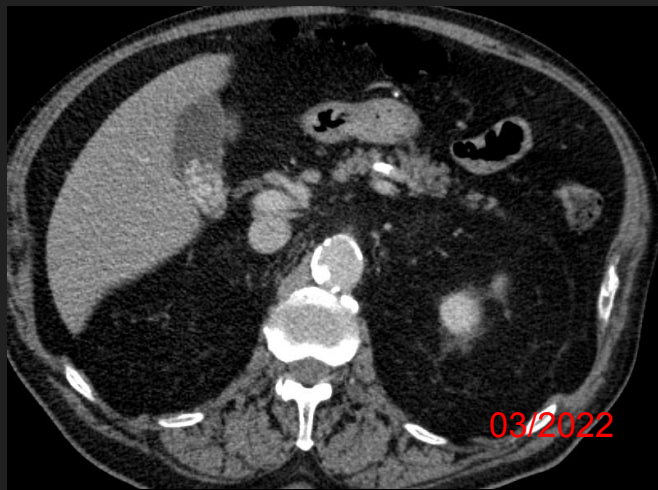
Jah, ehinokoki analüüsid ka vaja võtta igaks juhuks

R



60mm

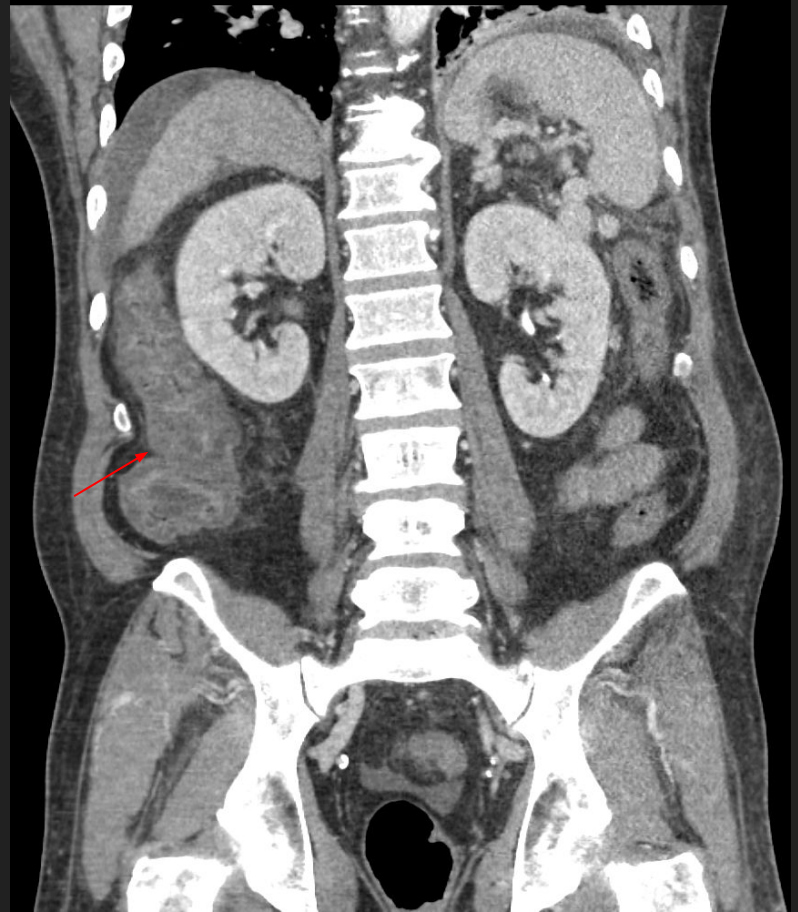
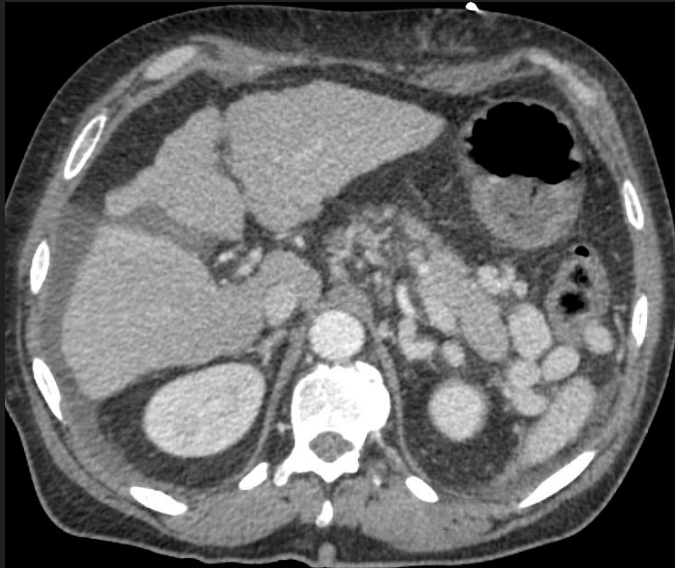




