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Assignment for viva.

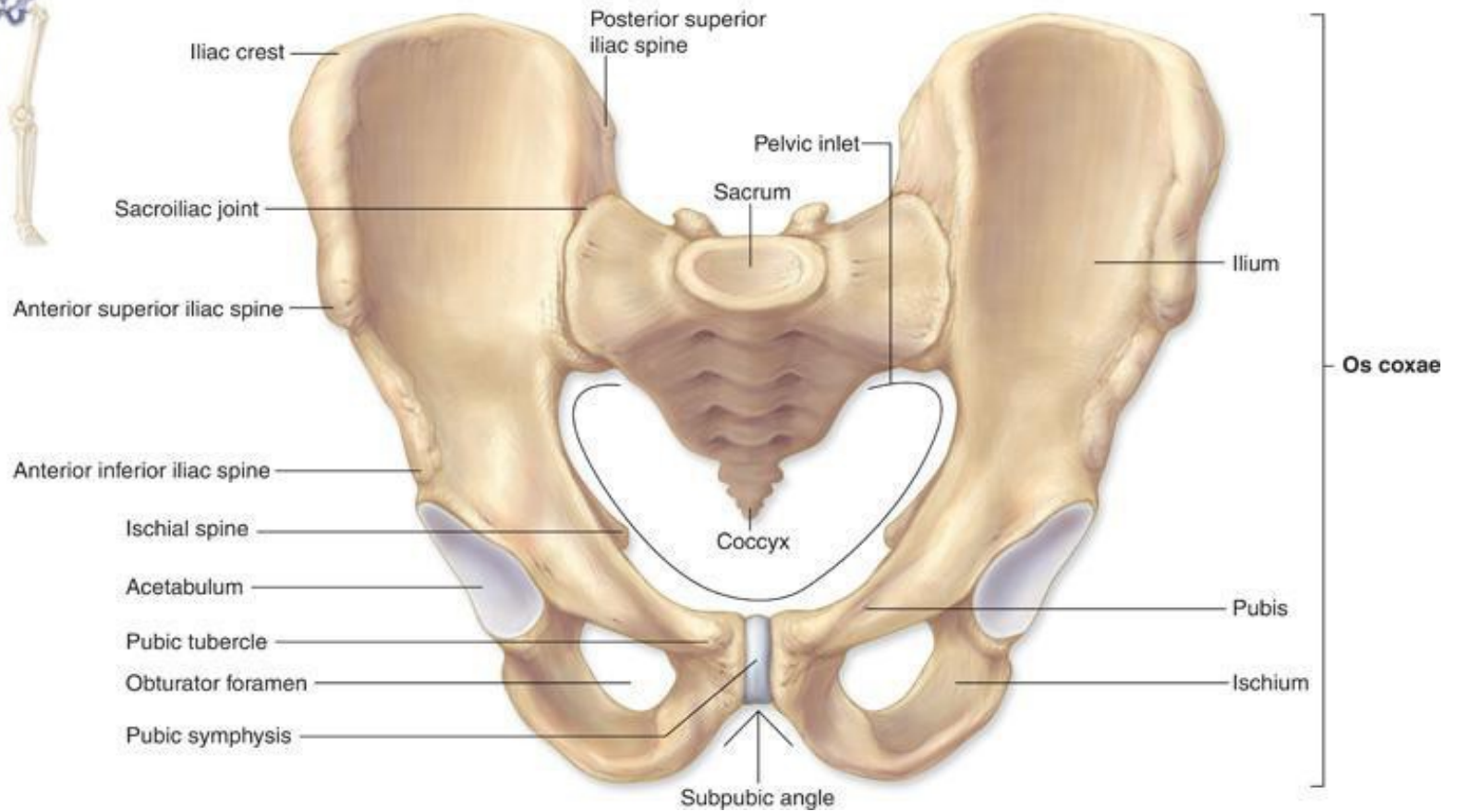
Question :

