

HIGH PLAINS RADIOLOGICAL ASSOCIATION

BODY MRI PROTOCOLS

Rev. 07.01.2020

ABDOMEN				
LIVER - Dynamic, Mass workup, HCC, Hepatitis	MRCP	ADRENALS	KIDNEYS	PANCREAS
	To include Liver and panceas			
ALL breathold/resp gated sequences except Diff T2 COR Balanced COR (Fiesta, Trufisp) T2 AX LONG TE T2 AX SHORT TE -	ALL breathold/resp gated sequences except Diff T2 COR T2 AX SHORT TE T2 AX FS T1 AX DUAL ECHO IN/OUT PHASE - BH T1 AX FAT SAT BH (LAVA, VIBE)	ALL breathold/resp gated sequences except Diff T2 COR SS FSE BH (Diaphragm to aortic bifur) T1 AX DUAL ECHO IN/OUT PHASE - 3-4mm Adrenals T1 COR DUAL ECHO IN/OUT PHASE - 3-4mm Adrenals	ALL breathold/resp gated sequences except Diff Balanced COR (Fiesta, Trufisp) T2 COR SSFSE BH T2 AX SSFSE BH T2 AX SSFSE FAT SAT BH	ALL breathold/resp gated sequences except Diff T2 COR SSFSE T2 AX SSFSE T2 AX FSE FAT SAT T1 AX DUAL ECHO IN/OUT PHASE DWI AX b=0, b400, b=800, send ADC
T2 AX - FAT SAT T1 AX DUAL ECHO BH IN/OUT PHASE DWI AX b=0, b400, b=800, send ADC ADC MAP from both b50 &b750 together T1 AX FAT SAT BH PRE (LAVA, VIBE) POST CONTRAST (Recomm) AX LAVA/ 3D FSPGR FAT SAT (20 SEC) AX LAVA/ 3D FSPGR FAT SAT (90 SEC) AX LAVA/ 3D FSPGR FAT SAT (3MIN) COR LAVA/ 3D FSPGR FAT SAT (5MIN) AX LAVA/ 3D FSPGR AX FAT SAT (10MIN) AX LAVA/ 3D FSPGR FS (20MIN IF USING Subtractions 20 sec, 90 sec, 3 min	3D COR THIN T2 MRCP X 2 RADIAL THICK SLAB X 5'S MIPs of 3D MRCP NO CONTRAST ***NPO 4 HOURS	T2 AX FSE FAT SAT (Diaphragm to aortic bifur) T1 AX FAT SAT BH (LAVA, VIBE) (Diaphragm to aortic bifur) POST CONTRAST (opt)(Diaphragm to aortic bifur) AX LAVA/ 3D FSPGR FAT SAT (30 SEC) AX LAVA/ 3D FSPGR FAT SAT (70 SEC) COR LAVA/ 3D FSPGR FAT SAT (3 min) Subtractions 30 sec, 70 sec, 3 min	T1 AX DUAL ECHO (IN/OUT PHASE) DWI AX b=0, b400, b=800, send ADC T1 COR FAT SAT BH T1 AX FAT SAT BH (LAVA, VIBE) POST CONTRAST (req'd) AX LAVA/ 3D FSPGR FAT SAT (20 SEC) AX LAVA/ 3D FSPGR FAT SAT (90SEC) COR LAVA/ 3D FSPGR FAT SAT (3MIN) AX LAVA/ 3D FSPGR FAT SAT (5MIN) Subtractions 20 sec, 90 sec Subtraction 3 min (COR) - if possible	3D THIN MRCP X 2 Cor THICK SLAB MRCP X 5 T1 AX FAT SAT BH (LAVA, VIBE) POST CONTRAST (req'd) AX LAVA FAT SAT (20 SEC) AX LAVA FAT SAT (90SEC) COR LAVA FAT SAT (3MIN) Subtractions 20 sec, 90 sec
NOTES: Contrast: EOVISt per request only. >FNH versus Adenoma a primary MRI done with ECF agent, (choledocal cyst) Opposed Phase Imaging (T1 IN/OUT) phase TE. For example, Out TE 2 ms, In TE 4 Subtraction Imaging: each phase of contrast) = creates a contrast	NOTES:	NOTES:	NOTES:	NOTES:

