

# The Hip Joint

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# General Structure: The Hip Joint

- Hip Joint: Synovial articulation between the acetabulum of pelvis and head of femur
- Stable ball and socket joint; great mobility
- Surrounded by several large muscles



# General Structure: The Hip Joint

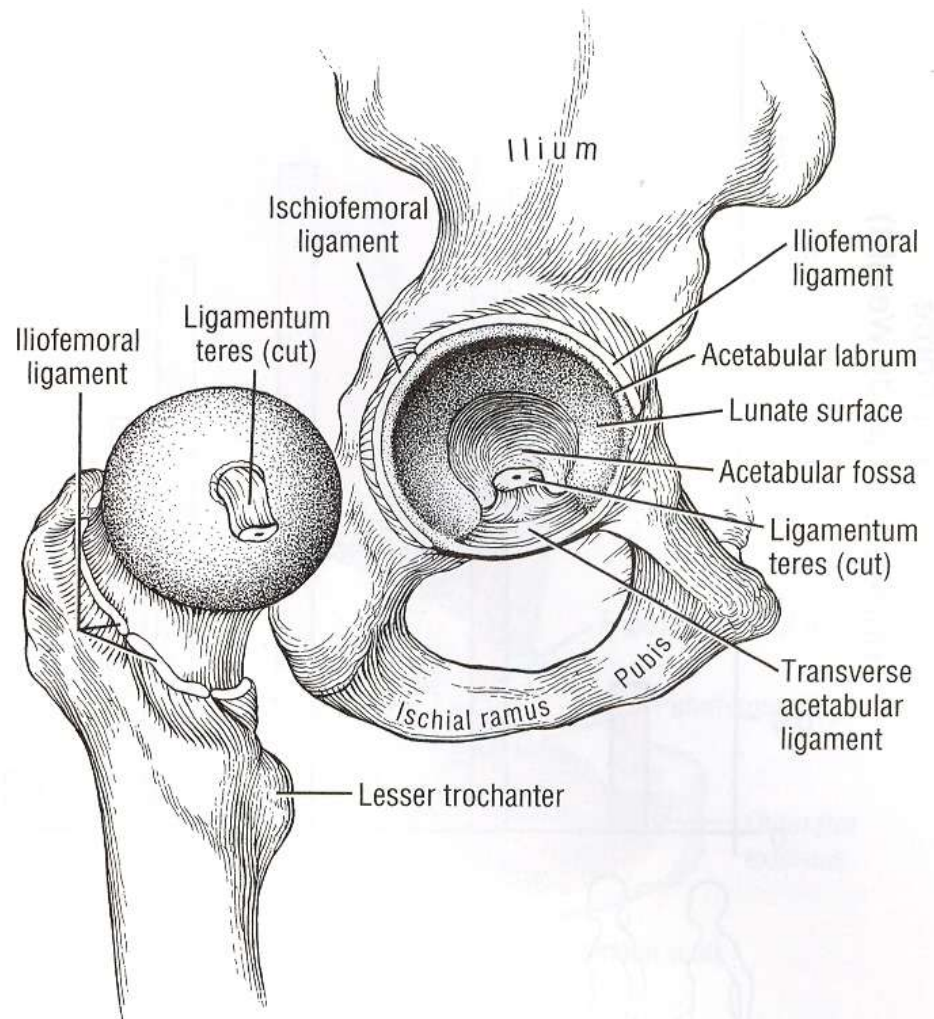
- The hip joint is the strongest and most stable joint in the body.
- Its stability results from
  - the mechanical strength of its ball and (deep) socket construction, allowing extensive articular surface contact
  - its strong joint capsule and ligaments
  - its many surrounding muscles