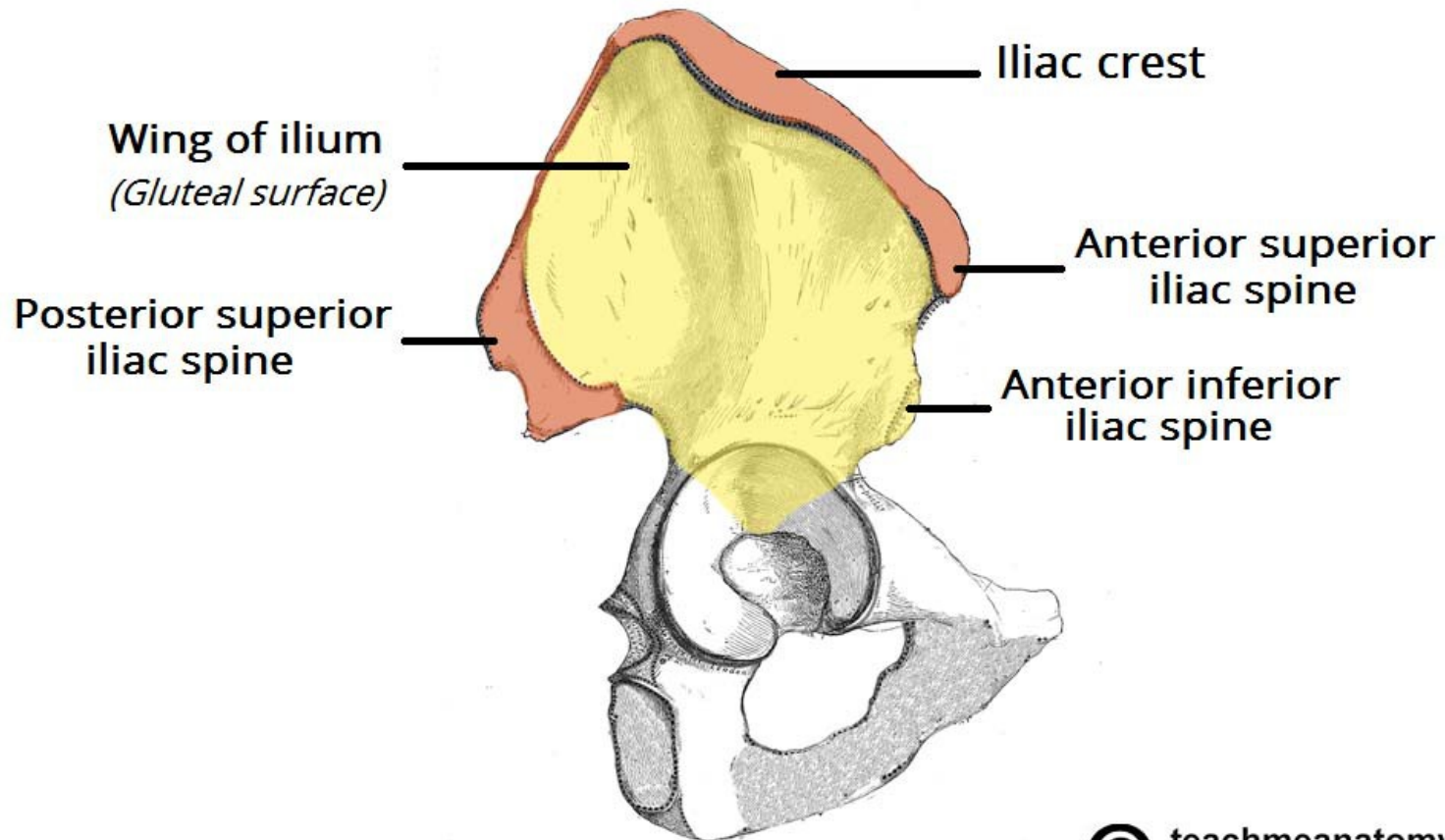
Write a complete note on hip joint ?

