

Systemic Module

MSS

“Anatomy”

Gluteal Region

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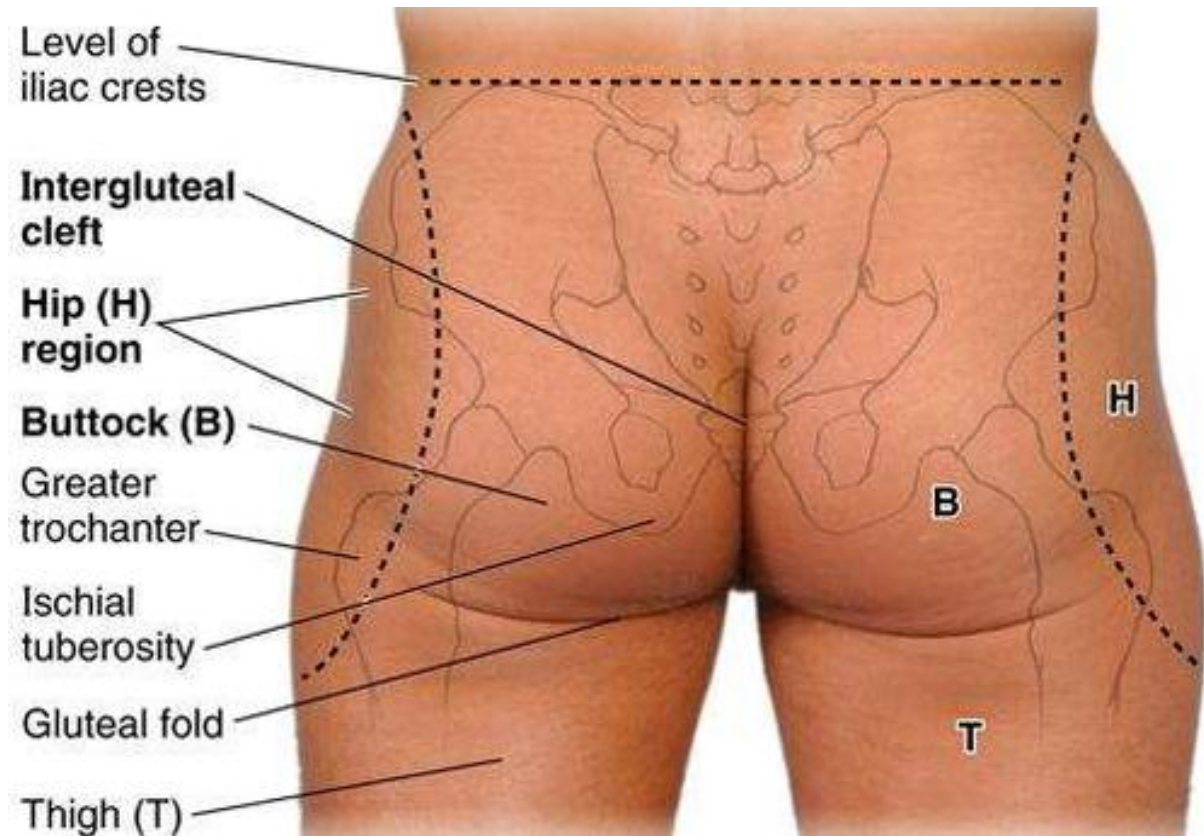
Gluteal Region

- The gluteal region is an anatomical area lies on **the posterolateral aspect of the pelvis.**
- It is occupied by large powerful muscles.
- The muscles in this region move the lower limb at the hip joint.
- Several important nerves and vessels traverse this area



Gluteal Region - Boundaries

- **Superiorly:** iliac crest (at L4)
- **Medially:** intergluteal cleft
- **Laterally:** Greater trochanter
- **Inferiorly:** gluteal fold



Bones of the Gluteal Region

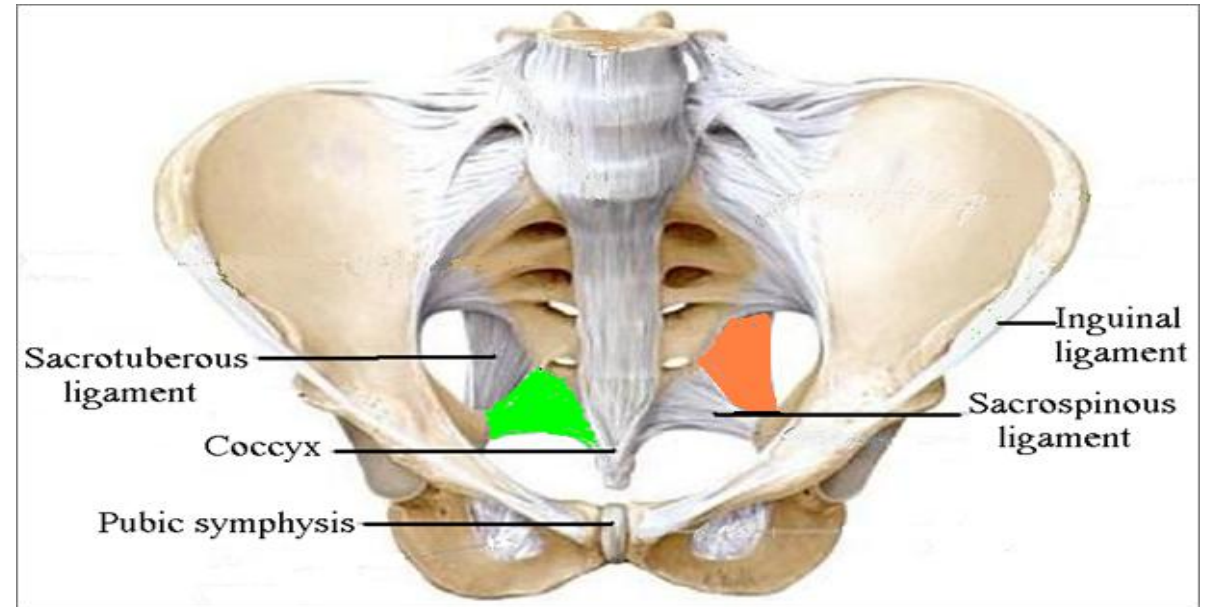
- **Posterior aspect of:**
 1. Hip bone
 2. Proximal end of Femur
 3. Hip joint



