DE VLAAMSE VERENIGING VOOR ECHOGRAFIE (VVE) ORGANISEERT

VVE

VERLOSKUNDIGE & ABDOMINALE ECHOCURSUS

Theoretische en Praktische Cursus
Theoretical & Practical Course
+ Hands-on Training

10/10/2009
UZ Leuven
Campus Gasthuisberg
Onderwijs & Navorsing 2
Auditorium BMW 1
Auditorium BMW 2
Seminarielokalen

Herestraat 49
3000 LEUVEN

UCL
Université catholique de Louvain

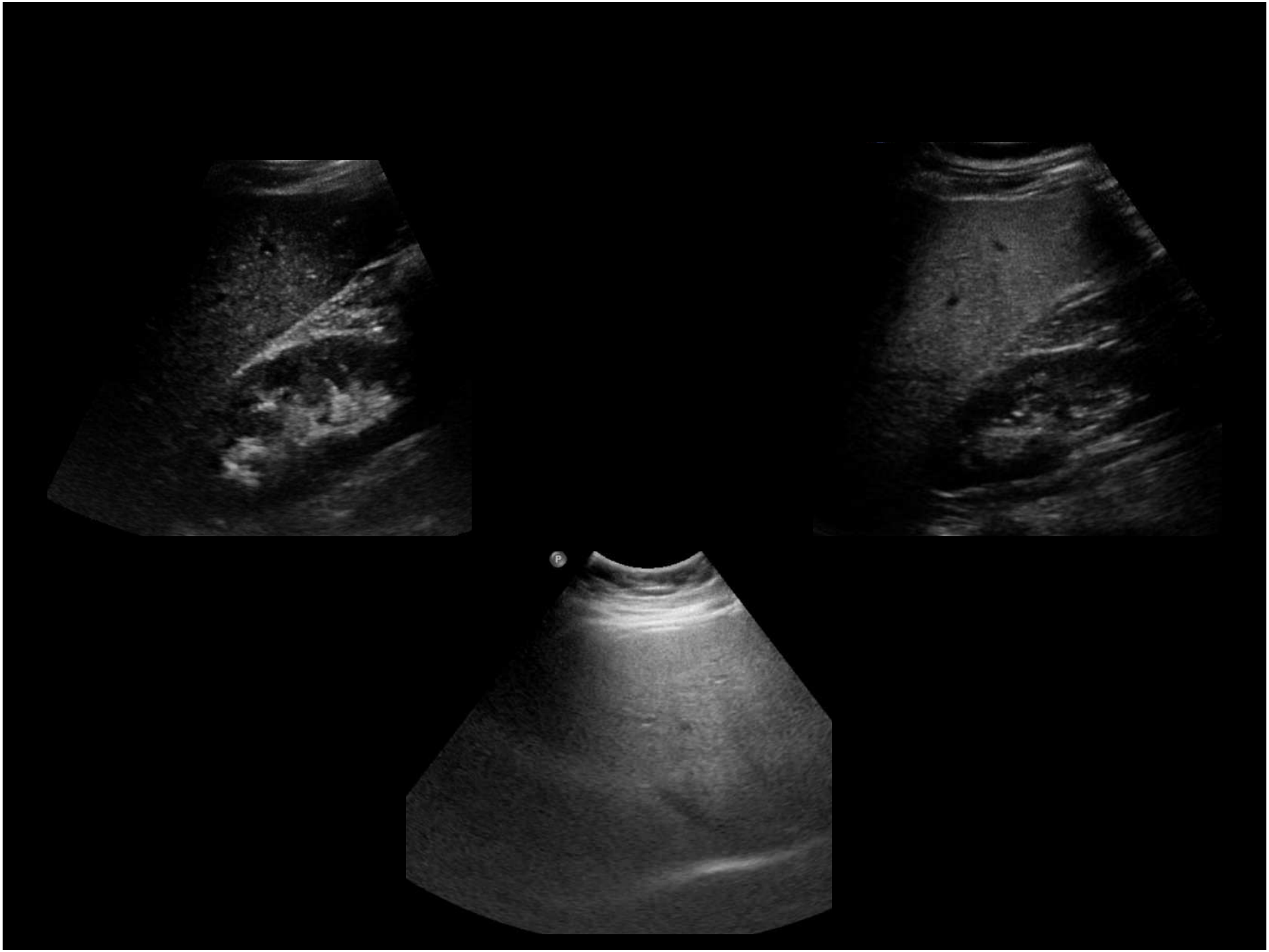
Session 2: The Liver
Moderators: P. Michielsen, UZ Antwerpen, Edegem & J. Delwaide, CHU, Sart Tilman, Liège

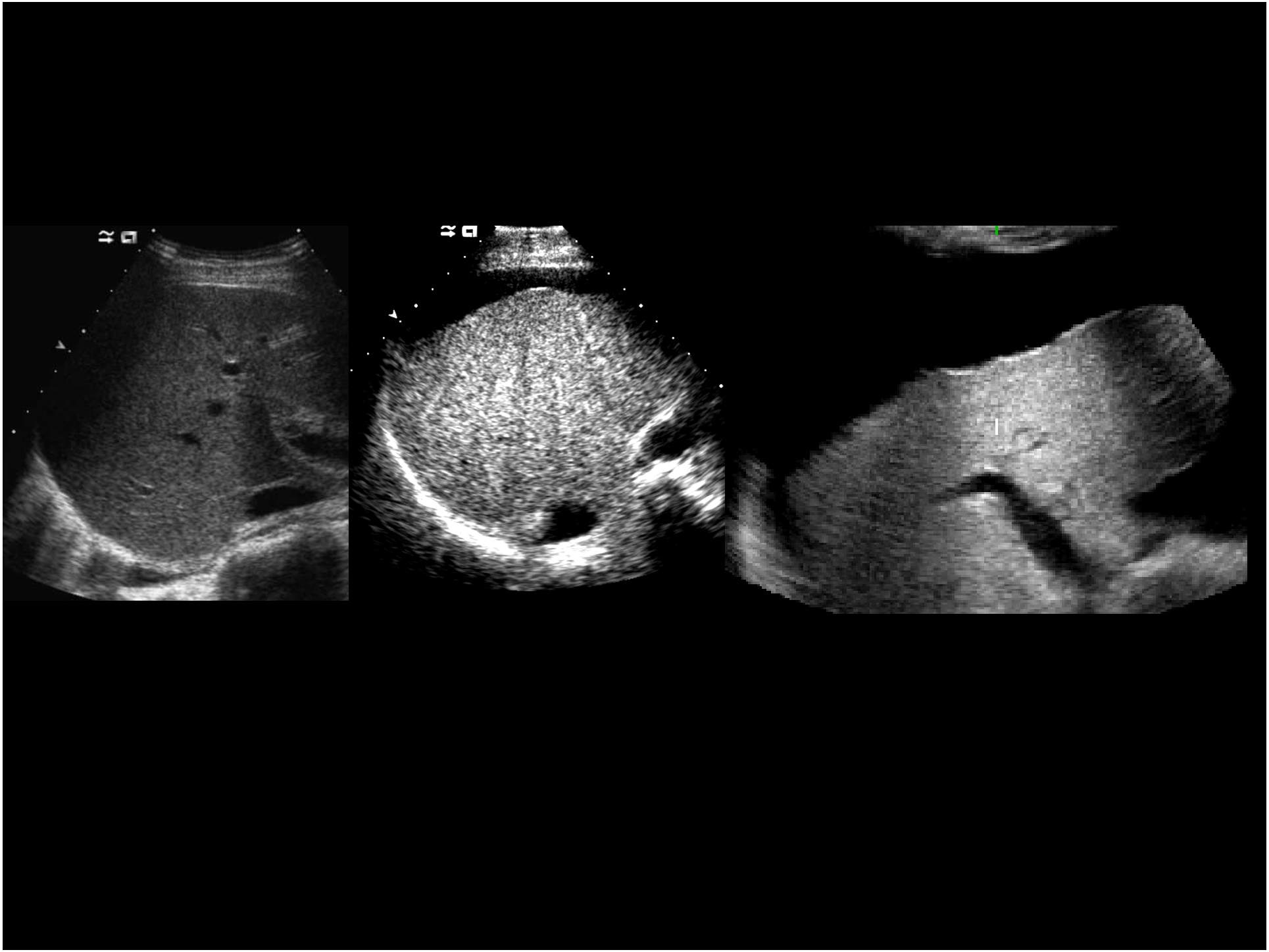
10.20-10.50	Echo-anatomy of the normal liver, anomalies of liver contours, size and echostructure *P. Peeldmans, UZ Antwerpen, Edegem*
10.50-11.20	Coffee break
11.20-11.50	Diffuse liver disease *J. Schouten, EMC Rotterdam, Rotterdam*
11.50-12.20	Focal liver lesions *E. Danse, UCL St-Luc, Sint-Lambrechts-Woluwe*
12.20-12.40	US-guided punctures of focal liver lesions *S. Francque, UZ Antwerpen, Edegem*

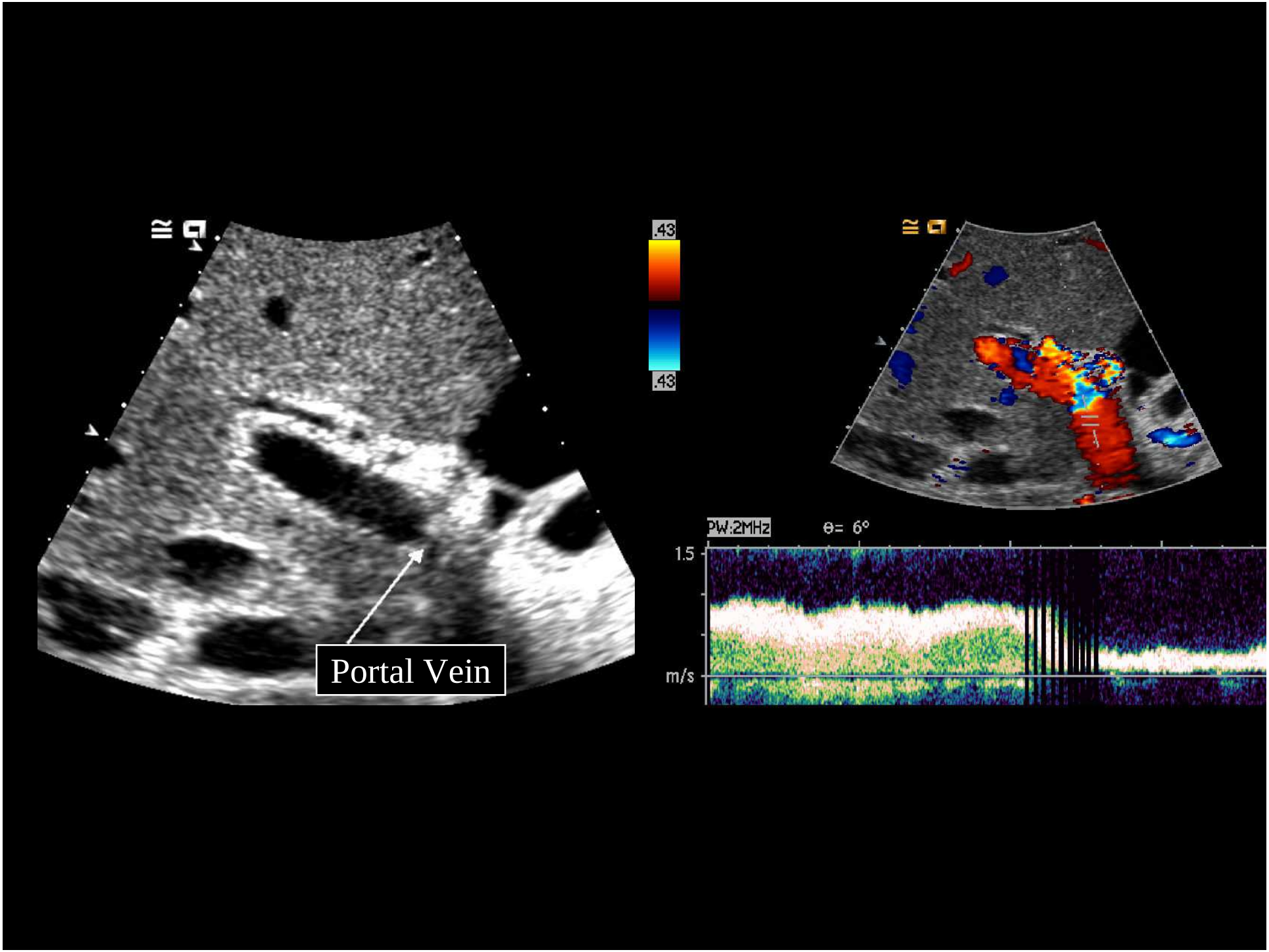
Focal liver lesions and US

- Objectives
  - Detection
  - Characterization
  - Localization
  - Follow-up

- Technique
  - B Mode
  - Color and Doppler
  - Volumetric approach
  - Contrast agents



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.43
Portal Vein
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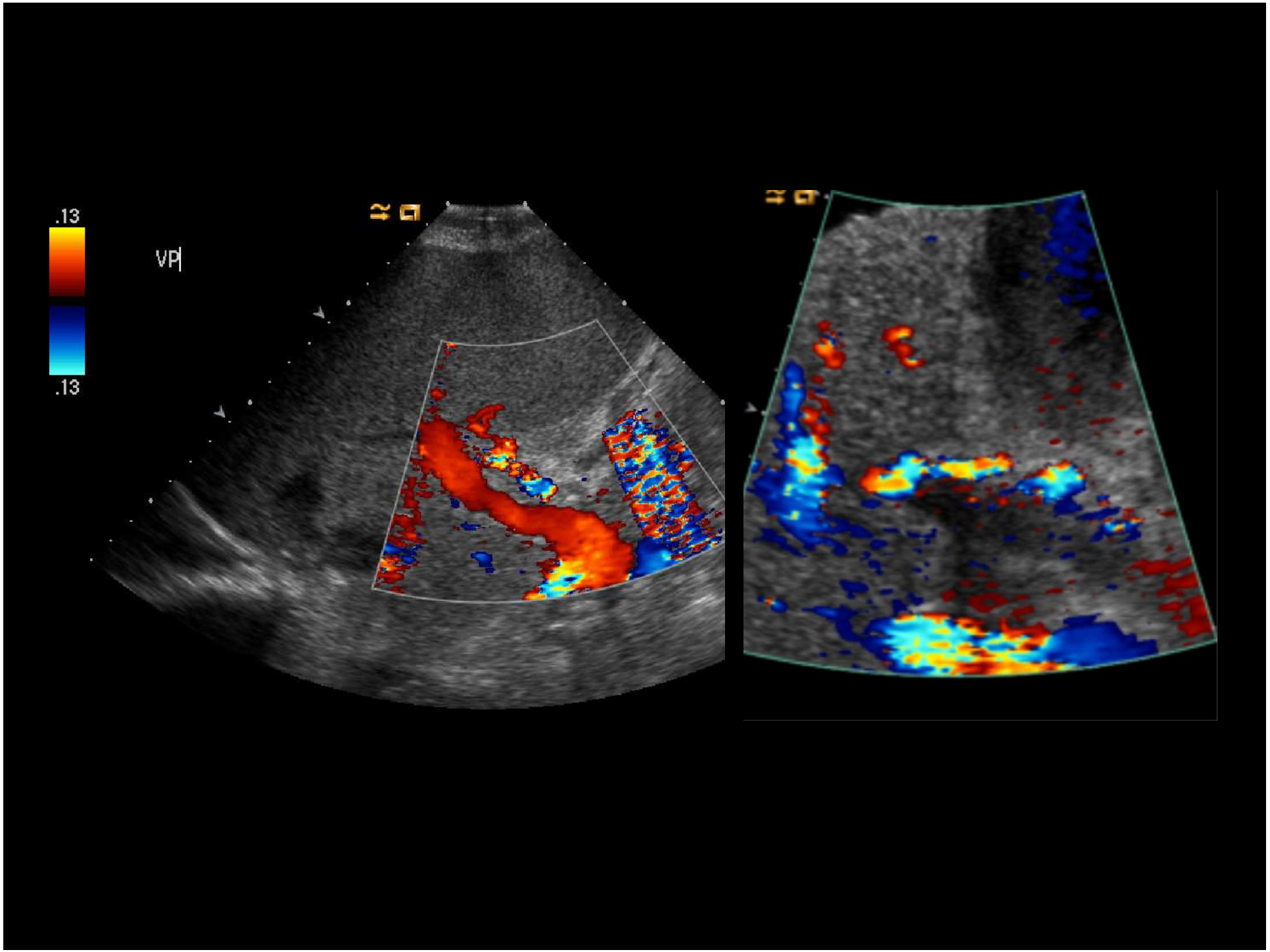
m/s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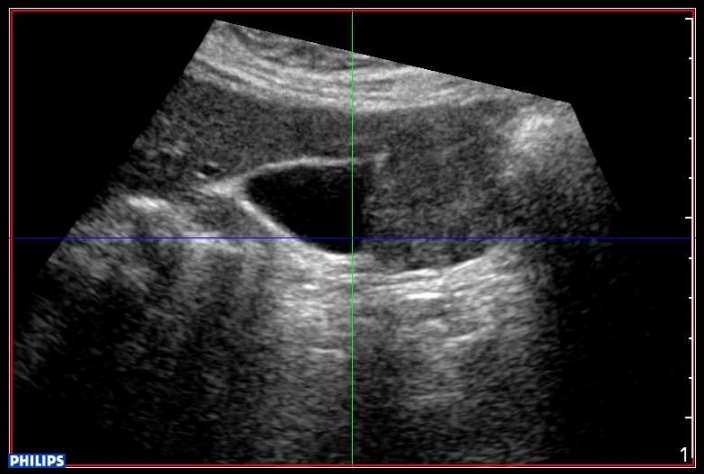
PHILIPS
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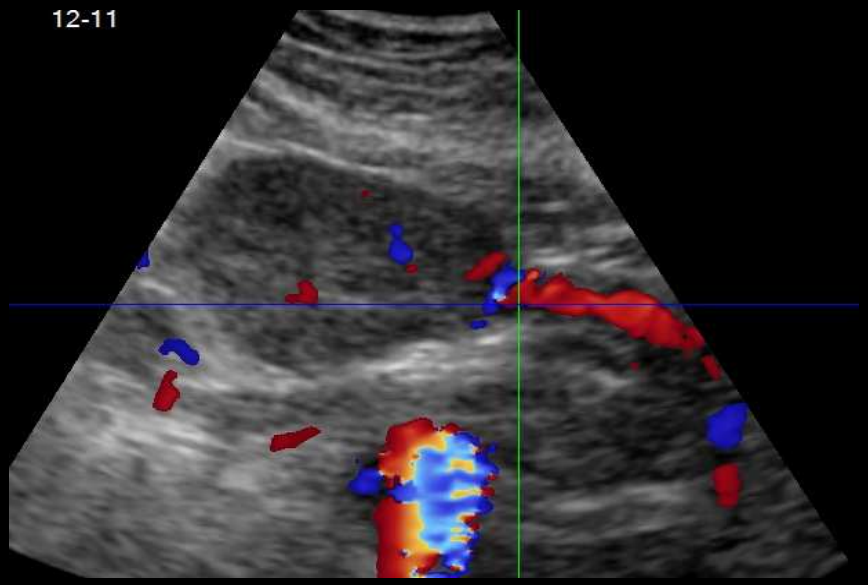
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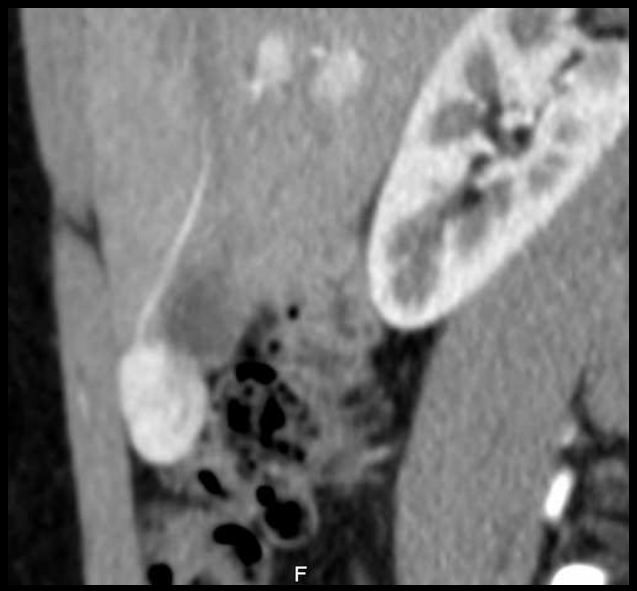
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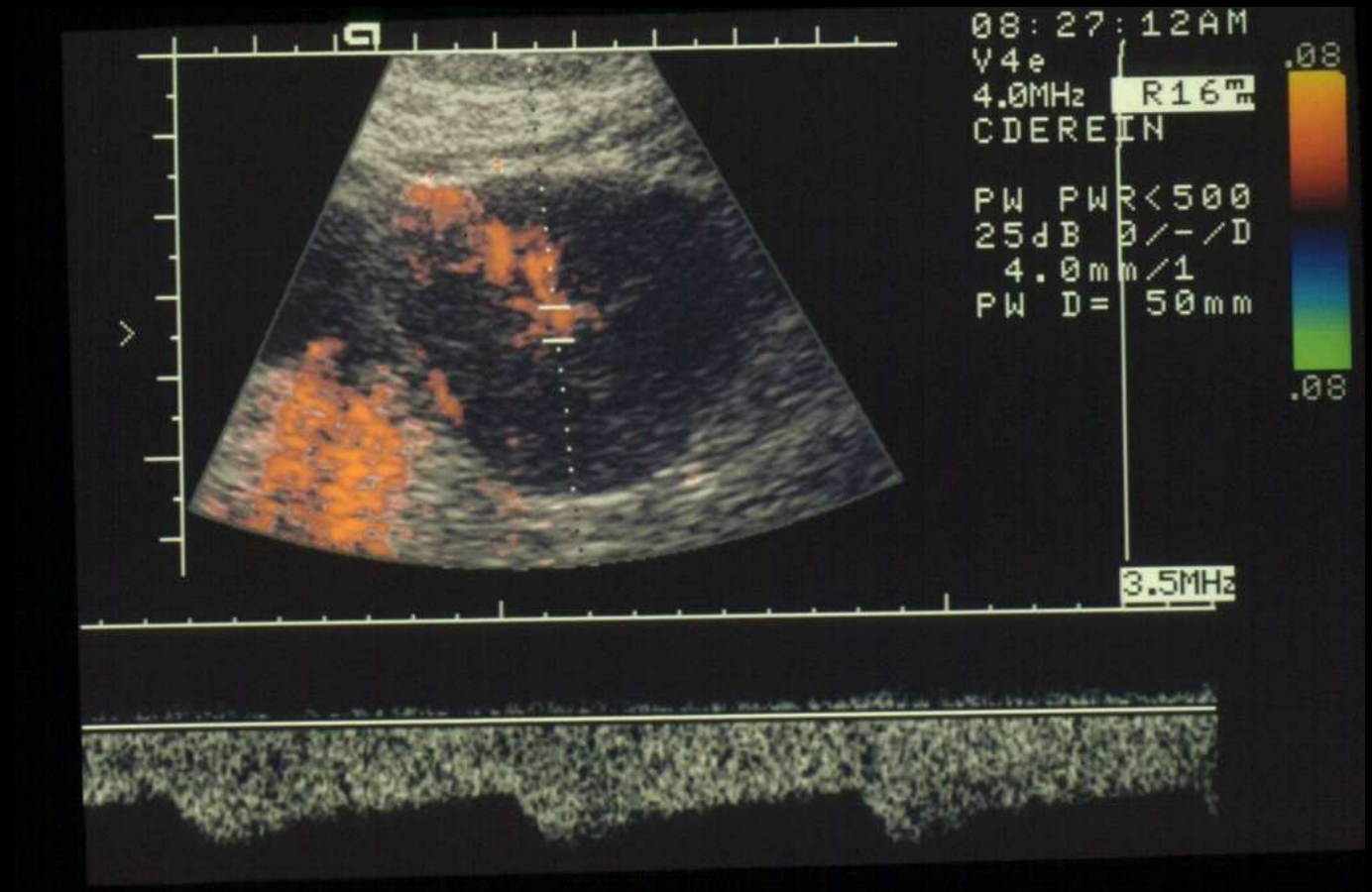
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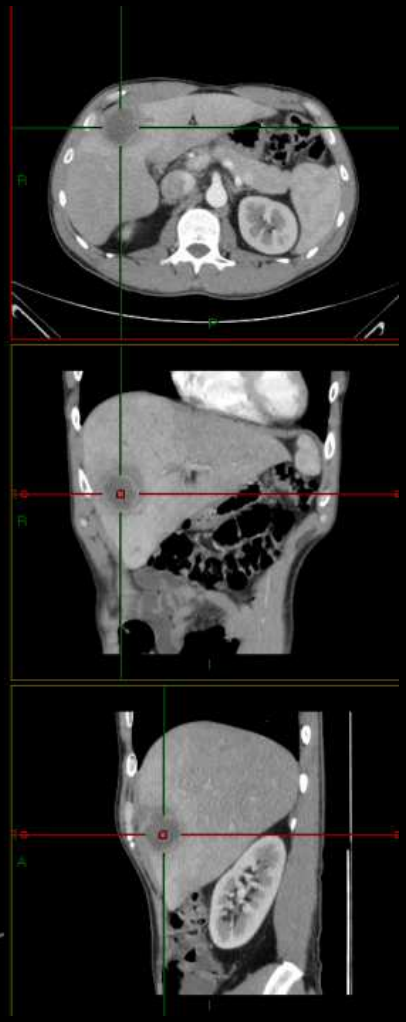


