

Internal Medicine Point-of-Care-Ultrasound: RUQ

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Disclosure

- I have no financial disclosure or conflicts of interest with the presented material in this presentation.

PEARLS



P - Parasternal

E - Epigastric

A - Anterior lung; apical (cardiac)

R - RUQ

L - LUQ

S - Suprapubic

Lecture Outline

- Discuss beginner and advanced goals with POCUS
- Probe Orientation
- Normal Ultrasound Anatomy
- Pathology and Applications for the internist

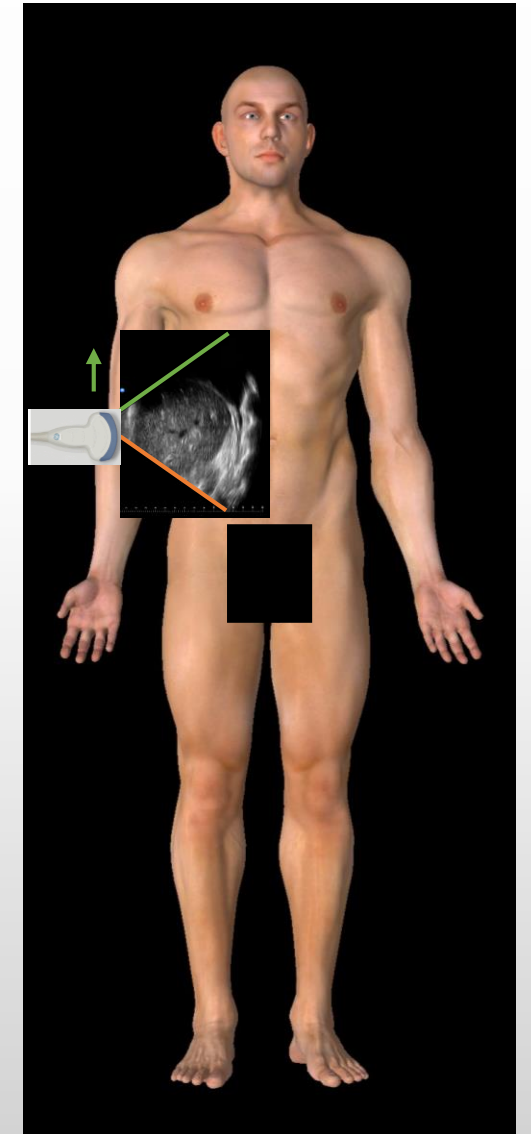
Probe Orientation in Right Upper Quadrant View (Liver and Kidney)

Probe: Curvilinear, Phased-Array

Preset: Abdomen

Probe marker: Cephalad for longitudinal view,
Posteriorly for transverse view.

Probe location: On the patient's right in the
mid-axillary line at the 10th and 11th intercostal
space.



RUQ View

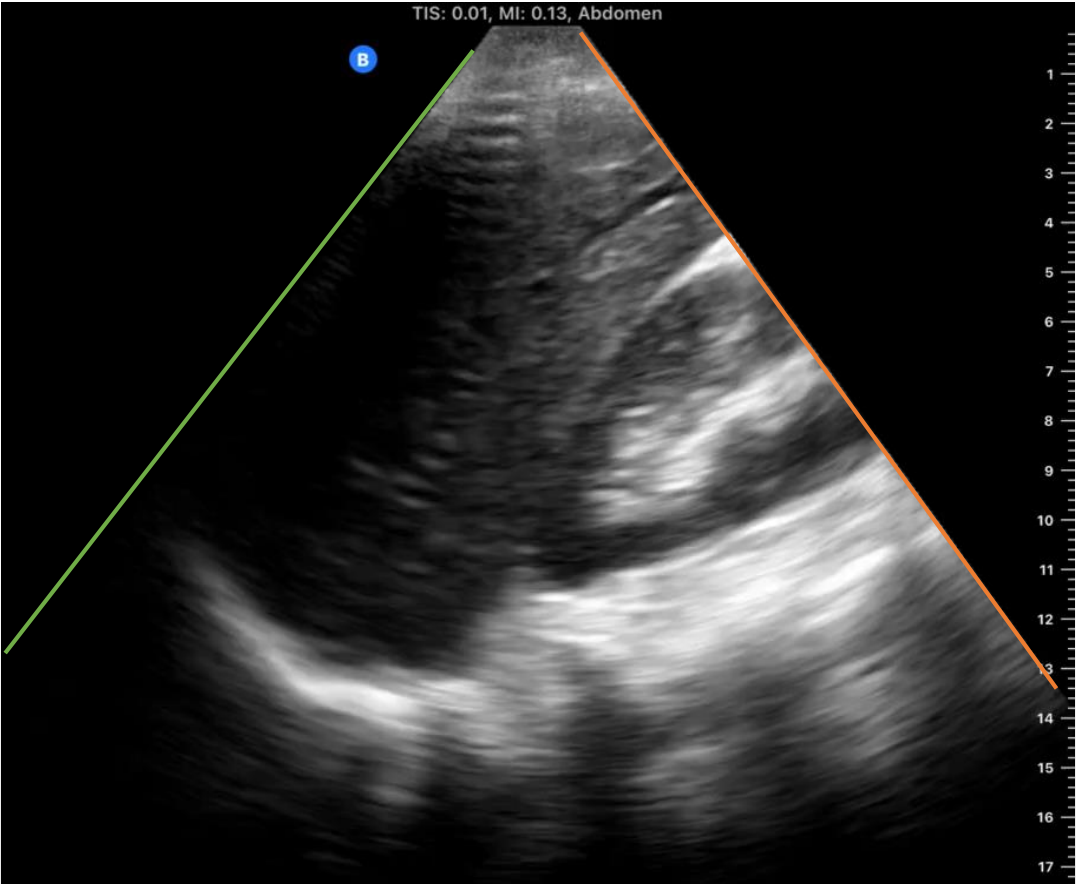
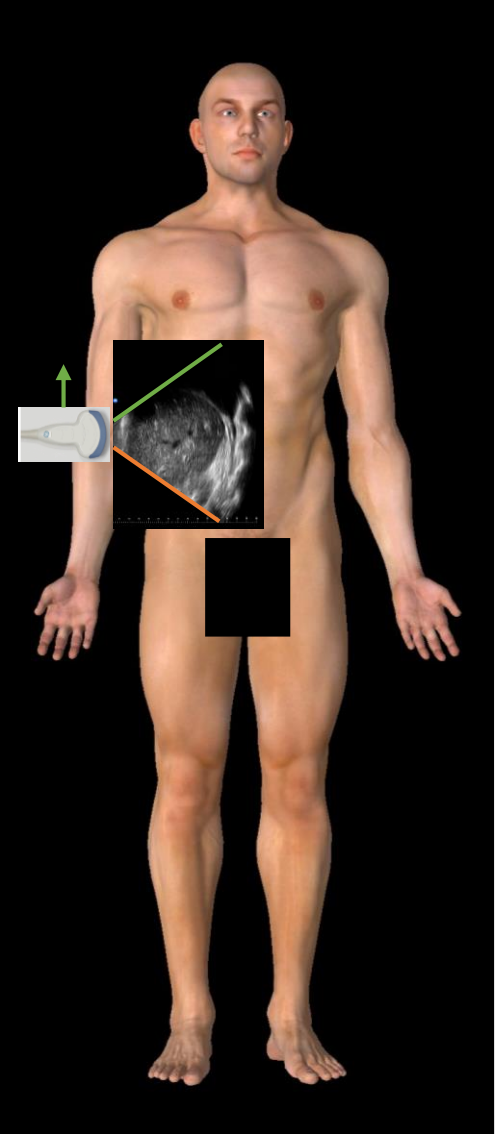
- Beginner

