

Subject: Anatomy

Semester: Dpt 2nd

Id: 15745

## SECTION A

### MCQS:

1. Fovea capitis
2. 135
3. Greater trochanter
4. Lesser trochanter
5. Externally rotated
6. Intracapsular fracture
7. Medial direction
8. Multiple fracture
9. 1000-1500ml
10. Tibia
11. Three borders and three surfaces
12. Axial loading
13. Acetabular labrum

14. Iliofemoral ligament

15. Radial Artery.

## SECTION B

### Question:1

### HIP JOINT ANATOMY:

- **Def:** A type of ball and socket joint that is formed between the head of the femur and the acetabular cavity of the pelvis is called Hip joint.
- **Type:** It is a type of synovial ball and socket joint. With the acetabular cavity acting as a socket and the femoral head acting as a ball.
- **Articular surfaces:** The articular surfaces involved in the hip joint are:
  - a. the femoral head
  - b. the acetabular cavity

**Femoral head:** The femoral head is more than half of a circle and is covered with hyaline cartilage except for the small depression called fovea capitis that is not covered with the hyaline cartilage. Ligamentum teres originates from this region.

**Acetabulum:** The acetabular cavity is present on lateral side of the pelvis and consists of:

- I. **Lunate Surface:** The horse shoe shaped surface and the only surface that articulates with the femoral head.
- II. **Acetabular fossa:** the depression of acetabulum that holds the femoral head.
- III. **Acetabular notch:** A notch is present inferior to the acetabulum to which the transverse acetabular ligament is attached.
- IV. **Acetabular labrum:** A fibrocartilaginous rim that deepens the acetabular

cavity and provides stability to the head of femur.

## · Ligaments of hip joint:

following are the important ligaments of hip joint:

1. **Capsular ligaments:** A dense fibrous sac that encloses the whole joint is called capsular ligament.
  - **Attachments:** on the pelvic bone it is attached 5 to 6 millimeters past the acetabular labrum. On the femur it is connected anteriorly to the intertrochanteric line and posteriorly to the crest.
  - **Fibers:** the capsule is composed of two fibers:

The inner circular fibers( zona orbicularis)

Outer longitudinal fibers (retinacula)

- **Synovial membrane:** A membrane that is present on the inner aspect of the capsule and is responsible to secrete the synovial fluid which lubricates the joint and reduces friction.

2. **Iliofemoral ligament:** A strong powerful ligament that connects the ilium with the femur is called the iliofemoral ligament.

- **Shape:** it has a shape of an inverted Y.
- **Attachment:** the apex is connected to the the lower half of anterior inferior iliac spine and above the acetabular margin and the area between them. whereas the lower base is connected to the intertrochanteric line.
- **Parts:** it is composed of three fibers

\* The lateral thick oblique fibers

\* The middle thin fibers

\* The medial thick vertical fibers

- **Function:** It is the most powerful ligament present on the anterior side of the body therefore it restricts the motion in the opposite direction i.e, it prevents the trunk from falling backwards.

3. **Ischiofemoral ligament:** A ligament that connects the ischium to the femur is called ichiofemoral ligament.

- **Attachment:** It is on one end connected to the ischium and the other end of fibers spiral behind the femoral neck and attaches to the greater trochanter
- **Function:** it supports the capsule posteriorly and provides stability.

4. **Pubofemoral ligament:** A ligament that attaches the pubis with the femur is called pubofemoral ligament.

- **Attachment:** Has a triangular shape and the base is connected to the iliopectoral eminence, superior ramus of pubis and to the obturator crest. And the apex is connected to the medial fiber of the iliofemoral ligament.

5. **Ligamentum teres:** Also called a the ligament of the head of the femur

- It is a flat triangular ligament
- The apex is connected to the fovea capitis whereas the base is connected to the transverse acetabular ligament
- **Function:** The main function of this ligament is to conduct the arteries to the head of the femur that originates from the acetabular branches of the medial circumflex femoral artery and the obturator artery.

