

## General Updates for March 2024

- Add T2 sagittal to renal protocol (some sites already doing this)
- Add NON fat sat axial T2 (not FIESTA) to enterography protocol (some sites already doing this)
- Please send subtractions

## Protocols

- [Abdomen/Pelvis](#)
- [Abdomen- Liver](#)
  - Post-treatment
  - Cholangiocarcinoma
  - Eovist
- [Abdomen- Pancreas](#)
- [Abdomen- Adrenals](#)
- [Abdomen- Kidneys](#)
- [Abdomen- Appendicitis \(pregnancy\)](#)
- [MRCP](#)
- [Abdomen + MRCP](#)
- [Abdomen without contrast](#)
- [Enterography](#)
- [Pelvis-Rectum](#)
- [Pelvis- Anal fistula](#)
- [Prostate](#)
- [Pelvis- Penile or Scrotum/testicles](#)
- [Pelvis- Routine](#)
- [Pelvis- Fibroids or Uterine Anomaly](#)
- [Pelvis- Cervical, vaginal, endometrial cancer](#)
- [Pelvic congestion](#)
- [Pelvis- Urethra \(diverticulum\)](#)
- [MR Urography](#)
- [MRAs](#)
- [Chest](#)
- [Chest MRA](#)
- [Chest/Abdomen/Pelvis](#)

## **ABDOMEN + PELVIS COMBO**

Coronal HASTE/SSFSE large FOV for both abdomen and pelvis (do not include chest)

Axial HASTE/SSFSE	BOTH abdomen and pelvis
Axial HASTE/SSFSE FS	BOTH abdomen and pelvis
Axial DIFFUSION/ADC (must go to B1000)	BOTH Abdomen and Pelvis
Axial IN/OUT PHASE BH	ABDOMEN ONLY
Sagittal T2 FSE *	PELVIS ONLY
Axial T1 VIBE FS PRE BH	BOTH abdomen and pelvis

### **Contrast**

ABDOMEN ONLY axial T1 VIBE FS arterial 20 sec

ABDOMEN ONLY axial T1 VIBE FS venous 40 sec

ABDOMEN ONLY axial T1 VIBE FS venous 70 sec

ABDOMEN ONLY axial T1 VIBE FS 3 min delay

PELVIS ONLY axial T1 VIBE FS delay following abdomen ~4min

ABDOMEN + PELVIS COMBINED Coronal T1 VIBE FS ~5 min delay

\*this sagittal T2 sequence ONLY needs to be performed if there is a specific indication (female pelvic pain).

