

Ultrasound guided intervention

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General Issues

- Well known intervention used in most departments. Nothing new.



Why ultrasound (why not)??

- Realtime – you see what is happening as it happens (breathing, movement etc.)
- Good image resolution (spatial, contrast and temporal)
- Available
- Fast
- Cheap
- Easy

FNAC vs. Core needle biopsy

- Core 2 +1,6 mm (native kidney)
- "Middle" needle = 1,2 mm (most other things, eg. focal lesions)
- Fine needle <1mm (same, local traditions)

Should we use FNAC or core
needle biopsy?

- Yes!!!!

Results, safety

- Failed in about 10% (cheap and not very time consuming to repeat)
- Most common reason is a necrotic area
- Complications ↓ 1% (this includes seeding but apart from needle tract difficult to know)

Technical problems

- Can't see through gas and bone (in abdomen not as common as most people think – you will only lose time if you try)
- Fatty tissue will distort the image and decrease penetration
- Sound reflected away from the transducer



09:36:52

4V1-S 12Hz

H3.0MHz 130mm

Abdomen

General /V

Pwr= 0dB

MIF=1.1 MI=1.7

90dB S1/+1/4/4

Gain=-20dB $\Delta=2$

Store in progress

Needle Guide=18°

SIN



1 min

Moose hunt principle!!



Needle guide or not?

- Using guide is the most common way in Scandinavia.
- Better access is the usual reason give for free hand technique

Drainages

- Same principle
- Good accuracy and less complications than "blind" procedures.
- More accessible than other methods
- One-step, up to 10F (14F)

Sedation?

FNAC – no

General anaesthesia for:
Children

Core needle - local

People who demand

General sedation?

Procedures that really
hurts (eg. ablations)

Contrast?

- Native if possible
- Arterial phase – usually at least 20 sec
- Late phase – plenty of time
- Not only i.v.



