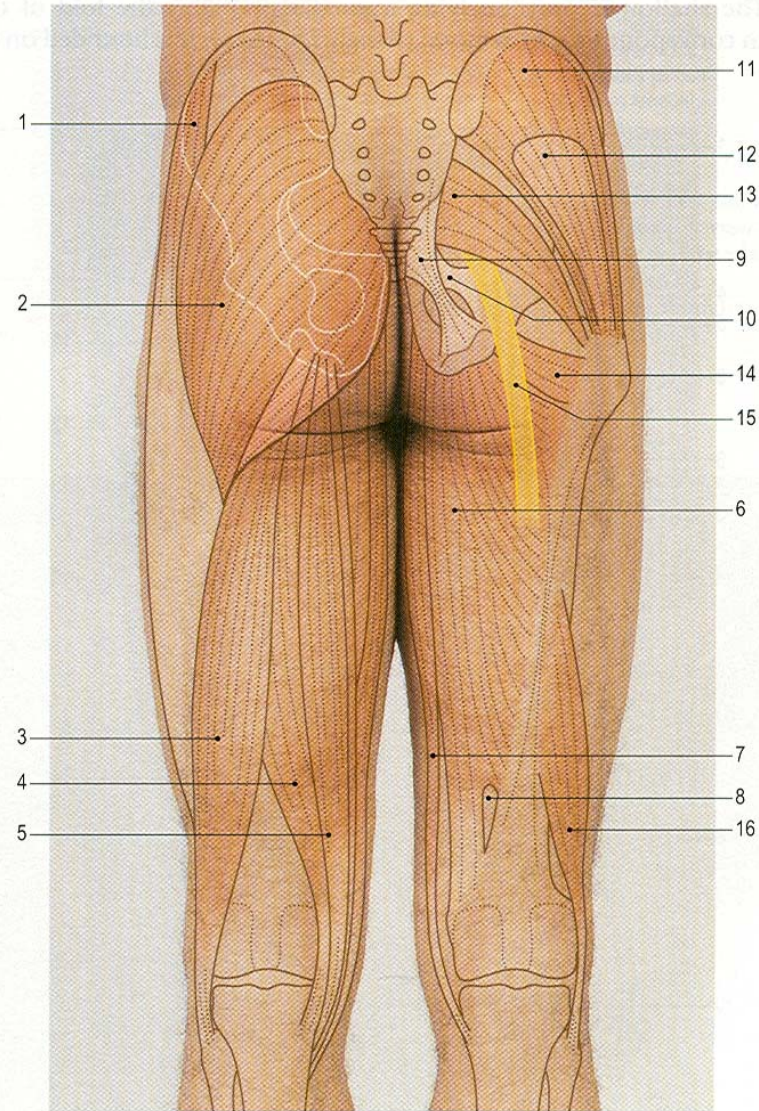




1. Tensor fasciae latae. 2. Gluteus maximus. 3. Long head of biceps femoris.
4. Semitendinosus. 5. Semimembranosus. 6. Adductor magnus. 7. Gracilis.
8. Adductor hiatus. 9. Sacrotuberous ligament. 10. Sacrospinous ligament.
11. Gluteus medius. 12. Gluteus minimus (deep to medius). 13. Piriformis.
14. Quadratus femoris. 15. Sciatic nerve. 16. Short head of biceps femoris.

Gluteal region

- Posterolateral to the bony pelvis and proximal femur.
- Muscles mainly abduct, extend and laterally rotate the femur relative to pelvic bone.
- Communicates with perineum, pelvic cavity
- Continuous with posterior thigh.

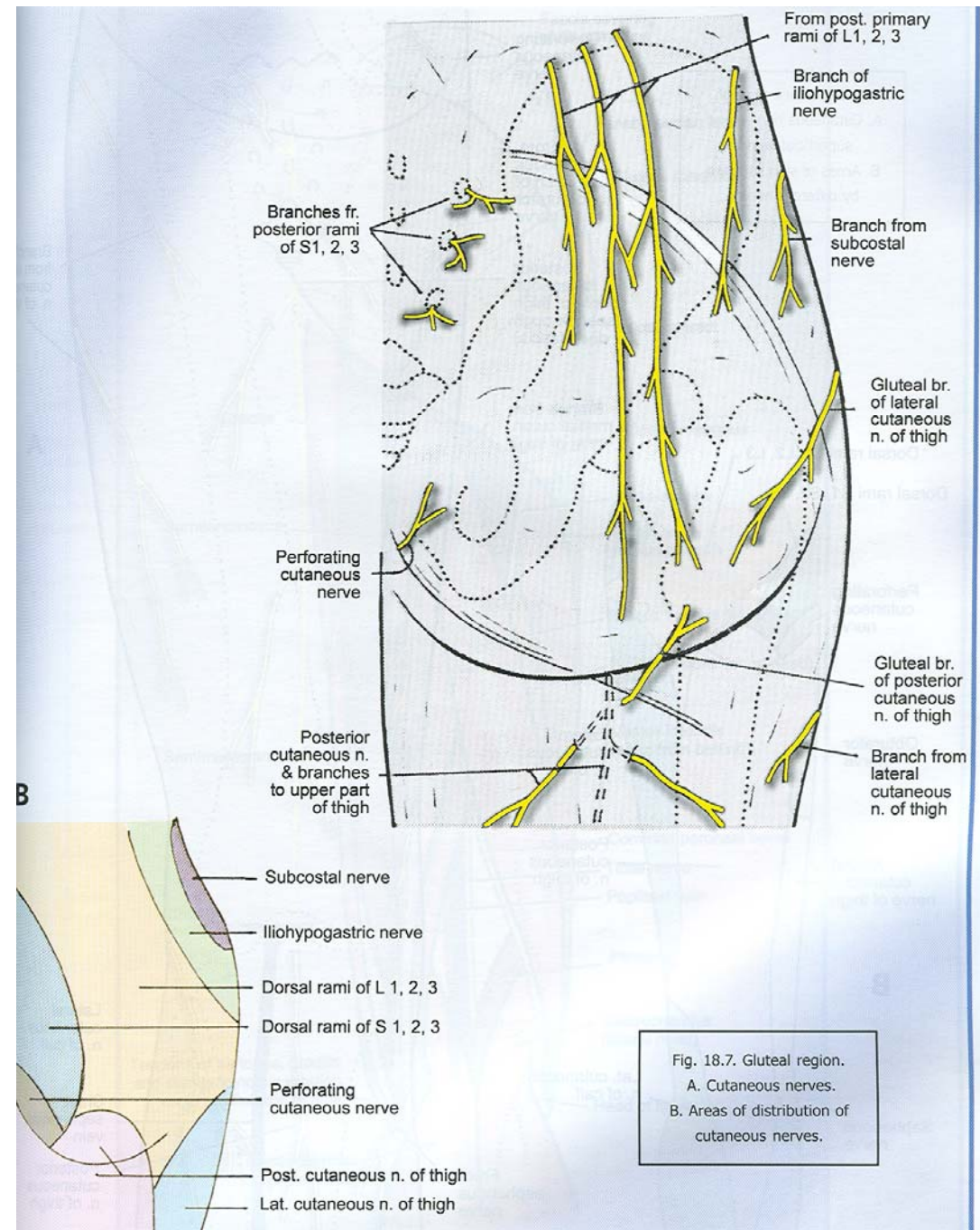
Cutaneous nerves-

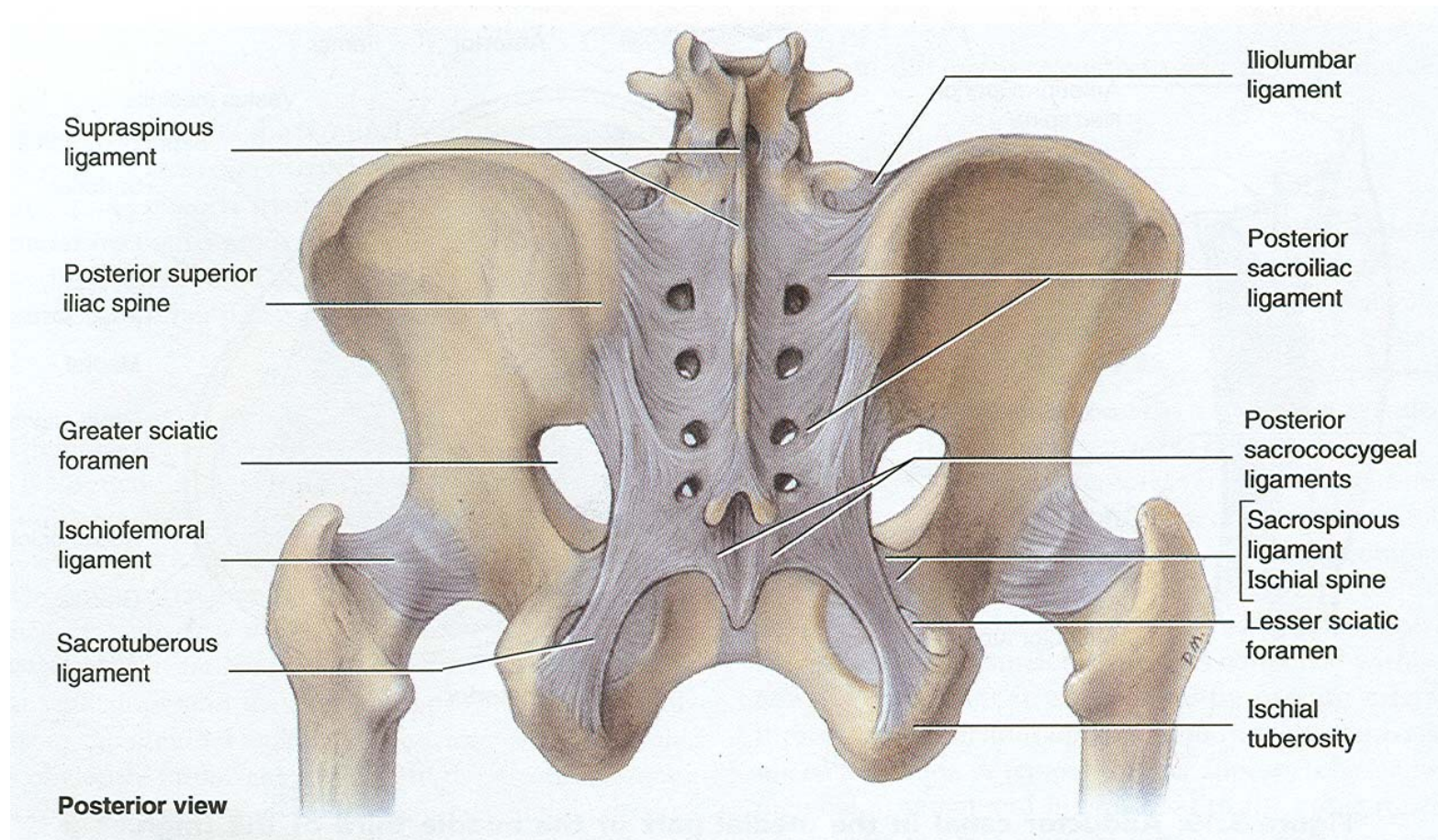
Upper ant. part from subcostal & iliohypogastric nerves

Upper post. part from post primary rami of L1,2,3 & S1,2,3

Lower ant. part from post. div. of lateral cutaneous nerve of thigh

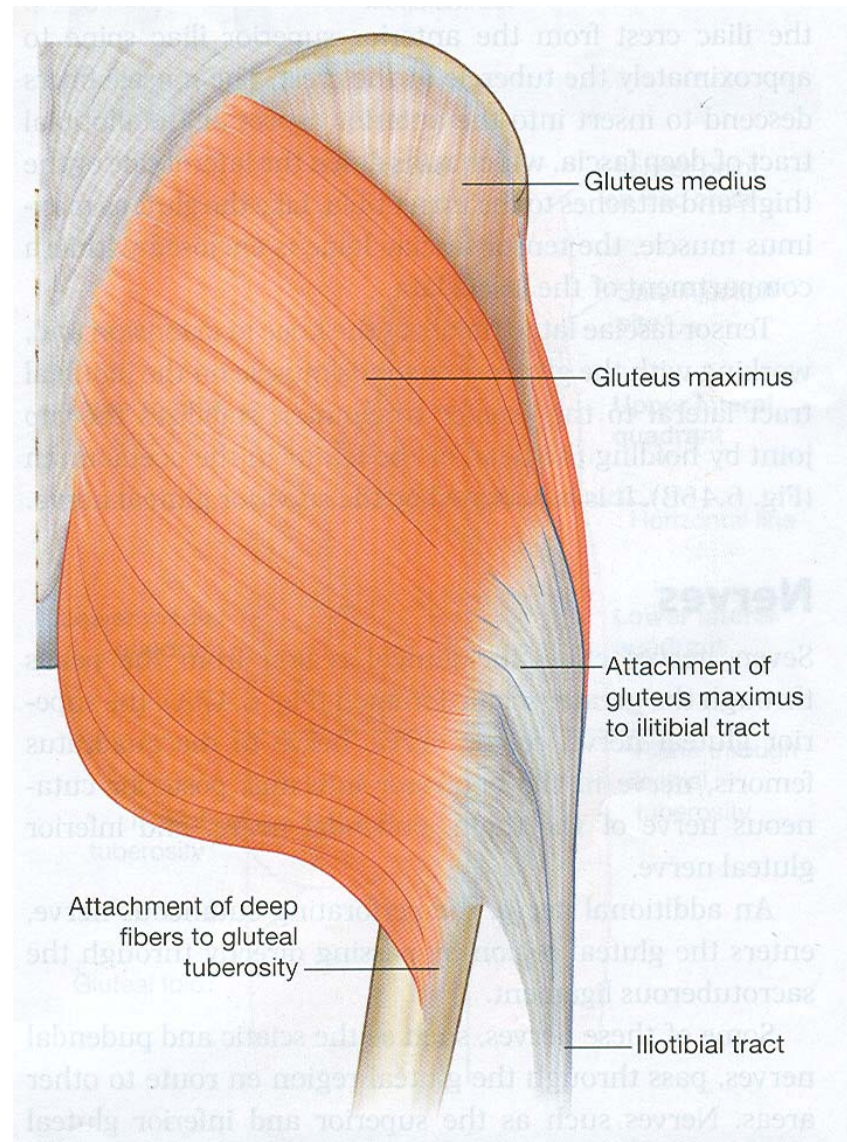
Lower & post. part from post. cut. nerve of thigh & perforating cut nerves(S2,3)



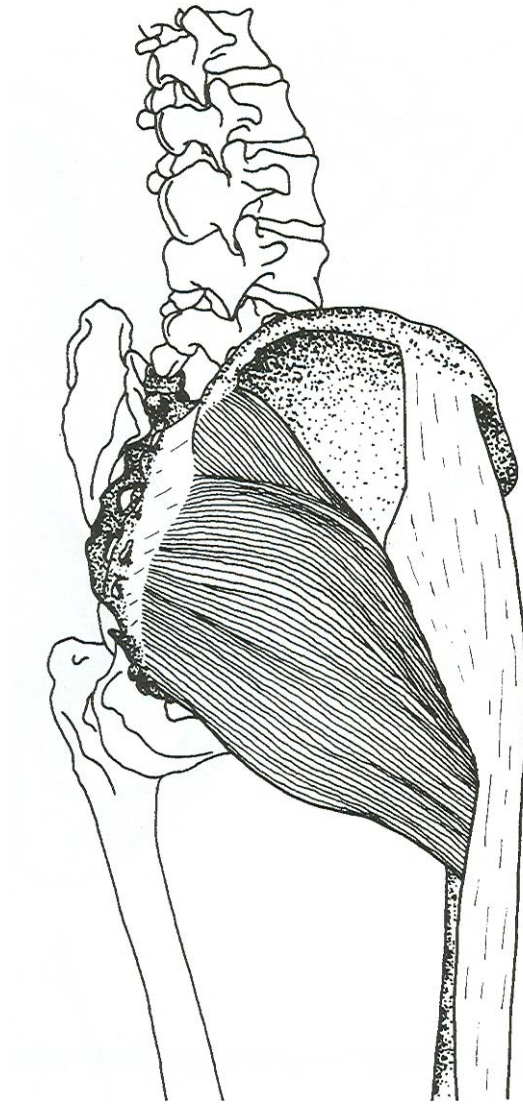


Muscles (gluteal region)

- Superficial group: Gluteus maximus
 Gluteus medius
 Gluteus minimus
 Tensor fasciae latae
- Deep group: Piriformis
 Obturator internus
 Gemellus superior
 Gemellus inferior
 Quadratus femoris



