Anatomy of Hip Joint

DR Shalini Kumar
Associate Professor
Anatomy, HIMSR
Articulation

• The hip joint is the articulation between the hemispherical head of femur and the cup shaped acetabulum of the hip bone

• The articular surface of the acetabulum is horseshoe shaped and is deficient inferiorly at the acetabular notch
Articulation

• The cavity of acetabulum is deepened by the presence of a fibrocartilaginous rim called acetabular labrum

• The labrum bridges across the acetabular notch and is here called the transverse acetabular ligament

• The articular surfaces are covered with hyaline cartilage
Type & Capsule

• It is a synovial ball and socket joint

• The capsule encloses the joint and is attached to the acetabular labrum medially

• Laterally it is attached to the intertrochanteric line of the femur in front and along the posterior aspect of the neck of the bone behind
Iliofemoral Ligaments

• It is a strong, inverted Y-shaped ligament

• Its base is attached to the anterior inferior iliac spine above

• Below the two limbs of Y are attached to the upper and lower parts of the intertrochanteric line of the femur

• The strong ligament prevents overextension during standing
Pubofemoral Ligament

• It is a triangular ligament

• The base of the ligament is attached to the superior ramus of the pubis

• The apex is attached below to the lower part of the intertrochanteric line

• This ligament limits extension and abduction
Ischiofemoral Ligament

• It is a spiral shaped ligament

• Attached to the body of the ischium near the acetabular margin

• Fibers pass upward and laterally and attached to the greater trochanter

• This ligament limits the extension
Transverse Acetabular Ligament

• It is formed by the acetabular labrum as it bridges the acetabular notch

• It converts the notch into a tunnel through which blood vessels and nerves enter the joint
Ligament of Head of Femur

• It is flat and triangular ligament

• It is attached by its apex to the pit on the head of the femur (fovea capitis)

• Attached by its base to the transverse ligament and the margins of the acetabular notch

• It lies within the joint and is ensheathed by synovial membrane
Synovial Membrane

• The synovial membrane lines the capsule

• It is attached to the margins of the articular surfaces

• It covers the portion of the neck of the femur that lies within the joint capsule

• It ensheathes the ligament of the head of the femur
Synovial Membrane

• It covers the pad of fat contained in the acetabular fossa

• A pouch of synovial membrane frequently protrudes through a gap in the anterior wall of the capsule

• Forms the psoas bursa beneath the psoas tendon
Nerve Supply

• Femoral nerve

• Obturator nerve

• Sciatic nerve

• Nerve to the quadratus femoris
Movements

• The hip joint has a wide range of movement but less so than the shoulder joint

• Some of the movement has been sacrificed to provide strength and stability

• The strength of the joint depends largely on the shape of the bones taking part in the articulation and on strong ligaments
Movements

• Flexion: It is performed by the iliopsoas, rectus femoris, sartorius, also by adductor muscles

• Extension: it is performed by the gluteus maximus and the hamstring muscles

• Abduction: It is performed by the gluteus medius and minimus, assisted by sartorius, tensor fasciae latae, and piriformis
Movements

• Adduction: It is performed by the adductor longus and brevis and the adductor fibers of the adductor magnus

• Lateral rotation: It is performed by the piriformis, obturator internus and externus, superior and inferior gemelli

• Medial rotation: It is performed by the anterior fibers of gluteus medius and gluteus minimus and the tensor fasciae latae

• Circumduction: It is a combination of the previous movements
Movements

- The extensor group of muscles is more powerful than the flexor group
- The lateral rotators are more powerful than the medial rotators
Relations

• Anteriorly: Iliopsoas, pectineus, and rectus femoris

• Posteriorly: The obturator internus, the gamelli, and the quadratus femoris muscle separate the joint from sciatic nerve

• Superiorly: Piriformis and gluteus minimus

• Inferiorly: Obturator externus tendon
Relations of Hip joint
Congenital dislocation of hip joint

- Anatomy of a Normal Left Hip
- Anterior view of the left hip
- Cut-away view of the left hip

Dislocation of the Left Hip:
- The left femur is dislocated and the acetabulum is under-developed and deformed.
- The soft tissues surrounding the joint fill the acetabulum and form a “false” joint.
Traumatic dislocation of hip joint
Fracture neck of femur
Transcervical fracture
Intertrochanteric fracture
Subtrochanteric fracture
Blood Supply to Head and Neck of Femur

- Head
- Neck
- Branch of the obturator artery
- Lateral femoral circumflex artery
- Medial femoral circumflex artery

Normal Head

- Cartilage

Avascular Necrosis Head

- Necrotic bone