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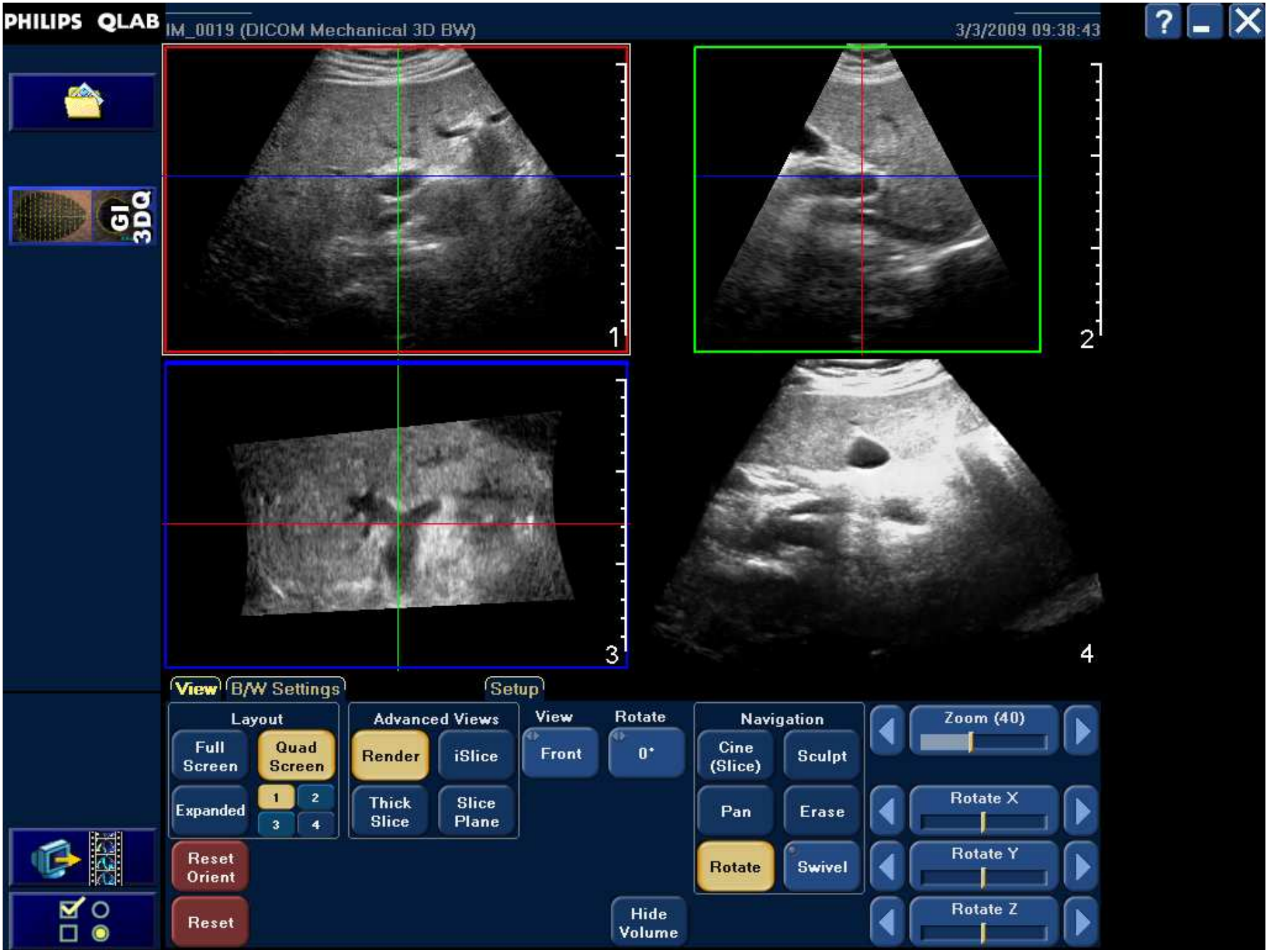
PHILIPS QLAB
IM_0019 (DICOM Mechanical 3D BW)
3/3/2009 09:38:43
GI 3DQ
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View
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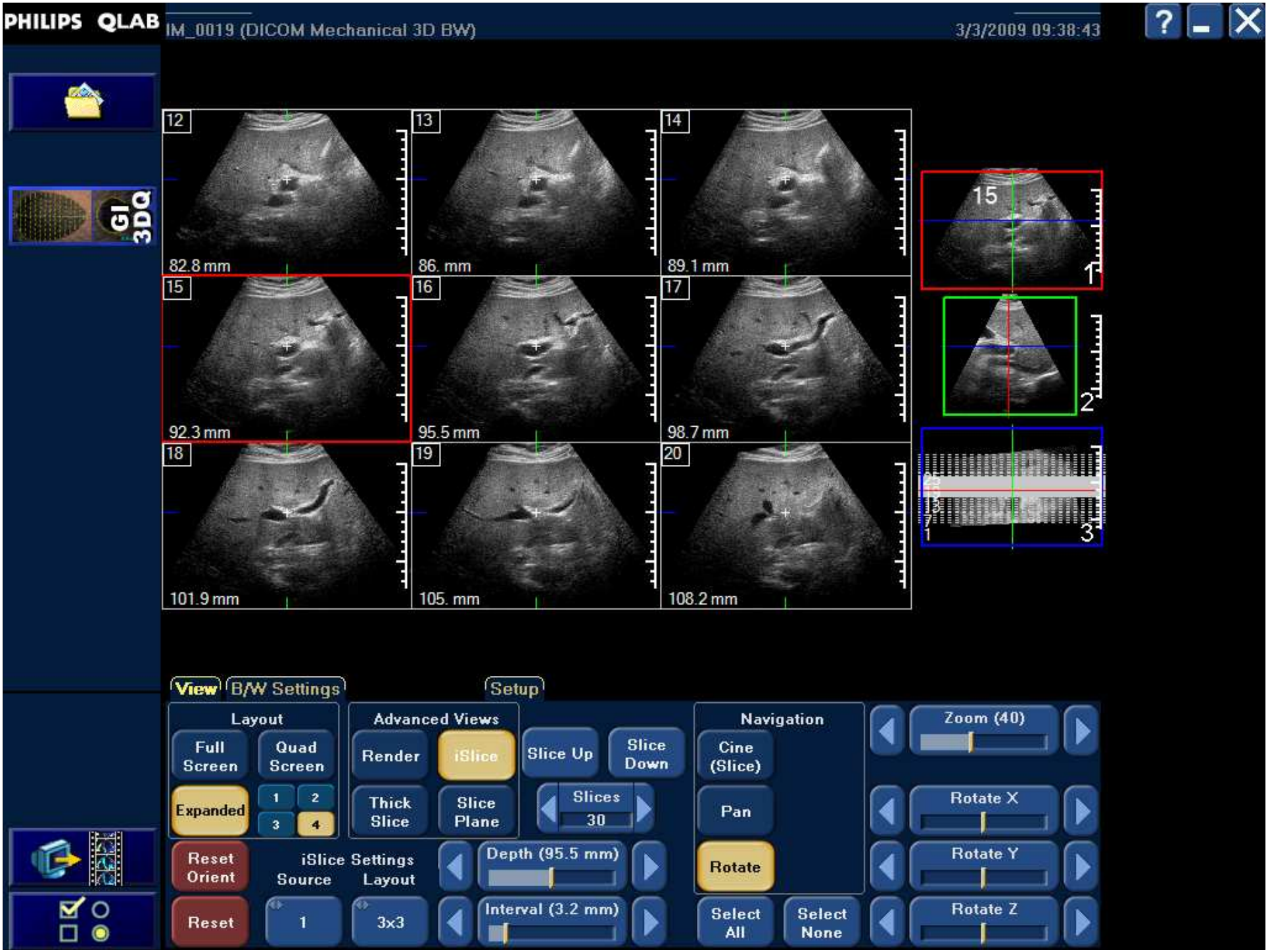
PHILIPS QLAB
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Reset Orient
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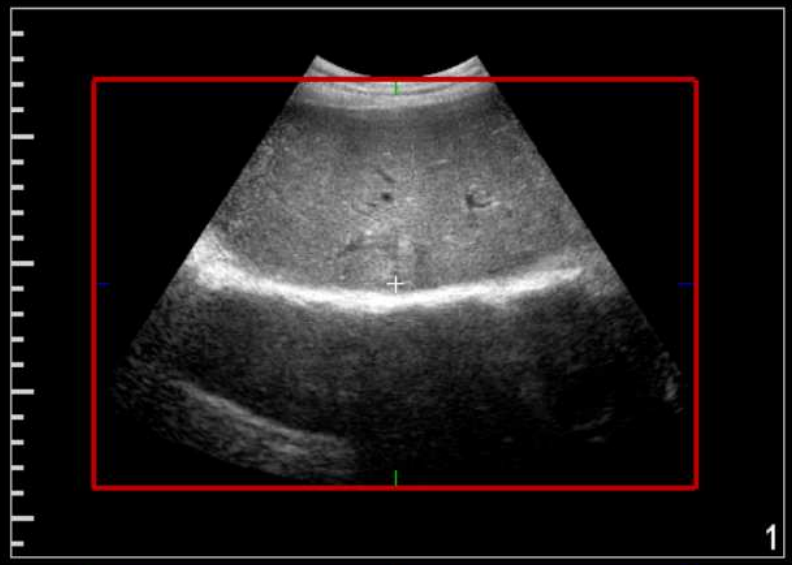
Depth (95.5 mm)
Interval (3.2 mm)

Localization



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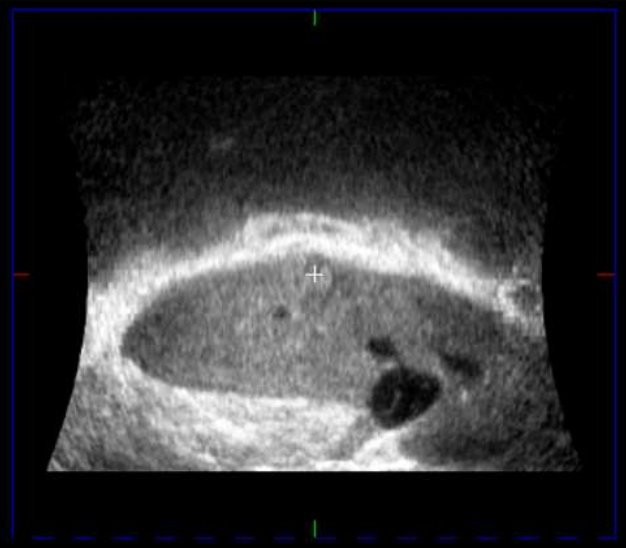

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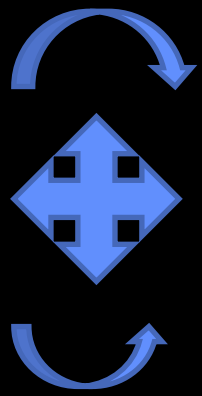

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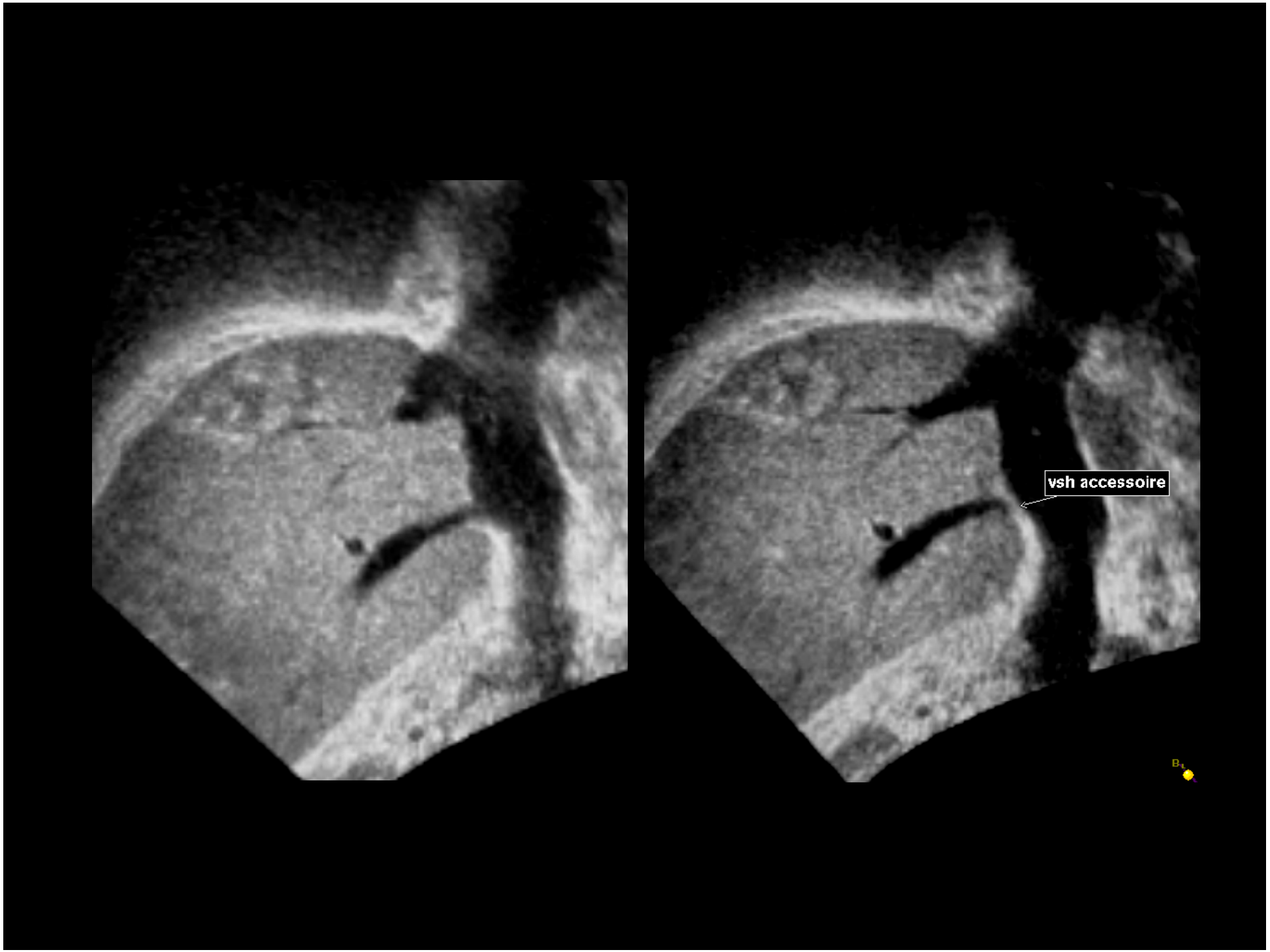
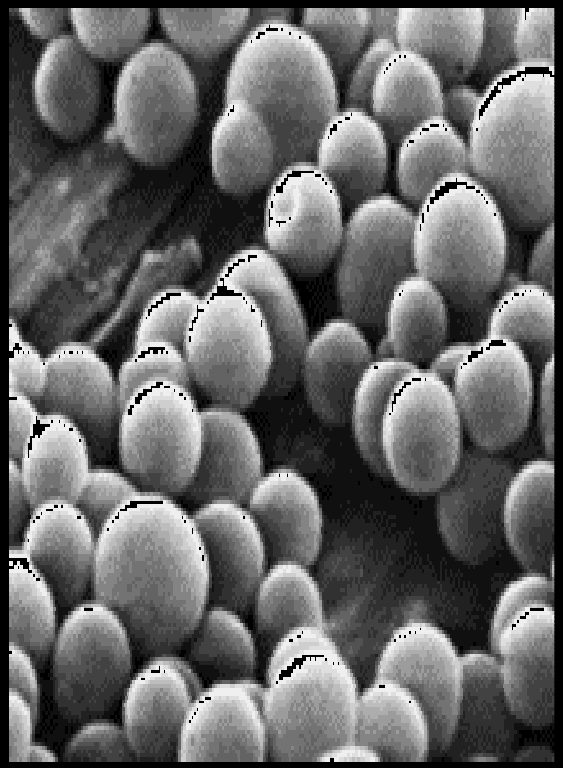
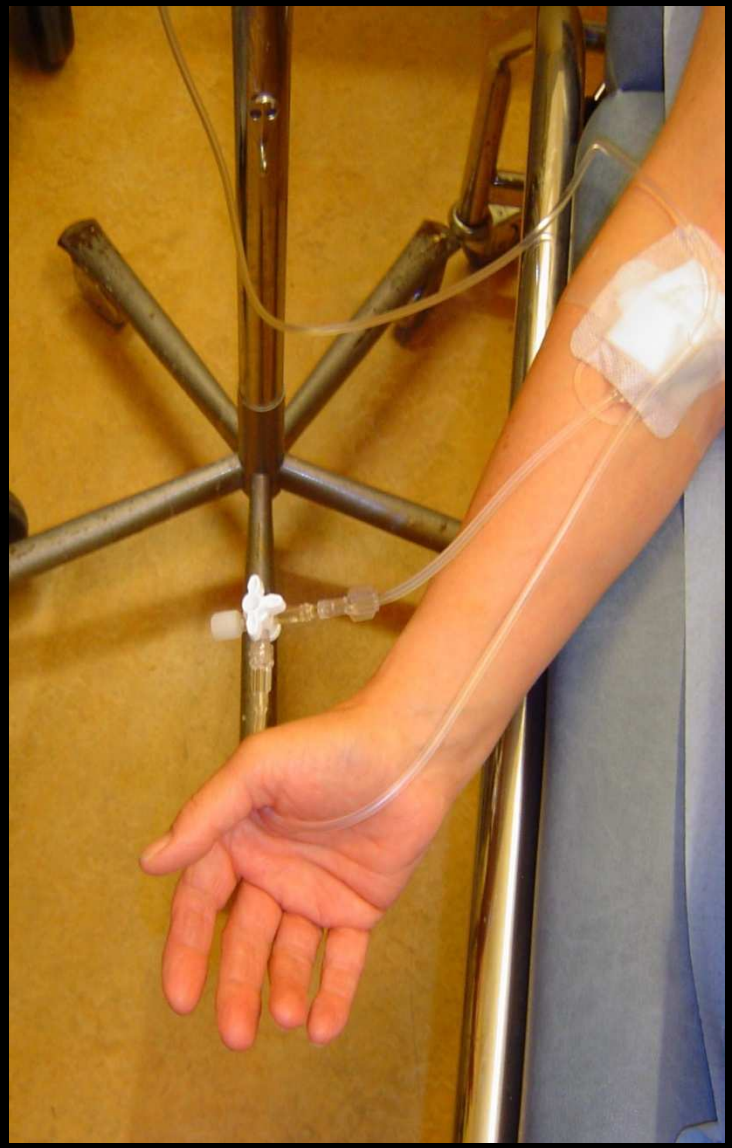

vsh accessoire

Contrast US



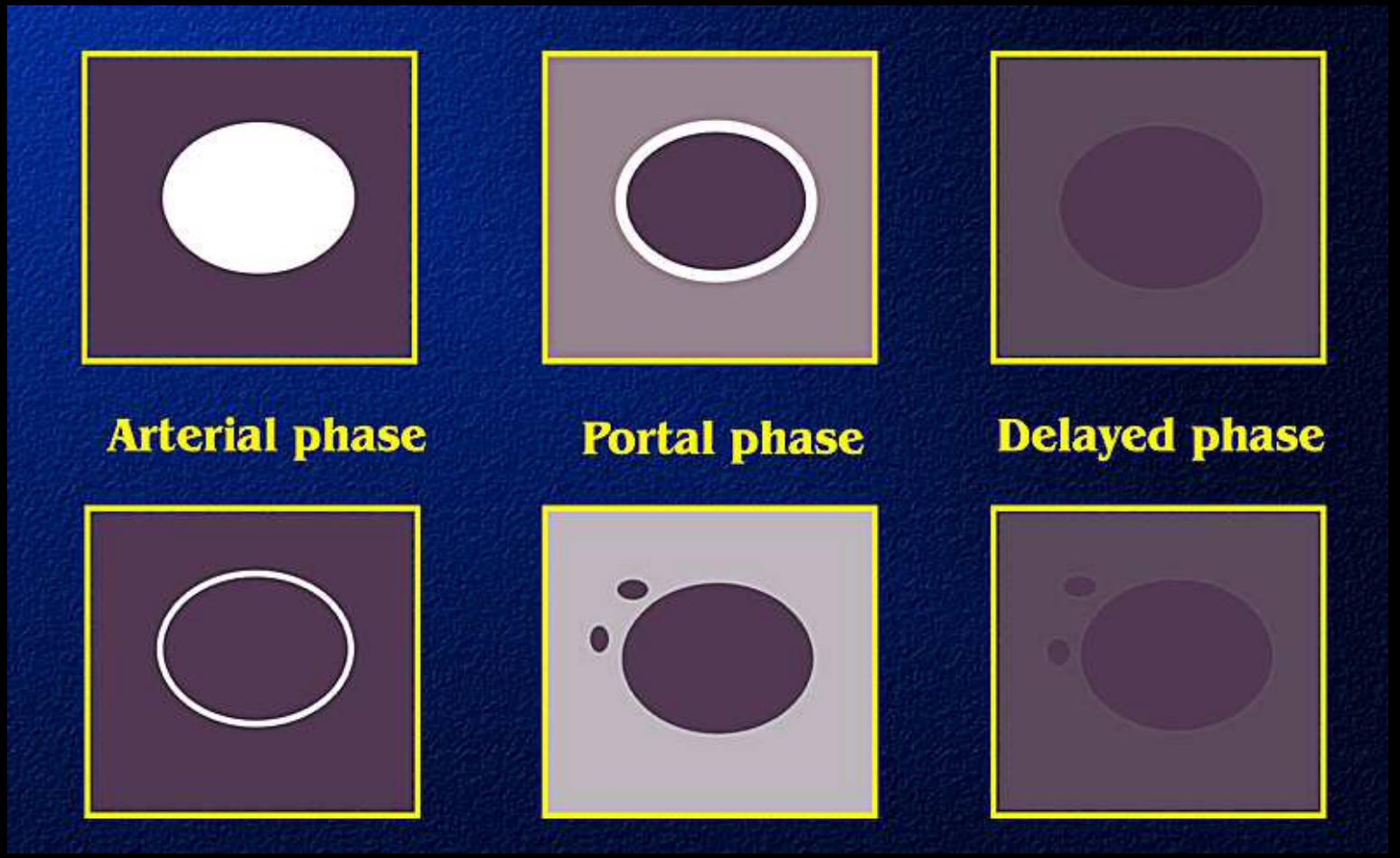
The bubbles vary in size

ranging from 1-10 micrometer



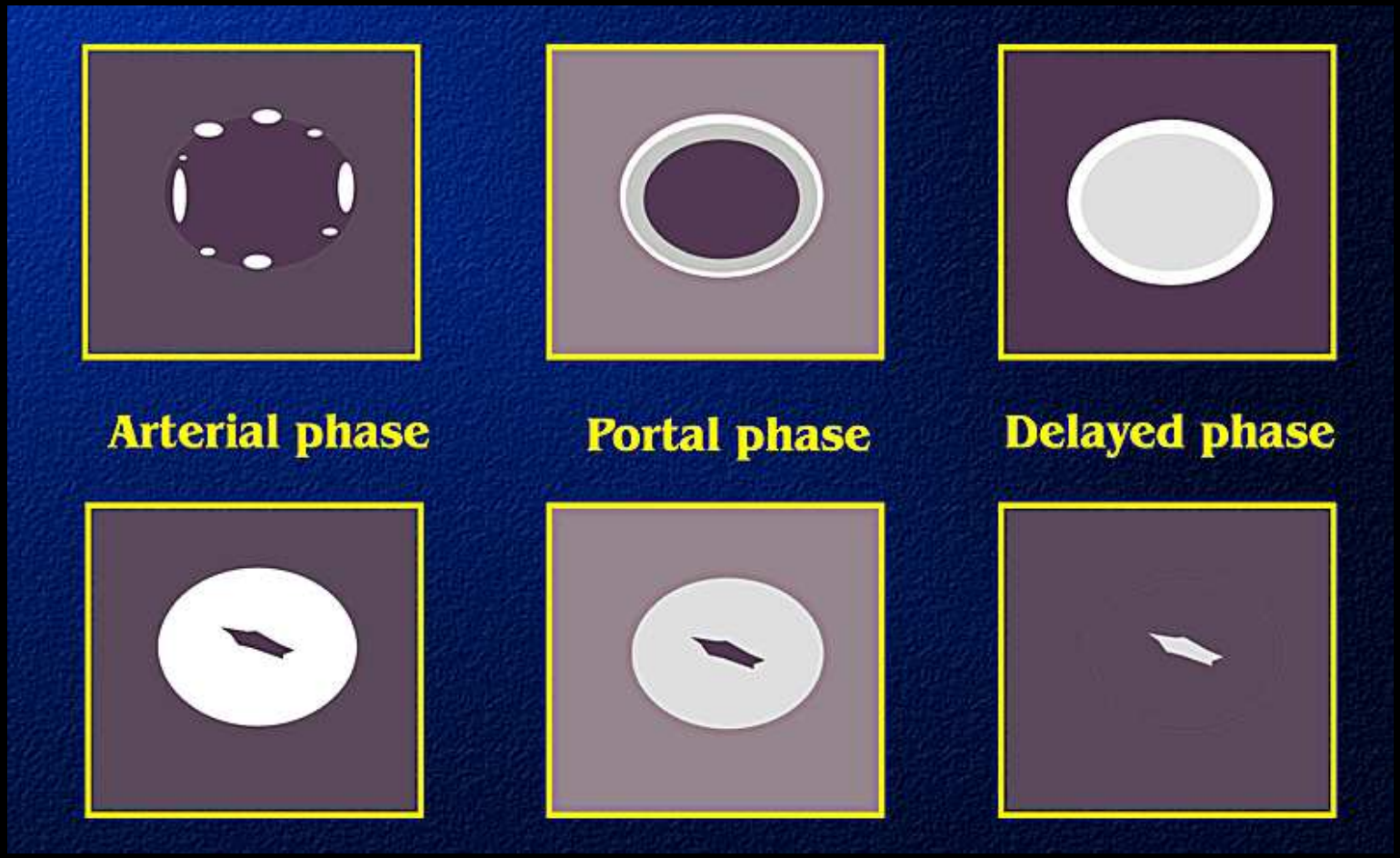
CHC

Metastases

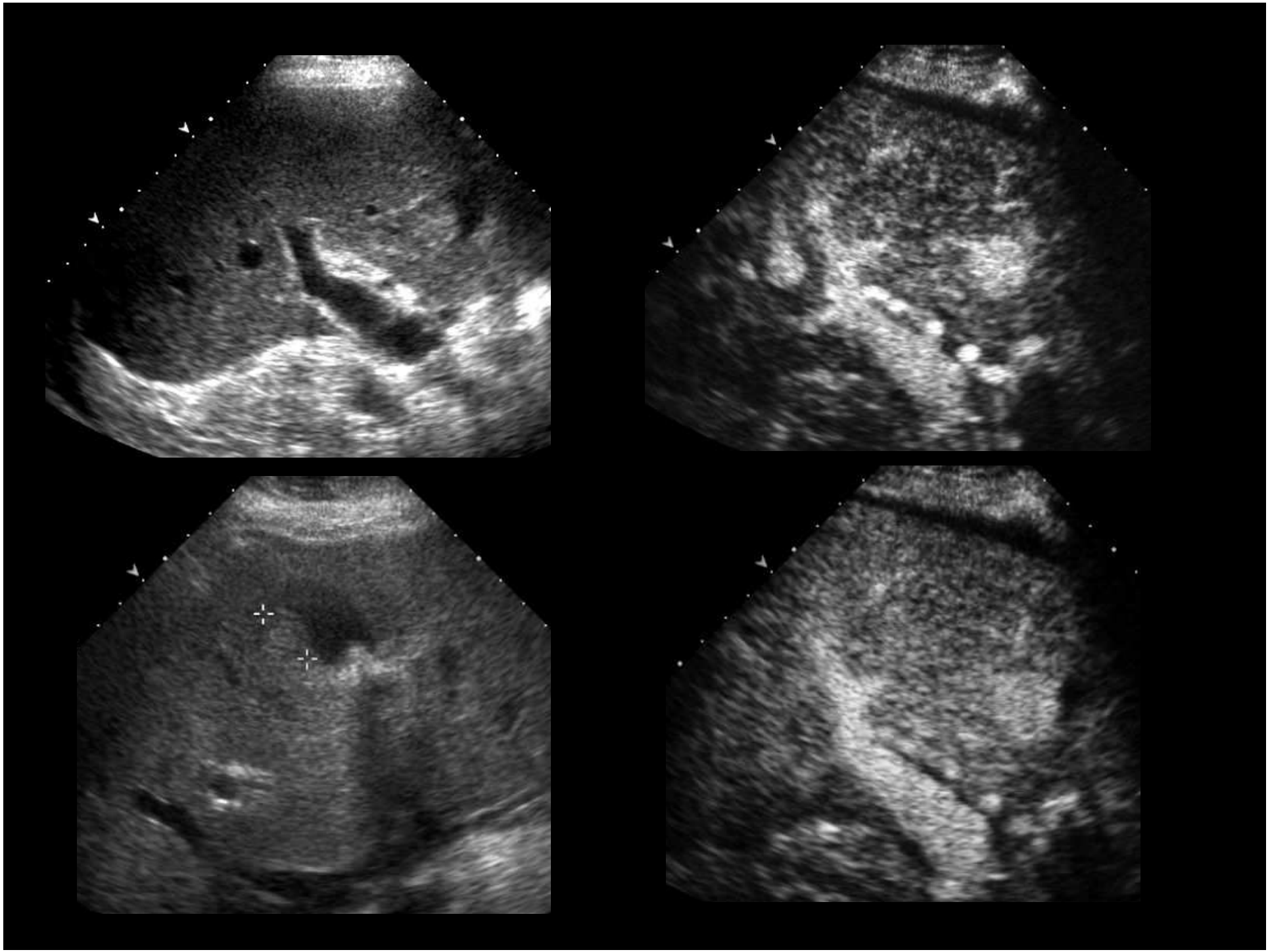


Bracco, Altana Pharma

hemangioma



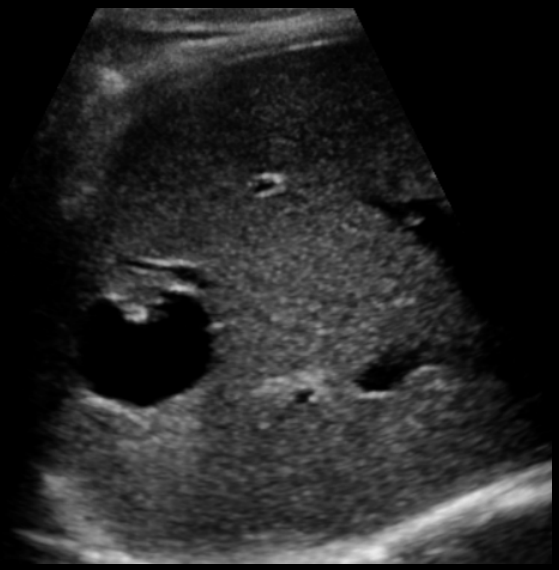
FNH



Benign focal liver lesions : Biliary cyst

Atypical cyts

- Haemorrhagia or surinfection



Atypical cyst

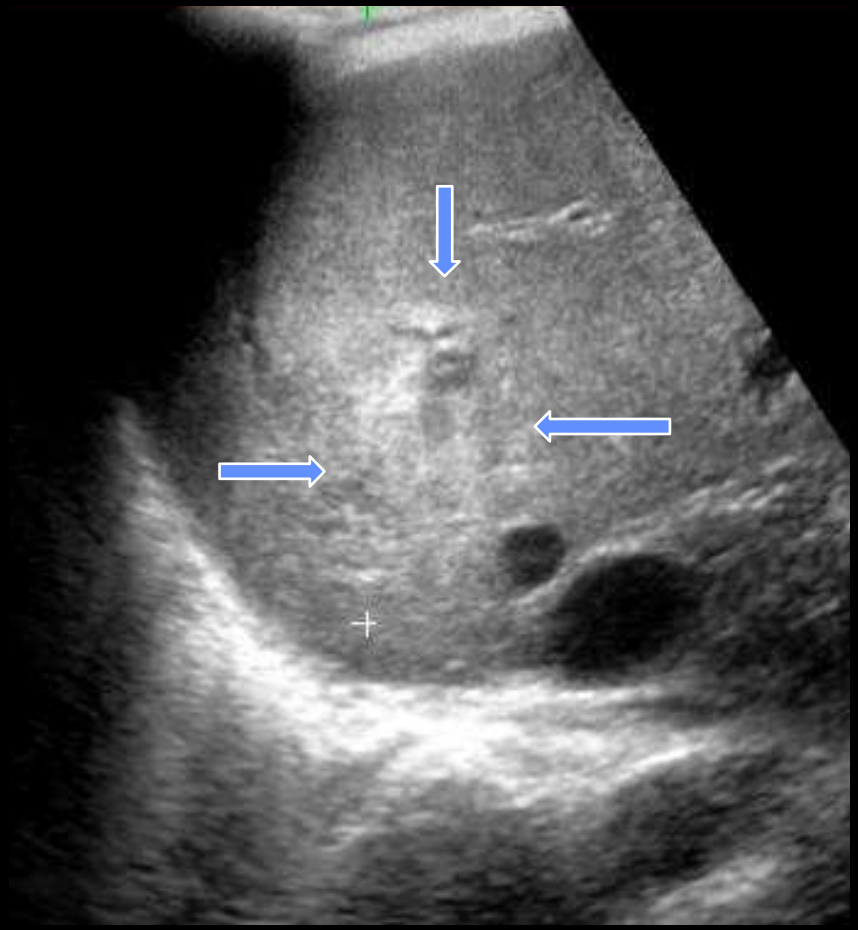
- Echinococcal cyst

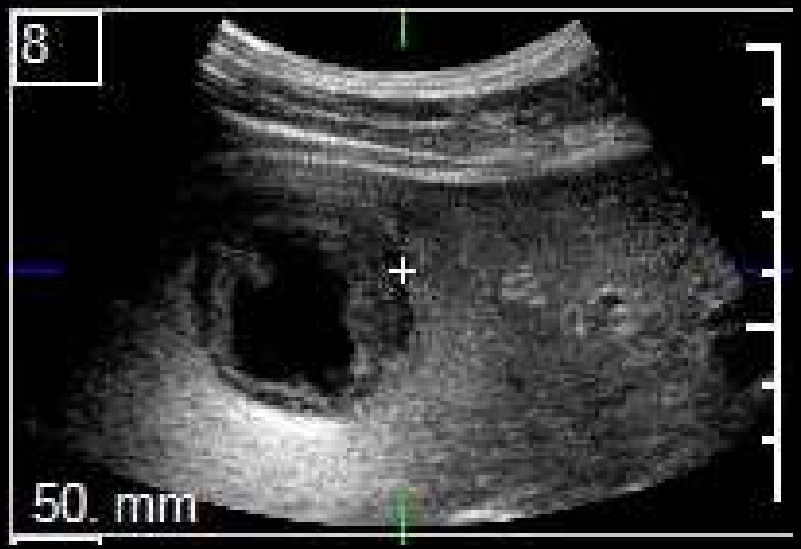
Atypical cyst

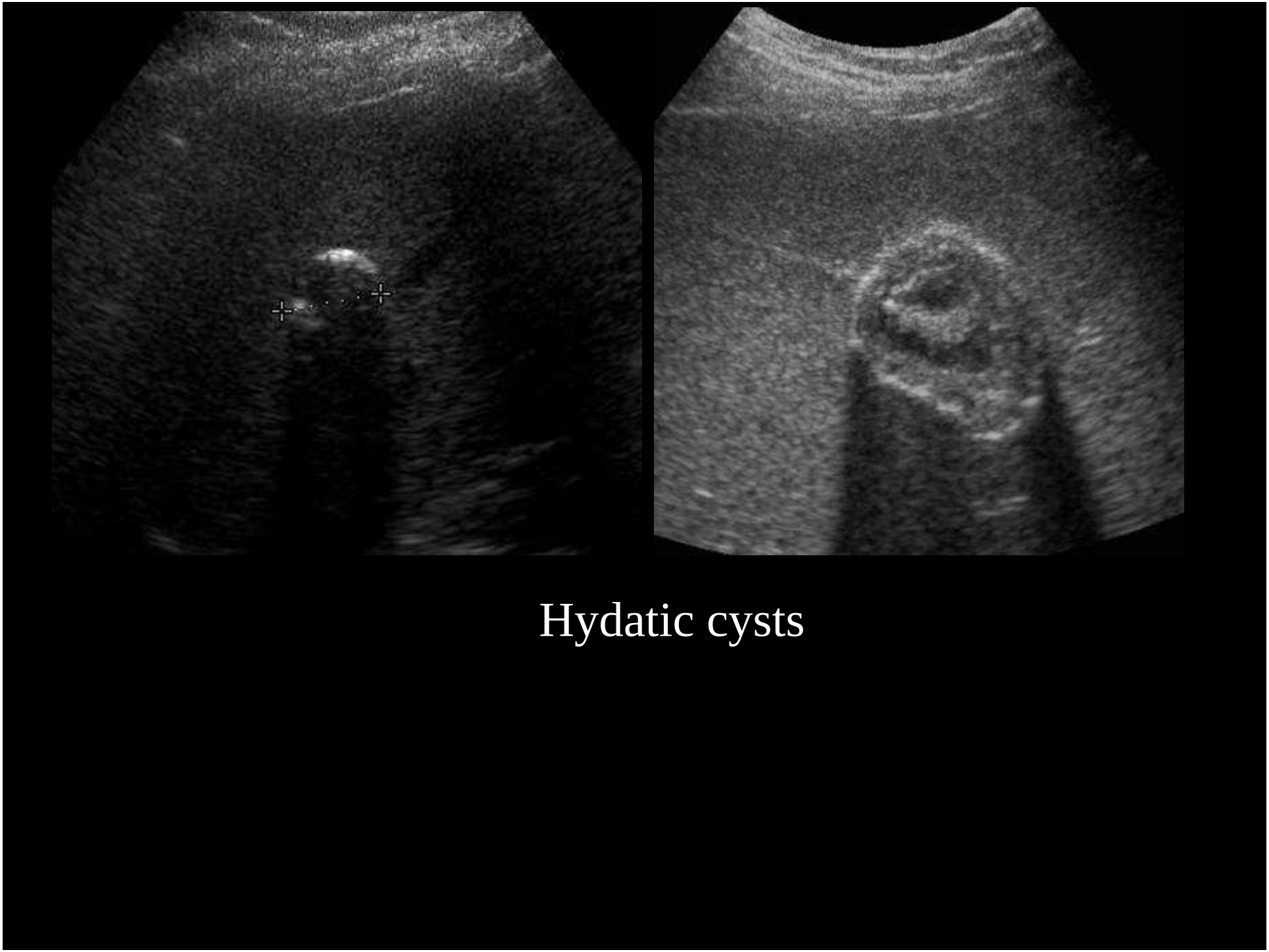
- Cystic metastases and cystadenoma

Absess

- Microbian, amoebic or fungal
- Contamination
  - Biliary tract
  - Portal vein
  - Artery
  - neighbourhood
  - Idiopathic
- Multilocullated collection with liver parenchyma changes




8
50. mm



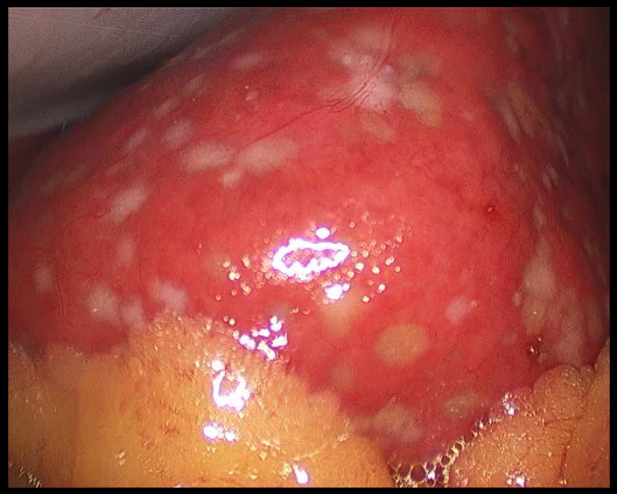
Hydatic cysts

Liver tumors

- Benign lesions
  - Hemangioma
  - Focal Nodular hyperpasia
  - Adenoma
- Malignant lesions
  - Metastases
  - Hepatocarcinoma
  - Cholangiocarcinoma
  - Miscellaneous (vascular tumors)

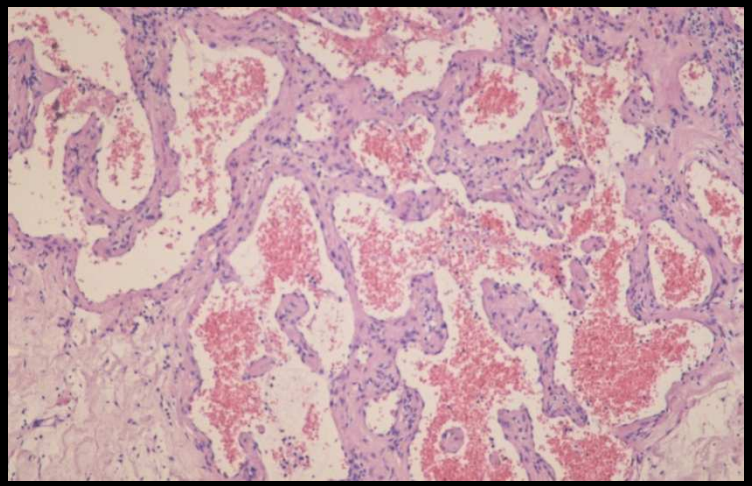
Benign liver tumors

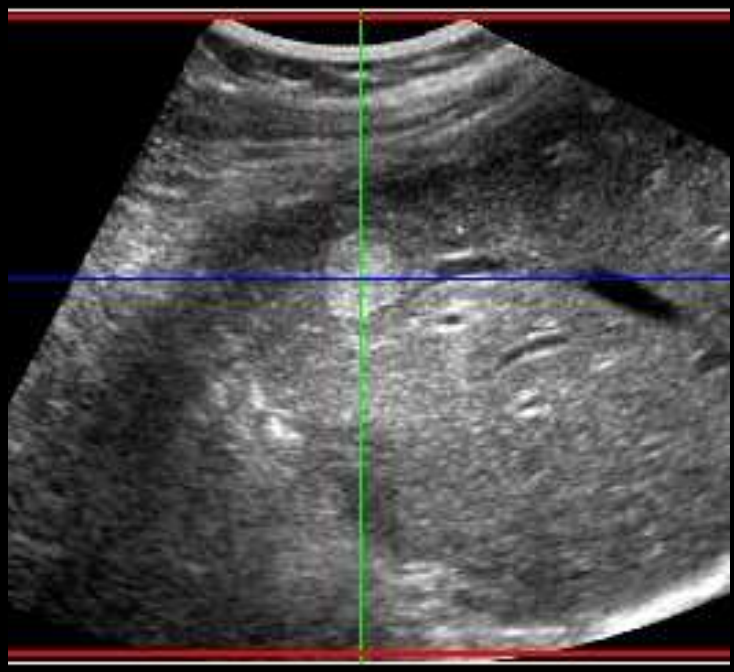
- Frequent : 52% in autopsic series
  - Biliary Adenoma, or microhamartoma (von Meyenbourg complexs), uncommon
  - Hemangioma : 5 - 20%
  - Cysts : 2 - 7%
  - FNH : 1%
- Imaging studies : characterization



