Focused Assessment with Sonography for The Emergency Resident (FASTER)

Jason Carter, M.D., M.H.S.A.

Synergy Medical Education Alliance/Michigan State University Emergency Medicine Residency Program, Saginaw, MI

I. Gallbladder

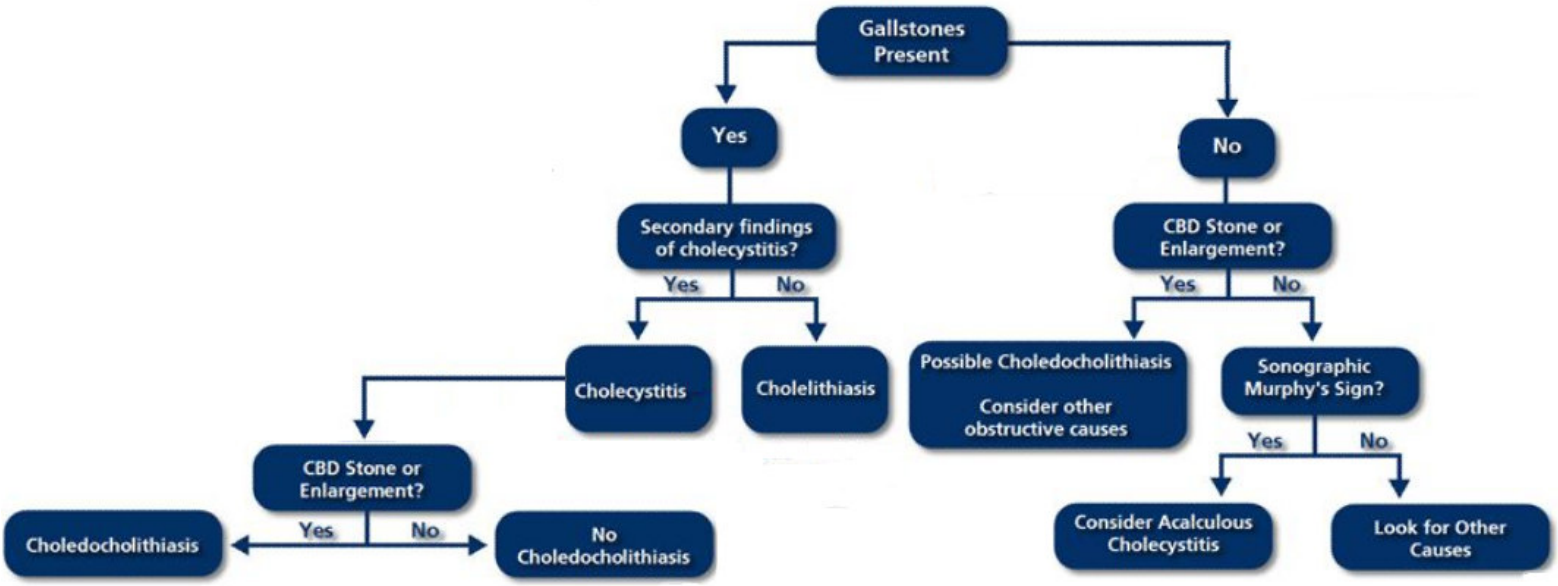


Figure 1 Copyright © EMsono, LLC, 2006 - 2008. Emergency Medicine Ultrasound Education

A. Measurements
   1. Diameter < 4cm
   2. Length < 10-11 cm
   3. Wall Thickness < 3mm
   4. CBD < 7 mm (inner wall → inner wall). [<10 in post-chole pt's]
   5. < 6 hrs of pain = biliary colic; > 6 hrs = cholecystitis/cholelithiasis
   6. Stones + wall thickening + sonographic Murphy's = 90% sensitive for cholecystitis

B. Clinical Questions
   1. Is there a sonographic Murphy's sign?
   2. Are there gallstones? Stones at the cystic duct? Stones in the CBD?
   3. Is there thickening of the gallbladder wall?
   4. Is there sludge seen in the gallbladder?
   5. Is there pericholecystic fluid present?
   6. Is the CBD enlarged?

