

Unit VII – Problem 4 – Radiology: Imaging of hip fracture and dislocation



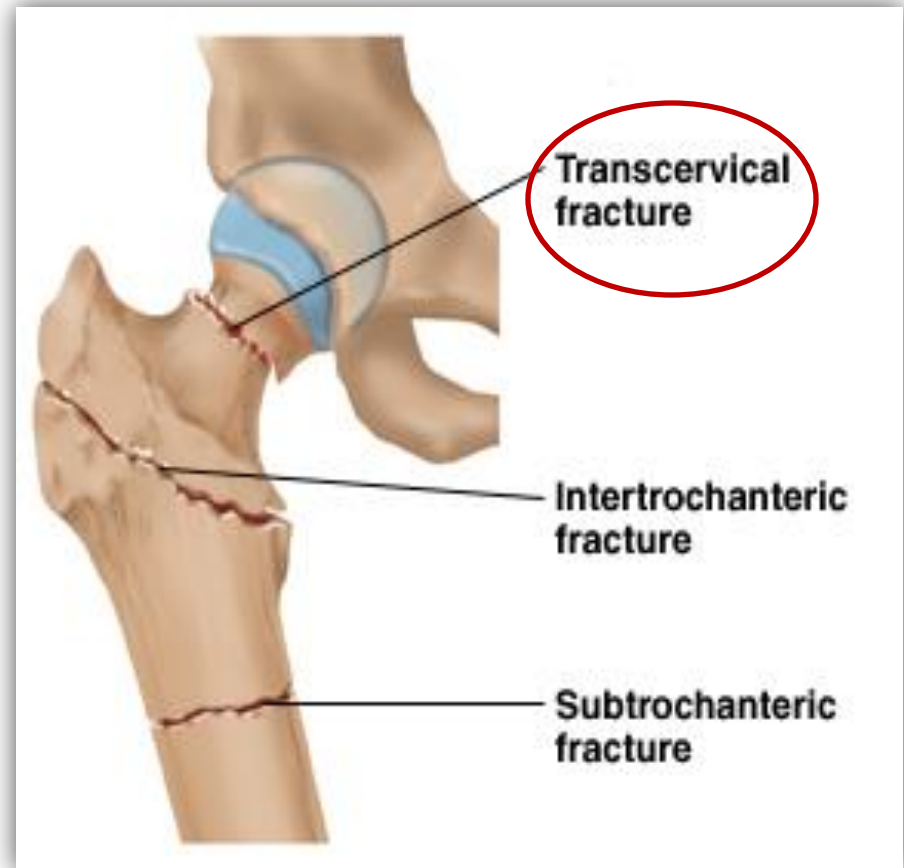
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Introduction

- **Plain films:** they are the gold standard – cheap – available in all health centers and hospitals.
- If a fracture or dislocation cannot be seen by plain radiographs → **CT Scan or MRI are used.**
- **Nuclear medicine bone scan:** replaced by MRI which is more accurate and provides clear pictures for the abnormalities.
- **Ultrasound:** safer – no radiation – especially for babies.

Types of Hip Fractures

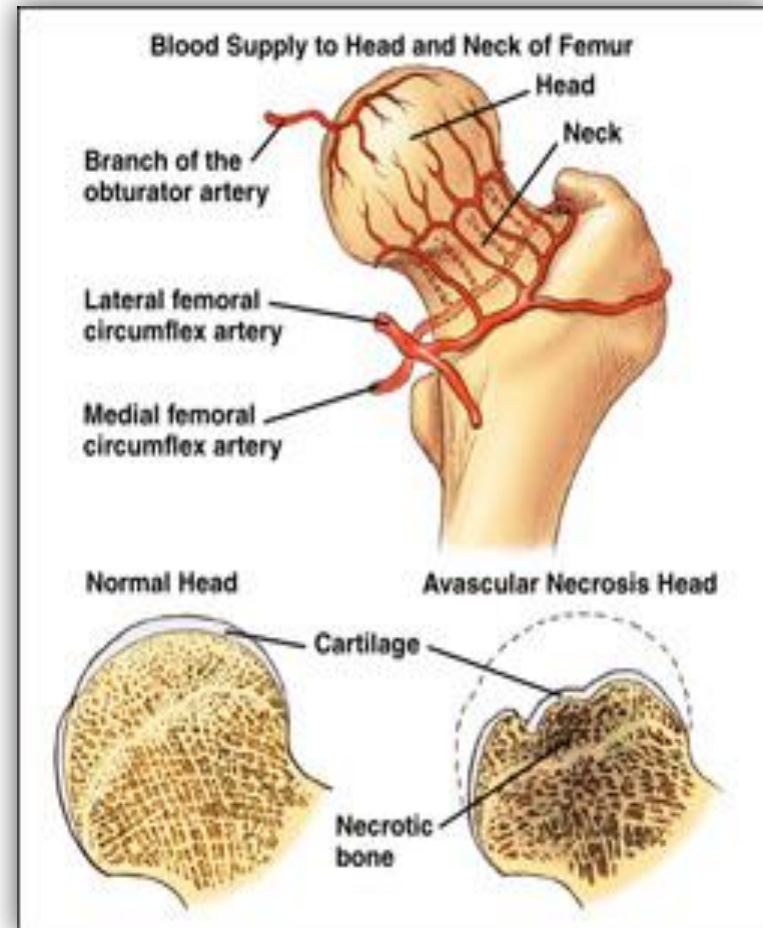
- There are mainly 3 types of hip fractures (as shown in the figure):
 - **Transcervical (most common):** because the neck is the weakest part in the femur which bears the weight of the trunk.
 - **Intertrochanteric:** between the greater and lesser trochanters of the femur.
 - **Subtrochanteric.**