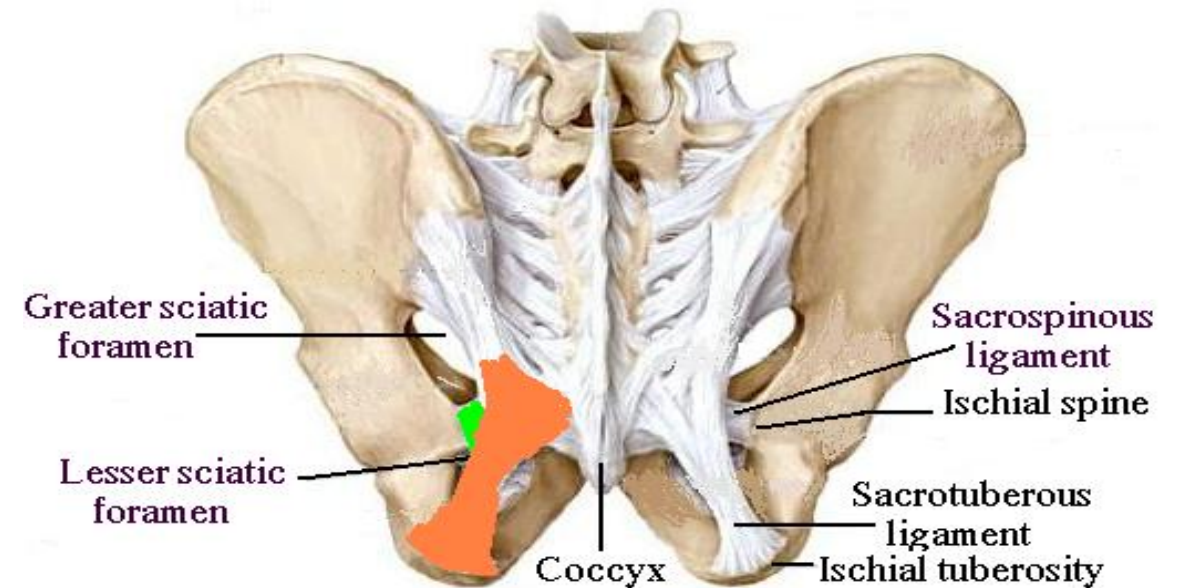
Ligaments of the Gluteal Region

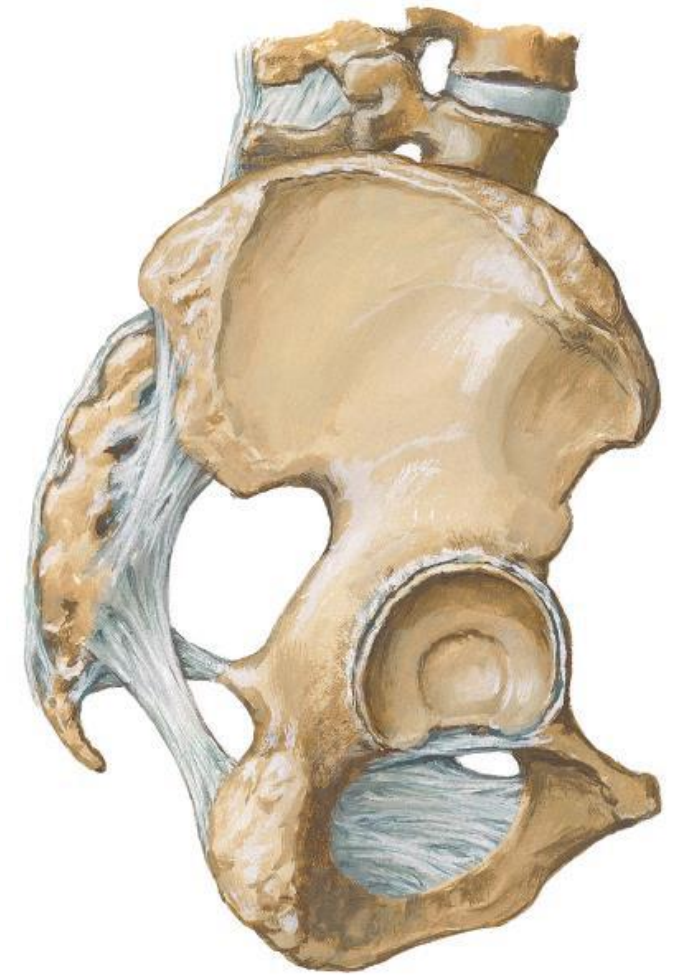
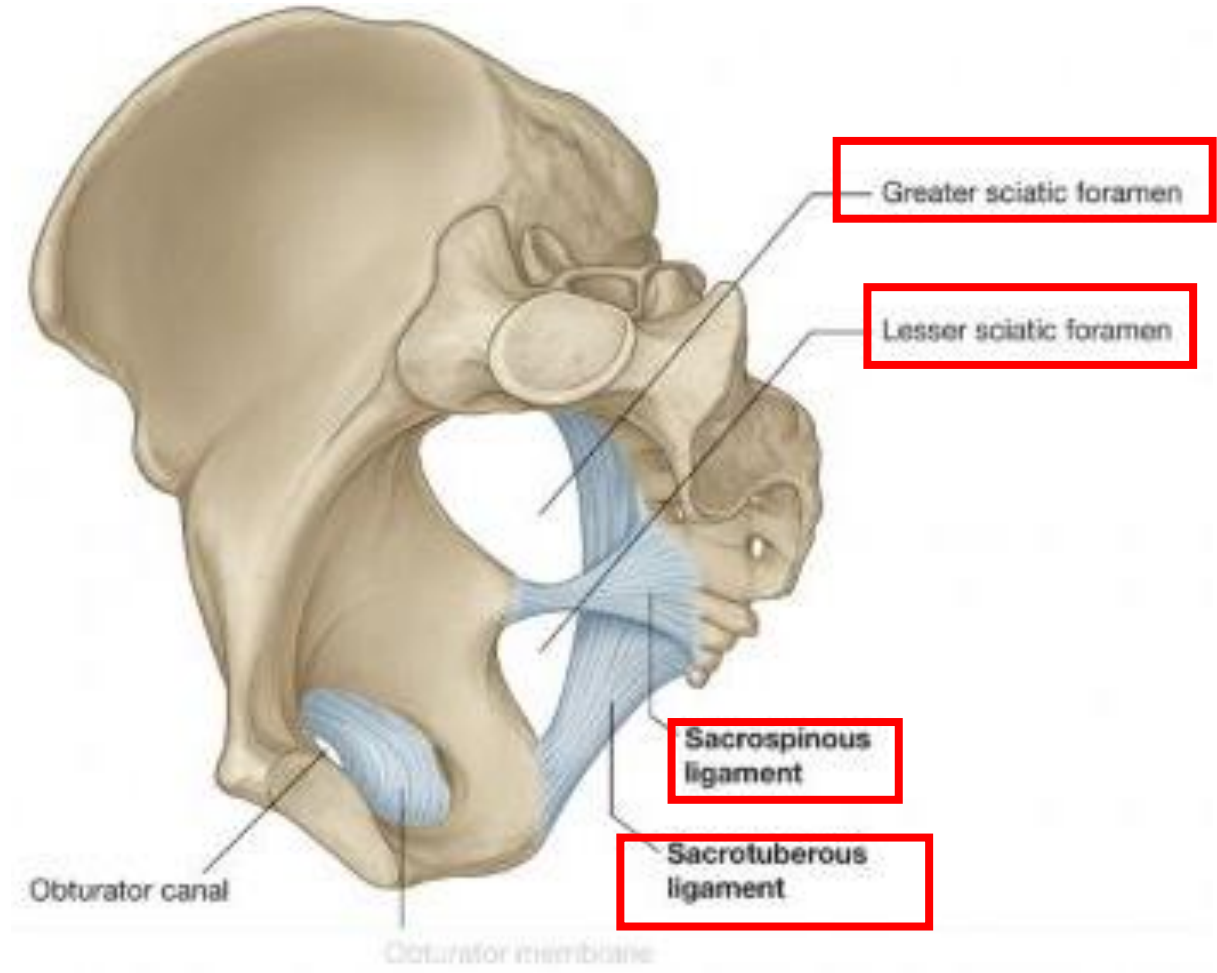
- 2 ligaments:

1. **Sacrospinous**, connecting sacrum to ischial spine
2. **Sacrospinous**, connecting sacrum to ischial tuberosity



- Both ligaments share in transformation of the greater and lesser sciatic notches into corresponding foramina.





Muscles of the Gluteal Region

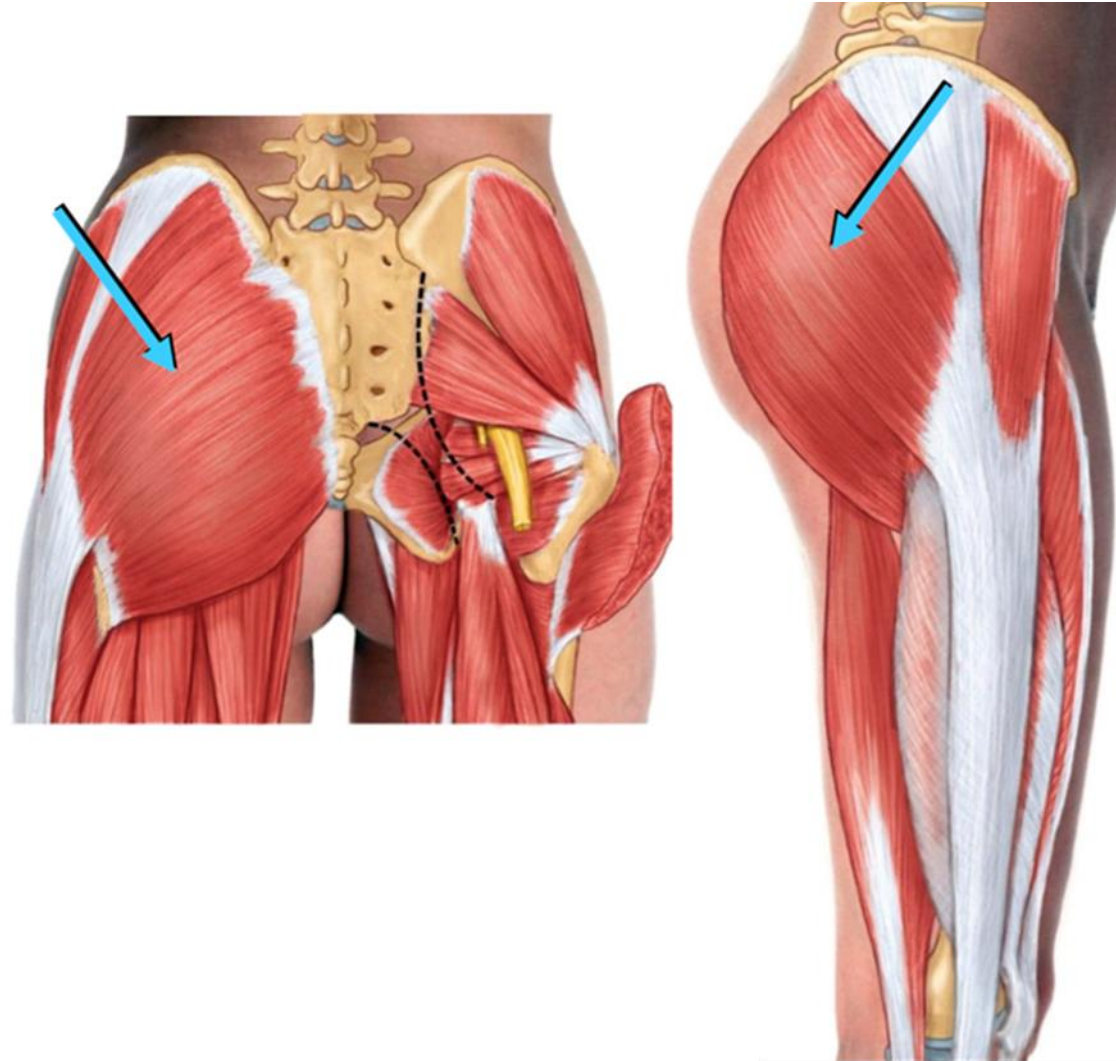
- The muscles of the gluteal region can be divided into two groups:
 1. **Superficial abductors and extenders** – group of large muscles that abduct and extend the femur. Includes the **gluteus maximus, gluteus medius, gluteus minimus** and **tensor fascia lata**.
 2. **Deep lateral rotators** – group of smaller muscles that mainly act to laterally rotate the femur. Includes the **quadratus femoris, piriformis, gemellus superior, gemellus inferior** and **obturator internus**.