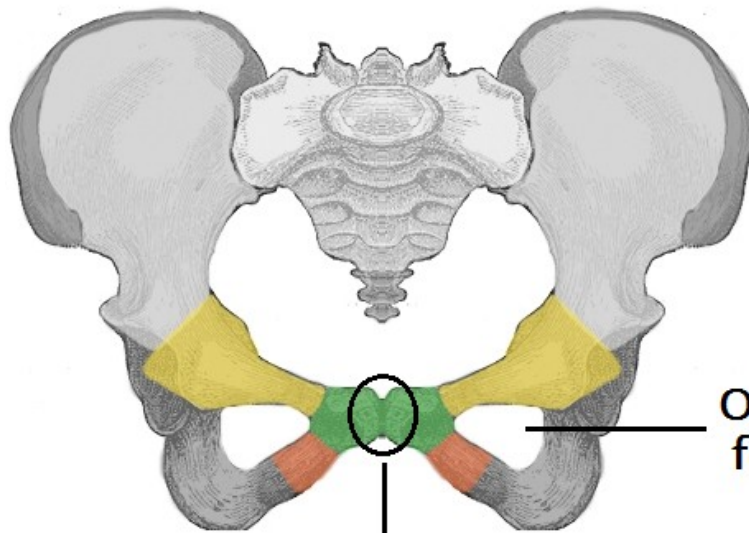




ANATOMY OF HIP JOINT

Osteology





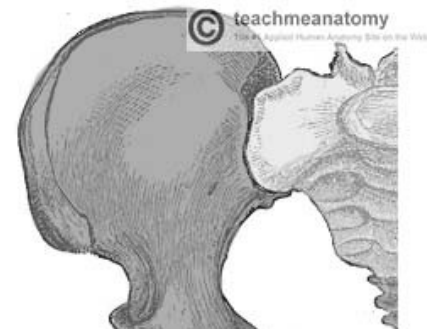


-  Body
-  Superior Rami
-  Inferior Rami

Obturator foramen

Pubic symphysis

 **teachmeanatomy**
The #1 Applied Human Anatomy Site on the Web.

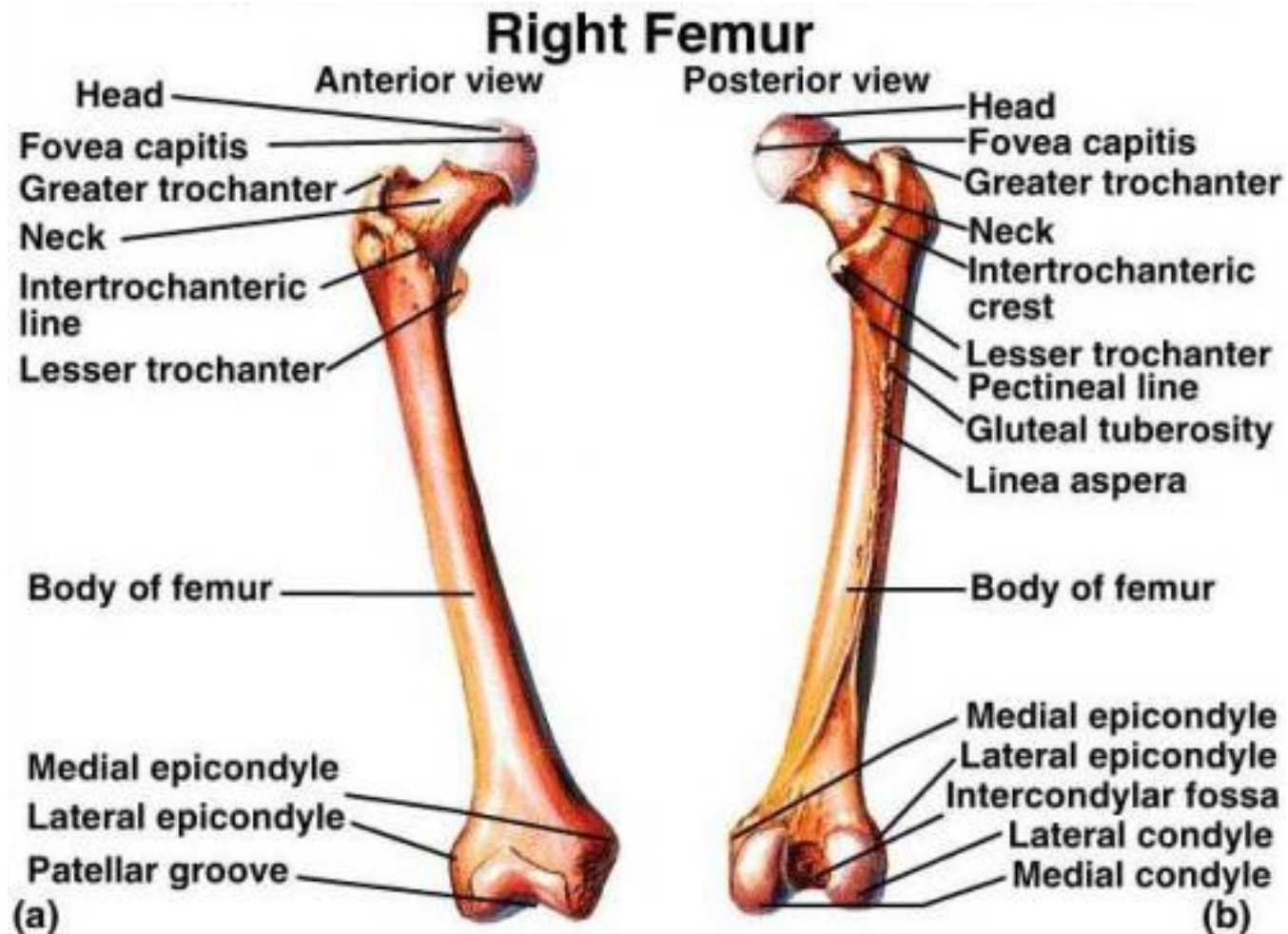


Superior ischial ramus

Body of ischium

Inferior ischial ramus

Femur



Hip joint

- Largest synovial joint
- Most proximal in lower limb
- Ball & socket joint
- Triaxial joint- allows 3D movements –degrees of freedom=3
- Convex femoral head articulates in concave acetabulum
- Weight bearing - Stable joint
- In the anatomical position, the anterior/superior part of the femoral head is not covered by the acetabulum.*