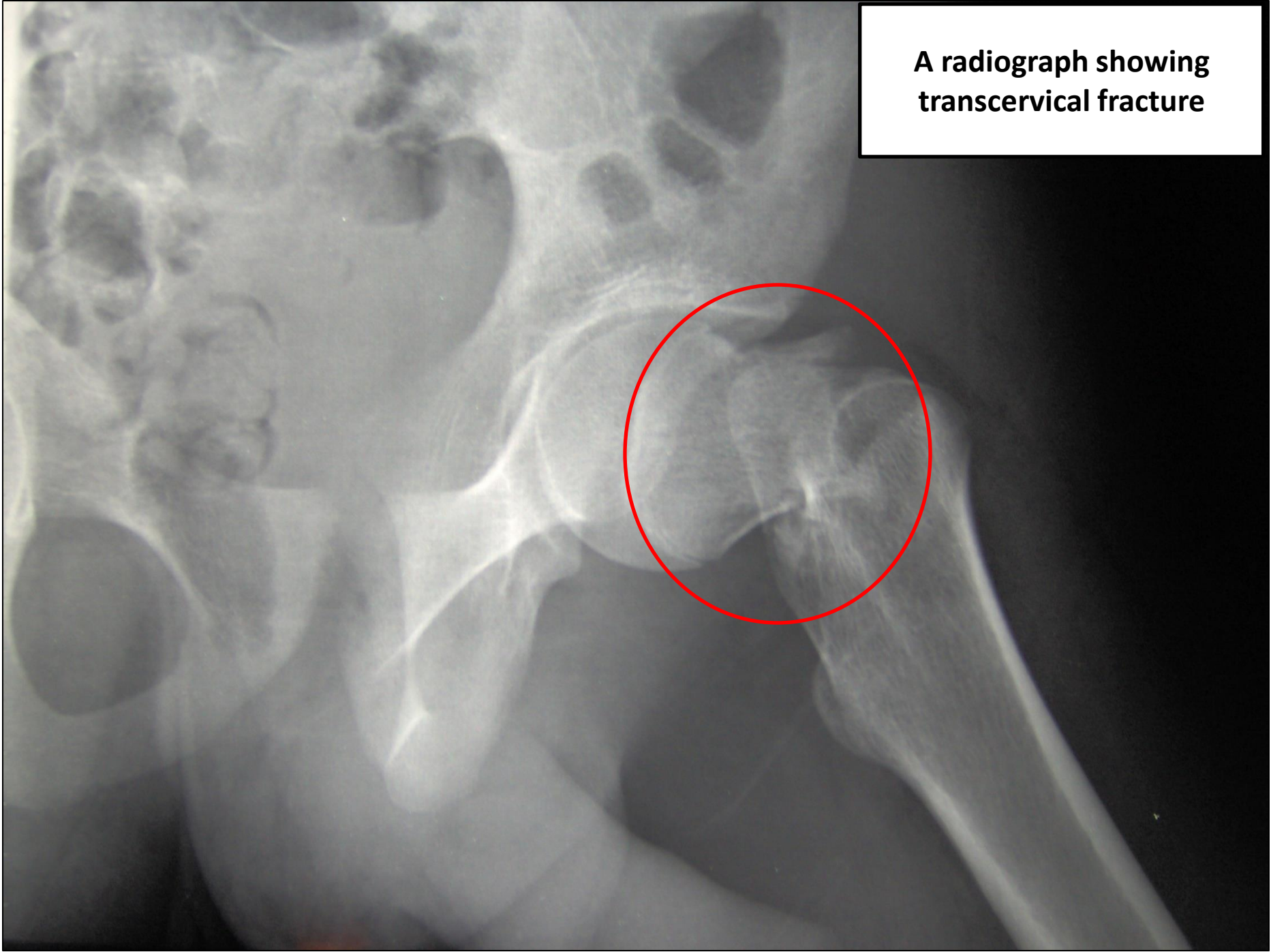
Arterial Supply of The Femur

- **The head and neck of femur are supplied by (see the figure):**
 - **Retinacular arteries** coming from → lateral and medial circumflex arteries which are branches of → deep artery of the femur.
 - **Acetabular branch of obturator artery** passing to the pit for the ligament of femoral head.

Note: when these arteries are injured, avascular necrosis of the femoral head will result.