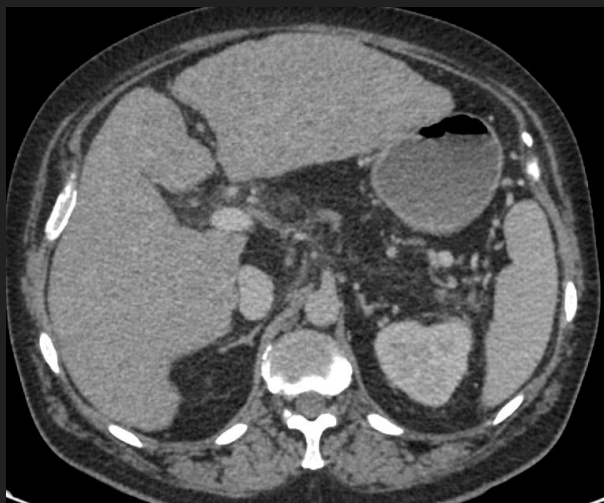
Kõhtu pudenenud (pigment)sapikivid võivad põhjustada abstsesse ka aastaid pärast oppi

Portaalhüpertensioon ja sool

Portaalhüpertensiooniga läheb venoosset paisust (parempoolne) jämesool ja/või jejunum turse. Ei ole koliit/enteriit

