TRA-MINW

Abdomen and Retroperitoneum Ultrasound Protocols

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****NOTE for all examinations:**

1. **If documenting possible flow in a structure/mass, all color/Doppler should be accompanied by a spectral gate for waveform tracing**
2. **CINE clips to be labeled:**
   -MIDLINE structures: "right to left" when longitudinal and "superior to inferior" when transverse
   -RIGHT/LEFT structures: "lateral to medial" when longitudinal and "superior to inferior" when transverse
   ****each should be 1 sweep, NOT back and forth****

WHAT TO INCLUDE:

Abdomen complete:

-Liver

-Gallbladder

-Biliary tree

-Pancreas

-Spleen

-Kidneys

-Aorta

-IVC

-Fluid

Adding images to "Complete" order (still charge as Abd Complete):

→ Hydronephrosis or pelvicaliectasis (more than prominent renal pelvis): add representative bladder image (do not need to do volume; show jet *only if readily seen*); if bladder full, see if dilatation persists after void

Abdomen limited, RUQ – indication is *PAIN or any mention of possible renal issue*:

-Liver

-Gallbladder

-Biliary tree

-Pancreas

-Right kidney: full kidney imaging

-IVC

-Fluid

Abdomen limited, RUQ – indication is *NOT pain AND there is no mention of possible renal issue* (i.e., abnormal LFTs, cirrhosis, etc.):

-Liver

-Gallbladder

-Biliary tree

-Pancreas

-Right kidney: SINGLE sagittal with liver***

-IVC

-Fluid

***If there is hydronephrosis or any other abnormality, include FULL right kidney imaging

Adding images to "Limited" order (still charge as Abd Limited):

→ Right hydronephrosis or pelvicaliectasis (more than prominent renal pelvis): add representative left kidney and representative bladder image (do not need to do volume; show jet *only if readily seen*); if bladder full, see if dilatation persists after void

Abdomen limited, OTHER:

-Evaluate organ of interest (i.e., spleen for LUQ)

-If hernia evaluation requested, see separate HERNIA protocol for instructions

Retroperitoneum or Renal/Bladder

If indication is related to the urinary tract (this will be nearly all exams):

-Kidneys

-Bladder: full always, attempted jets always (**see notes below re: when to have patient void and when to do bladder volumes)**

Notes:

-Aorta images or measurements do not need to be included if indication is urinary

**WHEN should the patient void:

(1) Indication = retention, urgency, UTI or similar; or, bladder VERY distended

-Void + pre/post volumes

(2) Hydronephrosis with full bladder seen at time of kidney imaging

-Void and re-assess if hydro persists afterward; pre/post volumes are NOT necessary

-Prostate (in men) does not need to be measured UNLESS indication is: retention, urgency or similar; OR, grossly enlarged

If indication is anything else (rare; example indication: renal artery hypertension):

-Kidneys

-Bladder (see note above)

-Aorta

-IVC

-Common iliac artery origins

Liver and the intrahepatic biliary tree:

-Measure: sagittal in mid-clavicular line

-Long axis and transverse: provide images of the right, left and caudate lobes

-Capsule/contour: linear 9Hz transducer over the left and right hepatic capsules

-Document focal and/or diffuse abnormalities

***Provide at least 1 image comparing echogenicity of the liver to the right kidney*

-Image vessels: hepatic and perihepatic vessels, including the inferior vena cava (IVC), the hepatic veins, the main portal vein, and, if possible, the right and left branches of the portal vein.

→Spectral Doppler of the main portal vein

→Provide image with MPV measurement but do not include on worksheet (discretion of radiologist whether to include in report)

-Right hemidiaphragm: document presence of effusion, if applicable

-If there is intrahepatic ductal dilatation: provide images with color to show differences between vessels and adjacent dilated bile ducts; include CINE with color.

-If a mass is detected, CINE images in 2 planes should be provided; assess Doppler (color and spectral)

***In patients with hepatitis B or C, provide CINE of the entire liver** - number of CINE necessary to cover liver will vary depending on liver anatomy, body habitus, etc.*

Gallbladder and extrahepatic biliary tract:

<u>Gallbladder</u>

-Long-axis and transverse views in supine and decubitus

-Gallbladder wall thickness: ensure measurement is of the wall and not of the wall + adjacent pericholecystic fat; this is best done in the transverse plane, measuring the wall closest to transducer

-Evaluate for stones, sludge and polyps

→Document mobility of stones and lack of mobility of polyps

→Color and spectral Doppler over sludge and polyps; please comment on worksheet if color appears artifactual in real-time (i.e., related to motion); provide Spectral if color is real

→CINE through polyps and sludge

→*Do* **NOT** *need to CINE through empty gallbladder*

-Assess for sonographic Murphy sign; if unable to assess, document reason (i.e., altered mental status, medicated, etc.)