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ABDOMEN/PELVIS				
ABDOMEN AND PELVIS PREGNANCY ABD PAIN	MR ENTEROGRAPHY	ABDOMEN AND PELVIS - (screening/pain/vague sx)	PELVIS - Abscess, pain	RECTAL CA STAGING
	ORDER: MR ABD W/WO & MR PEL W/WO			
To include abdomen and pelvis (including) cervix. Portions of the upper abdomen/liver may not be included.	Includes abdomen and pelvis, the upper abdomen may not be included.	*Avoid using this protocol (Not for liver or specific organ abnormalities)		Fleets enema evening prior and morning of MRI. 100 gel into rectrum (as tolerated)
ALL breathhold/resp gated sequences except Diff	ALL breathhold/resp gated sequences except Diff	ALL breathhold/resp gated sequences except Diff		
T2 COR	T2 COR 2D CINE SSFSE FAT SAT	ABDOMEN	STIR COR	T2 AX FSE (Aortic bifurcation through pelvis) 5mm Wide FOV
T2 SAG HASTE or SSFSE	Balanced COR 2D CINE (Fiesta, Trufisp)	T1 AX DUAL ECHO (IN/OUT PHASE)	T2 COR	T2 SAG Lg FOV FSE 5mm Wide FOV
T2 AX HASTE or SSFSE (ABD/PELVIS)	GIVE: 1mg IM Glucagon	T2 AX HASTE/SSFSE	T2 SAG	STIR COR
T2 AX FAT SAT HASTE or SSFSE (ABS/PELVIS)	Balanced COR (Fiesta, Trufisp)	T2 COR HASTE/SSFSE	T2 AX	High Res T2 below should be up to 512x512, best for 3-4min acquisition
OPT: Balanced COR/AX/SAG	Balanced AX (Fiesta, Trufisp)	T2 AX FAT SAT	T2 AX FAT SAT	
-	T2 COR	AX DWI b=50, b=750, send ADC	DWI AX b=0, b=400, b=800, send ADC	T2 FSE AX sm FOV 24cm(pelvic sidewall) HIGH RES -3mm
T1 AX FAT SAT BH	T2 COR FAT SAT	PELVIS	T1 SAG FAT SAT (LAVA, VIBE, DIXON)	T2 COR FSE sm FOV 24cm(pelvic sidewall) HIGH RES -3mm
DWI AX b=0, b=400, b=800, send ADC	T1 COR FAT SAT PRE (LAVA, VIBE, DIXON)	T2 AX HASTE/SSFSE STIR CORONAL	T1 AX FAT SAT PRE	T2 SAG FSE sm FOV 22 cm(pelvic sidewall) HIGH RES -3mm
MR UROGRAPHY (if requested) 3D HEAVY T2 CORONAL (MRCP Seq)	T1 COR FAT SAT POST (20 sec)	T1 AX FAT SAT BH PRE (LAVA, VIBE) DWI AX b=0, b=400, b=800, send ADC		DWI AX b=0, b=400, b=800, send ADC
**** NO CONTRAST****	T1 AX FAT SAT POST	BACK TO ABDOMEN FOR INITIAL CONTRAST	POST CONTRAST (recomm)	T1 AX FAT SAT (LAVA, VIBE) (FOV 25 cm) Matrix 320
		T1 AX FAT SAT BH PRE ABD (LAVA, VIBE) AX LAVA/ 3D FSPGR FAT SAT (20 SEC) AX LAVA/ 3D FSPGR FAT SAT (90SEC)	T1 AX FAT SAT	POST CONTRAST (Req'd)
		Subtractions 20 sec, 90 sec	T1 SAG FAT SAT	T1 AX FAT SAT POST (25cm fov) Matrix 320
		PELVIS T1 AX FAT SAT POST (LAVA, VIBE)	Subtractions AX (post-pre)	T1 SAG FAT SAT (22cm fov) Matrix 320 T1 COR FAT SAT (27cm fov) Matrix 320
				*PELVIC PHASE ARRAY COIL
NOTES:	NOTES:	NOTES:	NOTES:	NOTES:
	Oral Contrast: 2 bottles VoLumen 1 hour prior to exam 1 cup water right before getting on table			