GLUTEUS MAXIMUS



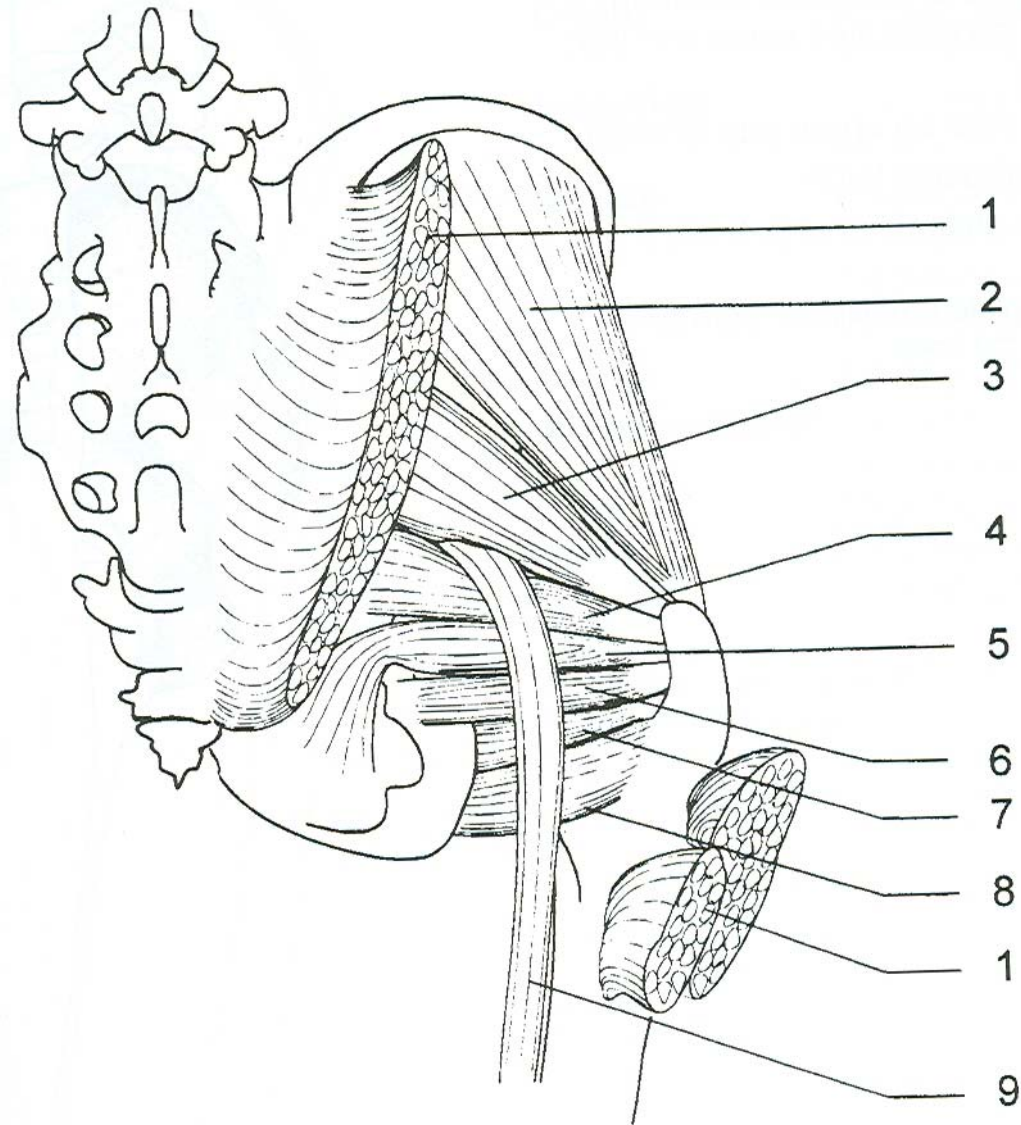
Gluteus maximus

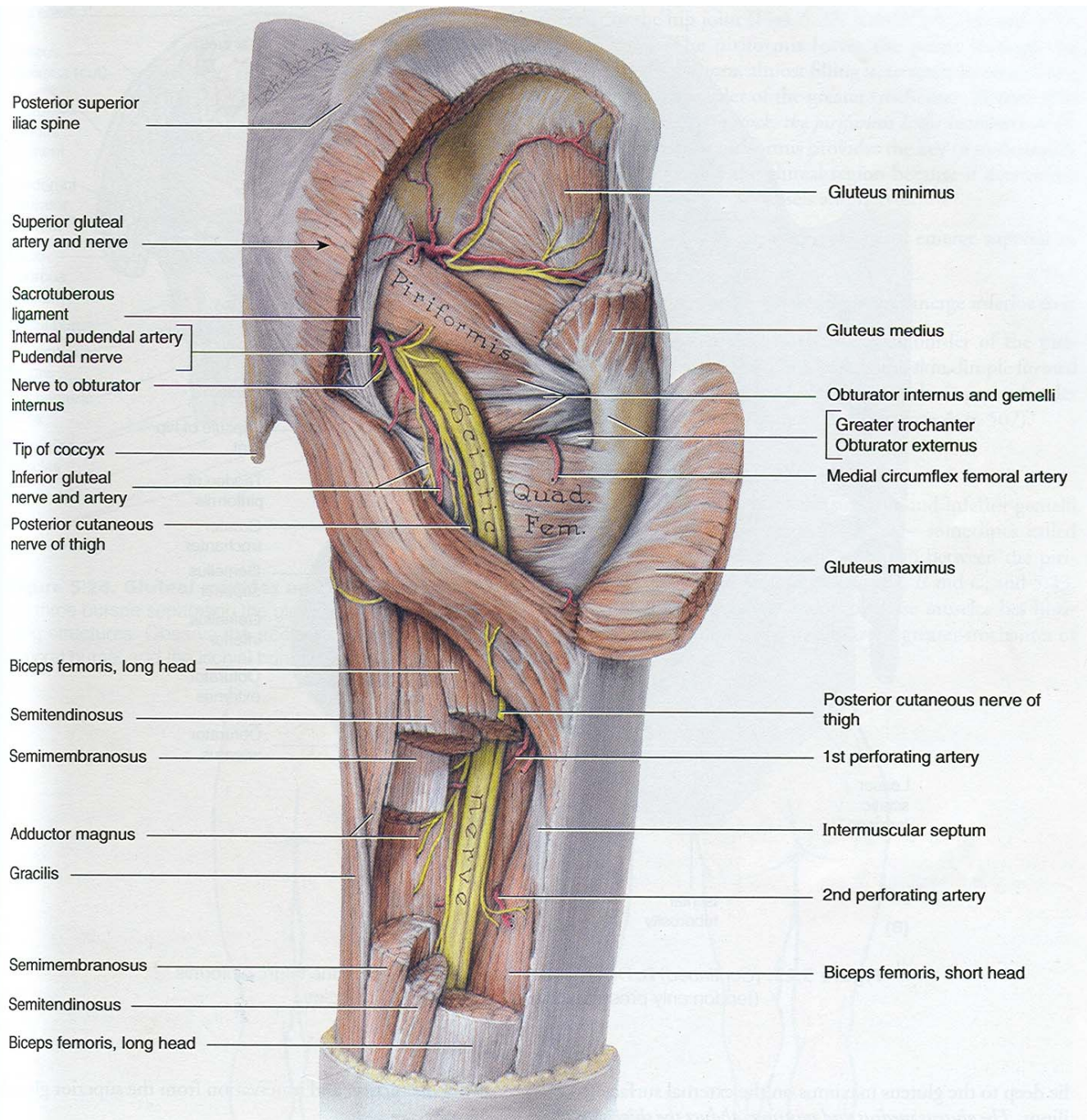
- Origin: Posterior gluteal line and rough area on ilium posterior to this line, iliac crest, aponeurosis of erector spinae, sacrum – dorsal surface of lower part, side of coccyx, sacrotuberous ligament and fascia covering gluteus maximus
- Insertion: Iliotibial tract and gluteal tuberosity of femur
- N. supply: Inferior gluteal nerve ($L_5S_1S_2$)
- Bursae: Trochanteric, Ischial, gluteofemoral

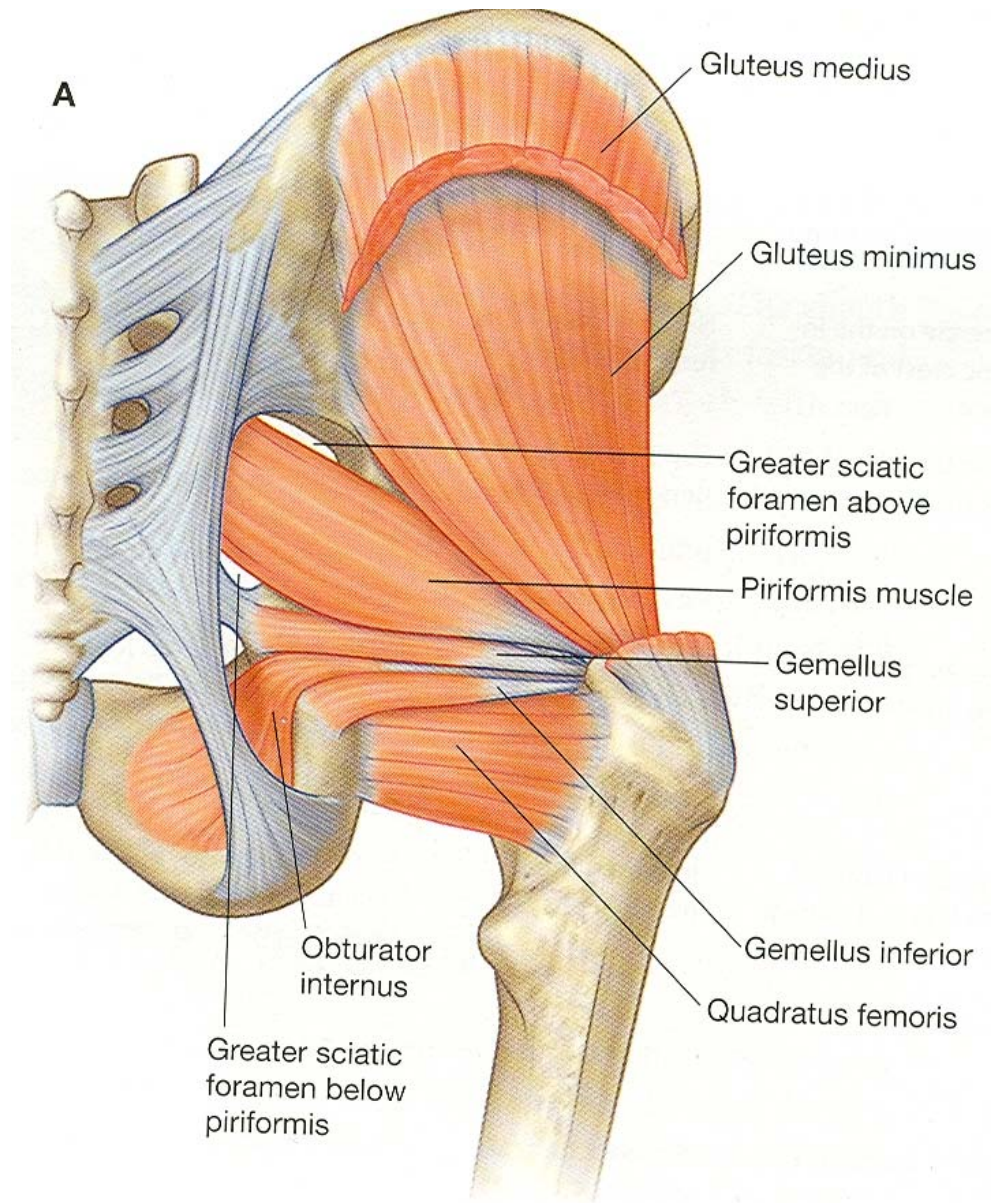
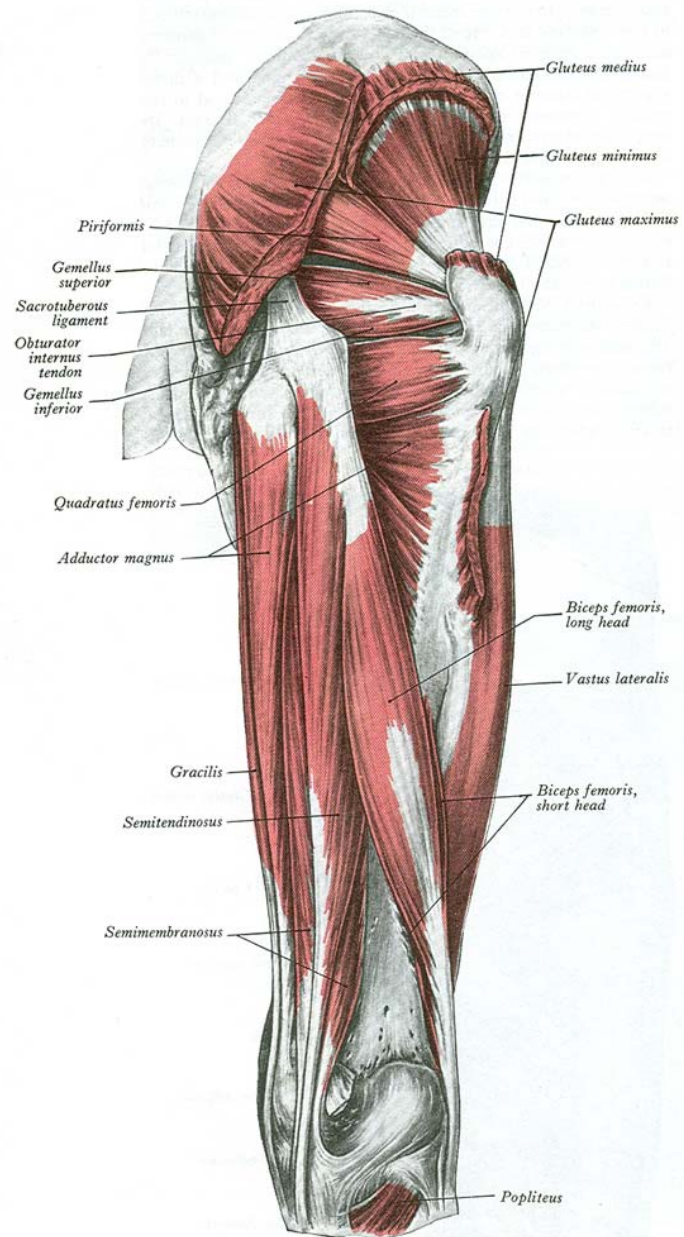
Actions:

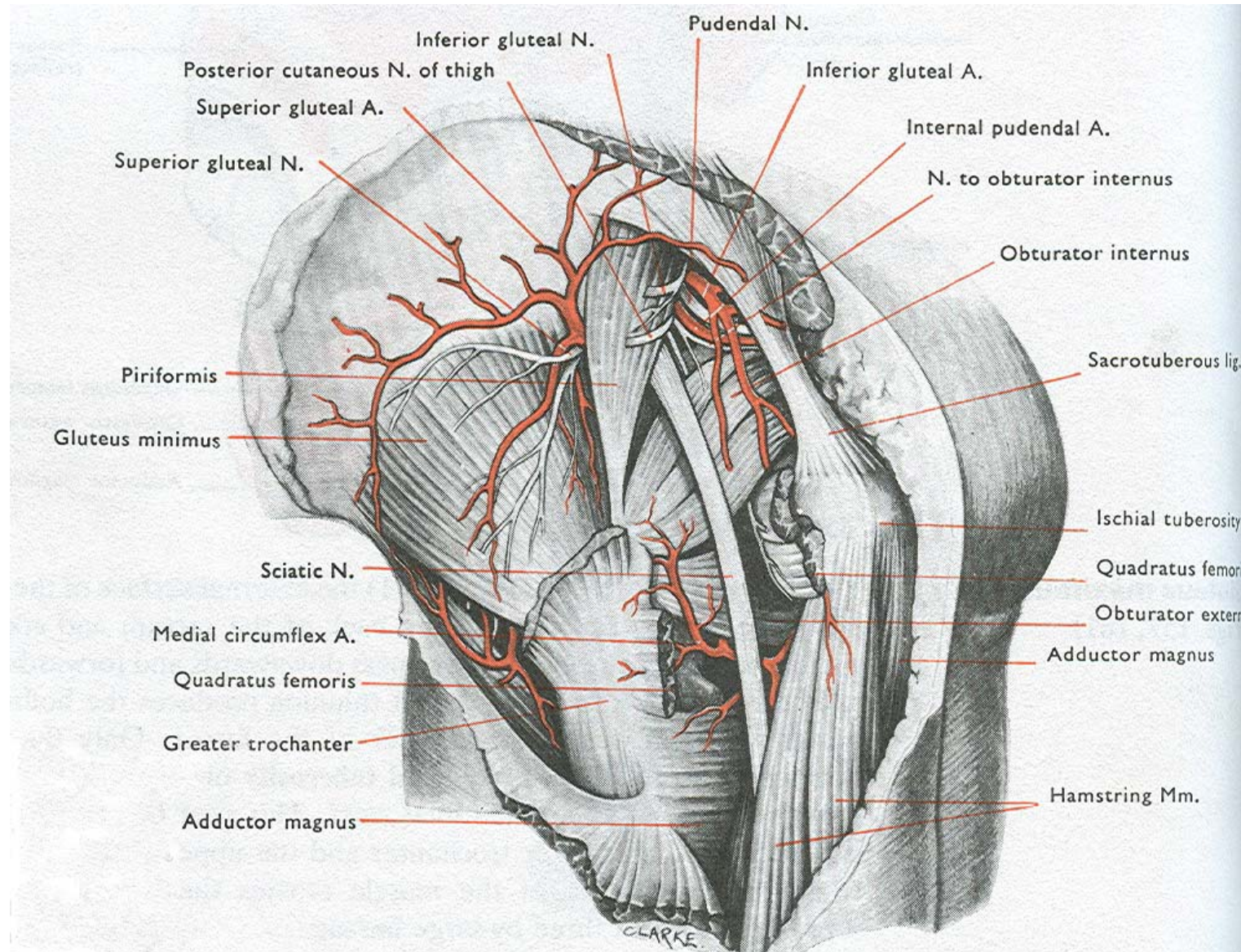
- Powerful extensor (can extend the flexed thigh)
- Inactive during standing
- Intermittently active in walking and climbing stairs
- Raises the trunk after sitting/stooping
- Prevents forward swaying
- Active in strong lateral rotation of thigh
- Powerful abduction of thigh
- Through iliotibial tract, stabilizes the femur on the tibia

MUSCLES OF THE HIP









Structures under cover of gluteus maximus

- Ilium
- Sacrum
- Coccyx
- Ischial tuberosity
- Greater trochanter of Femur
- Sacrotuberous and sacrospinous ligaments
- Gluteus Medius
- Piriformis
- Superior & inferior gemelli
- Obturator internus and externus
- Quadratus femoris
- Origin of Biceps (Long head)
- Semitendinosus
- Semimembranosus
- Adductor magnus

Structures under cover of gluteus maximus (contd.)

Structures passing through Greater Sciatic Foramen

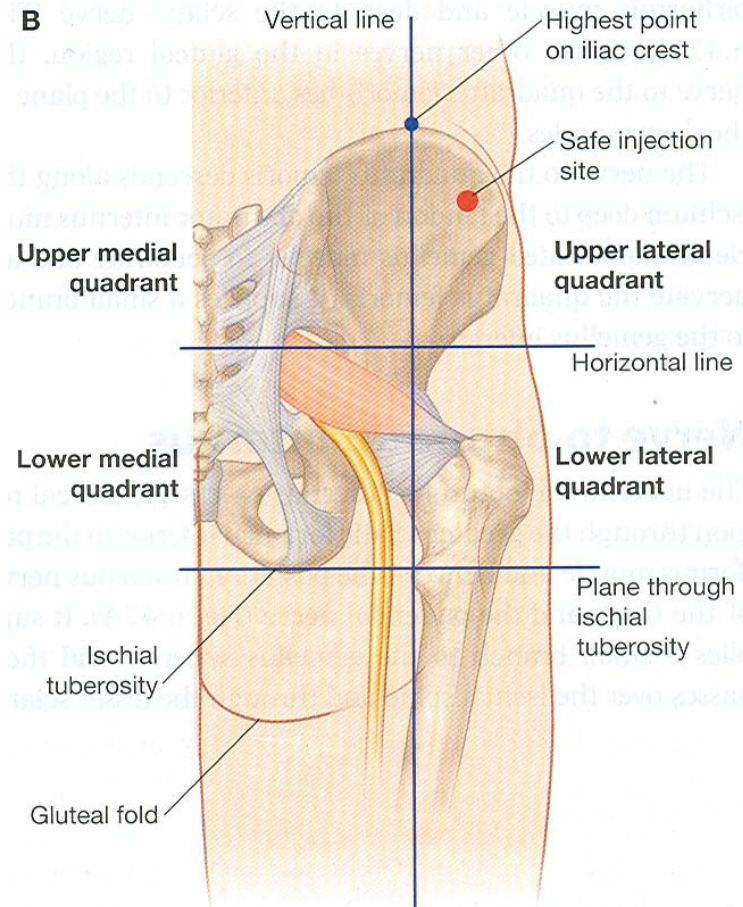
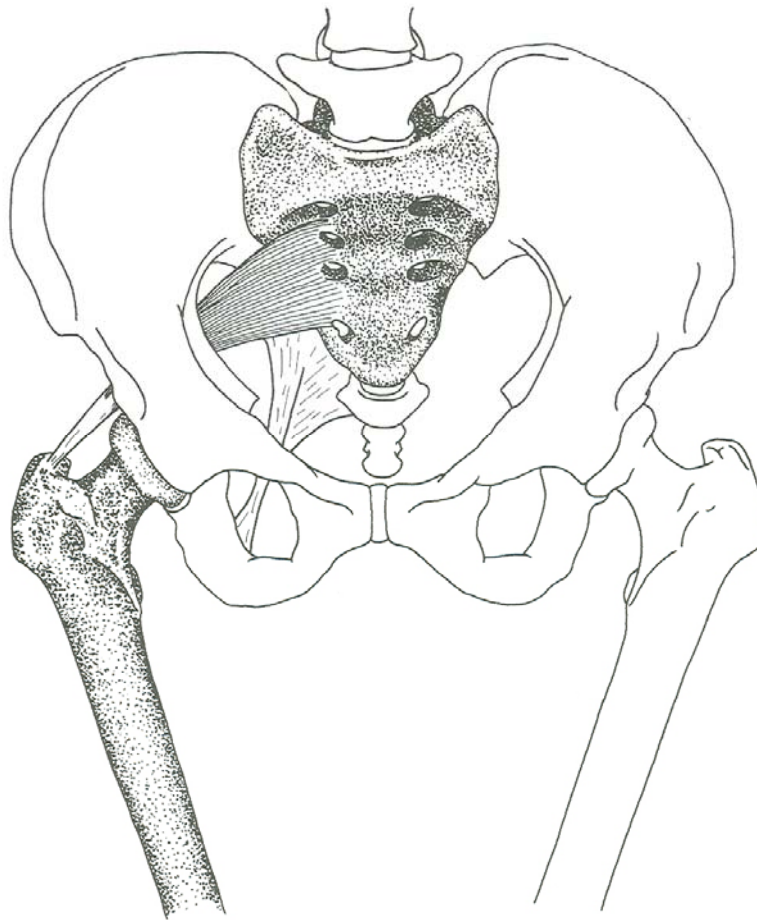
Superior to piriformis

- Superior gluteal Vs. & N.