112

09:31:45

4V1-S 10Hz

P1.5MHz 120mm

Abdomen

General /V

Pwr=-25dB

MIF=.09 MI=.11

80dB S1/+1/1/4

CPS Gain=-13 Δ=3

+1/M:2

Store in progress

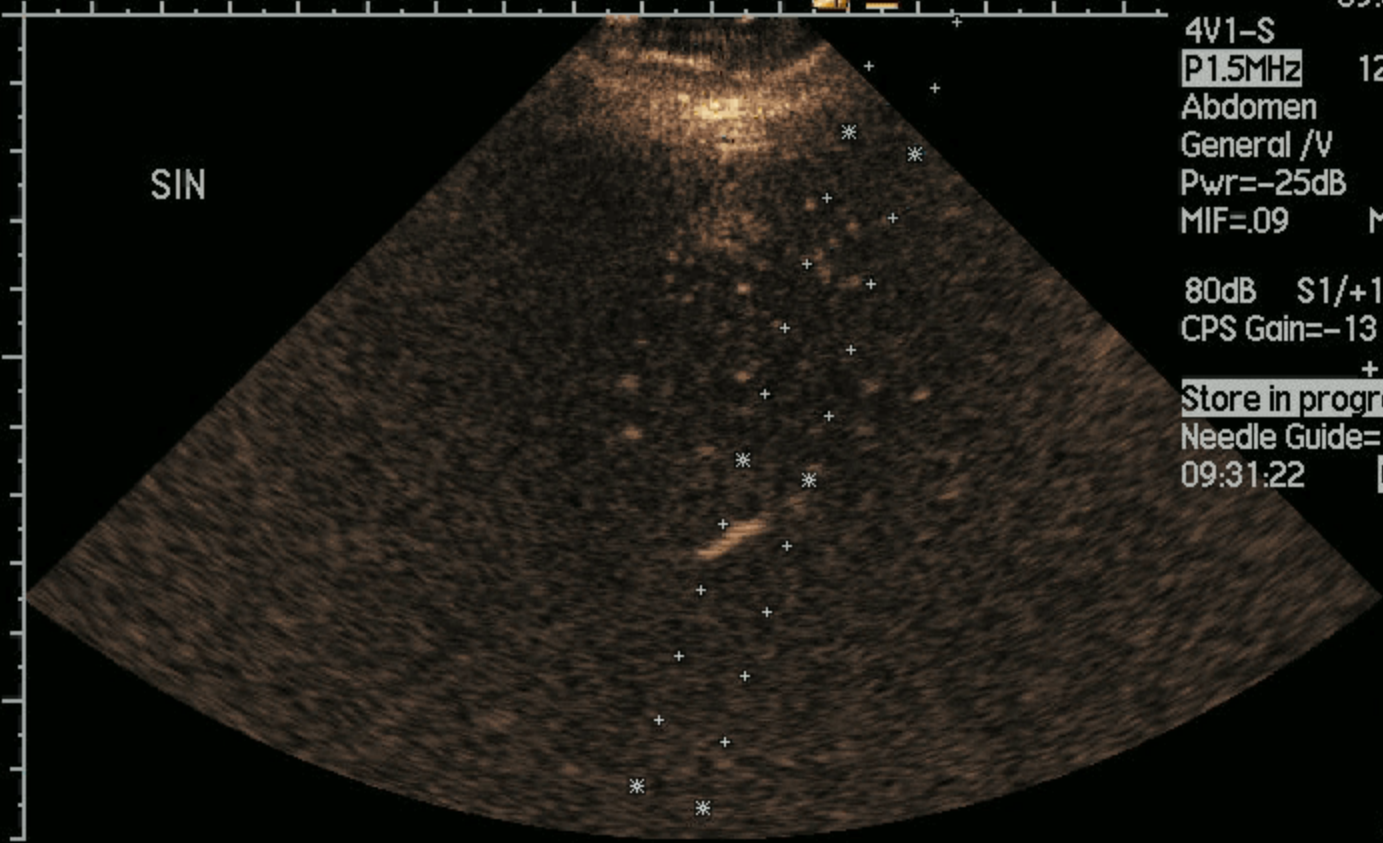
Needle Guide=18°

09:31:22

00:23

SIN