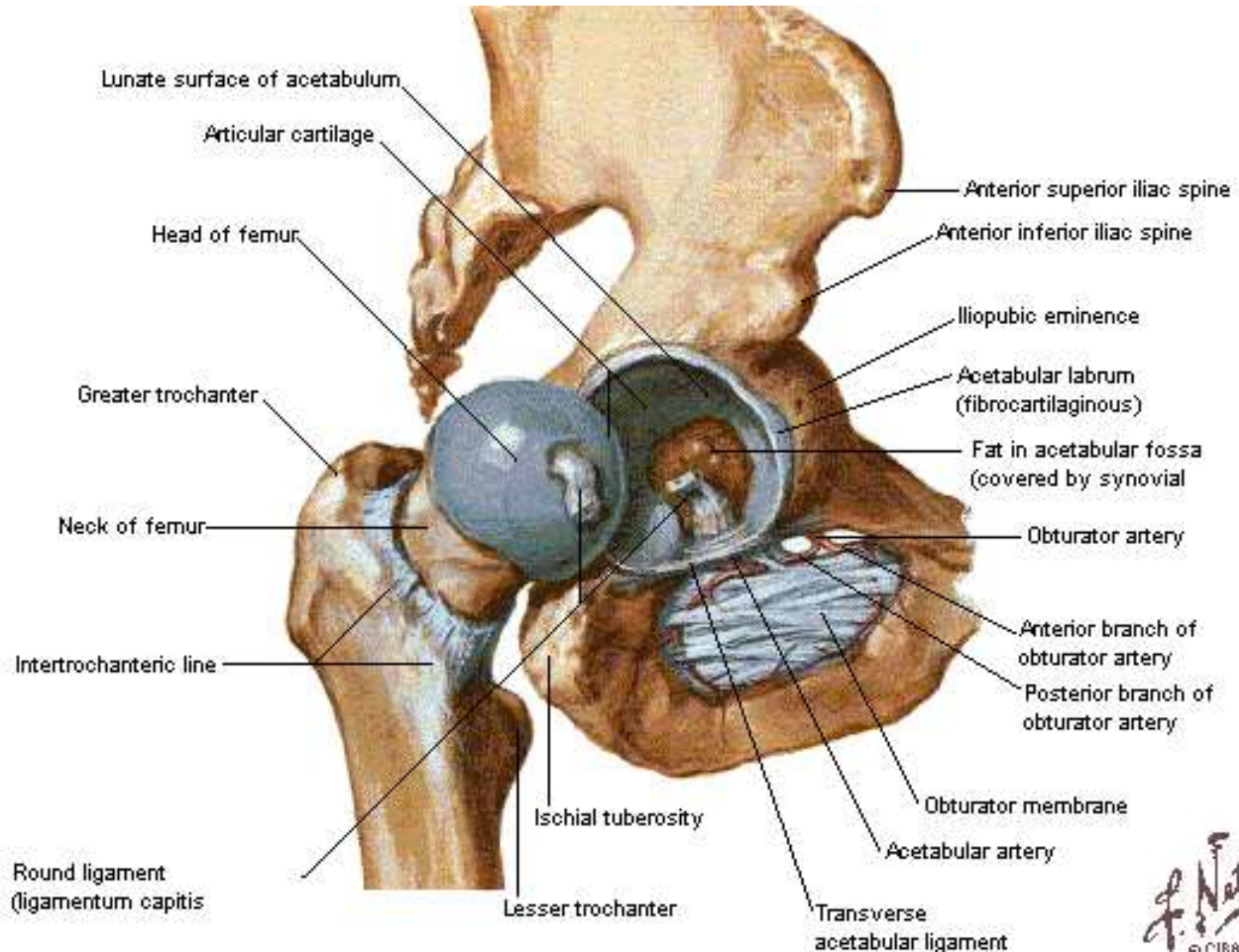
# General Structure: The Hip Joint

The articular surfaces of the hip joint are:

- i. The head of the femur which is spherical (three-quarter of a sphere)
- ii. The lunate surface of the acetabulum of the pelvic bone.

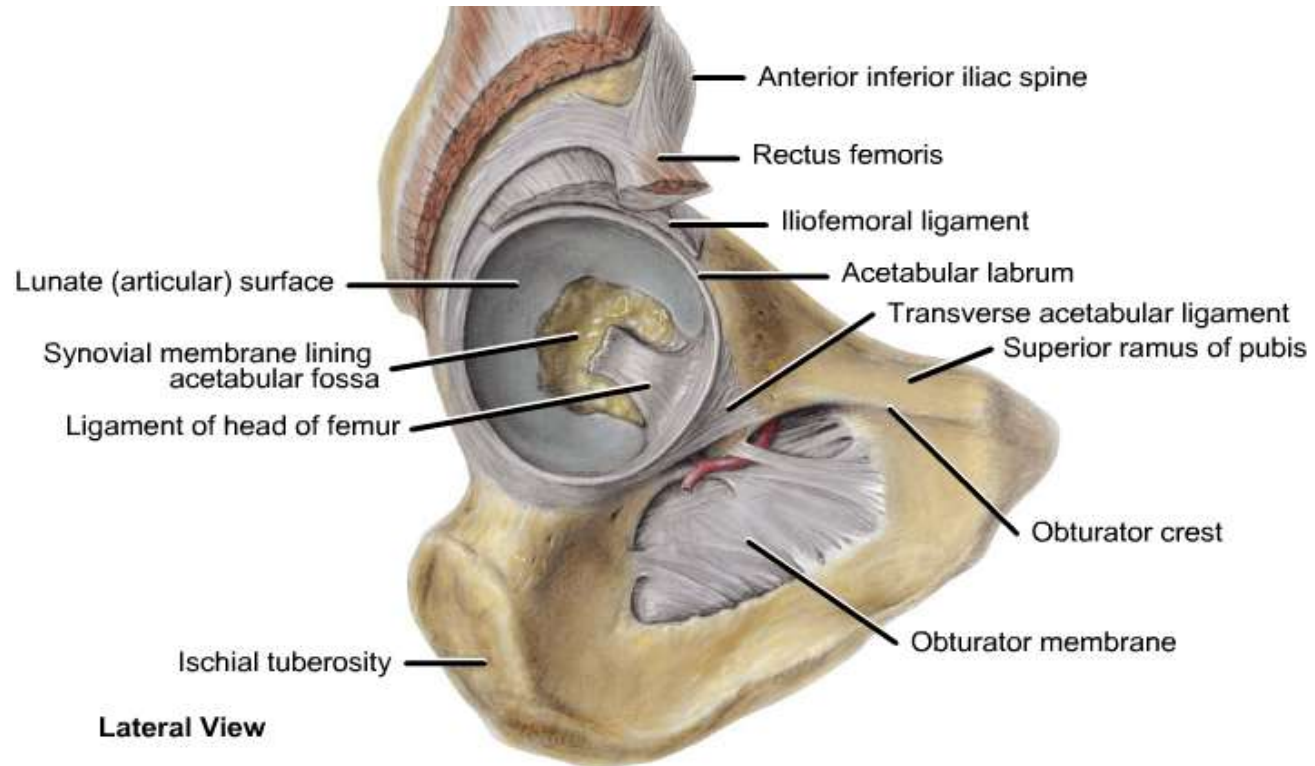


# The Hip: General View



# The Hip Joint: The Acetabulum

- The acetabulum labrum helps to deepen the acetabulum (approximately by 10%)
- It continues across the acetabular notch as the transverse acetabular ligament; converting the notch into a foramen
- Only the lunate surface(the articulating part of the acetabulum) is covered by cartilage