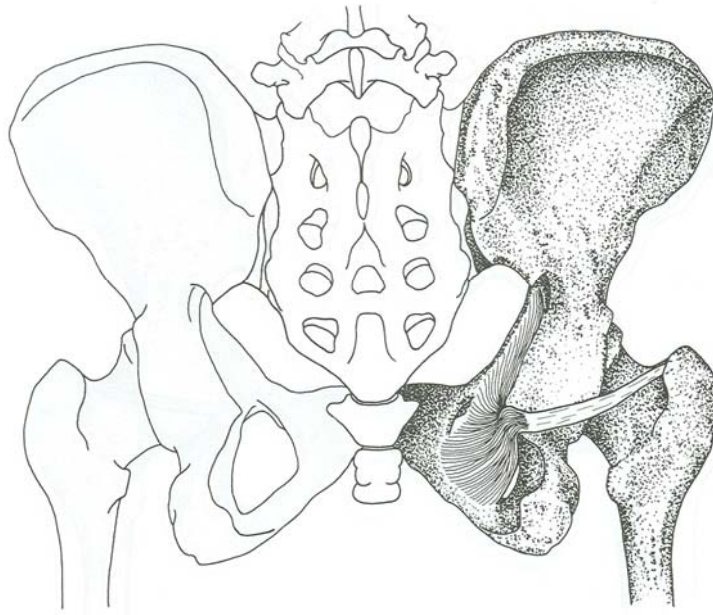
Inferior to Piriformis

- Inferior Gluteal Vs. & N.
- Sciatic nerve
- Posterior cutaneous nerve of thigh
- Pudendal nerve
- Internal pudendal Vs.
- Nerve to obturator internus
- Nerve to quadratus femoris
- Terminal branch of medial circumflex artery
- Ist perforating artery

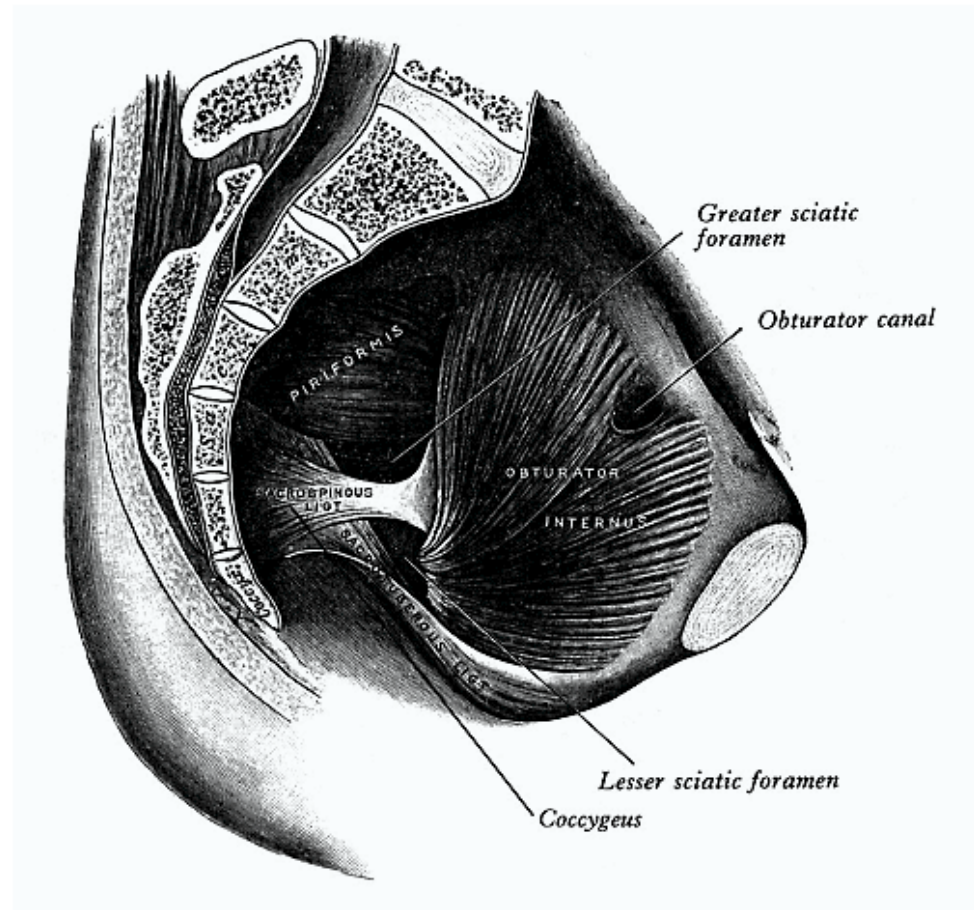
PIRIFORMIS



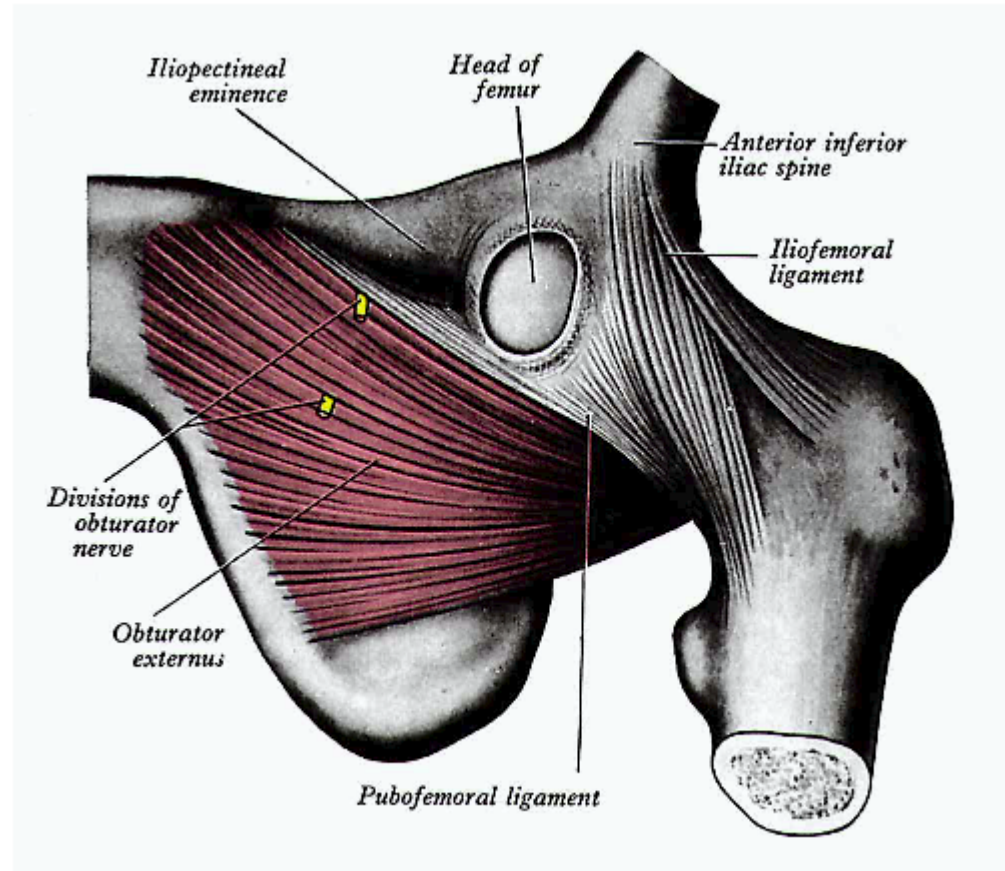
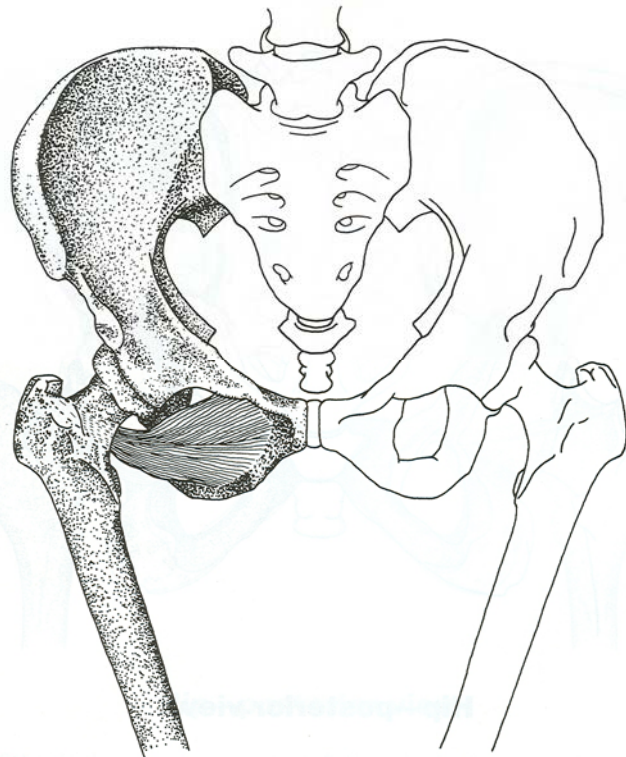
OBTURATOR INTERNUS



L5,S1

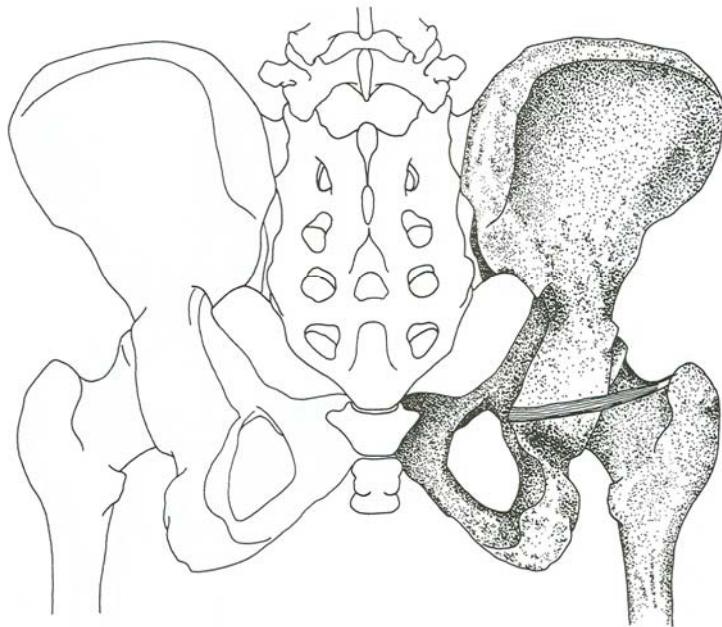


OBTURATOR EXTERNUS

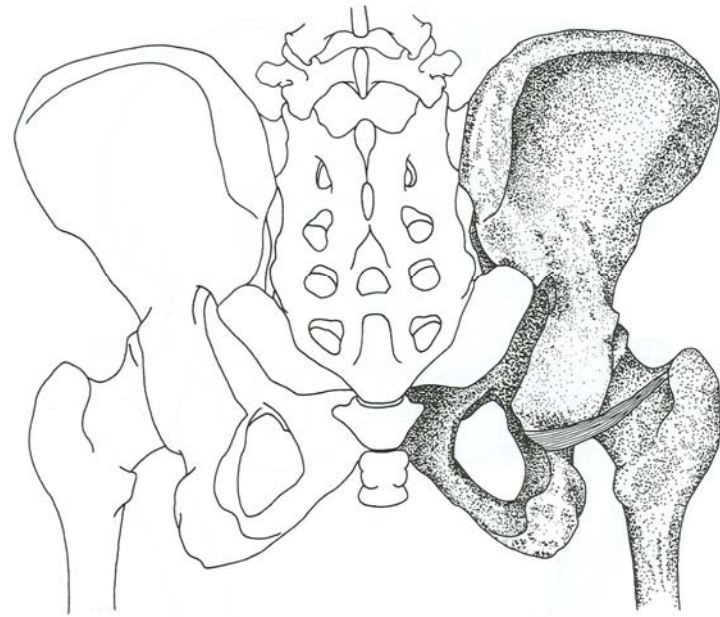


L3,4

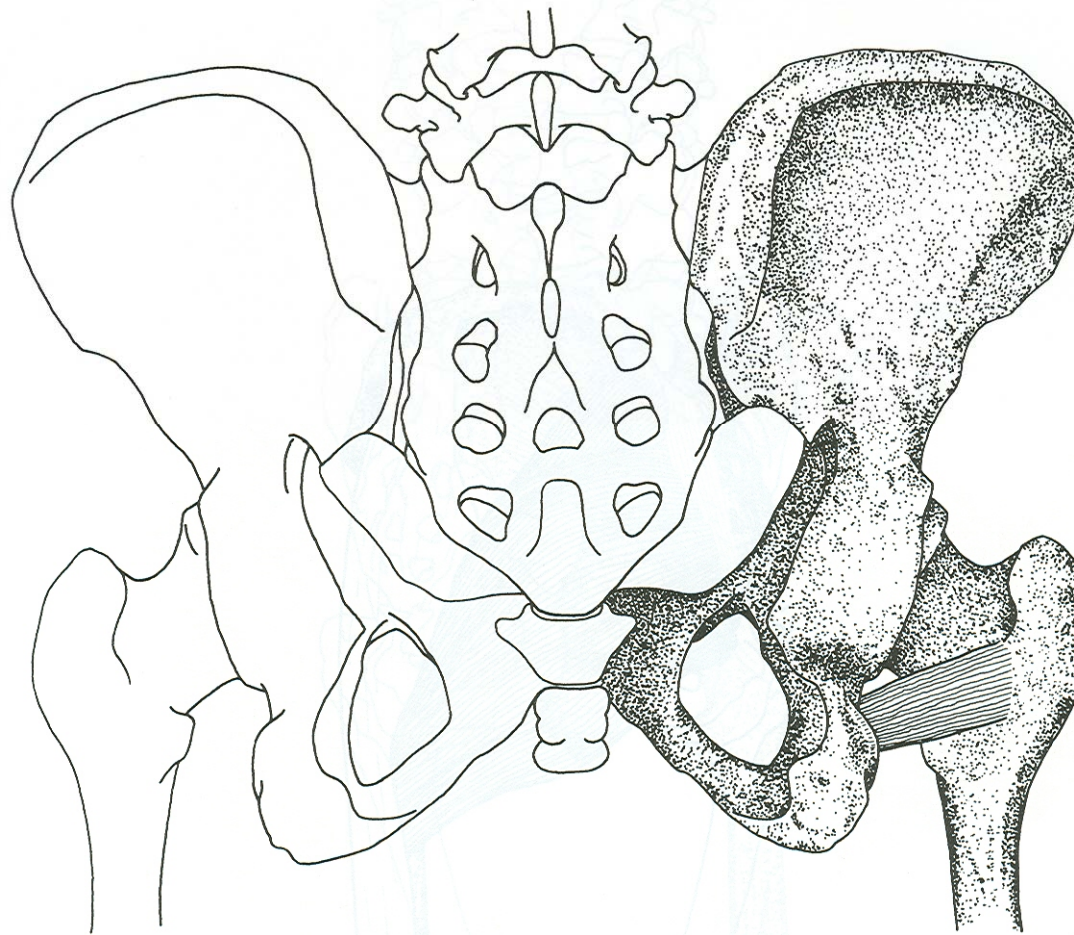
GEMELLUS SUPERIOR



GEMELLUS INFERIOR



QUADRATUS FEMORIS



Actions

- Postural muscles
- Maintain stability of hip joint
- Lateral rotators of extended thigh
- Abductors of flexed thigh

Tensor fasciae latae

Origin

- Anterior 5 cms of outer lip of iliac crest
- Anterior superior iliac spine
- Deep surface of fascia lata

Insertion

- Into iliotibial tract

Nerve supply

- Superior gluteal nerve (L4,5,S1)

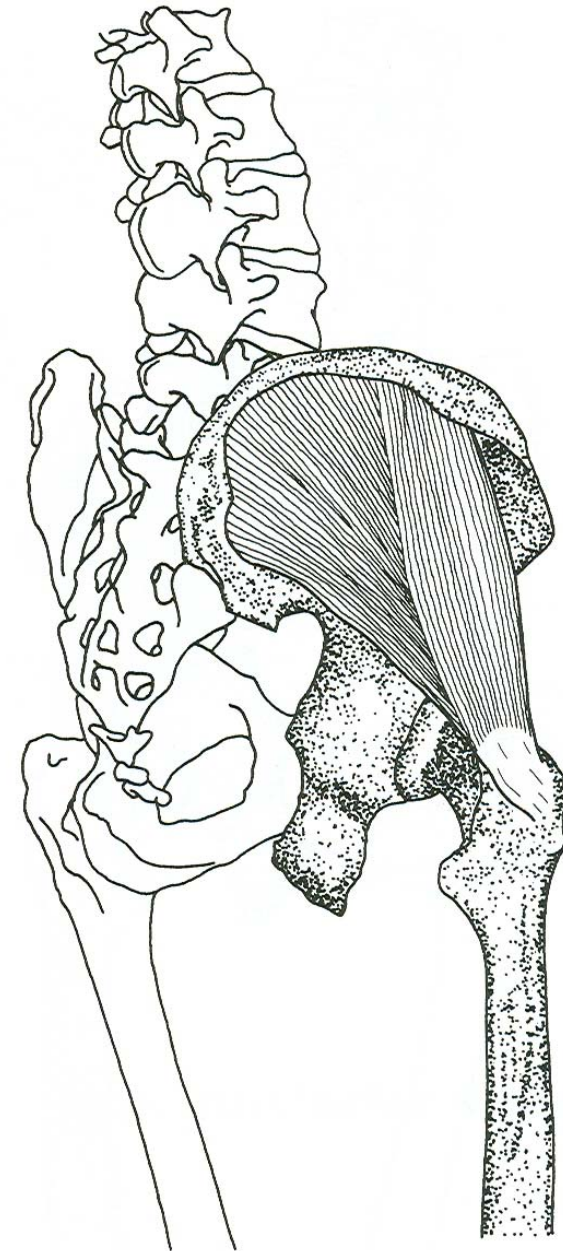
Action

- Extends knee with lateral rotation of leg
- Abduction and medial rotation of thigh
- Maintenance of upright posture

