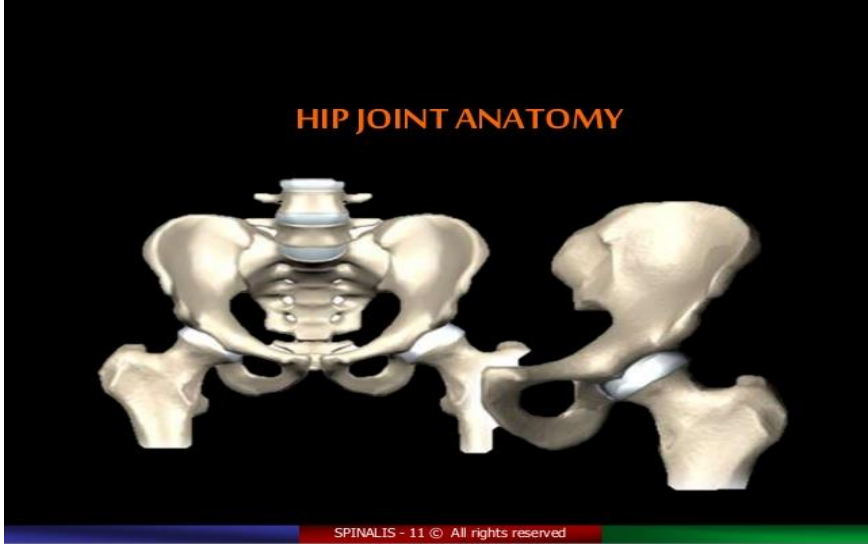


HIP JOINT

DR NAJMA ATTAULLAH

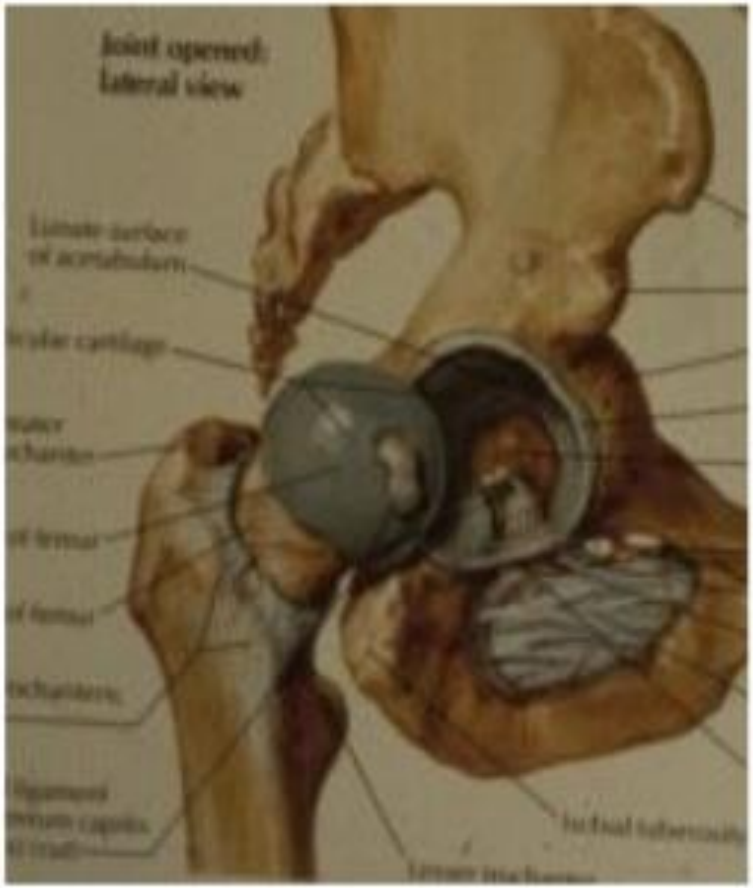
LECTURER KGMC

Hip Joint

- Synovial ball and socket joint
- Multiaxial
- Three degrees of freedom
- Movement in three planes
- Close pack extension and medial rotation
- Least pack semiflexion

