

PELVIS FEMALE GYN (see subtype)						
						These exams use the same protocol except that double oblique (angulation) imaging is done perpendicular to the tumor location / or body part if tumor is not seen (see illustrations)
						Tumors tend to be a light grey on T2W sequences. Look at history provided if you can't see the tumor and scan relative to the body part (like vagina, cervix, endometrium)
						if cervix cancer then double oblique images are done with attention to cervix but if endometrial cancer then with attention to the endometrium
<p>Figure 2. The double oblique technique. Illustration shows a uterus that is anteriorly tilted in the sagittal plane (anterovent) and laterally tilted to the left in the coronal plane. The double oblique sequence is performed by angling images anteriorly in the sagittal plane (green line) and laterally in the coronal plane (blue line), which creates true oblique images along the true axis of the uterus (orange line). A = anterior, P = posterior.</p>		<p>Rheumatoid representation of specific MR techniques: Axial of the uterus Axial of the cervix Coronal of the uterus or axial of the cervix Sagittal of the uterus Axial of the vagina</p>	<p>Stage IB2 cervical adenocarcinoma in a 48-year-old woman with radical hysterectomy (A) T2-weighted axial MR images show a 5 cm well defined exophytic mass (star) mainly involving right posterior exocervix with no disruption of peripheral rim. The maximum diameter of the lesion is measured. Scan (arrowhead) on the T2-weighted sagittal image. At histopathological finding, bilateral parametrial lesion was found. MRI stage T1b (> 4 cm) was underdiagnosed as final pathologic stage T2b.</p>			
GYNECOLOGIC CANCER		Scan number	Best done without and WITH IV CONTRAST			
Includes: Endometrial, cervix and vaginal cancer						
Patient Prep:						Fast for at least 4 hours and empty bladder/ rectum about 1 hour before examination (so bladder is part full).
Patient Prep:						Use 40 mL of warmed Vaginal ultrasound gel or KY jelly
Patient Prep:						Air in rectum may interfere with exam. If full of air have patient empty.
Technical note:						Scan perpendicular to the tumor site (or body part of the study such as cervix, endometrium or vaginal if tumor is not seen) using double oblique imaging
Technical note:						small FOV images (above)- see diagram. These oblique images are used for scans 5, 6, 7, 8, 9
Technical note:						The color indicators (yellow and blue scans) which use the same imaging FOV and planes for each color
Technical note:						use ANTERIOR SAT BAND when possible for imaging below if phase is AP; use phase AP in most situations; if artifacts might need to swap phase direction
LOC (3 planes)		1				
Large FOV Cor (to body) T2 (>3000/90 to 102 ms)		2	40 (30 to 50) cm	8 (6 to 10) mm	2 mm	Large FOV to include entire pelvis and all of the kidneys matrix =256 x 192 to 256; use fast FSE like RESTORE, FRFSE, DRIVE, DE FSE
Small FOV ObI SAG T2 no Fat Sat (>3000/90 to 102 ms)		3	22(18 to 28) cm	3 to 4 mm	0.3 to 0.4 mm	Smaller sized images are fit to patient from inside of one hip to the other (small FOV); ETL = 17 (13 to 21); NEX = 2; Freq A-P to avoid bowel motion ghosting into uterus whole pelvis
Small FOV ObI COR to tumor site T2 no Fat Sat (>3000/90 to 102 ms)		4	22(18 to 28) cm	3 to 4 mm	0.3 to 0.4 mm	small dedicated to region of tumor (COR long axis tumor site) - i.e. double oblique (double angulation) set of images
Small FOV ObI AX to tumor site T2 no Fat Sat (>3000/90 to 102 ms)		5	22(18 to 28) cm	3 to 4 mm	0.3 to 0.4 mm	small dedicated to region of (AX to long axis of tumor) i.e. double oblique (double angulation) set of images
Small FOV AX to tumor site DWI (same as immediately above)		6	22(18 to 28) cm	3 to 4 mm	0.3 mm	b= 50, 1000
Create ADC from data above		6 (create ADC map)				
Small FOV ObI AX GE T1 to tumor site (like scan 5) (NO Fat Sat 3D GRE T1*)		7	22 (18 to 28) cm	3 to 4 mm	0.3 to 0.4 mm	Nex =1 at 0 (pre contrast) scan top L5 thru entire pelvis. DCE*= dynamic contrast enhancement
AX (to body) (NO Fat Sat dual echo GRE T1)		8	28 cm (20 to 44 cm)	3 (2 to 4) mm		These are very important (both T1 without Fat Sat then with Fat Sat) if looking for endometriosis/ adnexal mass, repeat if degraded by motion or other)
same as scan above 7 GRE T1 with FAT SAT AX (to body)		9	28 cm (20 to 44 cm)	3 (2 to 4) mm		
Small FOV ObI SAG (Sag to tumor/ body part) DCE (Fat Sat, 3D GRE T1*)		10	22 (18 to 28) cm	3 to 4 mm	0.3 to 0.4 mm	Nex =1 at 0 (pre contrast) then 25, 60, 100, 140, 180, 240 seconds (and make subtraction of each of these from non contrasted exam)
make subtractions (all post & pre contrast scans)		10 (make subtractions)	22 (18 to 28) cm	3 to 4 mm	0.3 to 0.4 mm	or alternatively do if available on scanner 3d of 5 sec per phase with 36 phases
OBL AX +C (like scan 5) Fat Sat GRE T1		11	22 (18 to 28) cm	3 to 4 mm	0.3 to 0.4 mm	Nex = 2
optional Large FOV COR delayed post c+ (Fat Sat, 3D GRE T1*)		12	40 (30 to 50) cm	10 mm	1 to 2 mm	From mid kidneys through upper thigh (include all pelvis and lower Abd); perform if time permits for imaging slot
UTERINE FIBROIDS / LEIOMYOMA		Scan #	Done without and WITH IV CONTRAST			
Patient Prep:						Fast for at least 4 hours and empty bladder/ rectum about 1 hour before examination (so bladder is part full).