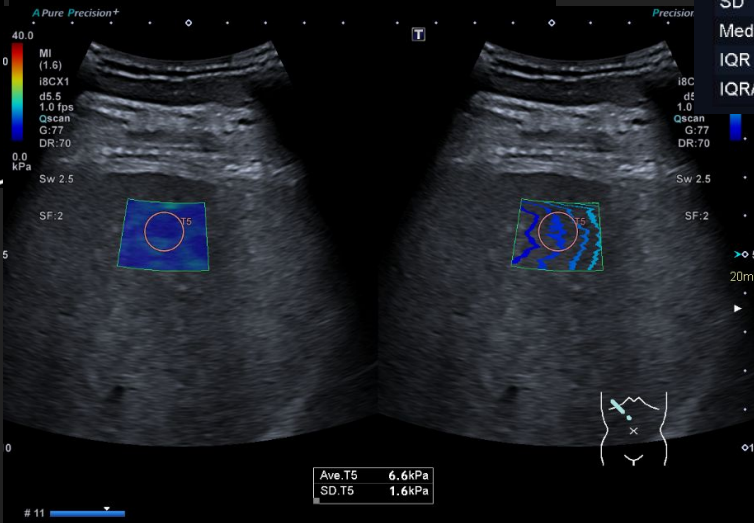


UH elastograafia



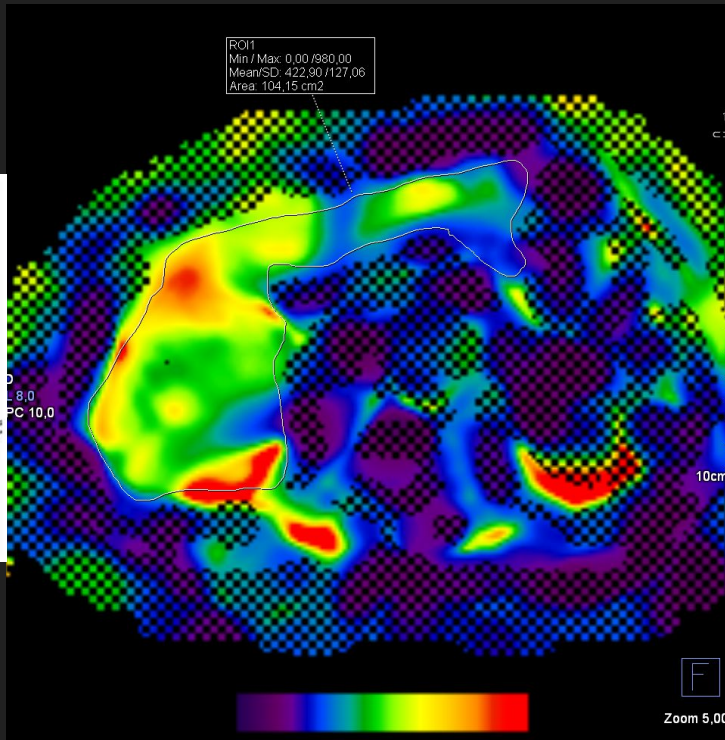
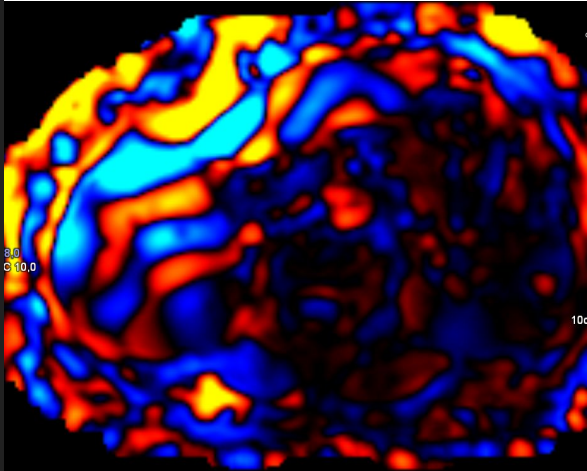
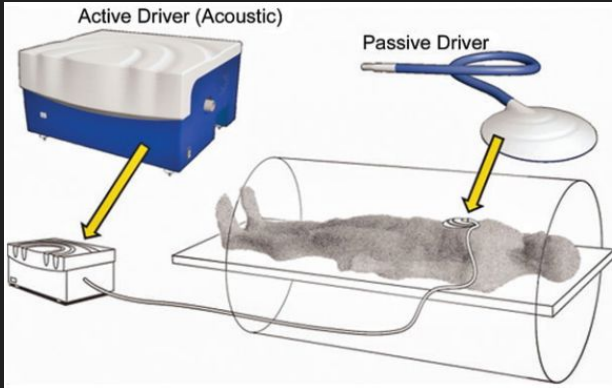
	Speed[m/s]		Elasticity[kPa]		Depth[cm]
	Average	SD	Average	SD	
<input type="checkbox"/> 1	1.47	0.11	6.4	1.0	4.9
<input checked="" type="checkbox"/> 2	1.52	0.08	6.8	0.8	5.0
<input checked="" type="checkbox"/> 3	1.63	0.12	7.9	1.2	4.6
<input checked="" type="checkbox"/> 4	1.62	0.13	7.8	1.3	4.8
<input checked="" type="checkbox"/> 5	1.50	0.18	6.6	1.6	4.4
<input checked="" type="checkbox"/> 6	1.57	0.12	7.3	1.2	4.4
<input type="checkbox"/> 7	1.72	0.17	8.9	1.7	4.9
<input checked="" type="checkbox"/> 8	1.69	0.12	8.4	1.2	5.1
<input checked="" type="checkbox"/> 9	1.56	0.16	7.2	1.5	5.2
<input checked="" type="checkbox"/> 10	1.55	0.14	7.1	1.3	4.9
<input checked="" type="checkbox"/> 11	1.47	0.14	6.4	1.3	4.9
<input checked="" type="checkbox"/> 12	1.60	0.19	7.6	2.0	4.6
<input checked="" type="checkbox"/> 13	1.59	0.13	7.4	1.2	4.7