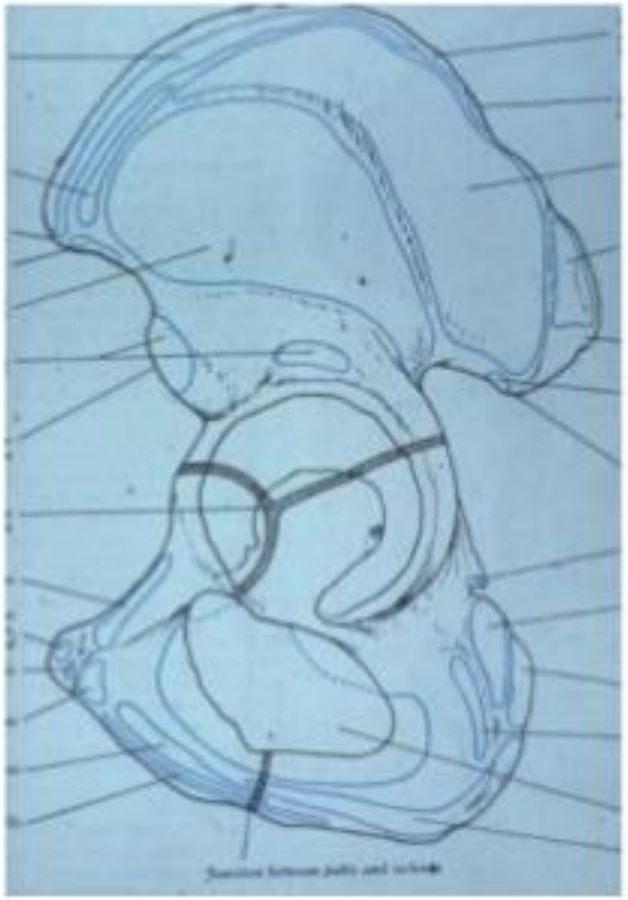
Hip Joint

- One of most stable joints in the body
- Articular surface of hip joint are reciprocally curved
- Superior surface of femur and acetabulum sustain greatest pressure



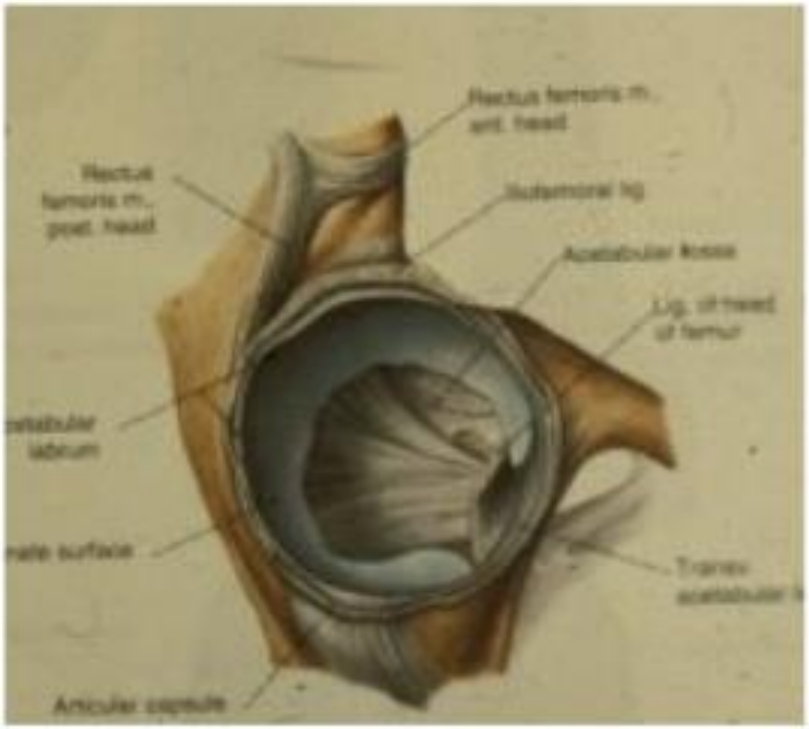
Acetabulum

- Y-shaped epiphyseal cartilage
- Start to ossify at 12 years
- Fuse 16-17 years
- Acetabular notch is inferior
- Nonarticular fossa, thin related medially to obturator internus
- Pad of fat, proprioceptive nerves



Articular Surface of Hip Joint

- Semilunar articular surface covered with hyaline cartilage
- Deepened by acetabular labrum
- Wedge shaped fibrocartilage