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PELVIS				
FETAL MRI	PELVIS - PLACENTA ACCRETA	FEMALE PELVIS - Pain, Fibroid, Endometriosis	CERVICAL CANCER STAGING	FEMALE PELVIS - UTERINE ANOMALY
Call Radiologist for ALL cases.	Call Radiologist for all cases. Moderately full maternal bladder required.	(NOT CANCER)	Suspected cervical cancer or with Smit sleeve	Muellerian duct anomaly
	3 PL BALANCED LOCALIZER - top of uterus to introitus			
Balanced 3 PLANE LOC (MOTHER)	T2 COR (HASTE)	T2 COR SSFSE- LG FOV TO INLUCE KIDNEY/URETERS	-	T2 COR SSFSE- LG FOV TO INLUCE KIDNEY/URETERS
T2 AX whole uterus	T2 AX	AX T2 FAT SAT- WHOLE PELVIS (~22FOV)	T2 COR SSFSE- LG FOV TO INLUCE KIDNEY/URETERS	T2 SAG - PELVIS (SIDEWALL TO SIDEWALL)
T1 AX FAT SAT whole uterus	T1 AX 2D IN/OUT PHASE	T1 AX IN/OUT PHASE WHOLE PELVIS	T2 AX FAT SAT- PELVIS -WIDE FOV	T2 AX - WHOLE PELVIS (~22FOV)
ORIENT TO BABY BRAIN	T1 AX FAT SAT	T2 SAG PELVIS		T2 COR - WHOLE PELVIS (~22FOV)
T2 AX (all cases)	T2 SAG	T2 SAG/OBL UTERUS (if different from above)	T2 SAG SMALL FOV - HIGH RES (2-4MM)	T1 AX FAT SAT
	Balanced SAG	T2 AX/OBL UTERUS SHORT AXIS SM FOV	T2 COR OBLIQUE (UT SHORT AXIS) SM FOV - HIGH RES 2-4MM	
HAVE IN EXAM CARD TO EVALUATE FETAL STRUCTURES: T2 AX/COR/SAG (HASTE)	<u>ORIENT TO UTERINE-BLADDER INTERFACE:</u>	T2 COR/OBL UTERUS LONG AXIS	T2 AX OBLIQUE (UT LONG AXIS) SM FOV - HIGH RES 2-4MM	T2 AX/OBL UTERUS - SHORT AXIS SM FOV
Balanced AX/COR/SAG	T2 SAG	T1 AX FAT SAT PRE (LAVA, VIBE) SM FOV	SM FOV AX DWI AX b=0, b=400, b=800, send ADC	T2 COR/OBL UTERUS - LONG AXIS SM FOV
T2 AX/COR/SAG FAT SAT	T2 AX FAT SAT	POST CONTRAST (recom)	SM FOV T1 AX FAT SAT PRE (LAVA, VIBE, DIXON)	
T1 AX/COR/SAG FAT SAT	Balanced AX	T1 AX FAT SAT POST (30SEC, 1 MIN, 3 MIN) SM FOV	POST CONTRAST (recom) 20cc's	No Contrast
DWI b=50, b=750, send ADC (FOV)	T2 AX	T1 SAG FAT SAT POST	SM FOV T1 AX FAT SAT POST (30 sec, 1 min, 3 min)	
	Balanced SAG	POST - T1 AX FAT SAT WHOLE PELVIS	T1 SAG FAT SAT POST	
		Subtraction imaging 30 sec, 1 min, 3 min)	WHOLE PELVIS T1 AX FAT SAT POST (LG FOV)	
			Subtraction imaging 30 sec, 1 min, 3 min)	
			4-6 hours fasting prior to exam to limit bowel persitalsis	
NO CONTRAST! Patient should sign consent form for MRI in pregnancy.				
NOTES:	NOTES:	NOTES:	NOTES:	NOTES:
			USE A 20CC SYRINGE FILLED WITH KY GEL IF CONCERN FOR CERVICAL CA. The patient is to squirt the gel into the vagina for better enhancement. Use respiratoy gating	

