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

Magnetic Resonance Imaging

First Semester

Lecture 22 : MRI of male pelvis

By

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Introduction :

Learning about male pelvis 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:

The term pelvis, meaning **"basin"** describes the **irregularly shaped opening created by the two hip bones, the sacrum and the coccyx.** The pelvis is inferior most part of the trunk**, it supports the urinary and reproductive organs.**

-Male pelvis: In comparison to the female pelvis, the male pelvis is narrower. (Fig-1-) The lesser pelvis in males contains:

A- Distal parts of the urinary and digestive systems: ureter, urinary bladder, urethra and rectum.

B- Internal genitalia: testes, epididymides, ductus deferens, seminal glands, ejaculatory ducts, prostate, and bulbourethral glands.

C- External genitalia within the perineum. The perineum is the part of the pelvis which contains **the external genitalia and anus.**

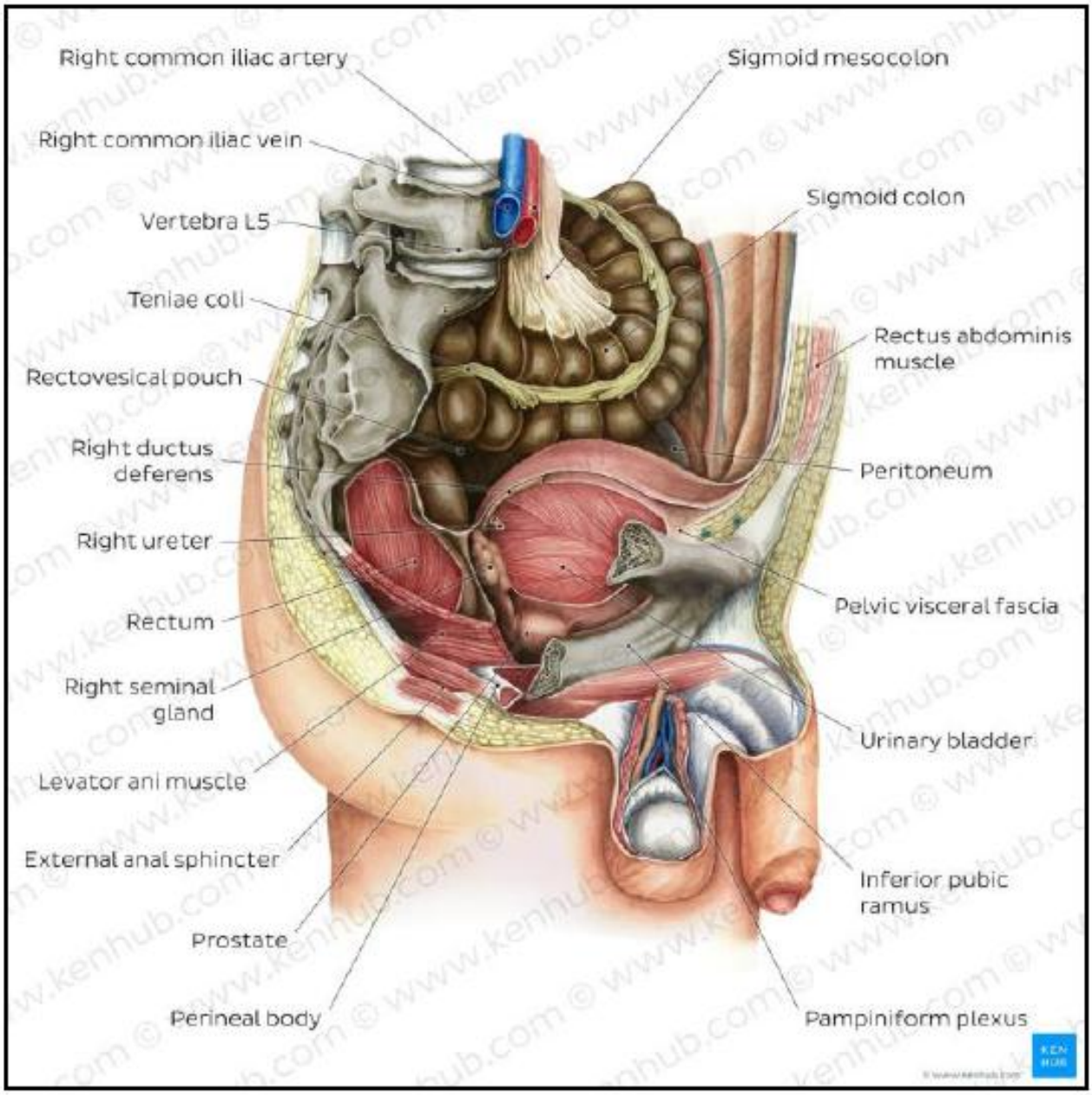


Fig.1: Male pelvis

- **The MRI pelvis protocol** encompasses a set of MRI sequences for the routine assessment of the pelvis.