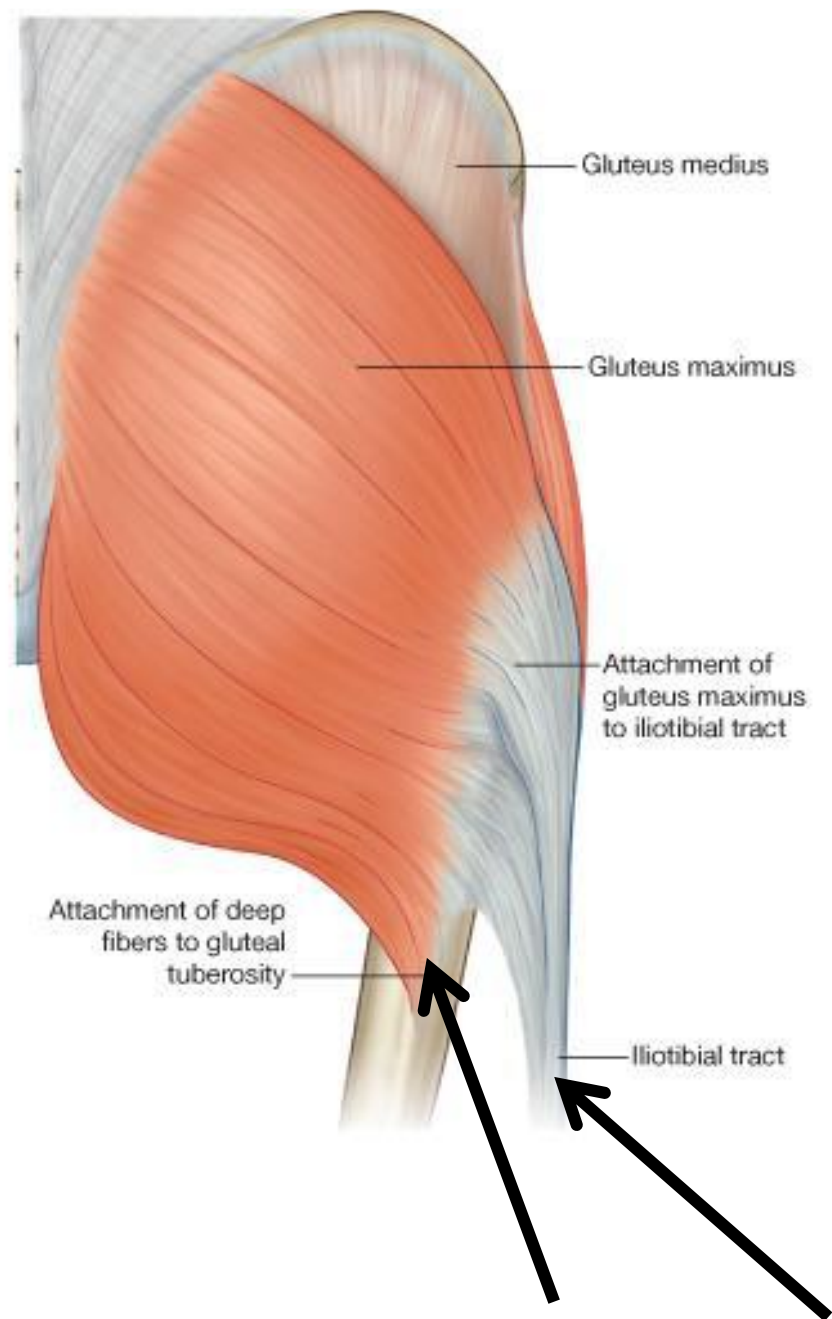
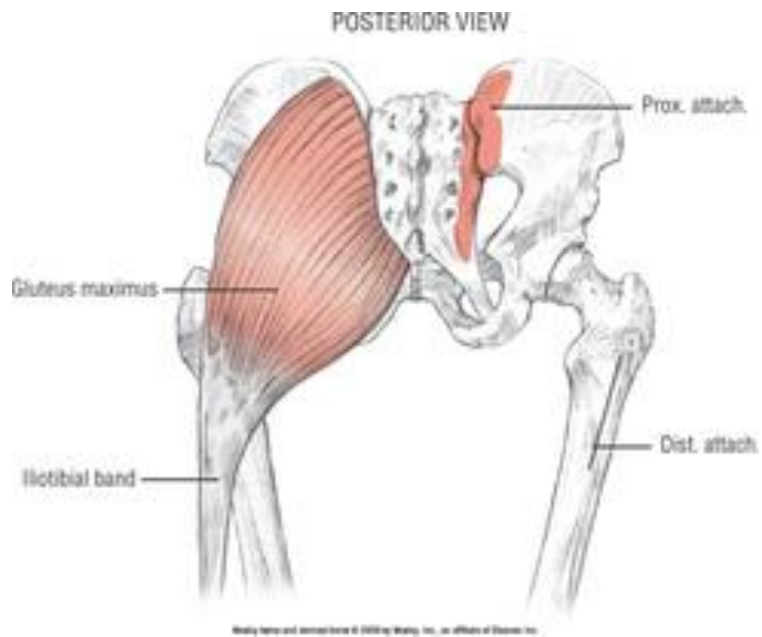
Superficial Abductors and Extenders

- **Gluteus maximus**
- **Gluteus medius**
- **Gluteus minimus**
- **Tensor fascia lata**

Gluteus Maximus

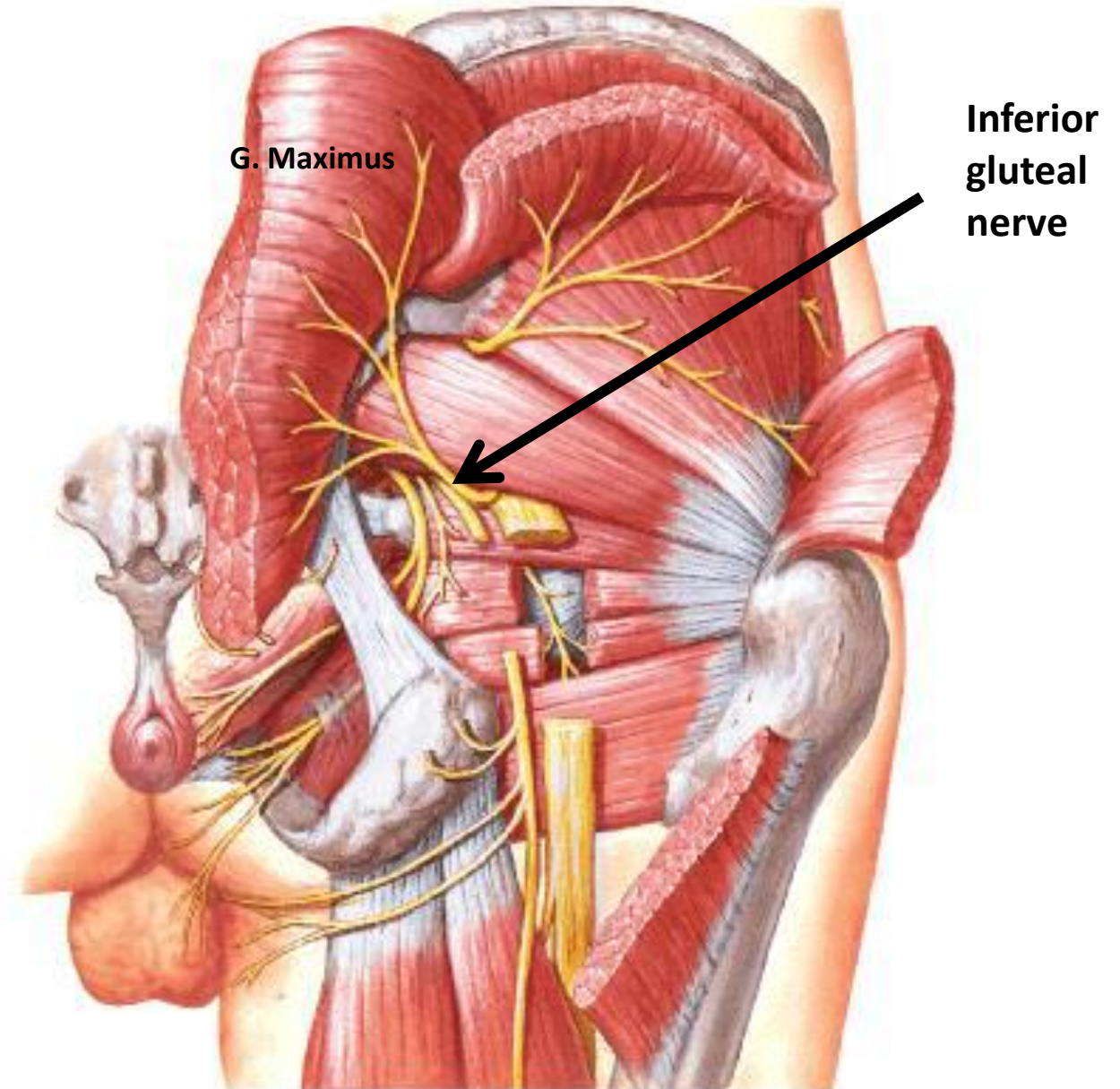
- Largest and most superficial muscle
- **Origin:** Originates from the gluteal surface of the ilium, back of sacrum and coccyx, back of sacrotuberous ligament .
- **Insertion:** 75% of fibers into the iliotibial tract and 25% into the gluteal tuberosity of the femur.