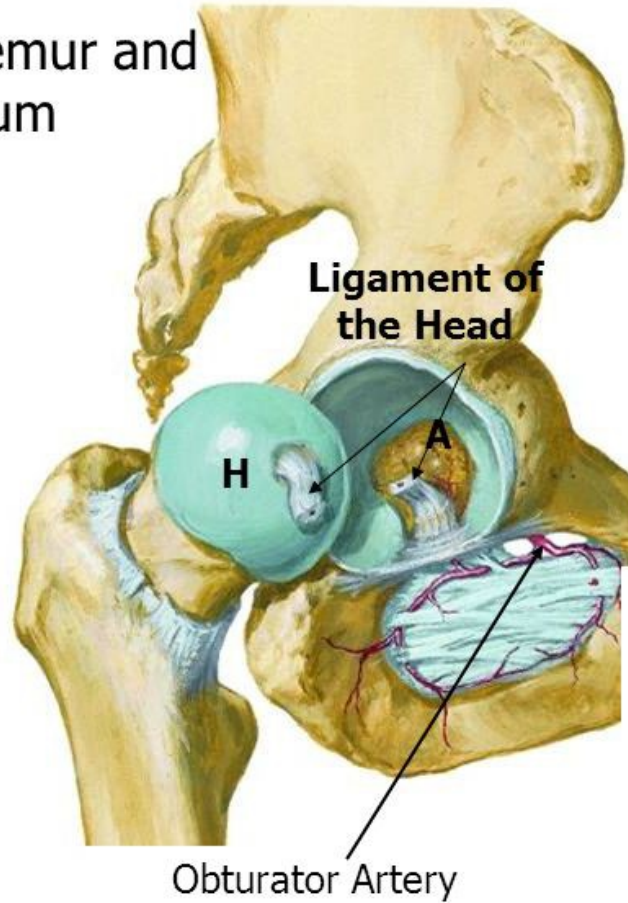
The Acetabulum

- The cup-shaped acetabulum is a little below the middle third of the inguinal ligament.
- The acetabular articular surface is an incomplete cartilaginous ring, thickest and broadest above, where the pressure of body weight falls in the erect posture, narrowest in the pubic region.
- The rough lower part of the cup, the acetabular notch, is not covered by cartilage.
- The center of the cup, the acetabular fossa, is also devoid of cartilage but contains fibro elastic fat.
- The acetabular labrum, a fibro cartilaginous ring attached to the acetabular rim, deepens the cup and enlarges the contact area with the femoral head.
- The transverse acetabular ligament covers the acetabular notch and makes a foramen for vessels and nerves.

Plate 487C

Hip Joint (Opened) Lateral View

Note head of femur and
acetabulum



Hip Joint

Ligamentum of the Head:

can be an important
blood supply to head
of femur-
branch of Obturator
artery



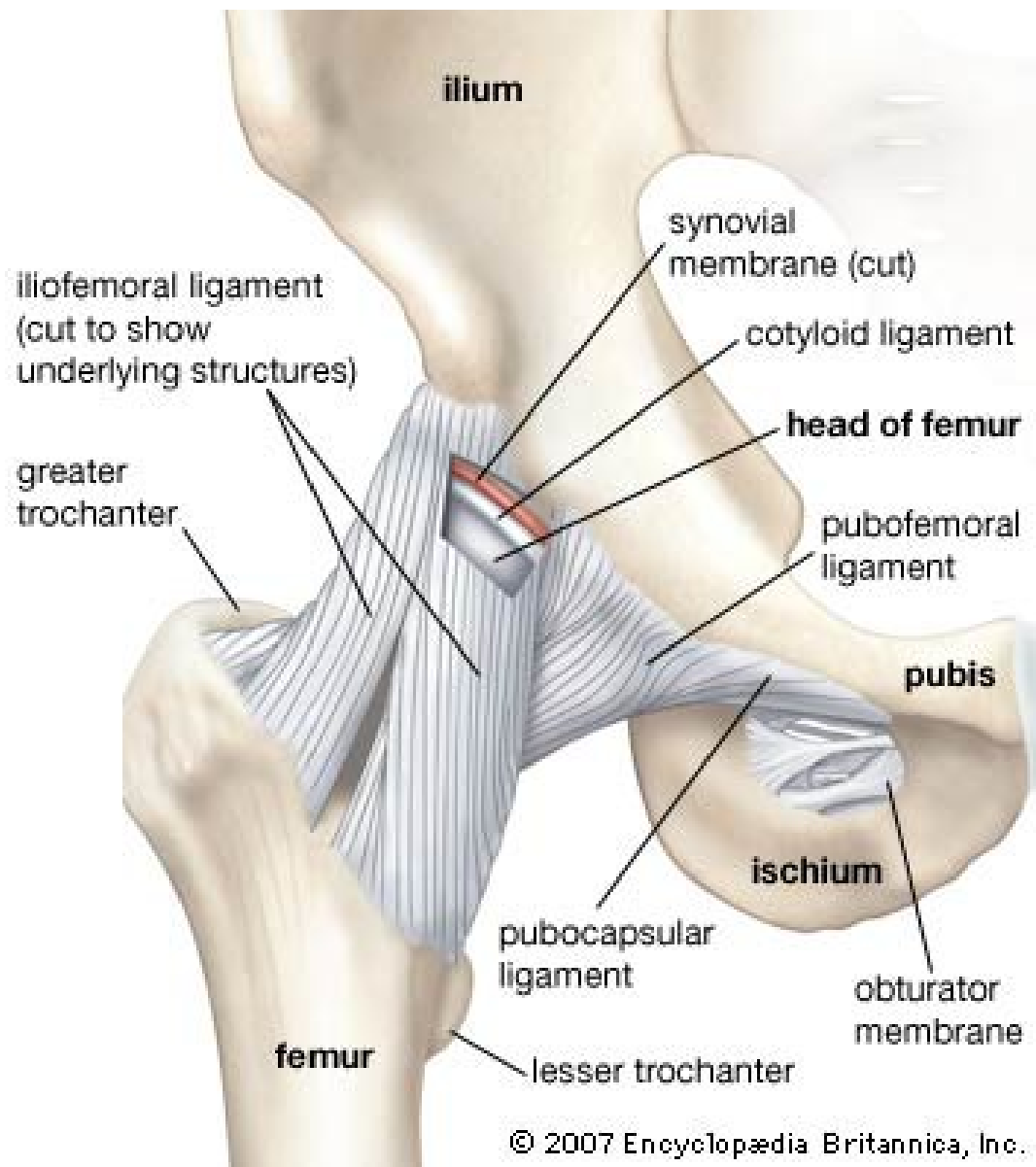
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Supporting Structures

- Supporting Structures located within the hip joint
- Transverse acetabular ligament: spans acetabular notch, completing the “cup” of the acetabulum
- Acetabular labrum: a ring of fibrocartilage surrounding the outer rim of the acetabulum, which deepens the socket and “seals” the joint
- Articular cartilage: acts as a shock absorber

Capsule and ligaments

- The capsule is a cylindrical sleeve, running from the acetabular rim to the base of the femoral neck.
- It is supported by powerful ligaments. Anteriorly these are two ligaments:
 - The iliofemoral ligament of Bertin &
 - The pubofemoral ligament, Together they resemble the letter Z.
- Posteriorly the capsule is strengthened by ischiofemoral ligament.
- All the 3 ligaments are coiled up around the femoral head.