**A radiograph showing
transcervical fracture**





Internal or external nails used to fix the fracture and prevent complications from occurring (such as avascular necrosis) especially if they are used early



Nuclear medicine bone scan showing increased uptake in the left femoral head & neck → indicating the presence of an abnormality (example: fracture)

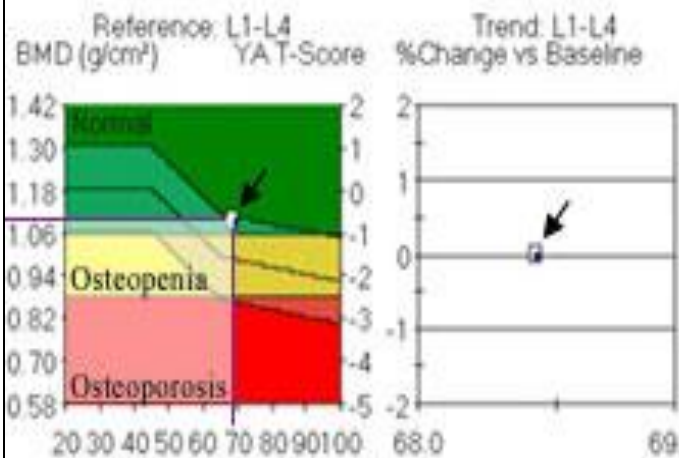
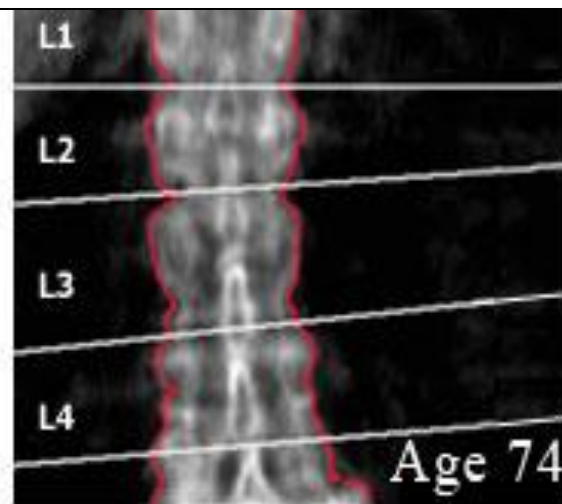
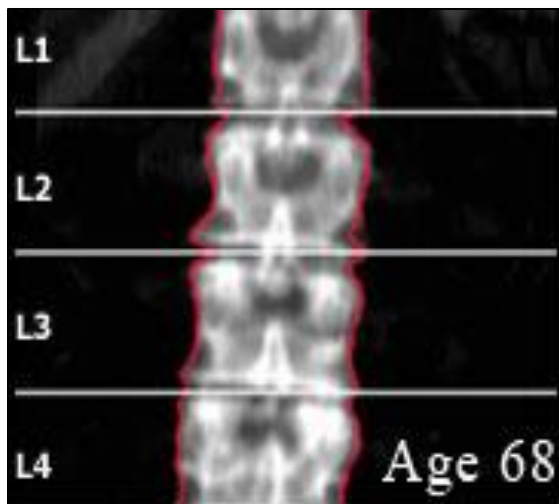