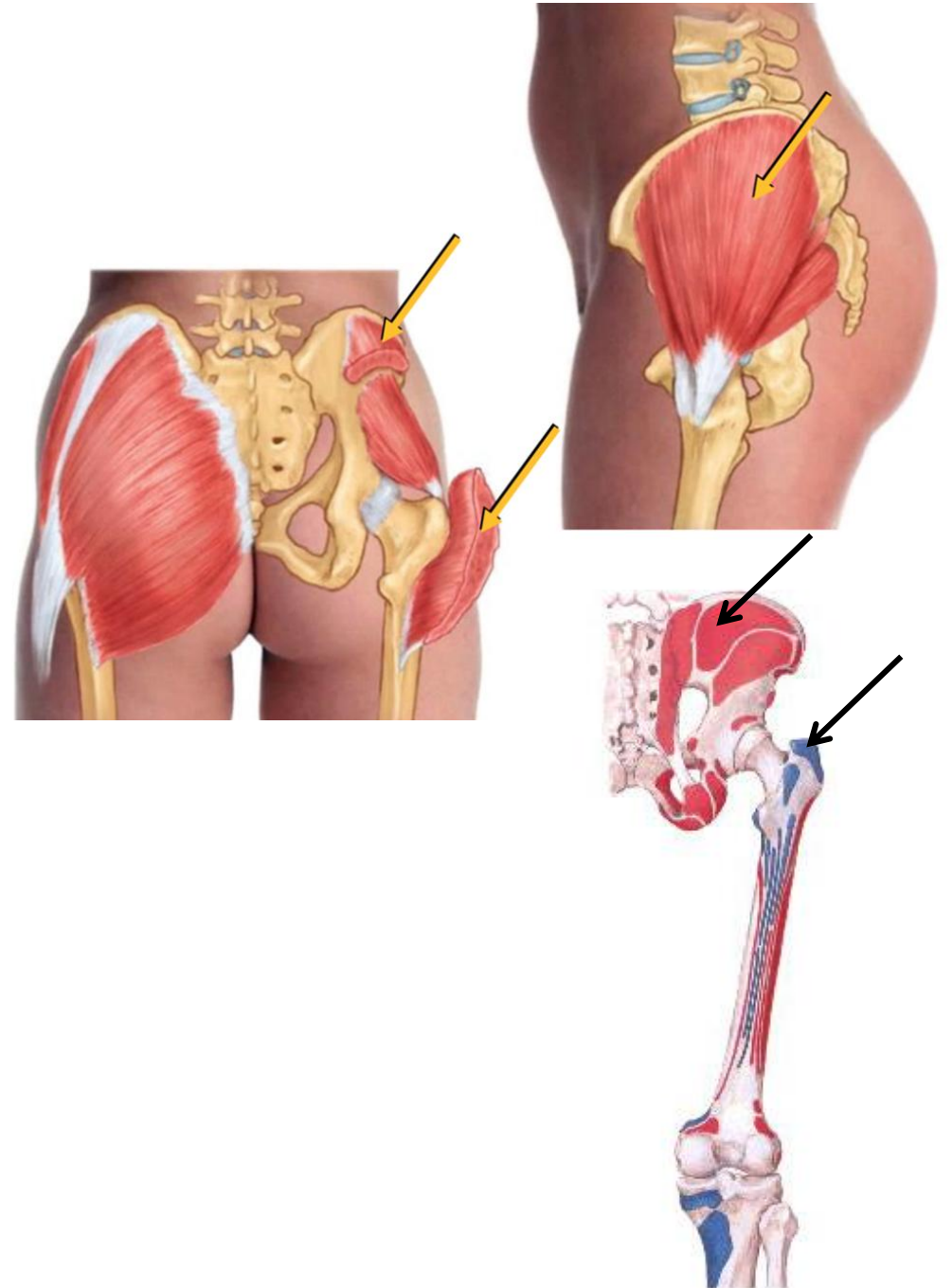
Gluteus Maximus

- **Nerve supply:** Inferior gluteal nerve
- **Action:** It is the main extensor of the thigh, and assists with lateral rotation.
 - It is only used when force is required
 - It is used in standing up from a sitting position, running & climbing up stairs.
 - Paralysis of muscle – inability to raise the trunk from sitting or stooping positions



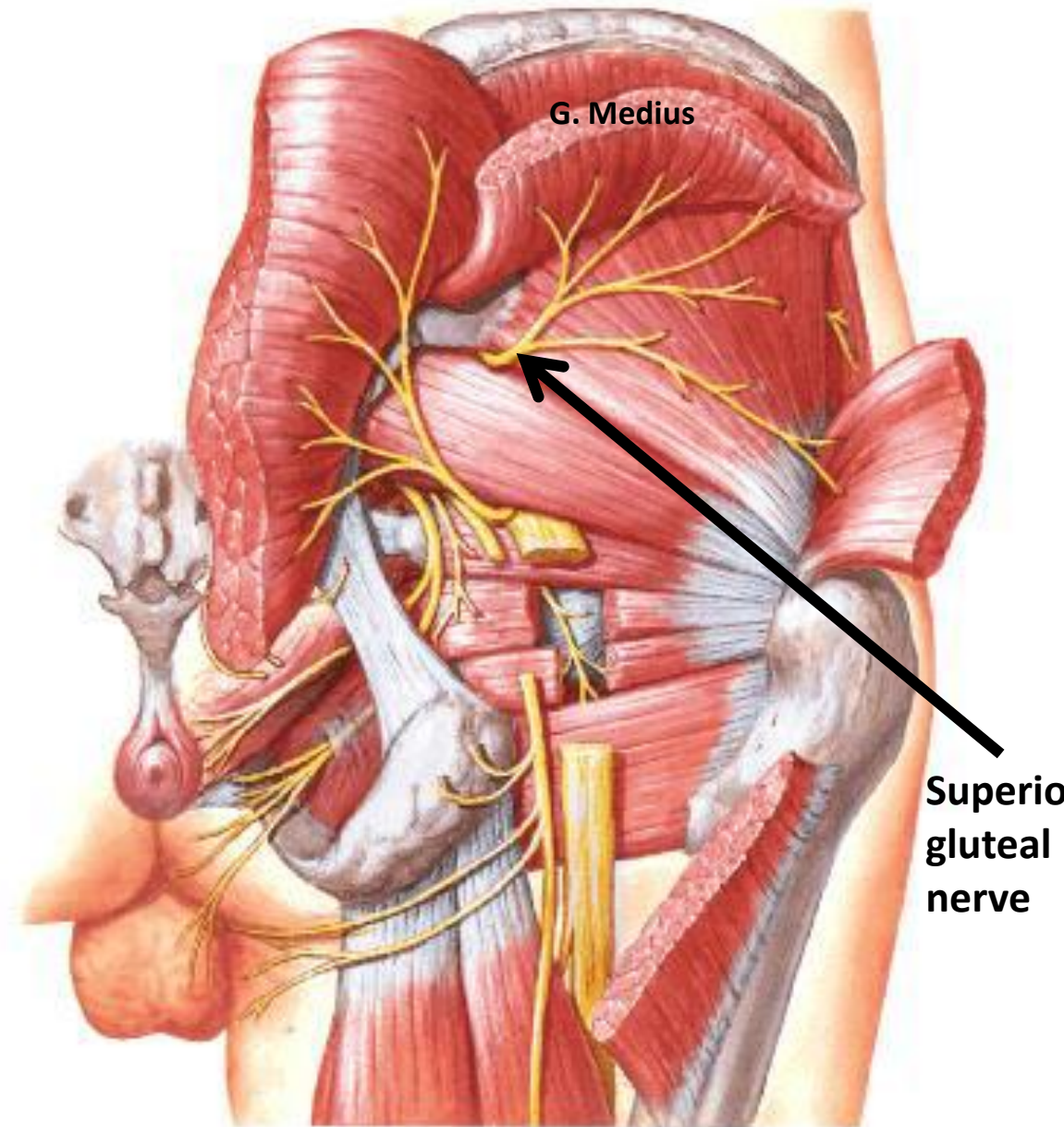
Gluteus Medius

- Lies beneath Gluteus Maximus
- **Origin:** Gluteal surface of ilium.
- **Insertion:** Lateral surface of greater trochanter