Hemangioma

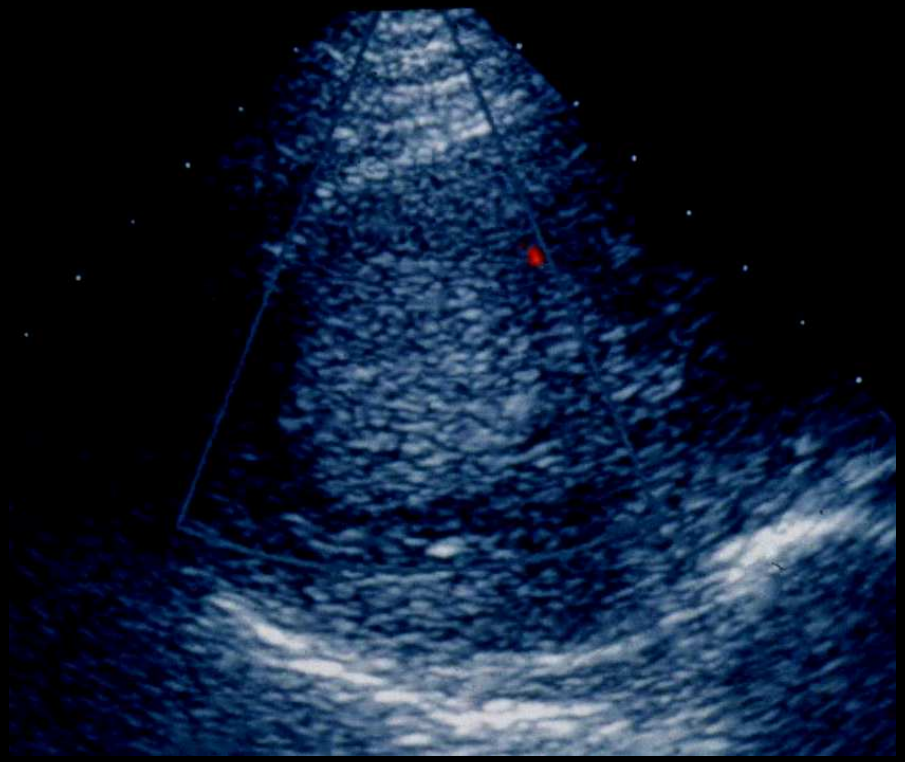
- Usually asymptomatic

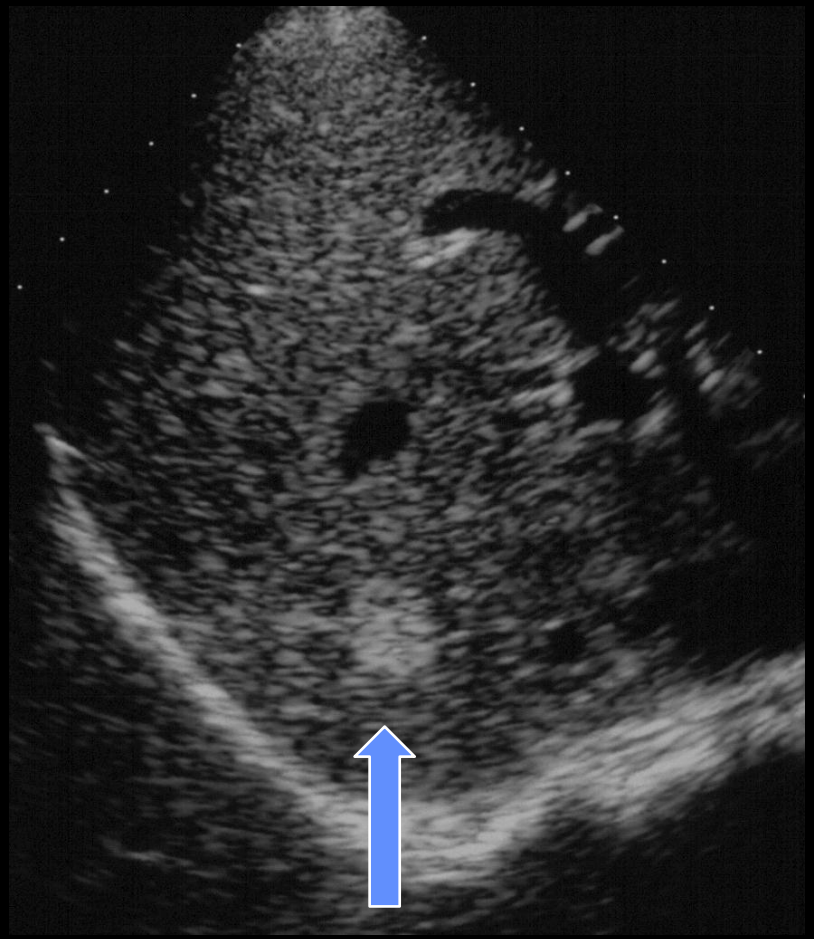


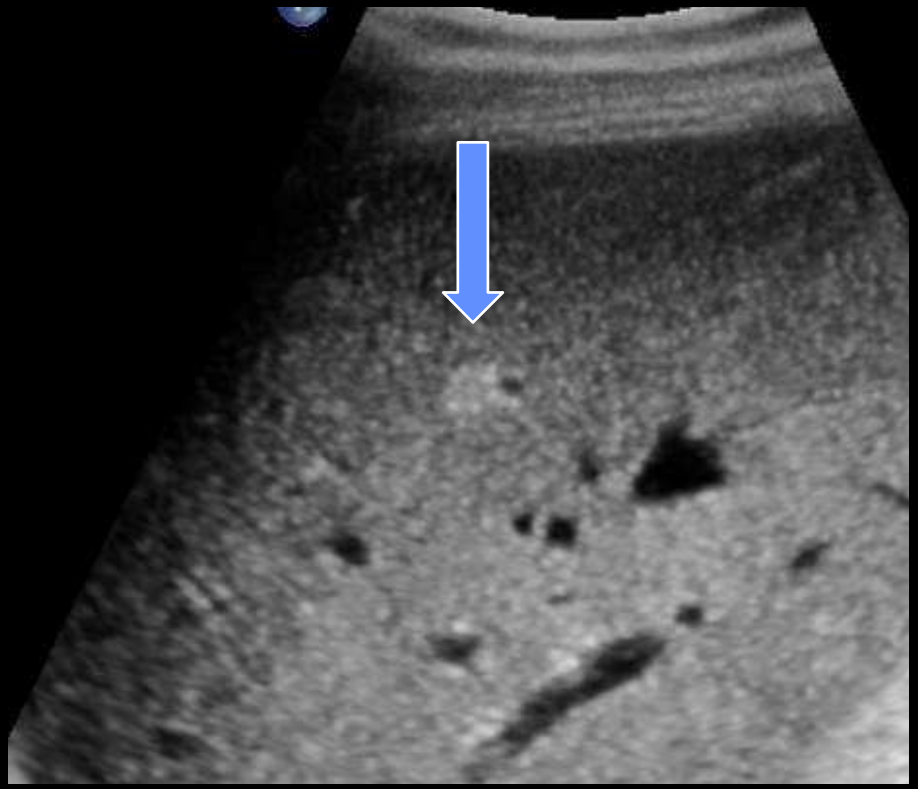


Hemangioma

- US
  - Hyperechoic, homogeneous, well delineated

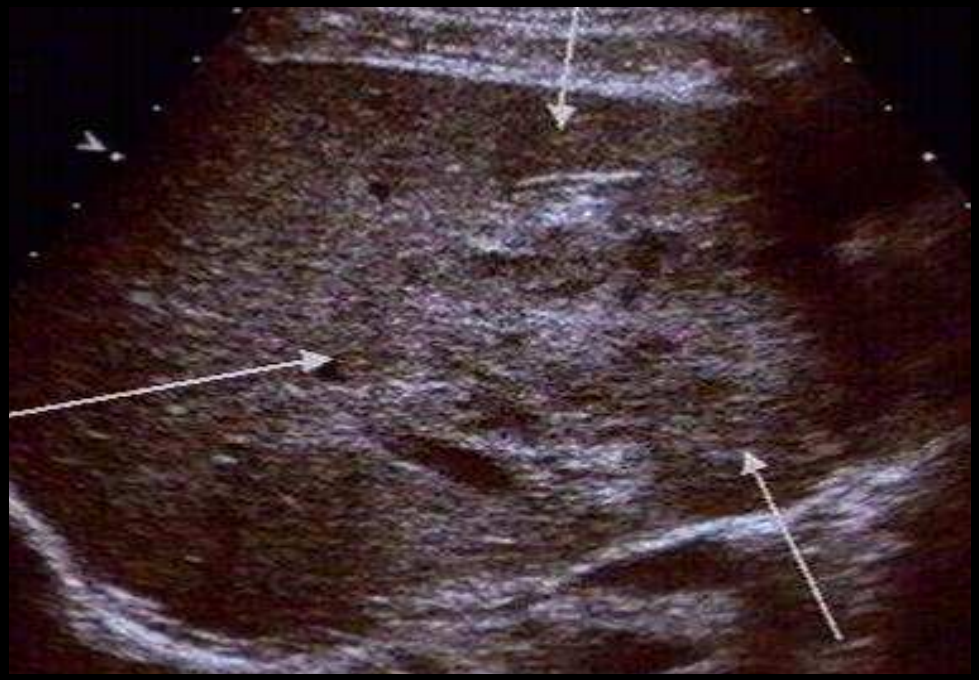


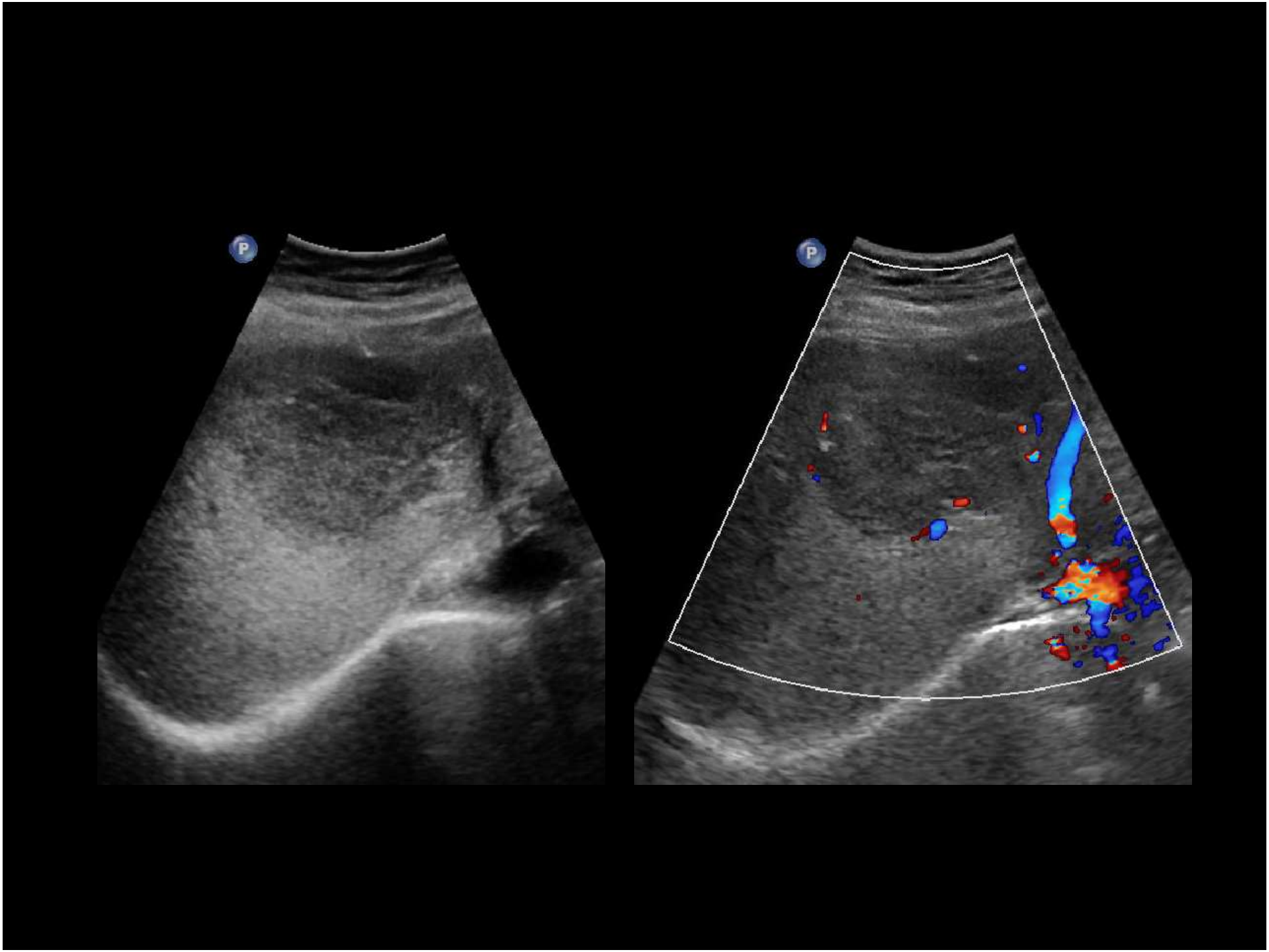




Hemangioma

- US
  - Atypical forms

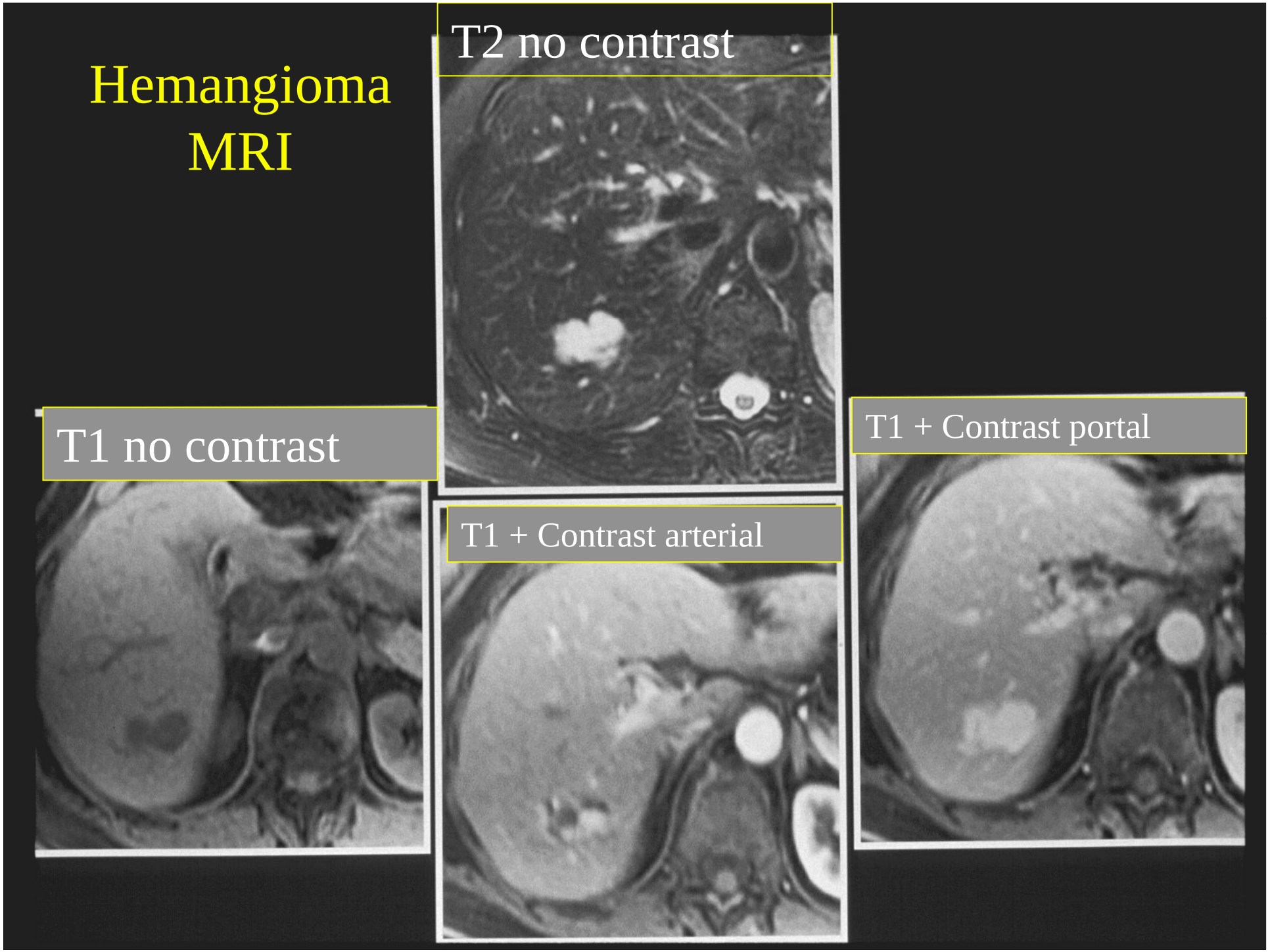


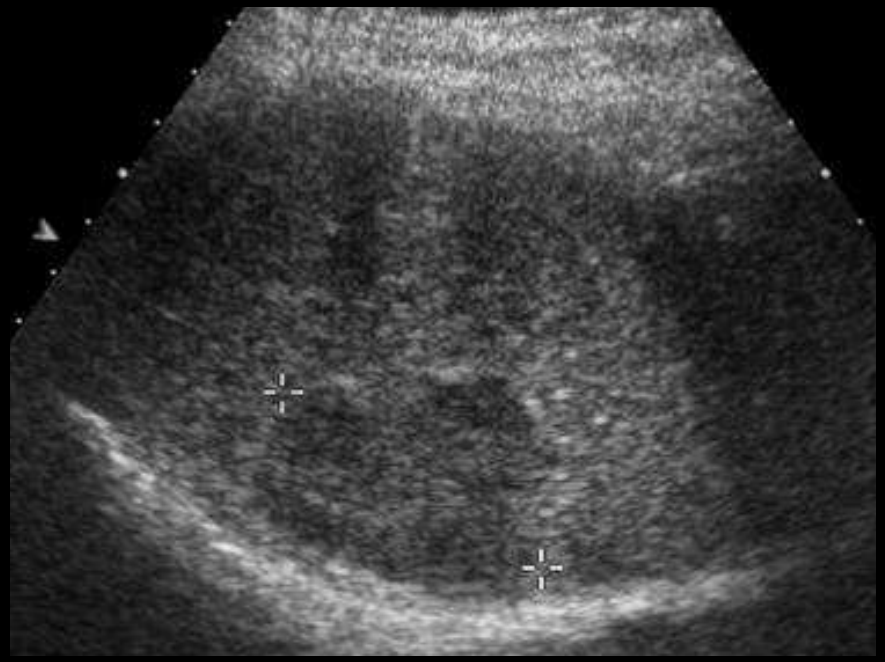


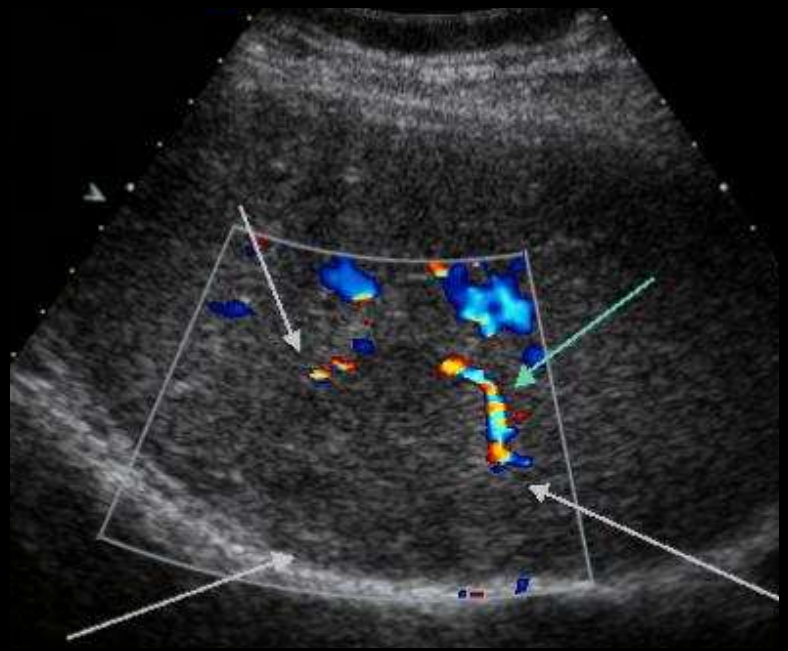
Hemangioma

- CT and MRI

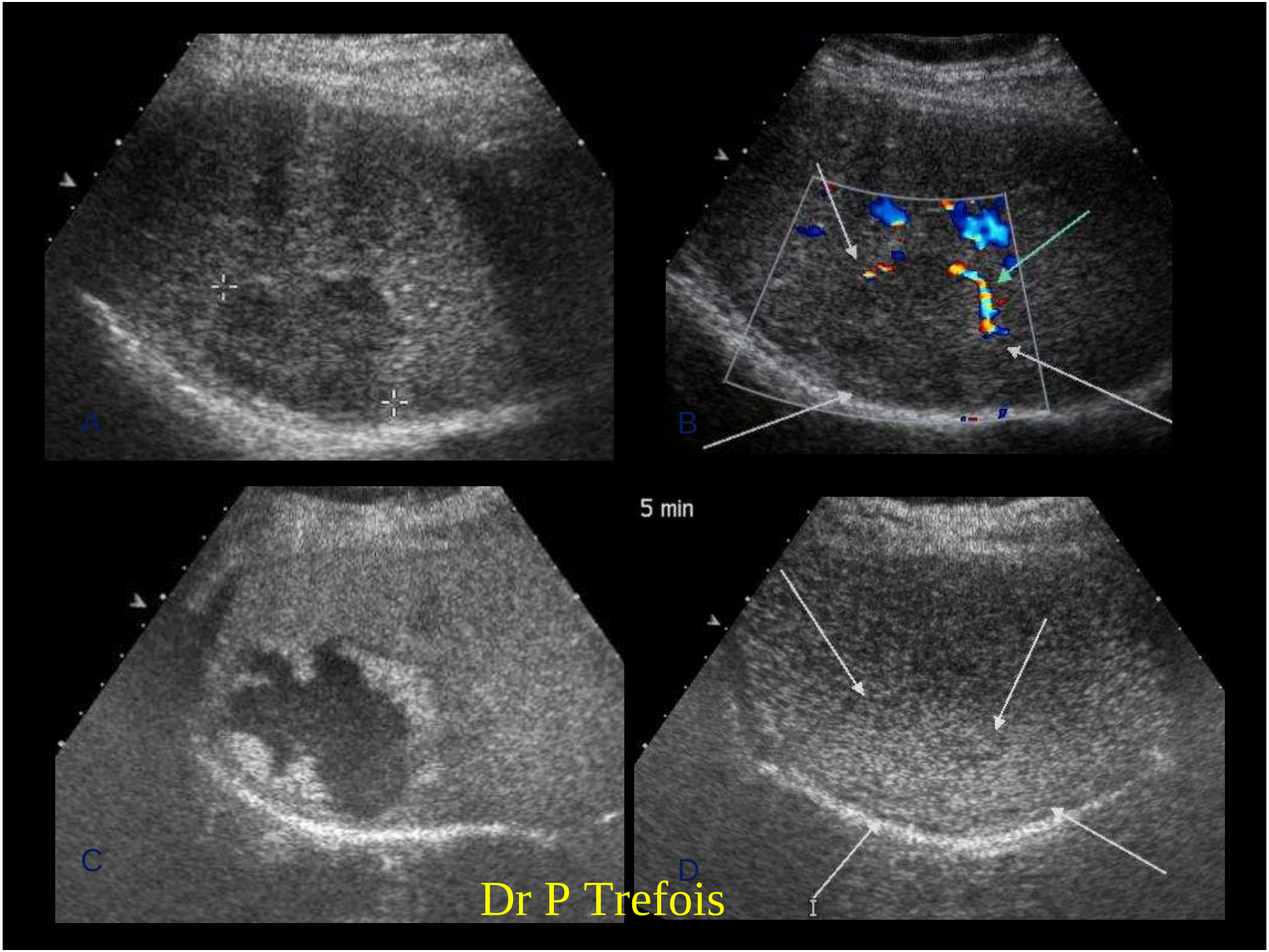
Hemangioma MRI



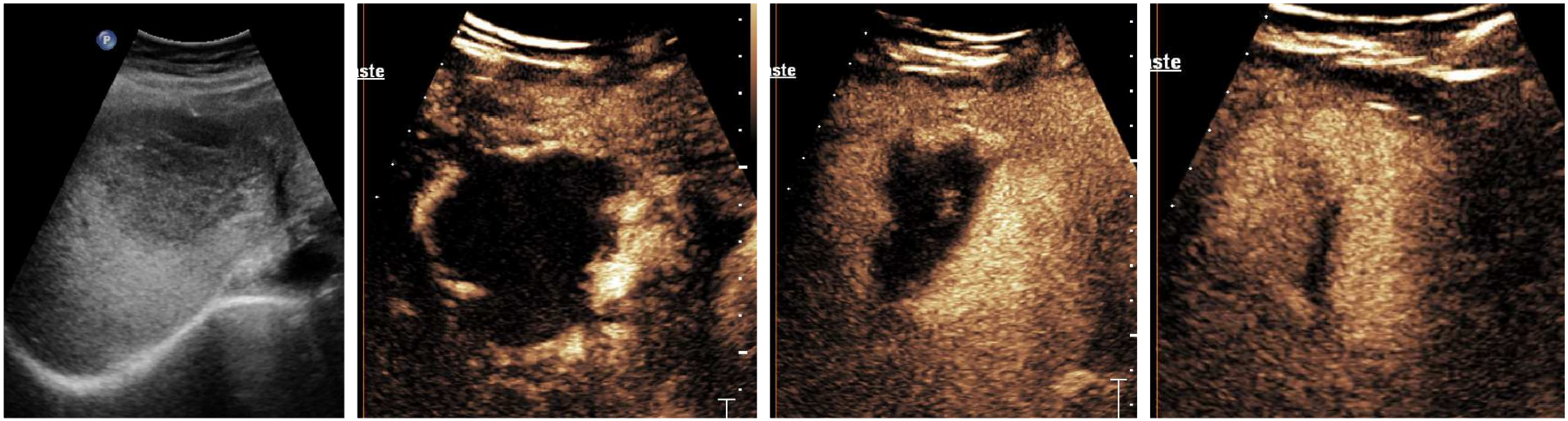




Dr P Trefois


A
B
5 min
C
D
Dr P Trefois

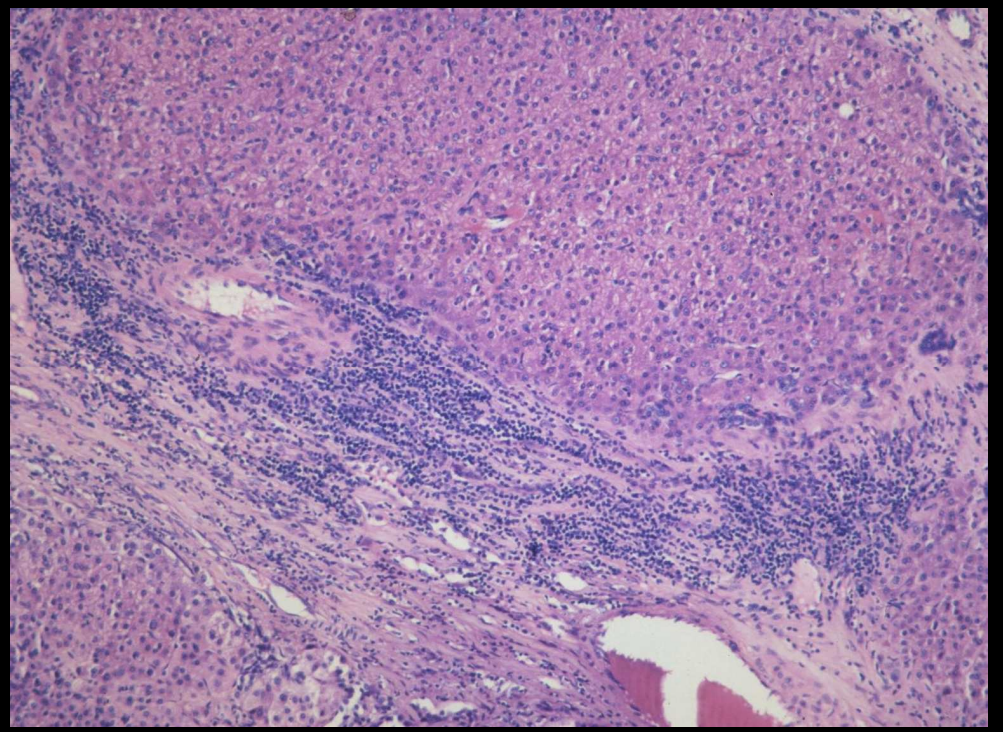
Hemangioma and Contrast US



Non C* C* arterial……..portal…….delayed (5 min)

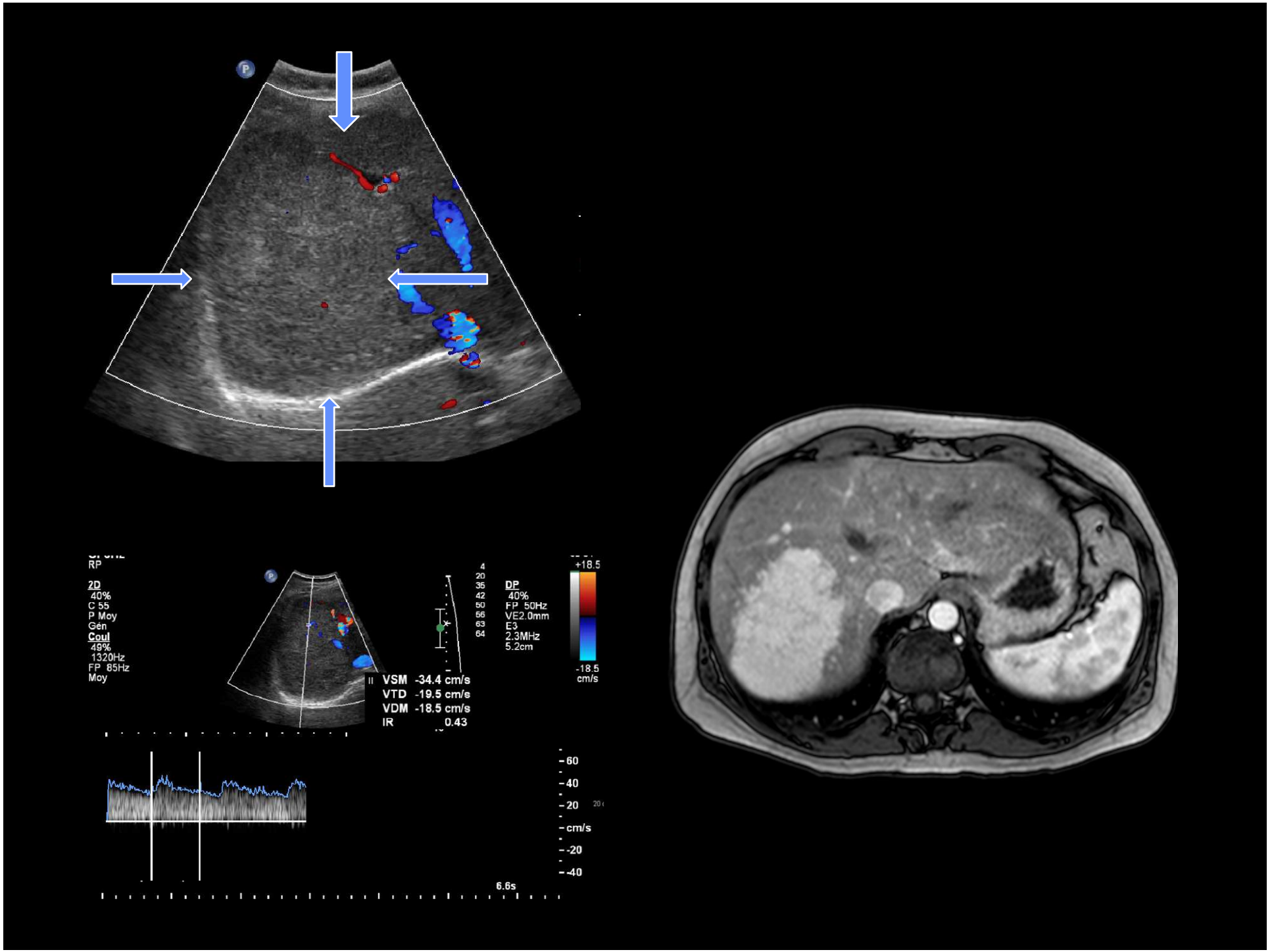
Focal Nodular Hyperplasia

- Frequent benign tumor
- Parenchymal Hyperplasia due to arterial malformation
- Pseudotumor composed of nodules separeted by fibrous septa and with a central scar
- More frequent in women , usually asymptomatic



