

# Clinical correlates 2: Radiology of the pelvis

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# Introduction

- X-rays
  - High-energy electromagnetic waves
  - Travel in straight lines
  - Shorter wave length than visible light
  - Able to penetrate solid materials of varying densities
  - Like a camera, it is capable of exposing a photographic film (X-ray film)

# Introduction

- X-rays
  - Used to visualize internal organs and structures of body
  - Provide valuable means for verifying presence of injuries, illnesses or diseases
- Radiology
  - Study of the diagnostic and therapeutic uses of X-rays

# Types of radiological approaches

- Plain X-ray
- Contrast Enhanced X-ray
- Ultrasound
- Computerized Tomography (CT-Scan)
- Magnetic Resonant Imaging (MRI)

# Plain X-ray

- Use of high-energy electromagnetic waves, passing through the body onto a photographic film, to produce a picture of the internal structures of the body for diagnosis and therapy

# Contrast Enhanced X-rays

- In which radio-opaque materials is injected into the tissue of interest to highlight the tissue against uninjected tissues
- Examples include: Barium meal and enema (Barium is the contrast), Angiography, Hysterosalpingography and Cystography etc

# Ultrasound

- Procedure in which sound waves are transmitted into body structures as a small transducer is passed over the patient's skin
- Sound waves are reflected back into the transducer and are interpreted by a computer that converts waves to a composite picture form

# Computed Tomography

- Painless, noninvasive diagnostic X-ray procedure using ionizing radiation that produces a cross-sectional image of the body with the aid of the computer



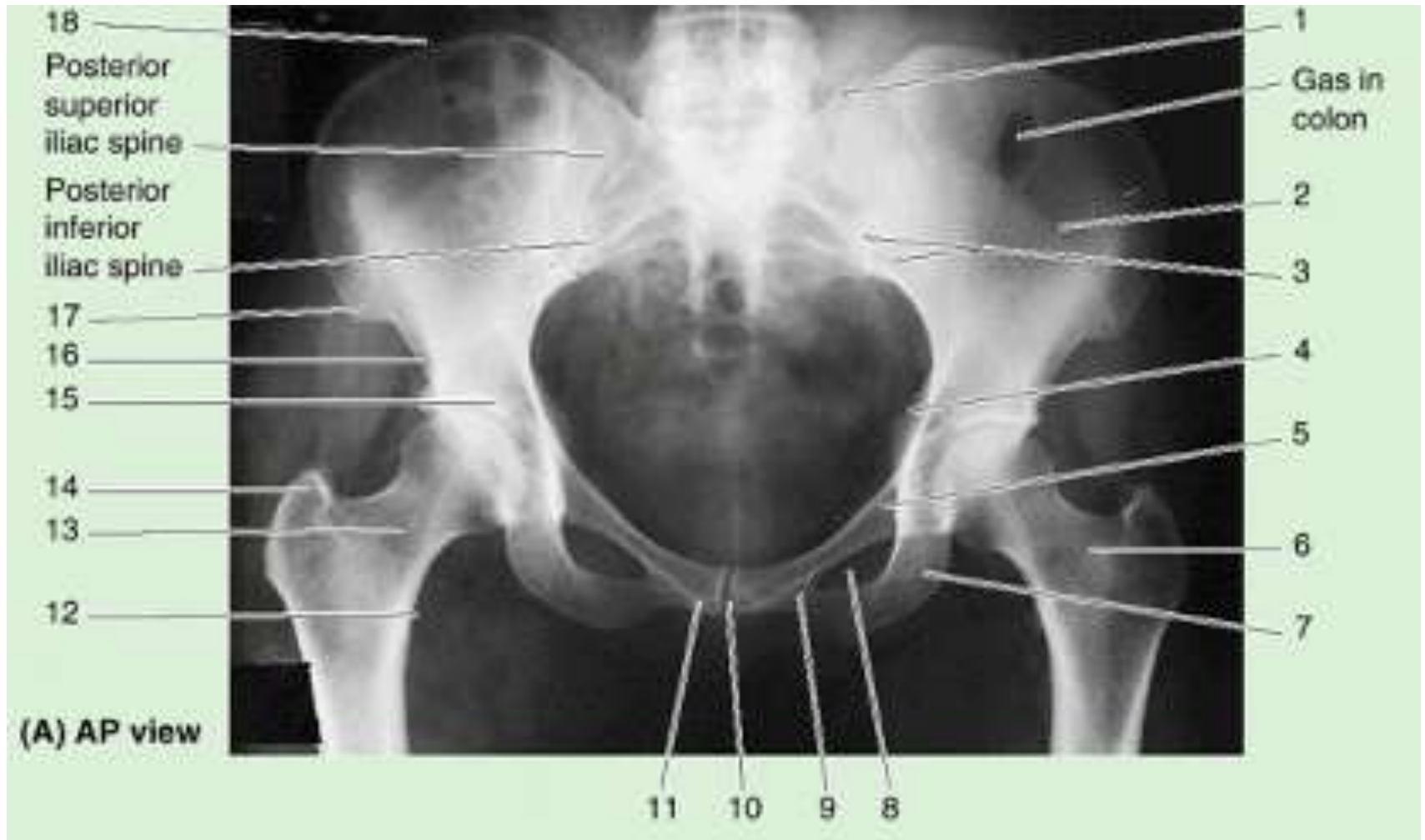
# Magnetic Resonant Imaging (MRI)

