Al-Mustaqbal University
College of Health and Medical Technologies
Radiological Techniques Department

Magnetic Resonance Imaging

First Semester

Lecture 23 : MRI of female pelvis

By

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Introduction :

Learning about male female is essential for Radiological Technologist

1- perform MRI exams effectively,

2- interpret MRI results accurately,

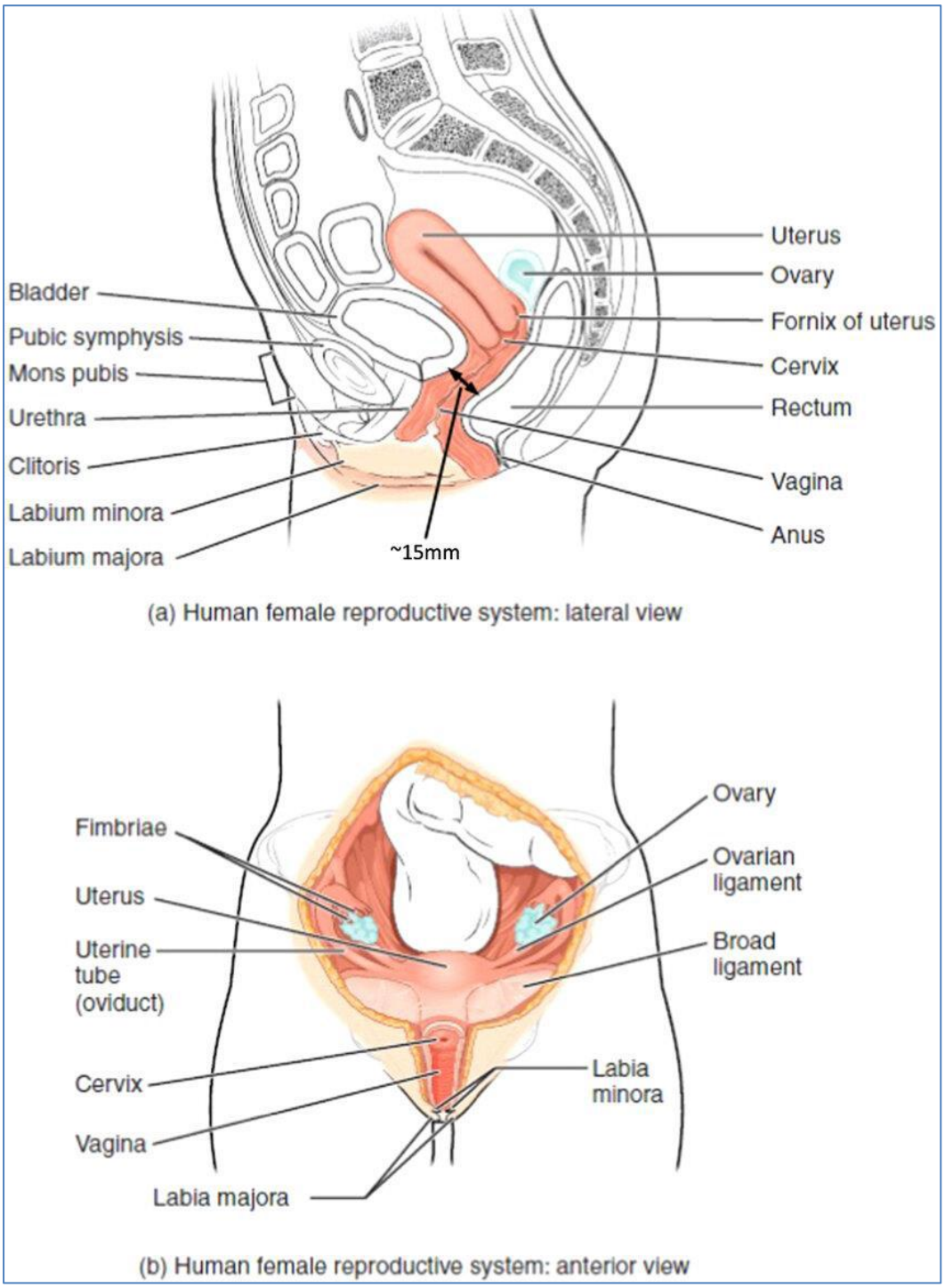
3- ensure patient safety,

4- understand anatomy and pathology, and

5- collaborate with other healthcare professionals.