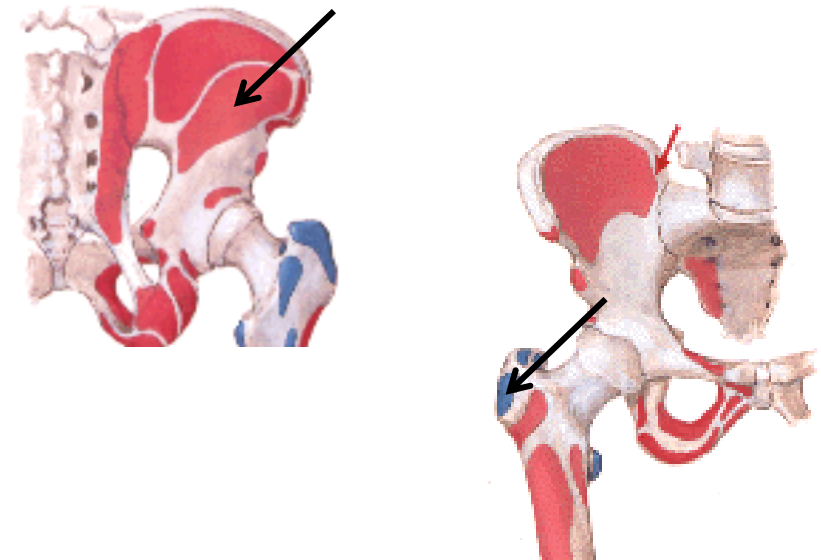
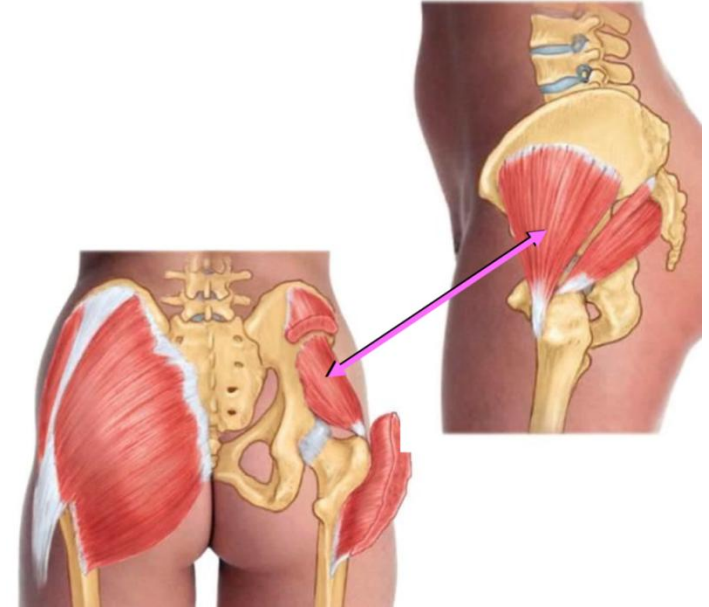
Gluteus Medius

- **Nerve supply:** Superior gluteal nerve
- **Action:**
 - Main abductor of thigh
 - Their anterior fibers are medial rotators of thigh.
 - During locomotion, prevent pelvis from tilting to the unsupported side when the leg is raised from the ground (contraction of muscle of supported side prevent tilting of pelvis to unsupported raised limb).



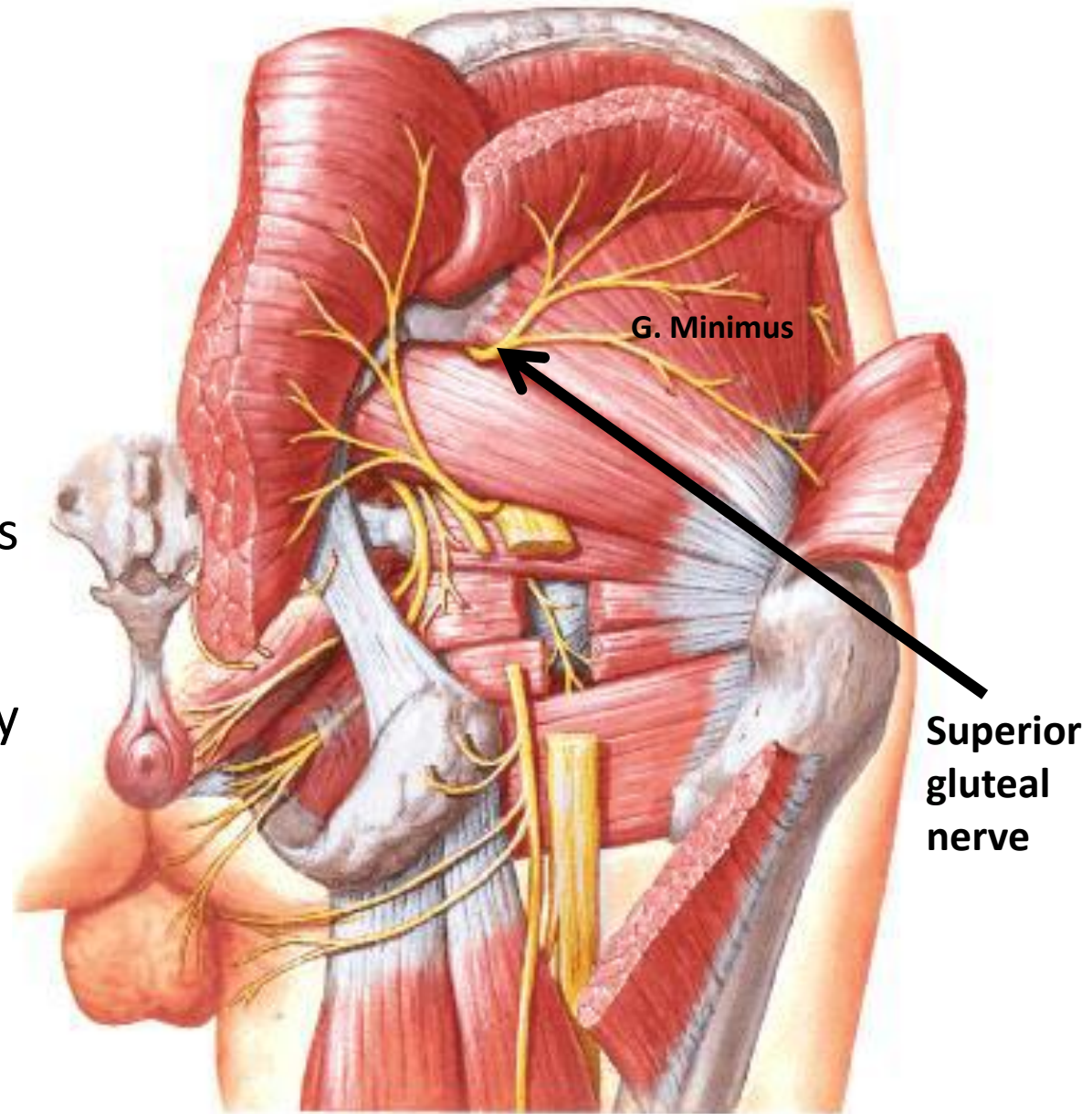
Gluteus Minimus

- The deepest and smallest of the superficial gluteal muscles.
- **Origin:** Gluteal surface of ilium.
- **Insertion:** Anterior surface (front) of greater trochanter of femur.



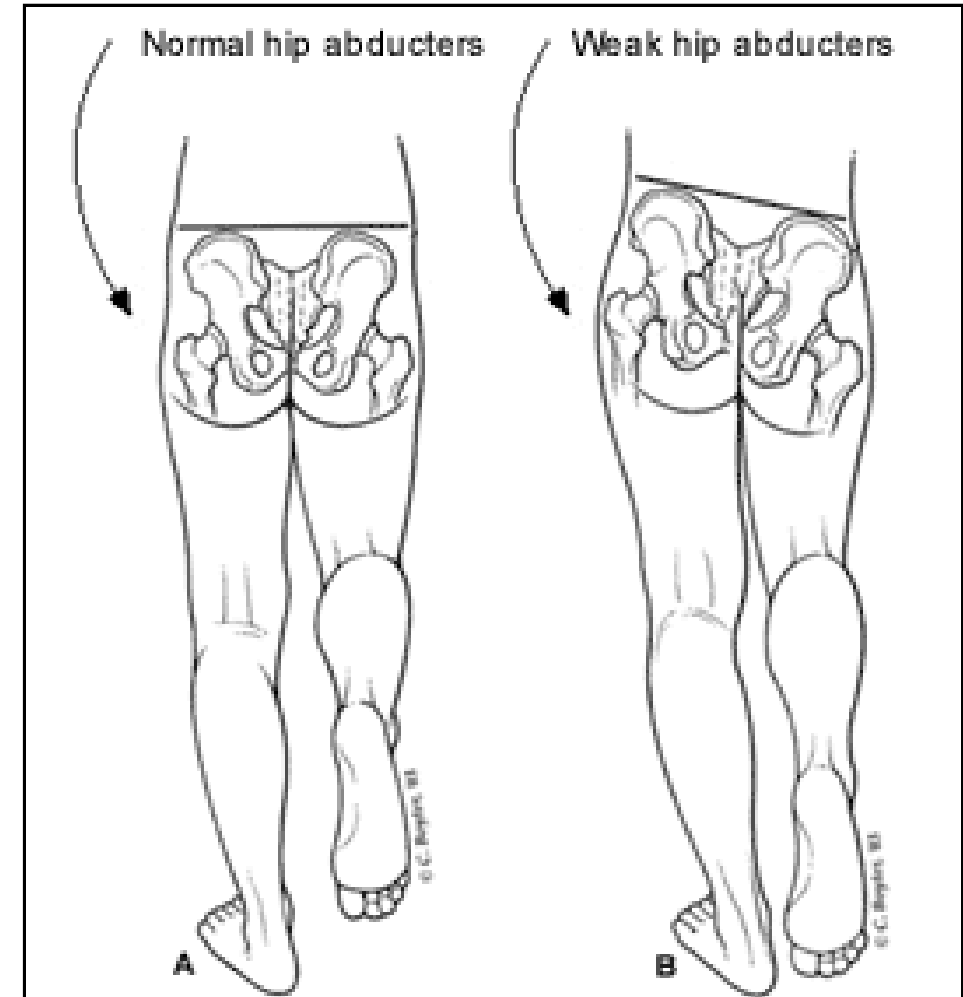
Gluteus Minimus

- **Nerve supply:** Superior gluteal nerve
- **Action:**
 - Main abductor of thigh
 - Their anterior fibers are medial rotators of thigh.
 - Holds opposite side of pelvis horizontally when foot is off the ground.