GLUTEUS MEDIUS

Gluteus medius

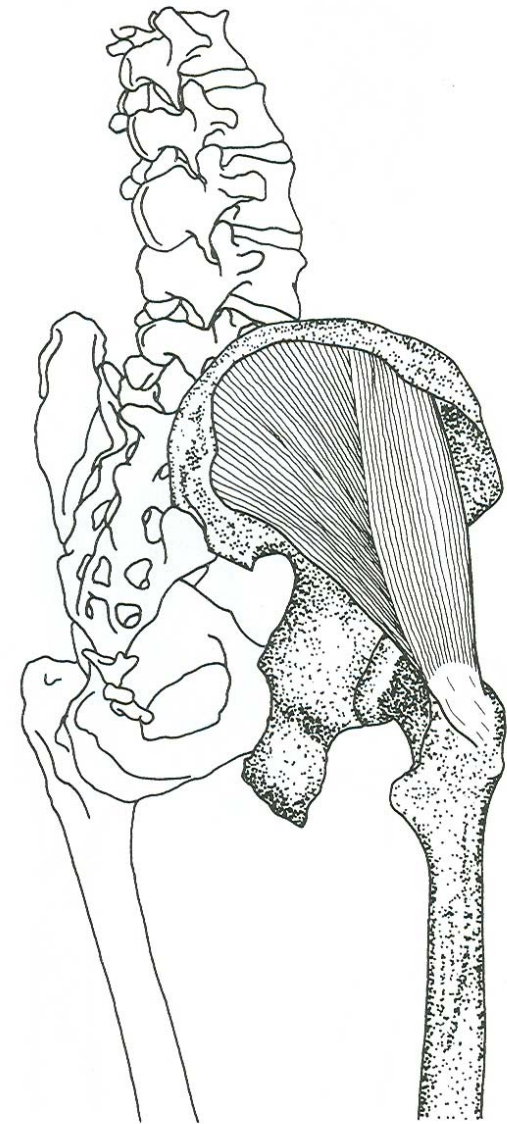
- Origin: Outer surface of ilium between iliac crest and posterior gluteal line above and anterior gluteal line below
- Insertion: Oblique ridge on lateral surface of greater trochanter and posterosuperior angle of greater trochanter
- N. supply: Superior gluteal n. (L_{4,5} S₁)



Gluteus minimus

- Origin: Outer surface of ilium between anterior and inferior gluteal lines and from the margins of greater sciatic notch
- Insertion: Anterior surface of greater trochanter
- N. supply: Superior gluteal N. (L_{4,5} S₁)

GLUTEUS MINIMUS

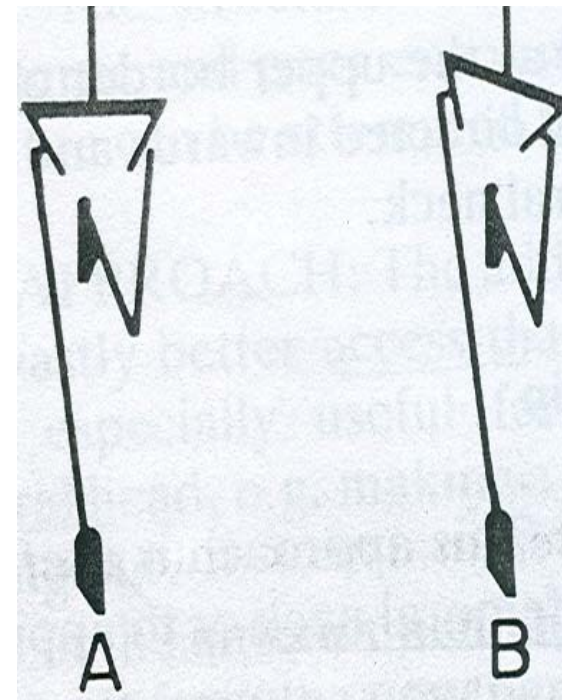
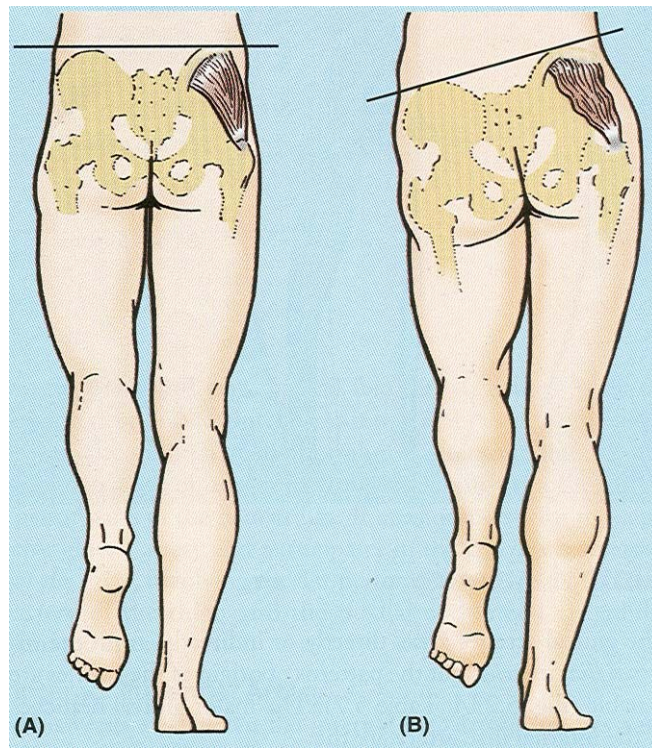


Actions of gluteus medius and minimus

- Acting from the pelvis
 - Abduct the thigh
 - Medially rotate the thigh (anterior fibres)
- Acting from the femur
 - maintaining the trunk upright on supported side in walking and running
 - muscles are active when standing with feet parallel and close together

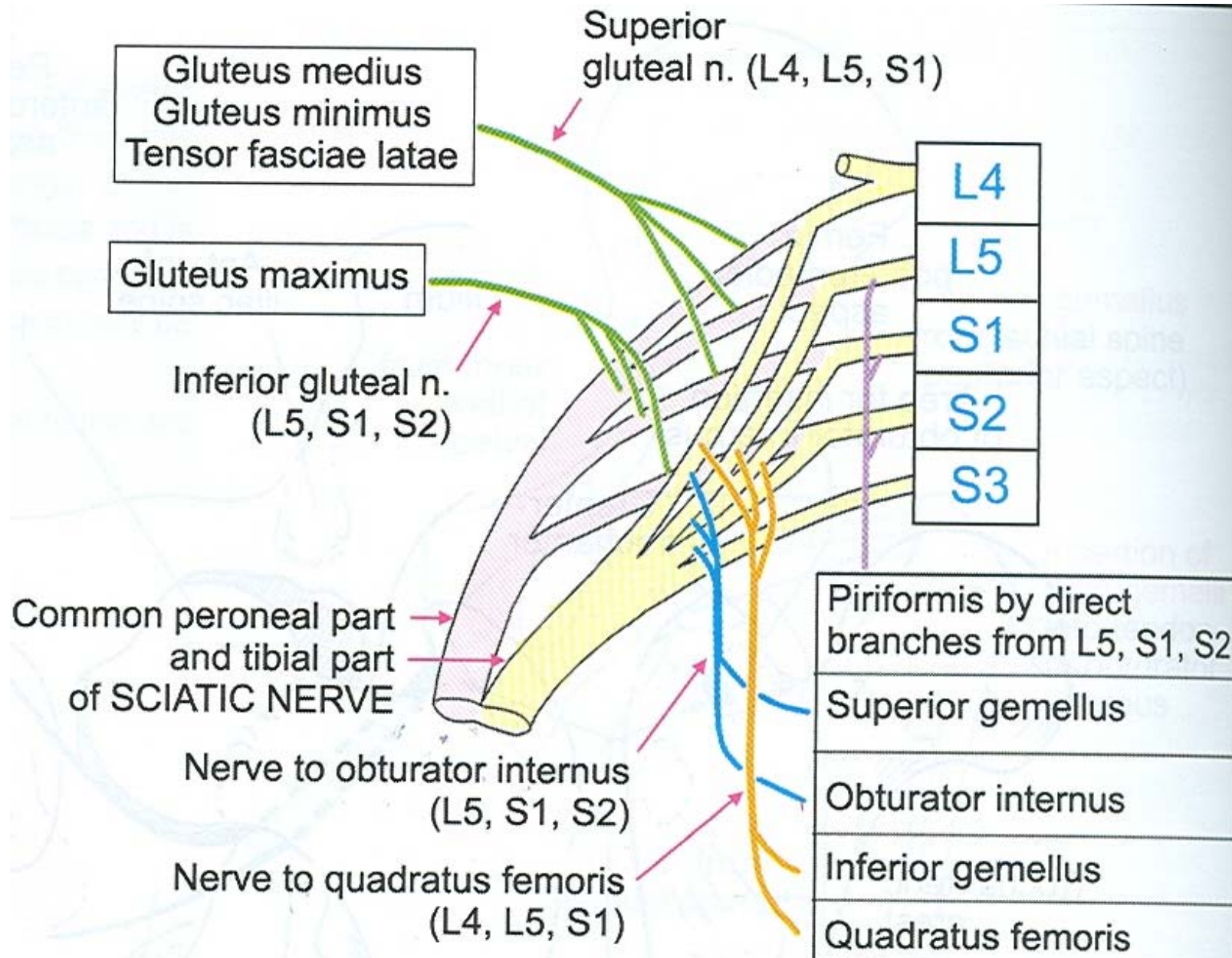
Applied Anatomy

- Trendelenburg's sign
 - In paralysis of glutei, pelvis sinks on the unsupported side when the patient tries to stand on affected limb.
Have a characteristic lurching gait
- Ischial bursitis (Weaver's bottom)
 - Excessive friction between ischial bursae and ischial tuberosities
- Trochanteric bursitis
 - Inflammation of the trochanteric bursa
- Intramuscular injections: given in superolateral quadrant of gluteal region to avoid injury to nerves
- Injury to: Superior gluteal nerve
 - Sciatic nerve

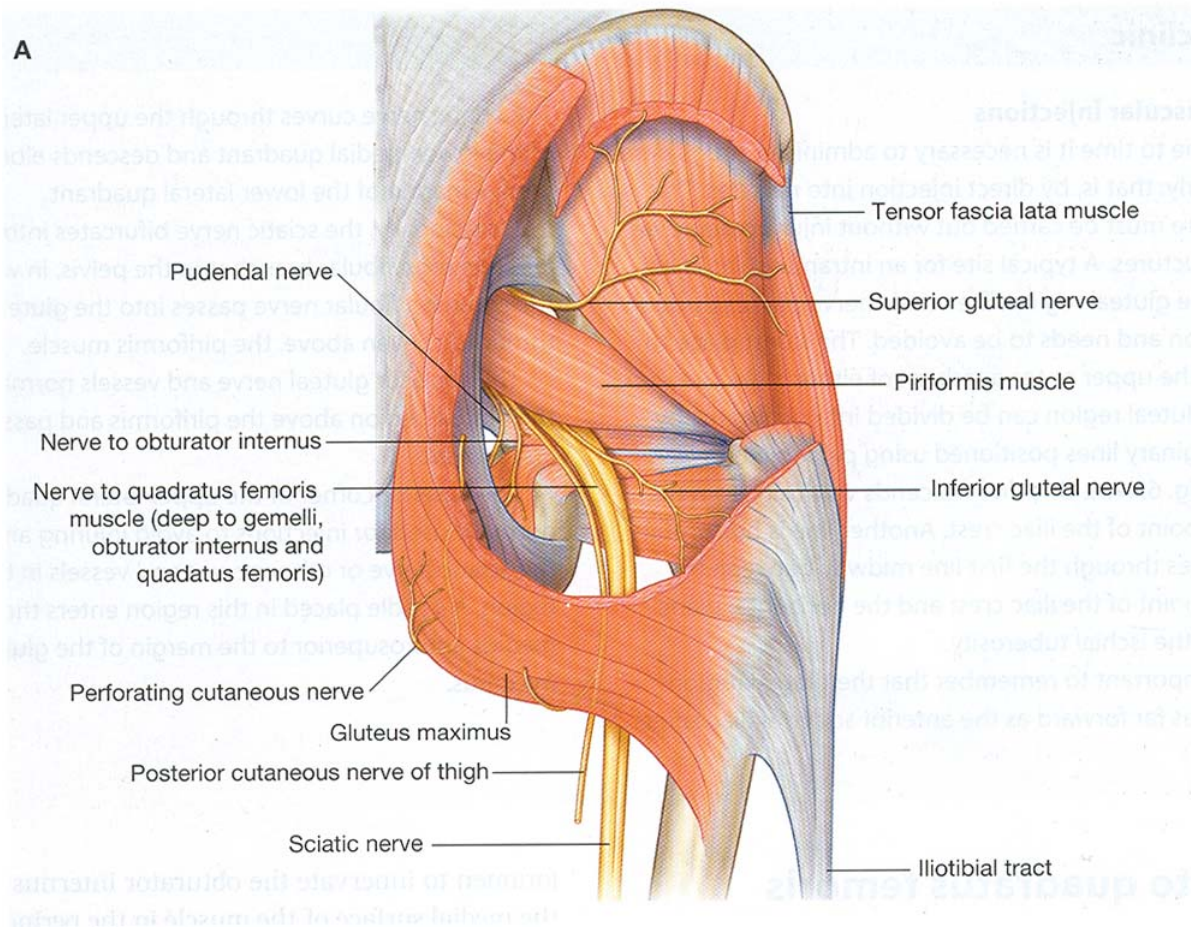


Nerves (gluteal region)

- Sciatic
- Post. Cut. Nerve of thigh
- Sup. Gluteal
- Inf. Gluteal
- Nerve to quadratus femoris
- Nerve to obturator internus

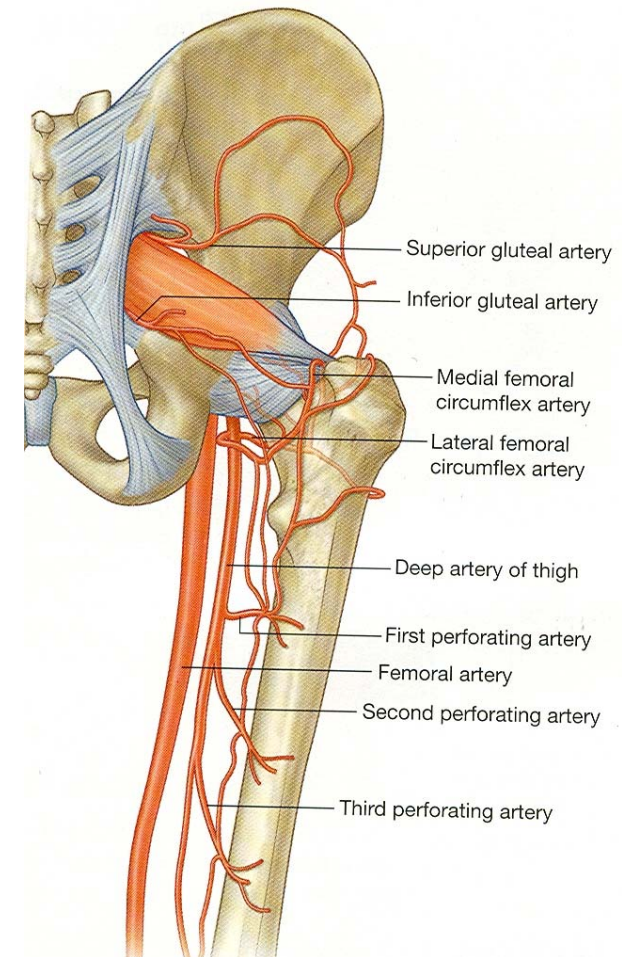


A



Arteries (gluteal region)