•Anatomical overview:

-Female pelvis: The female pelvic area includes the fallopian tubes, ovaries, uterus, cervix, bladder, urethra, pelvic floor muscles, clitoris, vagina, and rectum. (fig-1)



(Fig.1) Female pelvic region

- Indications: -

1- Assessment of congenital abnormalities of the urogenital tract.

MR Urography:

Use: Visualizes the urinary tract, including the kidneys, ureters, and bladder, and helps identify conditions like **hydronephrosis or urinary tract obstruction.**

2- Diagnosis and staging of carcinoma of the cervix.

3- Diagnosis of carcinoma of the uterus.

4- Assessment of benign uterine tumors, e.g.: Leiomyoma and fibroids.

5- Evaluation of sacral lesions.

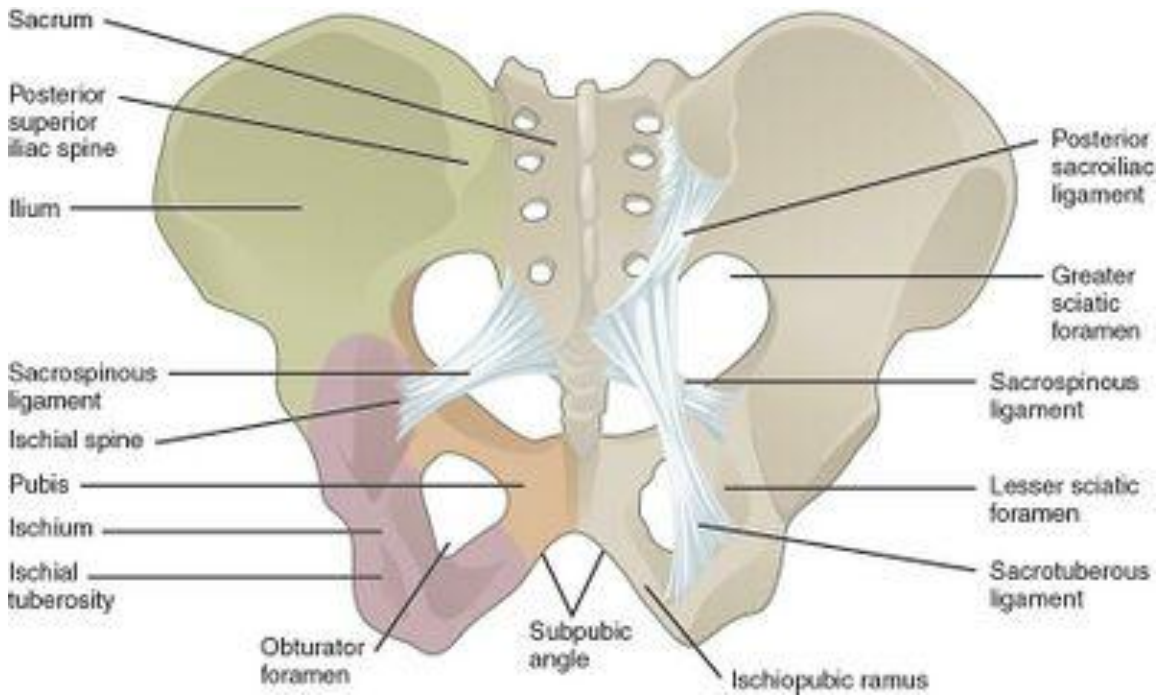
1. Fertility Assessment: MRI can assess **the uterine cavity and fallopian tubes** to evaluate factors that may impact fertility.
2. Gynecological Conditions: MRI is commonly used to evaluate and stage gynecological conditions such as **uterine fibroids, ovarian cysts, endometriosis, and adenomyosis.**