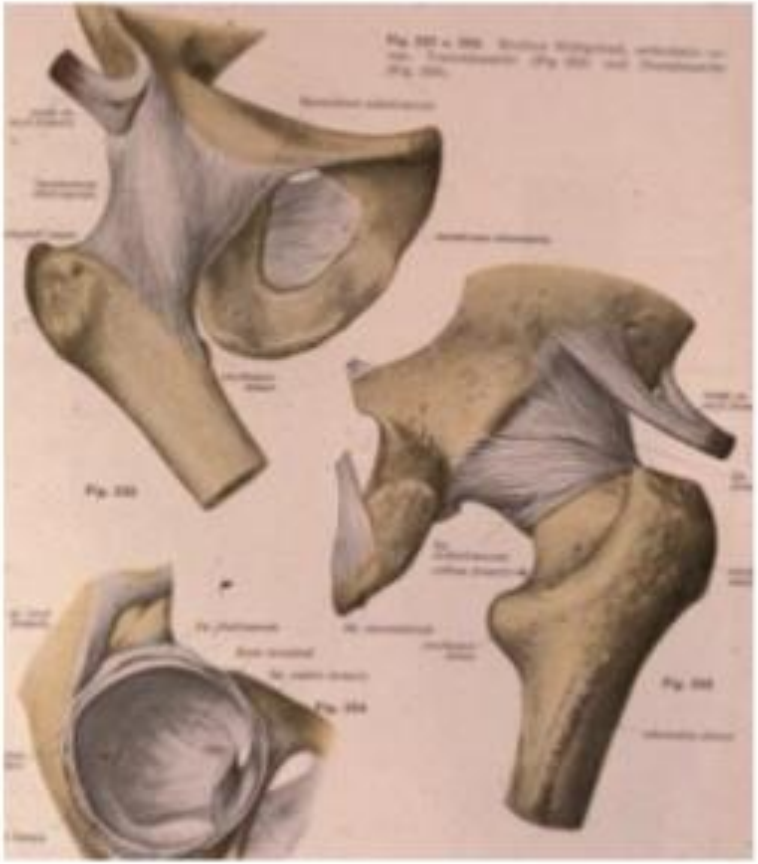


Articular Surface

- Head of femur 2/3rd of sphere
- Pit for ligamentum teres
- Covered with articular cartilage
- Cartilage thicker posterior superior
- Epiphyseal line for head intracapsular

Capsule of Hip

- Proximally attached
- Margins of the acetabular fossa
- Base of labrum
- Distally, anterior to the intertrochanteric line
- Inferiorly, femoral neck close to lesser trochanter

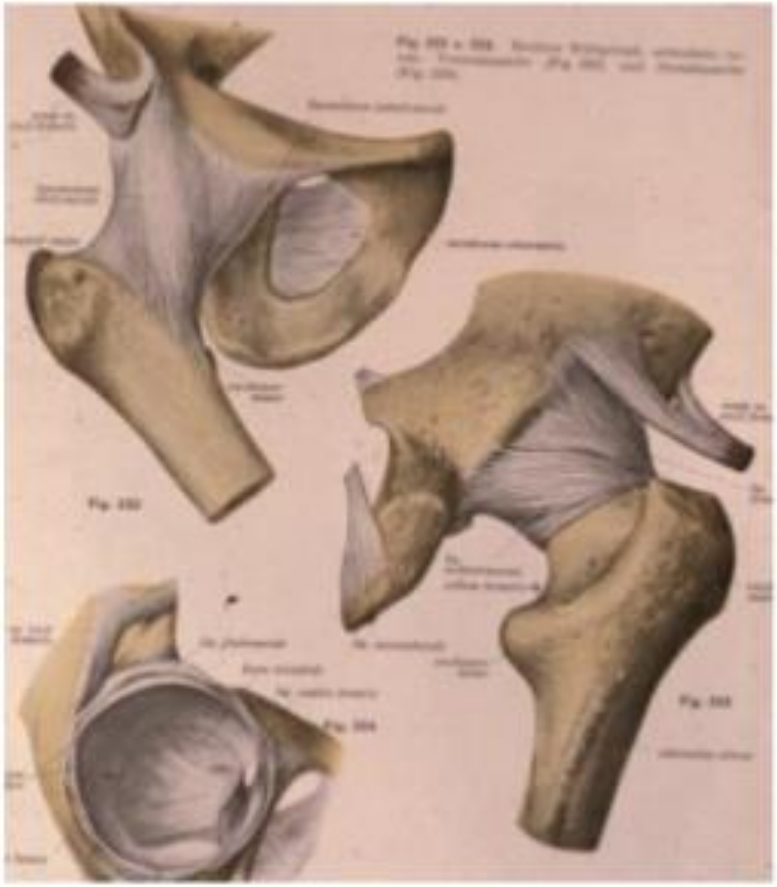


Capsule of Hip

- Posterior
- Free border, finger's breath from trochanteric crest due to insertion of obturator externus
- Into trochanteric fossa and
- Root greater trochanter