Hip joint movements

- **Osteokinematics:**

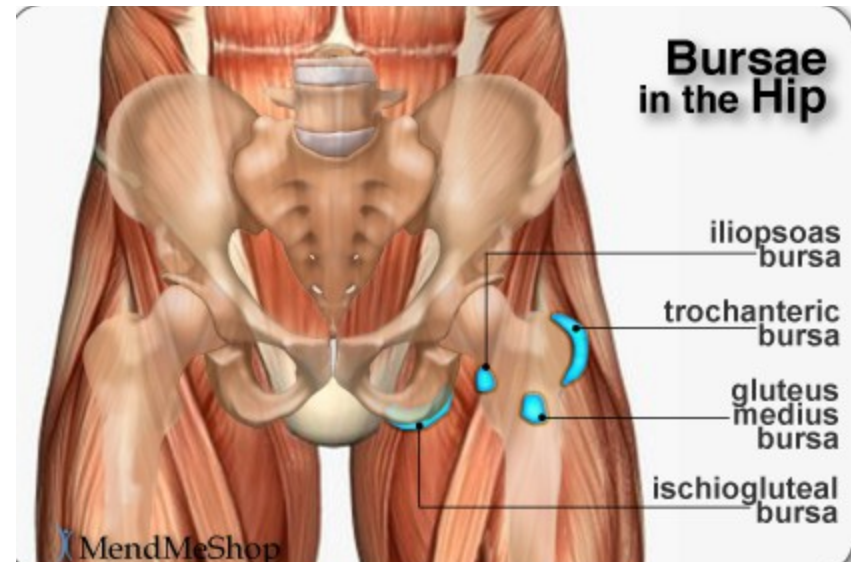
- Sagittal plane = flexion, extension, hyperextension
- Frontal plane = abduction, adduction
- Transverse plane = internal and external rotation

- **Arthrokinematics:**

- Extension 'winds up' and tautens the ligaments, thus stabilizing the joint passively.
- Flexion slackens them.
- Lateral rotation tightens the iliofemoral ligament and also the pubofemoral ligament.
- Medial rotation tightens the ischiofemoral ligament.
- Abduction tightens the pubofemoral and the ischiofemoral ligaments.
- Adduction tightens the lateral part of the iliofemoral ligament.
- The ligamentum teres plays only a minor role in the control of hip movements. Adduction from a semi-flexed position is the only movement where this ligament is under tension.

Bursae *

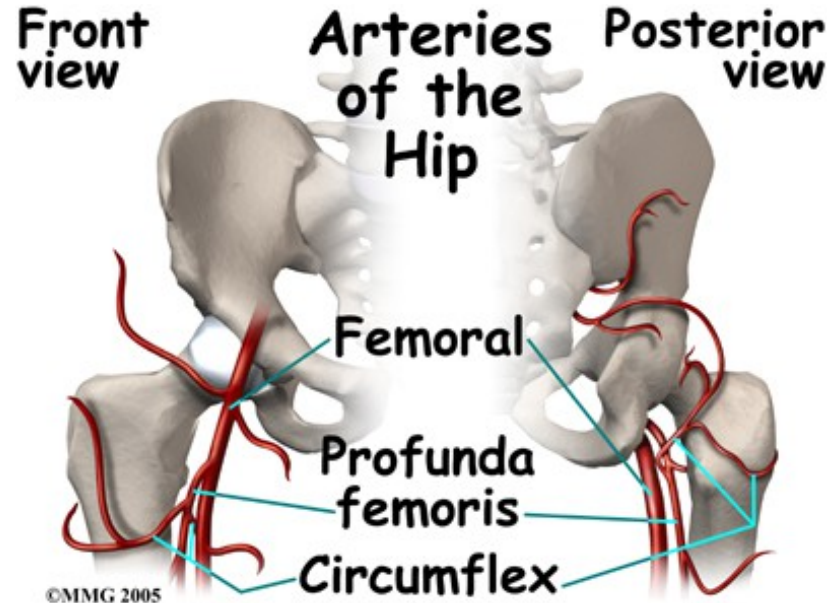
- There are as many as 20 bursae around the hip. Inflammation or infection of the bursa is called bursitis.
- The greater trochanteric bursa is located between the greater trochanter (the bony prominence on the femur) and the muscles and tendons that cross over the greater trochanter.