- Noninvasive scanning procedure that provides visualization of fluid, soft tissue, and bony structures using strong magnetic fields

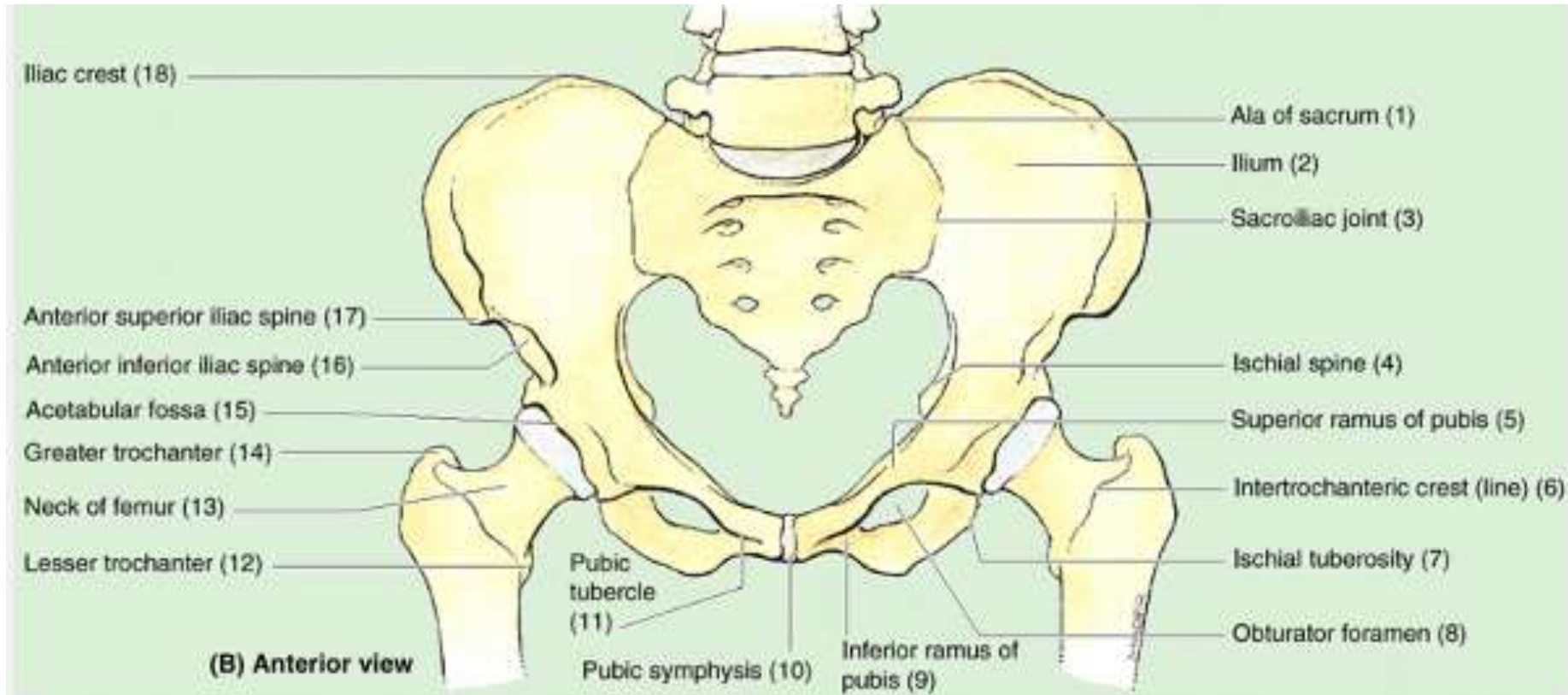
# Plain Pelvic X-rays

- Useful for showing bone pathologies
- Therefore, useful in pelvic fractures to confirm presence of fractures

# Plain Pelvic X-rays

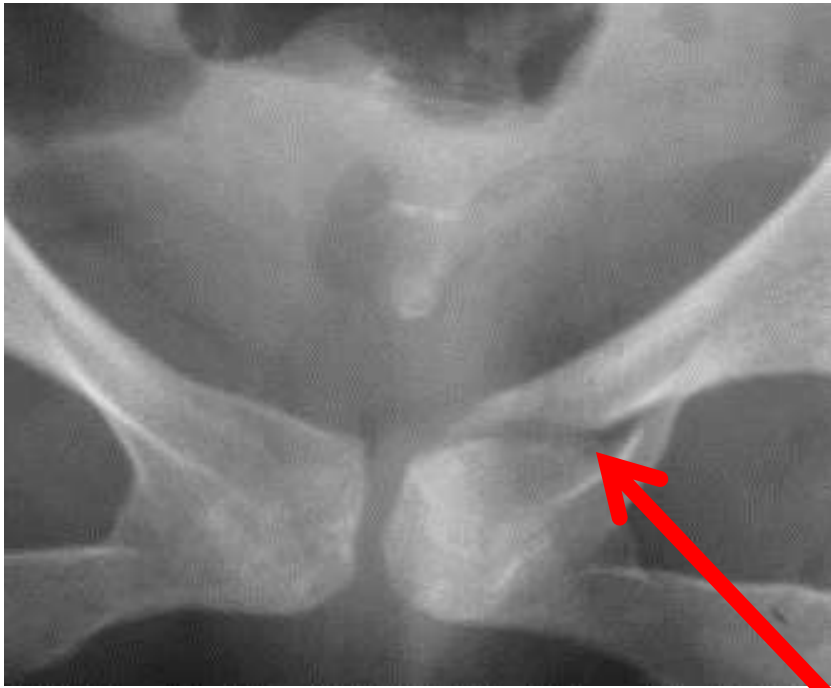


# Plain Pelvic X-rays



# Plain x-rays : Fractures

**Fracture of superior IP ramus**



**Diathesis of the symphysis**



# Contrast X-rays

- Extremely useful for the visualization of the lower urinary tract for suspected injuries and diseases
- Used also for visualizing the anus and the rectum
- Less commonly used for the genital tract