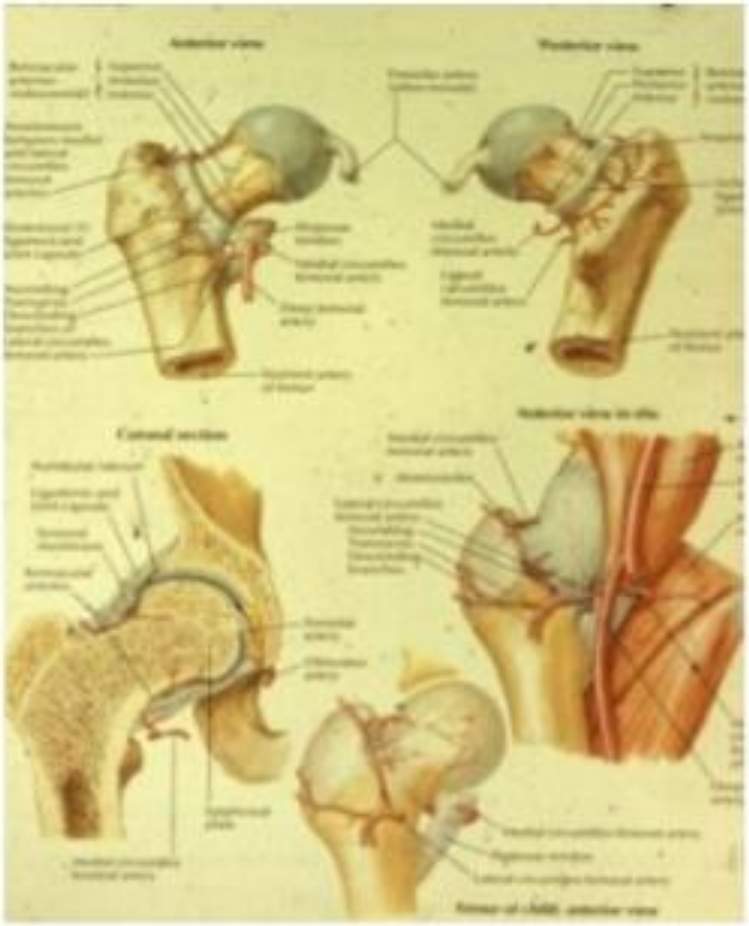
Capsule of Hip

- Strongest superiorly
- Anteromedially, deep fibres reflected head of rectus femoris
- Iliopsoas is anterior
- Lateral deep fibres of gluteus minimus