Figure 1

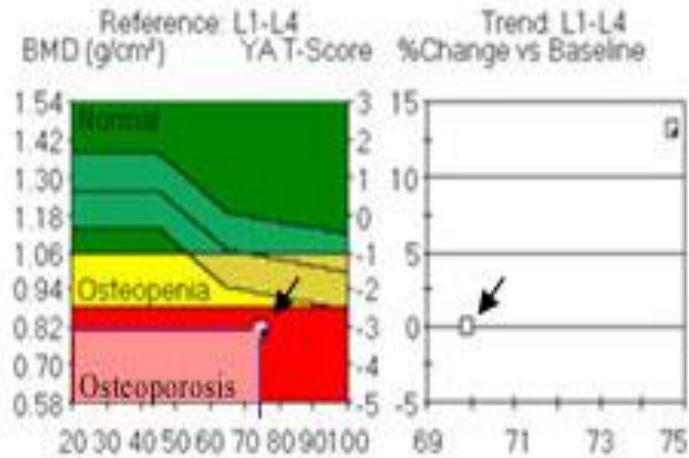
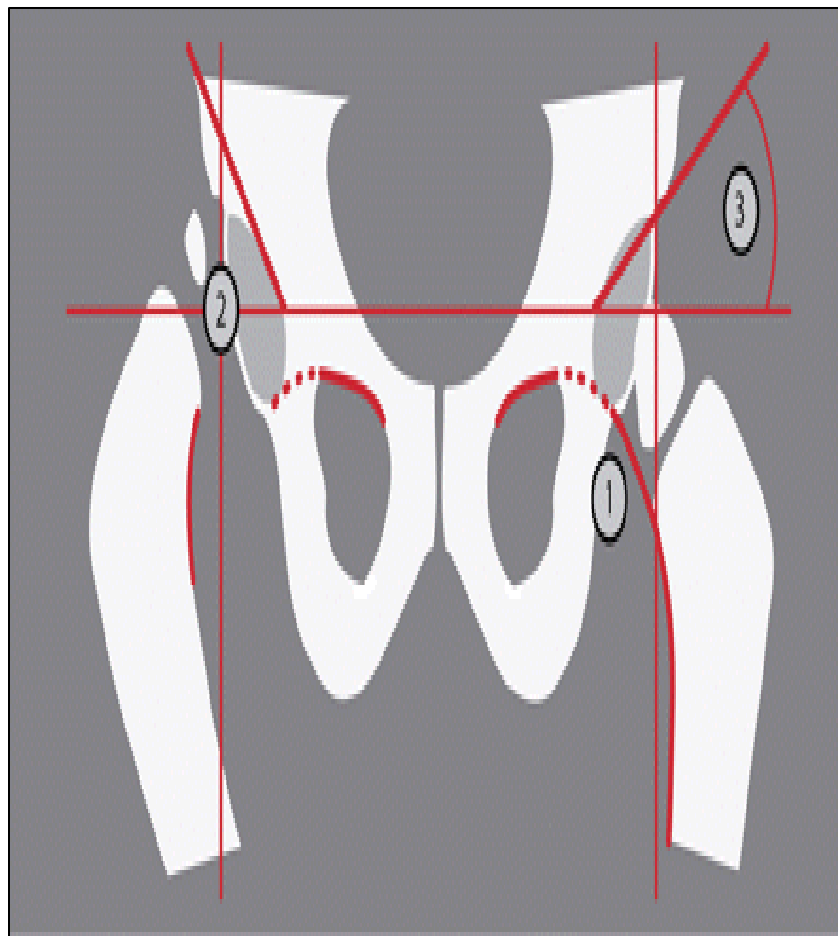


Figure 2

Osteoporosis is a common risk factor for hip fractures especially in women > 60 yrs (weakening the bone and leading to its damage even with minor trauma). Post-menopausal females must be screened for osteoporosis for early prevention of similar accidents. This is detected by DEXA scan which measures bone density.