- This bursa can get irritated if the iliotibial band is too tight.
- Two other bursa that can get inflamed are the iliopsoas bursa, located under the iliopsoas muscle and the bursa located over the ischial tuberosity (the bone you sit

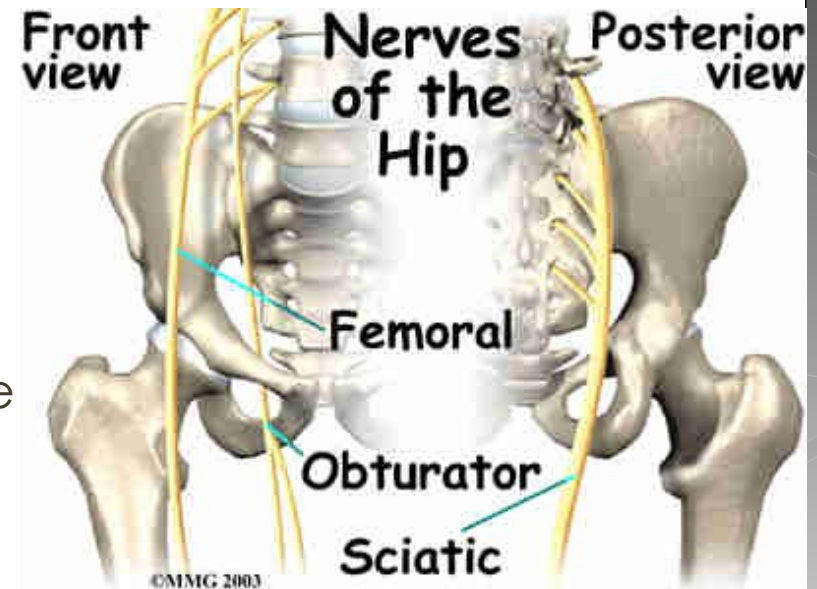
Blood Supply

- The blood supply to the hip is primarily from the internal and external iliac, femoral, obturator, and superior and inferior gluteal arteries.
- The femoral artery is well-known because of its use in **cardiac cath**; it travels from deep within the hip down the leg to the knee.



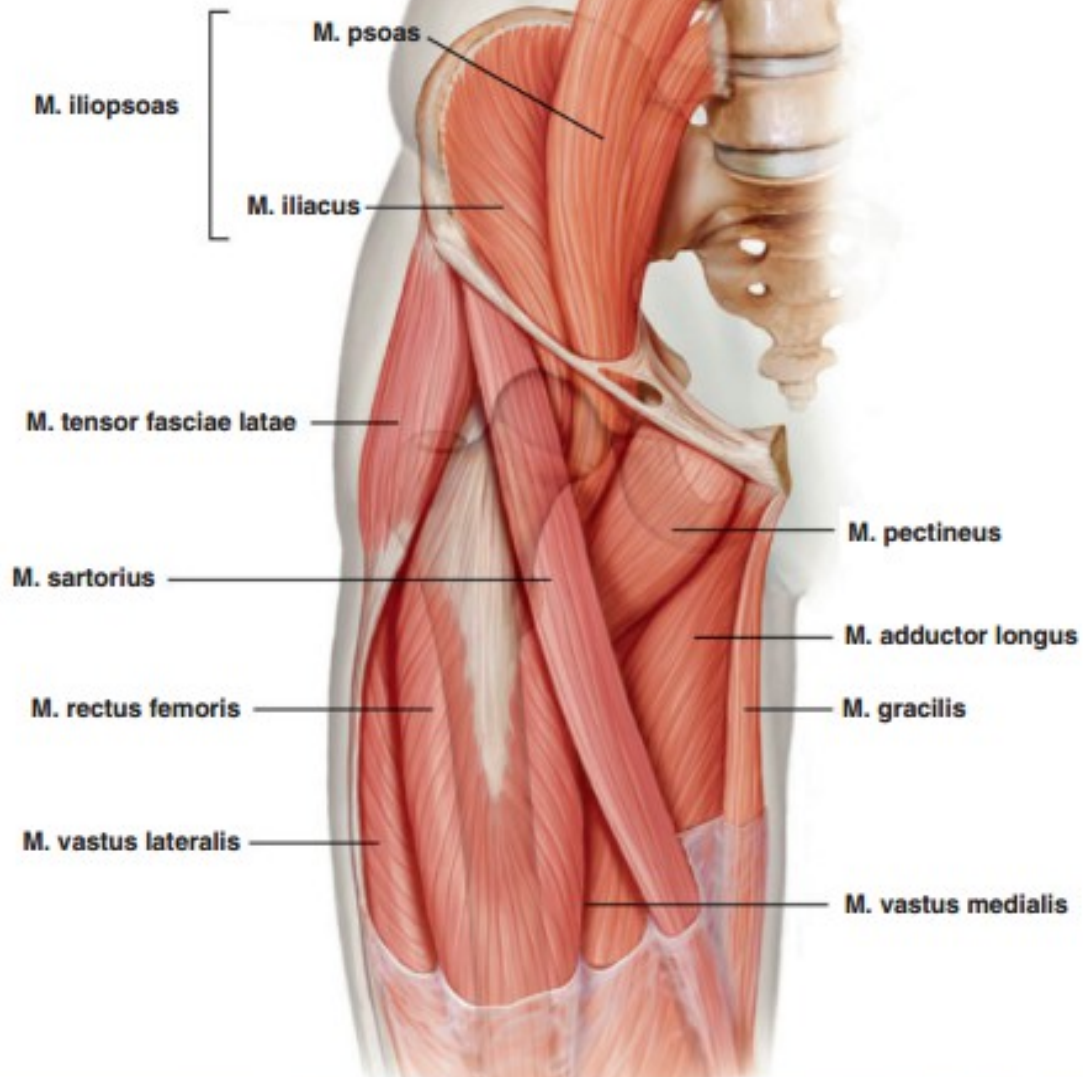
Nerve Supply

- The nerve supply of hip is by femoral nerve, lateral femoral cutaneous nerve, and obturator nerve.
- The obturator nerve is also responsible for sensation over the thigh. The sciatic nerve is the most commonly recognized nerve in the hip and thigh.
- The sciatic nerve is large—as big around as your thumb—and travels beneath the gluteus Maximus down the back of the leg and then branches on down to the foot.
- Hip dislocation can cause injury to the sciatic nerve.