Applied Anatomy

- The superior gluteal nerve innervates the gluteus medius and the gluteus minimus. These muscles have an important role in stabilizing the pelvis during locomotion.
- In the standing position, the gluteus minimus and medius contract when the contralateral leg is raised, preventing the pelvis from dropping on that side.
- If superior gluteal nerve is injured on one side, ask patient to stand on the affected side, the pelvis tilts to the normal side denoting a positive **TRENDELENBURG'S SIGN**



Normal

Trendelenburg
sign

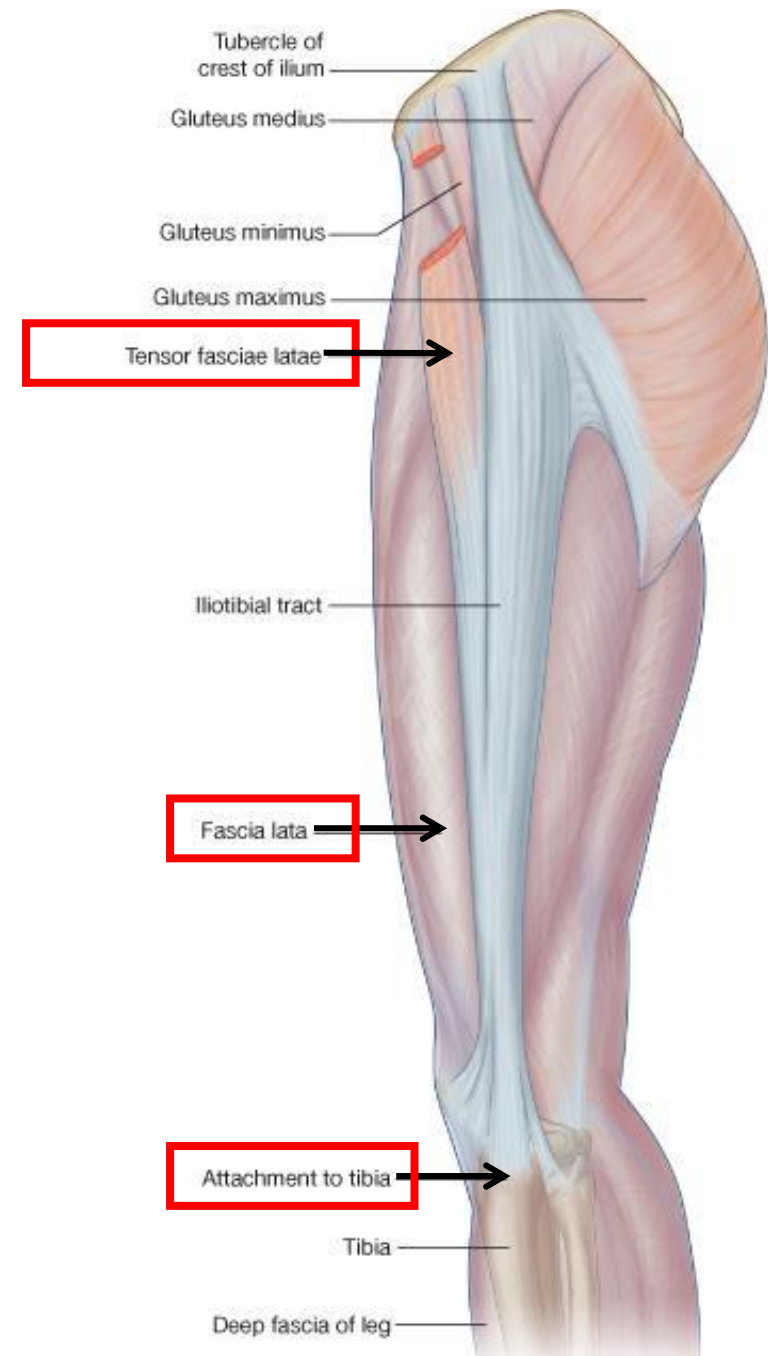


A

B

Tensor Fascia Lata

- **Origin:** Anterior 5 cm of outer lip of iliac crest..
- **Insertion:** Into the iliotibial tract, which itself attaches to the lateral condyle of the tibia.



Tensor Fascia Lata

- **Nerve supply:** Superior gluteal nerve
- **Action:**
 - Assists the gluteus medius and minimus in abduction and medial rotation of the lower limb.
 - Through the iliotibial tract → It maintains the extension of the Knee & stabilizes the femur on the tibia (during standing and when the quadriceps is relaxed).

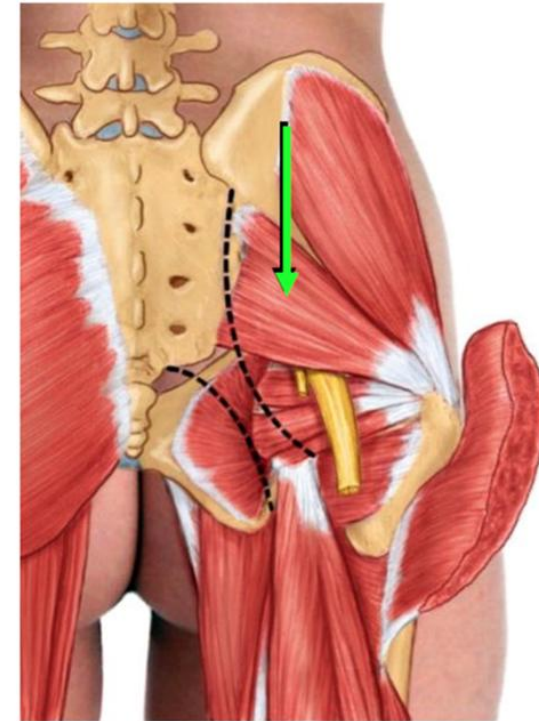
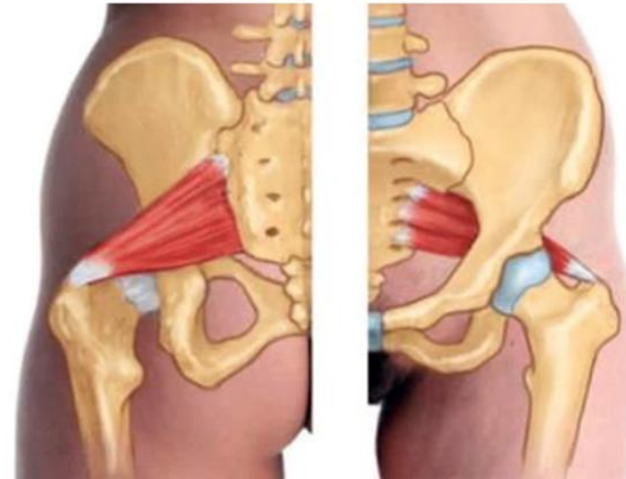


Deep Lateral Rotators

- Piriformis
- Obturator internus.
- Gemellus superior
- Gemellus inferior
- Quadratus femoris