# The Hip Joint: The Capsule

Consists of two layers:

- An outer fibrous layer
- An inner synovial membrane which lines everything in the joint.
- The capsule runs a spiral course between the pelvis and the femoral neck and tightens in extension.
- Flexion unwinds the capsule, making flexion > extension

Posterior View



Anterior View

# The Hip Joint: The Capsule

## **Medially, it attaches to:**

- The acetabular rim, the transverse acetabular ligament and rim of obturator foramen

## **Laterally to:**

- The intertrochanteric line anteriorly
- The neck of the femur posteriorly

Posterior View

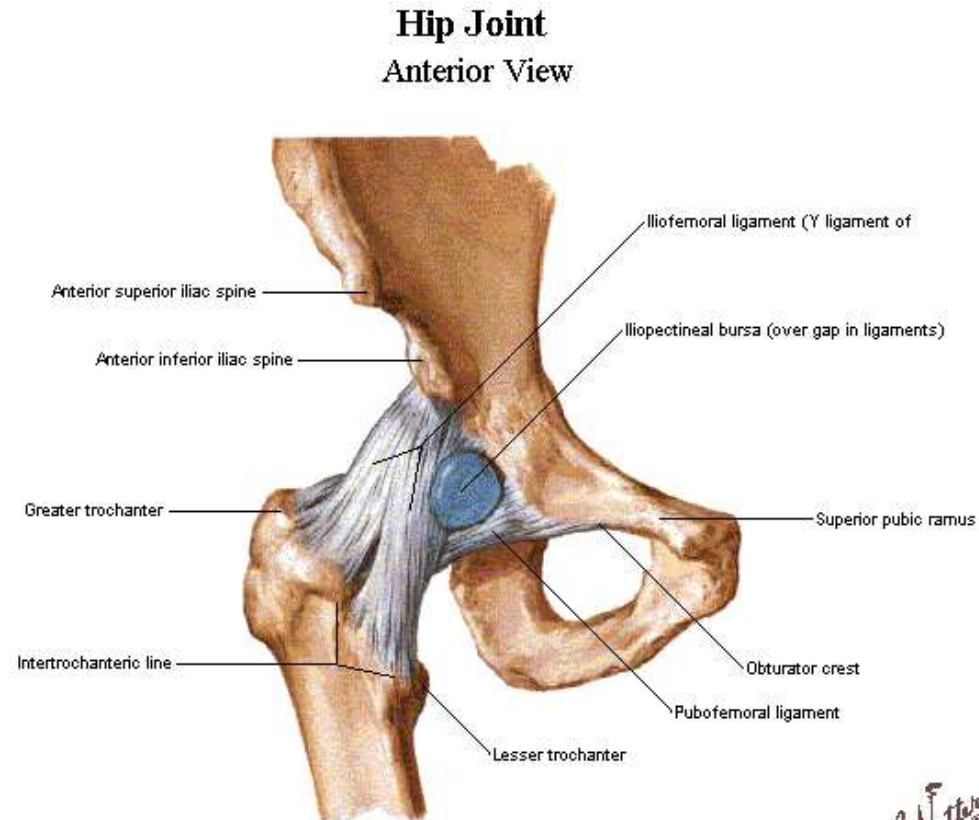


Anterior View



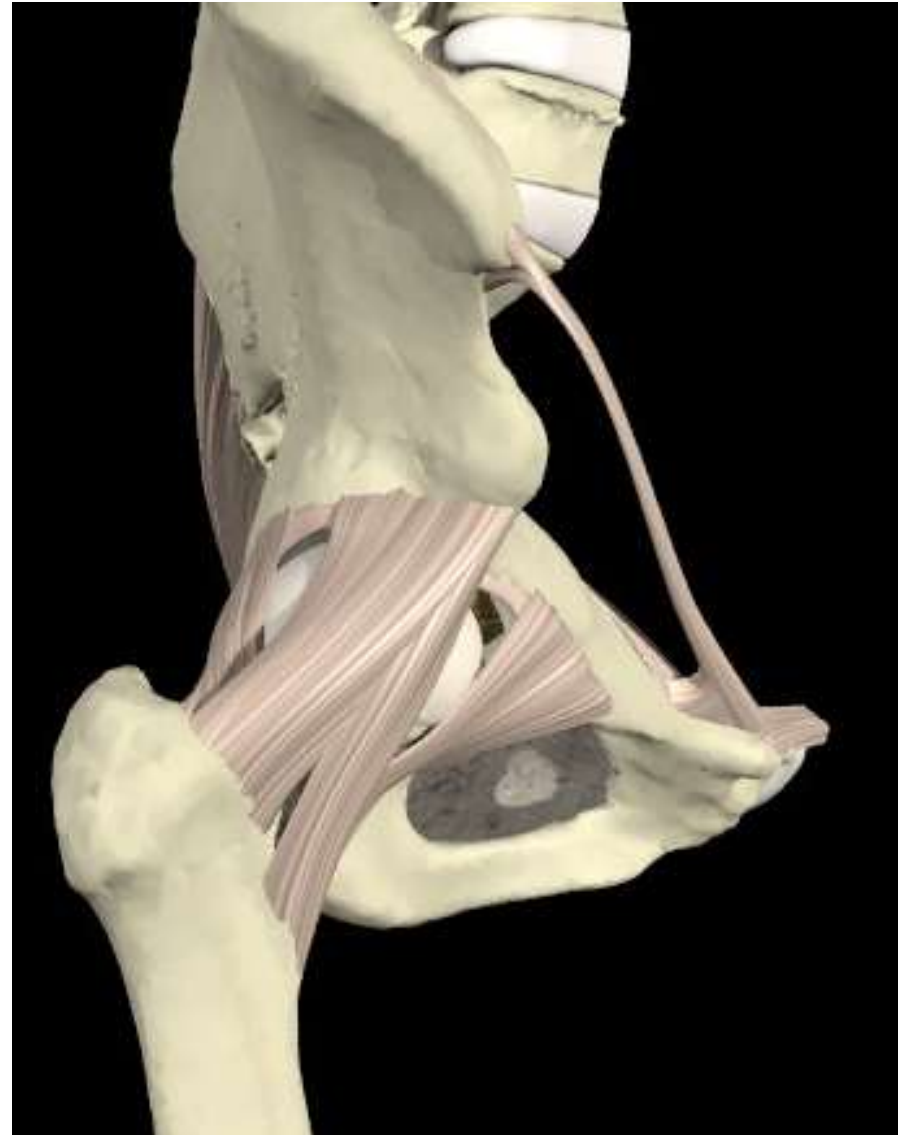