- Identification of the diaphragm, liver, right kidney, pleural space, and vertebral bodies.
- Identify ascites as an anechoic region separating the liver and kidney (Morrison's pouch).
- Identify a right pleural effusion as an anechoic region cephalad to the diaphragm, allowing for the thoracic spine to be seen cephalad to the diaphragm.
- Focusing above the diaphragm for pulmonary pathology, this view is the most sensitive for identifying early pulmonary congestion (B-lines), identify the size of pleural effusions, and identify pneumonias involving the right lower lobe.
- Identify the gallbladder. Assess gallbladder for gallstones.

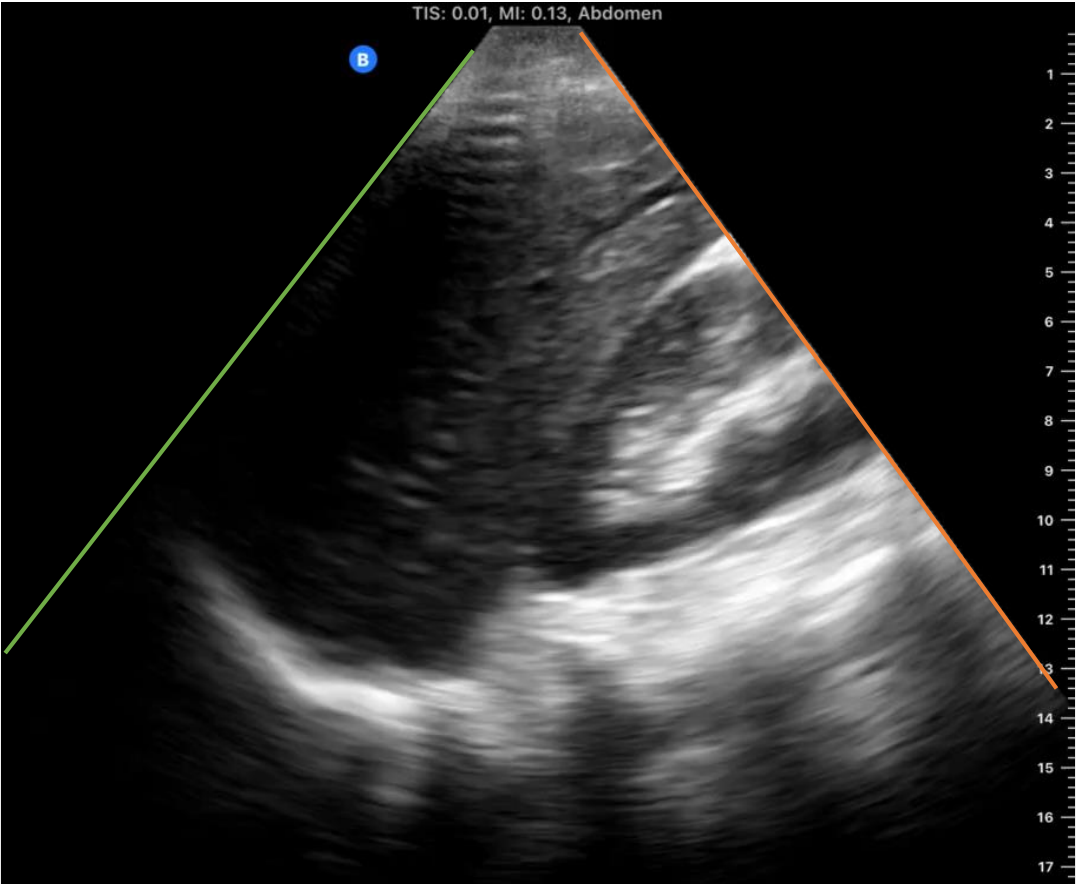
- Advanced

- Evaluate for urinary obstruction and hydronephrosis, and abnormalities in size and echogenicity of the kidney and liver may provide clues to their dysfunction and chronicity.
- Assess for hepatomegaly.