Lesion Type	T1 Appearance	T2 Appearance
Congenital Abnormalities of Urogenital Tract	Iso- to hypointense	Hyperintense
Carcinoma of the Cervix	Hypointense	Hyperintense
Carcinoma of the Uterus	Hypointense	Hyperintense
Benign Uterine Tumors (Leiomyoma/Fibroids)	Hypointense/Isointense	Hyperintense
Sacral Lesions	Hypointense (variable)	Hyperintense

-MRI procedure (female pelvis-uterus) :

- Patient position:

1- Position the patient supine, feet first with coil covering iliac crest to proximal femurs.
2- the Set-up the pelvic array coil.
3- Place hands on the chest or at the patient's side.



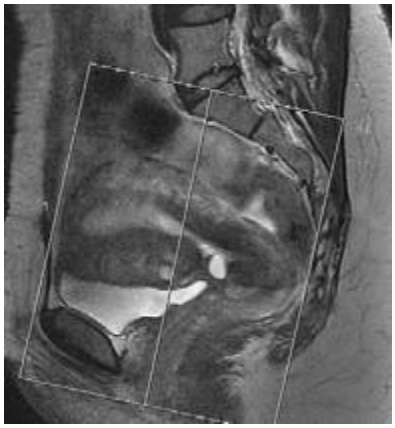
•Scout slice placement: -

1-Coronal localizer to obtain sagittal slices.

- **Slice Acquisition:** **Left to right.**
- **Slice Alignment:** **Straight sagittal, no angulation.**
- **Anatomic Coverage:**

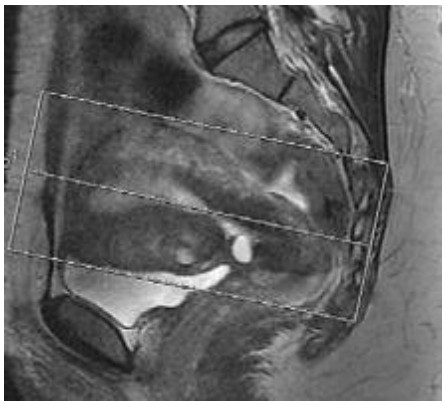
Left to right acetabulum, ASIS "Anterior superior iliac spine" to obturator foramen.

2-Sagittal localizer to obtain coronal slice



-Slice Acquisition: Anterior to posterior.
- Slice Alignment: Perpendicular to the long axis of the uterus.
-Anatomical Coverage: Pubis to anterior coccyx, to include the cervix and vagina.

3-Sagittal localizer to obtain axial slice:



-Slice Acquisition: Superior to inferior.
-Slice Alignment: Parallel to long axis of uterus.
-Anatomic Coverage: Superior to inferior margins covering long axis of the uterus.

MRI sequences:

Sequence	TR	TE	FA	ETL	Slice thickness
Sagittal (FSE) T2	5000	102	-	12	5mm
Axial (FSE) T2	4500	80	-	21	8mm
Axial (SE) T1	675	Min	-	-	8mm
Coronal (FSE) T2	4650	80	-	21	5mm
Coronal (FSE) (IR)	4775	50	-	6	5mm/TI=150
Coronal (FSE) T2 (fat sat)	5000	102	-	10	4mm

1- T1-Weighted Imaging:

Use: Provides detailed anatomical information and helps visualize the structures within the female pelvis, including **the uterus, ovaries, bladder, and rectum.**

2- T2-Weighted Imaging:

Use: Highlights differences in tissue water content and is valuable for assessing soft tissues within the pelvis, including **the pelvic organs, muscles, and ligaments.**

The choice of MRI sequences and parameters may vary depending on the clinical indication and the specific pelvic condition being evaluated.