-Indications of male pelvis MRI: -

1-Palpable mass on digital examination.

2-Prostate cancer for staging or radiotherapy/ surgical workup.

3-Cancer.

4- Prostate and peri-prostatic cysts.

•MRI procedure:

Patient position:

1- Patient should be in supine position (feet first).

2- Keep arms above the pelvis, if possible, if not; rest by sides.

3- Set-up the pelvic array coil.

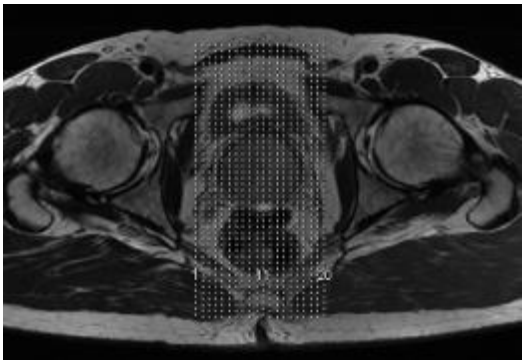
Other considerations:

An empty bladder can minimize motion artifacts from urine. However, a full bladder can aid visualization of bladder wall anatomy and pathology by improving definition between anatomy (e.g. differentiating prostate from bladder wall).

Fig.2 Patient position-pelvic array coil

•Scout slice placement: -

1-Axial localizer to obtain sagittal slice



-Alignment: **True sagittal.**

-Coverage:

1-Superior to inferior: **Superior aspect of the bladder to inferior aspect of the symphysis pubis.**

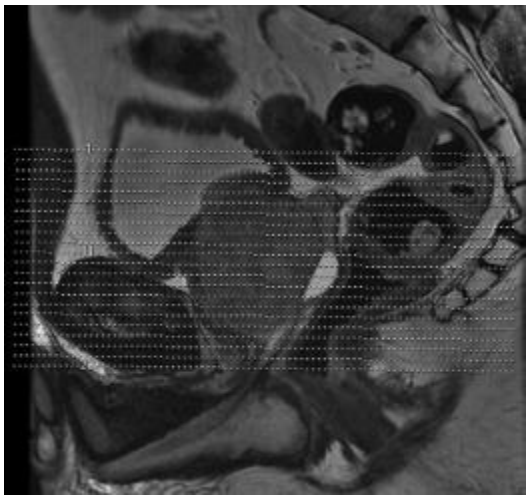
2-Lateral to medial: **True pelvis.**

3-Posterior to anterior: **Sacrococcygeal spine to symphysis pubis.**

- Demonstrates:

1- Prostatic hyperplasia, indenting the urinary bladder.
2- Seminal vesicles.
3- Extracapsular extension of cancer into the bladder.

2-Sagittal localizer to obtain axial slice



-Alignment: **True axial.**
-Coverage:

1-Superior to inferior: **Seminal vesicles to inferior aspect of the prostate.**

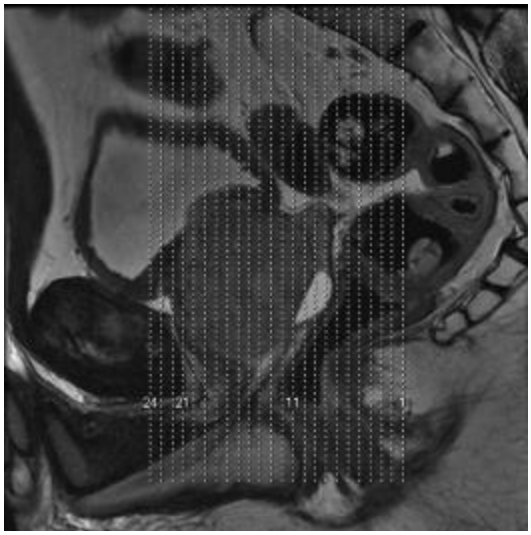
2-Lateral to medial: **True pelvis.**

3-Posterior to anterior: **Sacrococcygeal spine to symphysis pubis.**

- Demonstrates:

Seminal vesicles and vas deferens.

3-Sagittal localizer to obtain coronal slice



-Alignment: True coronal.
-Coverage:
1-Superior to inferior: Superior aspect of the bladder to inferior aspect of the symphysis pubis.
2-Lateral to medial: True pelvis.
3-Posterior to anterior: Retrovesicular space to anterior wall of the prostate.

- Demonstrates:
1-Extracapsular extension of cancer superiorly and laterally into the bladder and levator ani.
2-Seminal vesicles.

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

Summary Table

Lesion Type	T1 Appearance	T2 Appearance
Prostatic Hyperplasia	Isointense	Hypointense
Prostate Cancer	Hypointense	Hypointense
Prostatitis	Hyperintense	Variable (hypointense with high signal areas)
Prostatic Cysts	Hypointense/Isointense	Hyperintense
Calcifications	Hypointense	Low signal intensity