6. **Transverse Acetabular ligament:** A part of labrum that bridges the notch and does not contain the cartilage cells. Also it carries arteries, nerve, capillaries to the hip joint.

7. **Acetabular labrum:** A fibrocartilaginous rim that surrounds the acetabular cavity and not only deepens the cavity but also holds the head of femur in its position.

- **Stability of hip joint:** Following are the factors that contribute in stability of hip joint :
  1. **Labrum:** labrum increases the depth of the acetabulum thus provides stability.
  2. **Muscles:** the strength of the muscles surrounding the joint such as gluteus minimus, gluteus medius increases the stability.
  3. **Neck:** The length and obliquity of the neck of the femur contributes in

stability.

4. **Ligament:** The presence of the powerful ligaments such as ilio, ichio, pubofemoral ligament plays an important role in stability.

· **Arterial blood supply:**

Hip joint is supplied by the branches of the following arteries

1. Lateral circumflex femoral artery
2. Medial circumflex femoral artery
3. Obturator artery
4. superior gluteus artery
5. inferior gluteus artery

· **Nerve supply:**

Nerve supply to the hip joint is through the following nerves

1. Femoral nerve
2. obturator nerve
3. superior gluteal nerve
4. Nerve of the quadratus femoris
5. Sciatic nerve ( The largest nerve)

## **QUESTION : 2**

### **1. Cruciate Ligaments:**

\* **Origin:** The word cruciate is of latin origin that means cross

\* **Connection:** Cruciate ligaments connect femur with the tibia and in doing so it forms a cross hence called cruciate ligaments

\***Types:**

There are two types of ligaments.

**Anterior Cruciate Ligaments:** Proximally it is attached to the intercondylar fossa of the femur and distally it is attached to the intercondylar region of tibia that blends with the Medial meniscus. It Prevents the anterior dislocation of the tibia.

**Posterior Cruciate Ligaments:** Proximally it is attached to the anterior medial aspect of femoral condyle and distally it is attached to the posterior intercondylar region of tibia. Prevents the posterior dislocation of tibia.

## 2. Menisci:

\* **Def:** The fibrocartilaginous structure present in the knee joint and act as a shock absorber is called menisci.

\* **Shape:** They are C shaped and are attached to the intercondylar area of tibia.

\* **Function:**

1. It increases the stability of knee joint by deepening the articular surface of tibia.
2. It increases the surface area to further dissipate the force and act as shock absorber.

\* **Types:**

There are two types:

**Medial meniscus:** Medial meniscus is larger than the lateral meniscus. Medial meniscus is attached to the medial collateral ligament. Any damage to the medial collateral ligament can affect the medial meniscus as well.

**Lateral Meniscus:** Lateral meniscus is not attached to the lateral collateral ligament and it is smaller than the medial meniscus.

· **Question 3:**

## LIGAMENTS OF ANKLE JOINT:

There are two main sets of ligaments present in the ankle joint and each one originate from their respective malleolus.

### 1. **Medial Ligament:**

- **Other name:** Also known as deltoid ligaments.
- **Attachments:** Proximally it is attached to the medial malleolus.
- **Further ligaments:** It further consists of four ligaments that attaches to calcaneous, talus and navicular bones
- **Function:** It prevents the over eversion of the foot

### 2. **Lateral Ligament:**

- **Origin:** The lateral ligament originates from the lateral malleolus
- **Further ligaments:** It further consist of three ligaments i.e,
  - i. **Anterior Talofibular ligament:** Originates from the lateral malleolus and attaches to the lateral aspect of talus
  - ii. **Posterior talofibular ligament:** Originates from the lateral malleolus and attaches to the posterior aspect of talus
  - iii. **Calcaneofibular ligament:** Originates from the lateral malleolus and attaches to the calcaneus
- **FUNCTION:** Prevents the over inversion of foot.

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