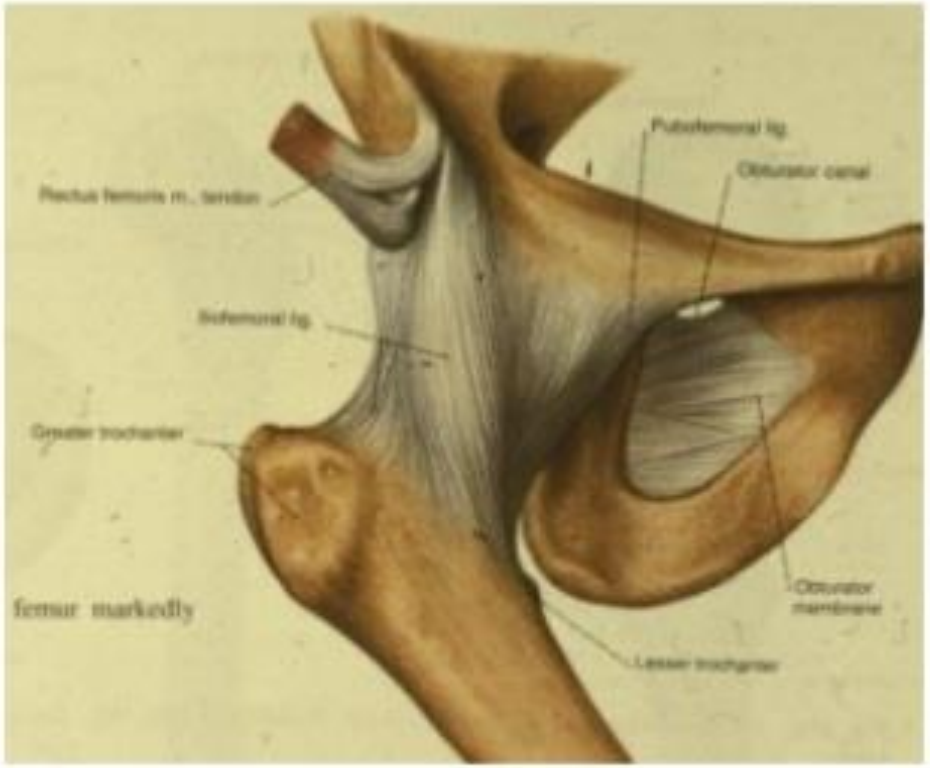
Synovial Membrane

- Lines inner portion of capsule and non articular structures
- Ligament of head
- Fat in acetabular fossa
- May communicate with psoas bursa
- Bursa under obturator externus