# Contrast x-rays of the lower urinary tract

- Cystography
- Urethro-Cystography

# Cystography

- Normal
- The contrast has completely filled the bladder





# Cystography

- Rupture of the bladder showing extravasation of urine



# Retrograde Urethrocytography

- NORMAL
- Contrast is filling the whole of the urethra



# Retrograde Urethrocytography

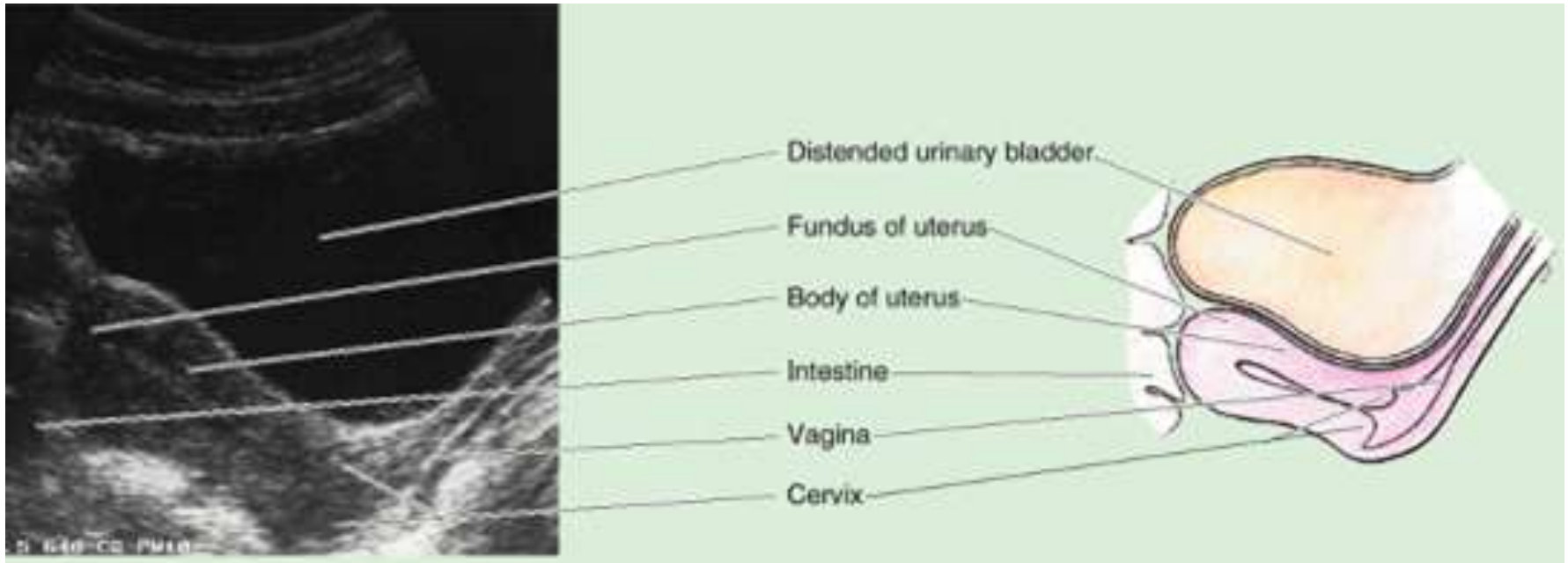