RUQ



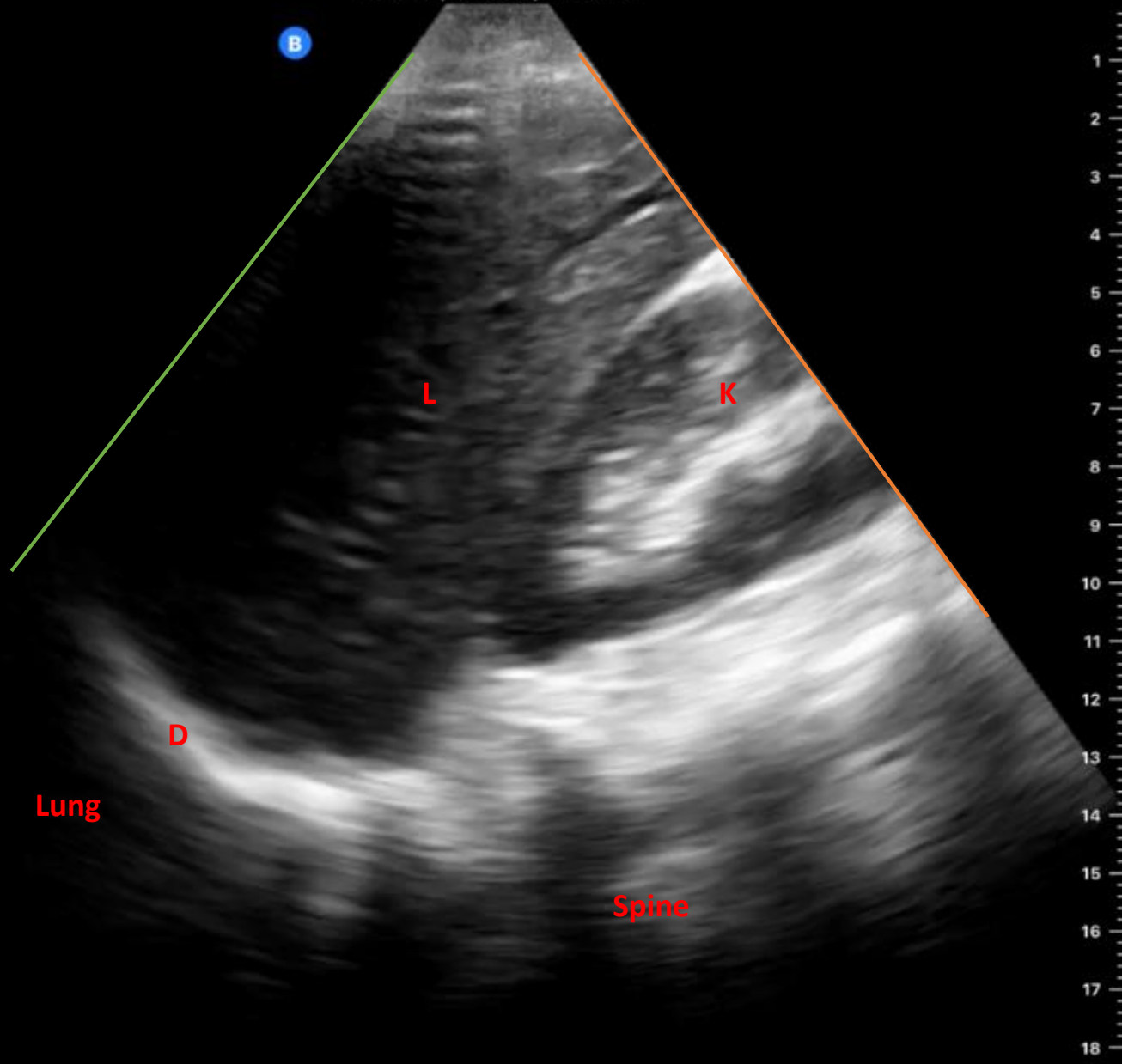
RUQ



TIS: 0.01, MI: 0.13, Abdomen

B

RUQ

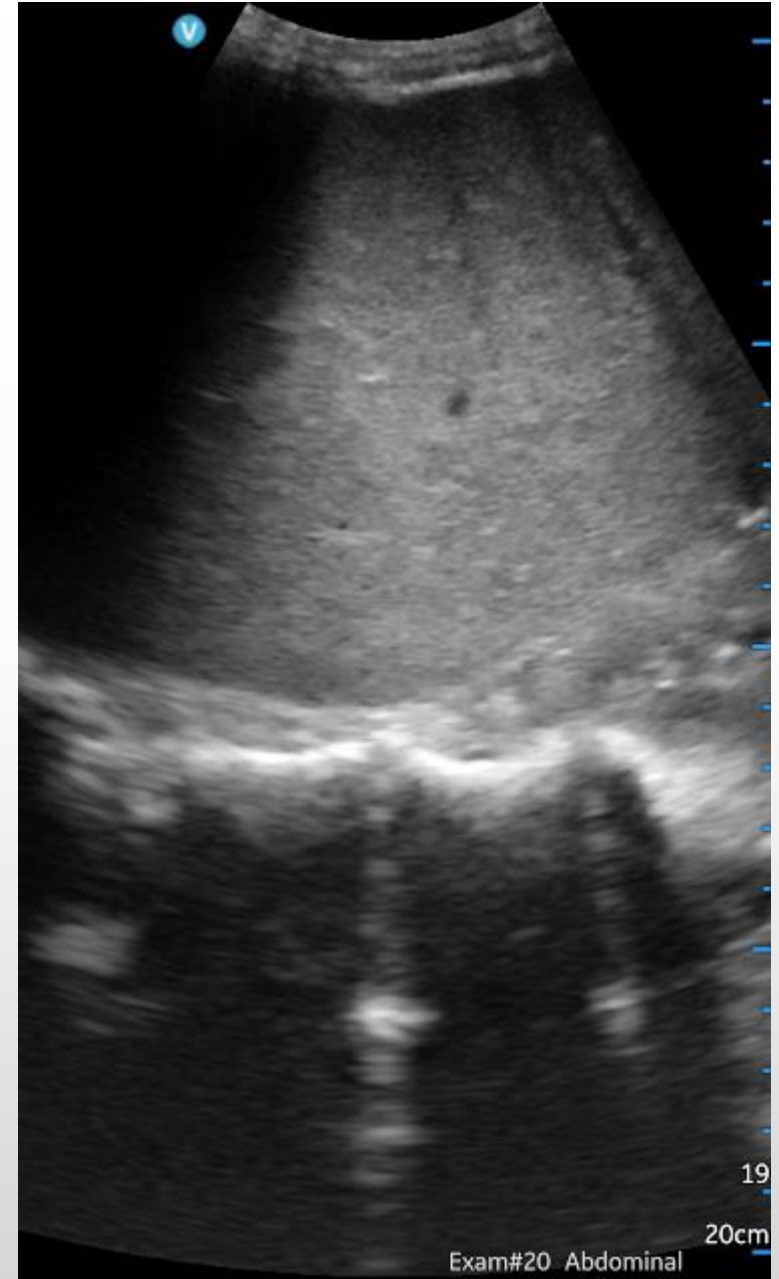


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Liver Pathology

Acute hepatitis:	Chronic hepatitis/cirrhosis:	Fatty Liver Disease (Hepatic Steatosis)
↑ Brightness of portal vein walls ↓ The echogenicity of the liver Usually Enlarged Liver	↓ Brightness of portal vein walls ↑ Liver echogenicity Usually Small/Atrophic Liver	↓ Brightness of portal vein walls ↑ Liver echogenicity Usually enlarged Liver