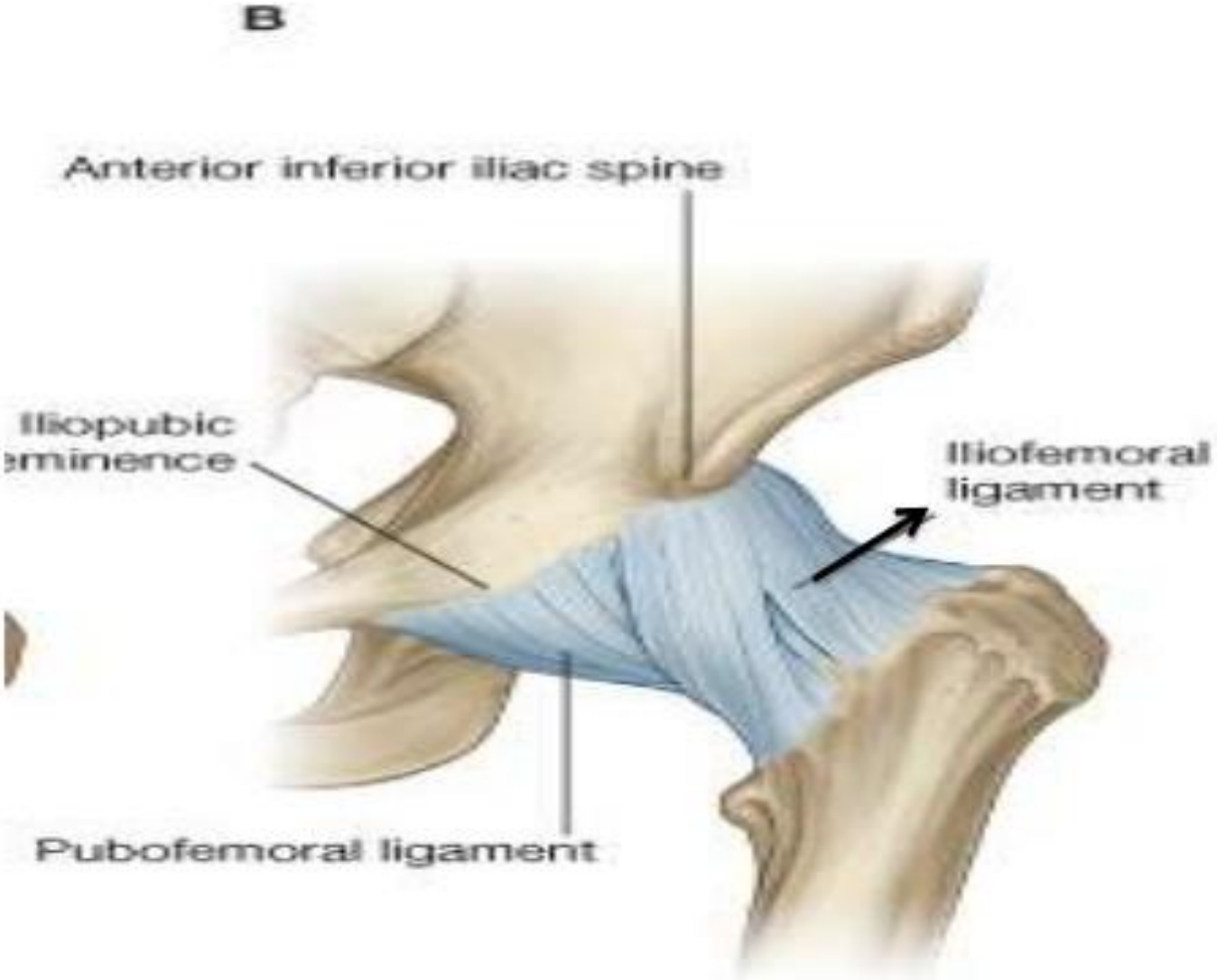


Ligaments of Hip

- Acetabular labrum
- Transverse ligament
- Ligament of head
- Iliofemoral ligament
- Pubofemoral ligaments
- Ischiofemoral ligaments
- Zona orbicularis

