

وسهلا



أهلا

الأستاذ الدكتور يوسف حسين

أستاذ التشريح وعلم الأجنة - كلية الطب - جامعة الزقازيق - مصر

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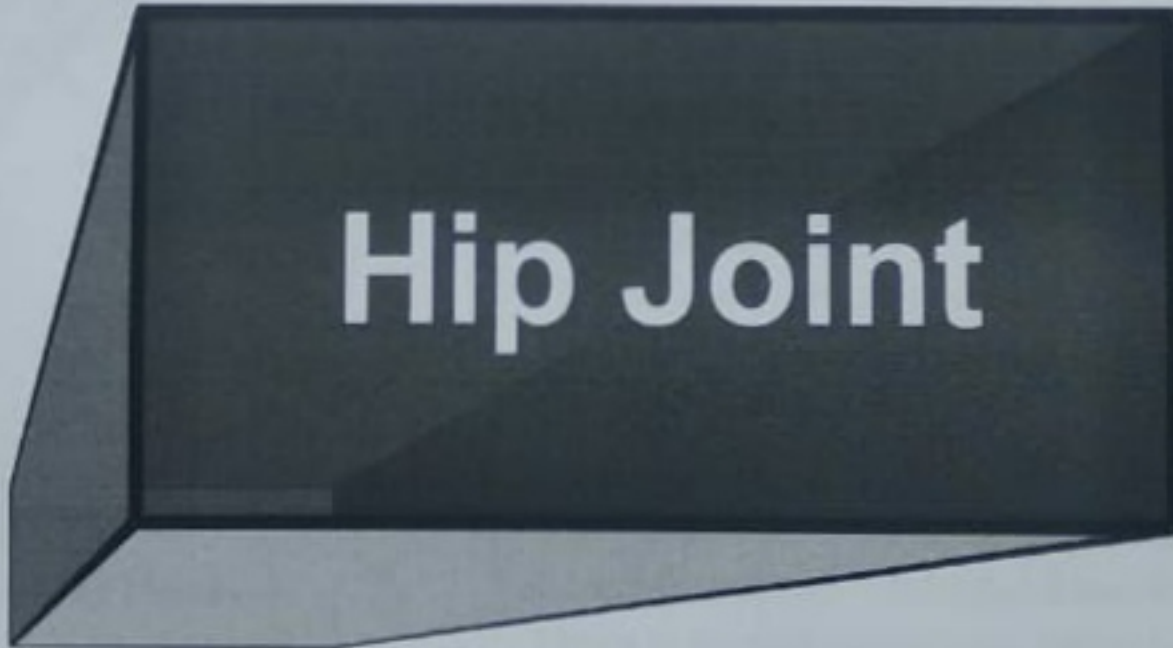
دكتورة من جامعة كولونيا المانيا

Dr. Youssef Hussein Anatomy اليوتيوب

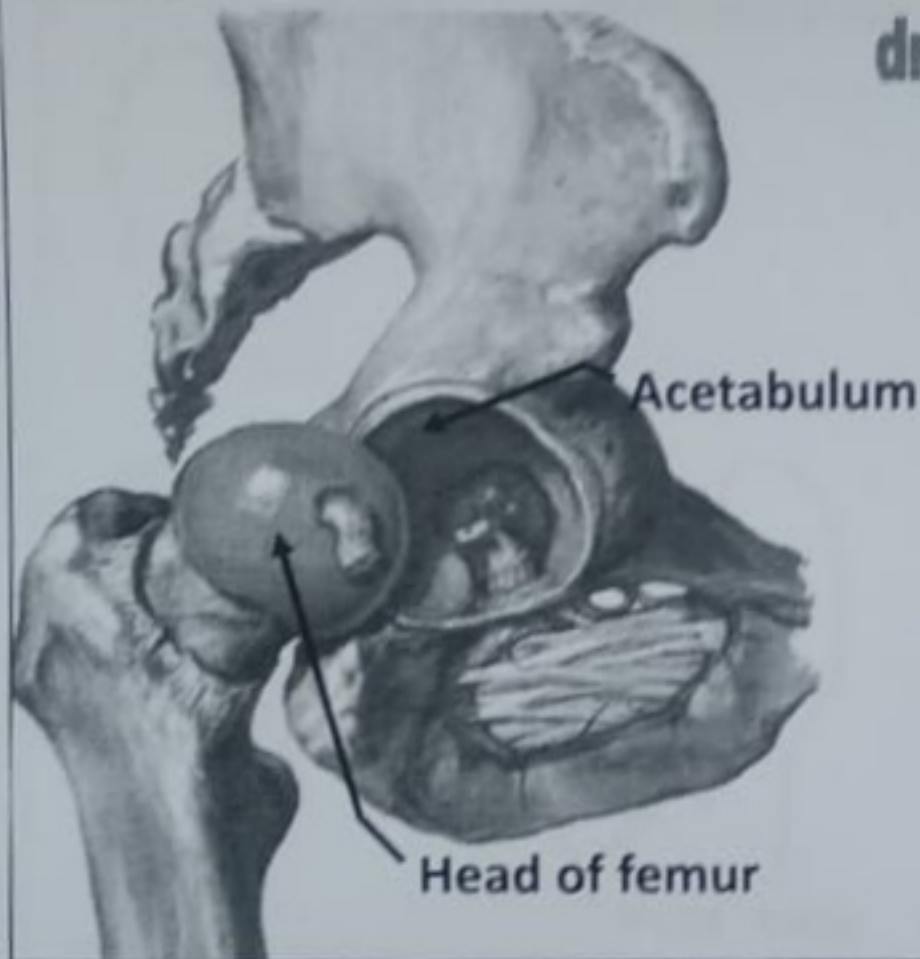
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1