Muscles of Hip joint

- The hip joint is surrounded by a large number of muscles.
- According to their function these are divided into 6 groups:
 1. Flexors,
 2. Extensors,
 3. Abductors,
 4. Adductors,
 5. Lateral Rotators,
 6. Medial Rotators
- On the basis of location they are divided into;
 - Anterior, posterior and medial.



Major hip flexors

Table 1 Flexor muscles

Muscle	Innervation	
	Peripheral nerve	Spinal
Iliopsoas*	Femoral and lumbar plexus	L2, L3
Sartorius*	Femoral	L2, L3
Rectus femoris*	Femoral	L3
Tensor fasciae latae	Superior gluteal	L5
Pectineus	Femoral and obturator	L2, L3
Adductor longus*	Obturator	L2, L3
Adductor brevis	Obturator	L2, L3
Adductor magnus	Obturator and sciatic	L3, L4
Gluteus medius	Superior gluteal	L5
Gluteus minimus	Superior gluteal	L5

*Clinically important muscles.

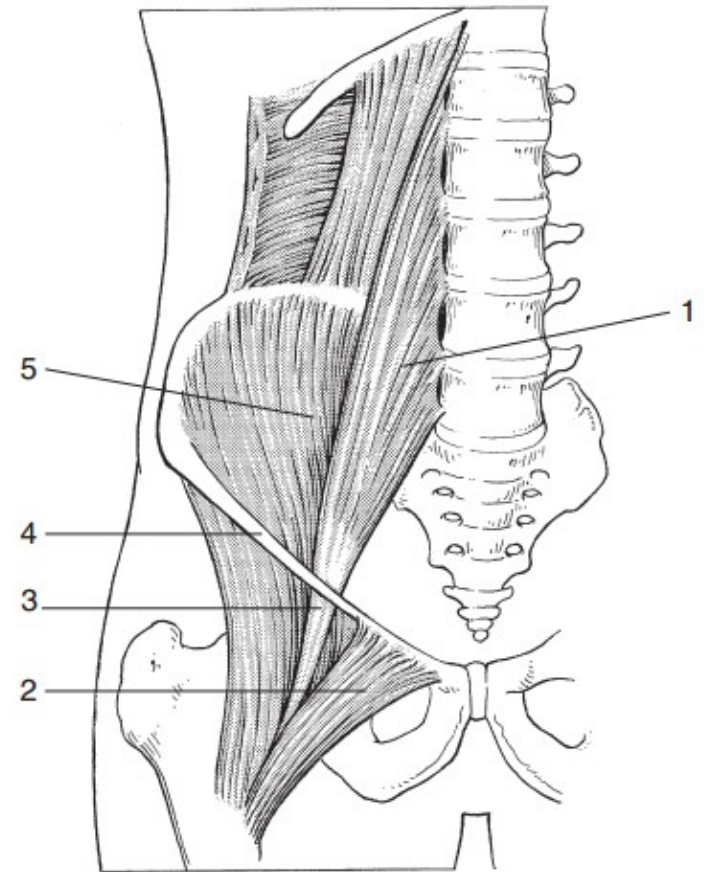


Fig 6 • The iliopsoas and associated structures: 1, psoas; 2, pectineus; 3, iliopsoas tendon; 4, inguinal ligament; 5, iliacus.

Table 2 Extensor muscles

Muscle	Innervation	
	Peripheral nerve	Spinal
Gluteus maximus*	Inferior gluteal	Mainly S1
Semimembranosus	Sciatic	S1, S2
Semitendinosus	Sciatic	S1, S2
Biceps femoris	Sciatic	S1, S2

*Clinically important muscle.