C. Views to print (4)
   1. Longitudinal
      a. Length, Width, Wall Thickness, also show any stones or fluid
   2. Transverse
      a. Width, Wall Thickness
   3. Neck/Cystic duct
      a. Thickness
   4. CBD
      a. Thickness

II. Renal

A. Goal: Detection of hydronephrosis

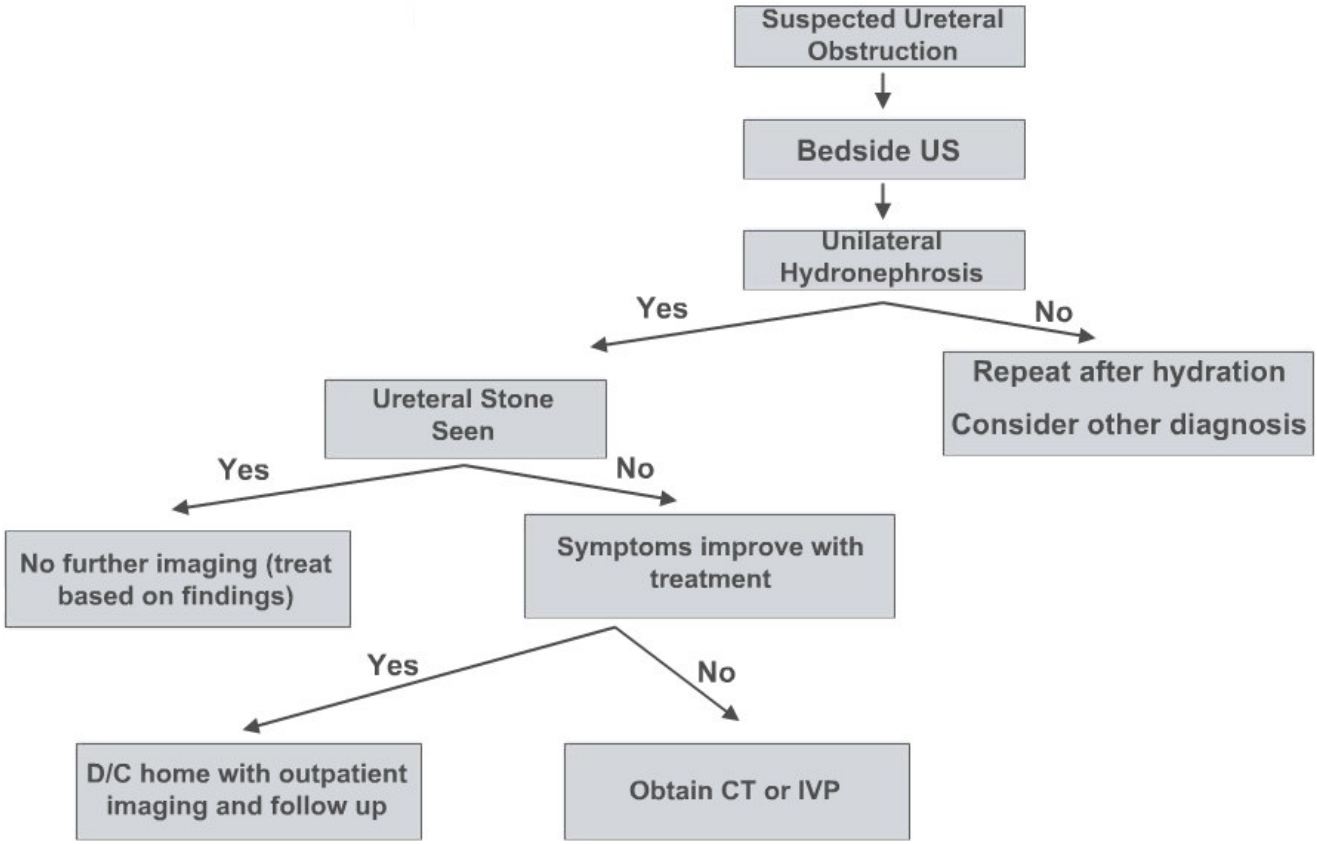


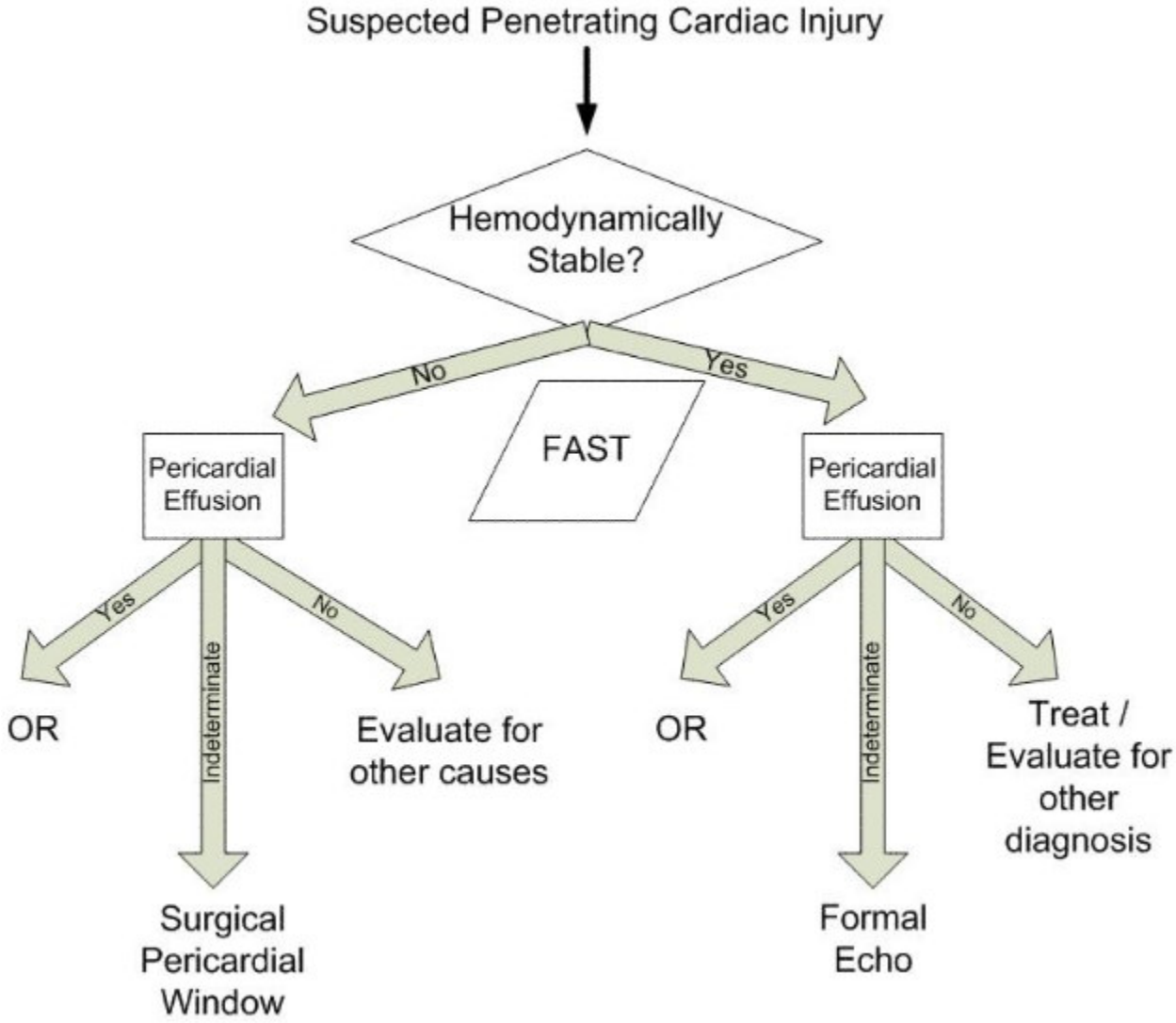
Figure 2 Copyright © EMsono, LLC, 2006 - 2008. Emergency Medicine Ultrasound Education