## **ABDOMEN- LIVER**

Coronal SSFSE BH

Axial SSFSE

Axial SSFSE FS

Axial diffusion

Axial in/out

Axial LAVA FS pre

Axial LAVA FS 20/40/70

Axial LAVA FS 3 min delay

Axial LAVA FS 5 min delay

### **Special Situations**

#### **\*HCC/Liver Treatment**

Coronal LAVA FS delay

-axial subtractions

#### **\*Cholangiocarcinoma**

Axial LAVA FS 20 minute delay

#### **\*Eovist**

Axial LAVA FS 20 min delay

## **ABDOMEN- Pancreas**

Coronal SSFSE BH

Axial SSFSE

Axial SSFSE FS

Coronal FIESTA FS

Axial diffusion

Axial in/out

Axial LAVA FS pre

Axial LAVA FS 20/40/70

Axial LAVA FS 3 min delay

## **ABDOMEN- Adrenals**

Coronal SSFSE BH

Axial SSFSE

Axial SSFSE FS

Axial in/out

Coronal in/out

Axial LAVA FS pre  
diffusion/ADC

**If contrast needed (per order or by radiologist- pheochromocytoma)**

Axial LAVA FS 20/40/70

Coronal LAVA FS 3 min delay

## **ABDOMEN- Kidneys**

Coronal SSFSE BH

Sagittal SSFSE/HASTE

Axial SSFSE

Axial SSFSE FS

Axial diffusion

Axial in/out

Axial LAVA FS pre

Axial LAVA FS 20/40/70

Axial LAVA FS 3 min delay

Coronal LAVA FS 4 minute delay

**ABDOMEN- Appendix (appendicitis in pregnancy)**

Coronal SSFSE BH

Axial SSFSE

Axial SSFSE FS

Sagittal SSFSE

**Call rad to localize appendix/cecum and then do smaller FOV of that area**

Axial T2 FS

Coronal T2 SSFSE FS

Axial FIESTA

Axial in/out phase

## **MRCP**

Coronal SSFSE

Axial SSFSE

Axial diffusion

Coronal FIESTA FS

Axial in/out

Axial LAVA pre FS

Coronal T2 FS 3D MRCP

Coronal T2 FS Radial

Coronal SSFSE FS thin

Axial SSFSE FS thin



## **ABDOMEN + MRCP**

Coronal SSFSE BH

Axial SSFSE

Axial SSFSE FS

Axial diffusion

Axial in/out

Axial LAVA pre

Axial LAVA 20/40/70

Axial LAVA 3 min delay

Axial LAVA 5 min delay

Coronal FIESTA FS

Coronal T2 FS 3D MRCP

Coronal T2 FS Radial

Coronal SSFSE FS thin

## **ABDOMEN- WITHOUT**

Coronal SSFSE BH

Axial SSFSE

Axial SSFSE FS

Axial diffusion

Axial in/out

Axial LAVA FS pre

## **Enterography**

Coronal cine

Coronal SSFSE BH

Coronal FIESTA

Axial SSFSE FS

Axial T2 HASTE (NO fat sat)

Axial FIESTA

Axial diffusion

Axial LAVA pre

Coronal LAVA pre

Coronal LAVA post

Axial LAVA post

Coronal LAVA 1 min delay

Axial LAVA 1 min delay

Coronal LAVA 2 min delay

Axial LAVA 1 min delay

## **RECTUM STAGING MRI**

Sagittal T2 HASTE/SSFSE to find tumor site. CALL RADIOLOGIST TO CONFIRM SITE AND DETERMINE SCAN PLANE ANGLED TO LOCATION OF MASS.

LARGE FOV PELVIS T2 HASTE

LARGE FOV PELVIS T1

SMALL FOV ANGLED TO THE LOCATION OF THE MASS : 3mm or thinner/ no gap,  
12-20cm to cover the rectum segment of concern

Axial, Sagittal, Coronal T2 FSE (NO FAT SAT!) VS. 3D T2 MPR thin reconstructed in  
axial, sagittal, coronal if scanner capable

Diffusion to B1000, ADC

Axial VIBE FS

Axial, sagittal, coronal VIBE FS GAD

LARGE FOV pelvis Axial VIBE FS GAD delay

## **ANAL FISTULA MR**

SMALL FOV LOWER RECTUM THROUGH LOW BUTTOCK SKIN ANGLED TO PLANE OF ANAL CANAL FOR ALL: 3mm / no gap, 12-20cm, CALL RADIOLOGIST IF QUESTION ABOUT COVERAGE/FISTULA LOCATION

Axial and Coronal T2 FSE

Axial and Sagittal STIR

Axial T1

Axial T1 VIBE FS

Axial, Sagittal, and Coronal T1 VIBE FS GAD

## **PROSTATE MRI**

LARGE FOV pelvis T1

SMALL FOV SEQUENCES (TRUE AXIAL): 3 mm or thinner/ no gap, 12-20cm to cover entire prostate and seminal vesicles

Axial, Sagittal, Coronal T2 FSE (NO FAT SAT!)

Diffusion to at least B1500

ADC map

Axial VIBE FS

Axial VIBE FS GAD dynamic (immediate scanning at injection, ~7sec/acquisition, for 2 min)

## **PENILE OR TESTICLE/SCROTUM MRI**

POSITIONING: Patient supine w/ towel between upper thighs to elevate scrotum. Dorsiflexed penis placed vertically against midline anterior abdominal wall & taped to prevent motion. Scan plane angled to position of the penis. Image penis through scrotum. 3/5 in. surface coil

Axial, sagittal, coronal T2 FSE in plane of penis

Axial T1

Axial T2 HASTE FS

DWI to B1000, ADC

Axial T1 VIBE FS

Axial, Sag T1 VIBE FS GAD

Axial T1 IN/OUT of phase

If history is TRAUMA then add:

Sagittal T2 FS

## **Routine pelvis (male or female)**

coronal T2 HASTE

axial T2 HASTE

axial T2 HASTE FS

axial T1 TSE

axial diffusion

axial T2 TSE

sagittal T2 TSE

coronal T2 TSE

axial VIBE FS pre

axial VIBE FS post

coronal VIBE FS post

sag VIBE FS post



## **Pelvis – fibroids**

Sag T2 TSE

Axial T2 TSE- oblique to uterus

Coronal T2 TSE- oblique to uterus

Axial T2 HASTE

Axial T2 HASTE FS

Axial T1 TSE

Axial diffusion

Axial VIBE FS pre

Sagittal VIBE FS post – 15 seconds, 1 min, 2 min

Coronal VIBE FS post

Axial VIBE FS post

## **Pelvis- Cervical, Vaginal, Endometrial Cancer**

Vaginal gel for cervical/vaginal cancer

Sagittal T2 HASTE/SSFSE to find site of interest (cervix, vagina, endometrium).  
Angle scan plan to the specific area/mass. Please call radiologist if any questions.