# The Hip Joint: The Ligaments

- 3 Ligaments reinforces the capsule:
  - Iliofemoral ligament**
  - Pubofemoral ligament**
  - Ischiofemoral ligament**
- The fibres of all three ligaments are spiral and are taut in extension
- This helps to maintain posture when standing with minimum expenditure of energy



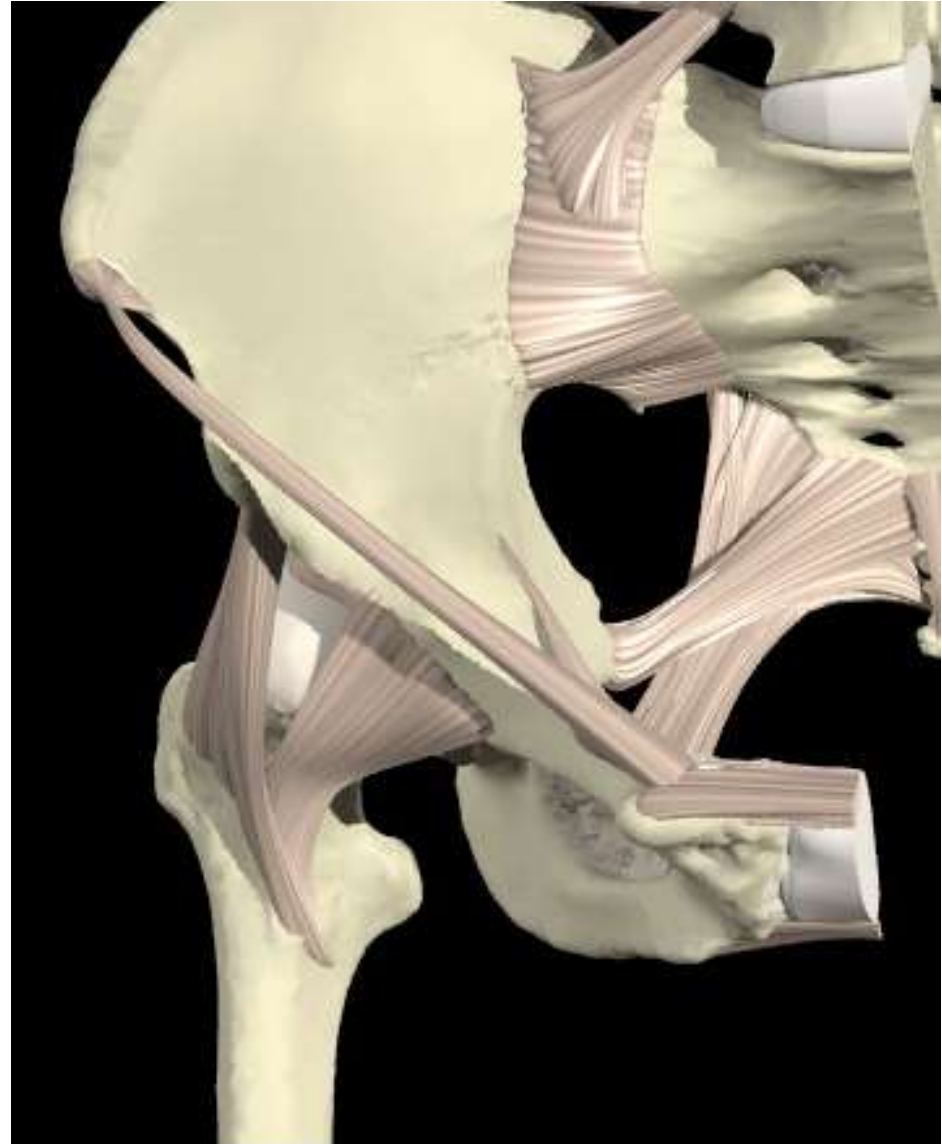
# The Hip Joint: Iliofemoral ligament

- Is triangular shaped with a Y outline
- Anterior to the hip joint
- Apex attached superiorly to the ilium between the anterior inferior iliac spine and the margin of the acetabulum
- Base attached inferiorly along the intertrochanteric line of the femur
- It is the strongest ligament in the body