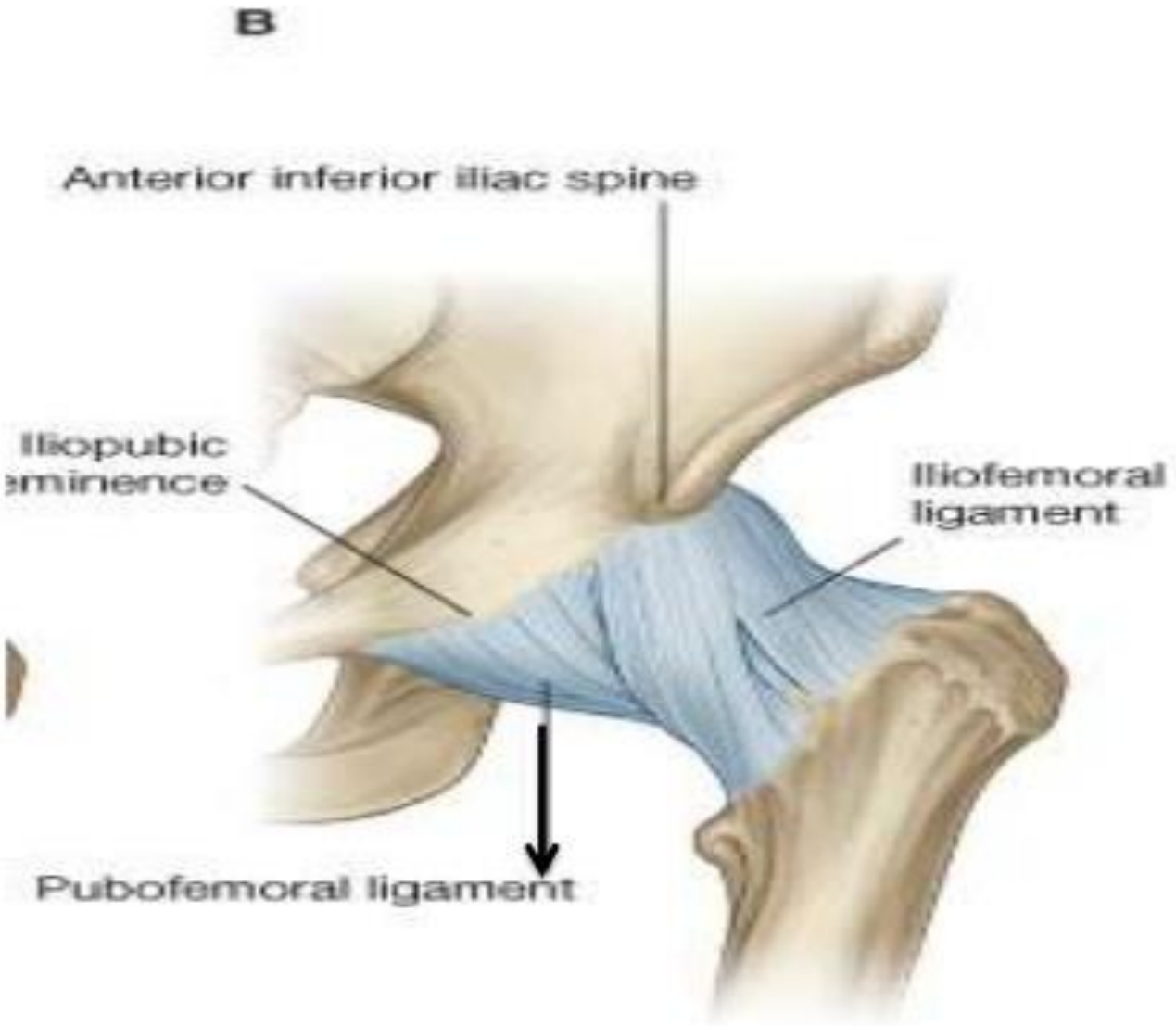


Ilio-femoral ligament



- The **ilio-femoral ligament;**
- Is anterior to the hip joint and is triangularly shaped.
- Its apex is attached to the ilium between the anterior inferior iliac spine and the margin of the acetabulum and its base is attached along the intertrochanteric line of the femur.
- Parts of the ligament attached above and below the intertrochanteric line are thicker than that attached to the central part of the line.
- This results in the ligament having a Y appearance.