- Superior gluteal
- Inferior gluteal



Hip Joint

- Type / Bones

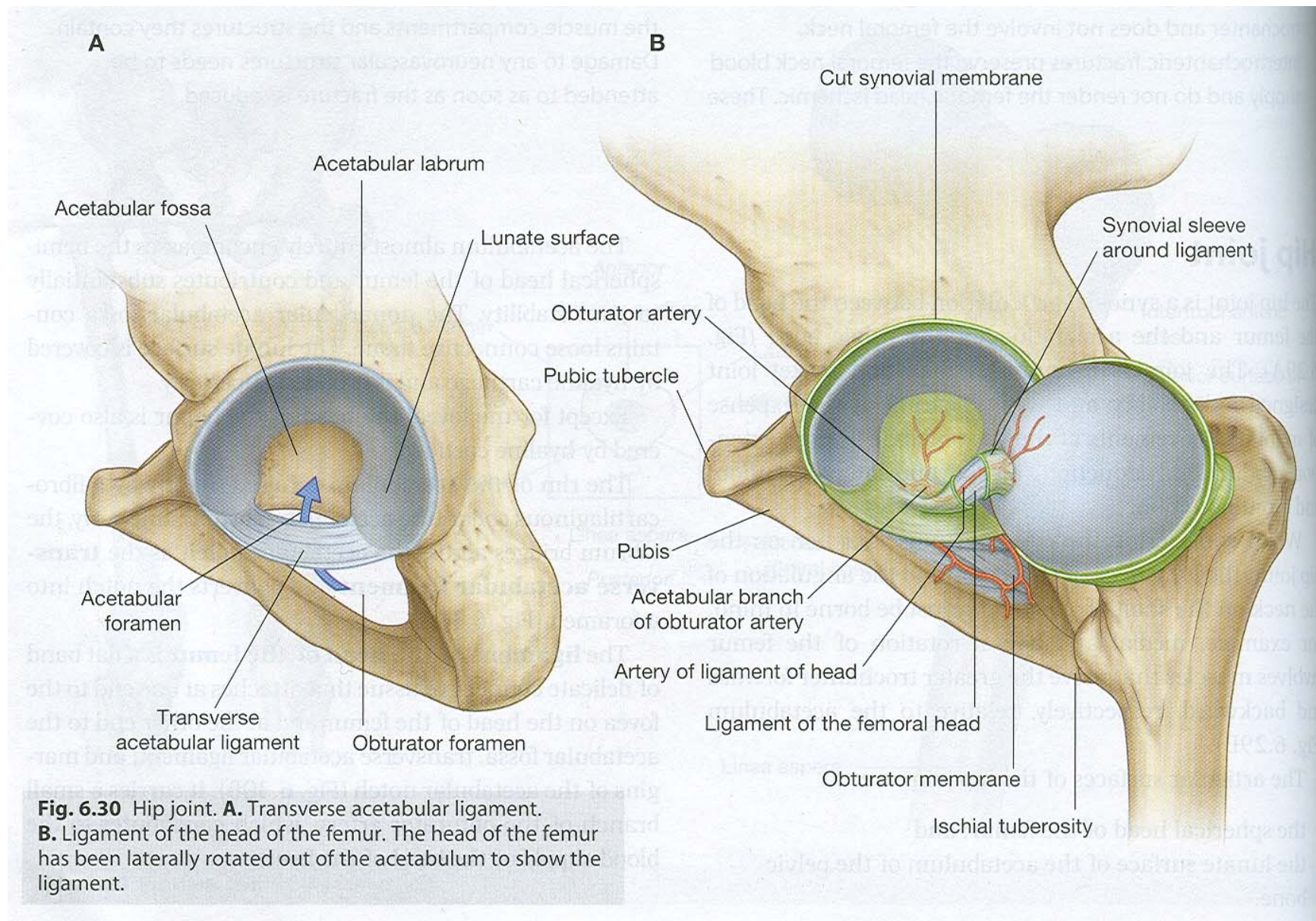
- Capsule

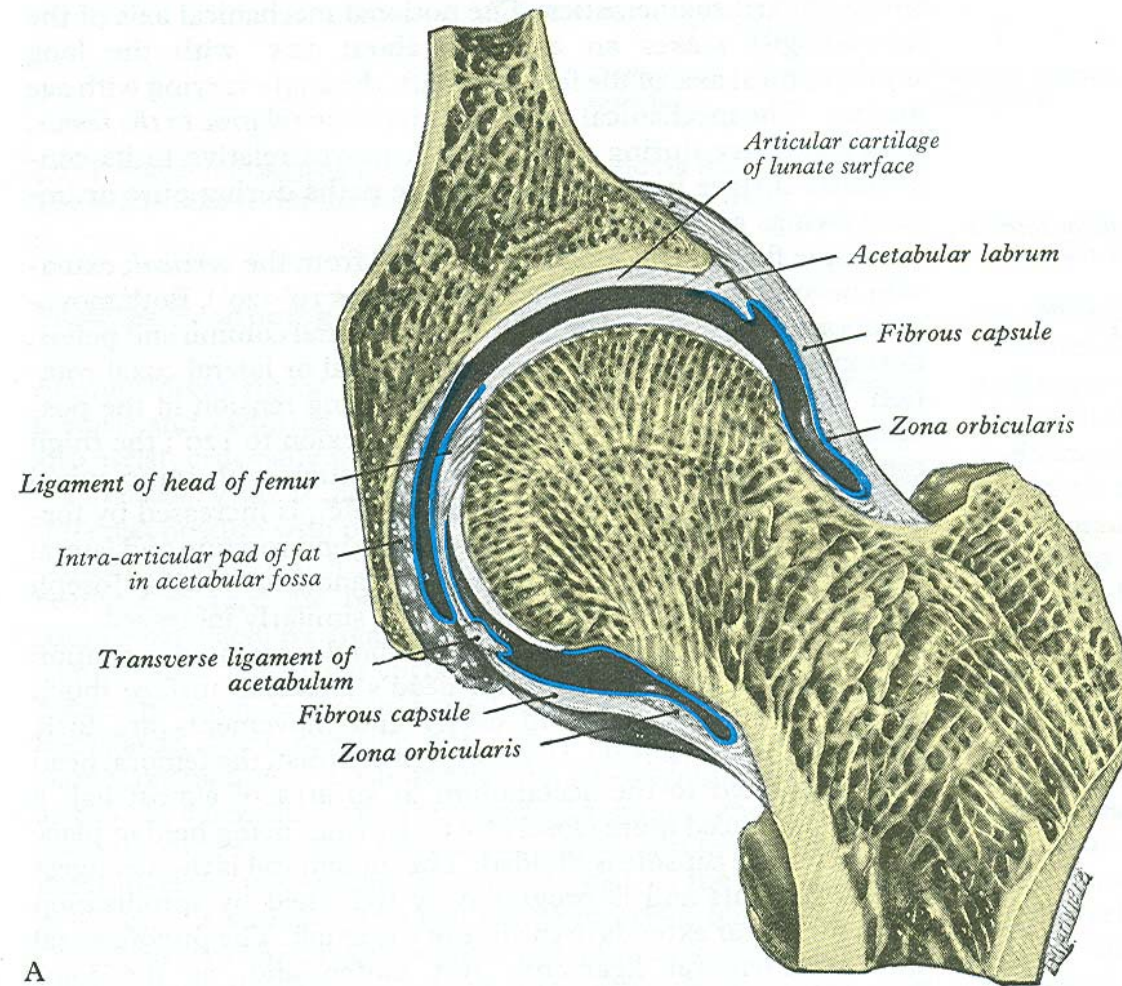
- Retinacula**
- Zona Orbicularis**

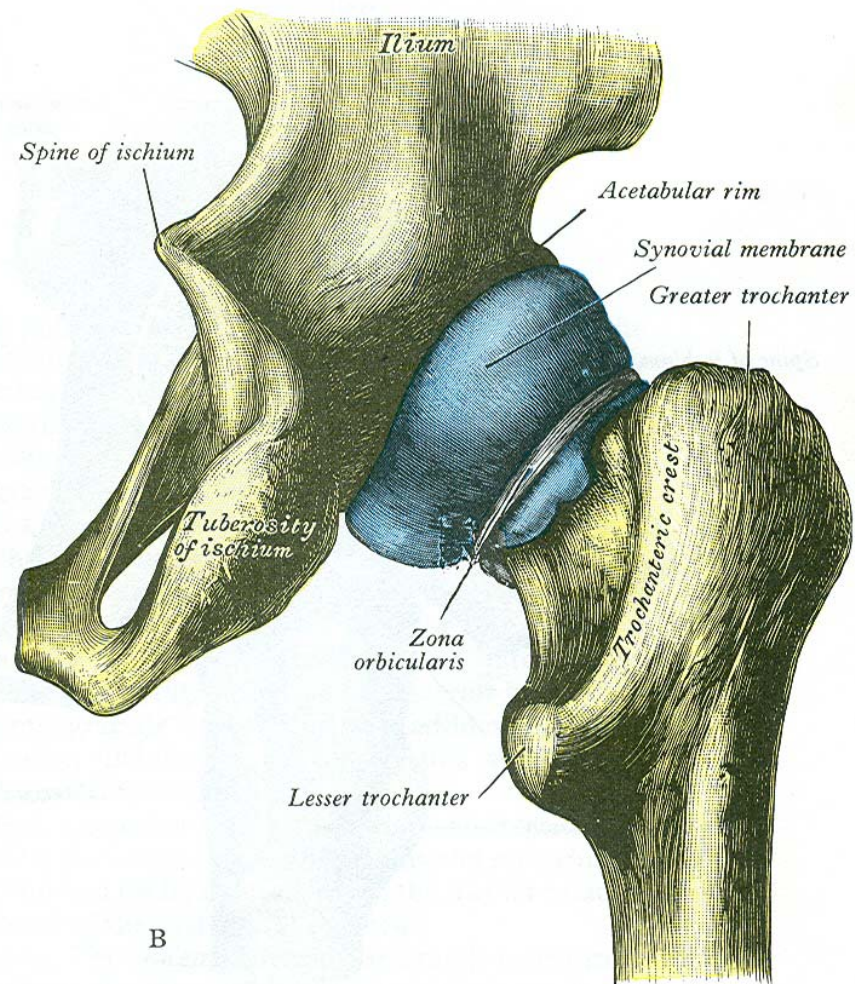
- Synovial Membrane/Bursae

- Ligaments

- Ilio femoral**
- Pubo femoral**
- Ischiofemoral**
- Ligament of Head of femur**
- Acetabular labrum**
- Transverse Acetabular**