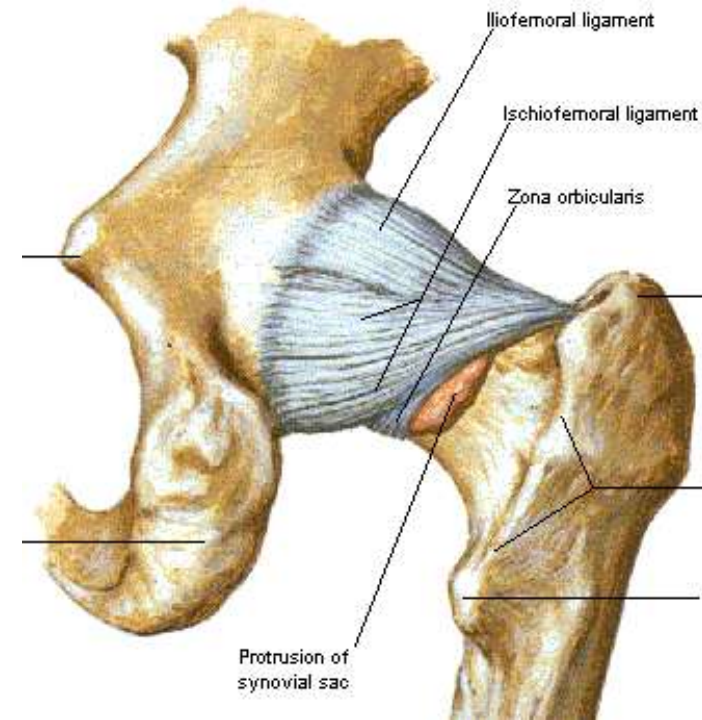
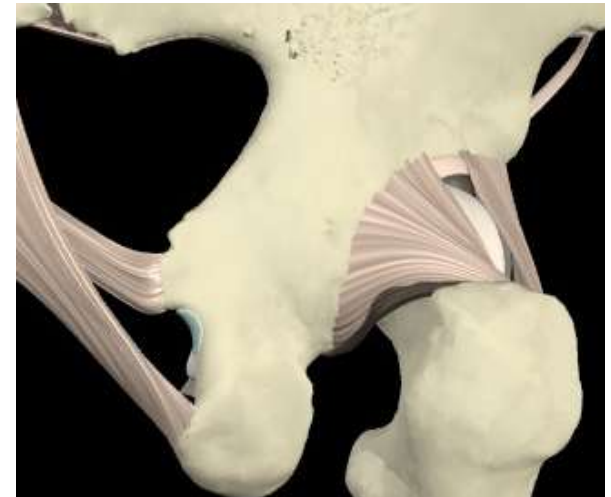
# The Hip Joint: pubofemoral ligament

- Is also triangular
- It is a thickening in the fibrous layer of the capsule of the joint
- Anteroinferior to the hip joint
- Base attached **medially** to the iliopubic eminence, adjacent bone, and obturator membrane
- **Laterally**, it blends with the fibrous membrane (outer layer of the hip joint capsule) and with the deep surface of the iliofemoral ligament.
- It limits both extension and abduction



# The Hip Joint: ischiofemoral ligament

- Posterior to the hip joint
- It is also a thickening in the fibrous layer of the capsule of the joint
- Attached **medially** to the ischium, just posteroinferior to the acetabulum
- **Laterally** to the greater trochanter deep to the iliofemoral ligament
- It is the weakest of the three ligaments

