

Renal Imaging Protocols

Routine Renal Mass

Last updated: 1/2003

Phased array coil centered over kidneys.

Weight based Gadolinium contrast (*), 15cc if pt is less than 180 pounds; otherwise 20cc Gd

Assess the patient's breath holding capability. If poor capability, give oxygen. If the patient can't hold his/her breath call body radiologist.

Run sequences in the order listed.

| Sequence | Plane | Comment | Film # |
|---------------------|-------|---|--------|
| T1 in/out | Ax | | 1 |
| HASTE | Cor | No fat sat. 5-6mm slices | 1 |
| VIBE | Ax | Slab thickness to include kidneys and entire mass. | 0 |
| 3D FLASH | Cor | Try to get effective thickness 2mm. Thin slab cover only renal arteries. | 0 |
| Give Lasix | | If the mass is near the hilum / collecting system. Dose: 1mg (1cc from standard 10cc vial) | |
| Timing Run | Ax | Thru kidneys – 1cc at 2cc/sec followed by 20 cc saline at 2cc/sec | 0 |
| 3D FLASH | Cor | 1 measures (0 sec) Use standard timing formula. | 0 |
| VIBE | Ax | Hx prior. (2 measures 70, 180 s) | 1 |
| 3D FLASH (optional) | Cor | Delayed Urogram if requested , if not do delayed VIBE | 0 |
| VIBE | Cor | 7-10 minute delayed | 0 |
| Do Subtractions | | 1-Arterial phase – pre-contrast, 2-vibe post-pre | 0 |
| Do Subtraction | | Delayed urogram – pre-contrast | 0 |

(*) The use of gadolinium contrast material for these applications represents off-label usage in the U.S. Outside the U.S., please consult your country's regulations for local guidelines.

NOTE: These protocols apply to Siemens Symphony (with Quantum gradients) and Sonata systems. While they reflect the protocols used at NYU Medical Center, NYU is not responsible for their application elsewhere.

Renal Mass Follow Up

Last updated: 1/11/2003

Phased array coil centered over kidneys.

Weight based Gadolinium contrast (*), 15cc if pt is less than 180 pounds; otherwise 20cc Gd

Assess the patient's breath holding capability. If poor capability, give oxygen. If the patient can't hold his/her breath call body radiologist.

Run sequences in the order listed.

| Sequence | Plane | Comment | Film # |
|-----------------|-------|--|--------|
| HASTE | Cor | No fat sat. 5-6mm slices | 1 |
| HASTE | Ax | No fat sat. 5-6 mm slices | 1 |
| VIBE | Ax | Slab thickness to include entire liver, kidneys and mass | 0 |
| Timing Run | Ax | Thru kidneys – 1cc at 2cc/sec followed by 20 cc saline at 2cc/sec | 0 |
| 3D FLASH | Cor | 1 measure (0 sec), post contrast only is needed on follow up Use standard timing formula. | 0 |
| VIBE | Ax | Hx prior. Timing: Cover entire liver 2 measures (70, 180 sec) | 1 |
| Do Subtractions | | Vibe post-pre | 0 |

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Routine Renal MRA

Last updated: 1/2002

Phased array coil centered over kidneys.

Arms propped up anterior to coil.

20 cc Gadolinium contrast (*)

Assess the patient's breath holding capability. If poor capability, give oxygen. If the patient can't hold his/her breath call body radiologist.

Run sequences in the order listed.

| Sequence | Plane | Comment | Film # |
|-----------------|-------|---|--------|
| T1 in/out | Ax | | 1 |
| | | | 0 |
| HASTE | Cor | No fat sat. 5-6mm slices | 1 |
| Scout | 3-Sag | Center slice through aorta. | 0 |
| VIBE | Ax | Thru Kidneys | 0 |
| 3D FLASH | Cor | Use 512 matrix. Try to get effective thickness less than 1.5 mm. Want to include celiac and SMA. | 0 |
| Timing Run | Ax | Thru kidneys – 1cc at 2cc/sec followed by 20 cc saline at 2cc/sec | 0 |
| 3D FLASH | Cor | Two measures (with 7 sec between) Second measure may be done on inspiration. Standard timing run. | 0 |
| VIBE | Ax | History to prior | 1 |
| Do Subtractions | | 1-Arterial phase – pre-contrast 2 vibe post-pre | 0 |

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Kidney Donor Regular

Last updated: 11/2001

Coil: On the Vision system, use the phased array coil centered over kidneys. On the Symphony system, use the 2-piece body array to cover down to the pelvis.

30 cc Gadolinium contrast (*). This allows for better vein opacification.

Assess the patient's breath holding capability. If poor capability, give oxygen. If the patient can't hold his/her breath, call body radiologist.