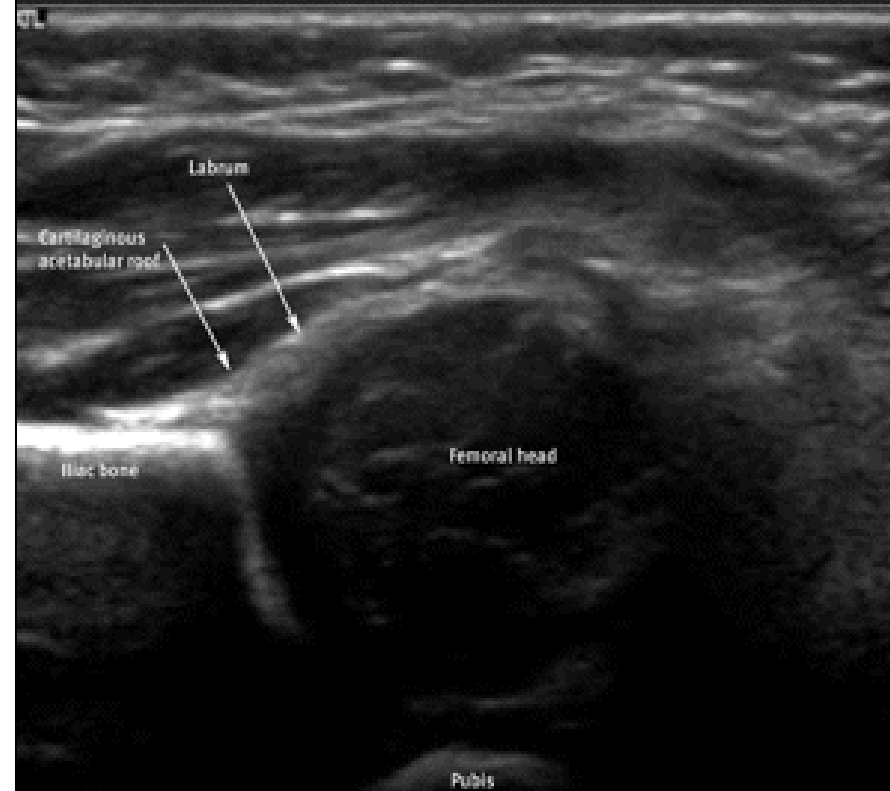
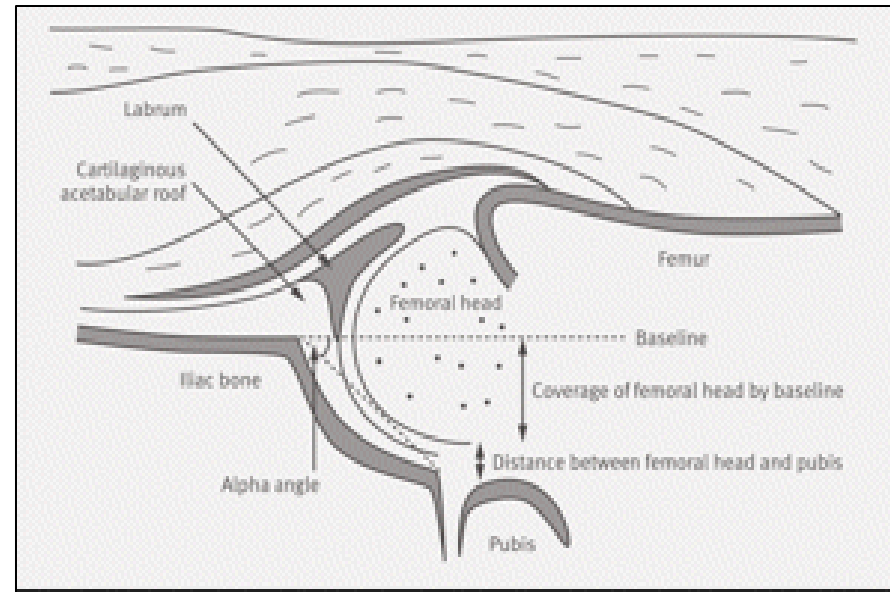


