

HIP JOINT

Type:-

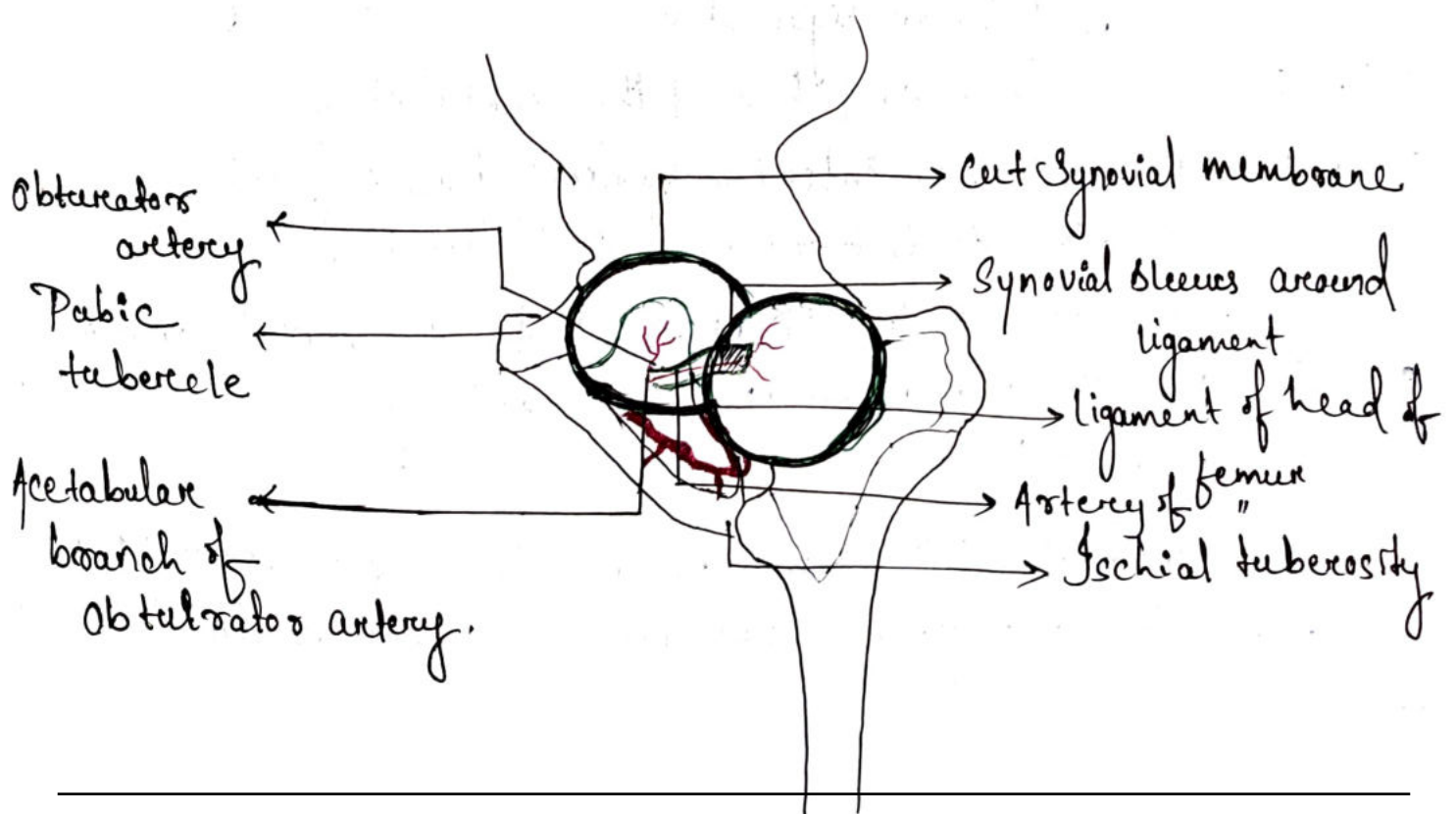
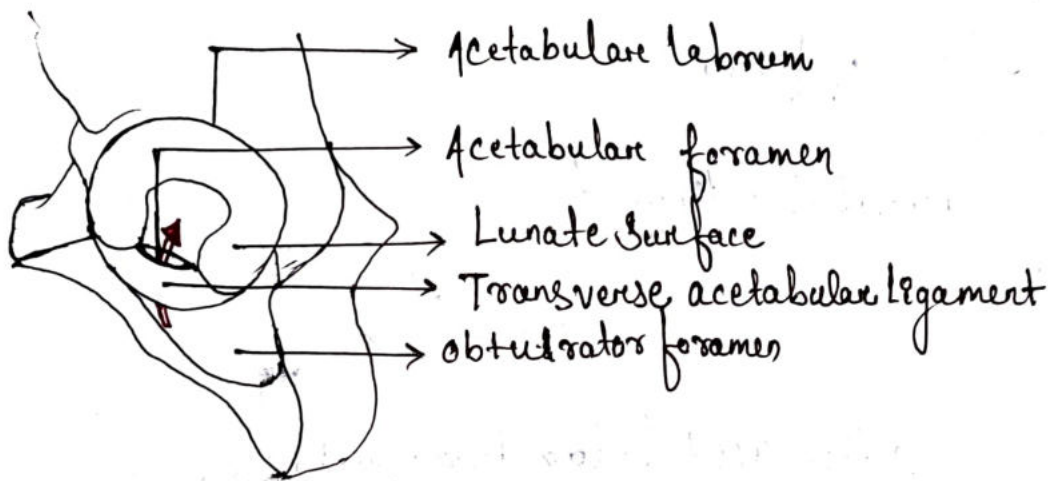
- It is a multiaxial ball and socket variety of Synovial joint.
- High mobility with high stability.