Run sequences in the order listed.

| Sequence | Plane | Comment | Film # |
|----------------|-------|---|--------------|
| T1 in/out | Ax | | 2,1 |
| HASTE | Cor | No fat sat. 4-5 mm slices | 2 |
| VIBE | Ax | Slab thickness to include kidneys and proximal ureters. | 0 |
| 3D FLASH | Cor | Try to get effective thickness 1-1.5mm. Keep the slab as small as possible (usually 96mm or less) – you don't need to include the entire kidneys; just the renal vessels and the roots of the celiac and SMA. | 0 |
| Give Lasix | | Dose: 10mg (1cc from 10cc vial) | |
| Timing Run | Ax | Thru kidneys – 1cc at 2cc/sec followed by 20 cc saline at 2cc/sec | 0 |
| 3D FLASH | Cor | Use standard timing formula On Vision: 2 measures (7 sec gap) On Symphony: 3 measures (0, 7 sec gap, 90 sec) Use standard timing formula. | 0,1 0,1,1 |
| VIBE | Ax | Hx prior. 1 measure. Run as soon as possible after the FLASH sequences. | 1 |
| 3D FLASH | Cor | Delayed Urogram | 0 |
| Do Subtraction | | 1-3D FLASH Arterial phase – pre-contrast 2-VIBE post-pre | 0 |

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Kidney Donor Experimental

Last updated: 1/2002

Patient must void before study.

35 cc Gadolinium contrast (*)

O2 NC

CONSENT-generic kidney form

Assess the patient's breath holding capability. If poor capability, give oxygen. If the patient can't hold his/her breath, call body radiologist.

protocol is under BODY PROTOCOLS ->RENAL DONOR PROTOCOL

| Sequence | Plane | Comment | Film # |
|---------------------|---------|---|--------|
| Flash scout | | non breath hold | |
| true fisp scout | | end exp breath hold | |
| T1 in/out | Ax | | 2,1 |
| HASTE | Cor | No fat sat. 4-5 mm slices | 2 |
| 3D MRA precontrast | Cor | 1.5mm.thick slices Keep the slab as small as possible (usually 96mm or less) through entire aorta and both kidneys (THE WHOLE KIDNEY) | 0 |
| T1 MAPPING | Obl Cor | history to 3D MRA precontrast | |
| Timing Run | Ax | Thru kidneys – 1cc at 2cc/sec followed by 20 cc saline at 2cc/sec | 0 |
| 3D renal perfusion | Obl Cor | PRECONTRAST 5 measures history to 3D MRA | 0 |
| 3D renal perfusion | Obl Cor | POSTCONTRAST 34 measures , INJECT 4 CC GAD AT 2CC/SEC, FOLLOWED BY 20 CC SALINE FLUSH, SEE PROTOCOL SHEET FOR SPECIFIC INSTRUCTIONS ON BREATHHOLDING AND CALCULATING TIME TO PEAK | 0 |
| 3D MRA postcontrast | Obl Cor | ADD 10 mg (1cc)LASIX to line USE FORMULA SCAN DELAY=TTP +5-TIME TO CENTER 2 measures 8 SEC gap, | |
| VIBE | Ax | 1 measure. Run as soon as possible after the FLASH sequences. | 1 |
| 3D MRA | Cor | Delayed Urogram | 0 |
| Do Subtraction | | 1-3D MRA Arterial phase – pre-contrast 2-3D MRA delayed urogram – pre-contrast | 0 |

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Routine Hematuria

Last updated: 12/2002

Phased array coil centered over kidneys and pelvis.

Arms propped up anterior to coil.

20 cc Gadolinium contrast (*)

Assess the patient's breath holding capability. If poor capability, give oxygen. If the patient can't hold his/her breath call body radiologist.

Run sequences in the order listed.

| Sequence | Plane | Comment | Film # |
|------------|-------|---|--------|
| T2 TSE | Sag | Non-breath-hold. (through bladder) (4mm 0.2 gap) | 2 |
| T2 TSE | Ax | Non-breath-hold. (4mm 0.2 gap) | 2 |
| T1 in/out | Ax | Coverage, bifurcation to pubic symphysis. | 2 |
| VIBE | Ax | Thru pelvis | 0 |
| VIBE | Ax | Thru kidneys with overlap with pelvis | 0 |
| HASTE | Cor | from kidneys to bladder | |
| T1 in/out | Ax | Thru kidneys | |
| 3D FLASH | Cor | Precontrast. Through kidneys and bladder (include posterior bladder to make sure distal ureters are covered). Give lasix (1cc) before timing run. | 0 |
| Timing Run | Ax | Thru kidneys – 1cc at 2cc/sec followed by 20 cc saline at 2cc/sec | 0 |
| 3D FLASH | Cor | Two measures (with 7 sec between) and 3 rd delayed urogram. Second measure may be done on inspiration. Standard timing run. | 0 |
| VIBE | Ax | History to prior through kidneys | 1 |
| VIBE | Ax | History to prior through bladder | 1 |

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