CPS
CA



Exit

Stop Timer



10:26:55

4V1-S 12Hz
H3.0MHz 130mm

Abdomen
General /V
Pwr= 0dB
MIF=1.1 MI=1.7

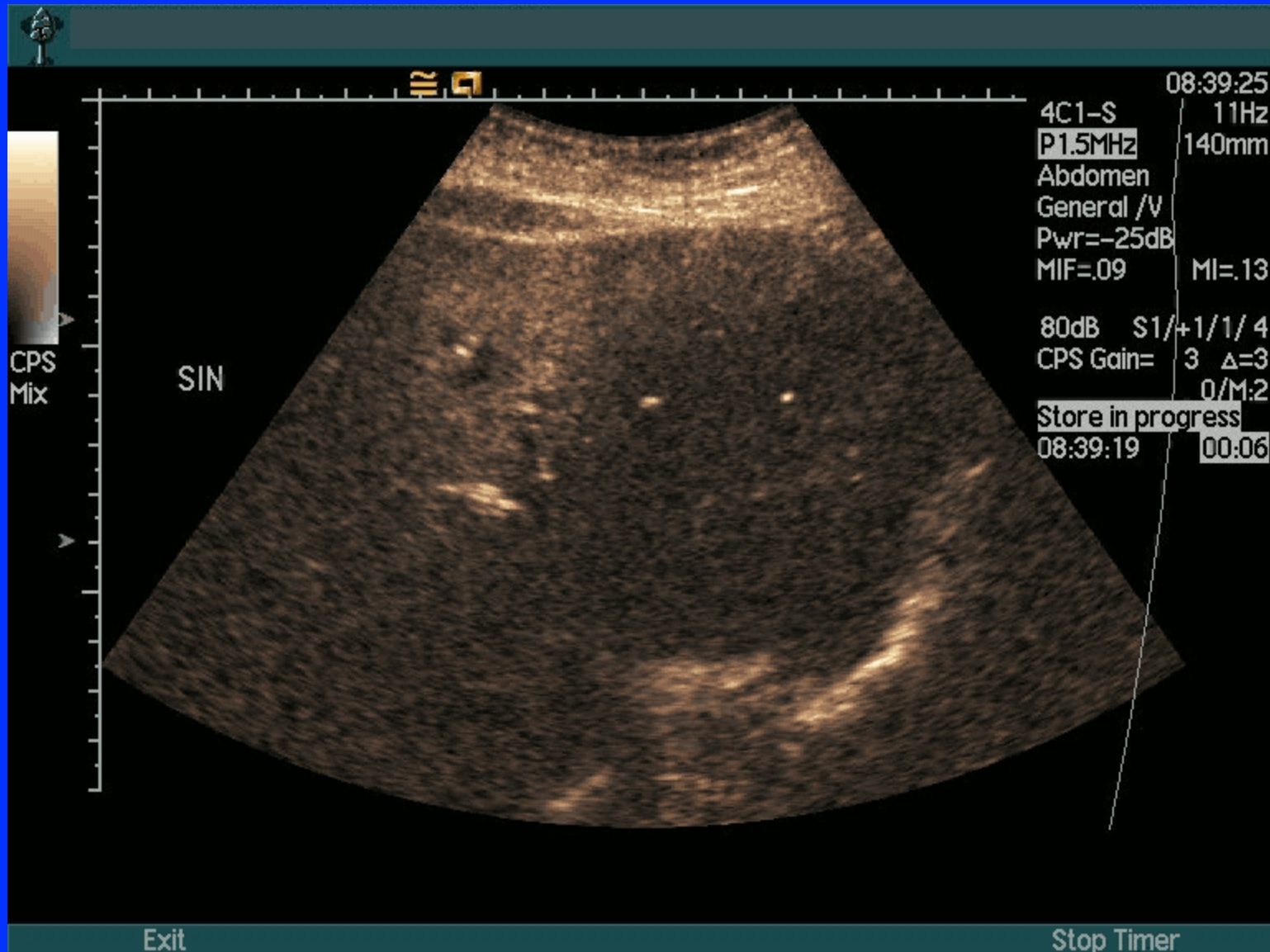
90dB S1/+1/4/4
Gain=-20dB Δ=2

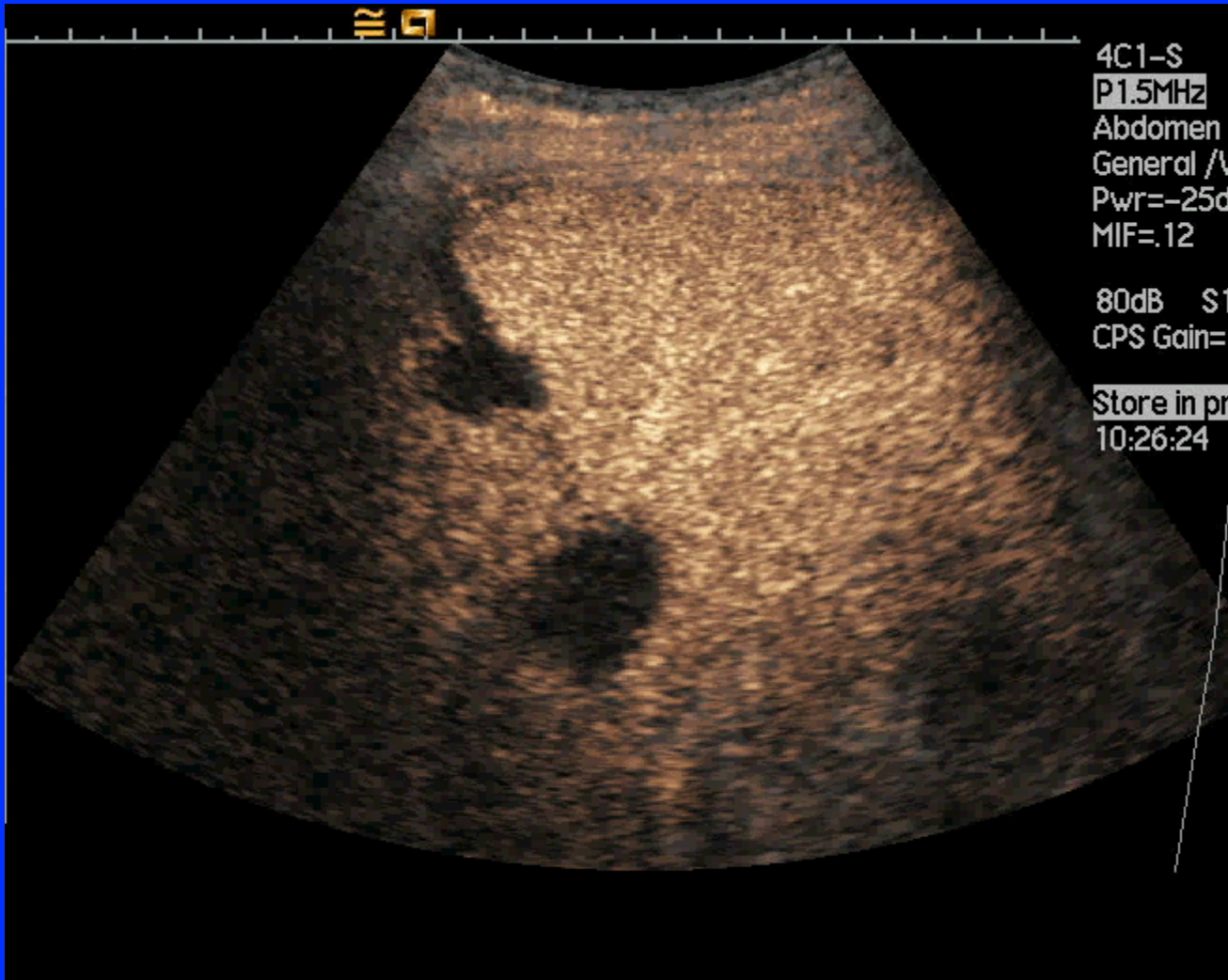