- Tear of the urethra following trauma, showing extravasation of contrast.
- Note that the outline of the urethra is now vague



# Pelvic Ultrasound

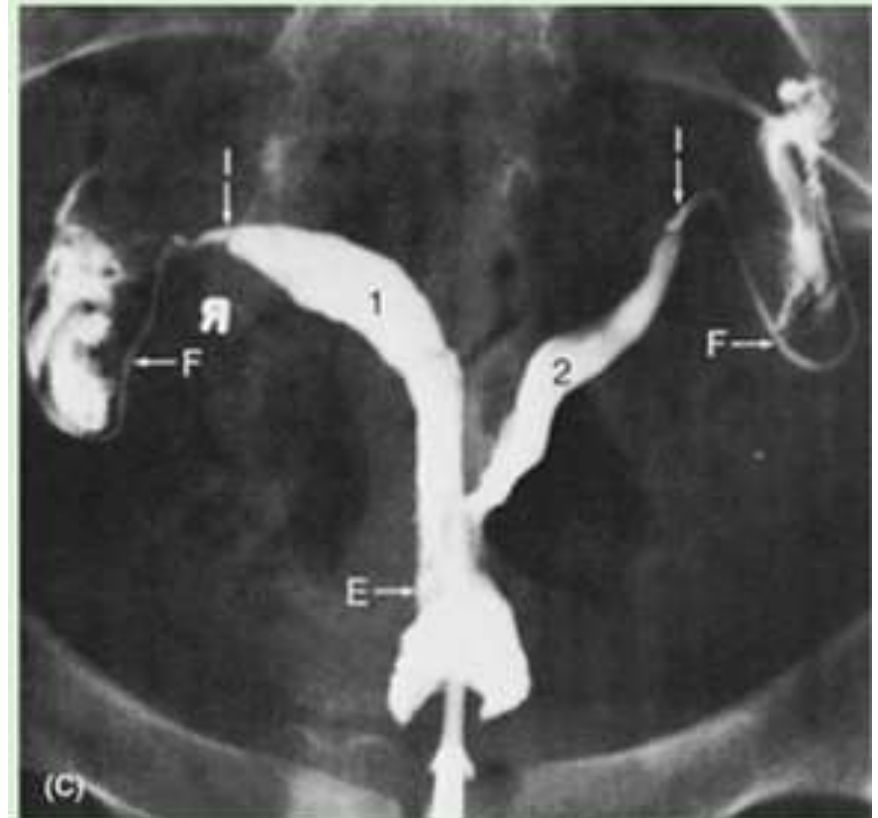
- Noninvasive procedure that uses high-frequency sound waves to examine the pelvis
- Can be used to locate a pelvic mass, an ectopic pregnancy, or an intrauterine device, and to inspect and assess the uterus, ovaries, and fallopian tubes

