

The "Hot" Gallbladder. The Spectrum of Sonographic Appearances.

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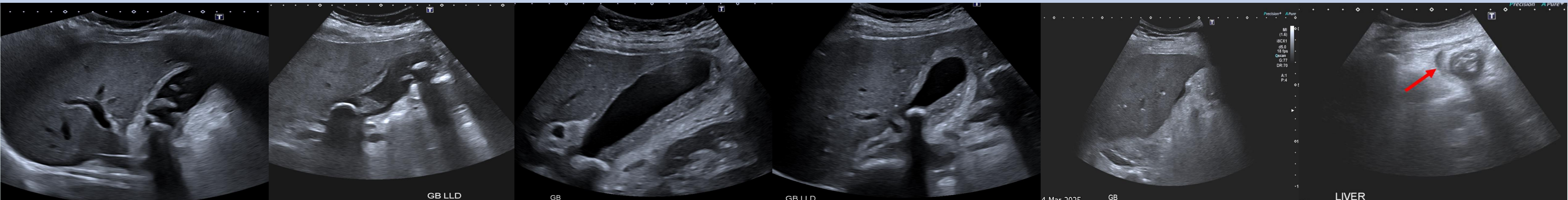
Objectives

To demonstrate the ultrasound features of both uncomplicated and complicated acute cholecystitis, highlighting sonographic findings that indicate disease severity and guide timely management.

Background:

Acute cholecystitis is a frequent presentation in the acute ultrasound unit.

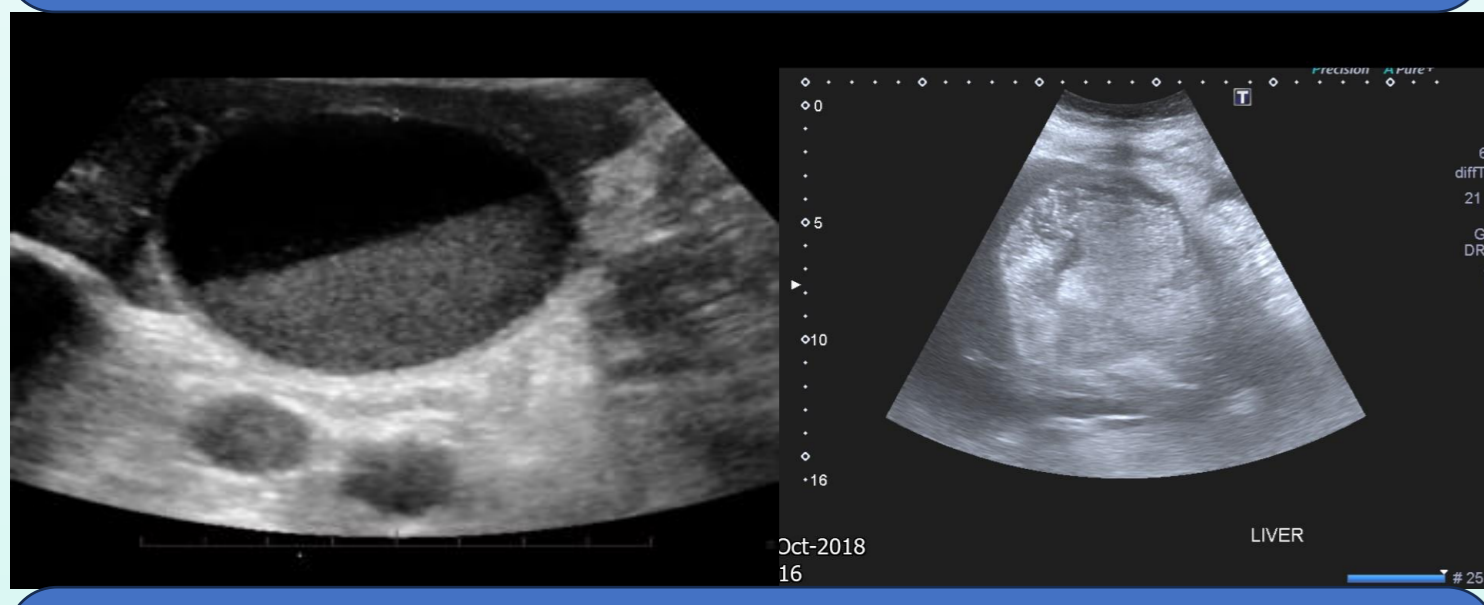
The term *'hot gallbladder'* encompasses a spectrum from uncomplicated gallstone cholecystitis to severe, life-threatening complications such as gangrenous cholecystitis, emphysematous cholecystitis, and gallbladder perforation. Ultrasound provides a rapid, non-invasive, and effective means of diagnosing and stratifying disease severity — essential for guiding timely management and reducing morbidity and mortality.