Store in progress
Needle Guide=18°

SIN



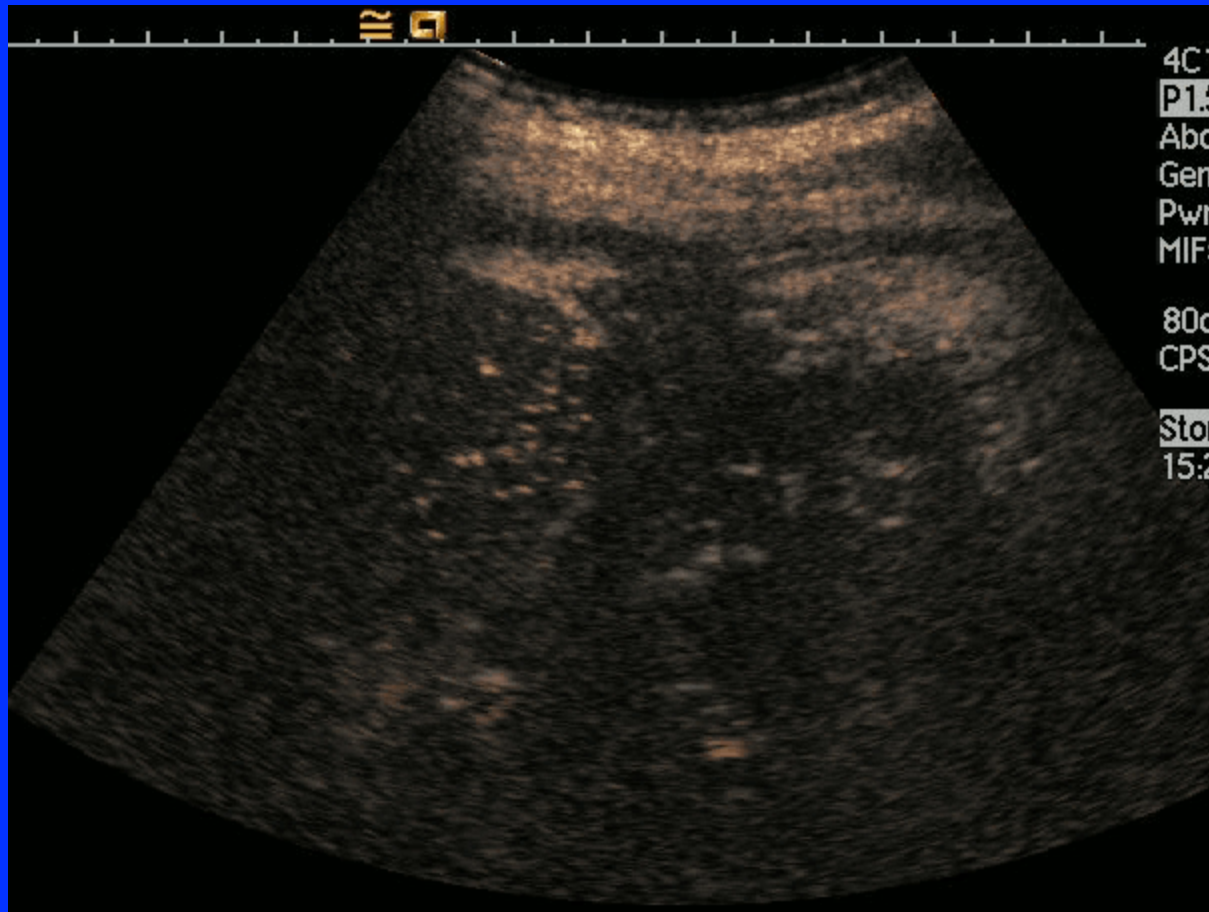
1 min



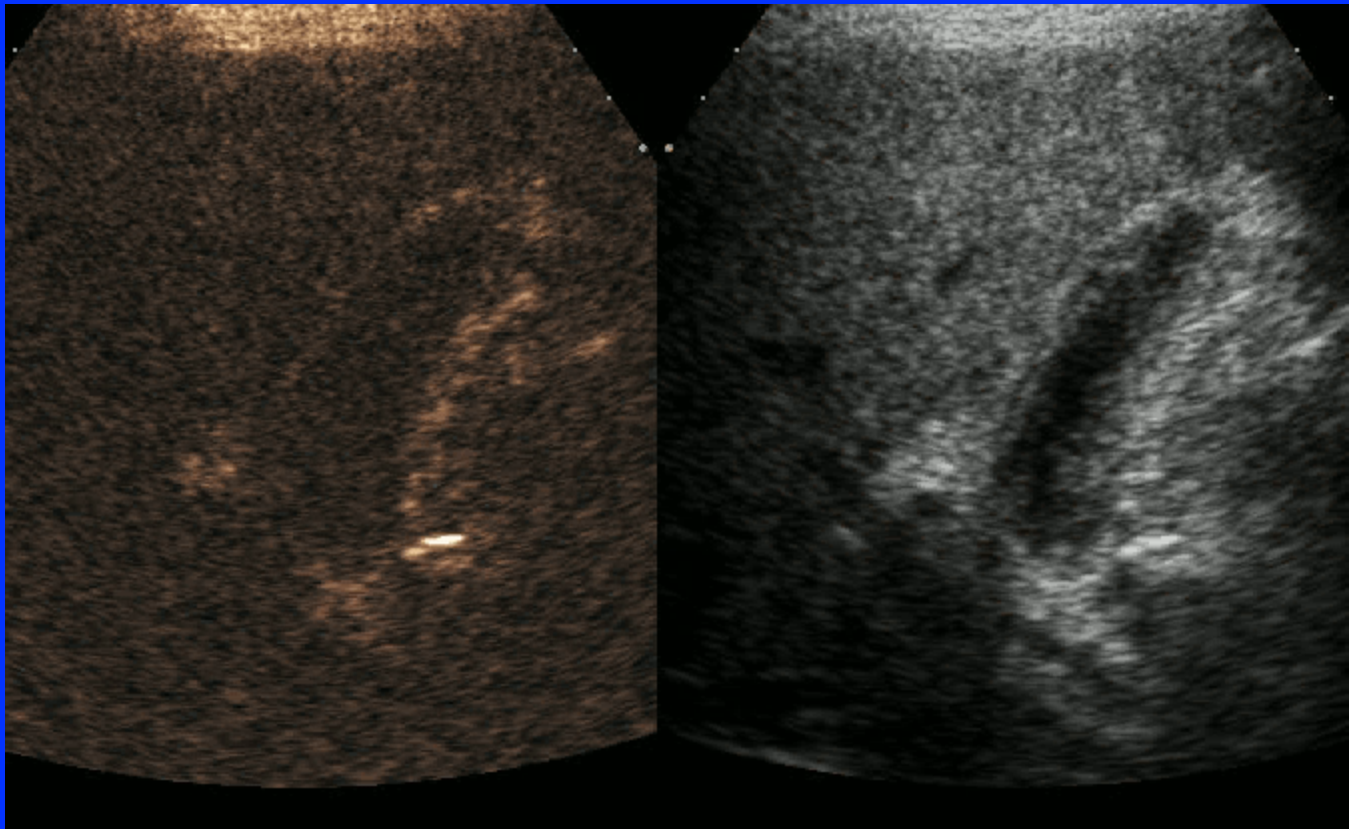




4C1
H30
Abc
Gen
Pwr
MIF
90c
Gain
Stor







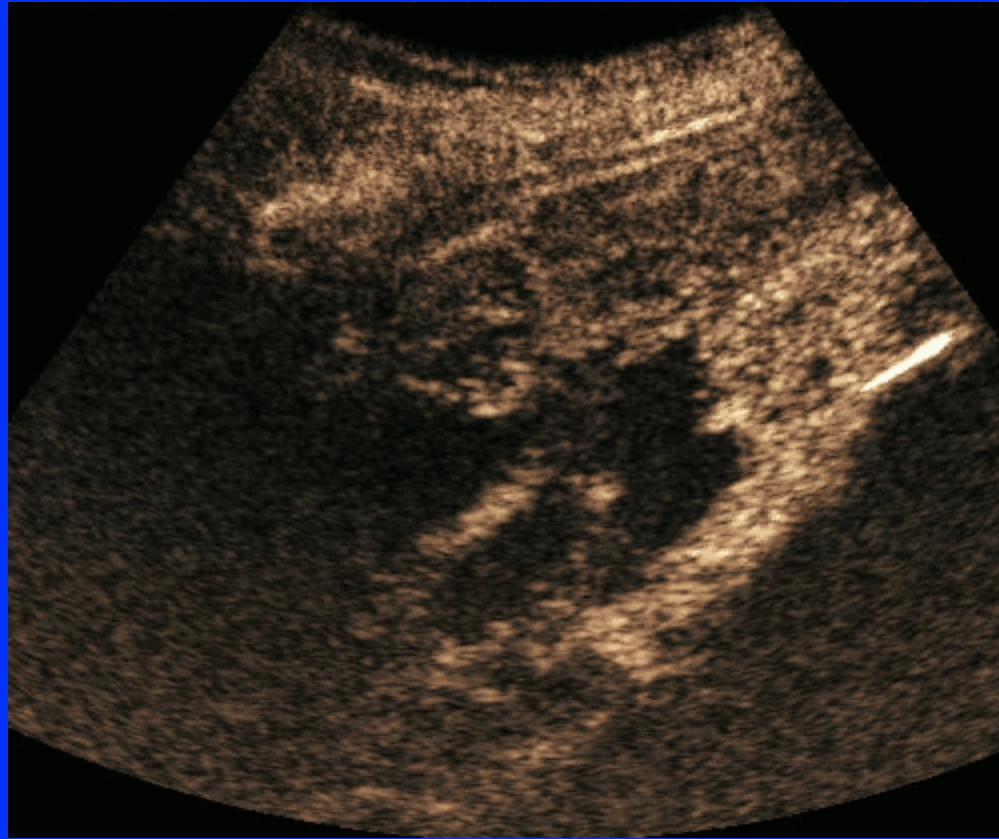
Gallbladder?