# Pelvic Ultrasound



# Hysterosalpingography

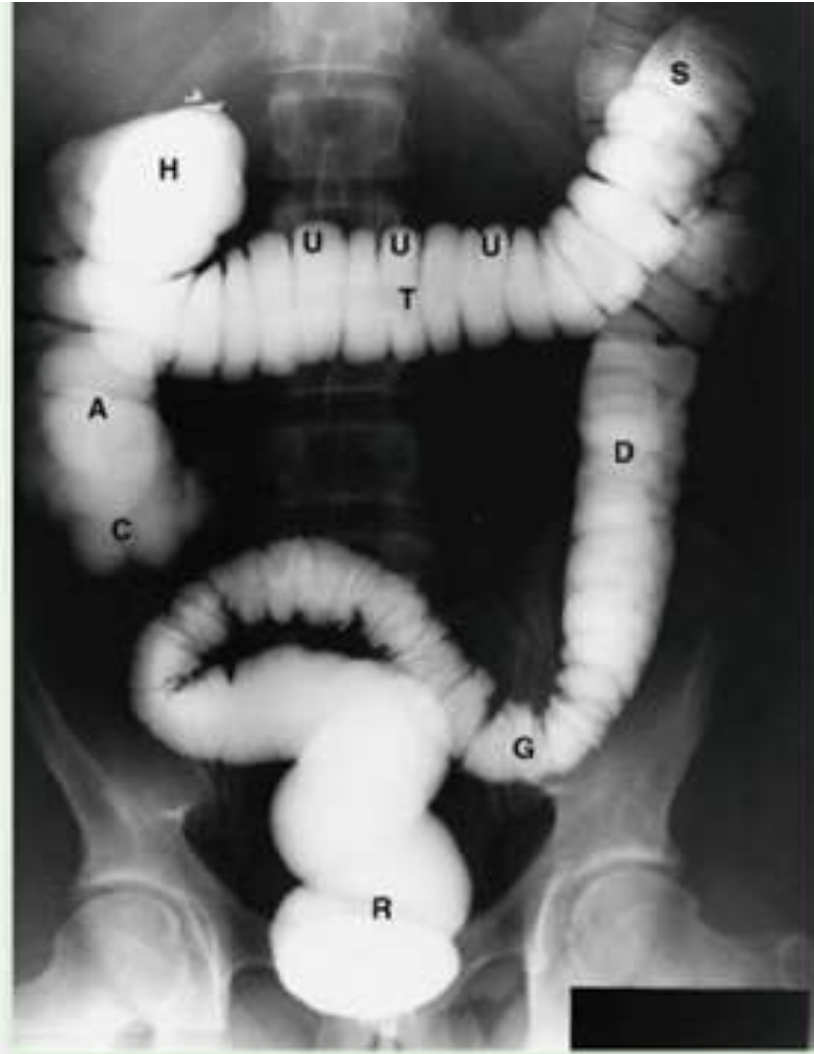
- X-ray assessment of uterus and fallopian tubes by injecting a contrast material into these structures



# Barium Enema

- Infusion of a radiopaque contrast medium, barium sulfate, into the rectum
- Contrast medium is retained in lower intestinal tract while X-ray films are obtained of the lower GI tract

# Barium Enema





# Angiography

- By introducing contrast material into the appropriate artery, angiography can visualize the arterial system
- Can therefore be used to visualize almost any organ in the body

# Angiography



**Angiography of the Superior mesenteric artery**

# The End