B

Most congruent position

90 degree flexion

5degree abduction

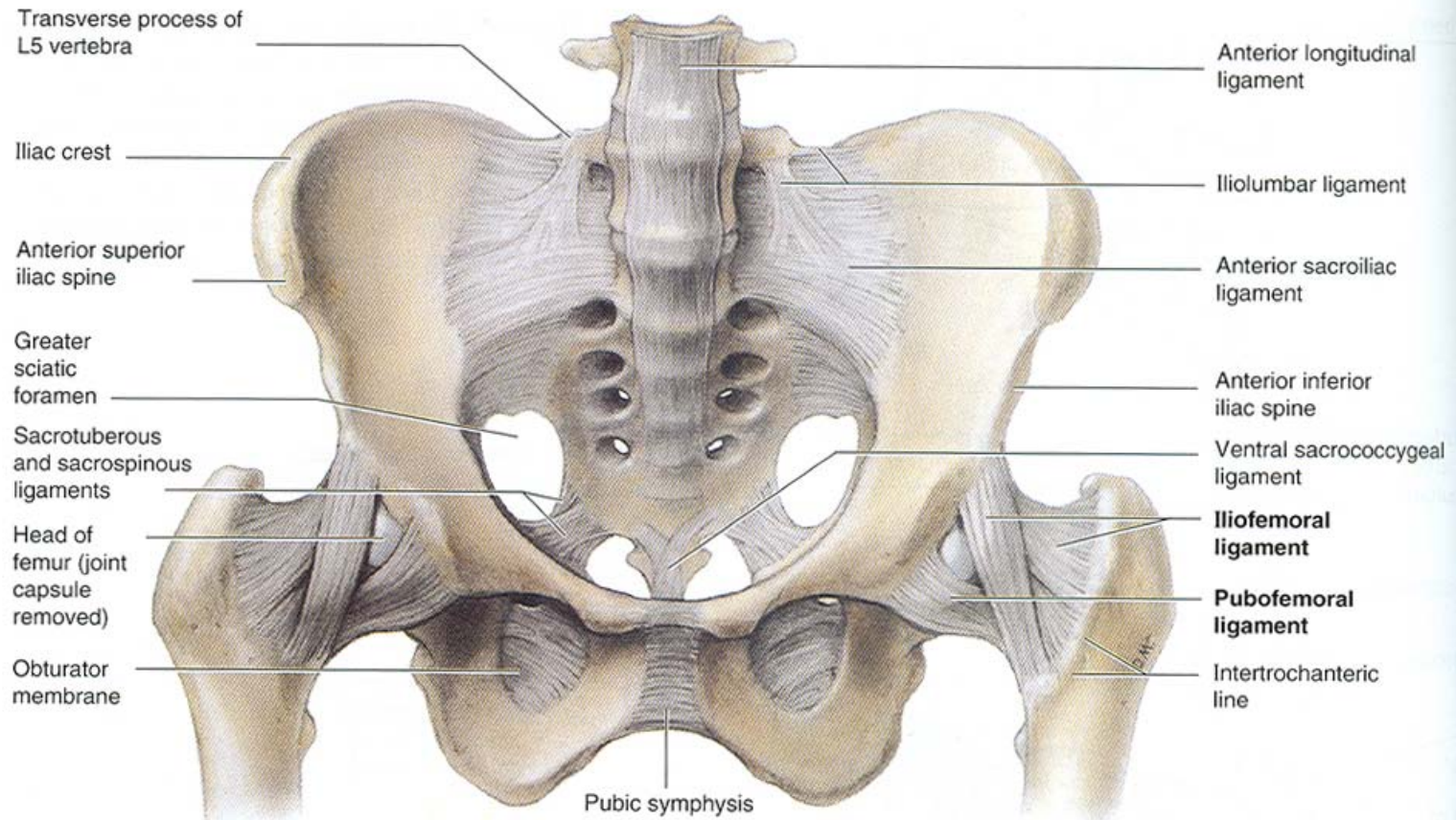
10 degree lateral rotation

Close packed position

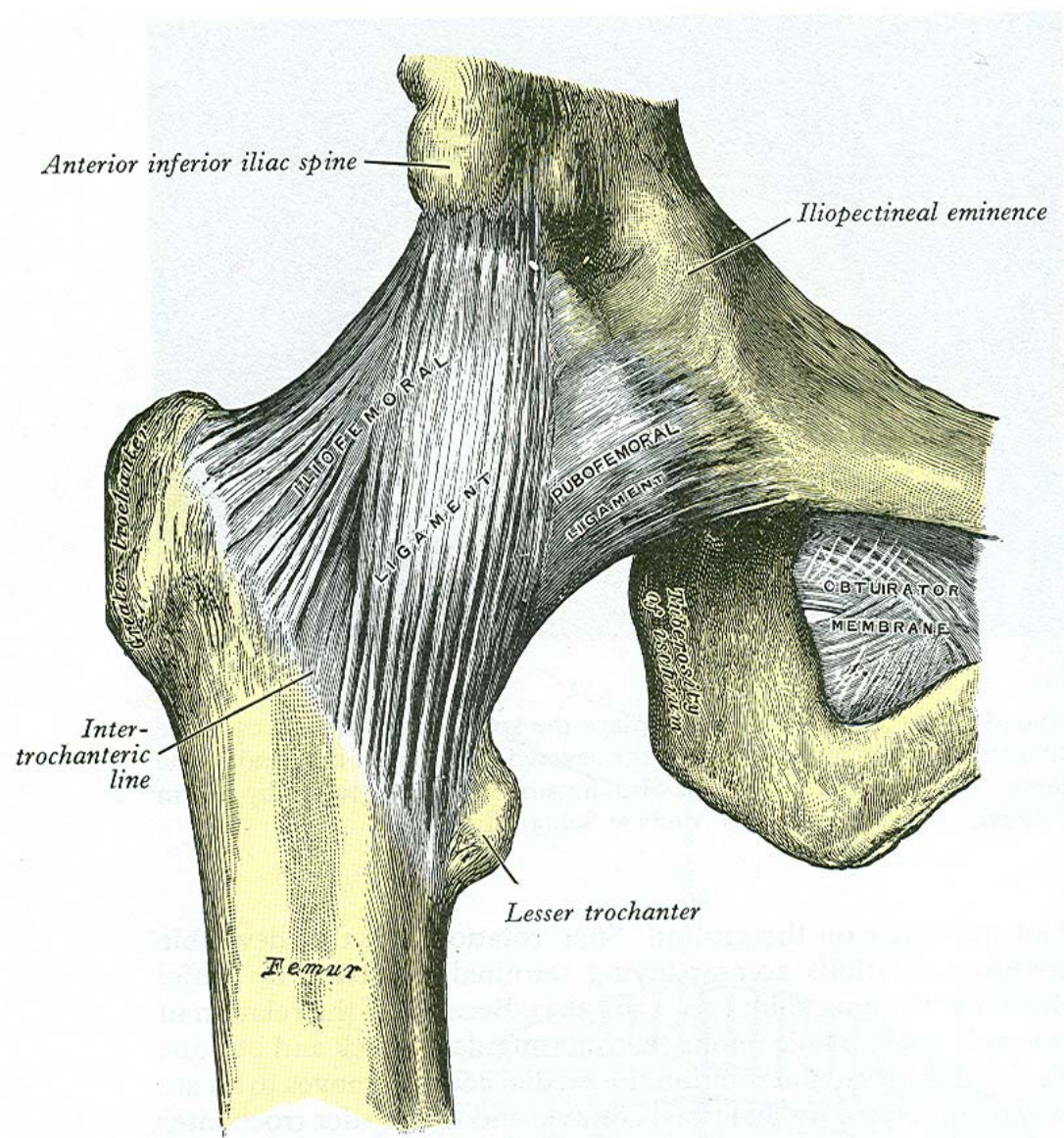
Full extension

slight adduction

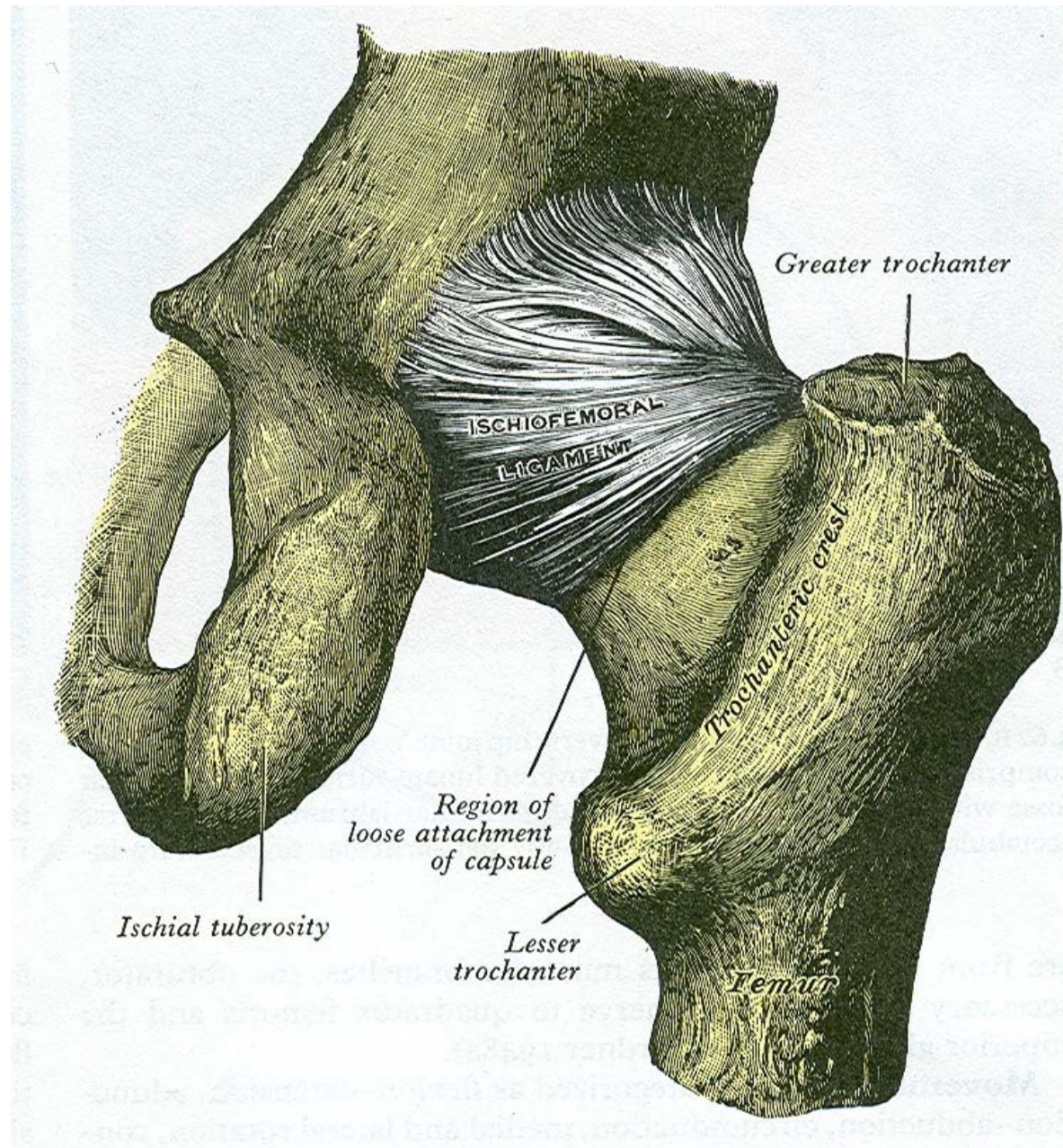
slight medial rotation

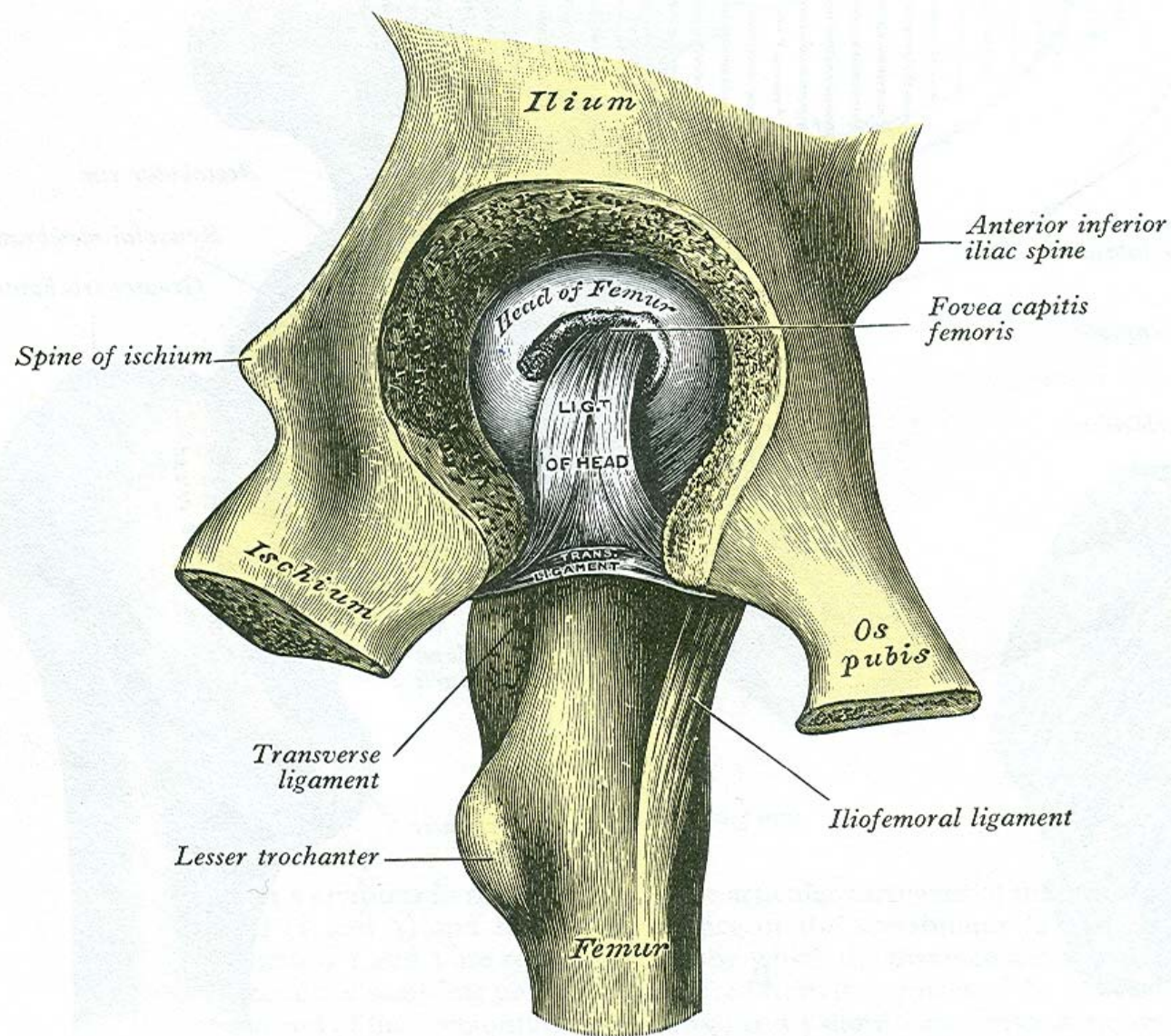


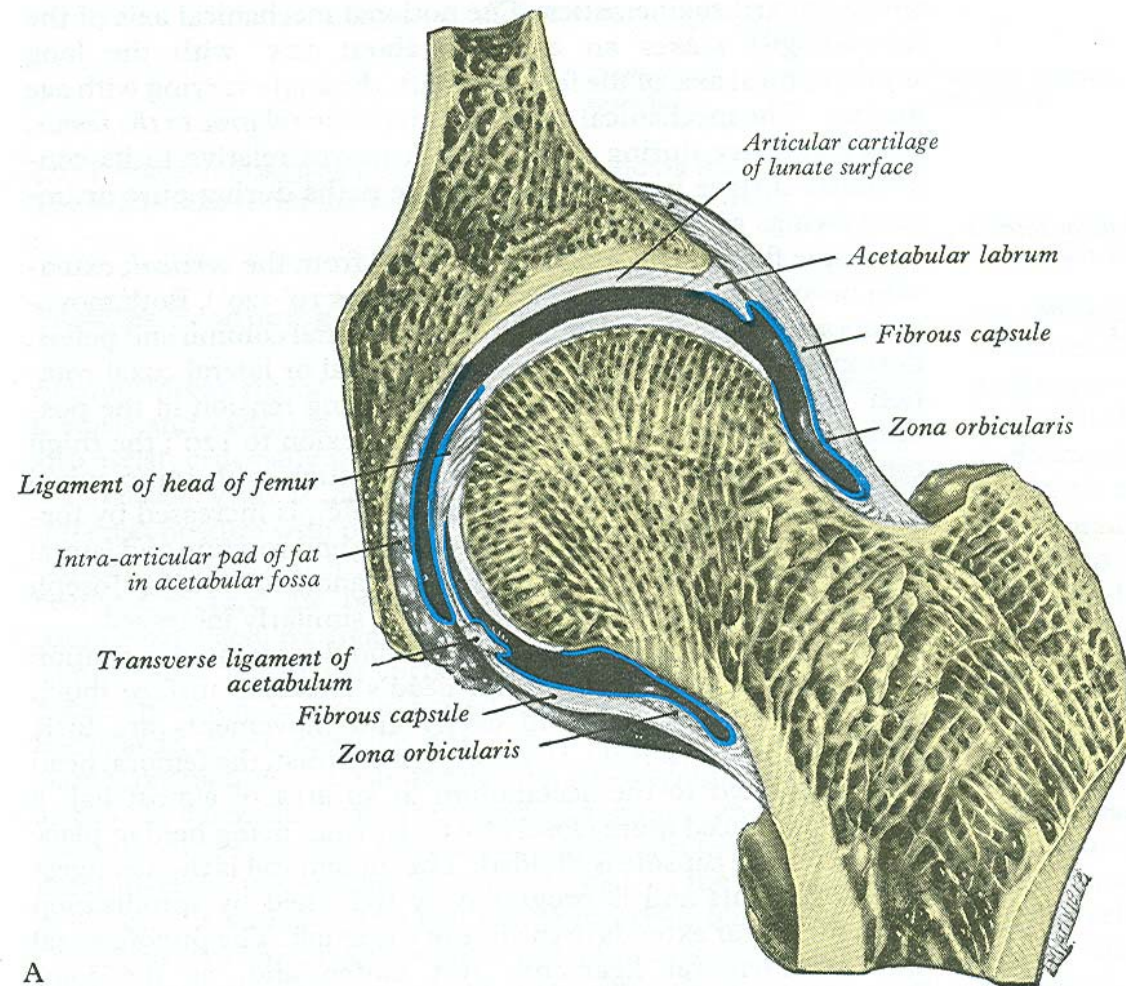
(A) Anterior view

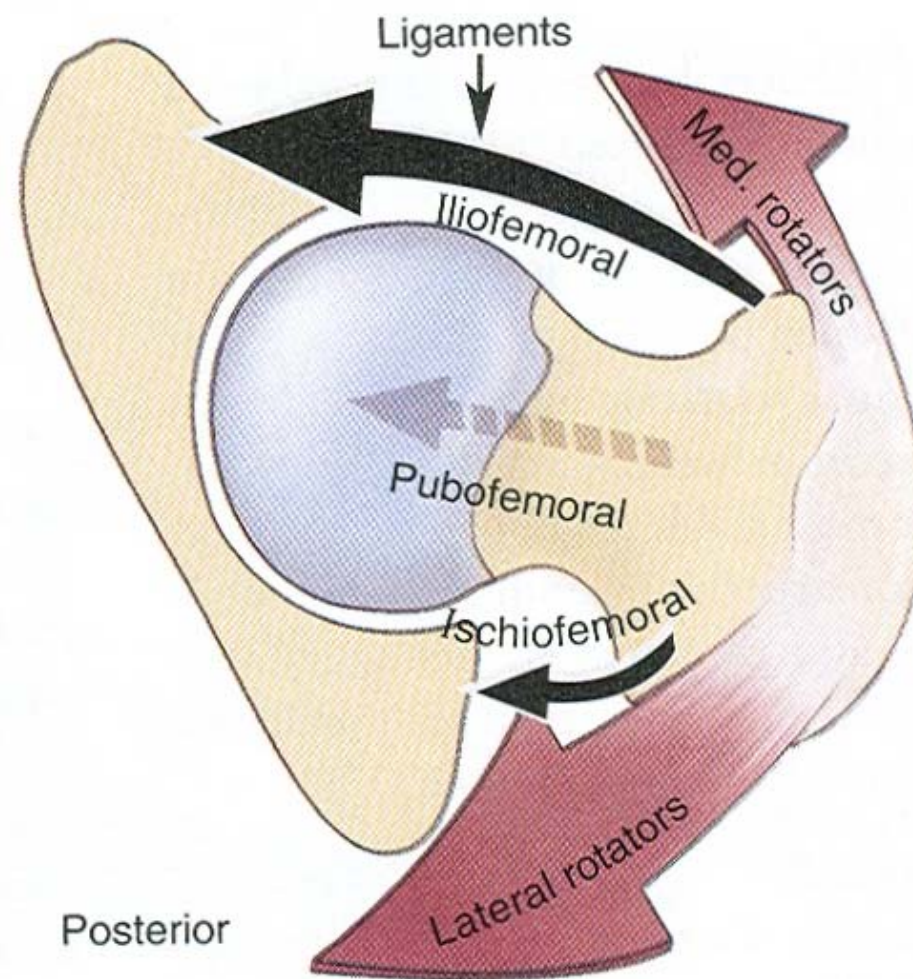


4.64 Right hip joint: anterior aspect.





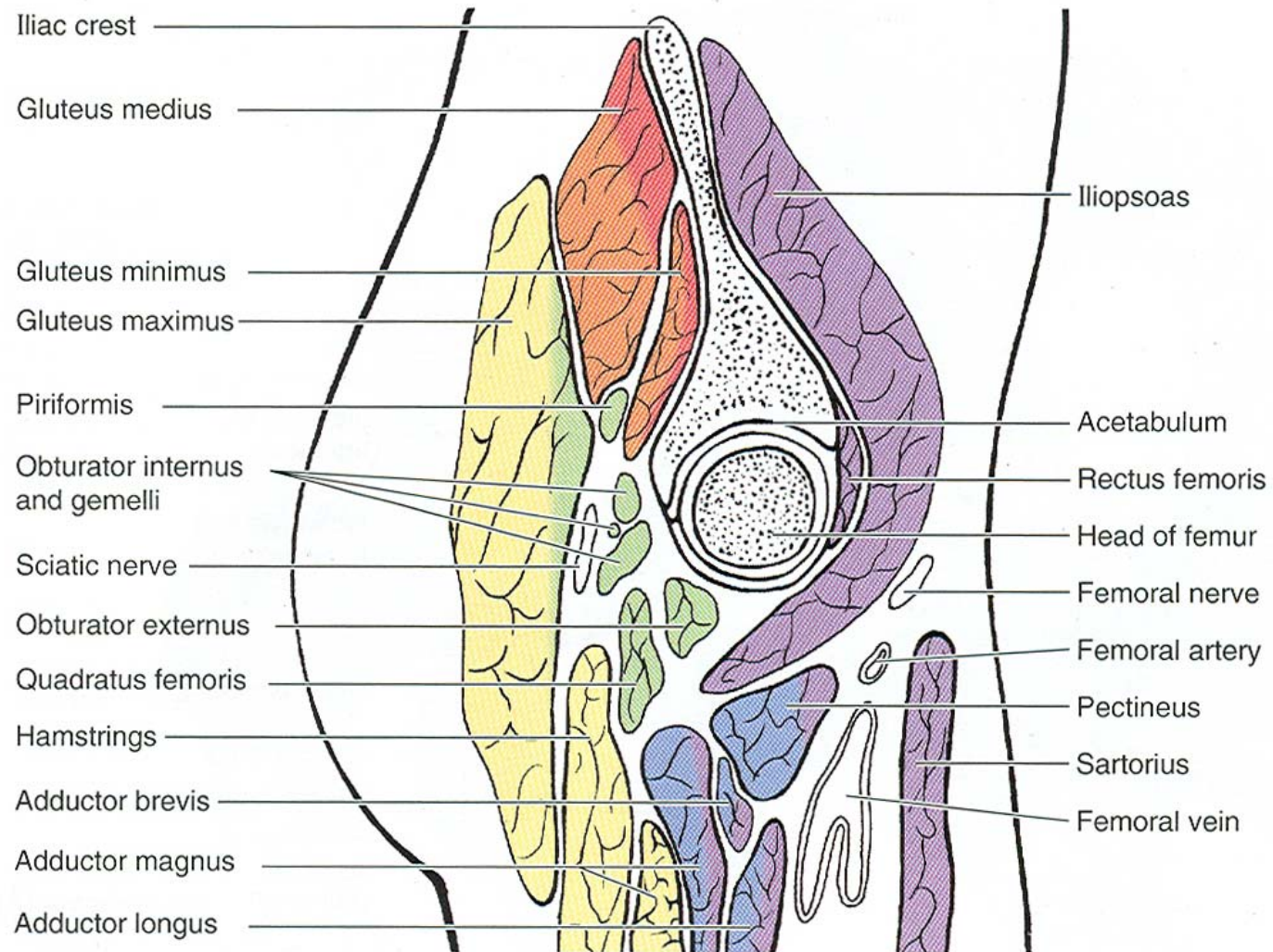




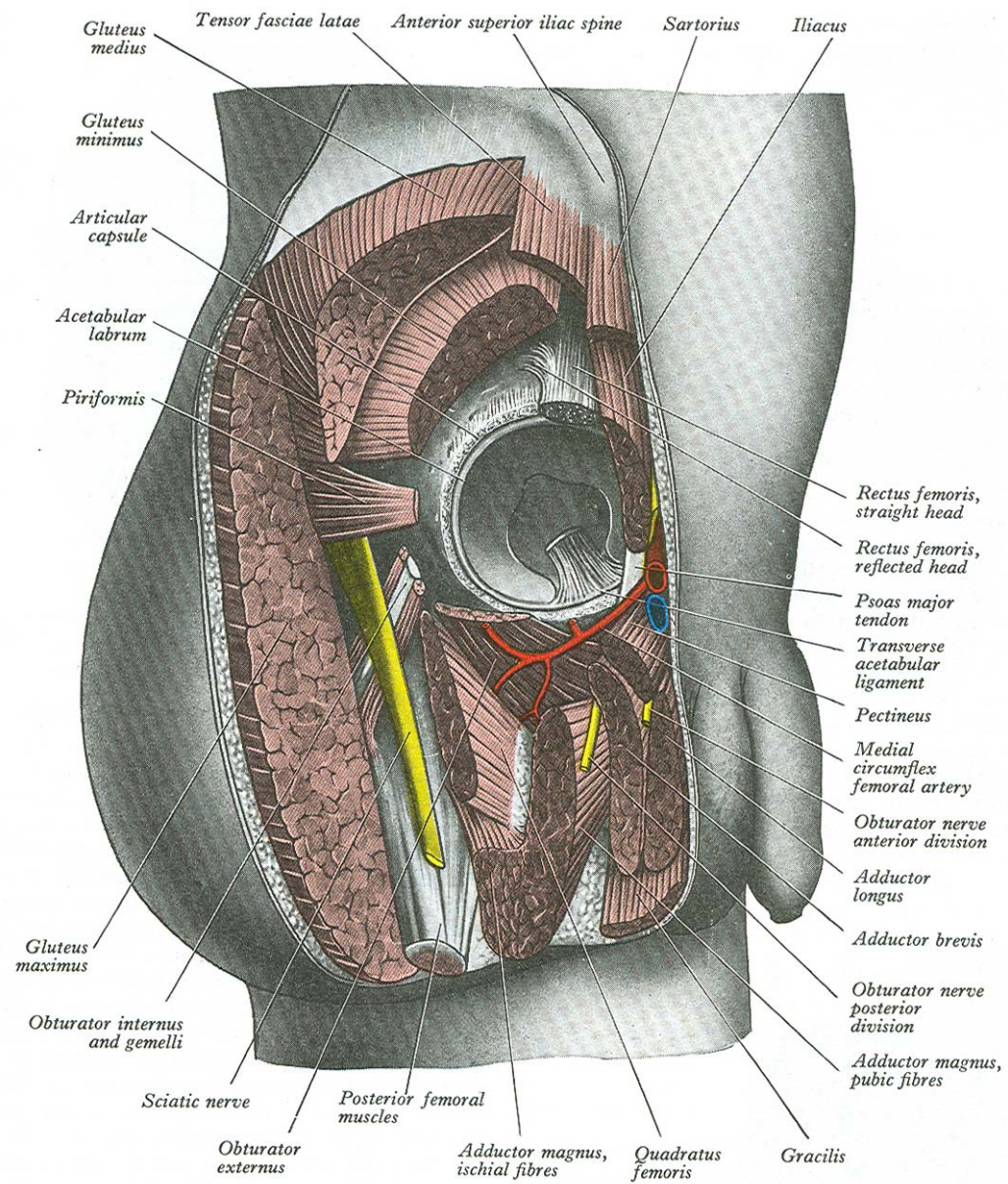
(B) Superior view

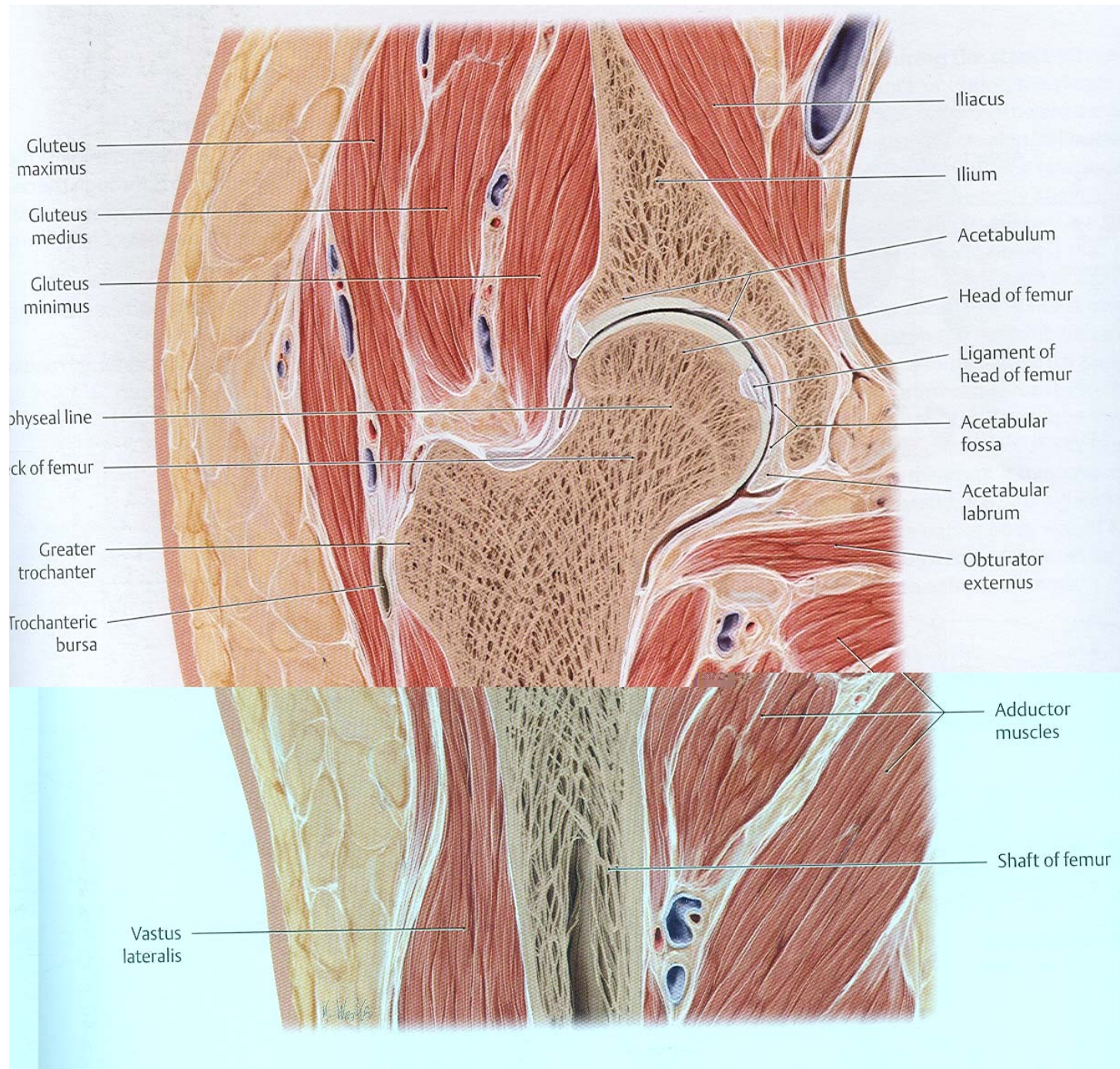
Stability of Hip joint

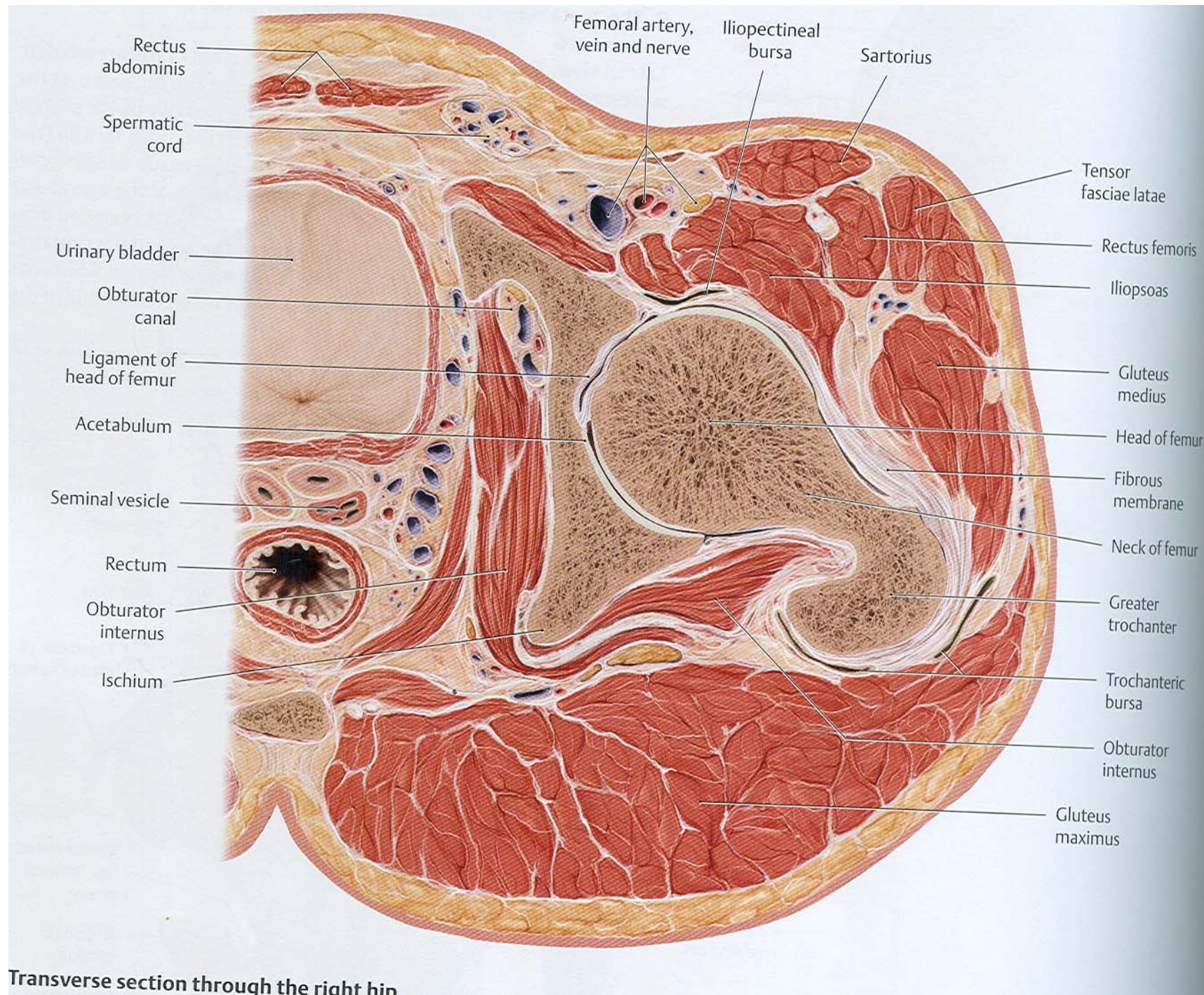
- Mechanical strength of its ball and socket construction, allowing extensive articular surface contact.
- Strong joint capsule
- Surrounding muscles
- Gravity



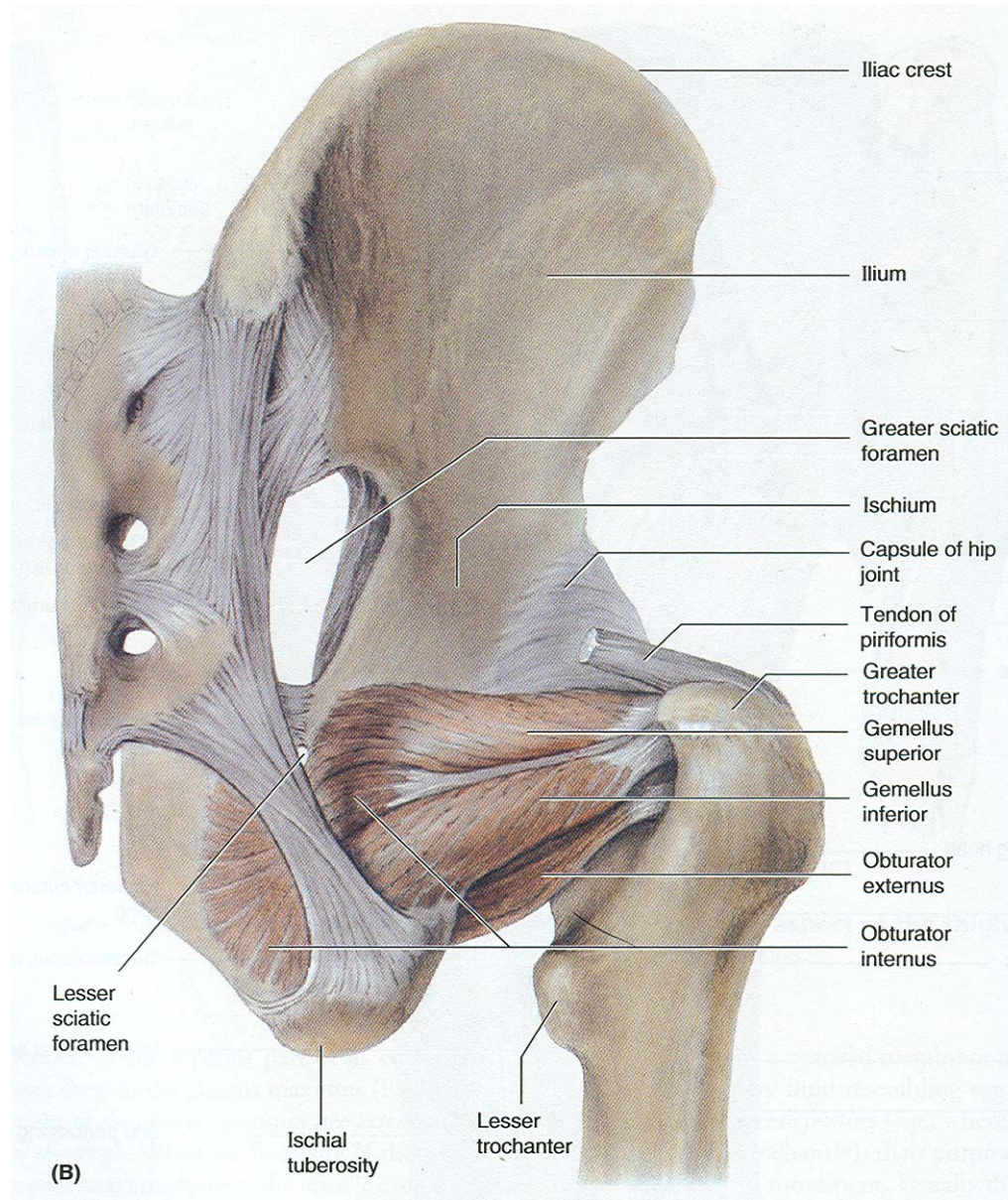
(A) Sagittal section through femoral head





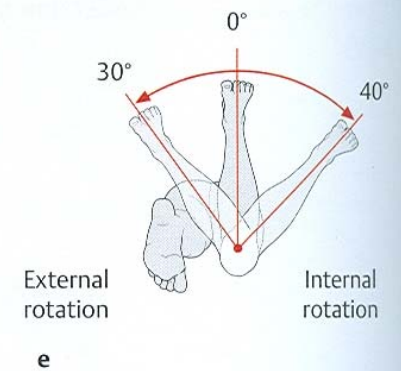
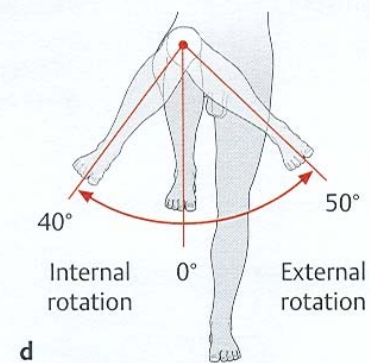
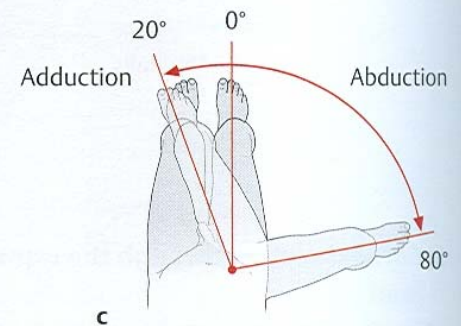
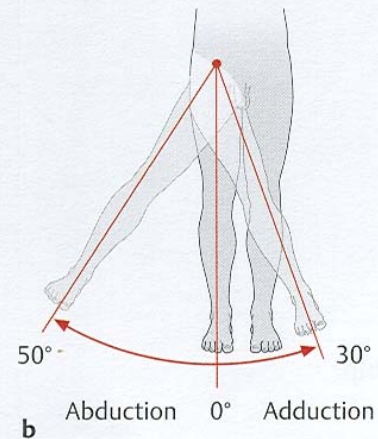