FNH and US

- US : non specific, arterial vascularisation with Doppler, central scar
- CT & MRI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1320Hz
FP 85Hz
Moy
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VTD -19.5 cm/s
VDM -18.5 cm/s
IR 0.43
DP
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FP 50Hz
VE2.0mm
E3
2.3MHz
5.2cm
+18.5
-18.5
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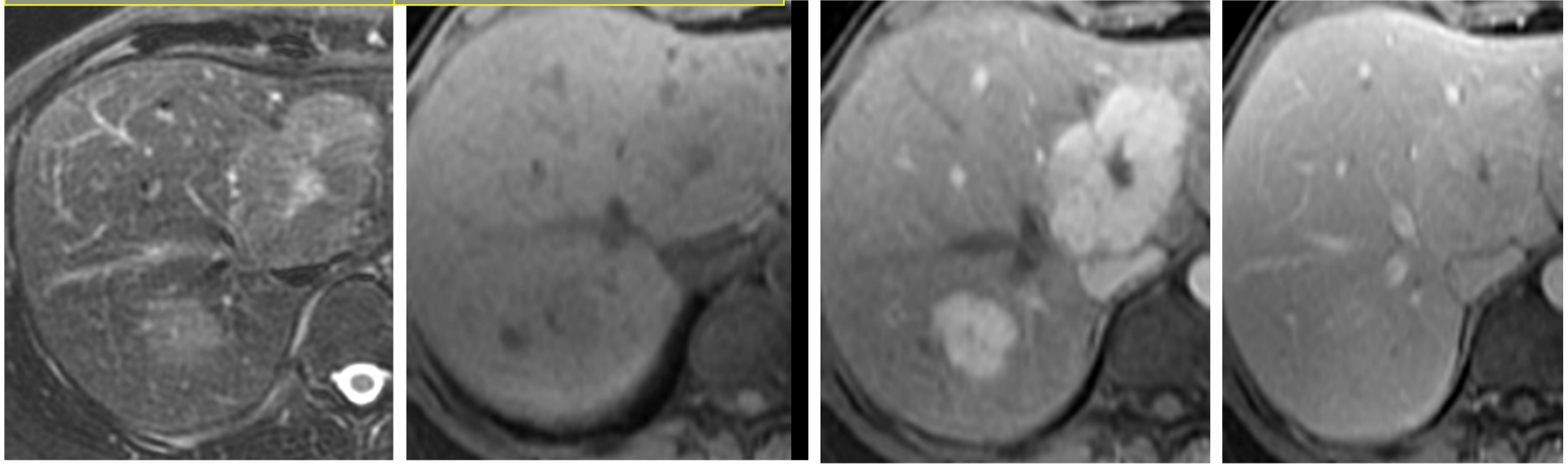
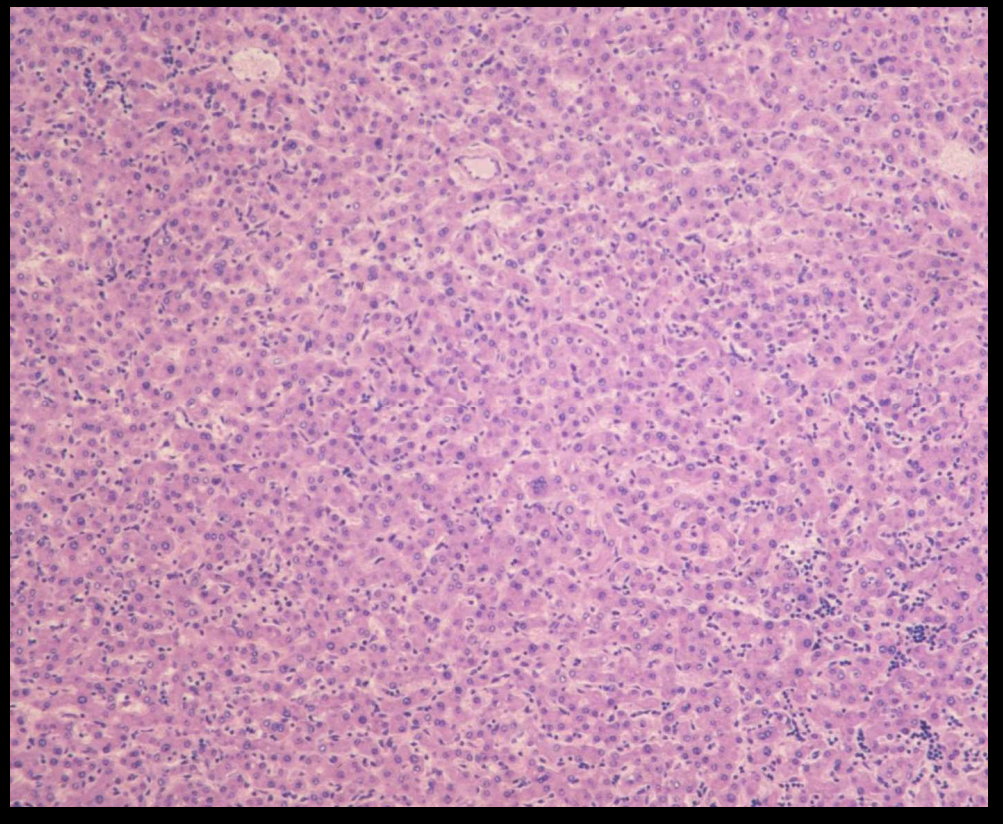
20
cm/s
-20
-40
6.6s

T2 - C*	T1 - C*	T1 C* arterial	T1 C* portal



Adenoma

- Uncommon benign lesion including normal hepatocytes
- Hormonal context
- Asymptomatic or abdominal pain if necrosis or hemorrhage
- Surgery



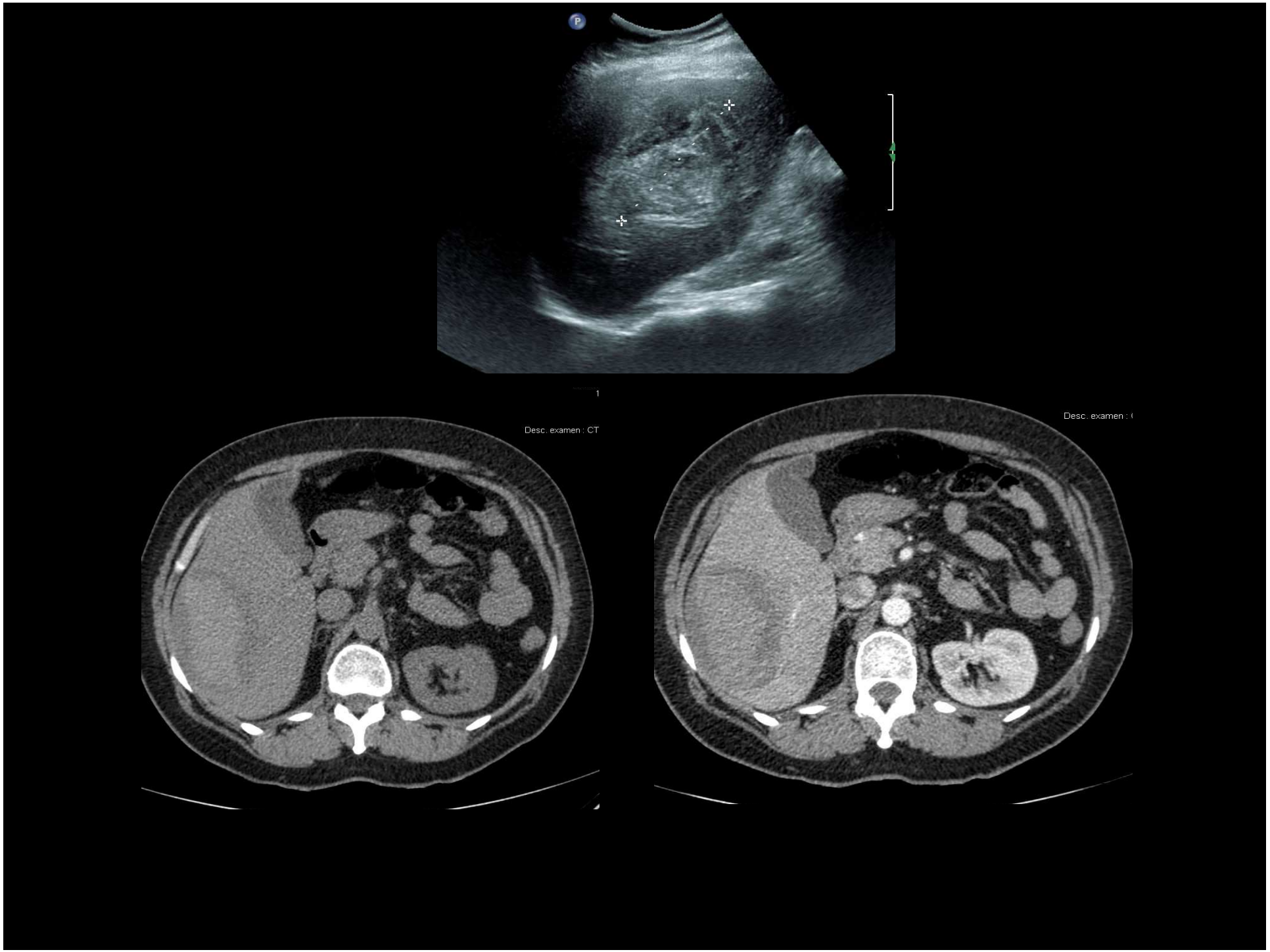
Adenoma : imaging

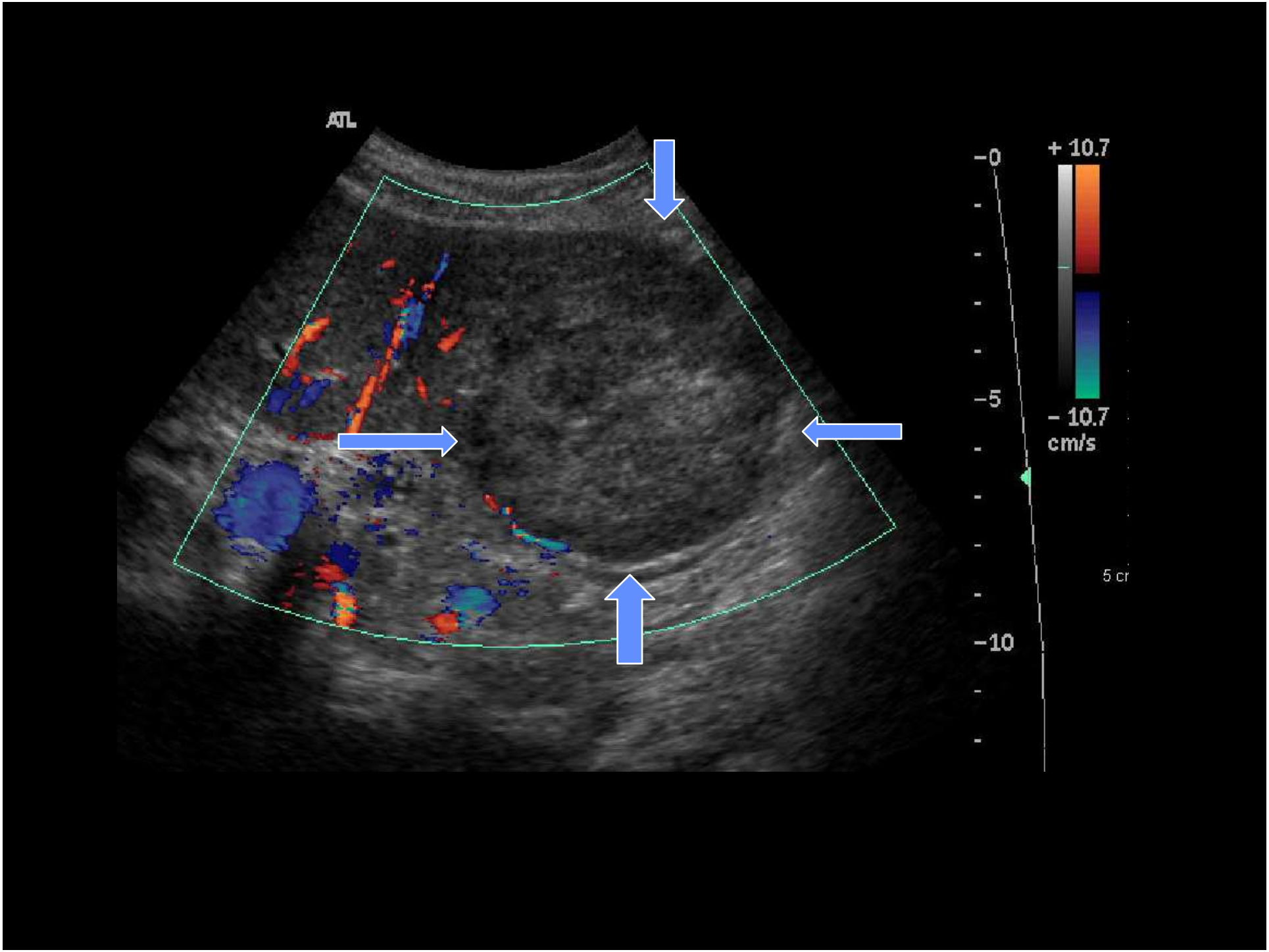
- Smooth Contours
- Heterogeneous lesion
- Vascularisation lower than FNH
- DD/ hepatocarcinoma

Adenoma & US

Signs

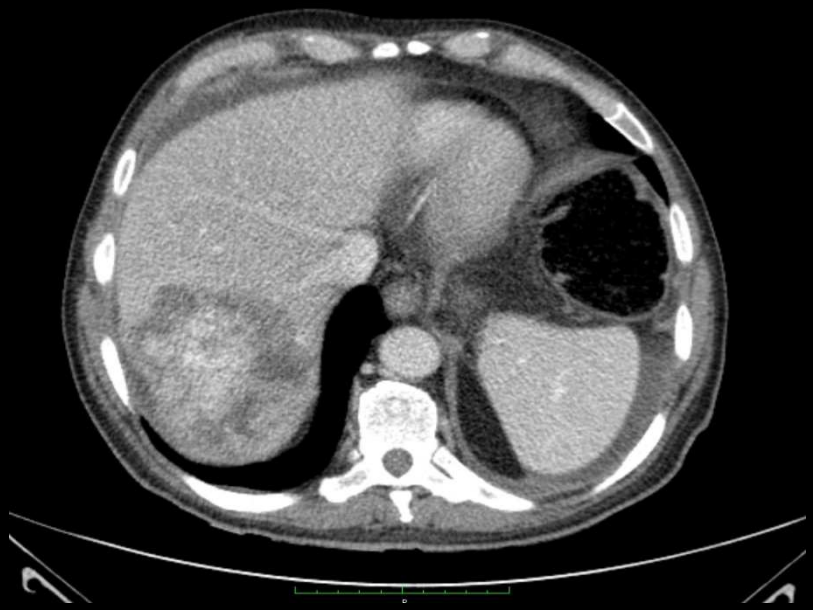
- no typic signs
- heterogeneous, hyperechoic (fat, blood)
- venous flow into the lesion
- mixing of venous and arterial flow
- no central arterial flow >< FNH


Desc. examen : CT
Desc. examen :


ATL
0
5
10
+ 10.7
– 10.7
cm/s
5 cr

Metastases

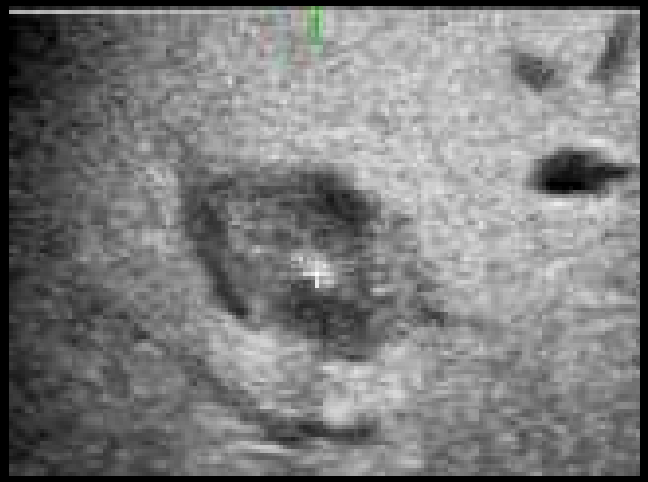
- Liver : frequent site
- Imaging
  - Hypovascular Metastases : target
    - colon
  - Hypervascular Metastases : transient enhancement
    - Neuroendocrine Tumors
    - Renal Carcinoma
    - Sarcoma
    - Melanoma

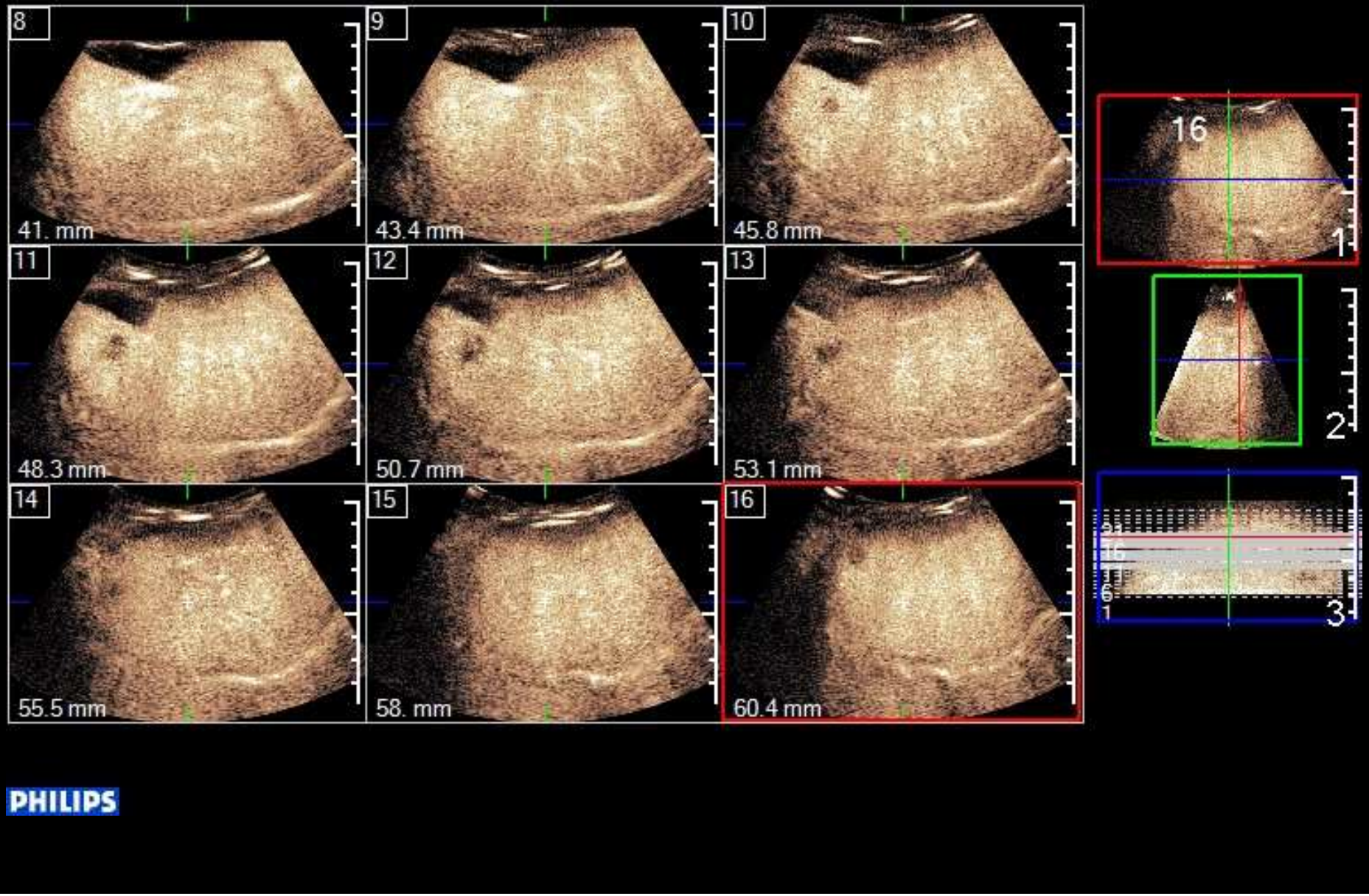


Metastases & US

Signs

- **coarse shape**
- **hypo or isoechoic nodule and hypoechoic halo**
- **hyperechoic, calcifications**




8
41. mm
9
43.4 mm
10
45.8 mm
11
48.3 mm
12
50.7 mm
13
53.1 mm
14
55.5 mm
15
58. mm
16
60.4 mm
16
1
2
3
PHILIPS