LARGE FOV PELVIS T2 HASTE

LARGE FOV PELVIS T1

SMALL FOV ANGLED TO THE LOCATION OF THE MASS : 3mm or thinner/ no gap,  
cover area of concern

Axial, Sagittal, Coronal T2 FSE (NO FAT SAT!)

Diffusion/ADC

Axial VIBE Fat sat precontrast

Axial, sagittal, coronal VIBE FS GAD

LARGE FOV pelvis Axial VIBE FS GAD delay

## **Pelvic Congestion**

Pelvic Congestion:1.5T

-coverage: abdomen (above renal vessels + pelvis combined)

Sag HASTE

Cor HASTE

Ax HASTE

Ax TRUFI

Sag TRUFI

Ax VIBE FS

Ax TOF 2D Pelvis

COR TWISTttf (start scan at same time as injection, every 6 seconds for 2 minutes-  
full venous phase)

Ax VIBE FS 3 min Delay

**Urethra:**

Large FOV T2 HASTE Pelvis

14cm FOV 3mm, 0 gap: Axial, Sagittal, Coronal T2 FSE

Axial T1 VIBE pre

Axial, Sagittal, Coronal T1 VIBE post gad

Axial diffusion

## **MR Urography**

-vigorous oral prehydration

3 plane localizer abdomen/pelvis

Coronal SSFSE abdomen/pelvis

Axial T1 A/P

Axial RT FS FSE T2 A/P

Axial 3D FS GRE precontrast ABDOMEN

Axial and coronal 3D FS GRE postcon ABDOMEN (20 seconds, 45s, 5 min)

Axial postcon pelvis (5 min delay)

Opposed phase axial abdomen

Axial abdomen post-processed

Axial diffusion abdomen

Coronal 3D Nav (MRCP type) kidneys and ureters

## **Noncontrast fast for obstruction**

Axial T1 A/P

Axial SSFSE A/P

Coronal 3D Nav (MRCP type) kidneys and ureters

## **MRA**

### 1. Renal MRA

Axial and Coronal HASTE

Axial and Coronal TRUFI

Coronal 3D MRA FS Post Con (arterial)

Axial VIBE FS post con

Additional MRV Sequence: 3 mins post con Coronal 3D MRA

### 2. Mesenteric MRA

Axial and Coronal HASTE

Axial and Coronal TRUFI

Sagittal 3D MRA Post Con (arterial)

Axial VIBE FS post con

Additional MRV Sequence: 3 mins post con Sagittal 3D MRA

### 3. AAA MRA

Axial and coronal HASTE

Axial and coronal TRUFI

Coronal 3D MRA FS post con (arterial)

Axial VIBE FS post con

Coronal 3D MRA FS (3 minutes post)

## **Chest**

### **Chest MRA**

Axial and Coronal HASTE

Axial and Coronal TRUFI

Oblique Sagittal 3D MRA Post Con. "Candy Cane Aorta" plane. Obliqued to the direction of the aorta arch.

Axial VIBE FS post con

Additional MRV Sequence: 90 seconds post con Coronal 3D MRA

### **Chest MR**

Axial and Coronal HASTE

Axial and Coronal TRUFI

Axial T1 VIBE Precontrast

Axial T1 in and out of phase

Axial Diffusion

Oblique Sagittal "Candy Cane" 3D MRA

Axial Postcontrast T1 VIBE

**Chest/Abdomen/Pelvis**

Coronal SSFSE- chest

Coronal SSFSE- A/P

Axial SSFSE- CAP

Axial SSFSE FS- CAP

Axial diffusion- abdomen

Axial in/out- chest/abd

Axial LAVA FS pre- CAP

Axial LAVA FS 20/40/70- abdomen

Axial LAVA FS chest

Axial LAVA FS 3 min delay- abdomen

Axial LAVA FS delay- pelvis

Axial FIESTA if non-con