Extrahepatic Bile duct:

-Extrahepatic bile duct: evaluate and measure at the porta hepatis, assess for intraluminal abnormalities

→Attempt to assess and measure distal CBD up to the pancreatic head, if possible; special attention should be paid to the distal CBD in cases of biliary ductal dilatation or pancreatic ductal dilatation

***Note regarding appropriate naming of the extrahepatic bile duct:*

→At the porta hepatis, label as “Extrahepatic bile duct”

→At mid to distal portion duct (or clearly beyond junction of cystic duct), label as “Common bile duct” or “CBD”

Pancreas:

-Attempt to visualize all portions (head, uncinate, body, tail)

-Specific attention to distal CBD near pancreatic head, pancreatic ductal dilatation

-Evaluate peripancreatic region for adenopathy or fluid

→If mass is present, CINE through to show relationship to pancreatic parenchyma and duct

→If adenopathy is present, CINE through it to show separate from liver and pancreas

Spleen:

-Provide maximum dimension in any plane

→ L x W x H and volume are no longer required

**When possible, obtain images showing left kidney and spleen together*

-Attempt to visualize left hemidiaphragm and pleural space

Kidneys:

-Maximum renal length only for all patients (adult and pediatric)

-->AP and Trans measurements and renal volume are not required

-Cortex does **not** need to be measured

-Longitudinal and transverse, with color images in the region of the hilum (mid) – 6 representative images each (including mid color), as follows:

→Longitudinal: Far lateral (should see some perinephric fat), lateral, mid (grayscale and color), medial, far medial (should see some perinephric fat)

→Transverse: High superior (should not see renal sinus), superior, mid (grayscale and color), inferior, low inferior (should not see renal sinus)

Consider placing the patient prone if renal poles are difficult to fully visualize

-If hydronephrosis or pelvicalectasis, provide AP pelvis measurement

→ At end of exam, assess if dilatation improves or resolves post-void

-If there is ANY complexity to a mass or cyst, provide CINE images

→If mass is a cyst, must clearly show it to be anechoic, imperceptible wall and increased through-transmission (may need to turn off spatial compounding to show this)

NOTE: When there are multiple simple renal cysts, measure the 3 largest on each side

-If known stent in place:

→ Nephroureteral stent: attempt to visualize proximal coil (ideally in renal pelvis) and distal coil (ideally in bladder).

→If known nephrostomy tube: attempt to visualize coil (ideally in renal pelvis).

→If unable to visualize all or part of the stent, provide representative still images of attempt and CINE through relevant anatomy to document.

***Provide images of right kidney with liver*

***Provide images of left kidney with spleen*

If indication is hematuria, transverse and longitudinal CINE through both kidneys (even if appear initially normal)

Bladder:

-Longitudinal and transverse of distended bladder always

-Lumen/wall abnormalities: provide CINE if abnormality is present; document if debris/mass is mobile or immobile by changing patient position; demonstrate color/spectral Doppler (or lack thereof)

-Evaluate distal ureter for dilatation or other abnormality

-Document ureteral jets

-In men, measure prostate size and volume ONLY when indication is: urinary retention, urgency, or similar; OR, grossly enlarged

-NO need to have the patient void

UNLESS:

**WHEN should the patient void:

(1) Indication = retention, urgency, UTI or similar; or, bladder VERY distended

-Void + pre/post volumes

(2) Hydronephrosis with full bladder seen at time of kidney imaging

-Void and re-assess if hydro persists afterward; pre/post volumes are NOT necessary

Aorta: representative images and measurements (proximal, mid, distal)

-Does NOT need to be included on Retroperitoneum/Renal orders that have “urinary” indication

IVC: representative images with and without color, document patency

-Note: does not need to be measured

Fluid:

-Evaluate RUQ, LUQ, periphery of abdomen (left and right) in paracolic gutters, pelvis

-Document location and presence, if applicable (trace, small volume, moderate volume, large volume)