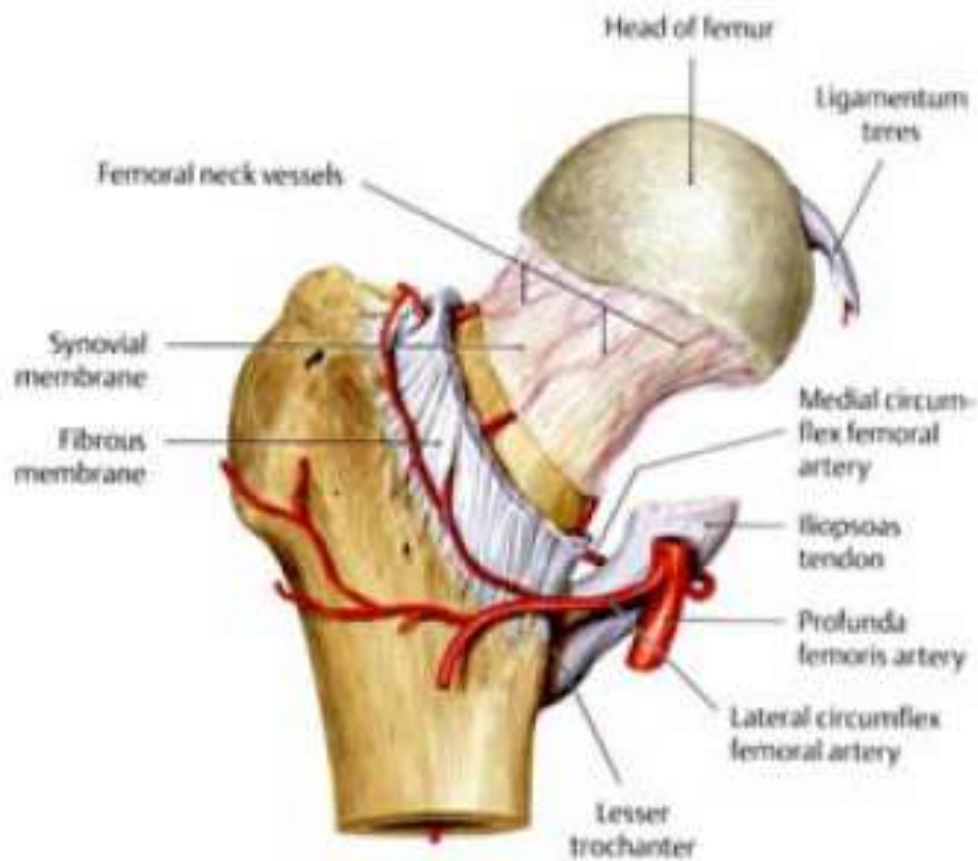


# The Hip: Blood supply

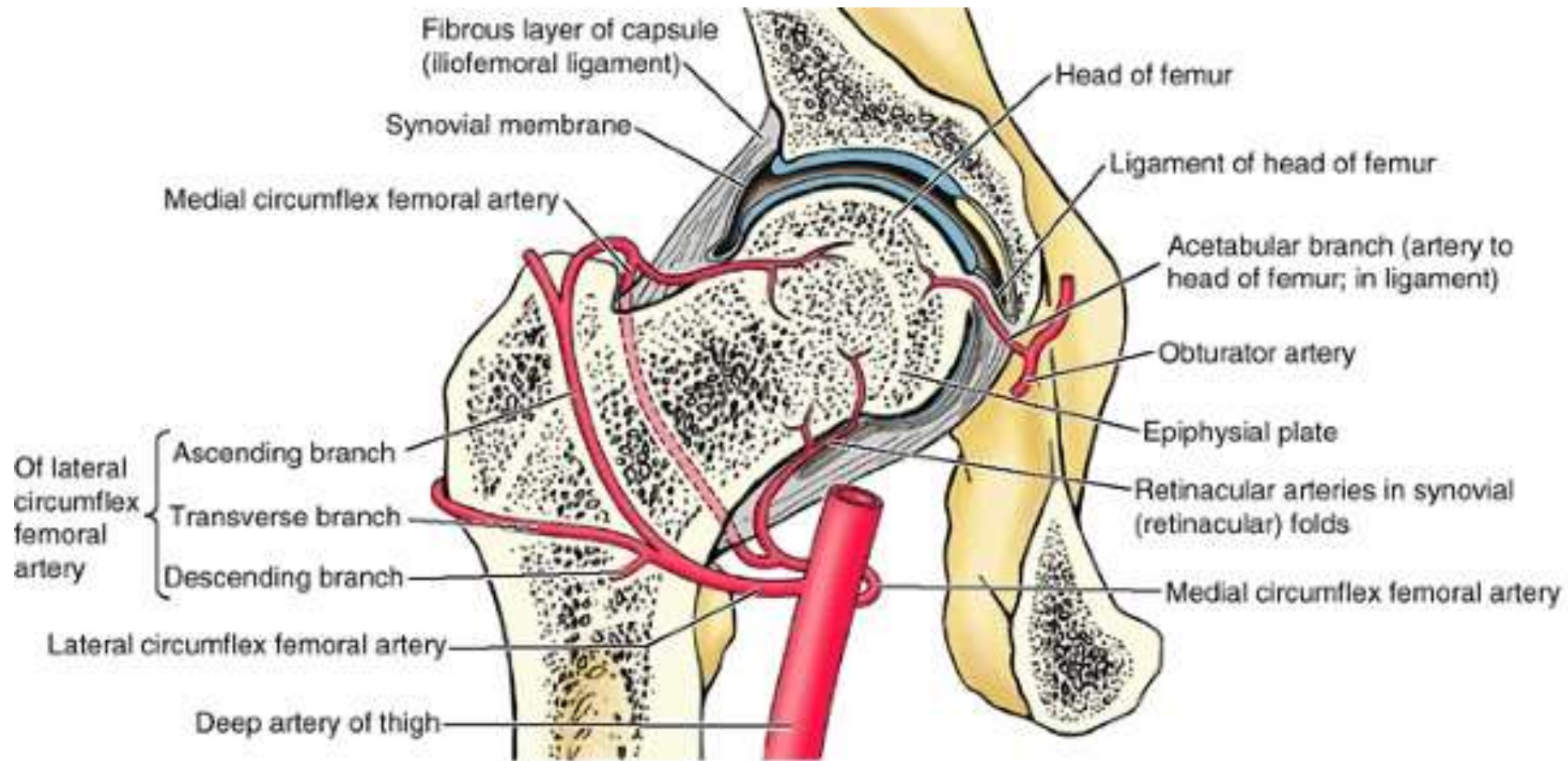
Blood supply to the head of the femur is from the following sources:

- i. Branches from **medial** and **lateral** circumflex arteries, which forms a vascular circle around the neck, from which metaphyseal and epiphyseal vessels penetrates the head
- ii. A small supply from acetabular branches of obturator and medial circumflex arteries via the ligament of the head.