Mean	1.57	7.3
SD	0.06	0.6
Median	1.57	7.3
IQR	0.11	1.0
IQR/Median	0.07	0.14



Kuidas on see võimalik?
Mina ei tea

MRT elastograafia

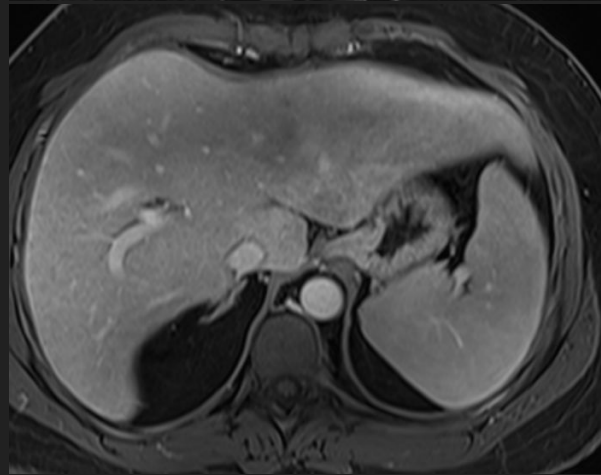
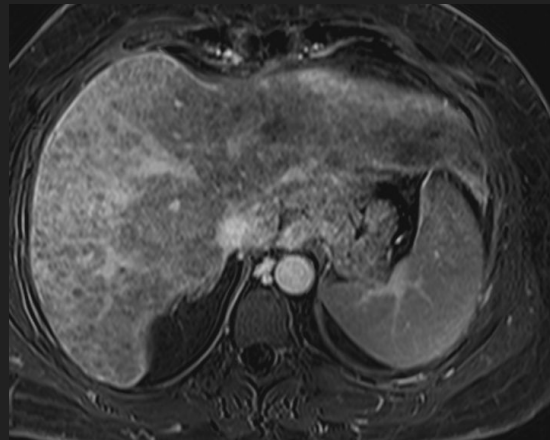
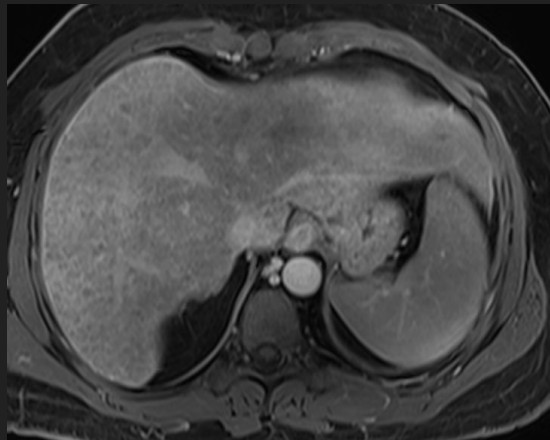
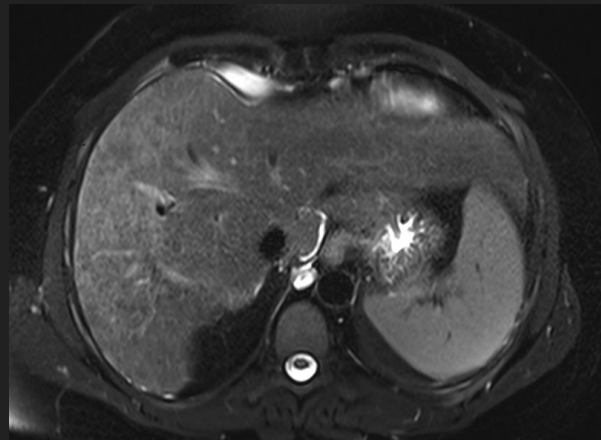


<2.5 kPa: Normal
 2.5 - 2.9 kPa: Normal or Inflammation
 2.9 - 3.5 kPa: Stage 1 to 2 Fibrosis
 3.5 - 4 kPa: Stage 2 to 3 Fibrosis
 4 - 5 kPa: Stage 3 to 4 Fibrosis
 >5 kPa: Stage 4 Fibrosis or Cirrhosis