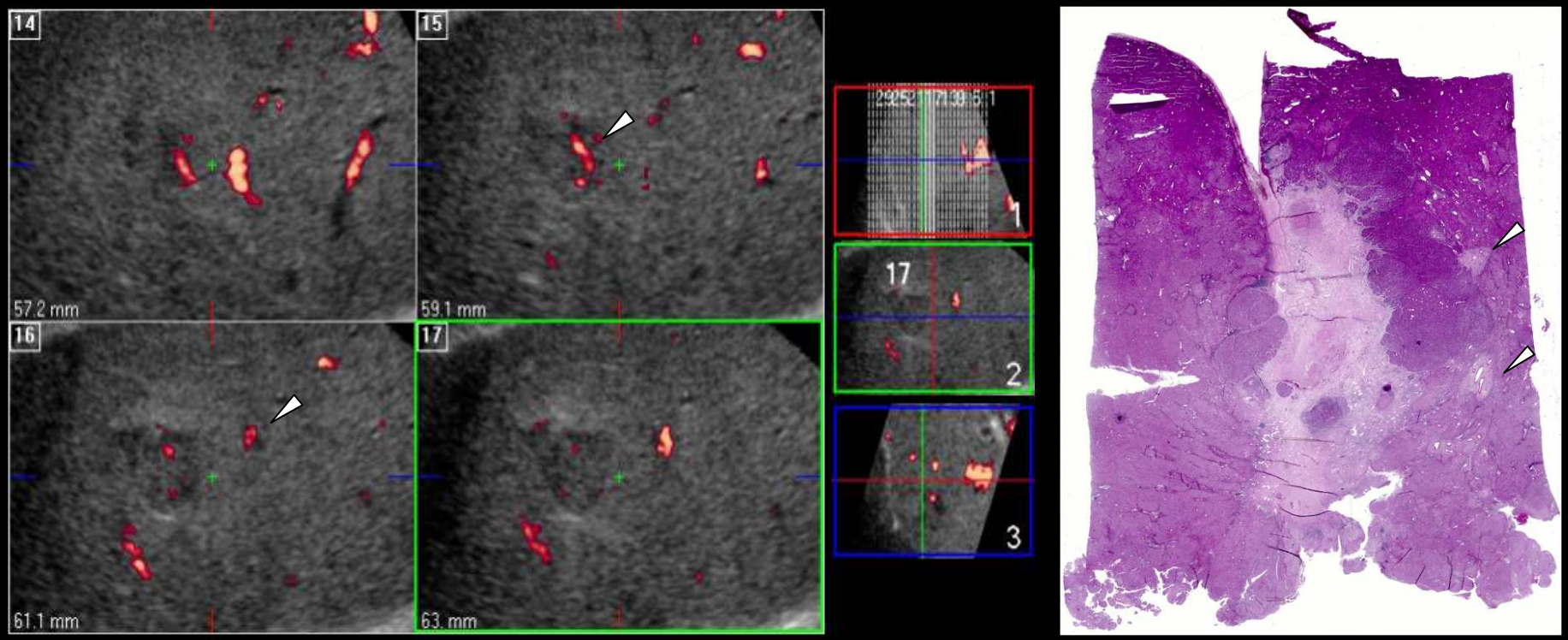
Hepatocarcinoma

- Cirrhosis
- Nodular or infiltrating Form
- Capsule
- Portal and hepatic veins invasions
- Imaging
  - Difficult Detection
  - Arterial vascularisation
  - Heterogeneous when large lesions

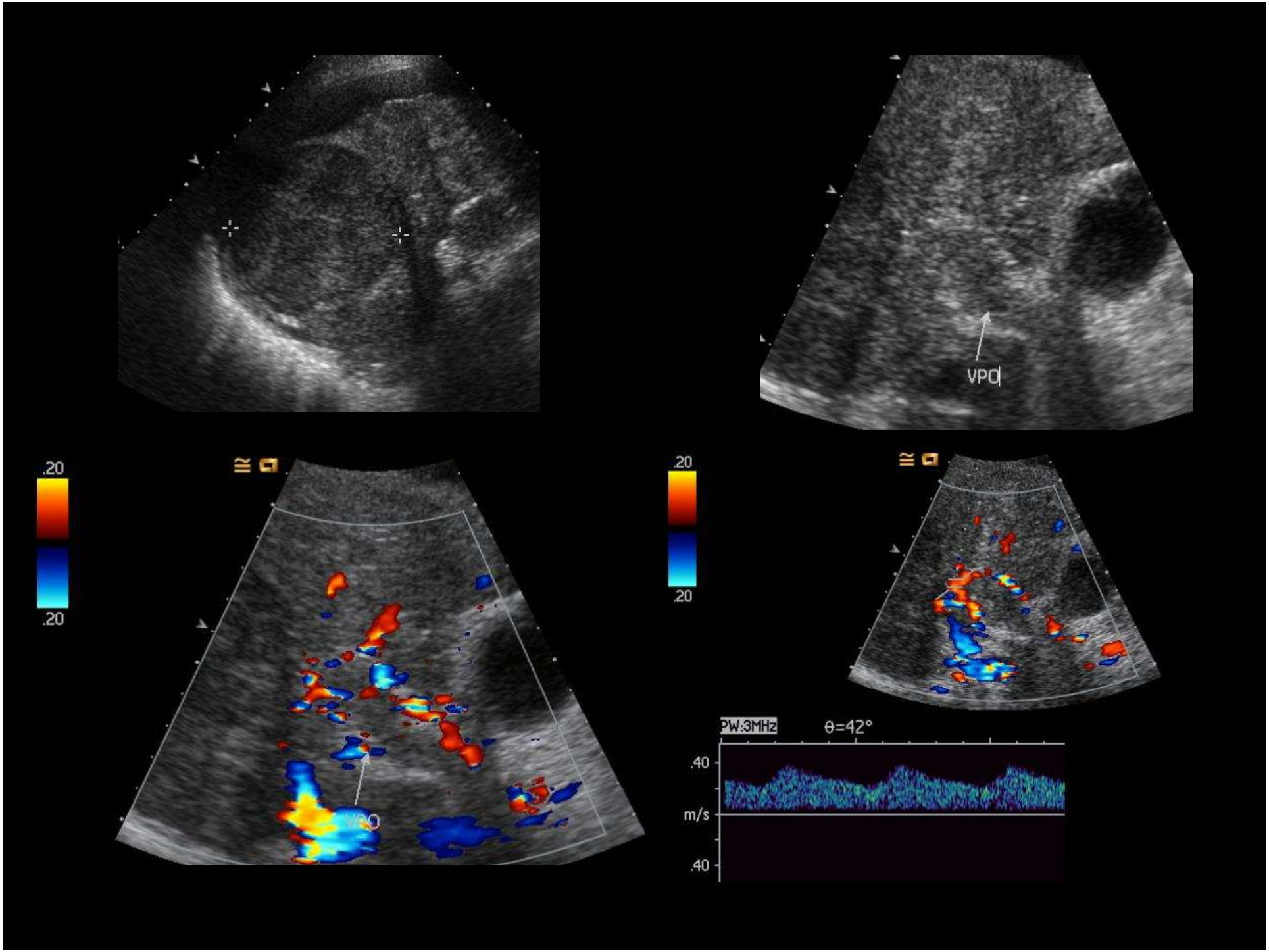
Cirrhotic liver and US

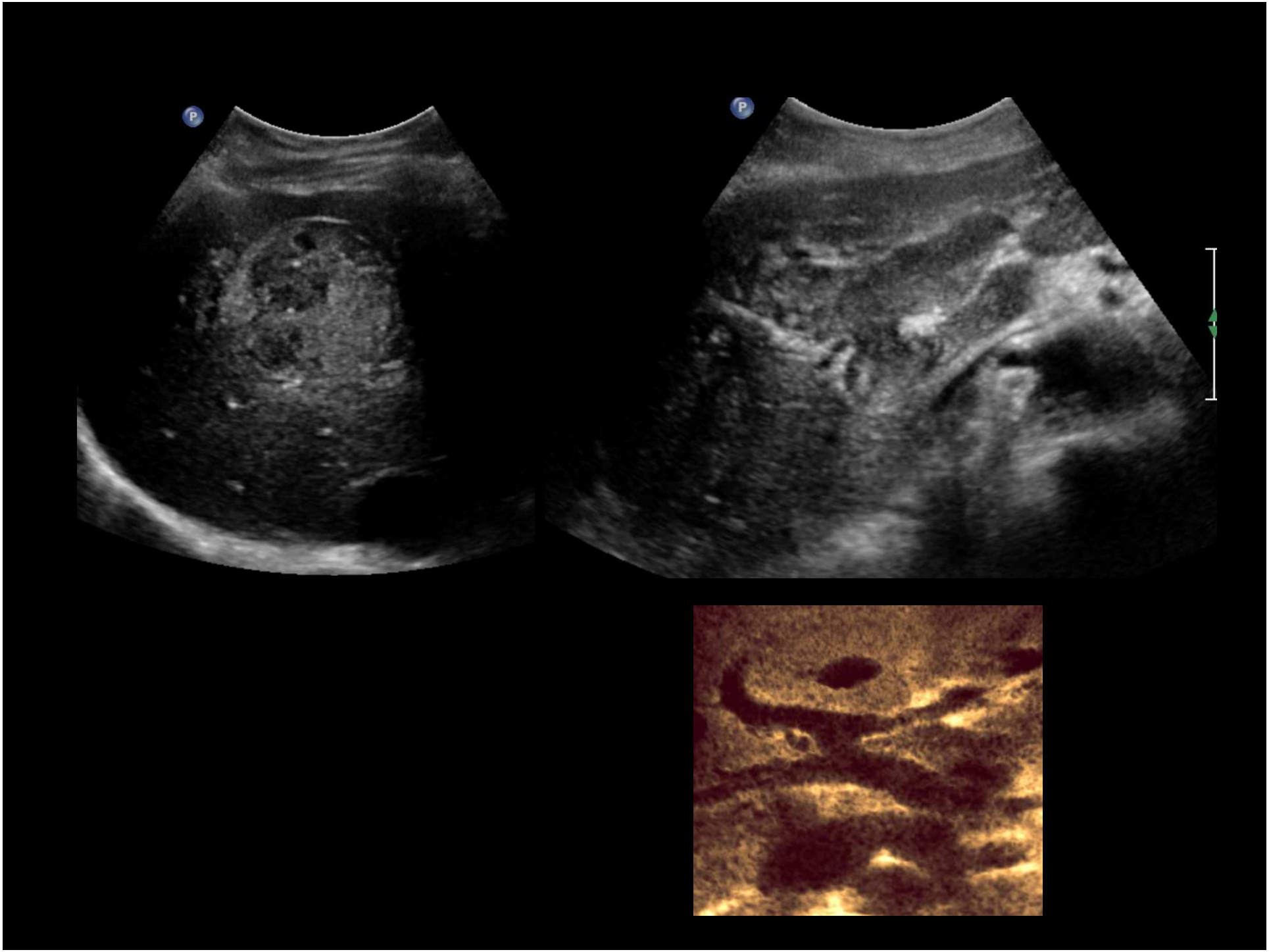
Signs

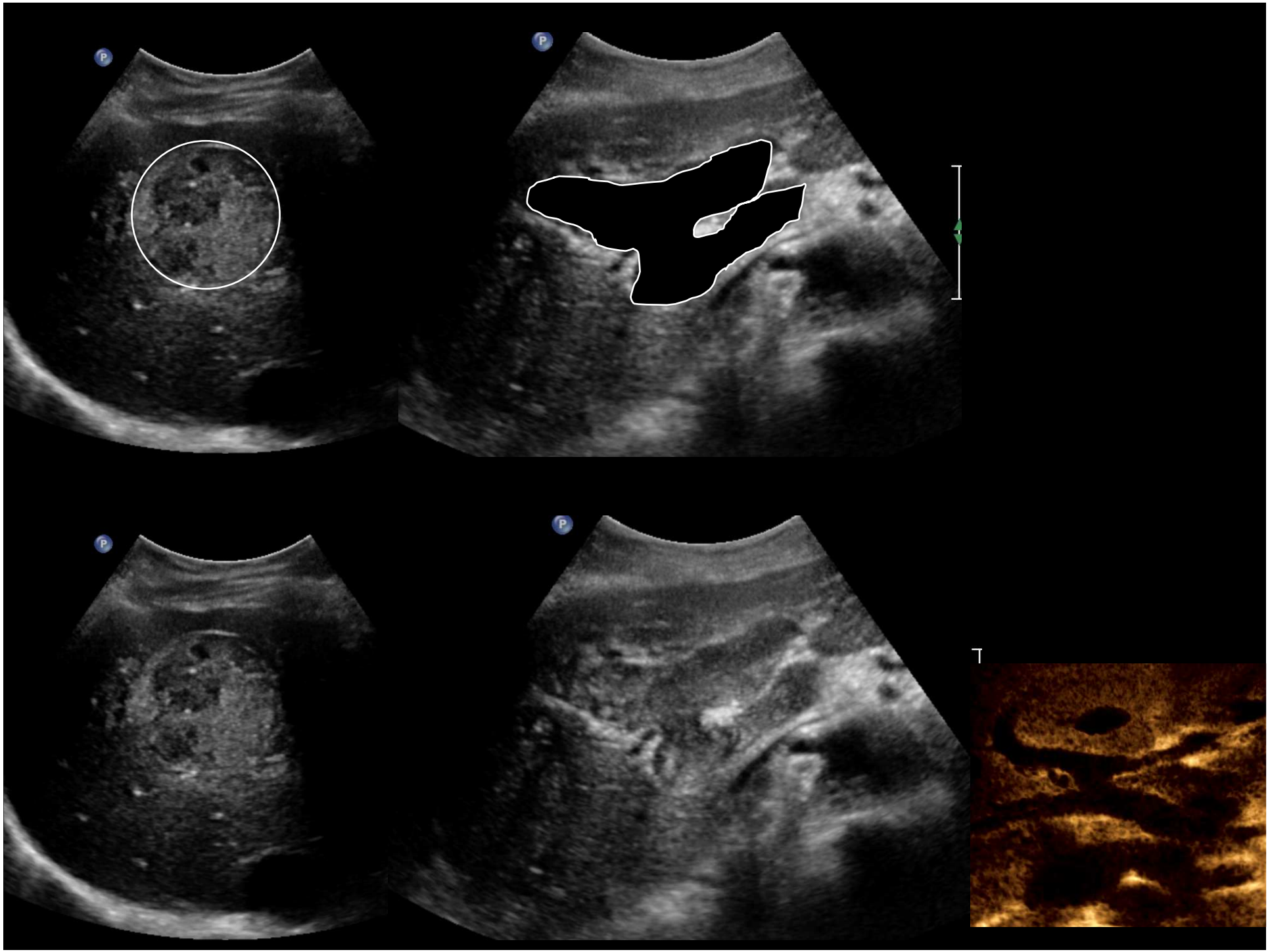
- nothing typic
- < 3 cm, hypoechoic and homogeneous lesion
- larger lesions are heterogeneous
- // angioma
- hypoechoic contour
- mosaïc pattern
- portal thrombosis + arterial flow into the thrombus