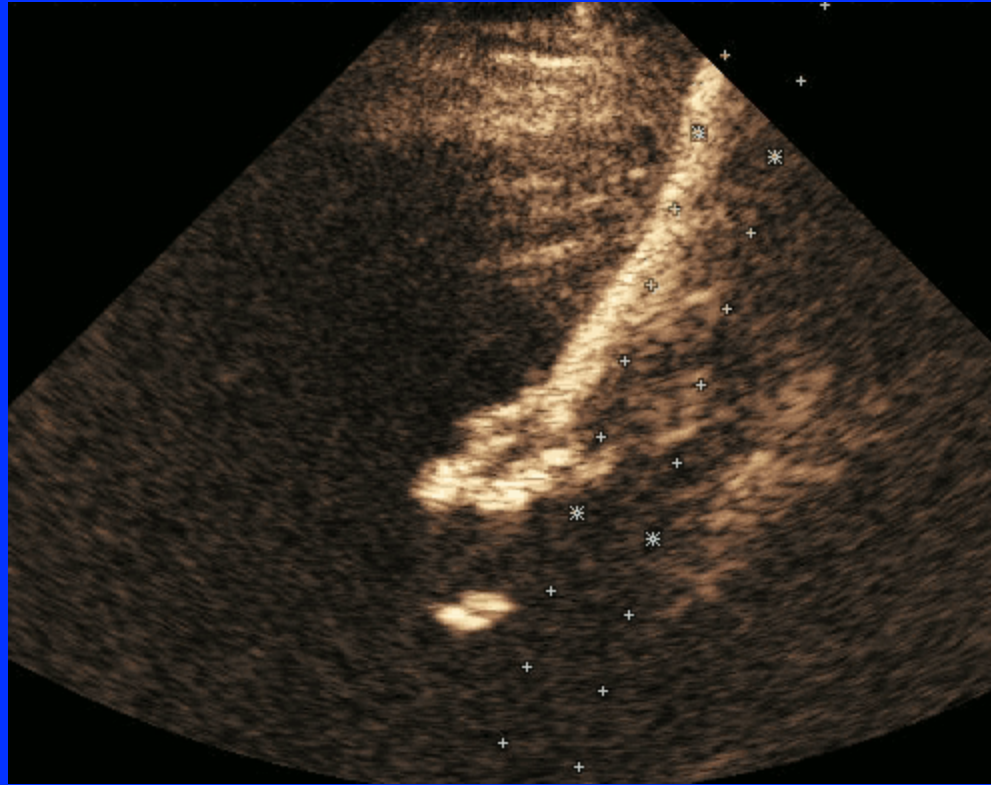
- *Any way you want*

but.....

*be as certain as you can that it
really is a cholecystitis*

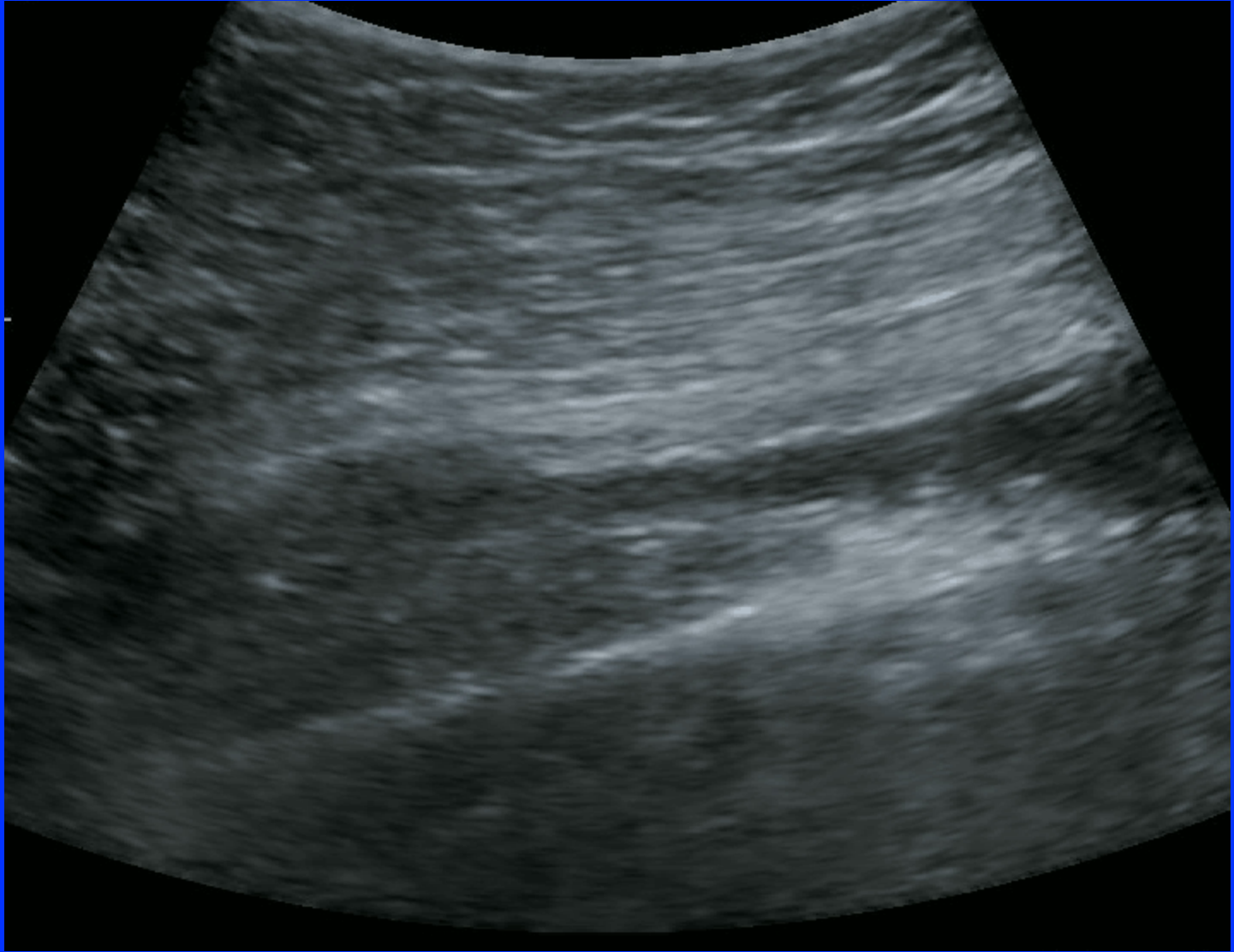






Outside the abdomen

- Same principles
- Be sure it is what you think it is.
- Ultrasound can be used whenever the lesion isn't surrounded by gas
- Lower thorax and upper abdomen – it may be an advantage to have the needle passage caudally to the transducer