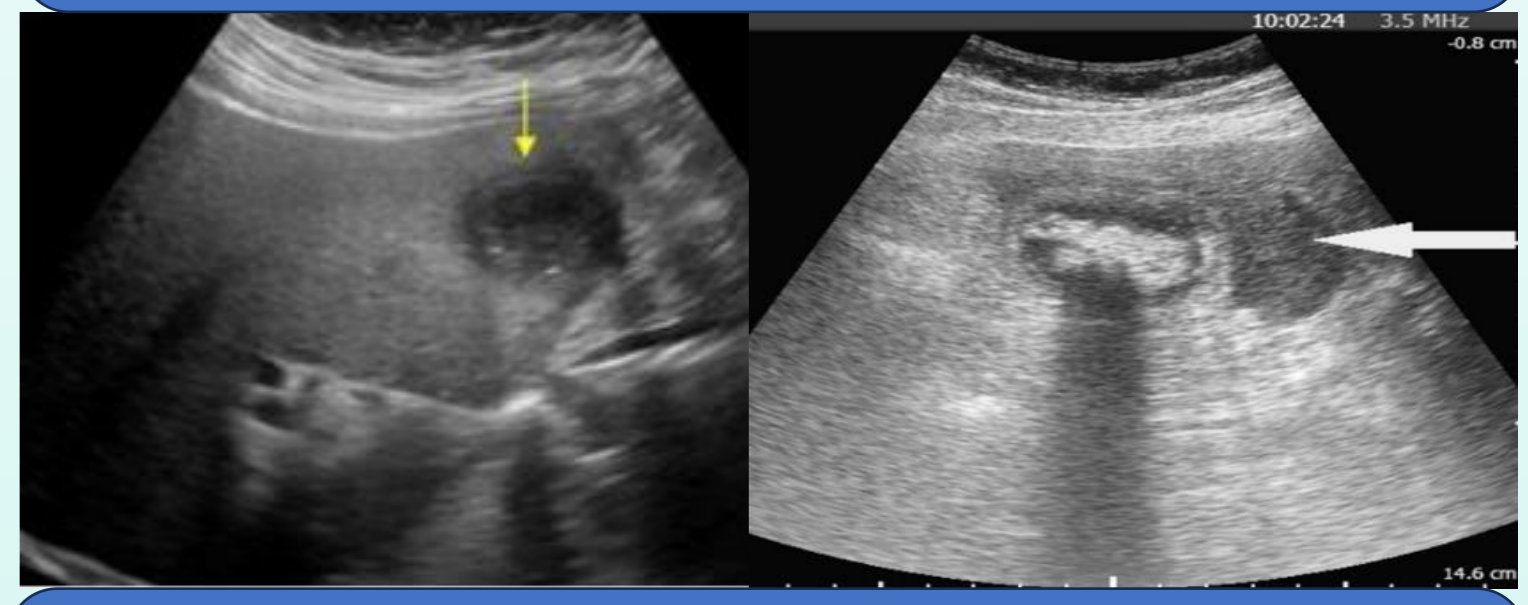
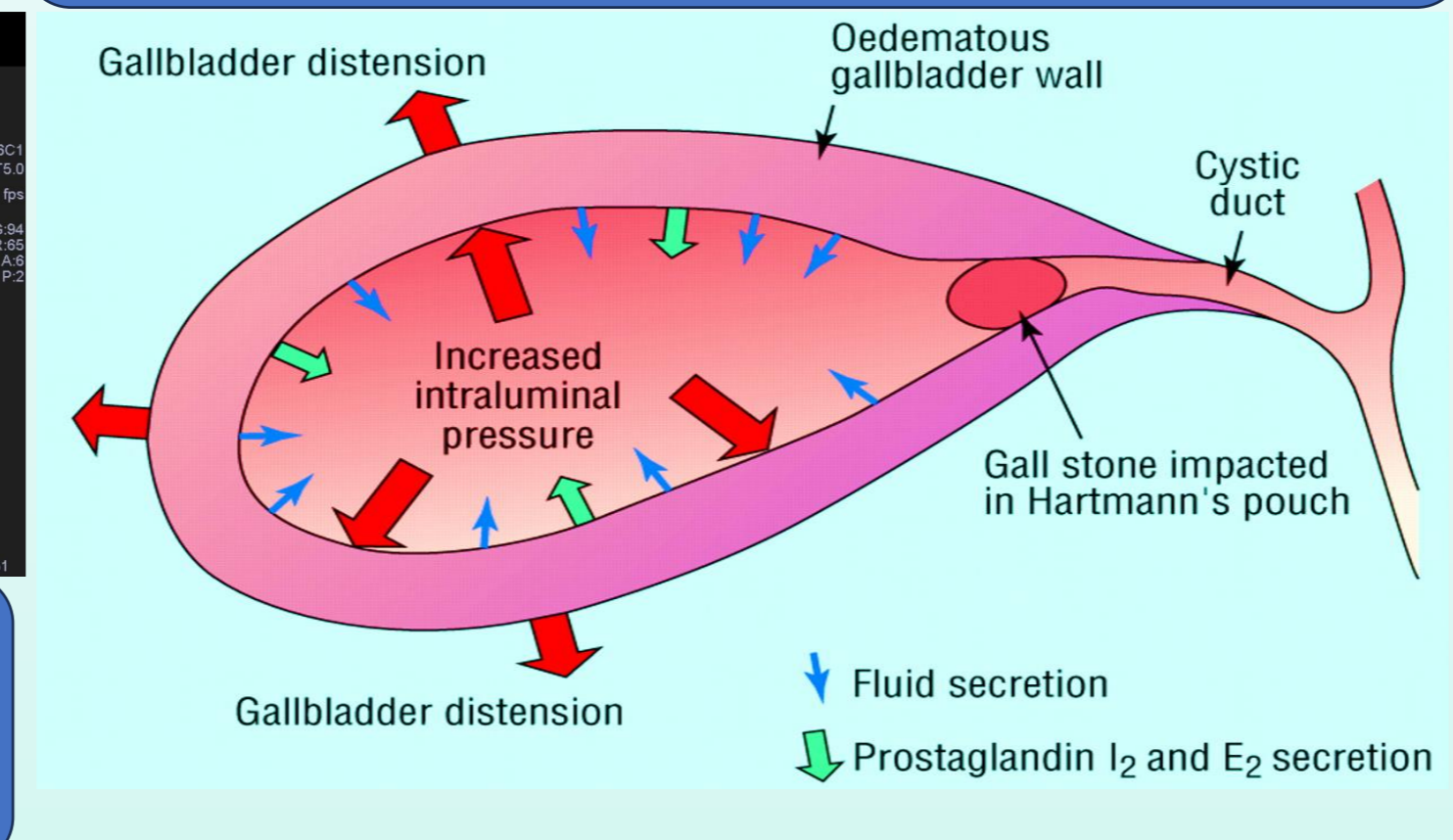
Gallstones are the primary trigger for 90-95% of acute cholecystitis. These images show the classic finding: echogenic foci (stones) casting a clean acoustic shadow.

