



MRA RUNOFF

Magnet Vendor/Field	Approved By	Published/Rev
Siemens MAGNETOM 3.0T XQ Numaris/X VA60A-OCN3	Dr Alvarez	8.12.26 / 1

Protocol	Contrast	Estimated Scan Time
MRA RUNOFF	Post-contrast dynamic imaging	~10–15 min room time

TECHNOLOGIST WORKFLOW

Phase	Sequence Group	Key Requirement
♥ SETUP	FastViewLocalizer	Center mid tibia; FastView coverage from mid tibia through abdomen
■ SCOUT	STA 3 / 2 / 1 VESSEL SCOUT	Run all 3 vessel scouts in order; sagittal planning
■ PRE	STA 3 / 2 / 1 CORONAL PRE	Run pre-contrast stations; STA 1 is breath-hold
■ BOLUS	CARE BOLUS COR FLUORO	User-triggered fluoroscopic bolus timing; 90 measurements
■ POST	STA 1 / 2 / 3 CORONAL POST	Post-contrast stations; subtraction ON; coronal MIP ON
■ VENOUS	STA 3 CORONAL POST VENOUS	Delayed venous-phase station; subtraction ON; coronal MIP ON

#	Seq Name	Pulse	Dim	Ori	Scan Dir	Phase Enc	FOV (mm)	Slc (mm)	Gap (mm)	TR (ms)	TE (ms)	Fat Sat	Freq	Phase	Notes
1		LOC	2D	—	—	—	1503	5.0	—	—	—	—	—	—	FastView; center mid tibia; total FOV 1503 mm; table speed 46 mm/s; TA 33 sec
2	STA 3 VESSEL SCOUT	VIBE	3D	Sag	R>>L	A>>P	500	5.0	0.5	21.0	7.30	None	384	269	STA 3 vessel scout; 2 slabs; 26 slices/slab; distance factor 10%; phase 70%; partial Fourier 6/8 phase + slice; MIP Sag ON; TA 1:13

3	STA 2 VESSEL SCOUT	VIBE	3D	Sag	R>>L	A>>P	500	5.0	1.5	21.0	7.30	None	384	269	STA 2 vessel scout; 2 slabs; 26 slices/slab; distance factor 30%; phase 70%; partial Fourier 6/8 phase + slice; MIP Sag ON; TA 1:22
4	STA 1 VESSEL SCOUT	VIBE	3D	Sag	R>>L	A>>P	500	5.0	2.5	23.0	7.80	None	384	269	STA 1 vessel scout; 1 slab; 32 slices; distance factor 50%; phase 70%; partial Fourier 6/8 phase + slice; MIP Sag ON; TA 50 sec
5	STA 3 CORONAL PRE	VIBE	3D	Cor	A>>P	R>>L	500	1.35	0.3	3.48	1.26	None	512	333	STA 3 coronal pre; GRAPPA PE 2; phase 65%; slice 63%; slice PF 6/8; TTC 1.0 sec; TA 24 sec
6	STA 2 CORONAL PRE	VIBE	3D	Cor	A>>P	R>>L	500	1.50	0.3	3.33	1.21	Fat Sat	448	314	STA 2 coronal pre; GRAPPA PE 2; phase 70%; slice 61%; slice PF 6/8; TTC 8.3 sec; TA 17 sec
7	STA 1 CORONAL PRE BH	VIBE	3D	Cor	A>>P	R>>L	500	1.60	0.3	3.32	1.21	Fat Sat	448	296	STA 1 coronal pre BH; GRAPPA PE 2; phase 66%; phase PF 7/8; slice PF 6/8; TTC 9.9 sec; TA 20 sec
8	CARE BOLUS COR FLUORO	VIBE	2D	Cor	A>>P	F>>H	360	30.0	6.0	32.13	1.68	None	320	237	CARE BOLUS COR FLUORO; 90 measurements; user-triggered; GRAPPA PE 2; phase 74%; TA 1:30
9	STA 1 CORONAL POST	VIBE	3D	Cor	A>>P	R>>L	500	1.60	0.3	3.32	1.21	Fat Sat	448	296	STA 1 coronal post; subtraction ON, save subtracted images ON; coronal MIP ON; GRAPPA PE 2; phase PF 7/8; slice PF 6/8; TTC 9.9 sec; TA 20 sec
10	STA 2 CORONAL POST	VIBE	3D	Cor	A>>P	R>>L	500	1.50	0.3	3.33	1.21	Fat Sat	448	314	STA 2 coronal post; subtraction ON, save subtracted images ON; coronal MIP ON; GRAPPA PE 2; slice PF 6/8; TTC 8.3 sec; TA 17 sec
11	STA 3 CORONAL POST	VIBE	3D	Cor	A>>P	R>>L	500	1.35	0.3	3.48	1.26	None	512	333	STA 3 coronal post; subtraction ON, save subtracted images ON; coronal MIP ON; GRAPPA PE 2; slice PF 6/8; TTC 1.0 sec; TA 24 sec
12	STA 3 CORONAL POST VENOUS	VIBE	3D	Cor	A>>P	R>>L	500	1.35	0.3	3.48	1.26	None	512	333	STA 3 coronal post venous; subtraction ON, save subtracted images ON; coronal MIP ON; GRAPPA PE 2; slice PF 6/8; TTC 1.0 sec; TA 24 sec