# Blood supply to the head



# Blood supply to the head



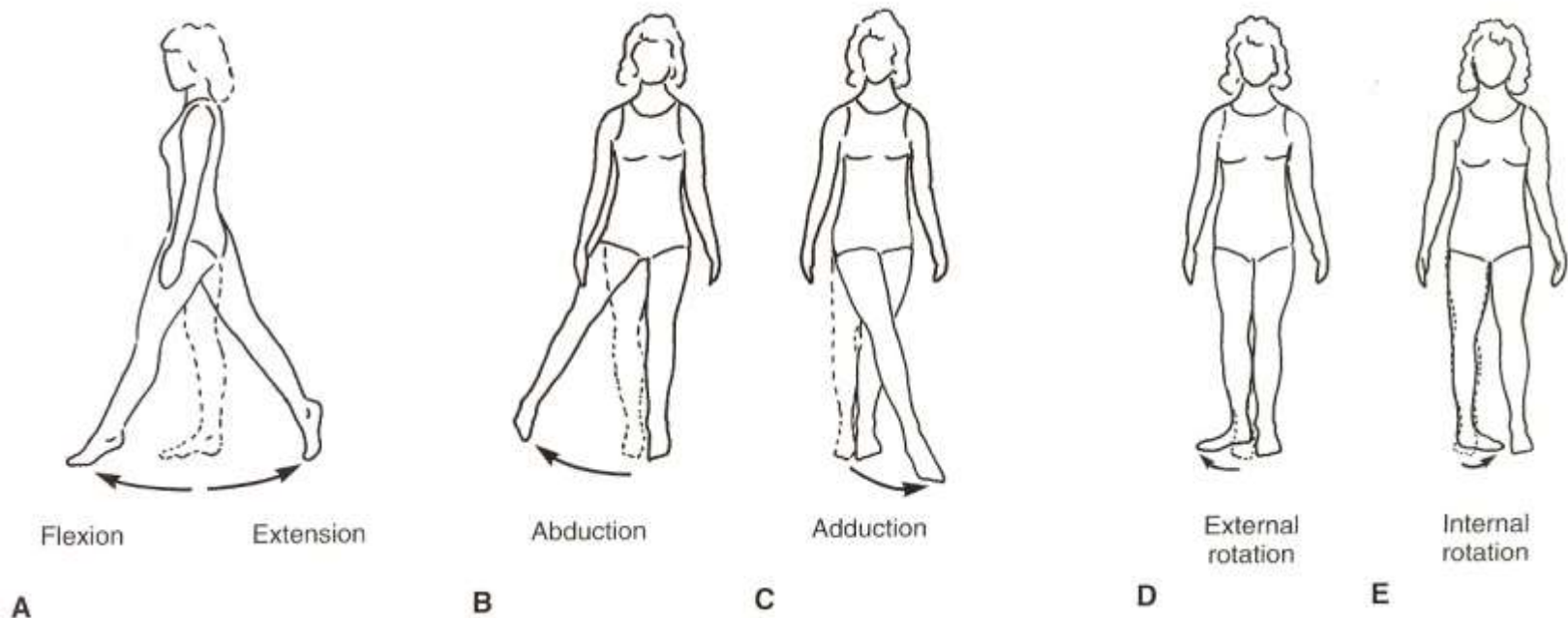
# General Function

- Provides stability for weight bearing
- Allows for mobility of the lower limb
- Load transmission (To and from lower limb)



# Movements of the Hip Joint

- Flexion and Extension
- Abduction and Adduction
- External Rotation and Internal Rotation.



# Movements of the Hip Joint

## Limits of Ranges of Motion (ROM)

- Flexion - 0 to 140 degrees  
Extension - 0 to 15 degrees
- Abduction - 0 to 30 degrees  
Adduction - 0 to 25 degrees
- External Rot. - 0 to 90 degrees  
Internal Rot. - 0 to 70 degrees (Range is greater in flexion than when extension)

# Movements of the Hip and its main Muscles

- **Flexion**

- Iliopsoas, sartorius, tensor fascia lata, rectus femoris, pectineus, adductor longus, adductor brevis, adductor magnus, gracilis

- **Extension**

- Hamstrings, adductor magnus, gluteus maximus

- **Abduction**

- Gluteus medius, gluteus minimus, tensor fascia lata

- **Adduction**

- Adductor longus, adductor brevis, adductor magnus, gracilis, pectineus, oburator externus