Pubo-femoral ligament

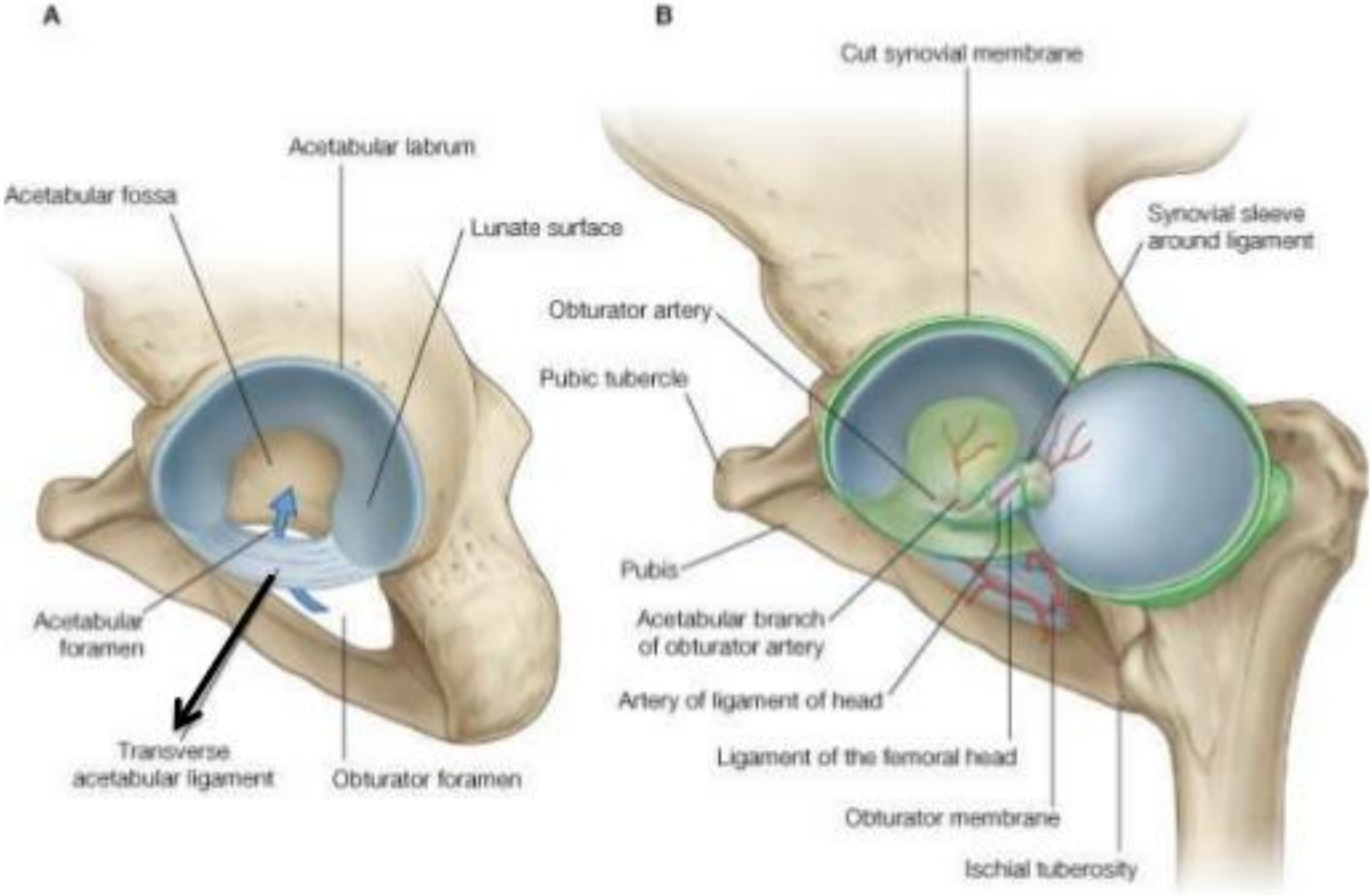


- The **pubofemoral ligament;**
- Is anteroinferior to the hip joint.
- It is also triangular in shape, with its base attached medially to the ilio-pubic eminence, adjacent bone, and obturator membrane.
- Laterally, it blends with the fibrous membrane and with the deep surface of the ilio-femoral ligament.

Ischio-femoral ligament

- The **ischiofemoral ligament;**
- Reinforces the posterior aspect of the fibrous membrane.
- It is attached medially to the ischium, just posteroinferior to the acetabulum, and laterally to the greater trochanter deep to the ilio-femoral ligament.

Ligament of the head of femur



Ligament of the head of femur

- The **ligament of the head of the femur;**
- Is a flat band of delicate connective tissue that attaches at one end to the fovea on the head of the femur and at the other end to the acetabular fossa, transverse acetabular ligament, and margins of the acetabular notch.
- It carries a small branch of the obturator artery, which contributes to the blood supply of the head of the femur.

Innervation

- Femoral nerve or its muscular branches (anteriorly)
- Accessory obturator nerve, if present (anteriorly)
- Obturator nerve (anterior division) (inferiorly)
- Superior gluteal nerve (superiorly and posteriorly)
- Nerve to quadratus femoris (posteriorly).
- Pain in the hip may be misleading because pain can be referred from the vertebral column.

Blood supply

- Vascular supply to the hip joint is predominantly through branches of the **obturator artery, medial and lateral circumflex femoral arteries, superior and inferior gluteal arteries, and first perforating branch of the deep artery of the thigh**.
- The articular branches of these vessels form a network around the joint.

Movements

- Hip movements are flexion-extension, abduction-adduction, medial-lateral rotation, and circumduction.
- Movements of the trunk at the hip joints are also important, such as those occurring when a person lifts the trunk from the supine position during sit-ups.

MOVEMENTS

Flexion

Flex-Extension: 120-140 deg

Adduction

Abd-Adduction: 60-80 deg

Lateral Rotation

Extension

Abduction

Int-External rotation: 60-90 deg

Medial Rotation

- **Flexion;** Iliopsoas (the strongest flexor), sartorius, tensor of fascia lata, rectus femoris, pectineus, adductor longus, adductor brevis, adductor magnus (anterior part), and gracilis.

- **Extension;** Hamstrings (semitendinosus, semimembranosus, and long head of biceps femoris), adductor magnus--posterior part, and gluteus maximus;
- The gluteus maximus is relatively inactive from the straight (standing) position to the fully extended position unless forceful extension is required.
- It acts mostly from the fully flexed to the straight position, as in climbing stairs or in rising from a sitting position.

- **Abduction;** Gluteus medius and minimus, and tensor of fascia lata.
- **Adduction;** Adductor longus, adductor brevis, adductor magnus, gracilis, pectineus, and obturator externus.
- **Rotation;**

❖ **Medial rotators;** anterior fibers of gluteus medius, gluteus minimus, and tensor of fascia lata;

❖ **Lateral rotators;** obturator externus, obturator internus, gemelli, piriformis, quadratus femoris, and gluteus maximus.

MOVEMENTS

Action	Muscles
Flexion	iliopsoas, sartorius , rectus femoris, tensor fascia lata
Extension	gluteus maximus , semimembranosis, semitendinosis, biceps femoris
Abduction	gluteus medius, minimus, tensor fascia lata with hip flexion
Adduction	pectineus, adductor longus, brevis, magnus, gracilis
Medial rotation	gluteus medius, minimus, tensor fascia lata
Lateral rotation	Obturator internus & externus, gemullus superior inferior, quadratus femoris, & piriformis, posterior fibres of gluteus medius & minimus,& superior fibres of gluteus maximus

Applied anatomy

Head of femur shifts upwards.

Lurching gait

Tredlenburg test is positive

Perthes disease

Destruction and flattening of head of femur

Fracture neck of femur