

PROTOCOL: MRA HEAD/CEREBRAL MRA/COW MRA WWO

CLINICAL

INDICATIONS/ HISTORY: Aneurysm, transient ischemic attack, cerebrovascular accident, arteriovenous malformation, syncope, ischemia, dural arteriovenous fistula

TIPS:

***Post-processing*:** If not autogenerated (Siemens) 3 planes of full-volume projected MIP: AP, lateral, caudocranial, and 3 planes of thick (2D) sliding-slab MIPS (OBL AX -parallel to orbital roof / OBL COR – parallel to basilar artery / Sag) using MIP rendering algorithm (never average, MPR, or SSD).
 Add a sagittal time-resolved sequence (TWIST for Siemens or TRICKS for GE) if history includes arteriovenous malformation.
 Add ASL, if available, if history includes arteriovenous malformation or dural arteriovenous fistula.

SCAN ORDER	PLANE	IMAGE CONTRAST/WEIGHTING	MODE	PULSE SEQ	COVERAGE	TR RANGE	TE RANGE	TI	FLIP ANGLE	THICKNESS/ GAP (mm)	FOV (cm)	Max Pixel (mm) Fr x Ph	Freq Axis	SEND TO PACS	Max scan time (target)
1	SAG	PC LOC	2D	PC	2 SLICES TO COVER CIRCLE OF WILLIS- VENC=60CM/S	MIN	MIN		20-30	60/0	24	1.25X1.25	SI	COLLAPSE	3:00
2	COR	PC LOC	2D	PC	1-2 SLICES TO COVER CIRCLE OF WILLIS- VENC=60CM/S	MIN	MIN		20-30	60/0	24	1.25X1.25	SI	COLLAPSE	3:00
3	AX-AVOID ANGLE	TOF MRA (FATSAT IF POSSIBLE ON GE)	3D	TOF-MULTI	BELOW VERTEBRO-BASILAR JUNCTION REGION OF CORPUS CALLOSUM	MIN	6.9 IF FLOW COMP, MIN IF NO FC	SUPERIOR TRACKING SAT	20-30	.9-1.0/OVLP (5 SLABS OF 24-32 PARTITIONS WITH 10-12 DISCARDS/OVERLAPS)	16-20	.9X.9	AP	FULL SERIES + BELOW	8:00
4	AX/SAG/ COR	T1 CEMRA	3D	FLASH/ FSPGR	COVER ENTIRE BRAIN	MIN	MIN		25	.9-1.1/OVLP	20-22	.9X.9	AP	FULL SERIES	<35s
5+C	AX/SAG/ COR	T1 CEMRA	3D	FLASH/ FSPGR	COVER ENTIRE BRAIN	MIN	MIN		25	.9-1.1/OVLP	20-22	.9X.9	AP	FULL NON-SUBTRACTED SEIRES AND SUBTRACTION OF BEST PHASE	<35s/PHASE: 3 PHASES

***POST PROCESSING*:** IF NOT AUTOGENERATED (SIEMENS) 3 PLANES OF FULL-VOLUME PROJECTED MIP: AP, LATERAL, CAUDOCRANIAL, AND 3 PLANES OF THICK (2D) SLIDING-SLAB MIPS (OBL AX-PARALLEL TO ORBITAL ROOF/OBL COR-PARALLEL TO BASILAR ARTERY/SAG) USING MIP RENDERING ALGORITHM (NEVER AVERAGE, MPR, OR SSD). SEE BELOW FOR DETAILS.

USE SERIES 3 AS SOURCE DATA FOR THESE MIPS	AP	VOLUME MIP	3D												
	LAT	VOLUME MIP	3D												
	CAUDO-CRANIAL	VOLUME MIP	3D												
	OBL AX	THICK MIP	2D		COVER ENTIRE SKULL					5-7/OVLP 2-3	20				
	OBL COR	THICK MIP	2D		COVER ENTIRE SKULL					5-7/OVLP 2-3	18				
	SAG	THICK MIP	2D		COVER ENTIRE SKULL					5-7/OVLP 2-3	22				
USE SERIES 5 AS SOURCE DATA FOR THESE MIPS	AP	VOLUME MIP	3D											GENERATE FROM SUBTRACTED SERIES	
	LAT	VOLUME MIP	3D											GENERATE FROM SUBTRACTED SERIES	
	CAUDO-CRANIAL	VOLUME MIP	3D											GENERATE FROM SUBTRACTED SERIES	
	OBL AX	THICK MIP	2D		COVER ENTIRE SKULL					5-7/OVLP 2-3	20			GENERATE FROM SOURCE SERIES	
	OBL COR	THICK MIP	2D		COVER ENTIRE SKULL					5-7/OVLP 2-3	18			GENERATE FROM SOURCE SERIES	
	SAG	THICK MIP	2D		COVER ENTIRE SKULL					5-7/OVLP 2-3	22			GENERATE FROM SOURCE SERIES	