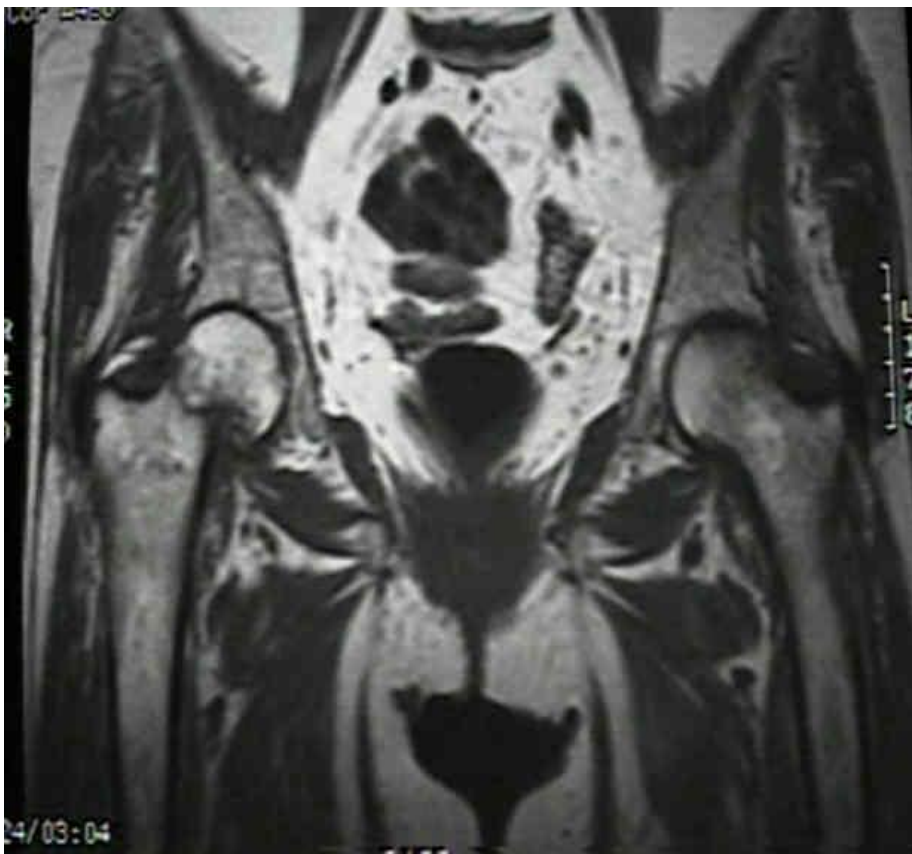
(1): Normal, continuous, smooth Shenton's line.

(3): Normal angle (femur is in the acetabulum).

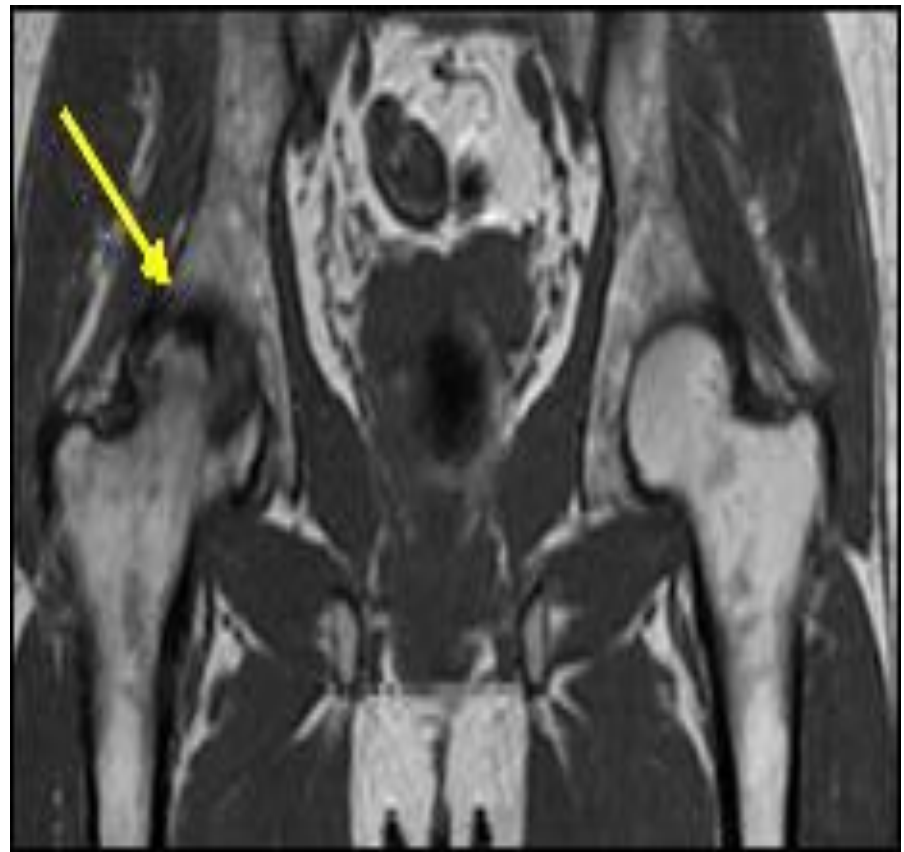
(2): Discontinuous Shenton's line with a bigger angle indicating the presence of fracture or dislocation (congenital dislocation of hip joint in children)

Ultrasound: auto-measurment of angles to detect any abnormalities





MRI: transcervical fracture in the right femoral neck



MRI: showing avascular necrosis in the right femoral head