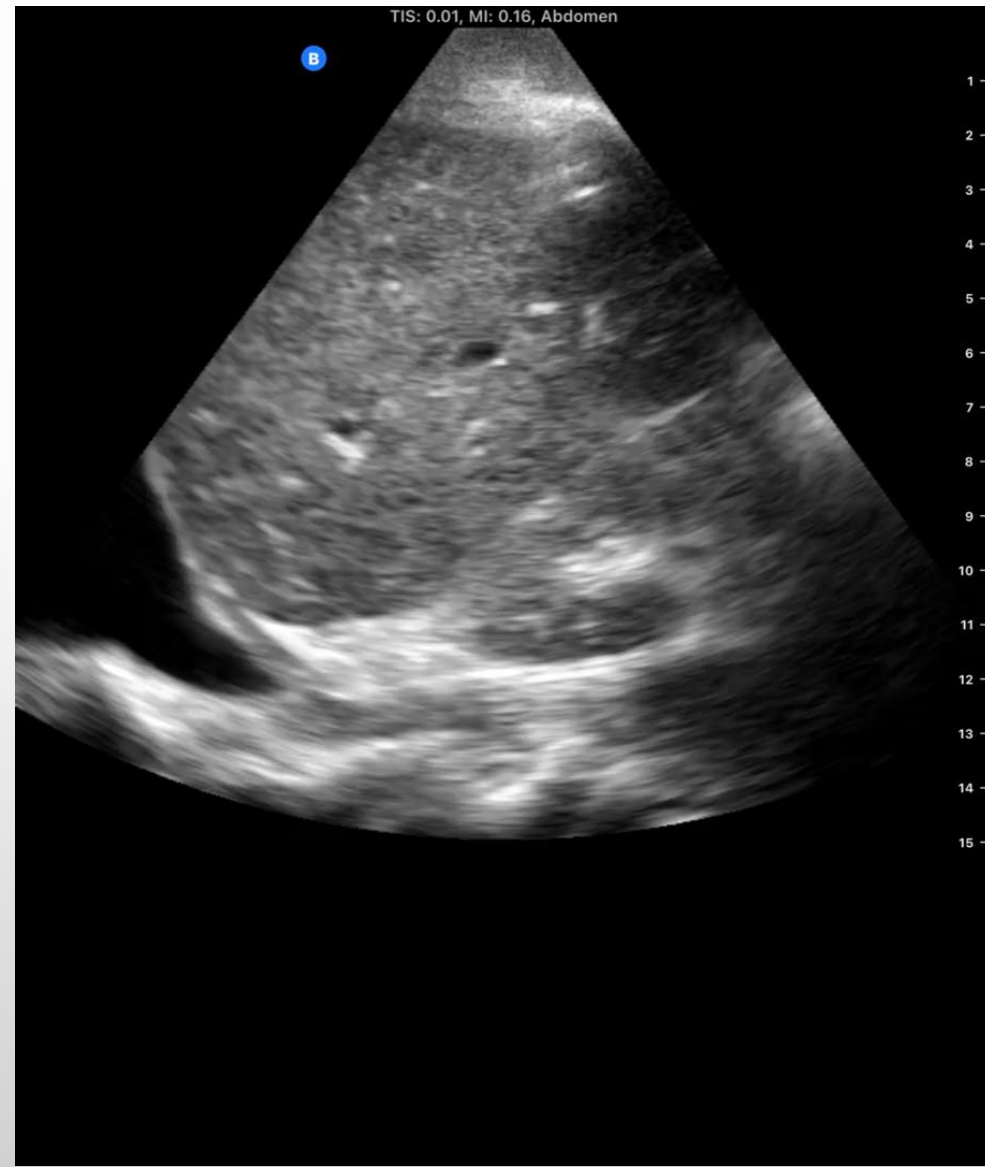
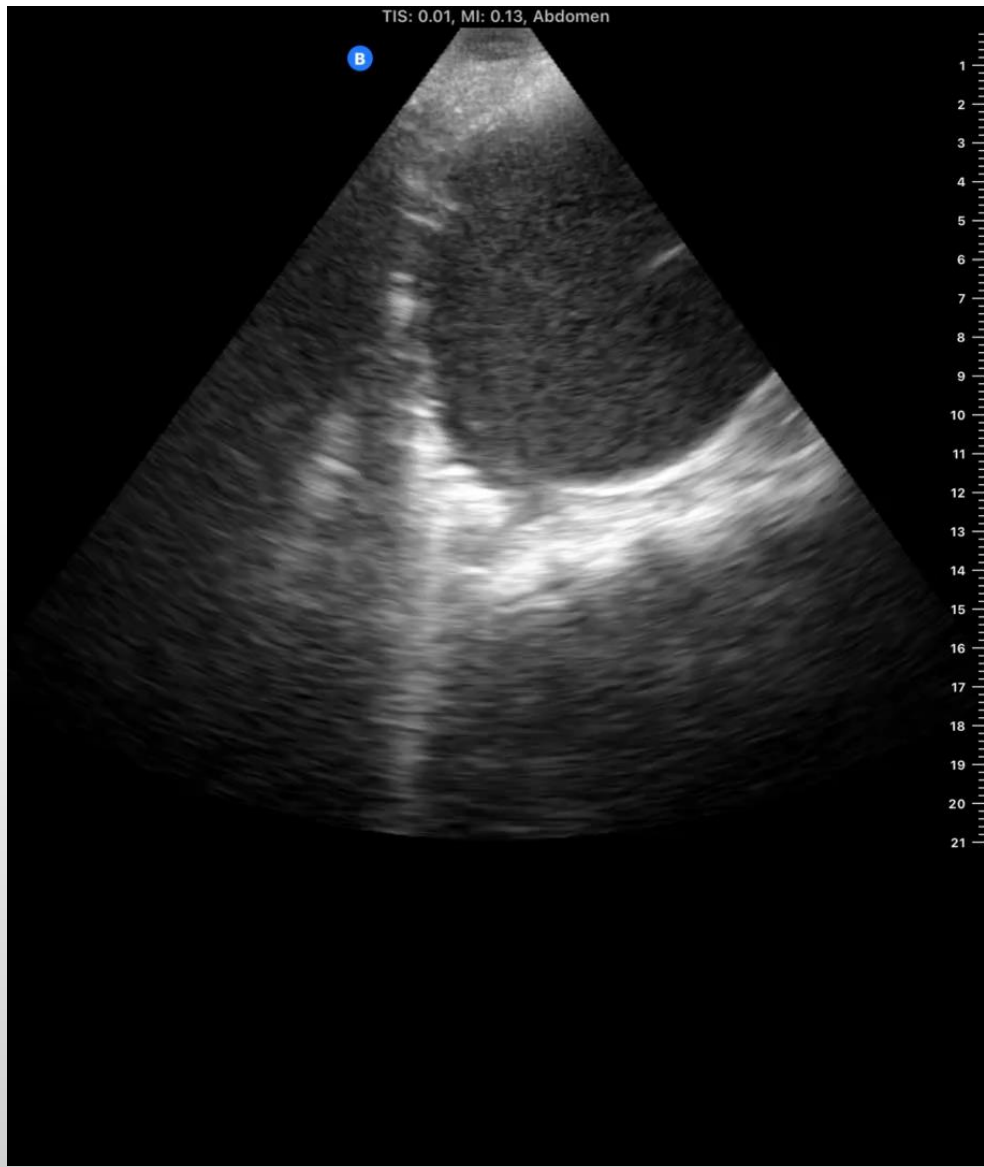
Hepatic steatosis