TECHNOLOGIST POST-PROCESSING

- Confirm all three vessel scout stations are acquired and the runoff coverage is complete.
- Verify pre-contrast coronal stations are complete before proceeding through CARE BOLUS timing and post-contrast stations.
- Confirm subtraction is ON and subtracted images are saved for STA 1, STA 2, STA 3 and STA 3 POST VENOUS.
- Confirm coronal MIP is ON for the post-contrast and venous stations; vessel scout MIP is sagittal.
- Review source images and MIPs for adequate arterial runoff coverage and venous-phase coverage before releasing the patient.

- Send source, subtraction and MIP/reformatted images to PACS per site workflow.

3D POST-PROCESSING

STATION ONE - ARTERIAL PHASE

- **Rotating MIPs**
 - Full DFOV – Edit to include vessels and kidneys only, 20 images (360-degree rotation)
- **Sliding Thin Slab MIPs**
 - Coronal
 - Full DFOV (through full volume)
 - 10mm slice thickness / 2mm spacing (anterior to posterior)
 - Sagittal
 - Full DFOV (through aorta)
 - 1mm slice thickness / 2mm spacing (patient's right to left)
 - Axial
 - Full DFOV (from above celiac artery through aortic bifurcation)
 - 10mm slice thickness / 2mm spacing (superior to inferior)
 - Double Oblique Renal Arteries (separately)
 - 18-24cm DFOV
 - 12mm slice thickness / 2mm spacing (anterior to posterior)
- **Curved Planar Reformatted Images**
 - Renal Arteries - Axial and Coronal
 - Celiac Artery - Axial and Sagittal
 - SMA - Axial and Sagittal

STATION TWO – ARTERIAL PHASE

- **Rotating MIPs**
 - Full DFOV – Edit to include vessels only, 20 images (360-degree rotation)
- **Sliding Thin Slab MIPs**
 - Axial
 - Full DFOV (through full volume)
 - 10mm slice thickness / 2mm spacing (superior to inferior)
 - Coronal:
 - Full Volume, Full DFOV
 - Angle parallel to Femoral Artery
 - 10mm Slice Thickness / 2mm Spacing (anterior to posterior)
 - Sagittal:

- Do Right and Left legs separately
- Angle parallel to Femoral Artery
- Full DFOV
- 10mm Slice Thickness / 2mm Spacing (from lateral to medial)

STATION THREE – ARTERIAL PHASE (do not use subtracted volume)

- **Rotating MIPs**
 - Full DFOV – Edit to include vessels only, 20 images (use movie loop)
- **Sliding Thin Slab MIPs**
 - Axial:
 - Full DFOV (through full volume)
 - 10mm slice thickness / 2mm spacing (superior to inferior)
 - Coronal:
 - Full Volume, Full DFOV
 - Angle parallel to Lower Legs
 - 10mm Slice Thickness / 2mm Spacing (anterior to posterior)
 - Sagittal:
 - Do Right and Left legs separately
 - Angle parallel to Lower Leg
 - Full DFOV
 - 10 mm Slice Thickness / 2mm Spacing (from lateral to medial)

ACTION ITEMS

♥ SETUP → ■ VESSEL SCOUTS → ■ CORONAL PRE → ■ CARE BOLUS → ■ CORONAL POST → ■ VENOUS