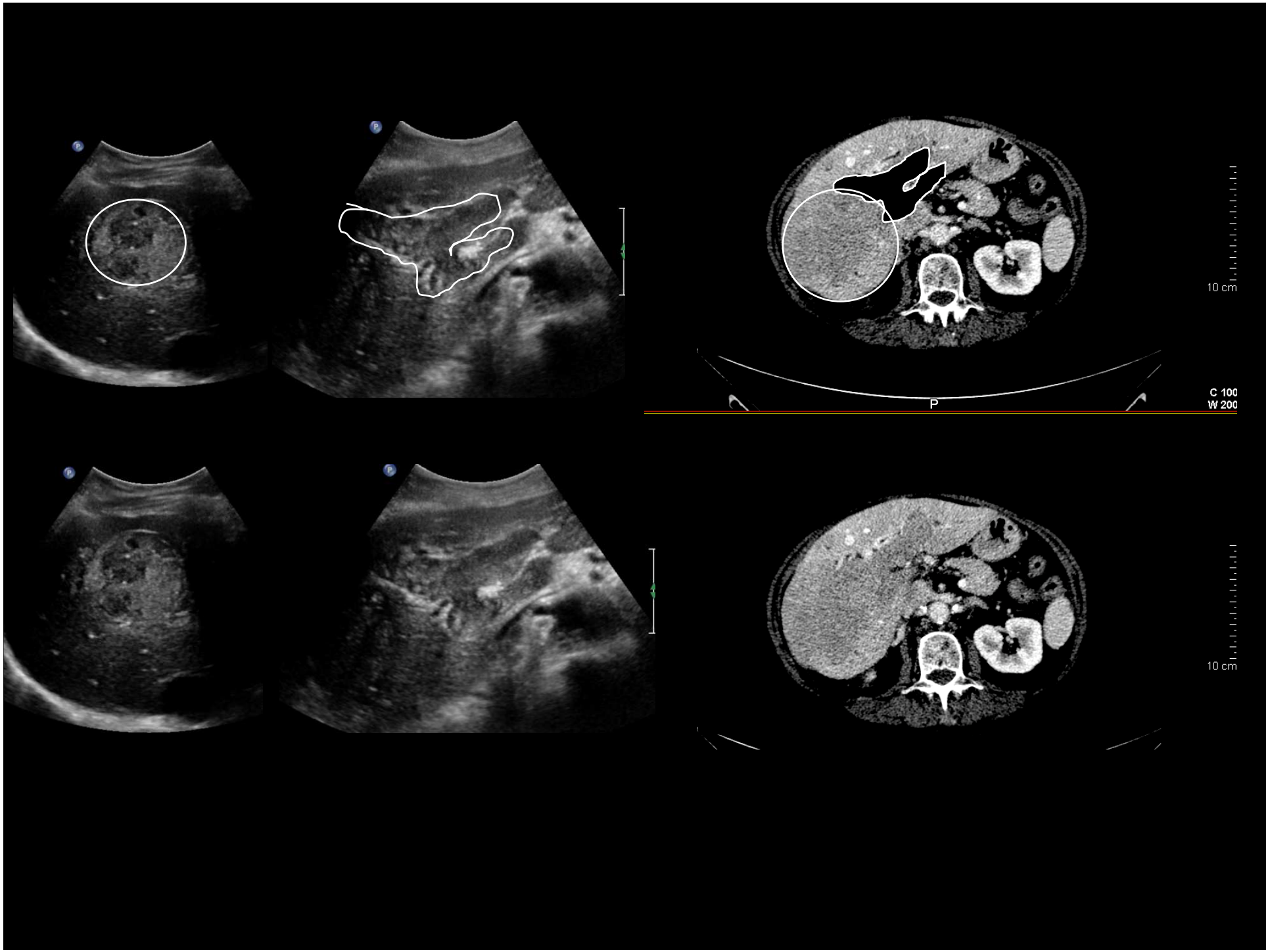


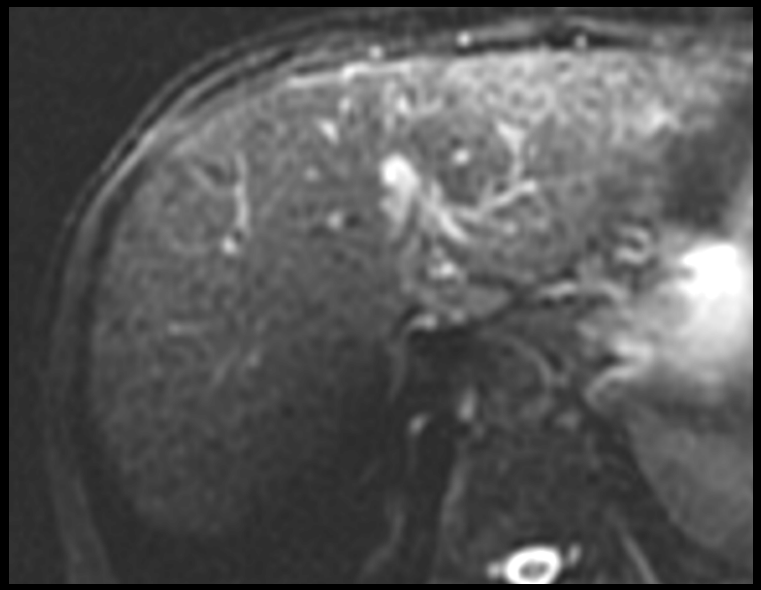
PHILIPS

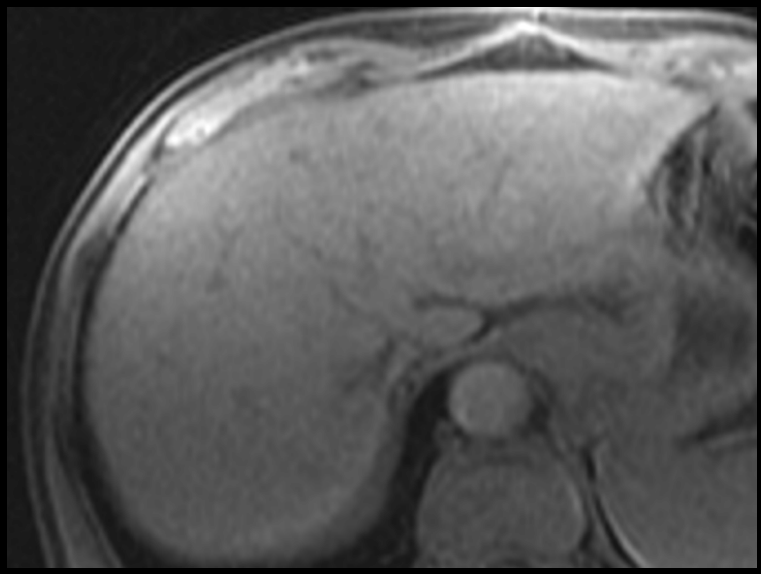

VPO
.20
.20
.20
.20
PW:3MHz
θ=42°
.40
m/s
.40

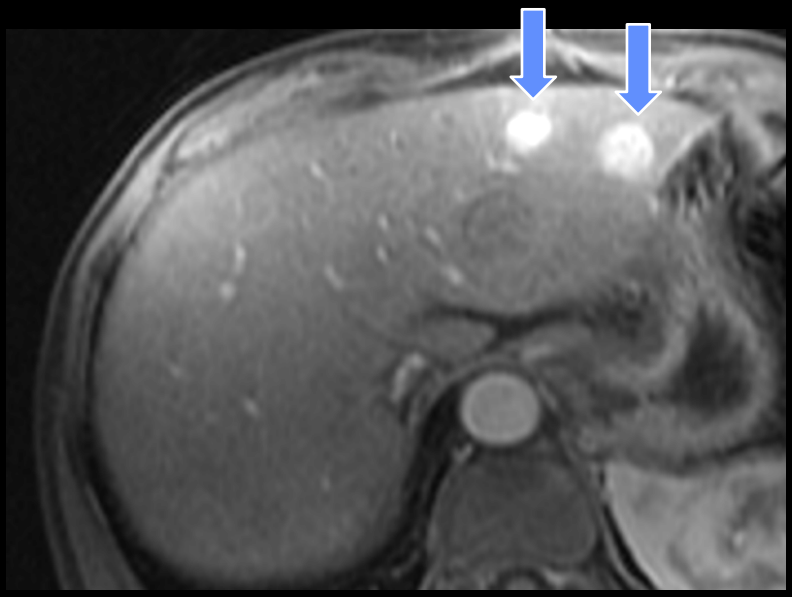


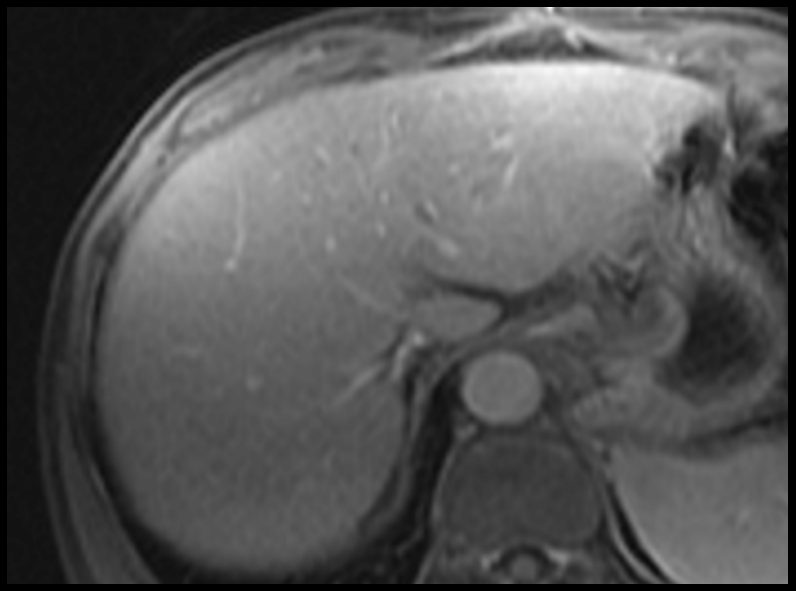


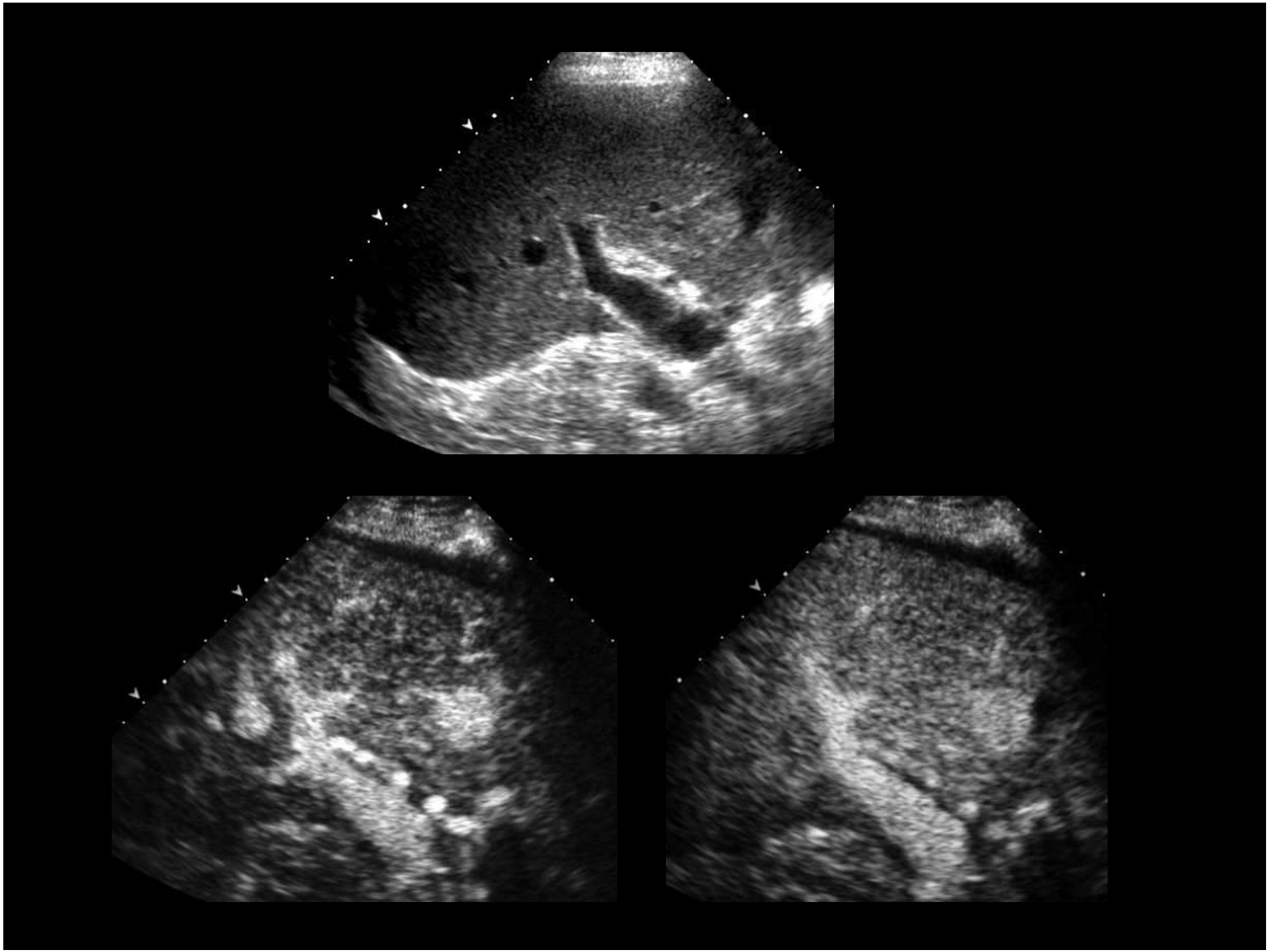

10 cm
P
C 100
W 200
10 cm

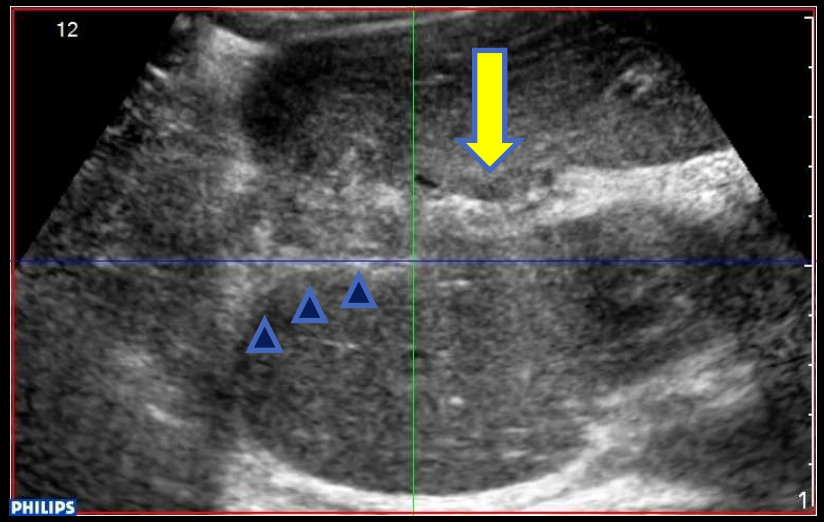


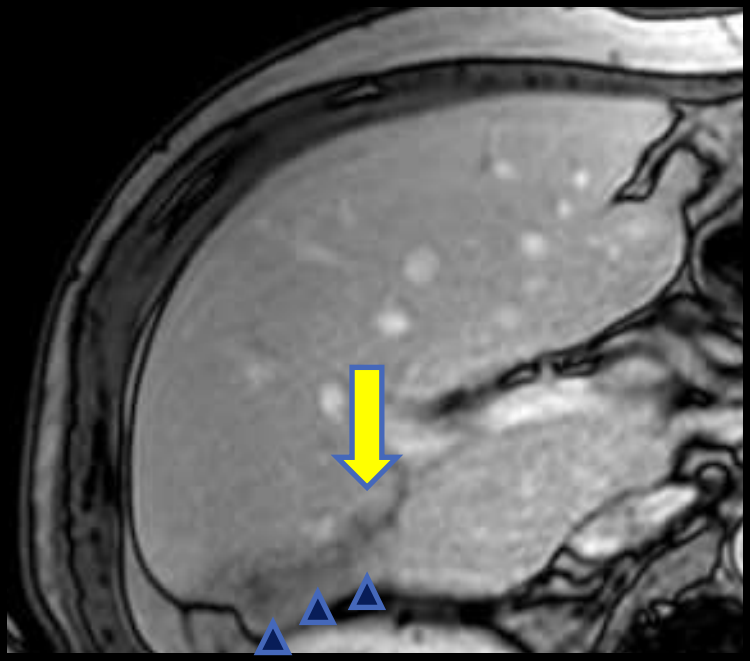




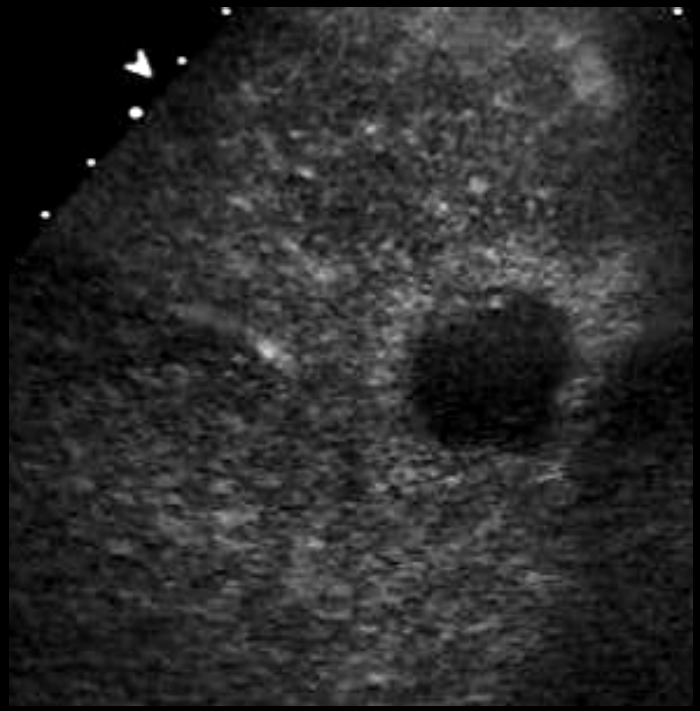






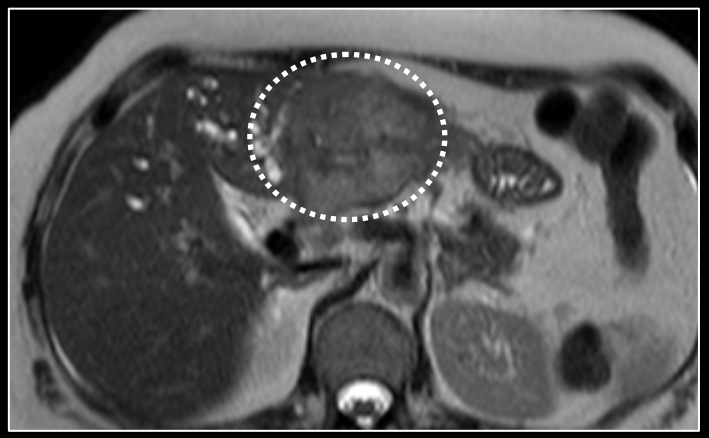


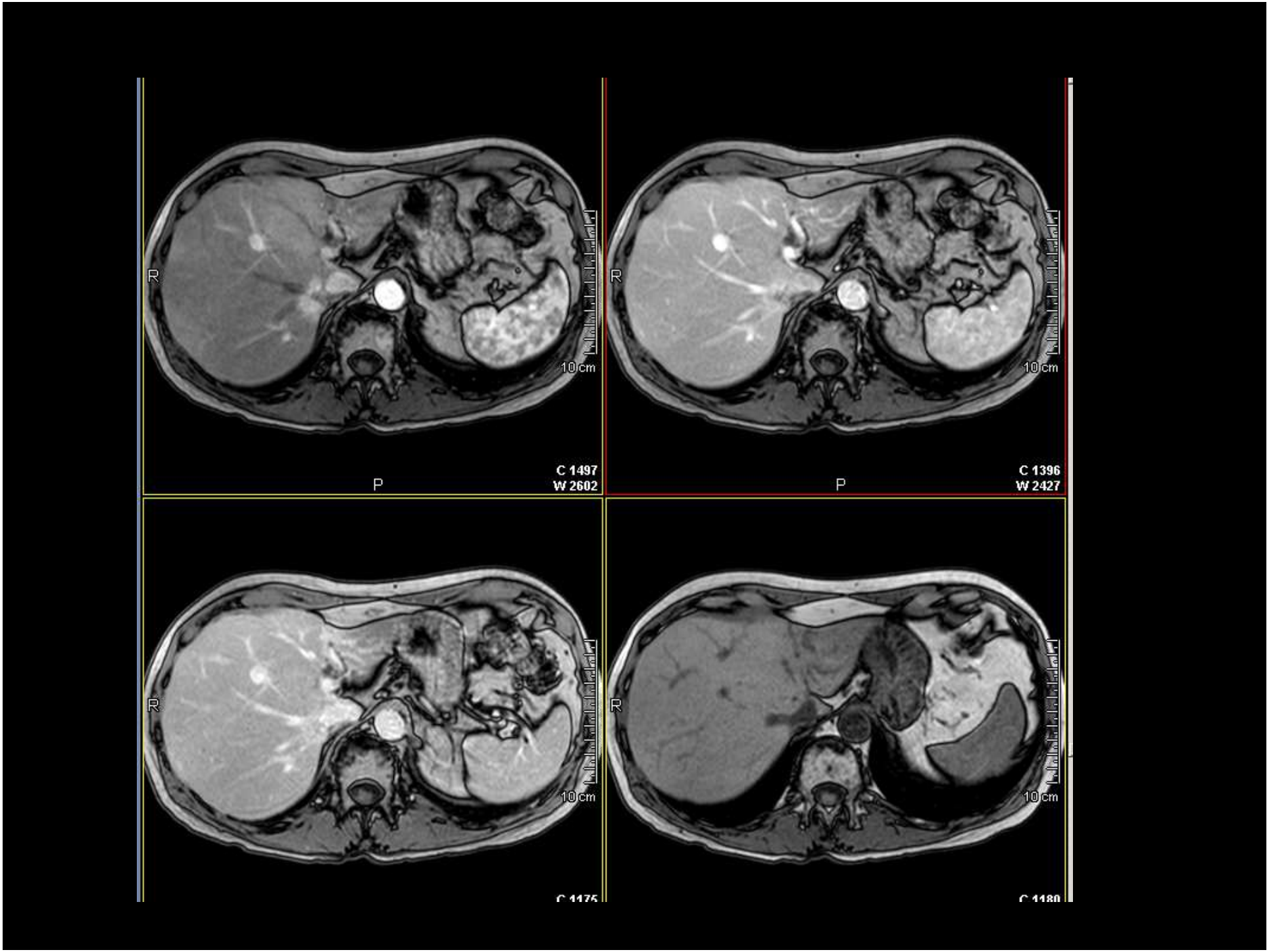
Portal vein thrombosis (yellow arrow) and site of the treated lesion (white arrow heads)

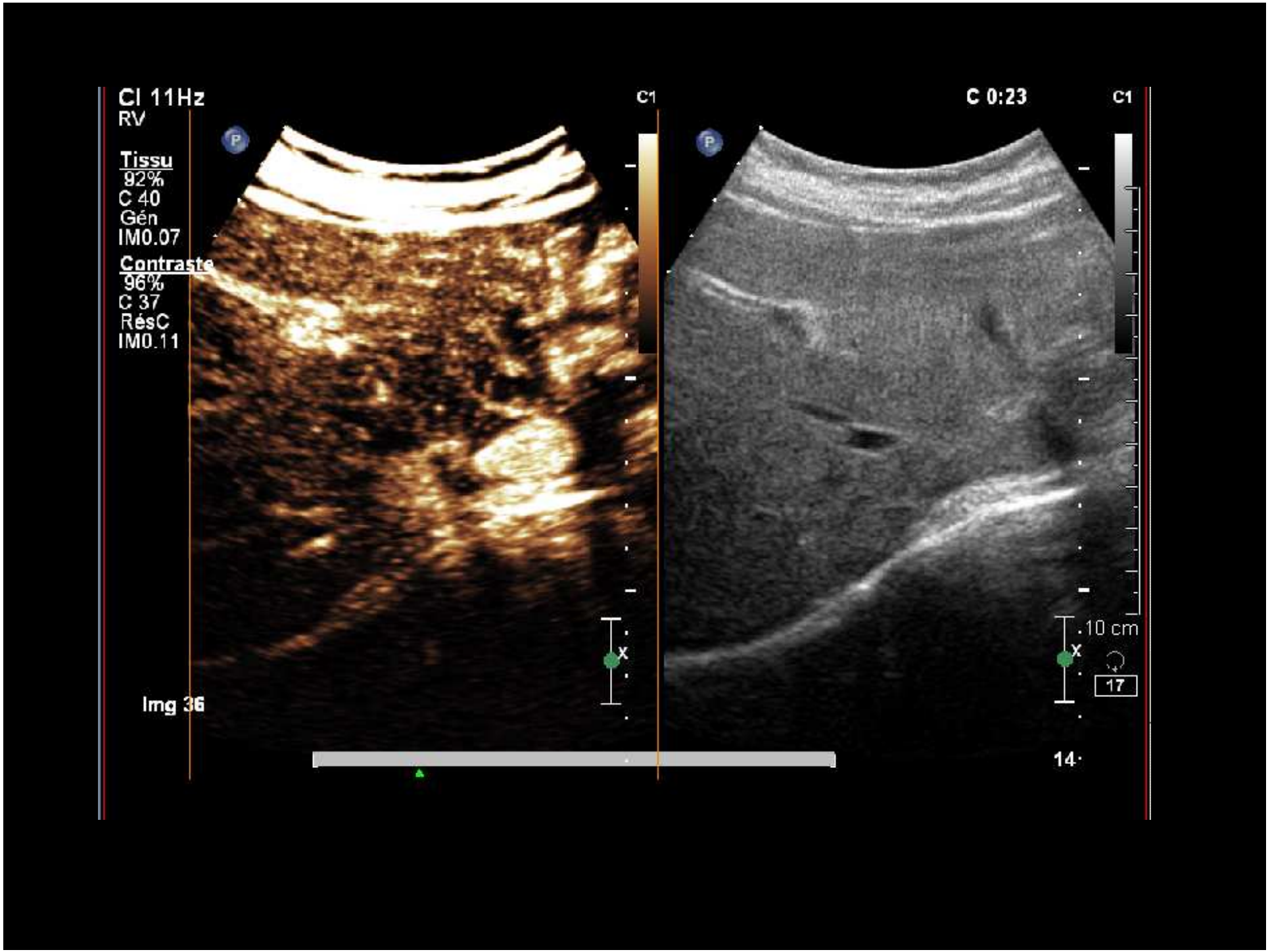


Cholangiocarcinoma

- Intrahepatic Cholangiocarcinoma: uncommon
- Hypovascularized Mass




R
10 cm
C 1497
W 2602
P
R
10 cm
C 1396
W 2427
P
R
10 cm
R
10 cm


CI 11Hz
RV
Tissu
92%
C 40
Gén
IM0.07
Contraste
96%
C 37
RésC
IM0.11
C1
Img 36
C 0:23
C1
.10 cm
17
14

Focal liver lesions and US

- Focal liver lesions:
  - Detection
  - Characterization
  - Localisation
  - Follow-up
- Technique
  - B Mode
  - Color and Doppler
  - Volumetric approach
  - Contrast agents