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PELVIS - Continued				
FEMALE PELVIS - Ovary/Adnexal mass	PROSTATE CANCER STAGING	TESTICULAR MASS/INFECTION	URETHRA	PERINANAL FISTULA
	Enema prep	Penis placed in anatomic position (up), scrotum elevated with towel if possible	(DIVERTICULUM)	Images centered on anus/perianal soft tissues
T2 COR SSFSE- LG FOV TO INLUCE KIDNEY/URETERS AX T2 FAT SAT - WHOLE PELVIS (~22FOV) T1 AX IN/OUT PHASE WHOLE PELVIS - T2 AX 3-4mm(sm FOV) T2 COR 3-4mm (sm FOV) T2 SAG 3-4mm (sm FOV) DWI AX b=0, b400, b=800, send ADC T1 SAG FAT SAT (LAVA, VIBE) T1 AX FAT SAT PRE (LAVA, VIBE) sm FOV POST CONTRAST (recom) (20cc's) T1 AX FAT SAT POST (30SEC, 1 MIN, 3 MIN) SM FOV T1 SAG FAT SAT POST, SM FOV WHOLE PELVIS T1 AX FAT SAT POST (LG FOV) Subtraction imaging 30 sec, 1 min, 3 min)	T1 AX FSE whole pelvis T2 AXIAL 3D whole pelvis STIR AX SM FOV AX DWI AX b=0, b400, b=800, send ADC T2 AXIAL SM FOV(20-22cm) HIGH RES 3mm T2 SAG SM FOV(20-22cm) HIGH RES 3mm T2 COR SM FOV(20-22cm) HIGH RES 3mm T1 AX FAT SAT PRE SM FOV POST CONTRAST T1 AX FAT SAT POST - 20 sec SM FOV T1 AX FAT SAT POST - 1 min SM FOV T1 AX FAT SAT POST - 3 min SM FOV T1 AX FAT SAT POST - 5 min whole pelvis T1 COR FAT SAT POST whole pelvis *40CC GADQ-Omniscan	T2 COR (iliac crests through perineum) T2 AX (small FOV) T2 SAG (small FOV) T2 COR (small FOV) T1 COR FAT SAT (small FOV) T1 SAG FAT SAT (small FOV) T1 AX FAT SAT (small FOV) POST CONTRAST (recomm) T1 AX FAT SAT POST (small FOV) T1 FAT SAT POST (COR and/or SAG) Comments: - All but initial sequence performed with coned-down field of view (FOV) centered on the scrotum. - Give Gadolinium only for infections or abscess, NOT for tumor workup (will not change the diagnosis).	T2 SSFSE COR - Max FOV LG FOV TO INLUCE KIDNEY/URETERS T2 AX 22 FOV T2 COR 20x22 FOV T2 SAG 20X22 FOV IN/OUT PHASE AX 20X22 FOV T1 AX FAT SAT 20X22 FOV Call rad to see if contrast is needed. IF SO, see below. T1 AX FAT SAT POST (30SEC, 1 MIN, 3 MIN) SM Subtraction imaging 30 sec, 1 min, 3 min)	T2 COR SSFSE- LG FOV TO INLUCE KIDNEY/URETERS T2 AX Whole pelvis T2 AX FAT SAT 22 FOV T2 COR FAT SAT 20x22 FOV T2 SAG FAT SAT 20X22 FOV T1 AX IN/OUT PHASE 20X22 FOV T1 AX FAT SAT PRE SM FOV CONTRAST T1 AX FAT SAT POST (30SEC, 1 MIN, 3 MIN) SM FOV T1 SAG FAT SAT POST, SM FOV T1 COR FAT SAT POST, SM FOV Subtraction imaging 30 sec, 1 min, 3 min)
NOTES: sm FOV: All of the internal pelvis	NOTES:	NOTES:	NOTES:	NOTES: