أهلا وسهلا

الأستاذ الدكتور يوسف حسين

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

رئيس قسم التشريح و الأنسجة و الأجنة - كلية الطب - جامعة مؤتة - الأردن

دكتوراة من جامعة كولونيا المانيا

اليوتيوب Dr. Youssef Hussein Anatomy

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Hip Joint

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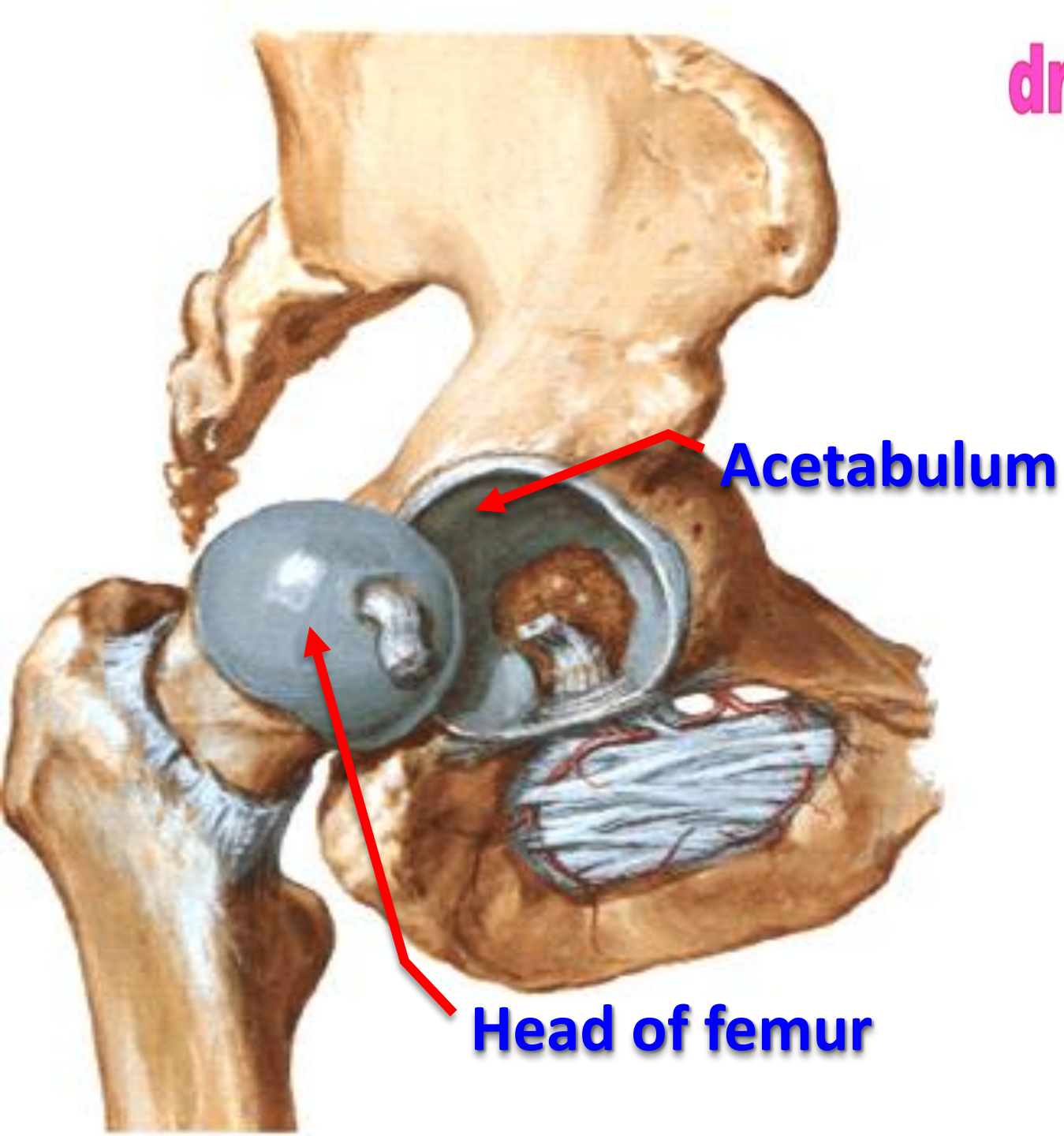


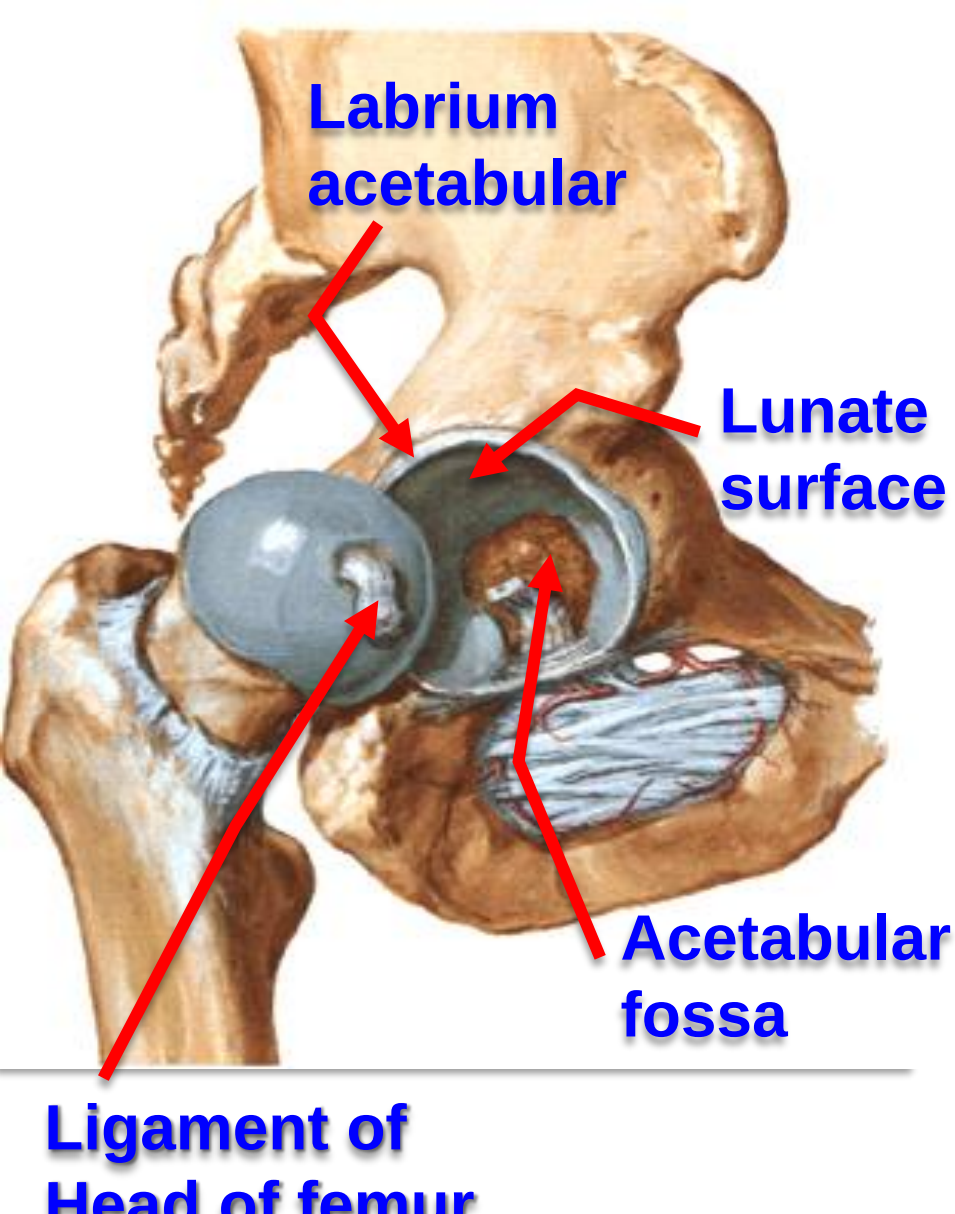
- **Hip Joint**

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.



- **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.

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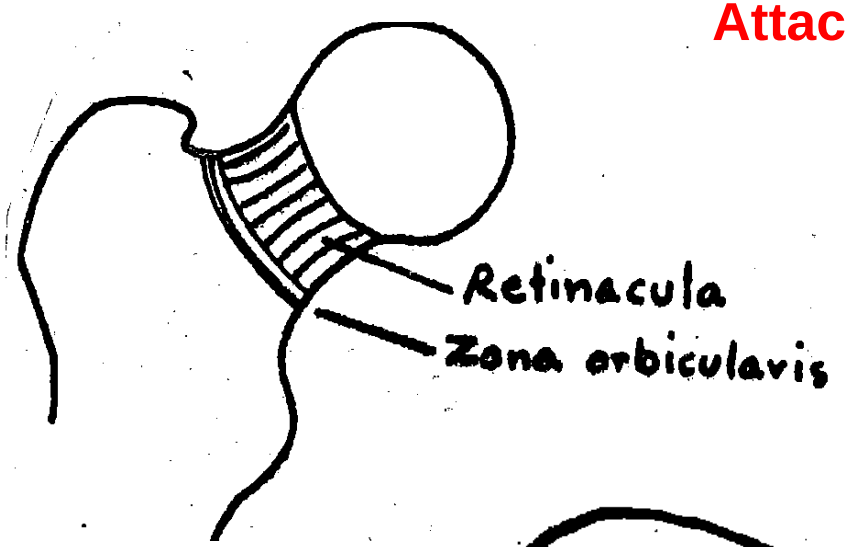
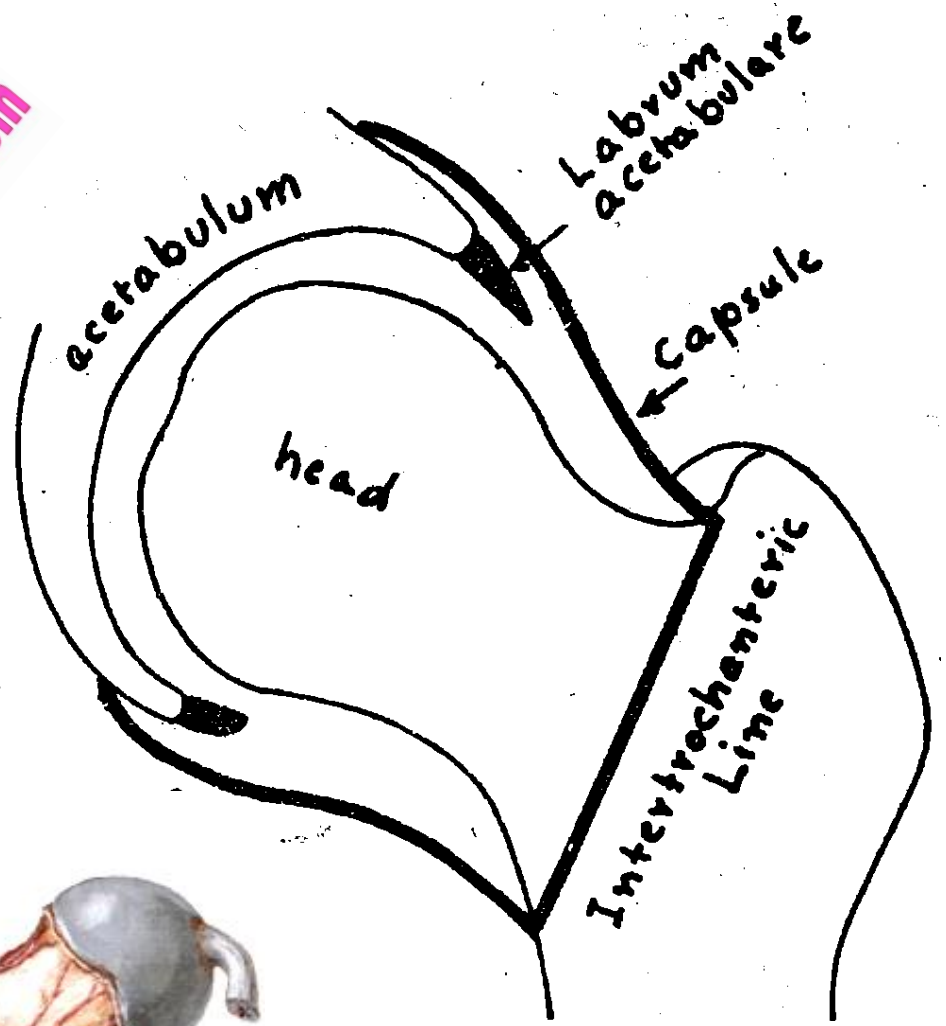
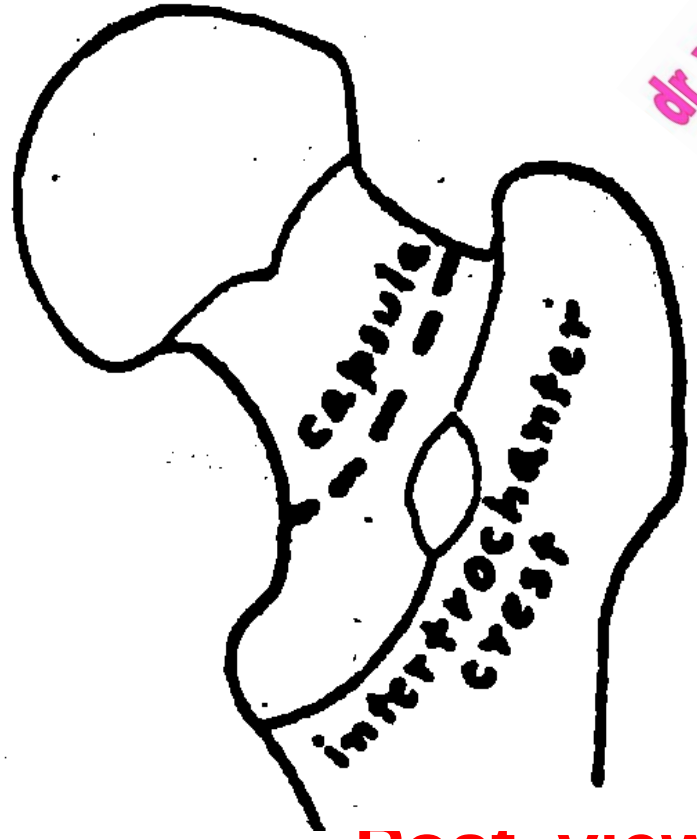
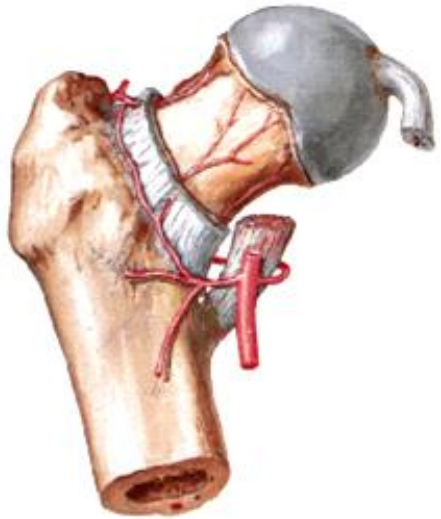
Attachment of capsule







Post. view



Ant. view

- **Attachment of the Capsule**

I- 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

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Ligaments of Hip Joint

- **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.

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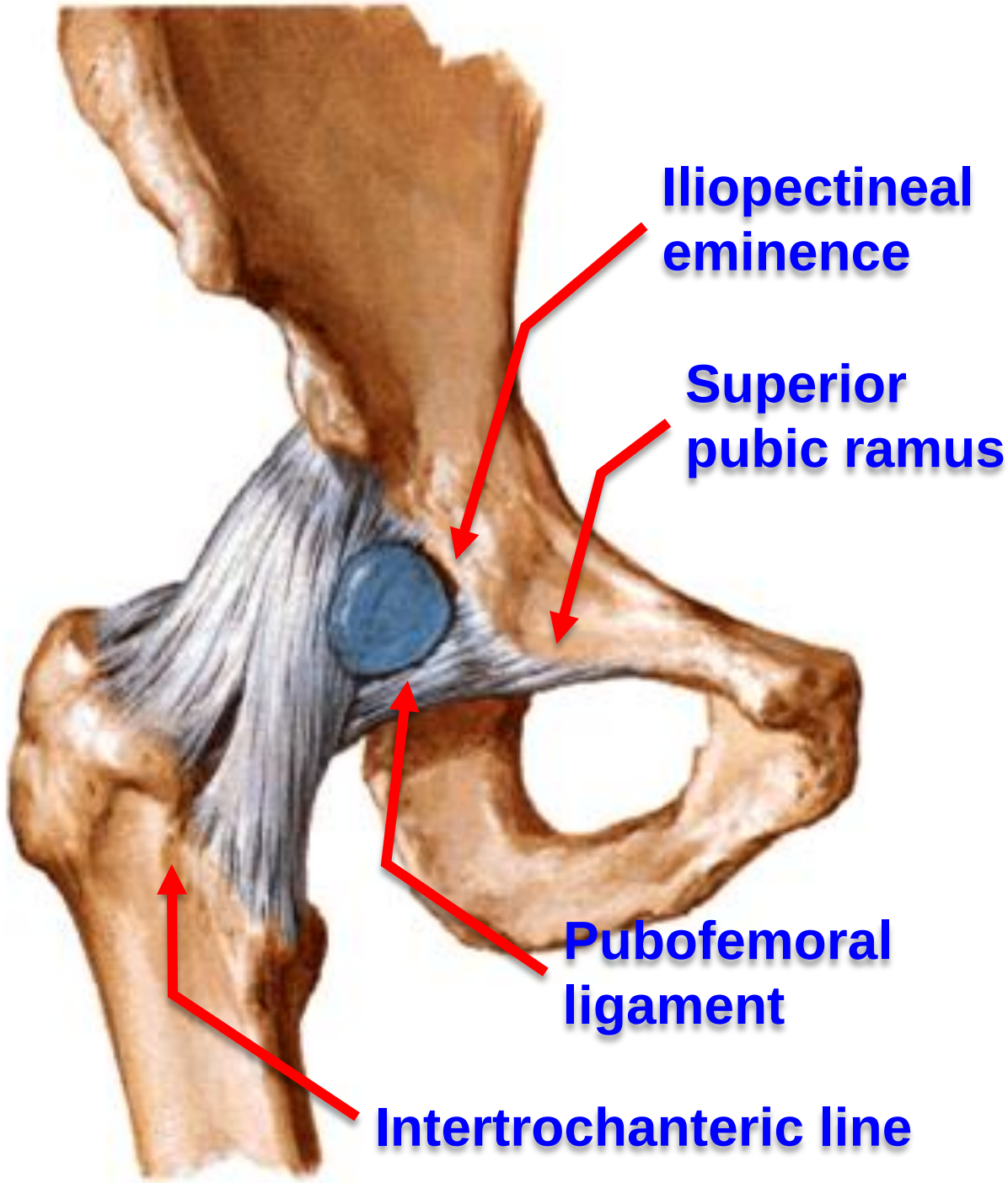

Pubofemoral ligament:

** **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.

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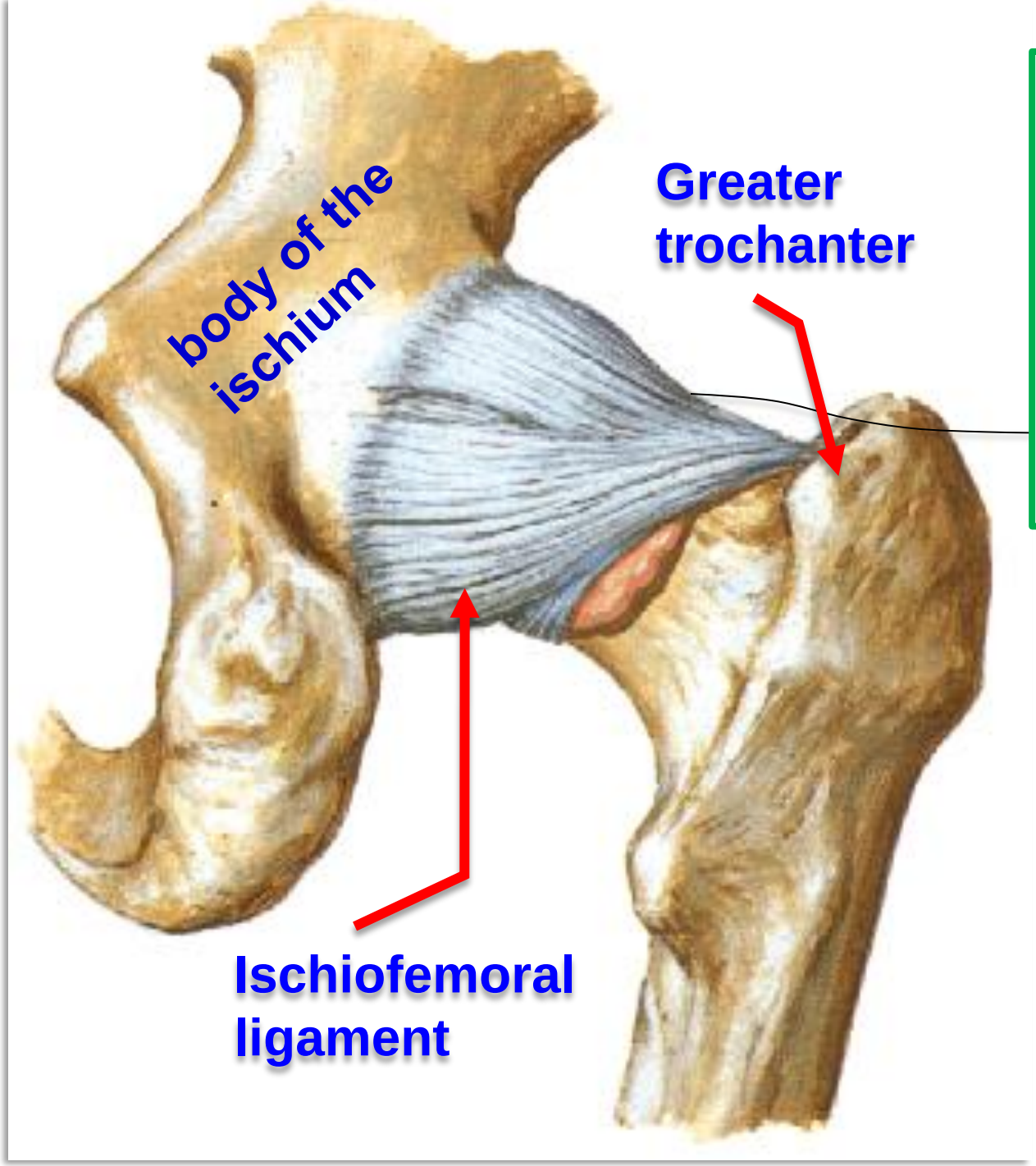

- **Ischiofemoral ligament:**

** **Site**; on the **back** of the capsule.

** **Shape:** spiral ligament

** **Attachment**,

1- Hip, the body of the **ischium**.

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**)**

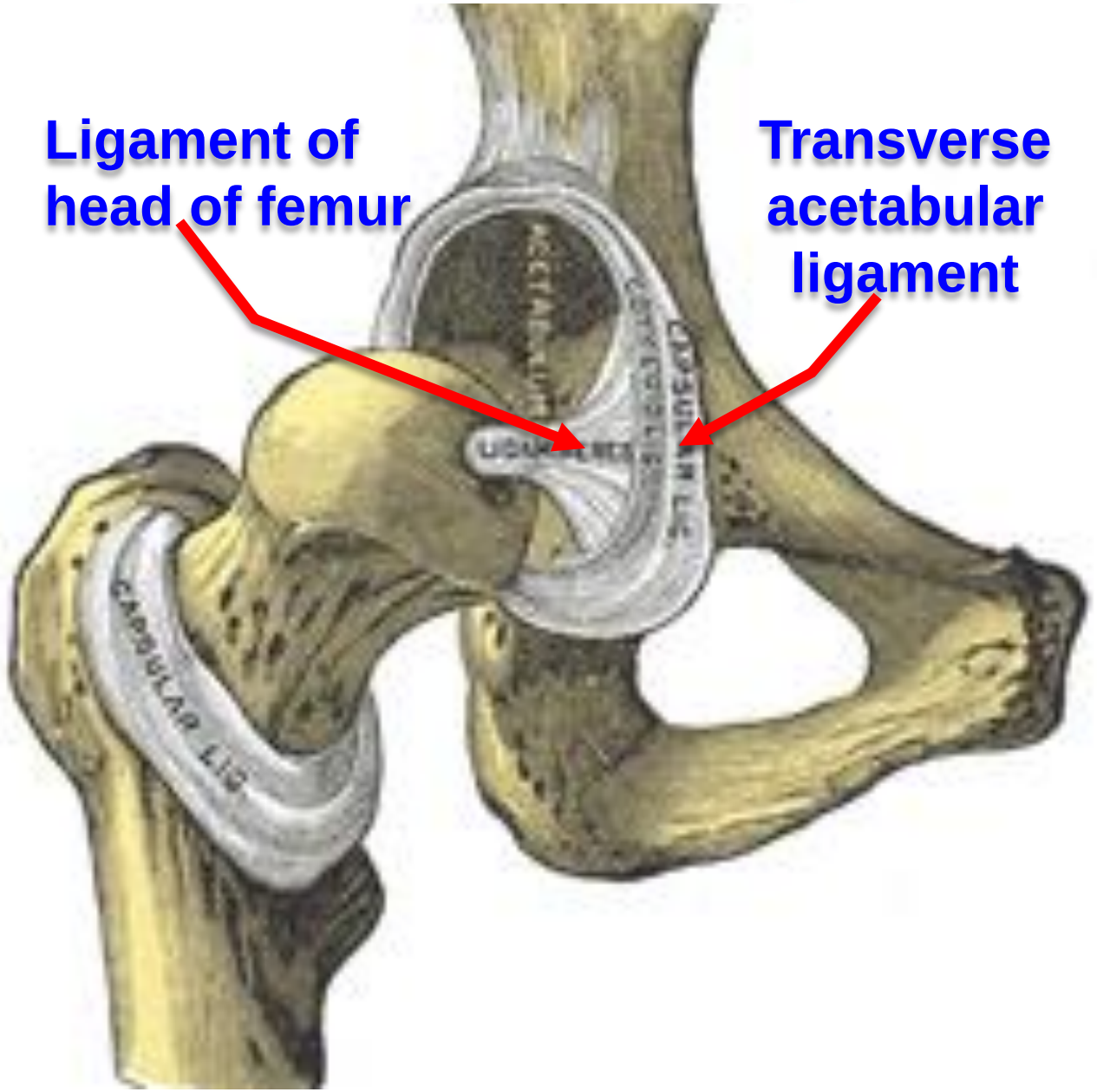
  - **Shape**, It is a triangular ligament and covered by a synovial membrane.

  ** **Attachment**;

  - Apex: to fovea of head of the femur.

  - **Base** to transverse acetabular ligament.

  ** **Functions**; carries blood supply to head of the femur.



Relations of hip joint

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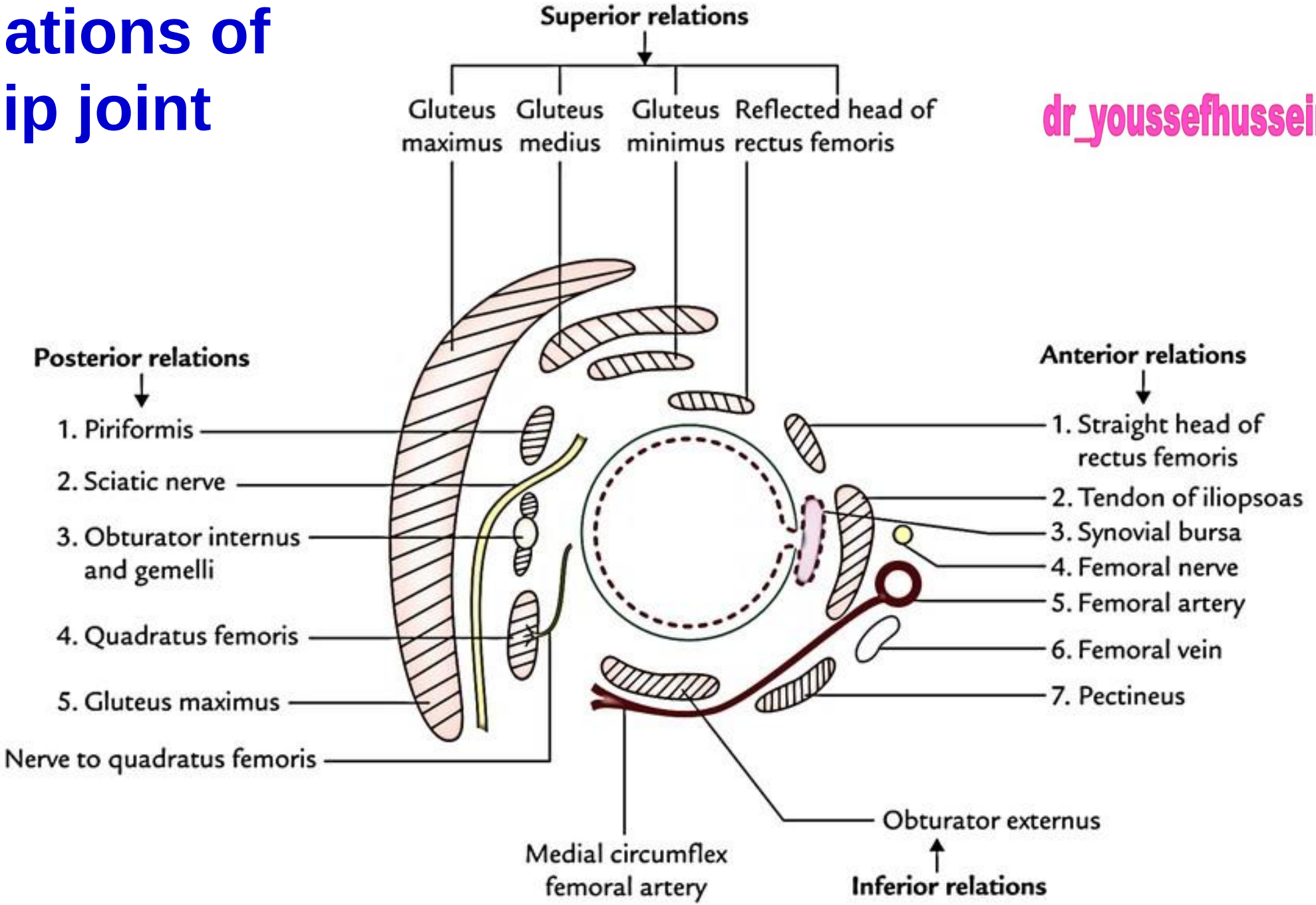

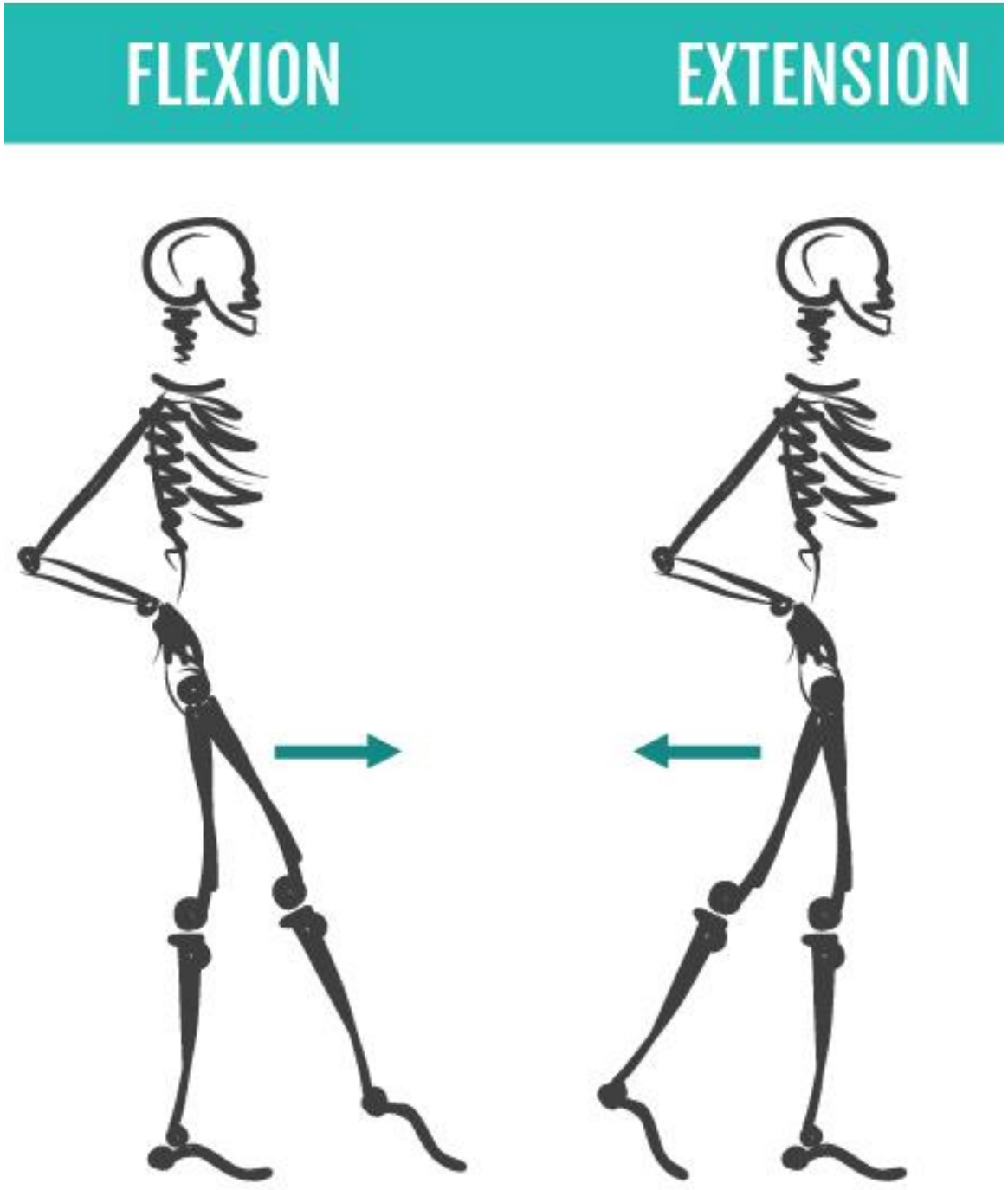

❖ Movements of the hip joint

- **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.**

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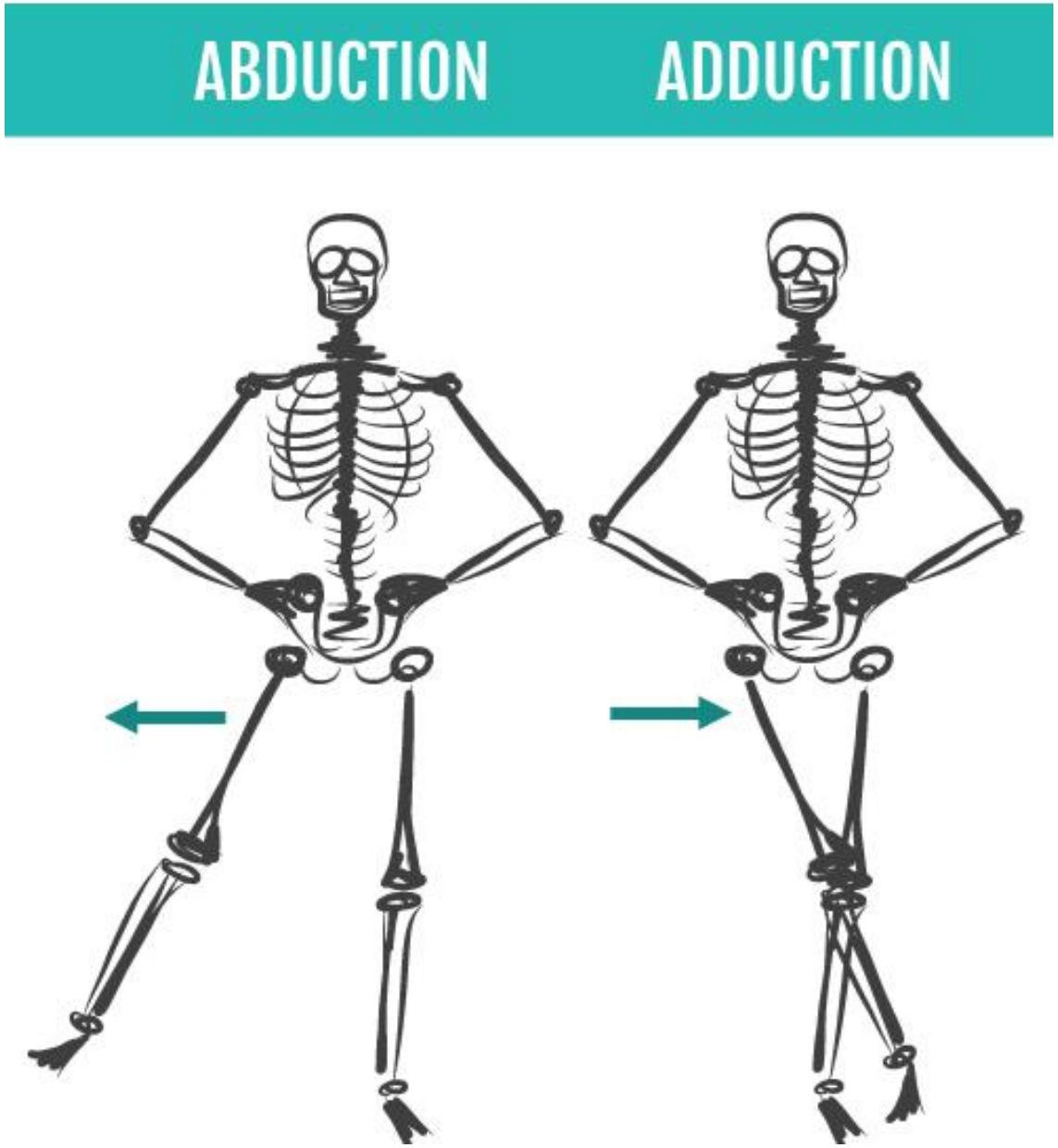

❖ Movements of the hip joint

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

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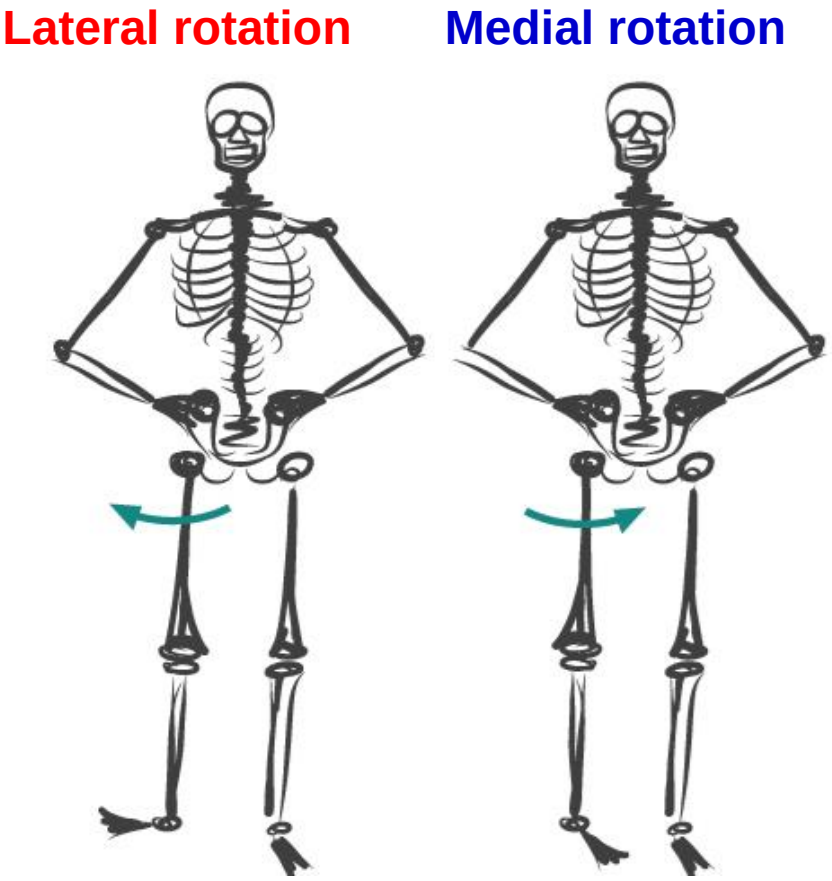
❖ Movements of the hip joint

- **Medial rotation:** mainly by of the glutei medius and minimus.
  - helped by tensor fasciae latae.
- **Lateral rotation:** by

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

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



- 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- **A**scending branch of the medial circumflex femoral artery.

2- **A**scending branch of the lateral circumflex femoral artery.

3- **A**cetabular 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.

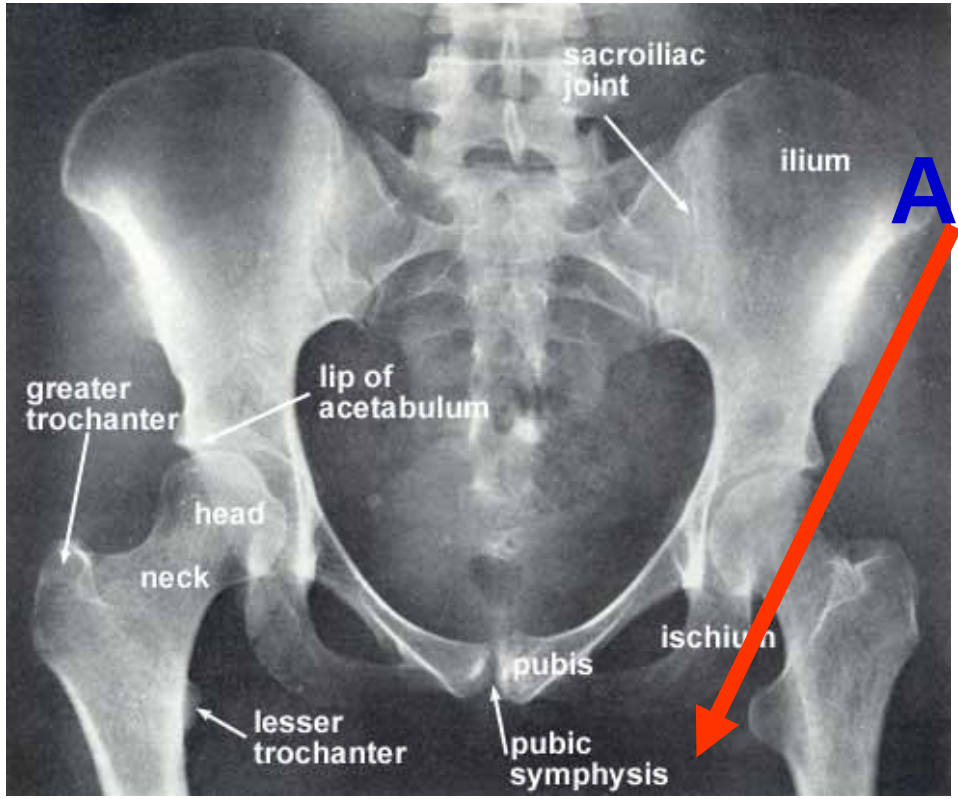
• Stability of the hip joint

- 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.



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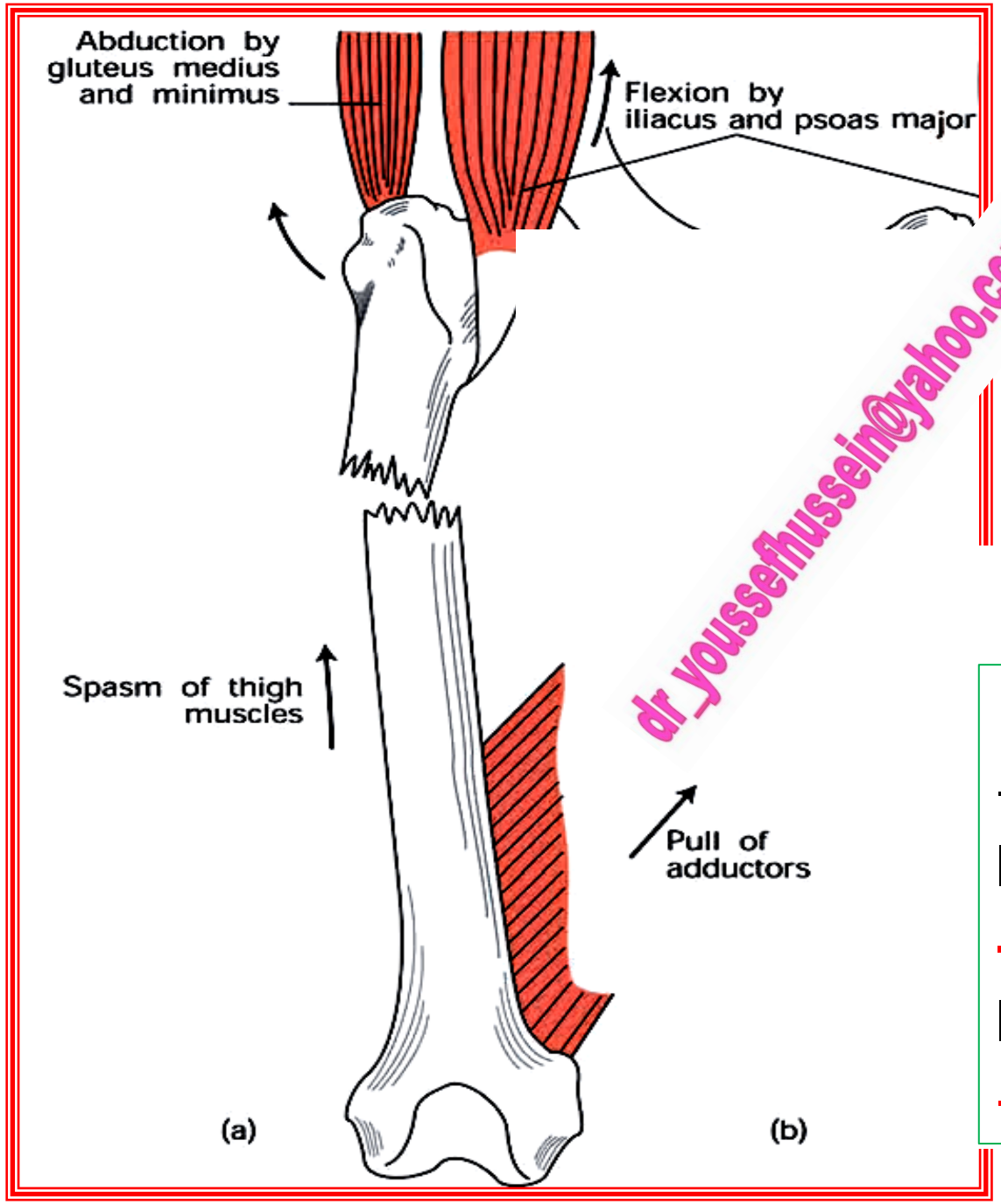

Fracture of the upper part of femur

- **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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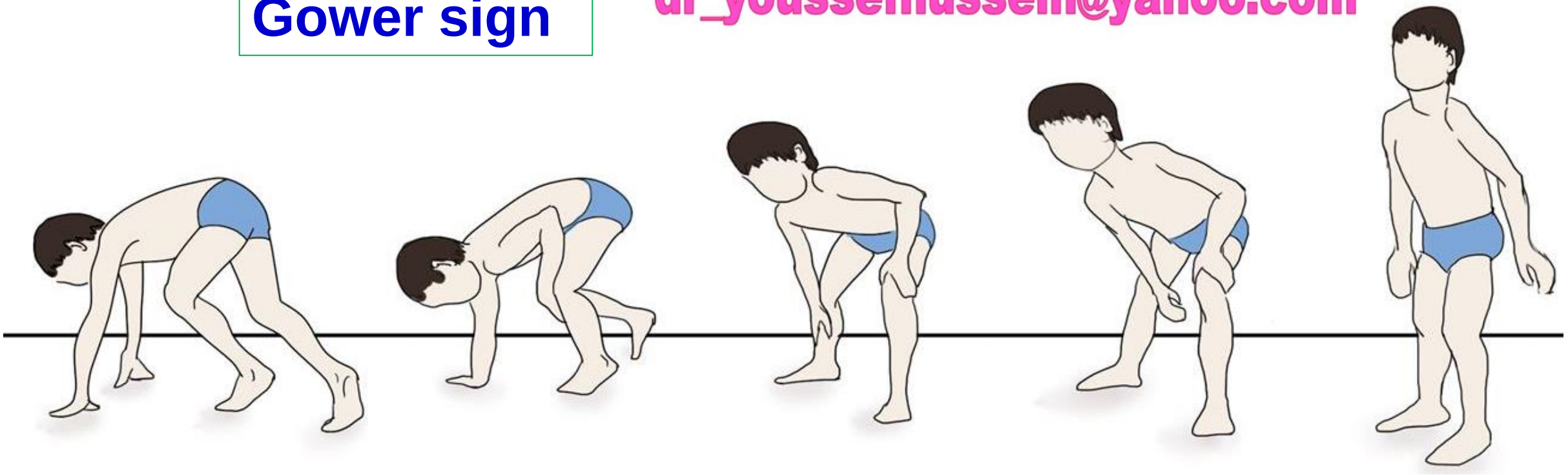
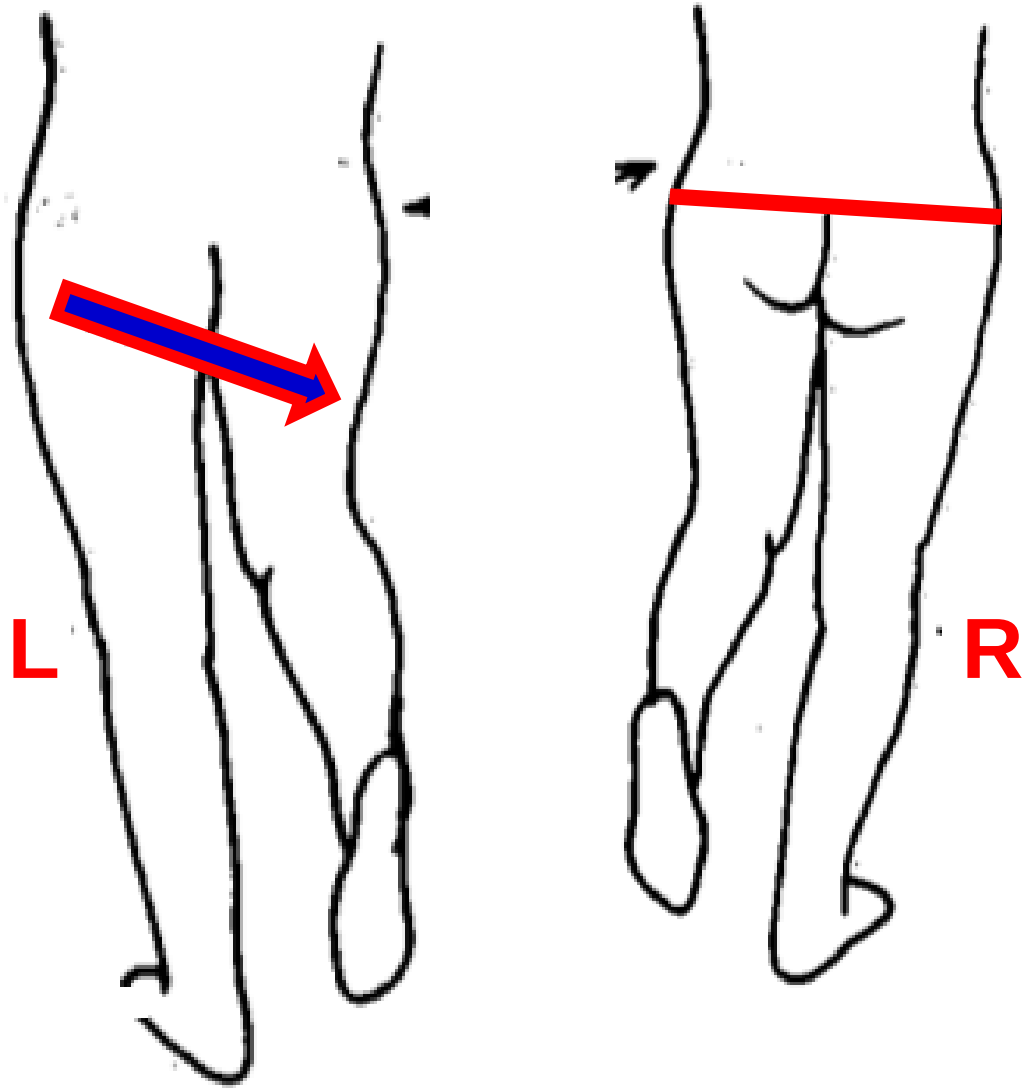


- Injury of inferior gluteal nerve: Paralysis of the gluteus maximus muscle leading to difficult in climbing up stairs and rising from the floor is squatting position**.**

- 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

❖ 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



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).

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