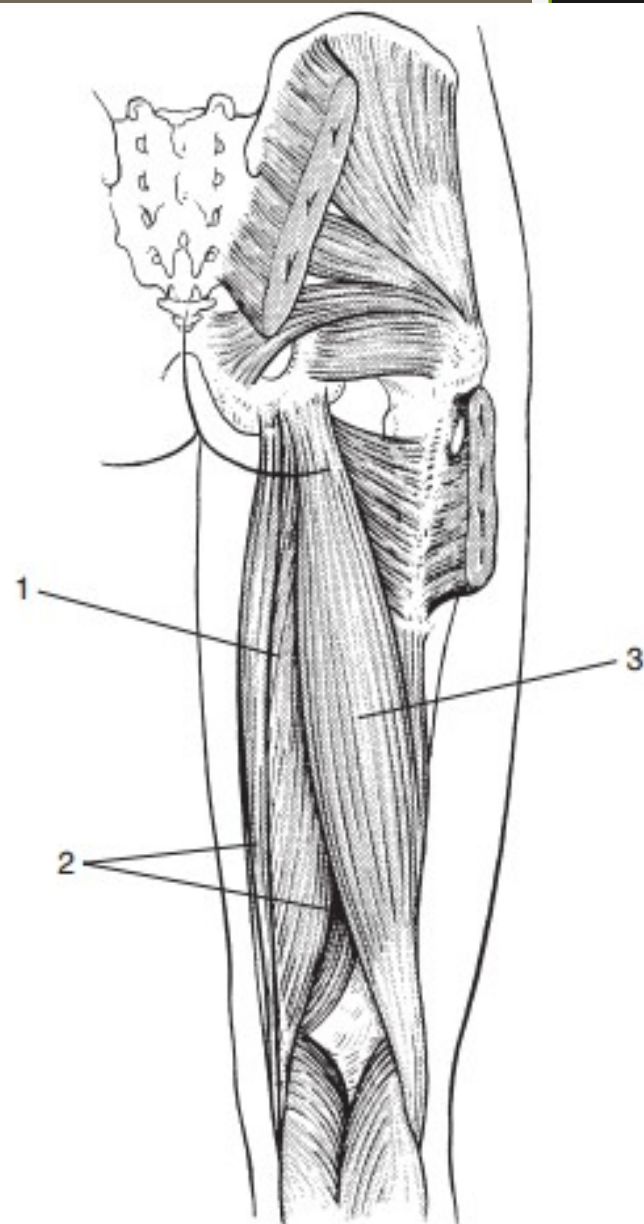
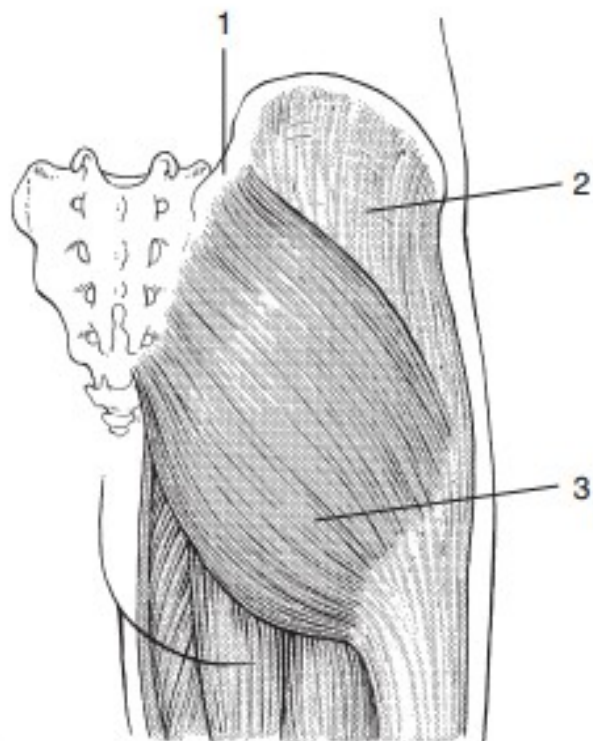


Fig 10 • Extensors of the hip (hamstrings): 1, semitendinosus; 2, semimembranosus; 3, biceps femoris.

Table 3 Abductor muscles

Muscle	Innervation	
	Peripheral nerve	Spinal
Gluteus medius	Superior gluteal	L5
Gluteus minimus	Superior gluteal	L5
Tensor fasciae latae	Superior gluteal	L5
Gluteus maximus	Inferior gluteal	Mainly S1

Table 4 Adductor muscles

Muscle	Innervation	
	Peripheral nerve	Spinal
Adductor longus*	Obturator	L2, L3
Adductor magnus	Obturator and sciatic	L3, L4
Gracilis	Obturator	L2, L3, L4
External obturator	Obturator	L3, L4
Pectineus	Femoral and obturator	L2, L3
Quadratus femoris	Sacral plexus	L4, L5, S1
Semimembranosus	Sciatic	S1, S2
Semitendinosus	Sciatic	S1, S2
Biceps femoris	Sciatic	S1, S2

*Clinically important muscle.

Table 6 Medial rotator muscles

Muscle	Innervation	
	Peripheral nerve	Spinal
Tensor fasciae latae	Superior gluteal	L5
Gluteus medius	Superior gluteal	L5
Gluteus minimus	Superior gluteal	L5
Semimembranosus	Sciatic	S1, S2
Semitendinosus	Sciatic	S1, S2

Table 5 Lateral rotator muscles

Muscle	Innervation	
	Peripheral nerve	Spinal
Quadratus femoris*	Sacral plexus	L4, L5, S1
Piriformis	Sacral plexus	S1, S2
Internal obturator	Sacral plexus	L5, S1, S2
External obturator	Obturator	L3, L4
Pectineus	Femoral/ obturator	L2, L3
Adductor magnus	Obturator	L3, L4
Gluteus medius	Superior gluteal	L4, L5, S1
Gluteus maximus	Inferior gluteal	L5, S1, S2
Biceps femoris	Sciatic	S1, S2
Sartorius	Femoral	L2, L3
Iliopsoas	Femoral	L2, L3

*Clinically important muscle.



Thank you