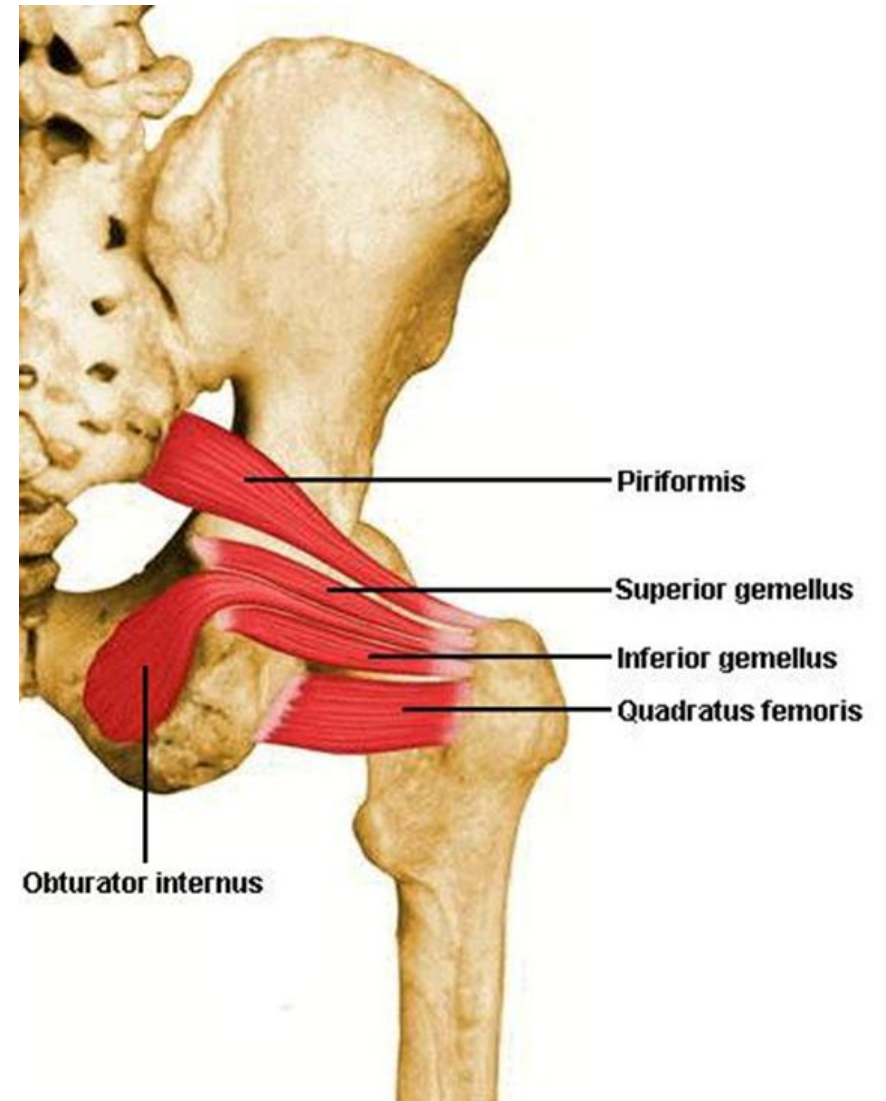
Piriformis

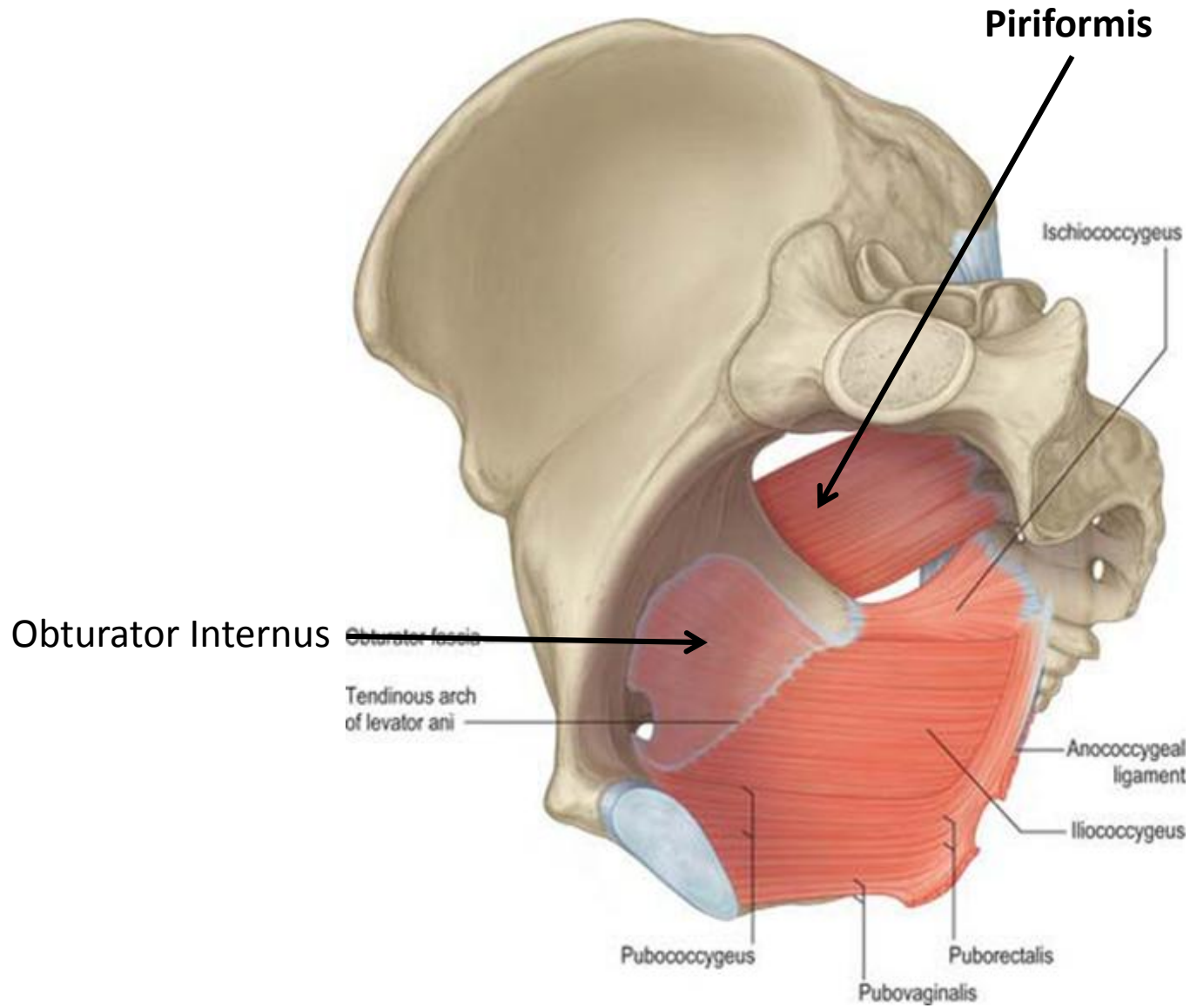
- It is a key landmark in the gluteal region (vessels and nerves)
- **Origin:** The anterior surface of the sacrum.
- **Insertion:** The upper border of greater trochanter of the femur.
- **Nerve supply :** Sacral nerve S1 and S2
- **Action:**
 - Lateral rotator of thigh.
 - Assists in stabilizing hip joint especially in abduction.



Obturator Internus

- Forms the lateral walls of the pelvic cavity.
- **Origin:** pelvic surface of obturator membrane & margins of obturator foramen.
- **Insertion:** Upper border of greater trochanter along with gemelli.
- **Nerve supply :** Nerve to obturator internus (L4,S1)
- **Action:** Lateral rotator of thigh.