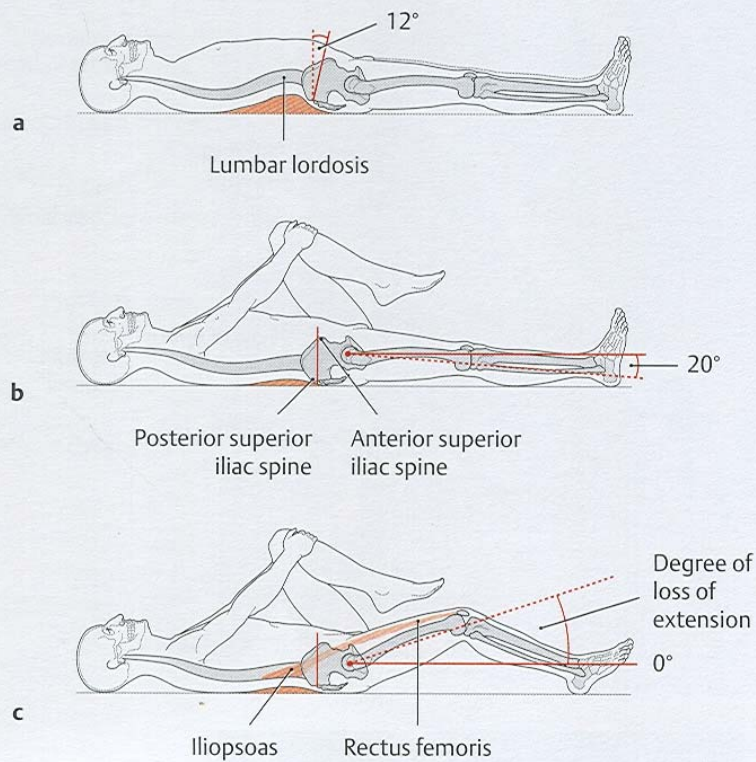
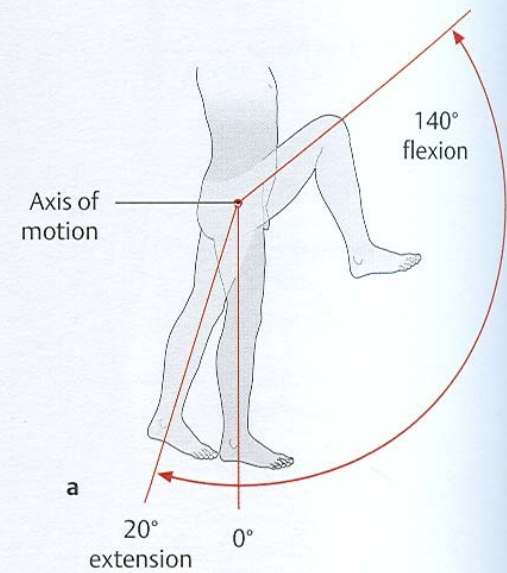
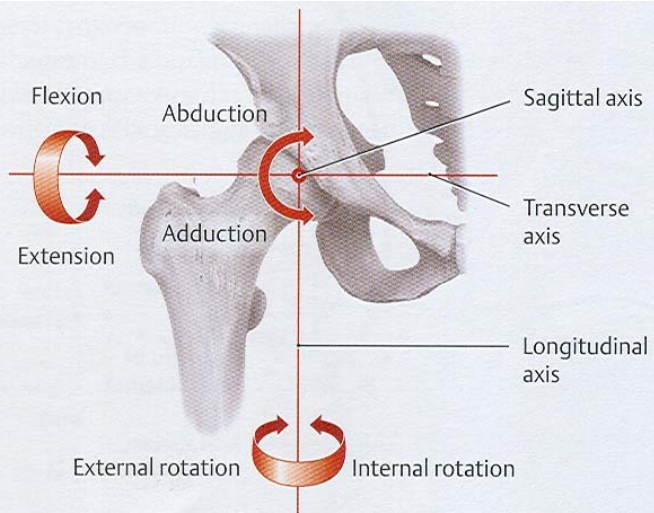


Transverse section through the right hip



Relations

- Anterior
 - Pectineus & femoral vein
 - Psoas Major & Femoral artery
 - Iliacus & Femoral nerve
 - Straight head of rectus femoris
- Superior
 - Reflected head of rectus femoris
 - Gluteus medius and minimus
- Inferior
 - Pectineus
 - Obturator externus
- Posterior
 - Obturator externus
 - Quadratus femoris
 - Obturator Internus /Gemelli
 - Sciatic n. & n. to quadratus femoris
 - Piriformis



Functional groups of muscles acting at hip joint

Flexors

Iliopsoas
Sartorius
Tensor of fascia lata
Rectus femoris
Pectineus
Adductor longus
Adductor brevis
Adductor magnus-anterior part
Gracilis

Adductors

Adductor longus
Adductor brevis
Adductor magnus
Gracilis
Pectineus
Obturator externus

Lateral rotators

Obturator externus
Obturator internus
Gemelli
Piriformis
Quadratus femoris
Gluteus maximus

Extensors

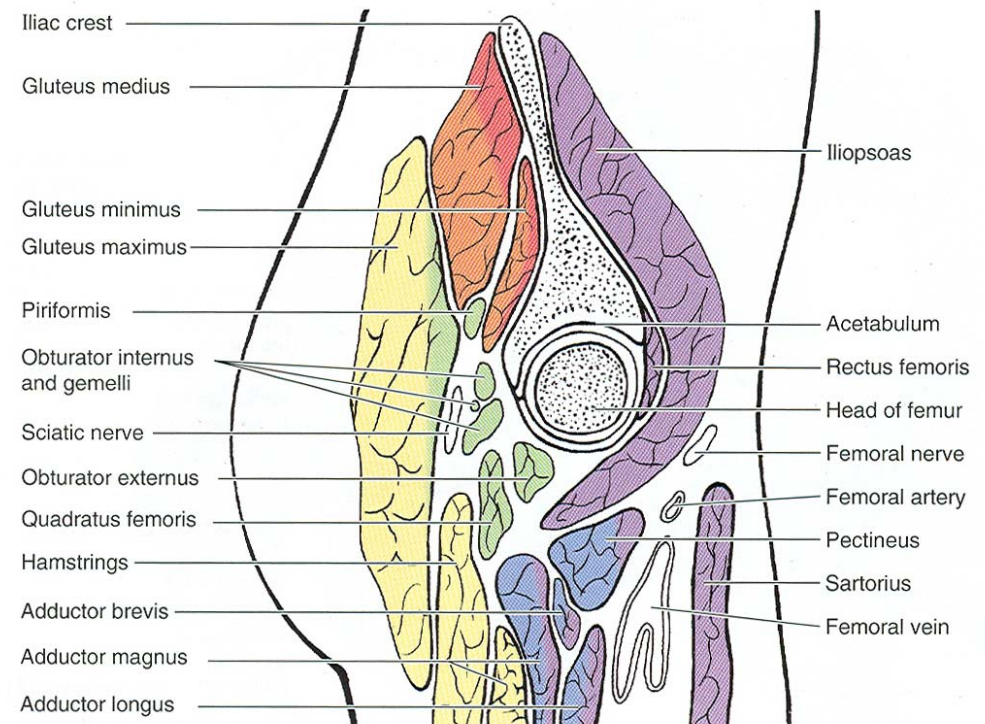
Hamstrings:
Semitendinosus
Semimembranosus
Long head, biceps femoris
Adductor magnus-posterior part
Gluteus maximus