Acute cholecystitis begins when an impacted stone in the neck obstructs bile outflow. This obstruction traps bile, leading to the inflammatory cascade of distension and wall thickening.

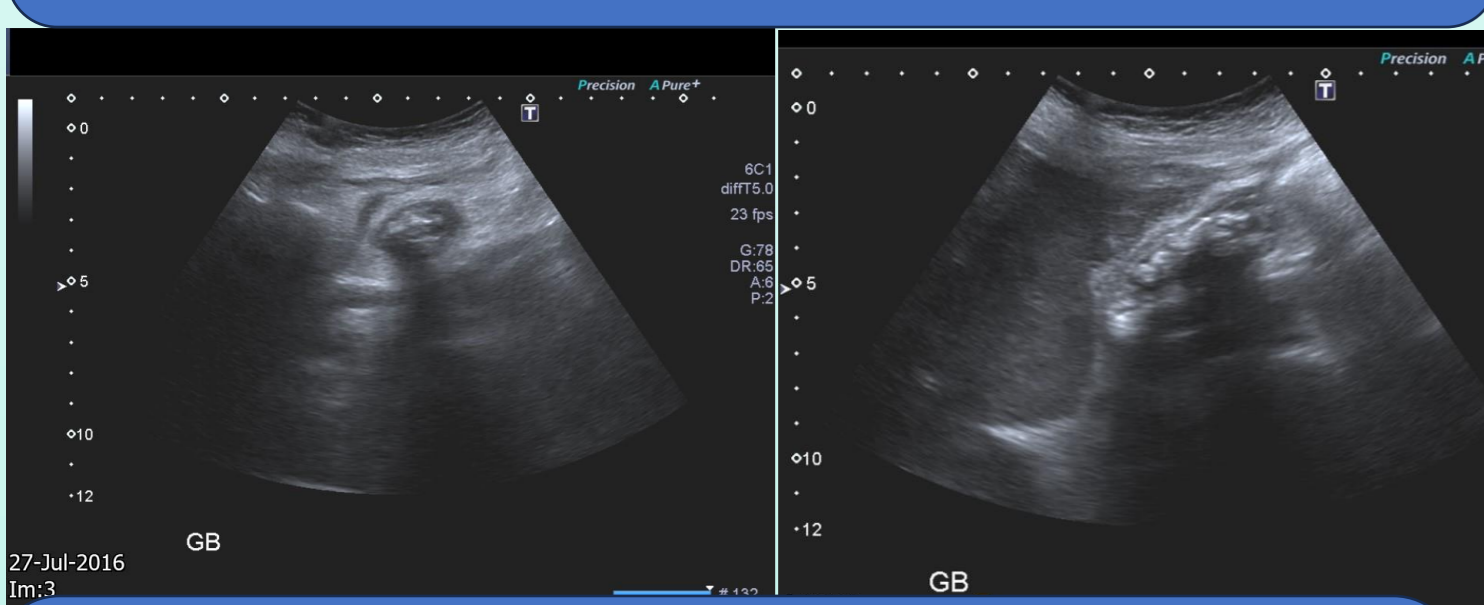
Pericholecystic fluid indicates inflammation has progressed through the entire gallbladder wall ('transmural'). This finding is seen as a distinct anechoic (black) fluid line surrounding the organ.