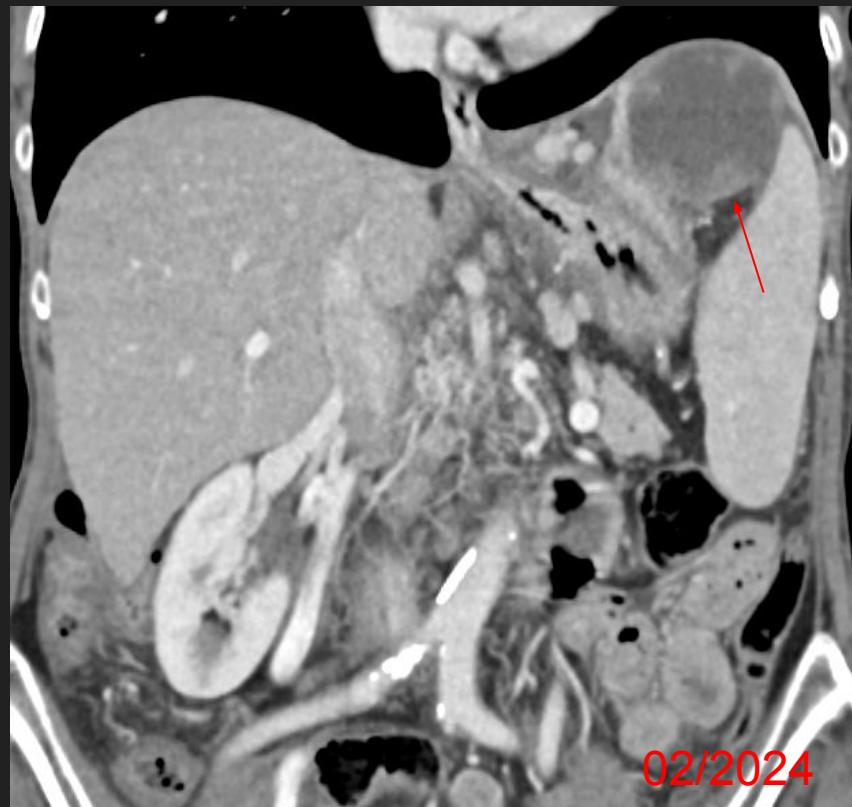
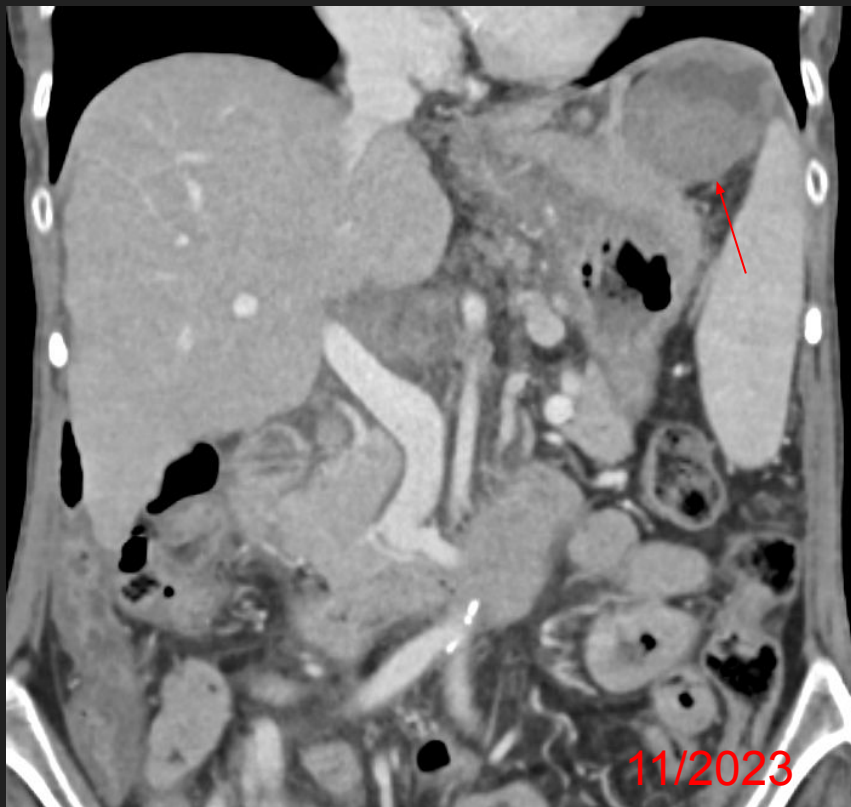
	A	B	C
1		kPa	cm2
2	ROI1	3.92	93
3	ROI2	4.44	94
4	ROI3	4.28	100
5	ROI4	3.94	85
6			
7	Kaalutud keskmine, kPa		4.2
8			

Guglielmo, F. F., Venkatesh, S. K., & Mitchell, D. G. (2019). Liver MR elastography technique and image interpretation: Pearls and pitfalls. *Radiographics*, 39(7), 1983–2002. <https://doi.org/10.1148/rg.2019190034>

Tsirroos ei pruugi olla nähtavalt sõlmeline maks - MR elasto 5,8 kPa



Kasvaja dünaamika hindamisel vaata ka kontrasteerumist



Üldist

- Vaata S1 ja maksa servasid ka kollete suhtes
- Kui kirjutad, et dünaamikata ja eelmine kirjutab ka, et dünaamikata, vaata mõnda veel vanemat uuringut, äkki kasvab aeglaselt
- Iga paar mm kolde suurenemist pole kohe kasvaja progressioon, mõtle, kas see on piisavalt suur muutus, et selle peale ravi muuta/lõpetada. Levinud kasvaja kontrolli all hoidmine on ka väärtus
- Kolorektaalvähk maksa metastaasidega võib olla kuratiivselt ravitav ka siis, kui on 10 metastaasi, seega on oluline metastaaside suurus ja asukoht, samas pankrease vähiga juba üks maksa mts tähendab palliativset süsteemravi