Other types of intervention

- "Moose hunt" principle applies



IR

09:33:06

4V1-S 10Hz

P1.5MHz 120mm

Abdomen

General /V

Pwr=-25dB

MIF=.09 MI=.11

80dB S1/+1/1/4

CPS Gain=-13 Δ=3

+1/M:2

Store in progress

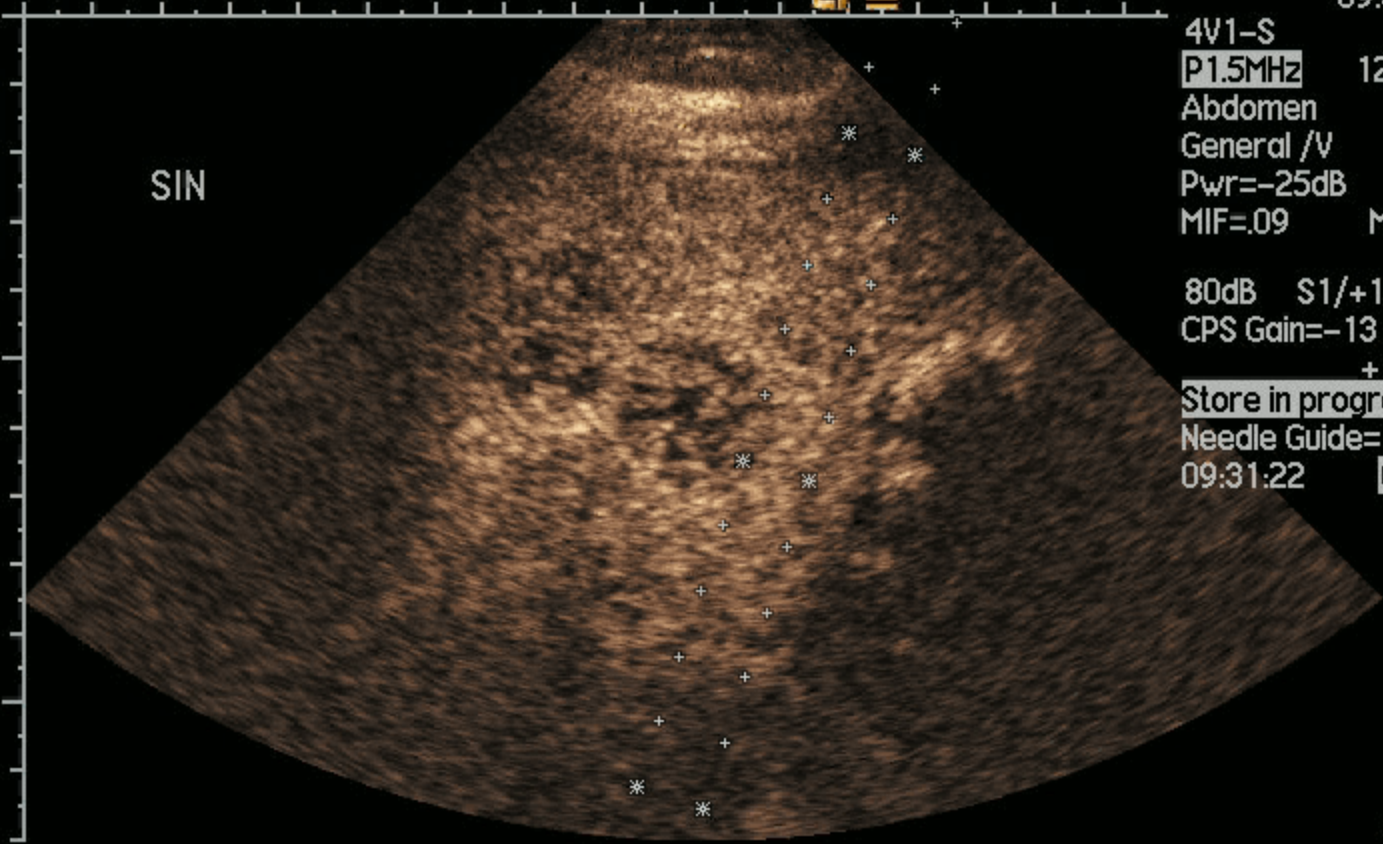
Needle Guide=18°

09:31:22

01:44

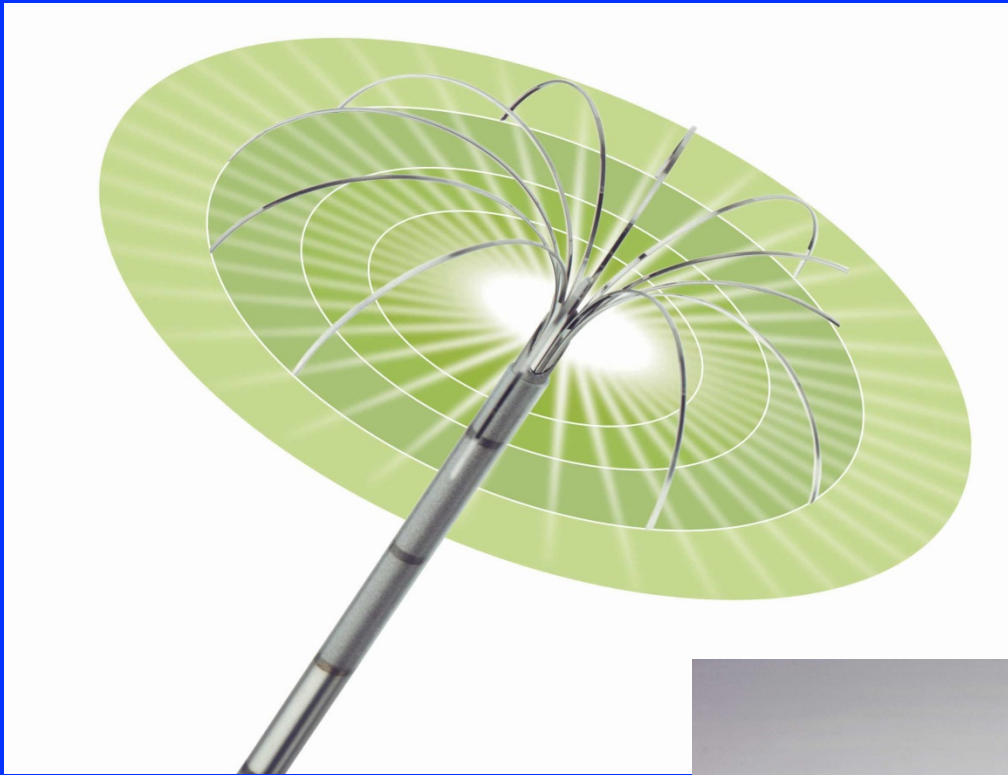
SIN

CPS