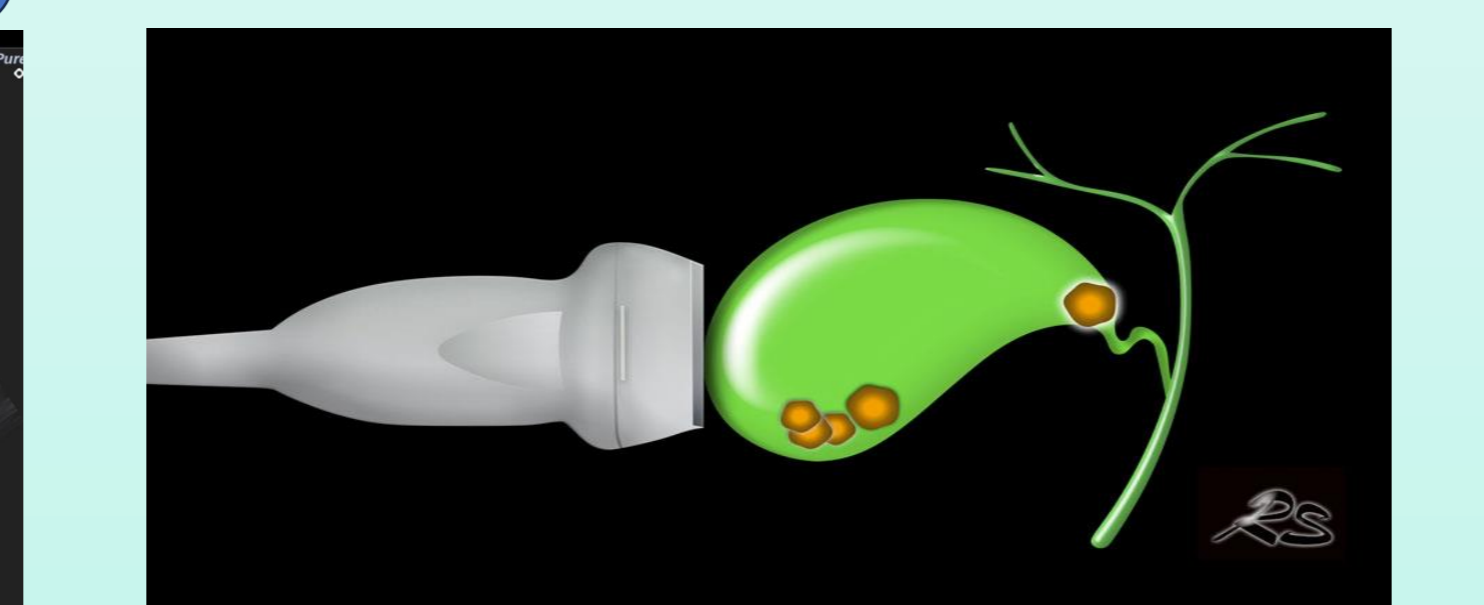
This severe complication occurs when prolonged inflammation cuts off blood supply (ischemia), causing tissue death. Sonographically, this appears as marked, asymmetric wall thickening with internal purulent debris.



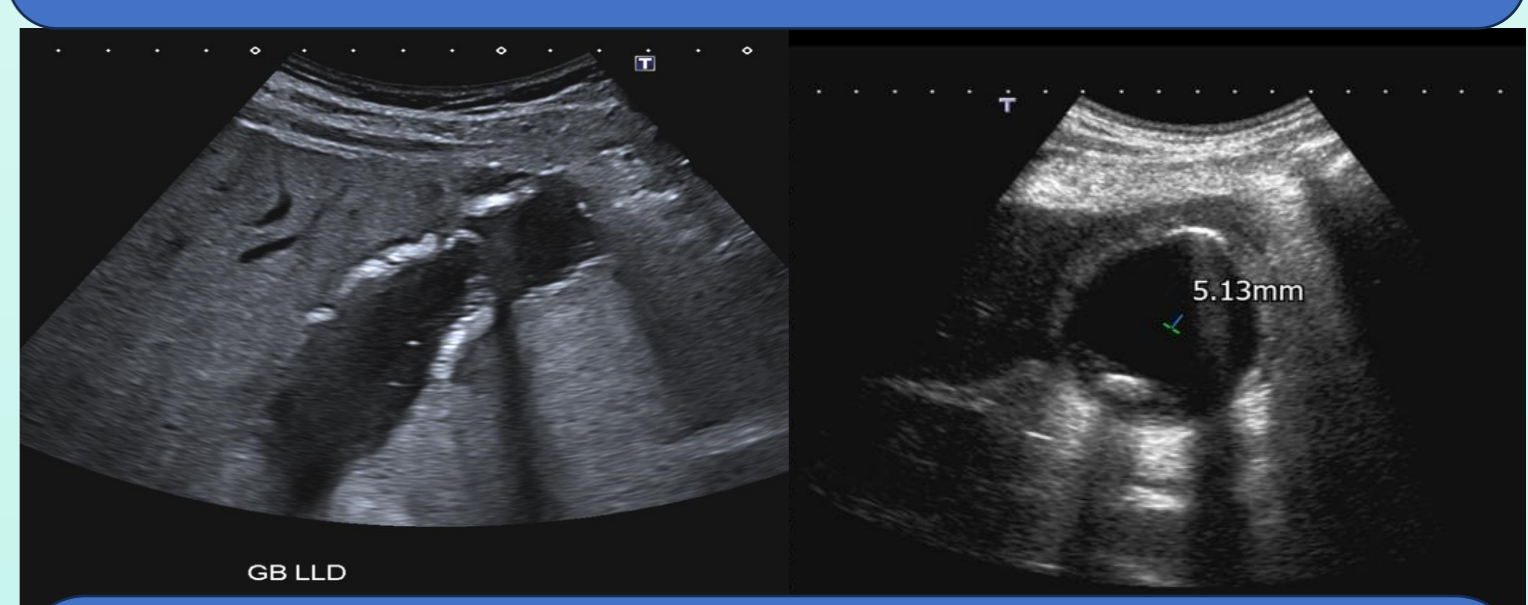
Complication: Liver Abscess
This is a life-threatening complication where the infection has perforated the gallbladder and spread directly into the liver. These scans show a new, complex fluid collection (an abscess) within the adjacent liver tissue.



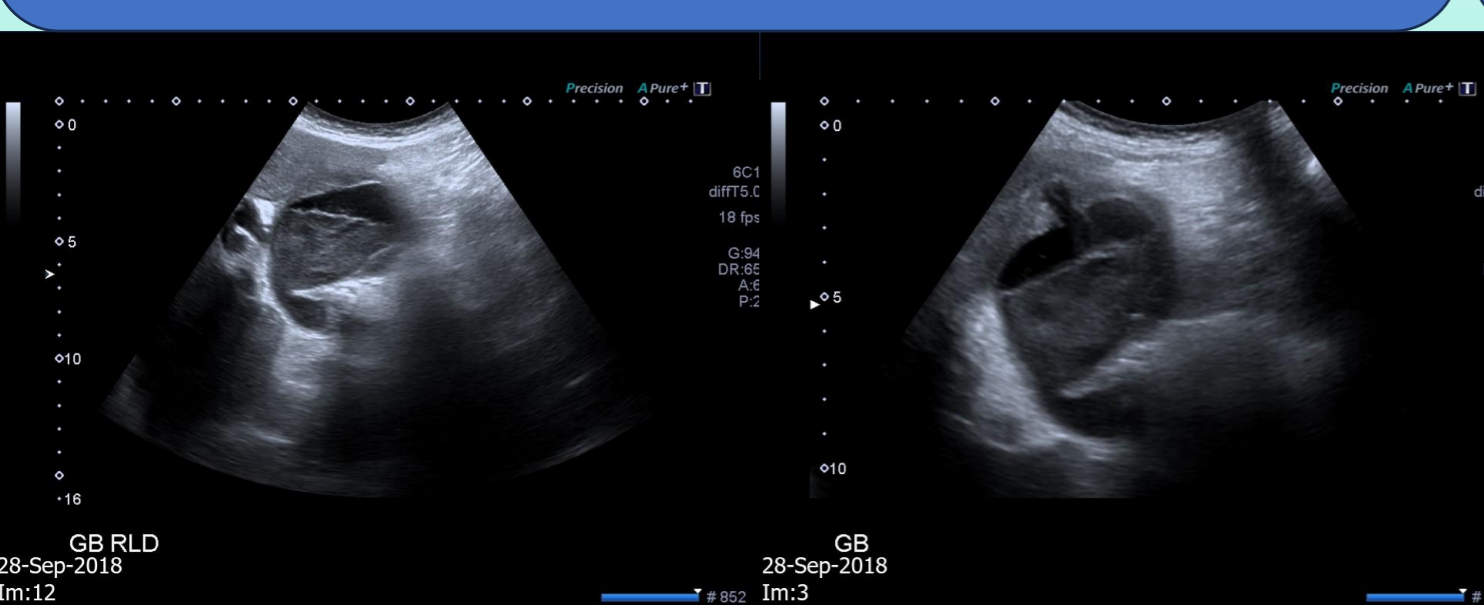
Ultrasound demonstrates a collapsed gallbladder containing a gallstone, with surrounding free fluid; these findings raise suspicion for gallbladder perforation



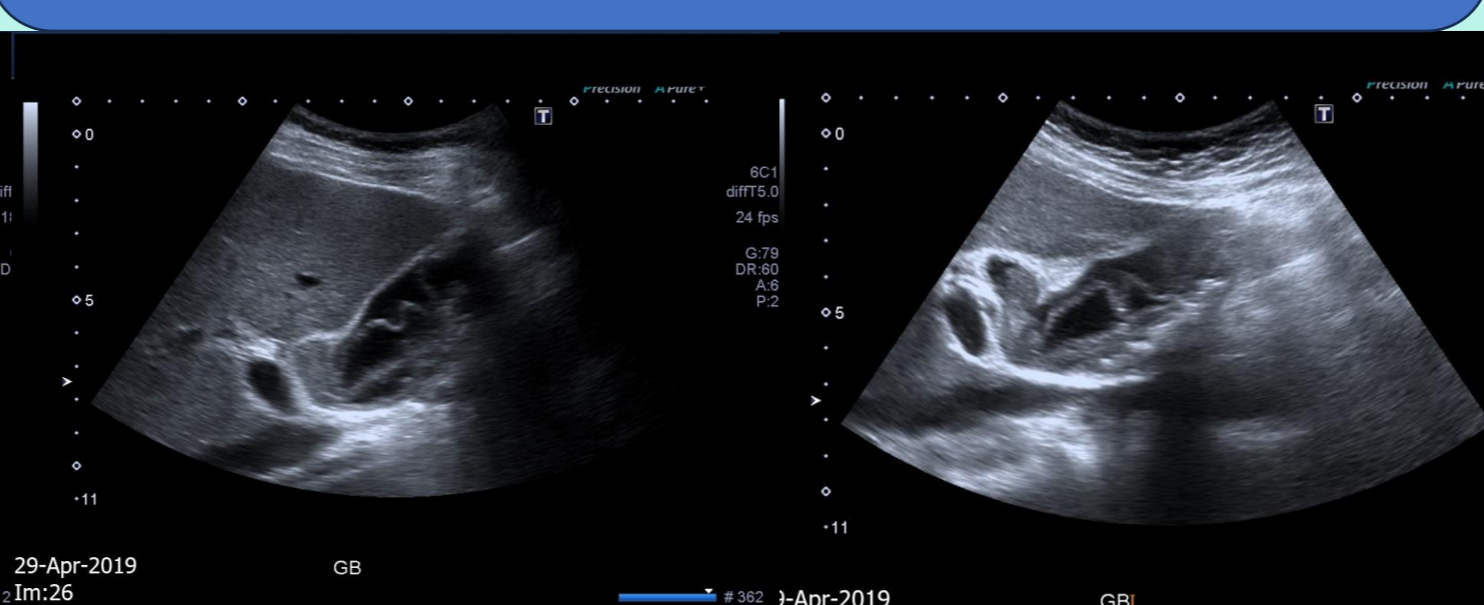
Ultrasound elicited a positive sonographic Murphy sign, demonstrated by maximal tenderness over the gallbladder when the probe is pressed directly on its fundus, often associated with gallbladder wall thickening and pericholecystic fluid.



