Gallbladder Exam US Quick Sheet:

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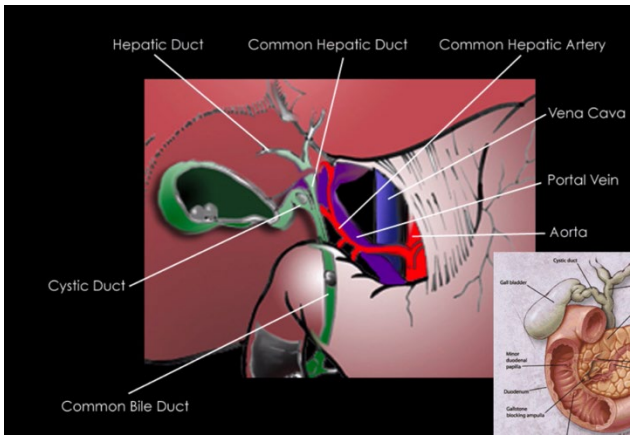
Basic Science and Literature: (Important one liners from literature)

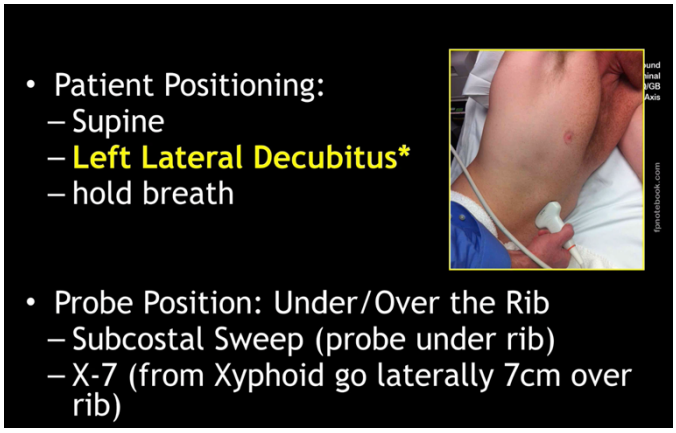
- 20 million people in US have gb disease, 1 million new cases per year
- 1/3 of pts with cholelithiasis go on to have symptomatic cholecystitis
- Surgical branch point, ultrasound improves diagnosis (sens/spec with POCUS 90%/88%)

Focused questions: (Answer Yes or No)

- Are there gallstones? (hyperechoic, mobile, shadowing; look specifically in neck)
- Is there a sonographic Murphy's sign? 95.2% NPV. Push in multiple areas
- Additional questions:
    - Is there anterior wall thickening (>4 mm is abnormal, <3 mm is normal)?
    - Pericholecystic fluid: edema around the wall
    - Common bile duct thickening >6 mm or >1/10 age

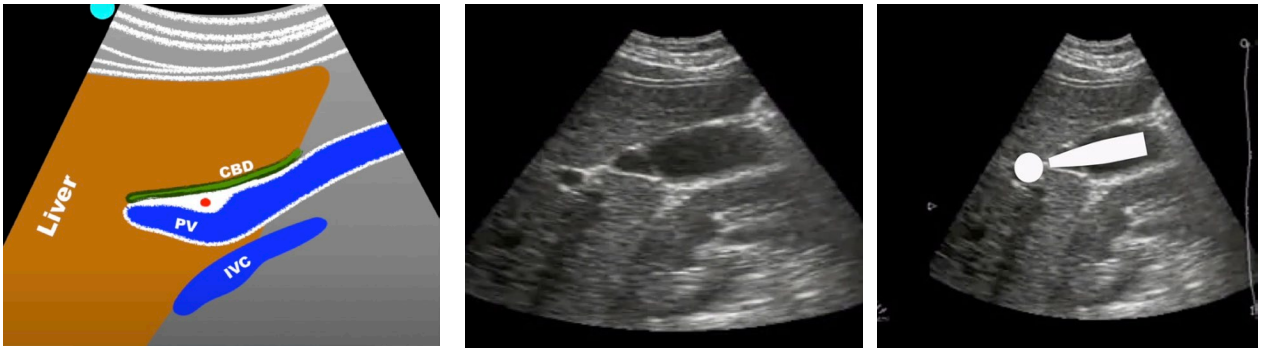
Anatomy:





Technique: Home base: (How do you start the scan, how to align direction of the probe)

- Positioning: pt supine or left lateral decubitus, can have them hold breath
- Steps:
    - Set butterfly app to abdomen/gallbladder setting
    - Probe with marker facing cranially, start at midline and sweep along inferior costal border laterally or over rib. Gallbladder is approximately at midclavicular line.
    - View gallbladder in long axis in its entirety by sweeping the probe.
    - Rotate probe to marker facing patient's right. View entire gallbladder in short axis by fanning the probe.
    - Look for "exclamation point sign" of gallbladder and portal vein



- Identify common bile duct. CBD in long axis lies on top of (superficial to) portal vein, which has hypoechoic walls. Use color flow to identify portal vein CBD and should be smaller than portal vein. Measure if possible, inner to inner wall. Normal = 1mm per decade of life (unless already have GB out!)

Pathology and Pitfalls
Indication: RUQ pain
DDx: cholecystitis, cholelithiasis, cholangitis, gastritis
Pathology—
1. Wall thickening: always measure anterior. <3 mm normal, >4 mm, abnormal
2. Stones will have acoustic shadowing as way to help identify them. Stone in neck of GB indicates impending cholelithiasis even if no wall thickening yet, as impacted stone will ultimately lead to inflammatory response.
3. Common bile duct dilation (>6 mm or >1/10 of age)
4. Polyps look like stones but don't shadow. >2 cm malignant, >6mm should be evaluated further or followed.

Troubleshooting: (if you can't get a good image try this!)
- If unable to view, try left lateral decubitus. Brings liver and gb anterior and displaces bowel gas.
- Have pt take a deep breath. Liver and GB come under the costal margin.
- Go above the costal margin
- Move probe laterally, point towards midline and shoot through the liver
- Find portal vein (has bright white walls) in long axis and rotate probe 90 degrees
- Make sure they are fasting. As soon as they eat, GB squeezes out and contracts
- If there is a lot of bowel gas, hold probe firmly for 20-30 seconds and let air pass from the overlying bowel

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