Articular Surfaces:-

Reciprocal but not co-extensive

Head of Femur:-

- More than half of a sphere.
- Covered by hyaline cartilage.
- except at the fovea capitis.



Acetabulum :-

- Horse Shoe shaped lunate Surface (articular & covered by hyaline cartilage)
- Deep notch with narrow mouth.
- Articular notch
- Acetabular fossa.

Ligaments

1. Fibrous Capsule
2. Ilio femoral
3. Pubofemoral
4. Ischiofemoral
5. Ligament of head of femur
6. Acetabular labrum
7. Transverse acetabular ligament.

Fibrous Capsule :-

Attachment

- On hip bone :- To the acetabular labrum including transverse acetabular ligament &
- To the bone above and behind the acetabulum
- On femur :- to the intertrochanteric line in front and 1cm medial to intertrochanteric crest behind.
- Thick anterosuperiorly : Part subjected to max tension
- Thin and loosely attached posteroinferiorly.
- 2 type of fibres

Outer longitudinal :→ Many reflect to neck of femur & contain blood supplying head and neck inner circular k/s

Synovial Membrane :→

- Lines the fibrous capsule
- Intracapsular portion of neck of femur.
- Both surfaces of acetabular labrum.
- Transverse ligament
- Fat in acetabular fossa.
- Round ligament of head of femur.

Joint Cavity :→

- Communicates with the subtendinous bursa beneath the tendon of Psoas major, through a circular opening in the capsule betⁿ Pubofemoral and vertical band of iliofemoral ligament.

Iliofemoral Ligament :→

- Inverted Y shaped : Triangular
- Ligament of Bigelow.
- Strongest ligament of body : Resists the trunk falling backward in standing posture.
- Apex : Lower half of ASIS
- Base : Inter-trochanteric line (vertical) fibres from thick, Strong bands, while the middle fibres are thin and weak

Pubofemoral Ligament :→

- Supports the joint inferomedially.
- Triangular
- Superiorly, it is attached to the iliopubic eminence, obturator Crest and obturator membrane.
- Inferiorly, it merges with the anteroinferior part of the Capsule and lower band of iliofemoral ligament.

Ischiofemoral Ligament :→

- Comparatively weak, and covers the joint posteriorly.
- Fibres are twisted and extend from ischium posteroinferior to the acetabulum, from the zona orbicularis, and few fibres to the greater trochanter.

Ligament of the Head of femur:→

- Round ligament or ligamentum teres.
- flat, triangular ligament.
- Apex: Fovea Capitis
- Base: transverse ligament and margins of the acetabular notch.
- Very thin / very absent
- Transmits arteries to the head of femur from the acetabular branches of the obturator and medial circumflex femoral arteries.

Acetabular Labrum:→

- Catylor ligament.
- Fibrocartilagenous rim attached to the margins of acetabulum
- Narrows the mouth of acetabulum which helps in holding the head of femur in position.