Patient Prep:						NOT needed (vaginal gel or KY jelly)
Patient Prep:						Air in rectum may interfere with exam. If full of air have patient empty.
Technical note:						Imaging FOV should include all of uterus and all fibroids/ masses; (may need to increase or decrease FOV)
Technical note:						use ANTERIOR SAT BAND when possible for imaging below if phase AP; use phase AP in most situations; if artifacts might need to swap phase direction
LOC: (3 planes)		1		any		
						Smaller or larger FOV images are fit to patient and all pelvic organs
Small FOV SAG T2 no Fat Sat (>3000/90 to 120 ms)		2	28 cm (20 to 44 cm)	4 to 5 mm	0.4 to 0.5 mm	from inside of one hip to the other (small FOV); ETL = 17 (13 to 21); NEX = 2 Matrix at least 256 x 256
Small FOV AX (to endometrium) T2 no Fat Sat (>3000/90 to 120 ms)		3	28 cm (20 to 44 cm)	4 to 5 mm	0.4 to 0.5 mm	small dedicated to region of mass (AX to long axis of cervix) i.e. double oblique set of images
Small FOV AX DWI (same FOV and plane as immediately above for scan 3)		4	28 cm (20 to 44 cm)	4 to 5 mm	0.4 to 0.5 mm	b= 50, 1000
Create ADC from data above		4 (create ADC map)				
AX (to endometrium or uterus, same FOV and plane as scan 3,4) (NO Fat Sat 3D GRE T1*)		5	28 cm (20 to 44 cm)	4 to 5 mm		Nex =2 at 0 (pre contrast) The scans 11 and 12 should be the same except for no FS (FAT SAT) and FS
DCE (pre contrast then dynamic post) SAG +C Fat Sat GRE T1		6	28 cm (20 to 44 cm)	4 to 5 mm	0.4 to 0.5 mm	Nex =1 at 0 (pre contrast) then 25, 60, 100, 140, 180 seconds (and make subtraction of each of these from non contrasted exam)
make subtraction		6 (make subtractions)				make subtraction of ALL post contrast scans - pre contrast scan
AX (to endometrium/ uterus) (with Fat Sat otherwise same as scan 3,4 and 5, 3D GRE T1*)		7	28 cm (20 to 44 cm)	4 to 5 mm		
FEMALE UTERINE CONGENITAL ABNORMALITIES		NO IV contrast needed for this type of scan				
Patient Prep:						Fast for at least 4 hours and empty bladder/ rectum about 1 hour before examination (so bladder is part full).
Patient Prep:						NOT NEEDED: use no Vaginal ultrasound gel or KY jelly
Patient Prep:						Air in rectum may interfere with exam. If full of air have patient empty.
Technical note:						use ANTERIOR SAT BAND when possible for imaging below if phase AP; use phase AP in most situations; if artifacts might need to swap phase direction
LOC: (3 planes)		1	40 cm	any		
Large FOV Cor (to body) T2 no Fat Sat (>3000/90 to 102 ms)		2	40 to 50 cm	8 (6 to 10) mm	2 mm	Large FOV to include entire pelvis and all of the kidneys matrix =256 x 192 to 256; use fast FSE like RESTORE, FRFSE, DRIVE, DE FSE
Small FOV ObI SAG no Fat Sat T2 (>3000/90 to 102 ms)		3	20(18 to 24) cm	4 to 5 mm	0.4 to 0.5 mm	Small FOV images are designed to "fit" to patient and are as small as reasonably possible
Small FOV ObI COR to Endometrium no Fat Sat T2 (>3000/90 to 102 ms)		4	20(18 to 24) cm	4 to 5 mm	0.4 to 0.5 mm	small FOV (COR long axis of Endometrium) - i.e. double oblique set of images THIS is the MOST IMPORTANT sequence repeat if blurred
Small FOV ObI AX to Endometrium no Fat Sat T2 (>3000/90 to 102 ms)		5	20(18 to 24) cm	4 to 5 mm	0.4 to 0.5 mm	small FOV (AX to long axis of Endometrium) i.e. double oblique set of images
NO FAT SAT - AX to body (NO Fat Sat dual echo GRE T1)		6	28 cm (20 to 44 cm)	4 to 5 mm	0.4 to 0.5 mm	Nex =2
with FAT SAT AX to body same as scan 7 but with FS (w Fat Sat, GRE (dual echo) T1)		7	28 cm (20 to 44 cm)	4 to 5 mm	0.4 to 0.5 mm	Nex =2