Ascites, cirrhosis



Pleural effusion



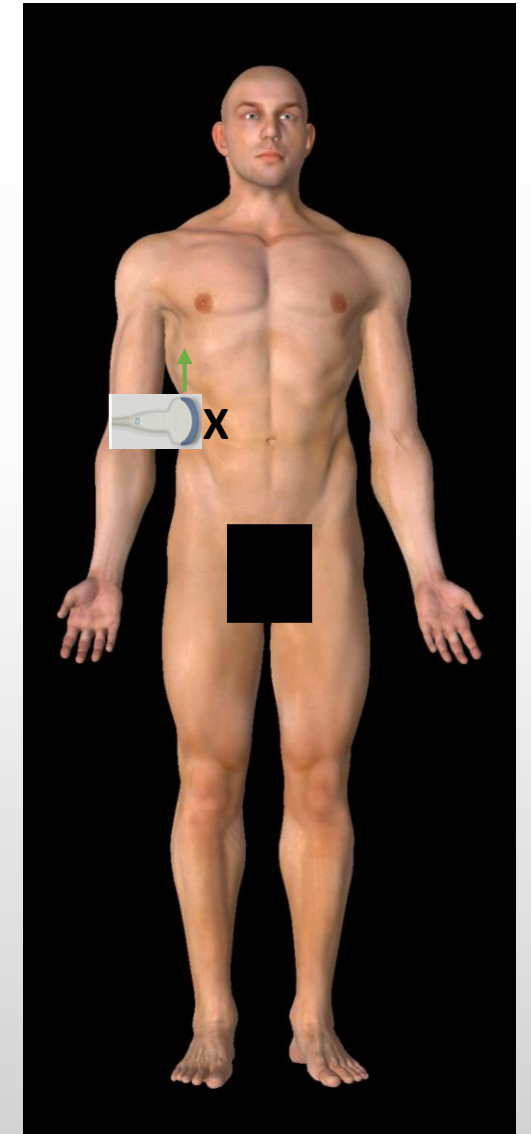
Probe Orientation in Right Upper Quadrant View (Gallbladder)

Probe: Curvilinear, Phased-Array

Preset: Abdomen

Probe marker: Cephalad

Probe location: Position your probe 6 cm to the left of epigastric midline (may help to simply slide along costal margin until GB comes into view). Another option is an intercostal view if the GB cannot be visualized from the costal margin.

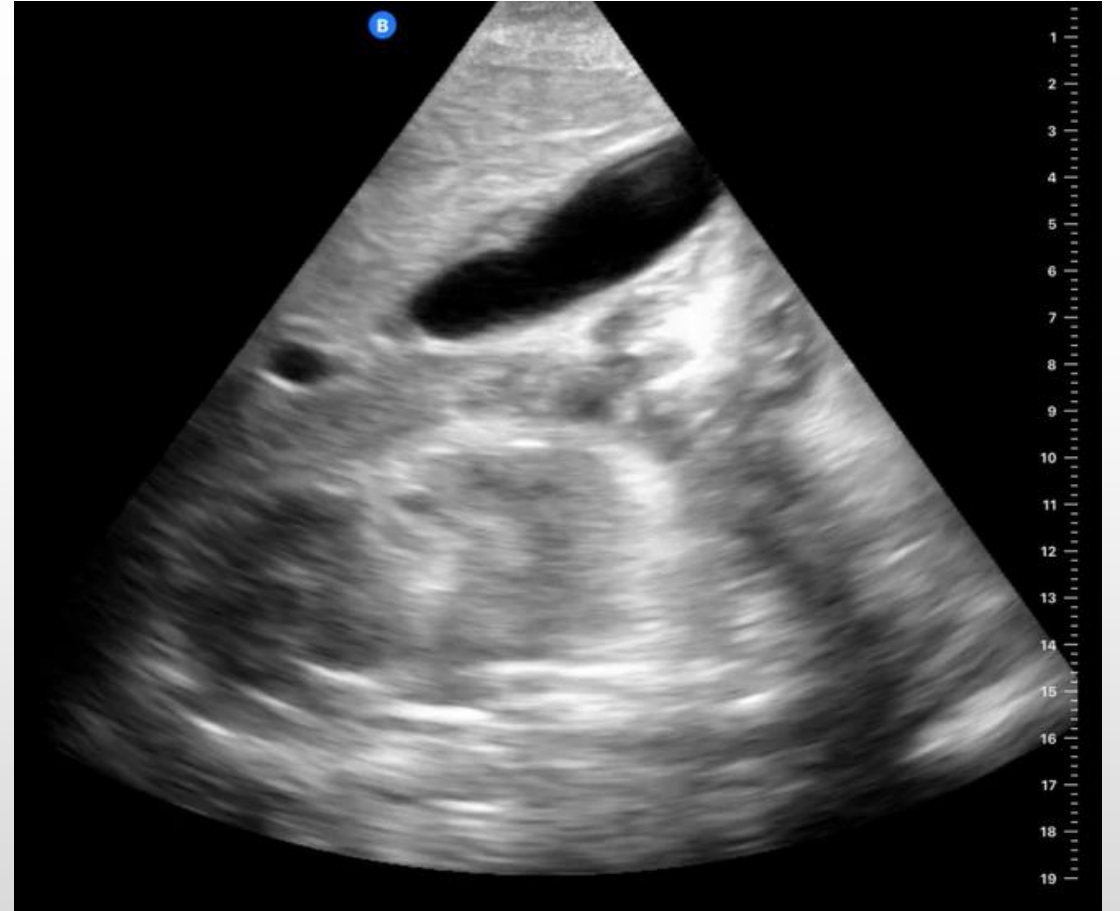


Gallbladder

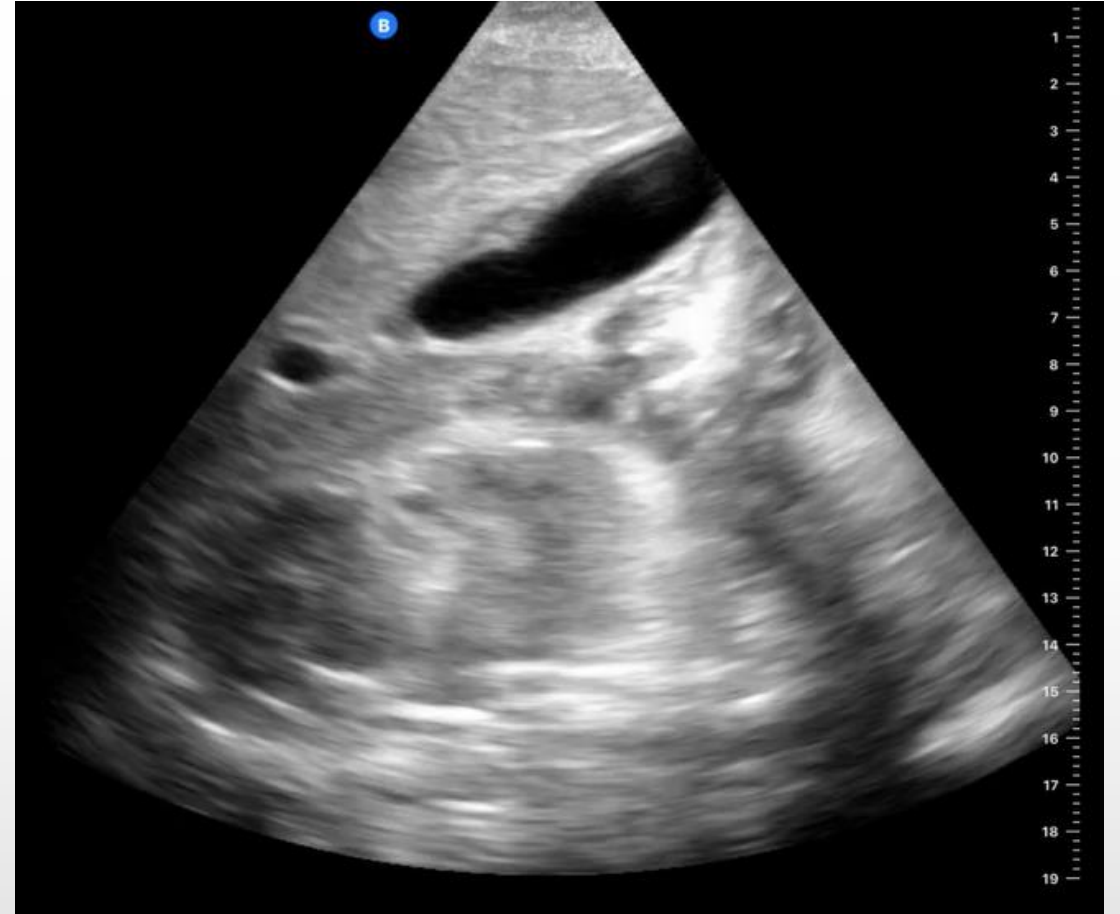
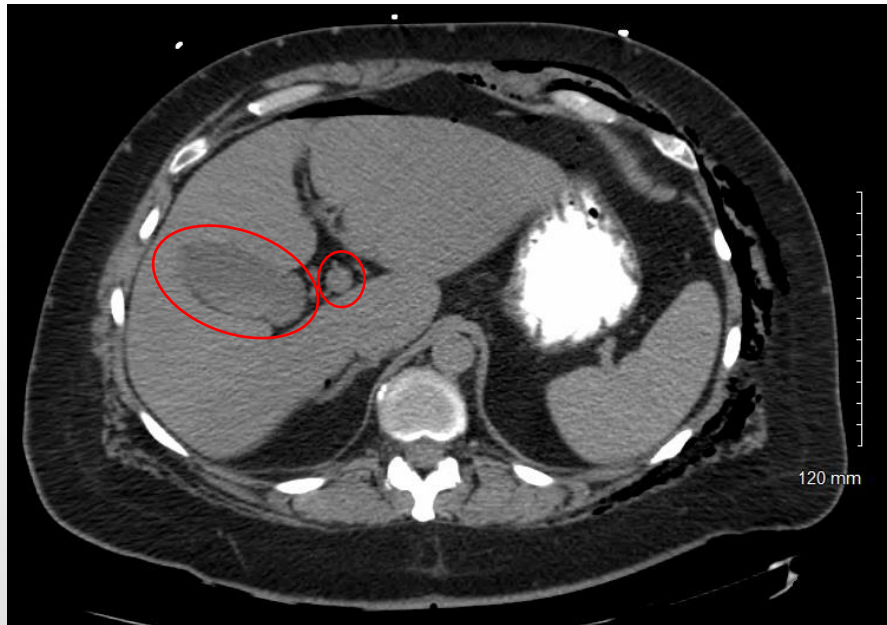
Infamous exclamation point sign.

The GB is the line, and the Portal vein is the point.

Often you can see a “Mickey Mouse” sign at the point. The two additional, smaller, circles include the common bile duct and hepatic artery (these three vessels make up the portal triad).



Gallbladder



Gallbladder and mystery circle...

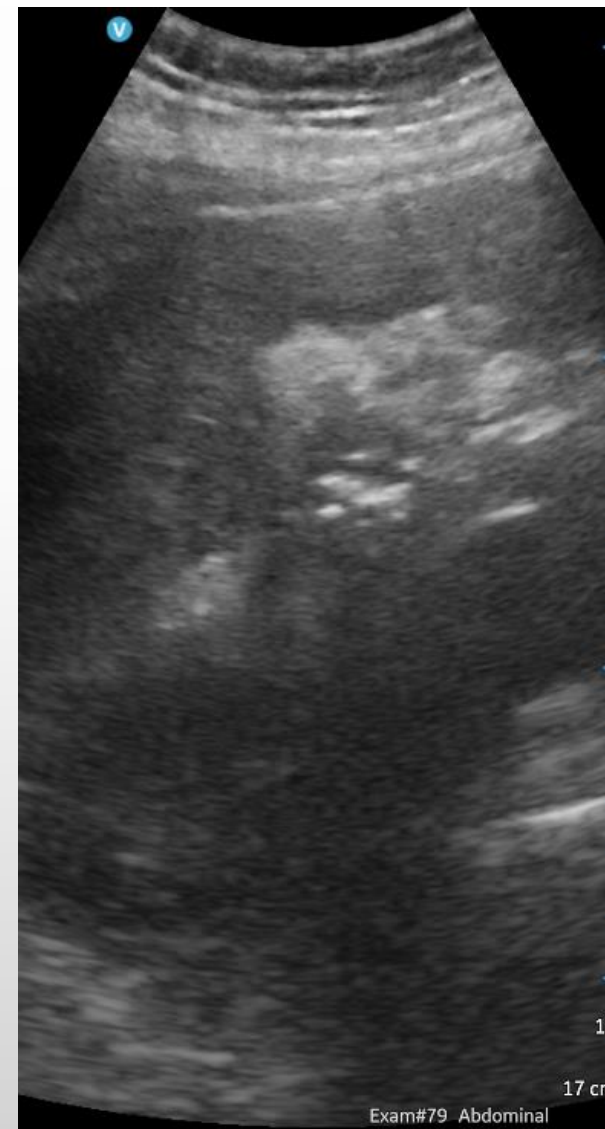
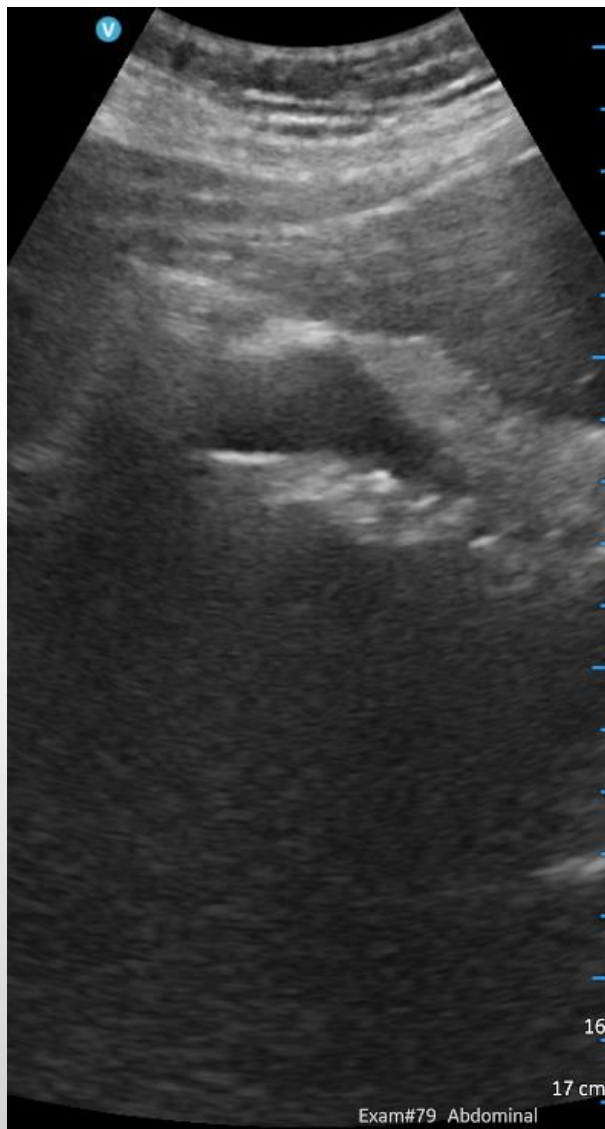


Cross-section



Longitudinal

Gallstones



Fake gallstones

Edge artifact can create shadowing.

Seen commonly with gallbladder imaging.

Occurs at the interface of two tissues where one is curved.

Also be wary of polyps and sludge which can mimic the appearance of gallstones, though neither of them cast an acoustic shadow.



References

- Soni NJ, Arntfield R, Kory P. *Point-of-Care Ultrasound*. Elsevier; 2020.
- Wagner, M., & Boughton, J. (2018). Pearls for an ultrasound physical and its routine use as part of the clinical examination. *Southern Medical Journal*, 111(7), 389–394.
<https://doi.org/10.14423/smj.000000000000000834>