CA



sec

6000msec/4000msec





12

10:26:55

4V1-S 12Hz

13.0MHz 130mm

Abdomen

General /V

Pwr= 0dB

MIF=1.1 MI=1.7

90dB S1/+1/4/4

Gain=-20dB Δ=2

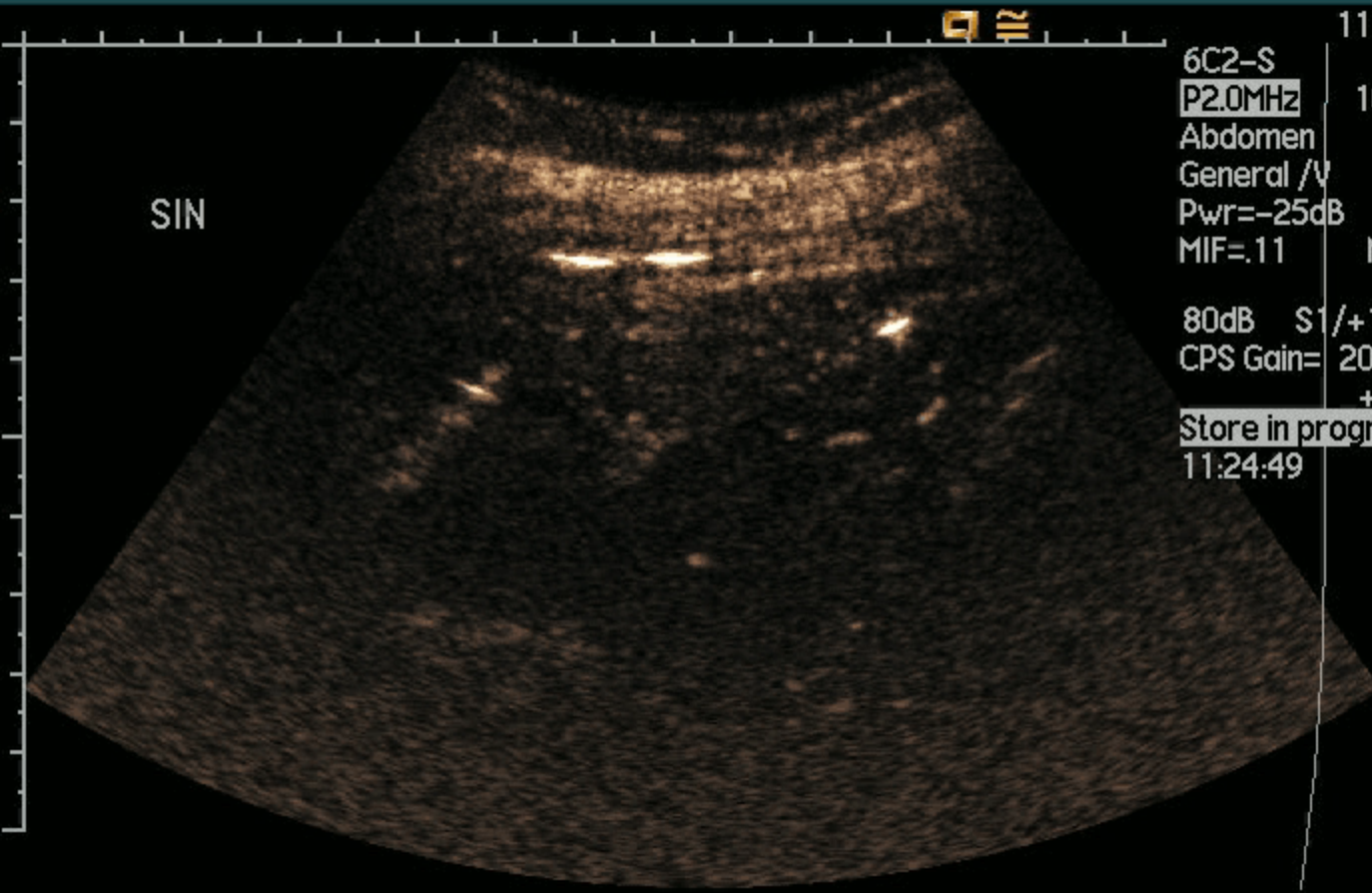
Store in progress

Needle Guide=18°

SIN



1 min



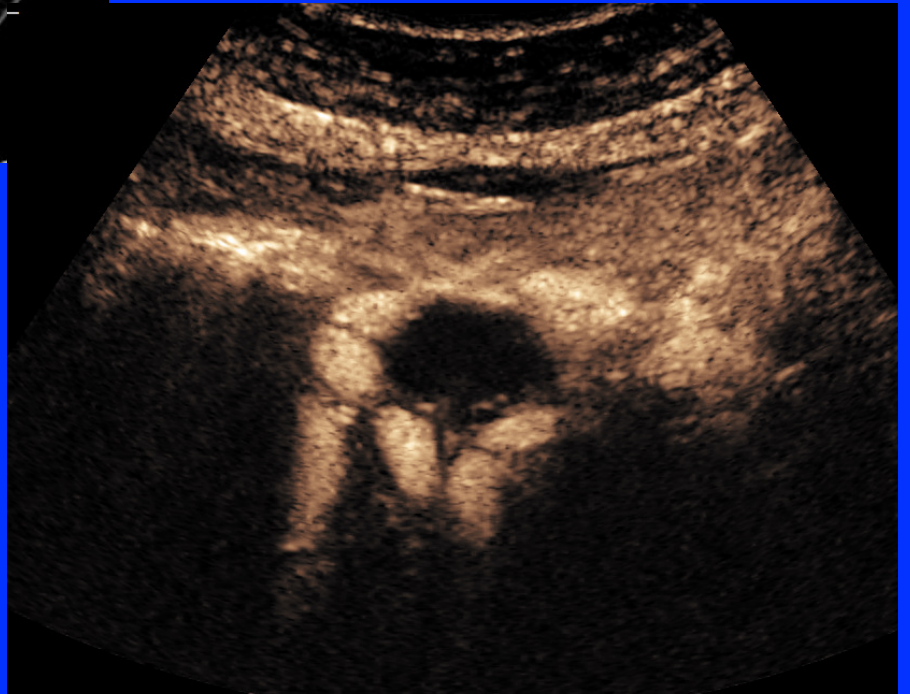
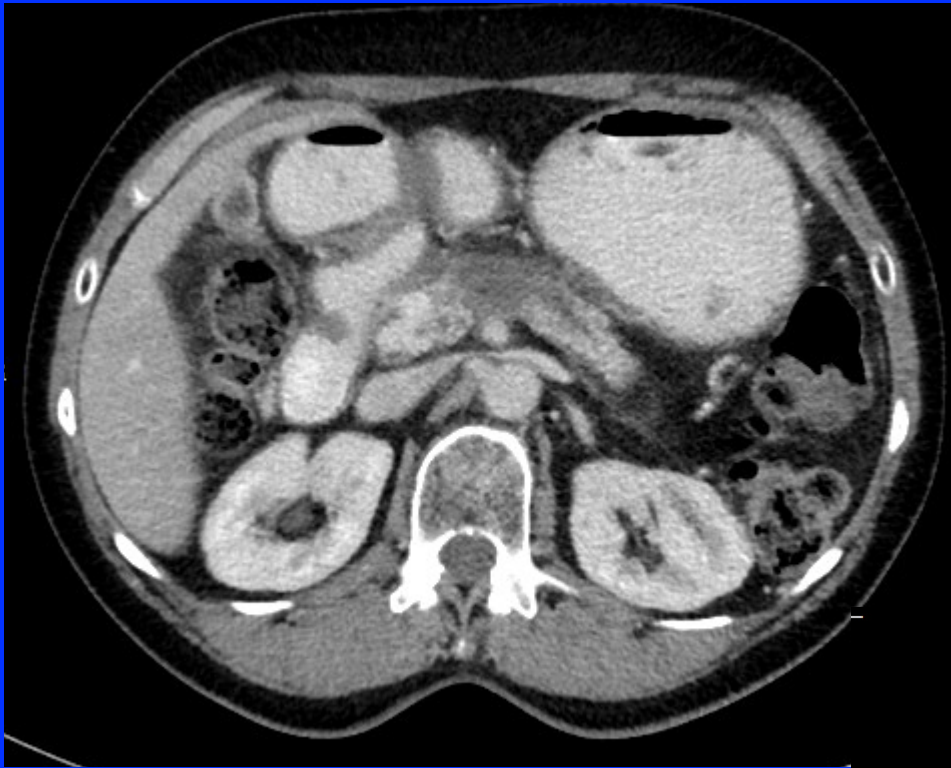
CPS
CA