- **Rotation**

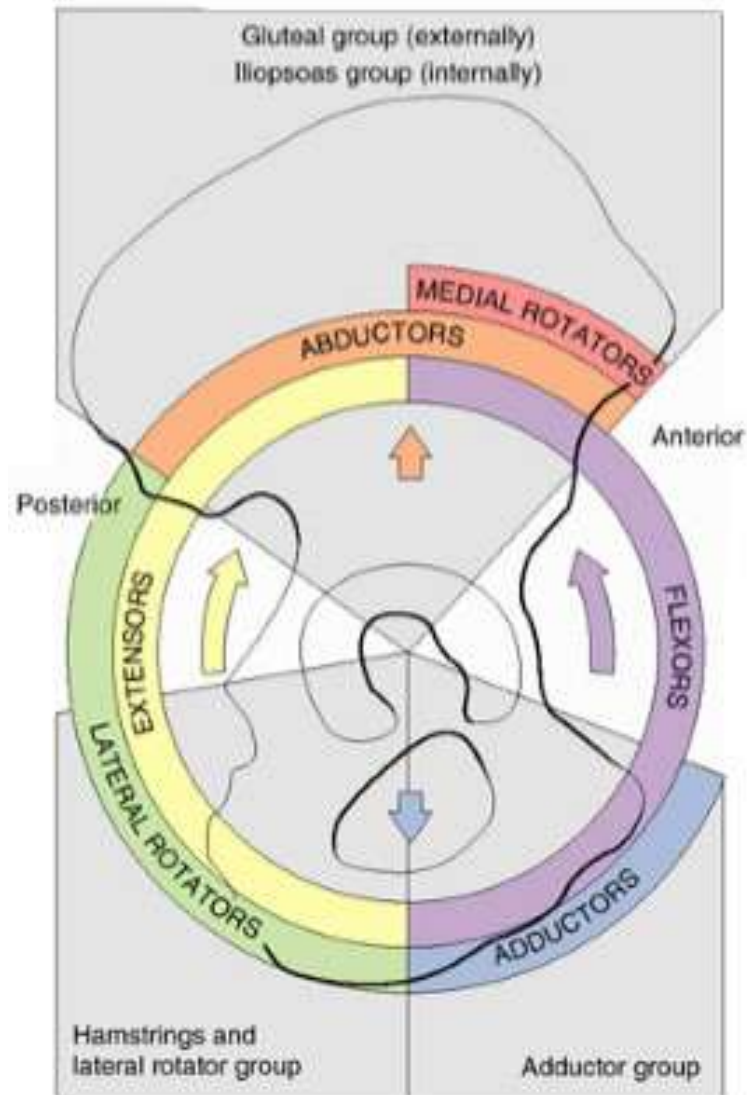
- **Medial**

- Gluteus medius, gluteus minimus, tensor fascia lata

- **Lateral**

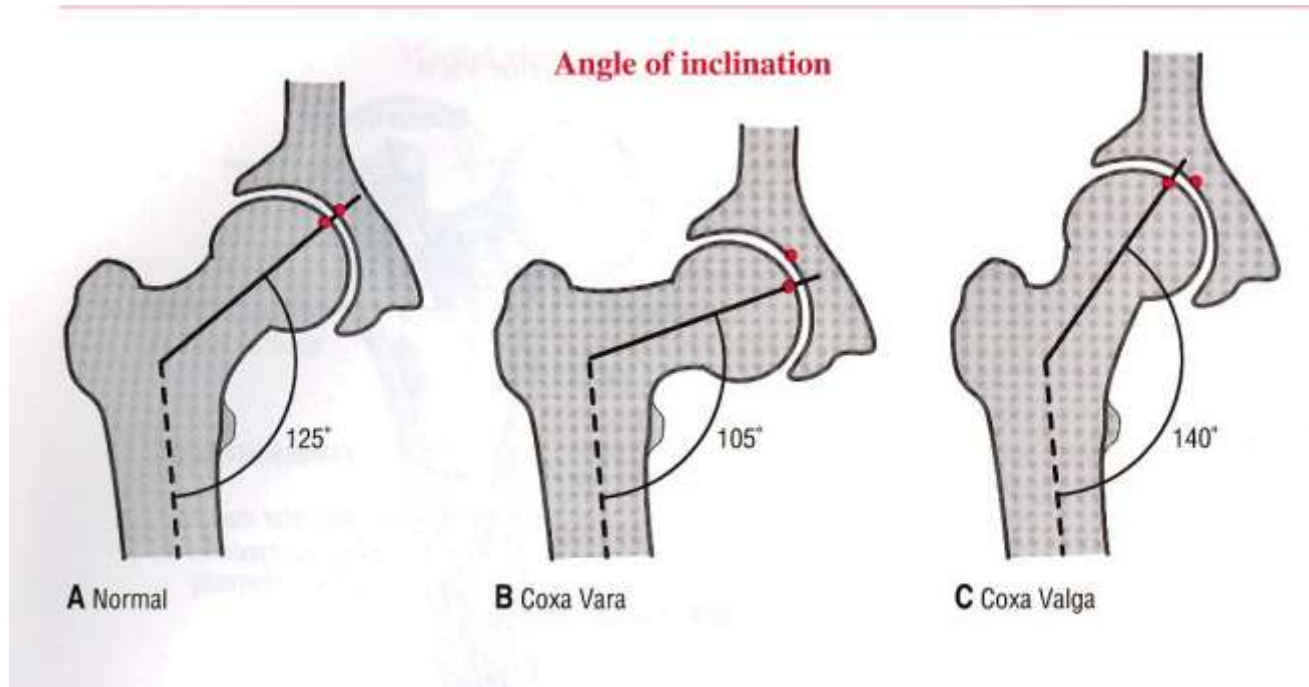
- Obturator externus, obturator internus, gemelli, piriformis, quadratus femoris, gluteus maximus

# Scheme of muscle supply



# Hip joints movement

- Abnormalities of the neck shaft angle may affect hip functions



# The End