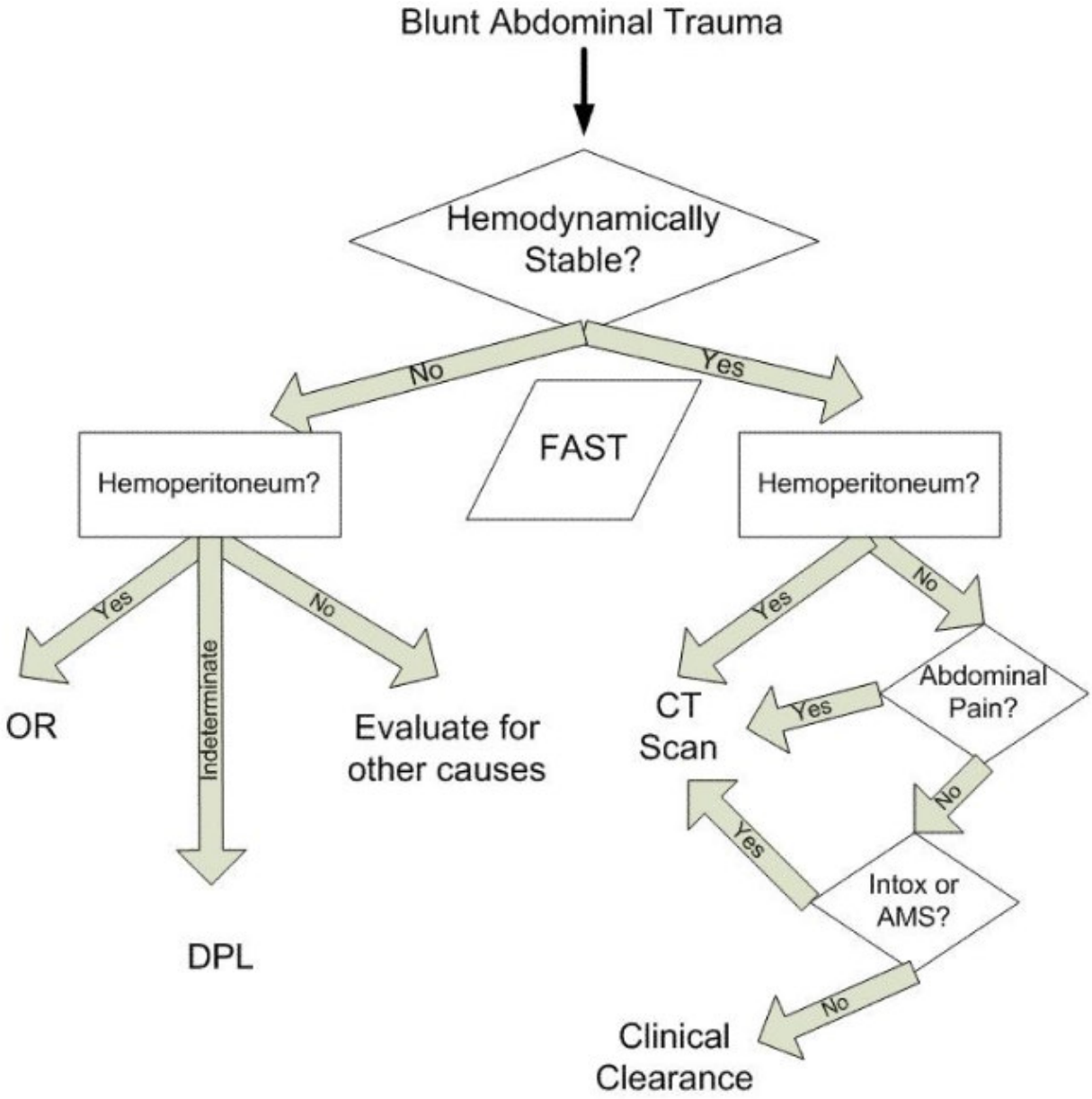
B. Measurements
   1. Normal kidney size 9-12 cm long; 4-5 cm wide
   2. Normal renal parenchyma is 1.5 – 2.5 cm.

C. Clinical Questions
   1. Is hydronephrosis present?
   2. Is hydroureter present?
   3. Are there renal calculi?

D. Views to print (5)
   1. Longitudinal
      a. Measure Length, Width
      b. Use calipers for measurements
   2. Transverse
      a. Measure width
      b. Use calipers for measurements
   3. Bladder

III. FAST

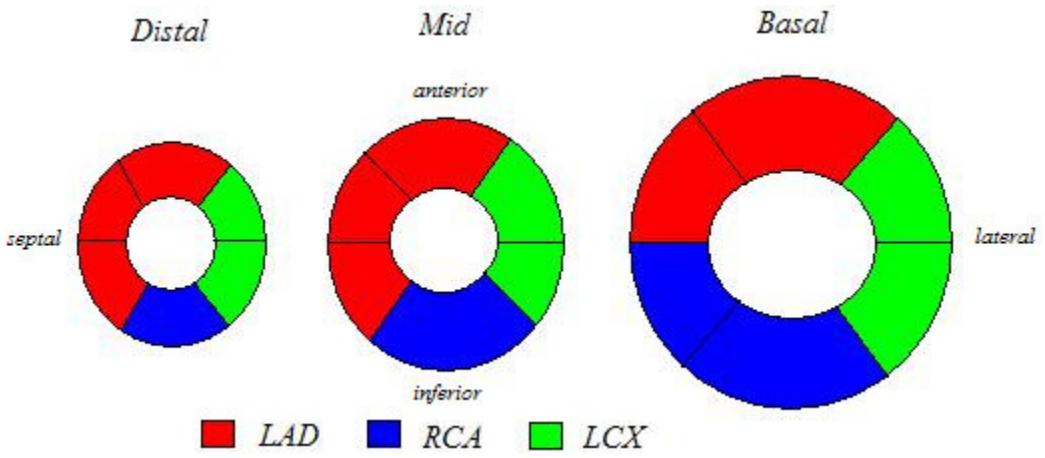




A. Clinical Questions
   1. Is there free fluid in Morrison's pouch?
   2. Is there a pericardial effusion/tamponade?
   3. Is there fluid between the spleen and kidney or spleen and diaphragm?
   4. Is there fluid in the pelvis?

B. Views to print (4)
   1. Perihepatic
      a. Show hepatorenal interface (Morrison's Pouch)
   2. Pericardial
      a. Show pericardium/epicardium interface
   3. Perisplenic
      a. Show splenorenal interface and spleen-diaphragm interface
   4. Pelvic
      a. Show retrovesicular/retrouterine space (pouch of Douglas)