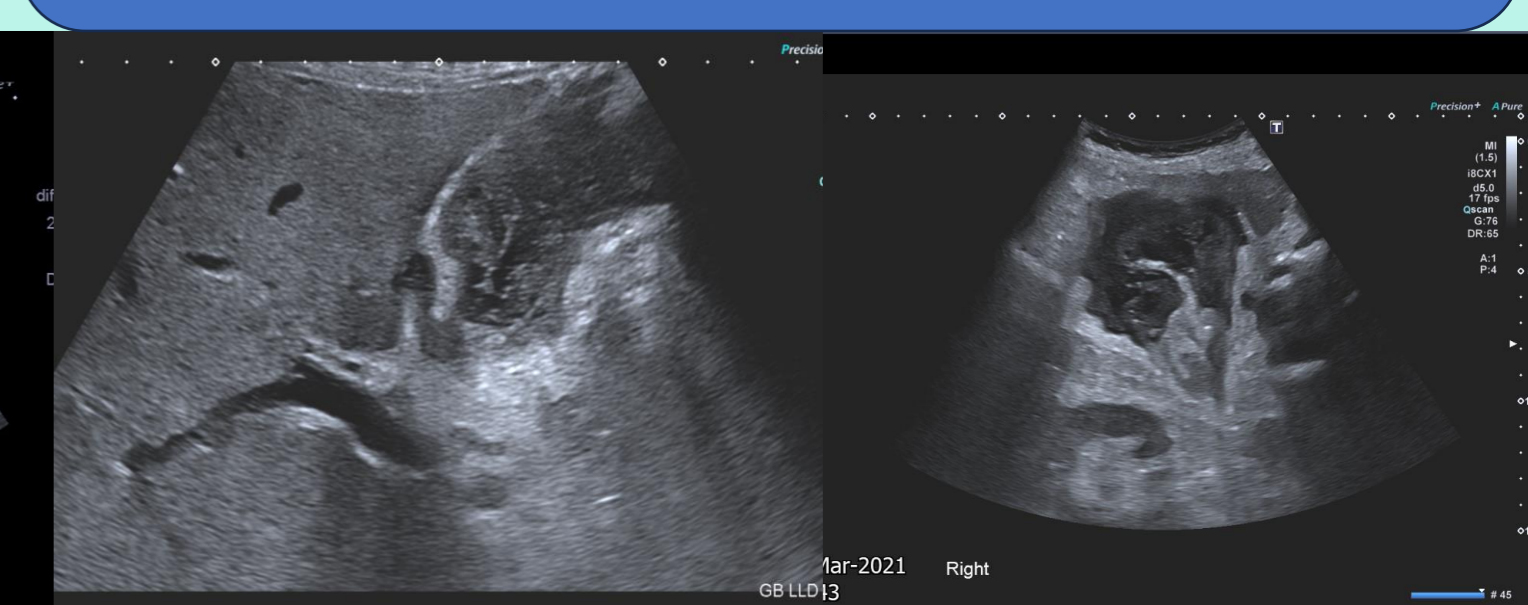
Emphysematous Cholecystitis
A surgical emergency, emphysematous cholecystitis is a severe infection with gas-forming organisms. The key finding is echogenic foci (gas) within the gallbladder wall, which creates a 'dirty' (reverberation) shadow.



Contained Perforation
This complication occurs when a perforation is 'walled off' by the body's inflammatory response. The images show a clear wall defect, but the resulting fluid collection is localized and contained, not free in the abdomen.



Complication: Sign of Gangrene
This is a specific sign of advanced gangrene, where the gallbladder's inner lining (mucosa) has necrosed and peeled away. The finding is echogenic, floating material within the gallbladder lumen that is separate from the wall.



Direct Sign of Perforation
This is the most direct sonographic evidence of perforation, where the rupture site itself is visualized. Note the clear 'discontinuity' or 'break' in the bright, echogenic line of the gallbladder wall.

Take home messages:

- Most cases of acute cholecystitis are associated with gallstones, so meticulous ultrasound evaluation is essential for accurate detection.
- Acalculous cholecystitis should be diagnosed with caution, ensuring careful assessment of wall thickness, pericholecystic fluid, and vascularity.
- Key sonographic features include gallbladder wall thickening, mural edema, pericholecystic fluid, and a positive sonographic Murphy's sign.
- Recognition of complications such as gangrenous, emphysematous, or perforated cholecystitis is crucial, as they carry higher morbidity and mortality.
- Early diagnosis and prompt reporting of sonographic findings significantly improve patient outcomes and guide timely management.

References:

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