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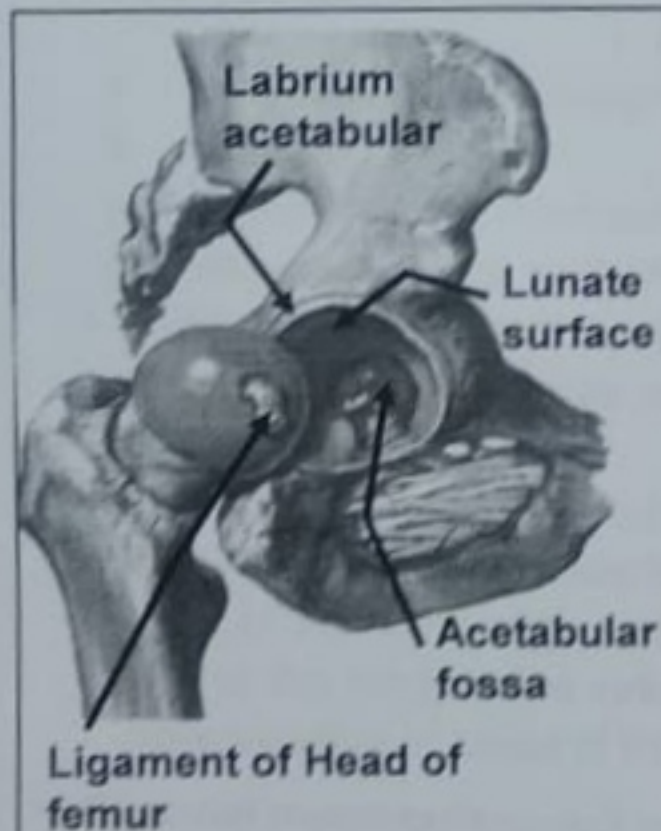
2



• Hip Joint

- 1- **Type:** Synovial joint, and polyaxial (ball and socket).
- 2- **Articular surfaces:**
 - a- Head of the femur.
 - b- Lunate surface of the acetabulum of hip bone.