Abductors

Gluteus medius
Gluteus minimus
Tensor of fascia lata

Medial rotators

Gluteus medius } Anterior parts
Gluteus minimus }
Tensor of fascia lata



(A) Sagittal section through femoral head

Movements/muscles acting on hip joint:

1. Flexion

- Psoas major/Iliacus
- Pectineus/ rectus femoris/ sartorius
- Adductor Longus

2. Extension

- Gluteus maximus/ hamstrings

3. Abduction

- Glutei medius and minimus
- Tensor fascia latae/ sartorius

4. Adduction

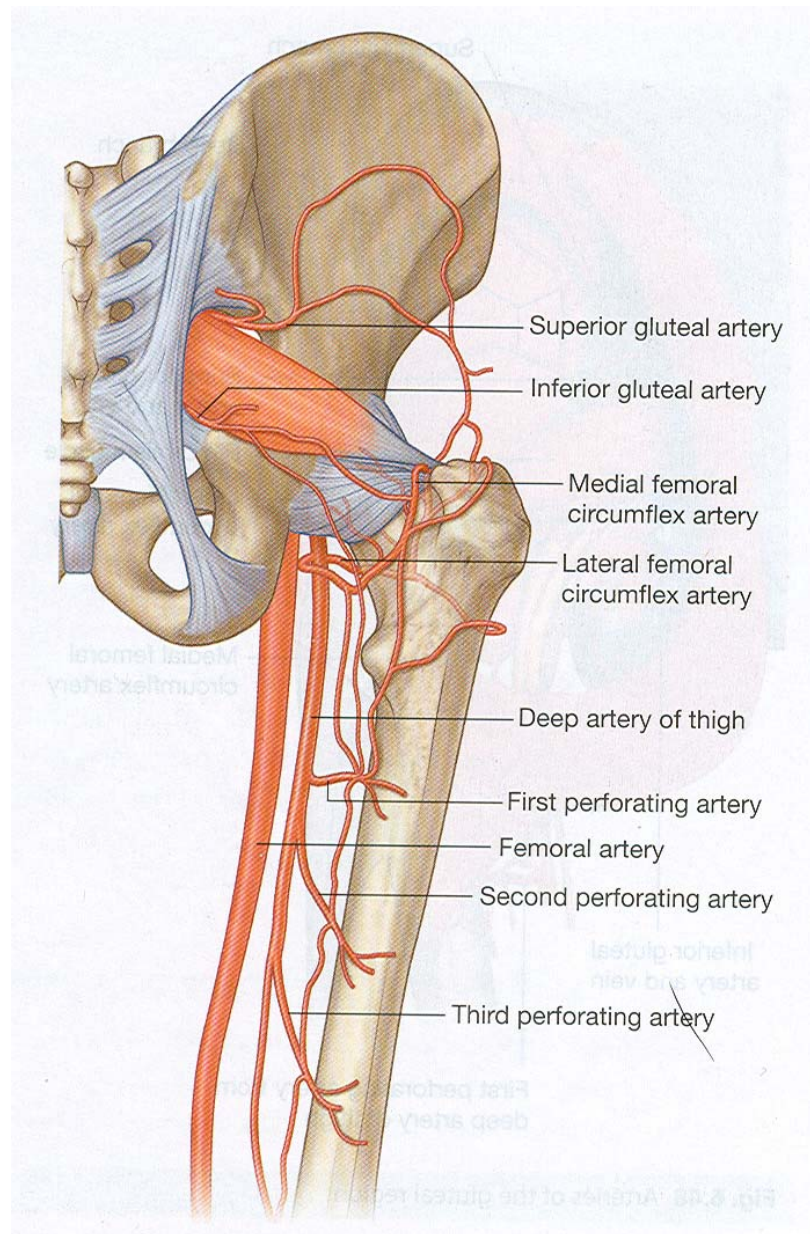
- Adductors/ Pectineus/ Gracilis

5. Medial Rotation

- Anterior fibres of gluteus medius & minimus
- Tensor fascia latae

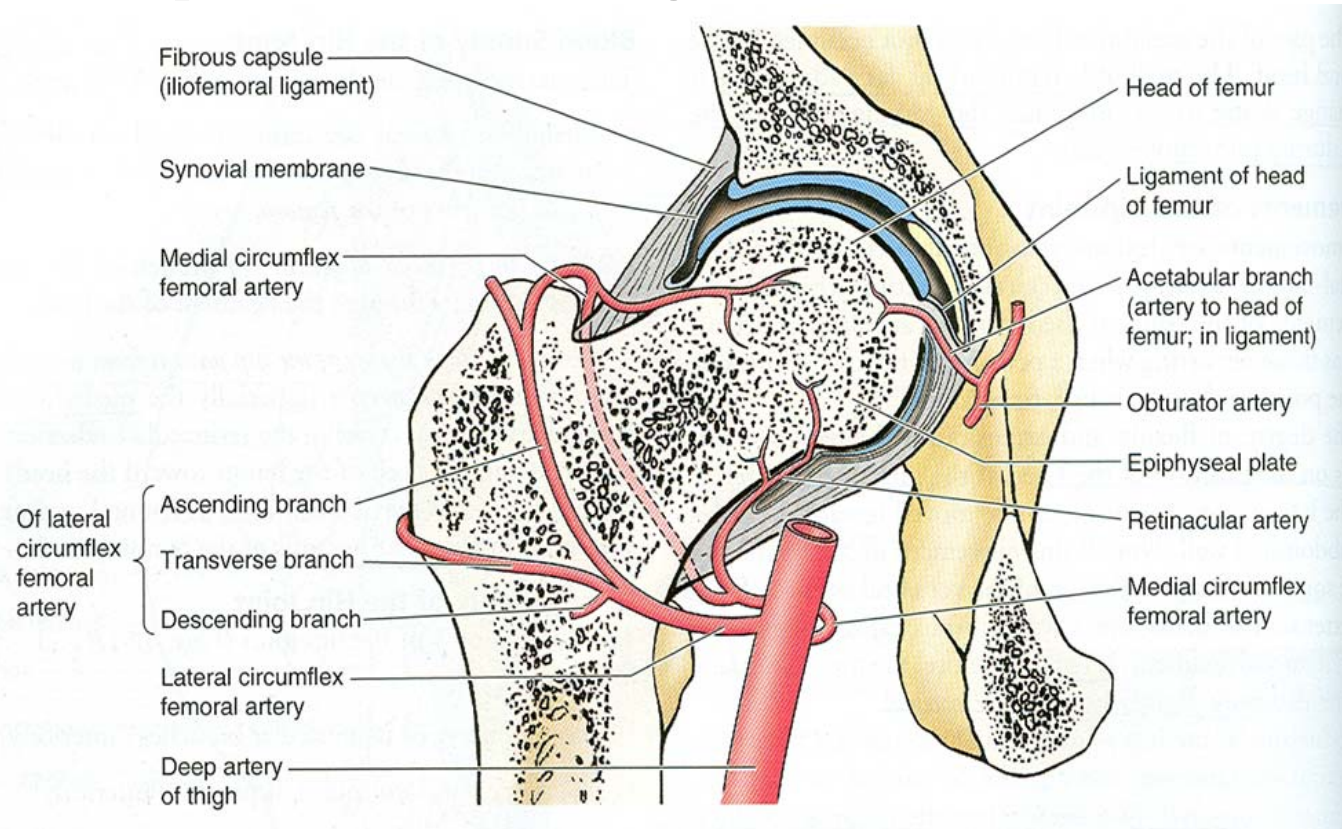
6. Lateral Rotation

- Obturators/ gemelli/ quadratus femoris
- Piriformis/ gluteus maximus/ sartorius



Blood Supply: Obturator artery

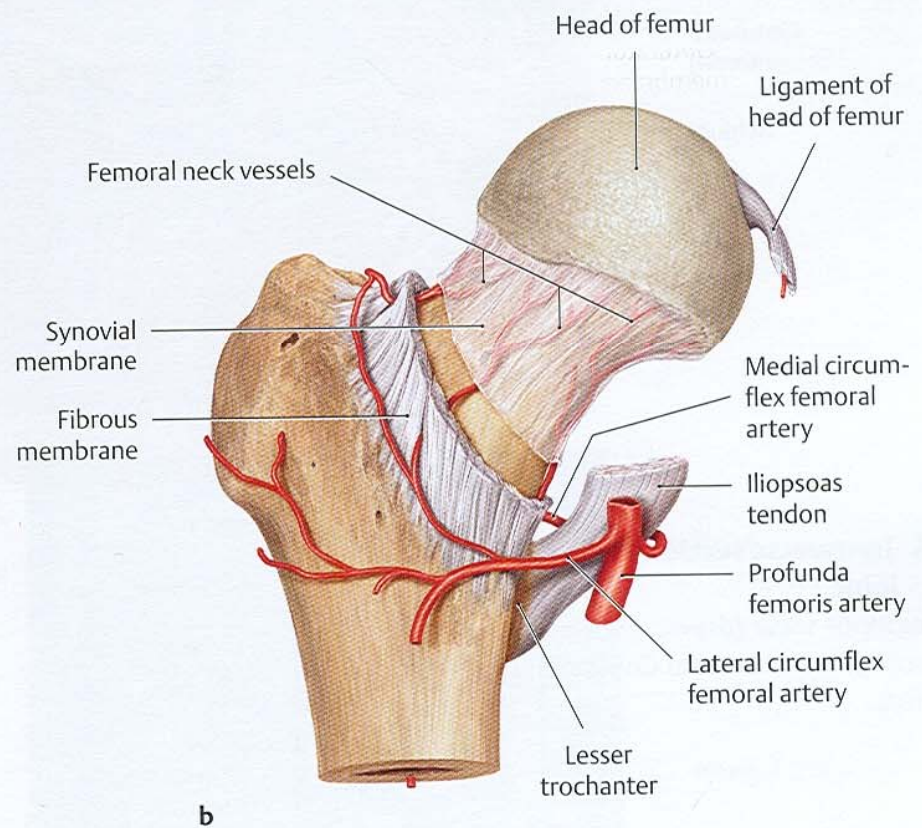
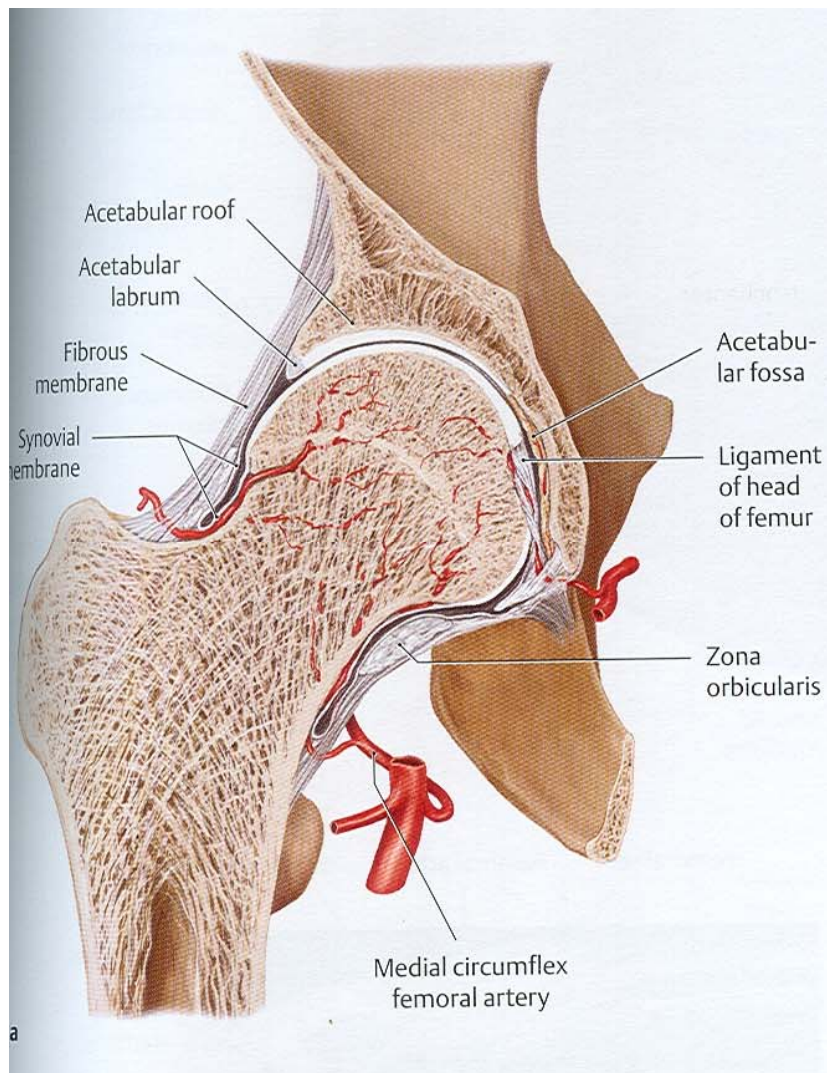
- Medial & lateral circumflex femoral arteries
- Superior and inferior gluteal arteries

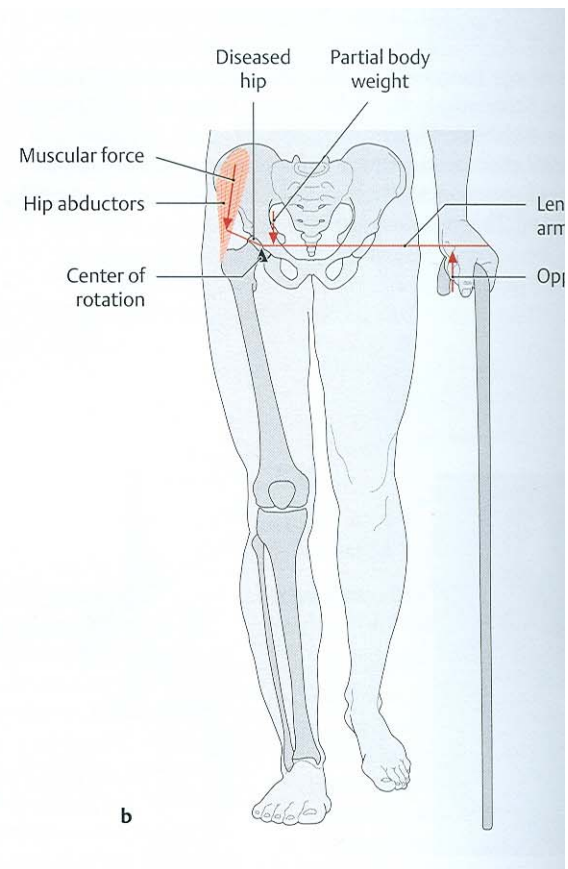
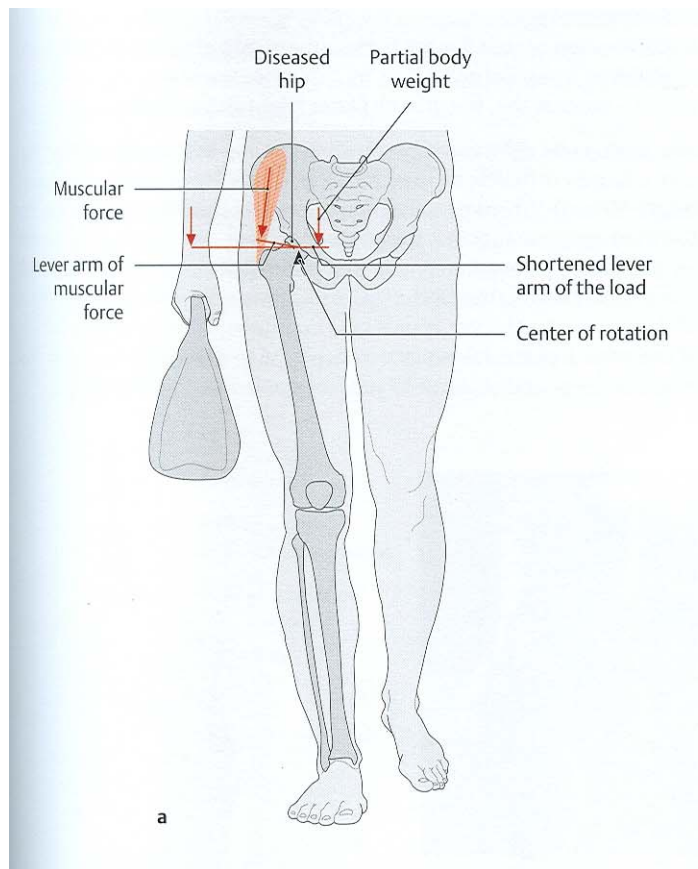


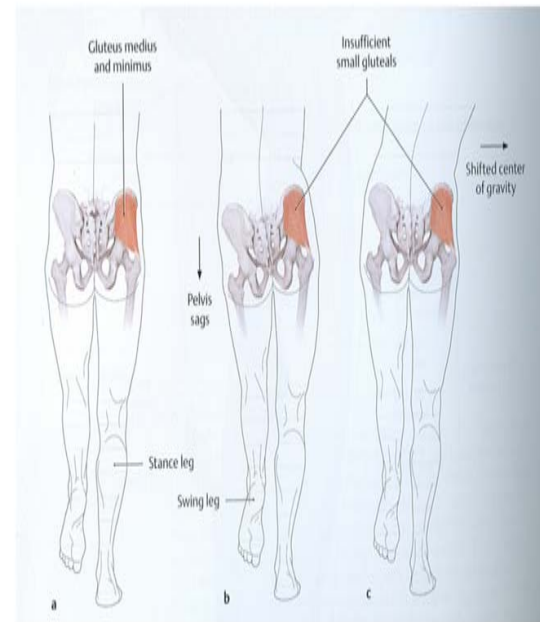
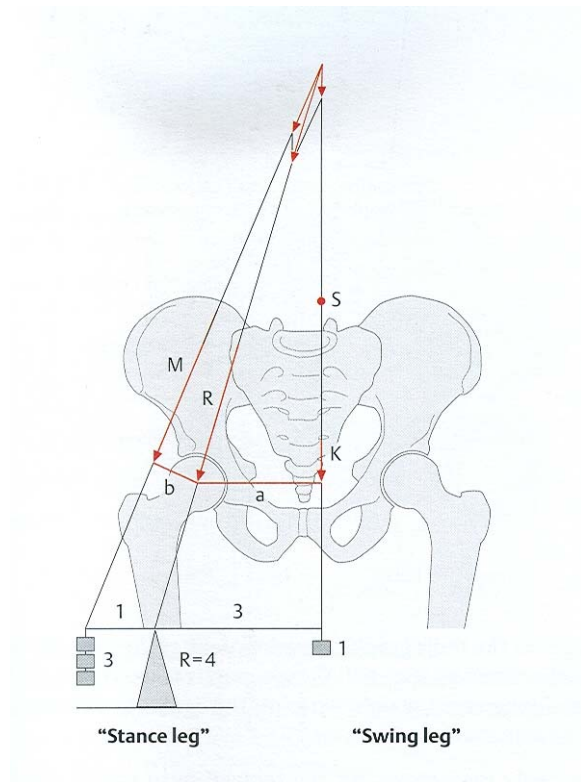
Nerve supply: Femoral

Obturator/accessory obturator

Nerve to quadratus femoris







Applied Anatomy:

- Dislocation
 - a) congenital
 - b) acquired
- Fractures and necrosis of head of femur
- Replacements