IV. Cardiac/ECHO

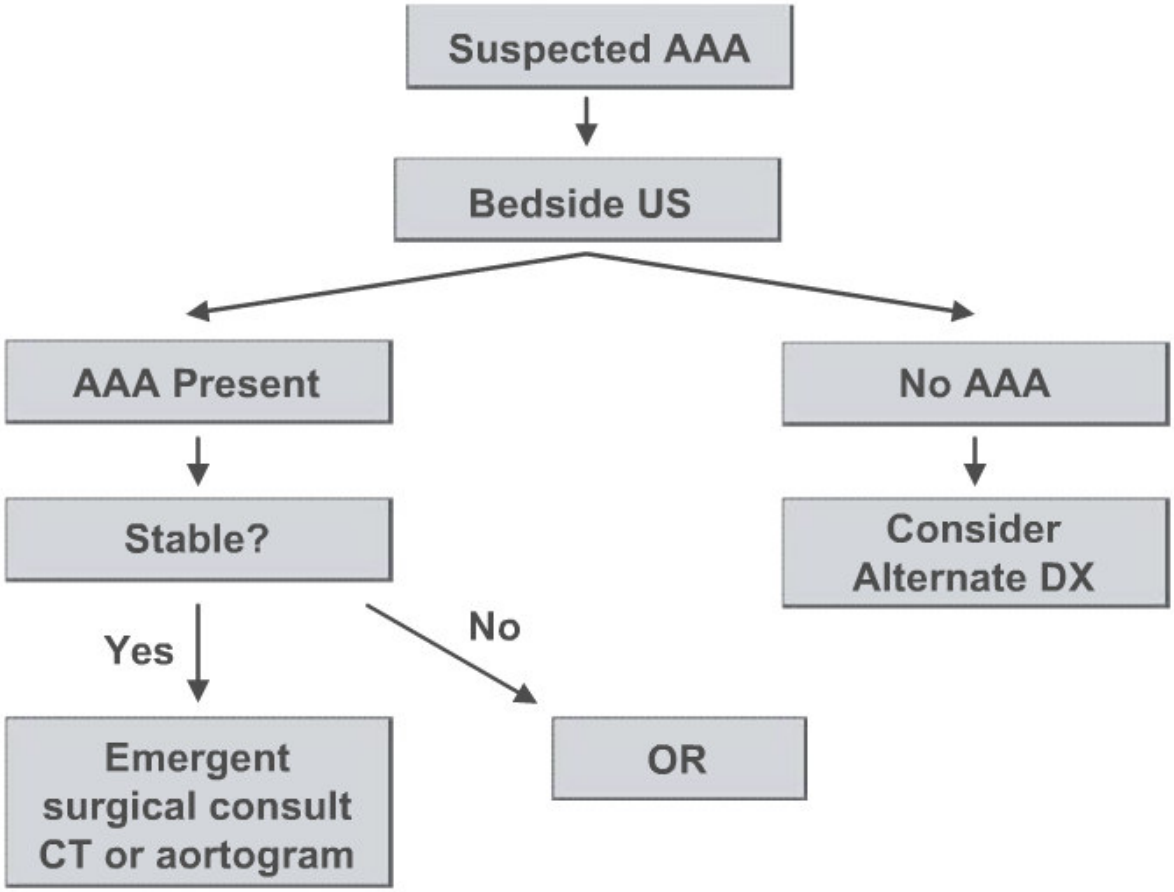


A. Measurements
   1. Calculate ejection fraction through M-mode tracing (use endocardium for motion)
      EF (%) = $EDV^2 - ESV^2 / EDF^2$ (use mm for EDV & ESV)

B. Clinical Questions
   1. Is there a pericardial effusion/tamponade?
   2. What is the ventricular filling volume?
   3. Is there a wall-motion abnormality?
   4. What is the ejection fraction?

C. Views to print (6)
   1. Subcostal 4 chamber
   2. Parasternal long axis
   3. Parasternal short axis
   4. Apical 4 chamber
   5. Apical 2 chamber
   6. Left ventricular M-mode

V. Abdominal Aorta



A. Measurements
   1. Luminal diameter of infrarenal aorta < 2.3 cm in males, < 1.9 cm in females
   2. Luminal diameter of common iliac < 1.5 cm in males, < 1.2 cm in females
   3. Renal arteries are within 1.5 cm of SMA
   4. AAA = diameter > 3.0 cm

B. Clinical Questions
   1. Is an abdominal aneurysm present?
   2. If so, is there an intimal flap or other evidence of dissection?
   3. If so, is there free fluid in the pelvis?
   4. If so, does it involve the renal arteries?

C. Views to print (6)
   1. Proximal aorta to SMA takeoff
      a. Transverse and longitudinal
      b. Use calipers for measurements
   2. Mid-aorta at level of SMA/Renals
      a. Transverse and longitudinal
      b. Use calipers for measurements
   3. Distal aorta to bifurcation
      a. Transverse and longitudinal
      b. Use calipers for measurements

VI. OB

A. Measurements (1st Trimester)
   1. Mean Sac Diameter (MSD) = (Length + Width + Depth) / 3 + 30
   2. Crown-Rump Length + 6.5
   3. Trans-vag @ 5 weeks β-hCG should be 1200-1500
   4. Trans-abd @ 6 weeks β-hCG should be 1500-2000

B. Clinical Questions
   1. Is an intrauterine pregnancy present?
   2. If so, is the fetus viable?
   3. Is there free fluid in the pelvis?

C. Views to print (3)
   1. Uterus
      a. Transverse and longitudinal
      b. Use calipers for measurements
   2. FHT Tracing
   3. Add views of any pathology
      a. Transverse and longitudinal