

Ovarian or Adnexal Mass

MRI Pelvis WO and With Contrast

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Standard uses: Evaluate ovarian and adnexal lesions (masses, large or complex cysts, etc.), endometriosis (may be listed as “deep pelvic endometriosis”, “bowel endometriosis”, “endometriotic implants”)

Patient prep:

- (1) NPO for at least 4 hours prior to study
- (2) Void before examination

Oral contrast: None.

Coil: Phase array body coil.

Coverage: Position the coil such that there is good coverage and signal from the ovaries and uterus. Increase FOV as needed for very large masses to ensure entire mass is imaged.

NOTE: *If mass is very large, please call radiologist at time of imaging to ensure FOV is adequate*

Intravenous contrast: Single dose gadolinium @ 2 cc / sec (Gadavist, MultiHance if Gadavist unavailable).

Anti-peristaltic agent: None.

Note #1: No special planes required – *orthogonal* (to the magnet) planes are sufficient for evaluating ovarian and adnexal masses.

Note #2: This protocol should be used for “endometriosis” evaluation. Do not use Uterus/Endometrium protocol.

- When this is the indication, please perform the SINGLE ADDED T1 FS pre-contrast sequence in the SAGITTAL PLANE (see #9d – *special note*)

SUMMARY:

1. Localizer
2. Coronal T2 non-FS Ultra fast SE (large FOV)
3. Axial T1 GRE in/out
4. Sagittal T2 TSE non-FS
5. Axial T2 Ultra fast SE non-FS (large FOV)
6. Axial T2 TSE non-FS (small FOV)
7. Axial T2 TSE FS (small FOV)
8. Coronal T2 TSE non-FS (small FOV)
9. Axial T1 pre-contrast FS (+ Sagittal T1 pre-contrast FS if indication is “endometriosis”)
- 10-11-12. Axial + Coronal + Sagittal T1 post-contrast FS
13. Axial DWI + ADC Map
14. Subtractions (3 axial; unless indication is “endometriosis”, then 4 total = 3 axial + 1 sagittal)

1. Localizer

- a. Breath hold

2. Coronal T2 Ultra fast SE (HASTE, SSFSE, FASE)

- a. Breath hold, concatenation/multi-breath hold is less desirable than single breath hold
- b. FOV: Complete front to back coverage (skin to skin)
 - i. CC: Include lower poles of kidneys if possible
- c. Goal parameters
 - i. **Large FOV (400-450 mm)**
 - ii. 7 mm thickness, 25% gap (1.5 mm)

3. Axial in and out of phase T1 GRE

- a. Large FOV = Superior iliac crest to perineum
- b. Goal parameters
 - i. Slice thickness 4 mm
 - ii. In plane acquired resolution <1 mm
 - iii. Number of averages >= 2

4. Sagittal T2 fast SE (Turbo SE, Fast SE)

- a. FOV = Cover all pelvic organs and each pelvic sidewall
 - i. CC: Extend above uterus/sacral promontory to below perineum
 - ii. Trans: At least extending into each femoral head
- b. Goal parameters
 - i. Slice thickness 3 mm
 - ii. In plane acquired resolution <1 mm
 - iii. Number of averages >= 2

5. Axial T2 Ultra fast SE (HASTE, SSFSE, FASE)

- a. Large FOV = Superior iliac crest to perineum
 - i. Ensure this is coned down to the body (covering skin to skin)
 - ii. Over-sample as needed for wrap/aliasing
 - iii. If mass is very large, please call radiologist at time of imaging to ensure FOV is adequate
- b. Goal parameters
 - i. Slice thickness 4-4.5 mm

- ii. In plane acquired resolution <1 mm
- iii. Number of averages >= 2

6. Axial T2 fast SE (Turbo SE, Fast SE) small FOV

- a. FOV: small, to cover both adnexa
 - i. But not image structures outside of adnexa
 - ii. Call radiologist for guidance, as needed
- b. Goal parameters
 - i. Total: 20 slices
 - ii. Slice thickness: >3mm & <8mm
 - 1. Adjust to cover entirety of both adnexa
 - 2. Increase slices if masses > 20 cm
 - iii. In plane acquired resolution ~ 1 mm
 - iv. Number of averages: 2
 - v. Gap: 20%

7. Axial T2 fast SE with fat suppression (Turbo SE, Fast SE) small FOV

- a. FOV: as above, #6
- b. Goal parameters: as above #6

8. Coronal T2 fast SE (Turbo SE, Fast SE) small FOV

- a. FOV: as above, #6
- b. Goal parameters
 - i. Slice thickness 3 mm
 - ii. In plan acquired resolution ~ 1mm
 - iii. Number of averages: 2

9. Axial (*unless indication is “endometriosis”, then add Sagittal pre-contrast) PRECONTRAST T1 Ultra fast 3D-GE with fat suppression (VIBE, LAVA, TIGRE) – 1 PLANE (or 2 planes if “endometriosis”)

- a. Breath hold
- b. FOV: Superior iliac crest through the pubic symphysis
- c. Goal parameters
 - i. Slab slices <= 3 mm
- d. *Special NOTE:* If indication is “ENDOMETRIOSIS”, please add:
 - i. **Sagittal PRECONTRAST T1 Ultra fast 3D-GE with fat suppression (VIBE, LAVA, TIGRE) – added plane**
 - 1. FOV: Cover pelvic organs, extending into each femoral head

10. & 11. & 12. Axial + Coronal + Sagittal

POSTCONTRAST Dynamic 3D-GE with fat suppression (T1 VIBE, LAVA, TIGRE) – 3 PLANES

- a. Breath holds
- b. Planes
 - i. Axial: Superior iliac crests to below pubic symphysis
 - ii. Coronal: Cover front to back (skin to skin), including at least from uterus/sacral promontory to perineum (*higher coverage and/or added sequences if mass extends outside of the pelvis*)
 - iii. Sagittal: Cover pelvic organs, extending into each femoral head

c. Goal parameters

- i. Slab slices \leq 3 mm
- ii. TIMING = Fixed scan delay (time from beginning injection until center of k-space)
- iii. Axial: 35s, 1 min, 3 min
- iv. Coronal: 2 min
- v. Sagittal: 4 min
- vi. Subtraction series are required for all pelvis examination

13. Axial DWI/ADC

- a. Free breathing
- b. FOV: Superior iliac crest to perineum
- c. Goal parameters = 50/400/800 and ADC map

14. Subtraction series: 3 total (axial)

- a. Unless, endometriosis, then 4 total (3 axial + 1 sagittal)

Radiologist's perspective:

MRI is the preferred modality to evaluate the female pelvis due to superior soft tissue contrast resolution (compared to US and CT) and ability to perform dynamic contrast enhancement. US is generally used for initial evaluation; it can help further characterize incidental lesions seen on CT.

MRI is reserved for pathology that remains indeterminate on US, for large ovarian cysts (>7 cm in premenopausal females and >3 cm in post-menopausal females), and for complex ovarian/adnexal masses (e.g. with septations or solid components).

Subtraction sequences are important to better delineate true enhancement from intrinsic T1 hyperintensity (i.e., hemorrhage, fat).

Please direct any questions or concerns to any of the body radiologists.