SIN

11:25:11
 6C2-S 12Hz
 P2.0MHz 100mm
 Abdomen
 General /V
 Pwr=-25dB
 MIF=.11 MI=.13
 80dB S1/+1/1/4
 CPS Gain= 20 Δ=3
 +1/M:2
 Store in progress
 11:24:49 00:22

Exit

Stop Timer



What can be done with
ultrasound, should be done with
ultrasound



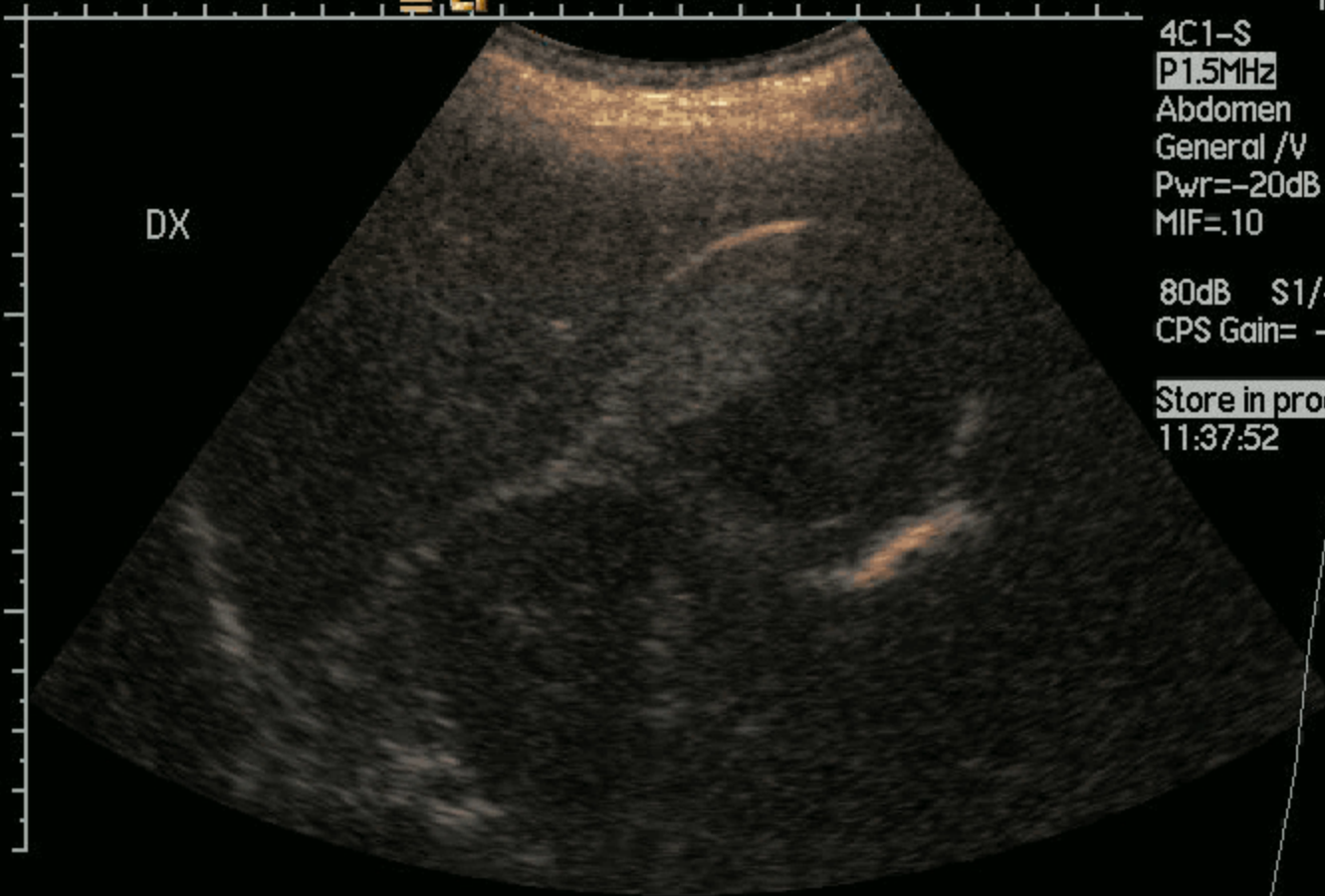
(“Moose hunt” principle)



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CPS
Mix



11:38:16

4C1-S 11Hz

P1.5MHz 140mm

Abdomen

General /V

Pwr=-20dB

MIF=.10

MI=.22

80dB S1/+1/1/4

CPS Gain= -2 Δ=3

0/M:2

Store in progress

11:37:52

00:24

Exit

Stop Timer