3



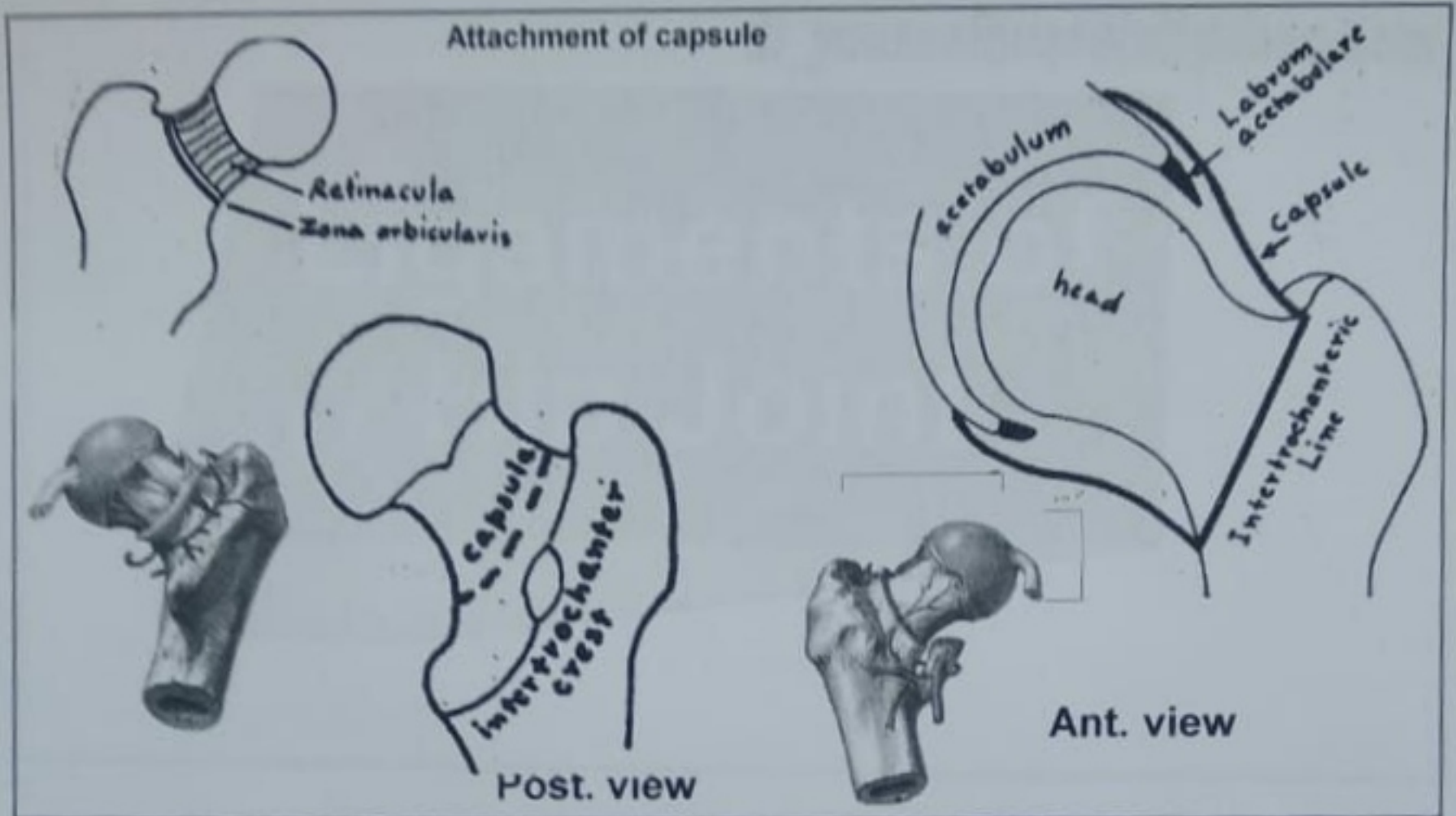
• Acetabulum of hip bone

- This is a **cup-shaped depression** on the lateral side of the hip bone.
- The inferior margin of the acetabulum shows **acetabular notch**.
- Its floor shows a **non-articular area** called the **acetabular fossa**.
- There is a C-shaped **articular strip** called the **lunate surface**.
- **Acetabular Labrum**; ring of fibrocartilage fixed to margin of acetabulum to increase depth of the cavity.

• Head of the femur

- It forms more than half (about two-thirds) of a sphere.
- There is a small depression called **fovea** that gives attachment to the ligament of the head of the femur.

4



5

• **Attachment of the Capsule**

- 1- **Hip bone:** to the margin of the acetabulum **outside the labrum acetabular.**
- 2- **Femur:**
 - a- **Anteriorly,** to the intertrochanteric line.
 - b- **Posteriorly,** to the neck of the femur **one cm medial** to intertrochanteric crest.
 - Accordingly, the **neck** is partly intracapsular and partly extracapsular.
 - The fibers of the capsule are arranged **longitudinally parallel** to the neck of the femur
 - Some of the deep fibers of the capsule are arranged **circularly** around the neck forming the **zona orbicularis.**
 - Many of the fibers of the capsule are reflected medially to cover the **intracapsular** part of the neck called **retinacula of the neck.** They keep the bony fragments close together in cases of fractures of the neck of the femur.
- **Synovial membrane** covers all non-articular surfaces inside the capsule

6

Ligaments of Hip Joint

7

- Iliofemoral ligament:

- It is the **strongest** ligament of the body.

** **Site**; anterior to the capsule.

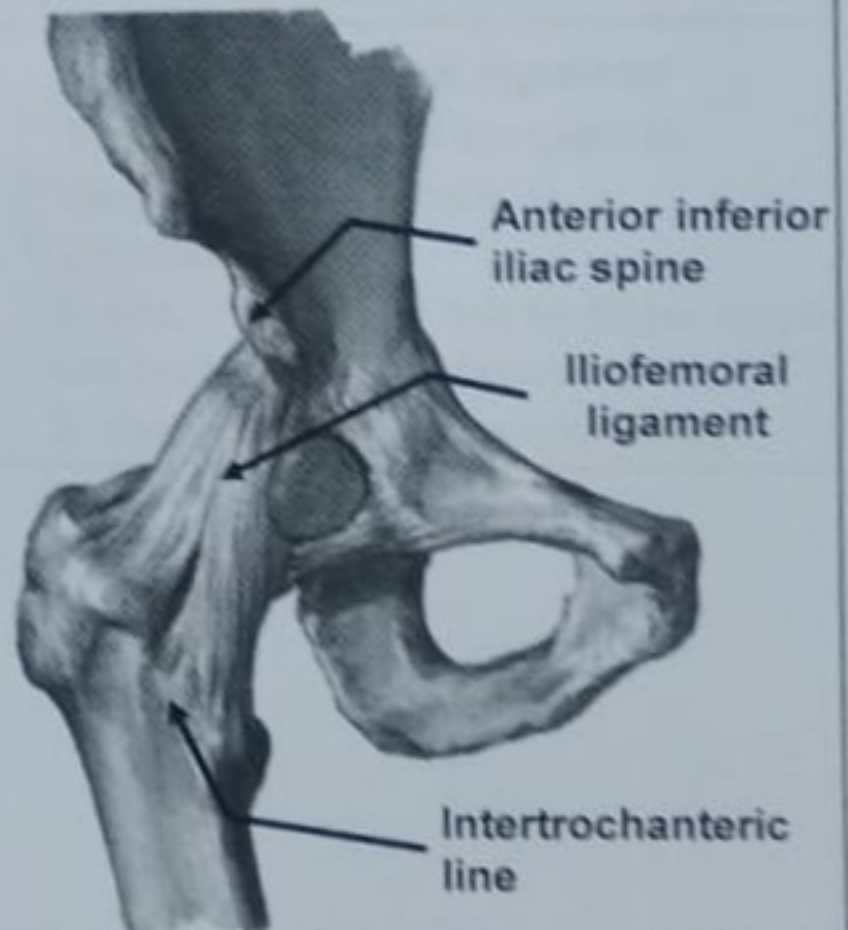
** **Shape**; Y- shaped.

** **Attachment**;

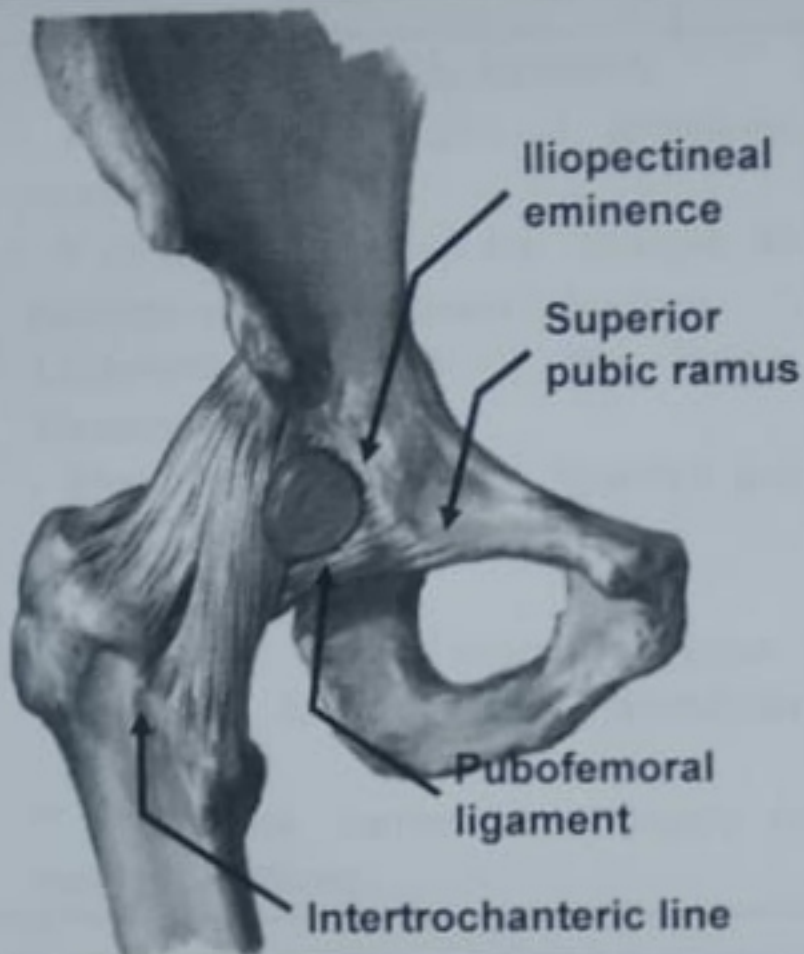
1- Apex attached to the lower part of **anterior inferior iliac spine**.

2- Two bands are attached to the **intertrochanteric line**.

** **Functions**, Prevents hyperextension of the hip joint.



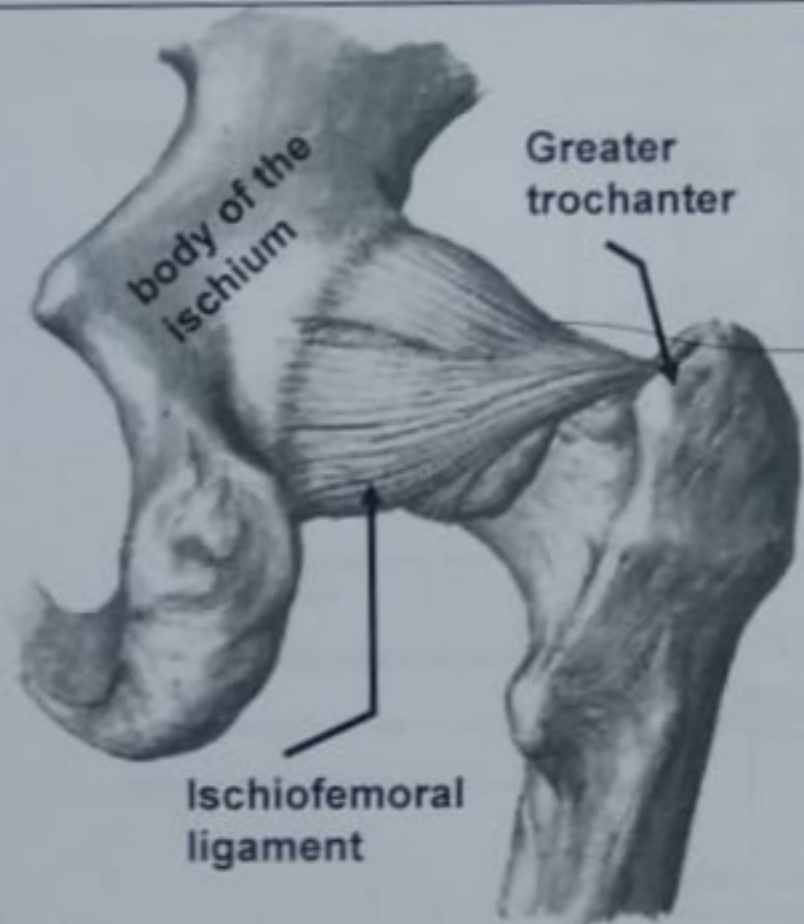
8



Pubofemoral ligament:

- ** Site, medial to capsule.
- ** Shape: triangular
- ** Attachment;
 - 1- Hip, iliopectineal eminence and superior pubic ramus.
 - 2- Femur, intertrochanteric line.
- ** Function, Prevents over abduction of the hip joint.

9

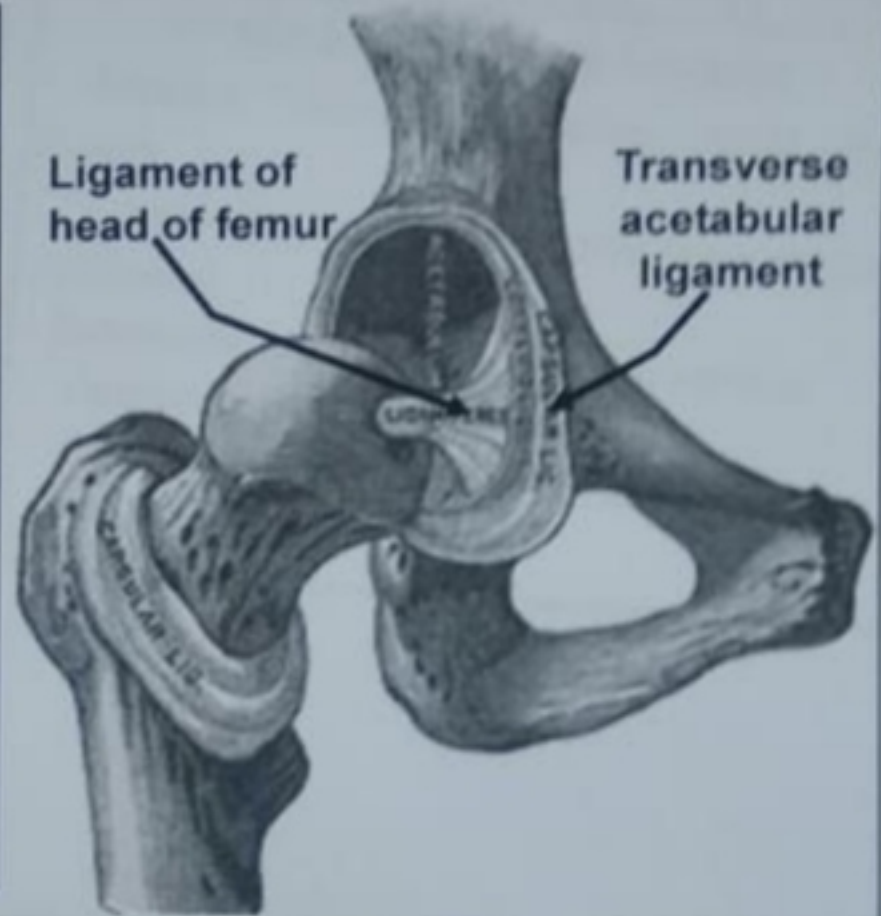


• **Ischiofemoral ligament:**

- ** Site; on the back of the capsule.
- ** Shape: spiral ligament
- ** Attachment,
 - 1- Hip, the body of the ischium below and behind the acetabulum.
 - 2- Femur, to the greater trochanter.

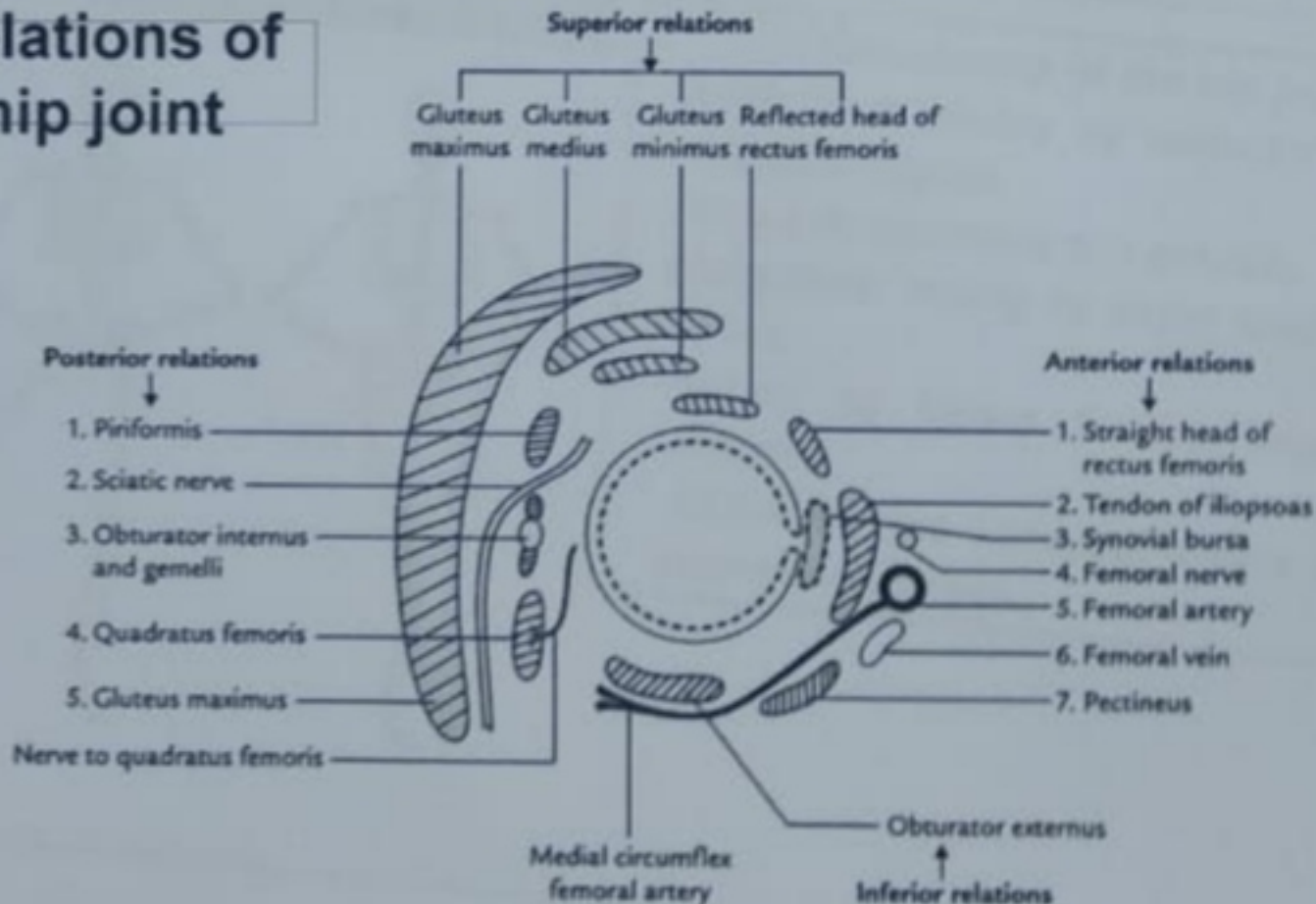
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- **Transverse acetabular ligament:**
 - **Attachments**, margins of acetabular notch.
 - It converts the notch into foramen for passage of nerve & vessel to the joint.
- **Ligament of head of the femur:** (ligamentum teres)
 - **Shape**, It is a triangular ligament and covered by a synovial membrane.
 - ** **Attachment;**
 - **Apex:** to fovea of head of the femur.
 - **Base** to transverse acetabular ligament.
 - ** **Functions;** carries blood supply to head of the femur.



11

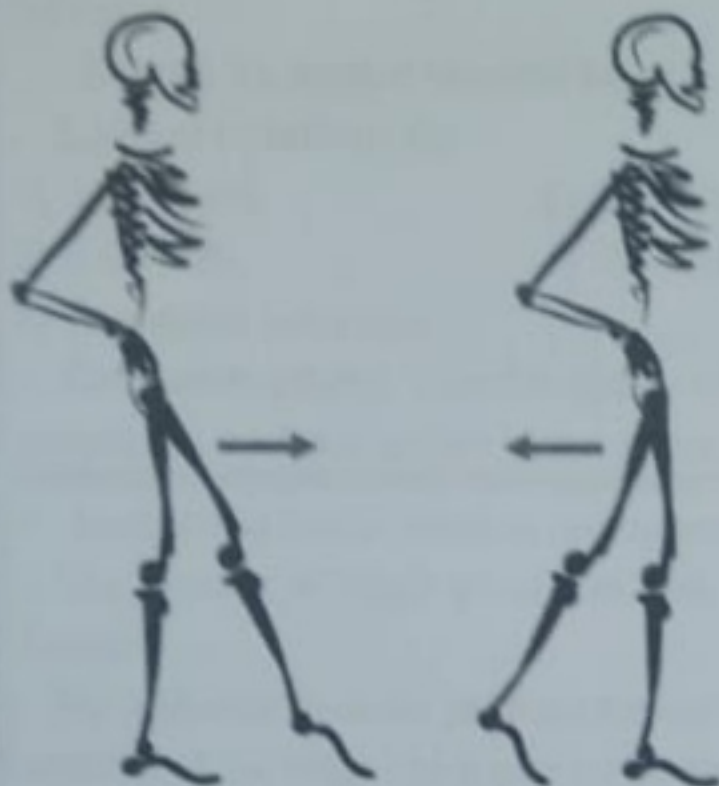
Relations of hip joint



12

FLEXION

EXTENSION



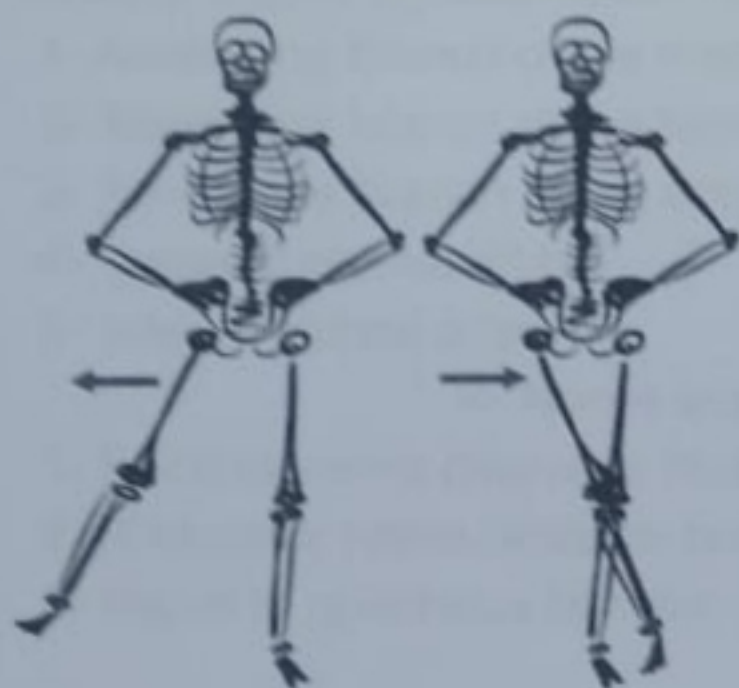
❖ Movements of the hip joint

- **Flexion:** mainly by psoas major and iliacus.
 - helped by sartorius, rectus femoris and pectineus.
- **Extension:** mainly by gluteus maximus.
- helped by the hamstrings.
- **Flexion and extension occur around a transverse axis.**

13

ABDUCTION

ADDUCTION



❖ Movements of the hip joint

- **Adduction:** mainly by adductor longus, brevis and magnus.
- helped by pectineus and gracilis.
- **Abduction:** mainly by glutei medius and minimus.
- helped by tensor fasciae latae and sartorius.
- **Abduction and adduction occurs around anteroposterior axis**

14

❖ Movements of the hip joint

- **Medial rotation:** mainly by of the glutei medius and minimus.

- helped by tensor fasciae latae.

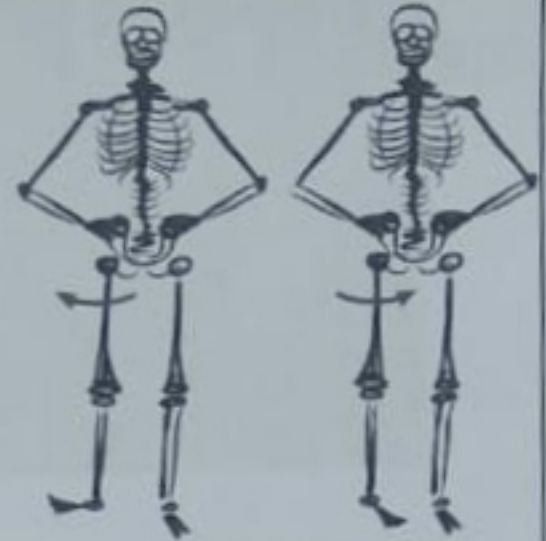
- **Lateral rotation:** by

- 1) Piriformis.
- 2) Obturator internus.
- 3) 2 Gemilli,
- 4) Quadratus femoris.
- 5) Obturator externus.

- **Circumduction;** combination of flexion, abduction, extension and adduction done in succession.

Lateral rotation

Medial rotation



• Medial and lateral rotation occurs around a vertical axis.

- The rotation of thigh occurs on axis passes from head of femur to medial condyle of the femur.

- The adductor muscles produce forward movement of the neck of the femur leading to medial rotation of the thigh like a gate on its hinges.

❖ Blood supply

- Arterial supply (anastomoses around the neck of the femur)

- 1- Ascending branch of the medial circumflex femoral artery.
- 2- Ascending branch of the lateral circumflex femoral artery.
- 3- Acetabular branch of the obturator artery.
- 4- Superior gluteal artery.
- 5- Inferior gluteal artery.

❖ Nerve supply of the hip joint

- 1- Femoral nerve (Nerve to rectus femoris).
- 2 - Obturator nerve (anterior branch).
- 3- Nerve to quadratus femoris.

• **Nelaton's line**

- a line drawn from the **anterior superior iliac spine** to the **ischial tuberosity**. This line normally passes on the top of the greater trochanter.

- **Dislocation of the hip joint**, the top of the greater trochanter is raised above the line.

• **Stability of the hip joint**

- It is very strong and stable joint due to the following factors:

- 1- The depth of acetabulum to accommodate greater part of head of the femur.
- 2- The strong ligaments around the joint.
- 3- The strong muscles around the joint.



Fracture of the upper part of femur

- Proximal segment:
- Flexion and lateral rotation by iliopsoas
- Abduction by gluteus medius, minimus
- Distal segment is pulled medially by the adductor muscles.

• **Neck of the femur**

- It is long and oblique position allows the lower limb to swing easily clear of the pelvis.
- If **fractured**, the shaft is free and rotate laterally around its own axis.
- **Types:** Intracapsular and extracapsular

Gower sign

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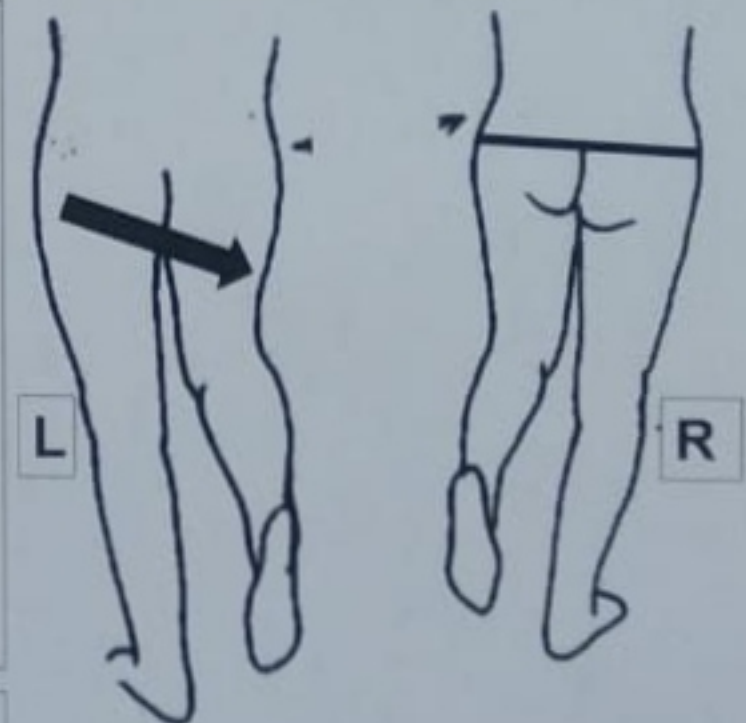
- **Injury of inferior gluteal nerve: Paralysis of the gluteus maximus** muscle leading to difficult in climbing up stairs and rising from the floor is squatting position.

- **Gower's sign, in Paralysis of the muscle the patient** Cannot stand without support, he rises slowly supporting his hand on his leg then on his thigh. He climbs on himself

19

❖ Trendelenburg's sign

- **Paralysis of left superior gluteal nerve**
- When standing on **normal right lower limb**: right glutei medius and minimus contracted to **prevent tilting** of the pelvis to the affected left side
- When standing on the **affected left limb**: pelvis **tilting to the normal right side** due to loss of actions of left glutei medius and minimus



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Paralysis of glutei medius and minimus:

- 1) One side paralysis leads to lurching gait.
- 2) Both sides paralysis lead to waddling gait (from side to side like the duck).

20