Transverse Ligament of Acetabulum:→

- A part of the labrum which bridges the acetabular notch but it has no cartilage cells.
- The notch thus converted into a foramen transmits vessels (acetabulum) and nerves to the joint.

Relations:→

- **Anterior** lateral fibres of Pectineus covered by femoral vein iliopectineal with femoral nerve separating the iliacus from femoral artery. Straight head of rectus femoris covering the deep layer of ischiofemoral tract.

Posterior

- Quadratus femoris covering obturator externus and the ascending branch of medial circumflex femoral artery.
- Obturator internus with two gemelli separate the Sciatic nerve from the nerve to quadratus femoris piriformis.

Superior

Reflected head of rectus femoris covered by gluteus minimus

Inferior

Lateral fibres of pectineus and obturator externus.

Blood Supply: →

- Obturator
- Two circumflex femoral.
- Two gluteal arteries.
- Medial and lateral circumflex femoral arteries form an arterial circle around the capsular attachment on the neck of femur.
- Retinacular arteries arise from this circle and supply the intracapsular neck and greater part of the head of femur.
- A small part of the head near the fovea capitis is supplied by the acetabular branches of the obturator and medial circumflex femoral arteries.

Nerve Supply: →

- The femoral nerve through the nerve to rectus femoris.
- Anterior division of obturator nerve.
- Accessory obturator nerve.
- Nerve to quadratus femoris.
- The Superior gluteal nerve.

Movements: →

- Flexion and extension occur around a transverse axis.
- Adduction and abduction occur around a anteroposterior axis.
- Medial and lateral rotations occur around a vertical axis.
- Circumduction is a combination of the foregoing movements.

Muscles producing movements —

- Flexion — Psoas major and iliacus.
- Extension — Gluteus maximus and hamstrings.
- Adduction — Adductors longus, brevis and magnus.
- Abduction — Glutei medius and minimus.
- Medial rotation — Tensor fasciae latae and the anterior fibres of glutei medius and minimus.
- Lateral rotation — Two obturators, two gemelli and quadratus femoris.

Clinical Anatomy: —

Diseases: —

- Below 5 years — Congenital dislocation and tuberculosis.
- 5 to 10 years — Perthe's disease
- 10 to 20 years — Coxa vara
- Above 40 years — Osteoarthritis.

congenital dislocation: —

- More common in the hip than any other joint of the body.
- The head of the femur slips upwards onto the gluteal surface of the ilium because the upper margin of acetabulum is developmentally deficient.
- This causes waddling gait, and the Trendelenburg's test is positive.

Tuberculosis:-

- Osseous destruction & marrow edema involving the bones forming hip articulation along with Synovial collection & reduced joint space

Pertthes' Disease (Pseudocoxalgia):-

- It is characterised by destruction and flattening of the head of femur, with an increased joint space in X-ray pictures.

Coxa vera & Valga:-

- A condition in which the neck-shaft angle is reduced from the normal of about 150 degree in a child and 127 degree in an adult.

Osteoarthritis:-

- Disease of old age.
- Characterised by growth of osteophytes at the articular ends which makes the movements limited, grating and painful.

Injuries:-

Young age: Greenstick fractures of the neck, and displacement of the head of femur.

Adulthood: Dislocation of hip joint

Old age: Fracture of the neck of femur.

Dislocation of hip:-

It may be Posterior (more common), anterior (less common), or central (rare). The Sciatic nerve may be injured in posterior dislocations.

Fracture of the Neck of femur:-

- It may be ~~Sub~~ Subcapital (near the head), cervical (in the middle) or basal (near trochanters).
- Damage to retinacular arteries causes avascular necrosis of the head.
- Such a damage is maximum in subcapital and least in basal fractures.
- These fractures are common in old age, betⁿ 40 and 60 years.
- Fracture-neck-femur is usually produced by trivial injury like tripping over some minor obstruction.
- The Patient falls down and cannot get up.
- The limb lies helplessly rolled out, as if paralysed.
- X-ray confirm the diagnosis.

Trochanteric fracture:-

- Intertrochanteric (b/w the Trochanters)
- peritrochanteric (along the Trochanters) or
- Subtrochanteric (below the trochanters)
- These fractures occurs in strong, adult Subjects and are produced by severe, violence injuries.