Gemellus Superior

Origin-spine of ischium

Insertion-tendon of OBT int

Nerve supply- Nerve to OBT internus

Gemellus Inferior

Origin-ischial tuberosity

Insertion-tendon of OBT internus

Nerve supply- nerve to Quadratus femoris

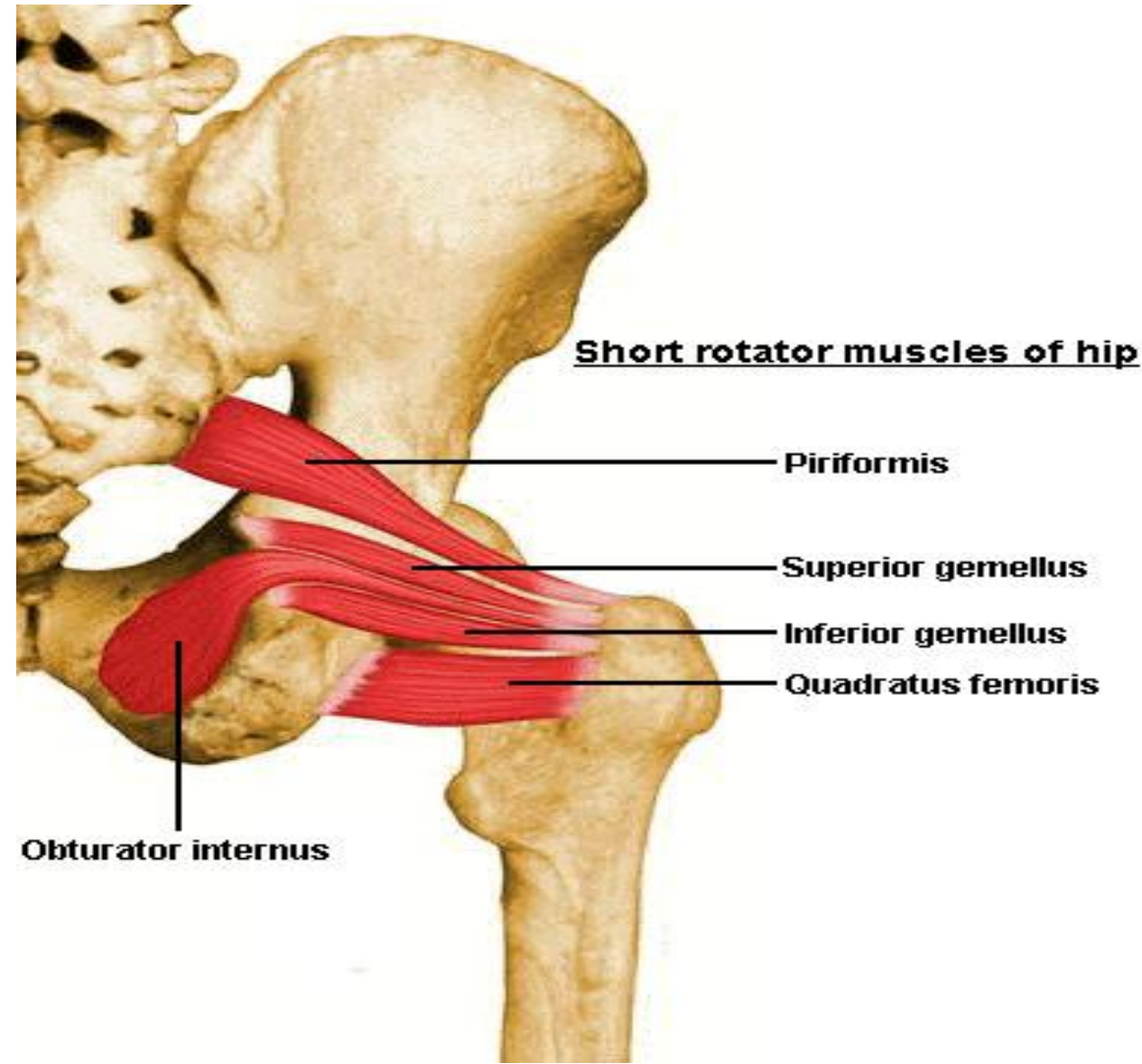
Quadratus Femoris

Origin-ischial tuberosity

Insertion-quadrate tubercle

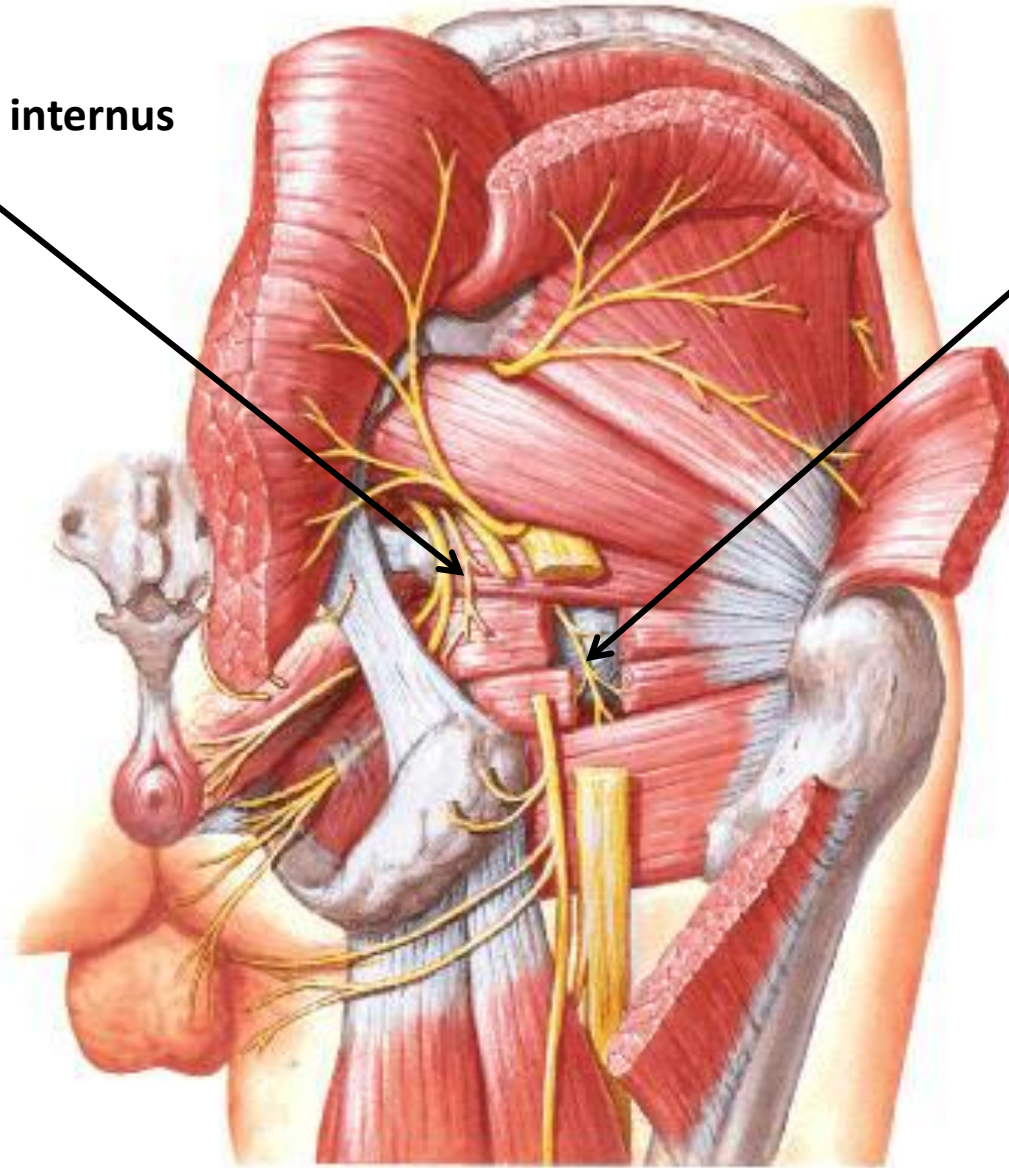
Nerve supply: Nerve to Quad. Femoris

All are Lateral Rotators of the thigh



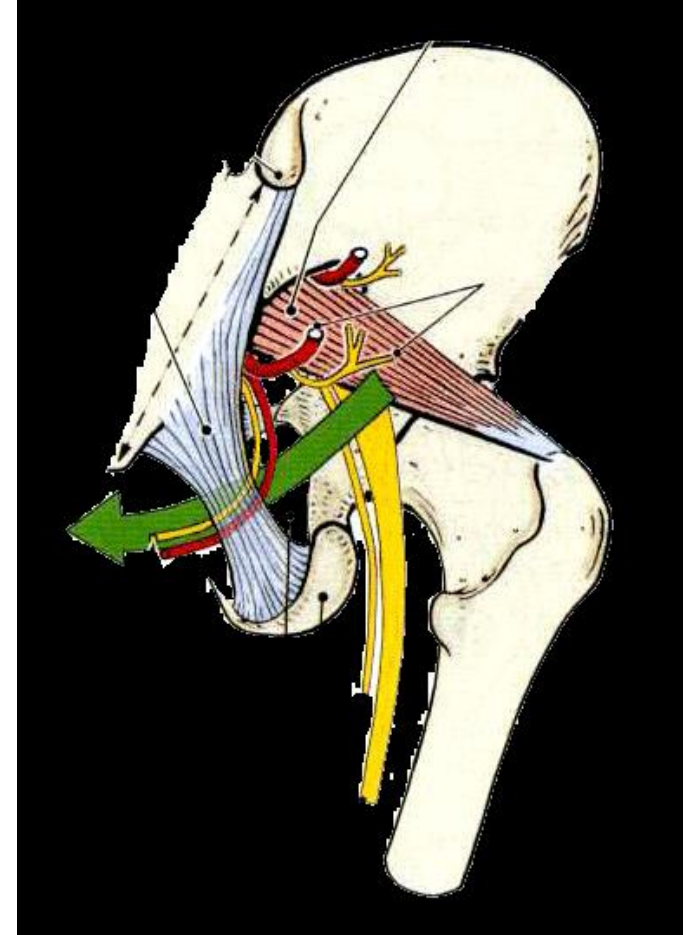
Nerve to obturator internus

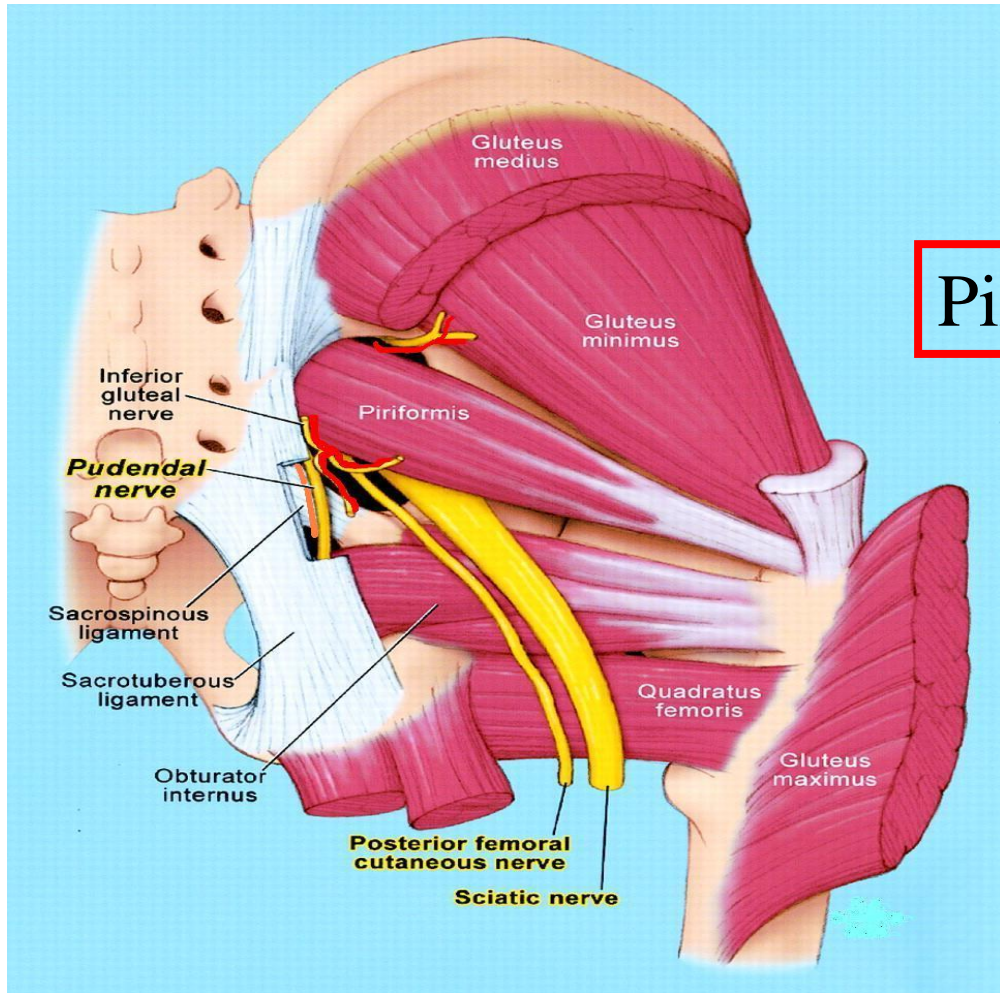
Nerve to quadratus femoris



Structures Passing Through Greater Sciatic Foramen

- **Greater sciatic foramen** is a gateways between the pelvic cavity and the gluteal region .
- Structures passing through this foramen can be grouped into:
 - 1. Structures passing above the Piriformis**
 - 2. Structures passing below the Piriformis**





Above the piriformis:

Superior gluteal vessels & nerve

Piriformis: an important landmark

Below the piriformis:

Inferior gluteal vessels & nerve

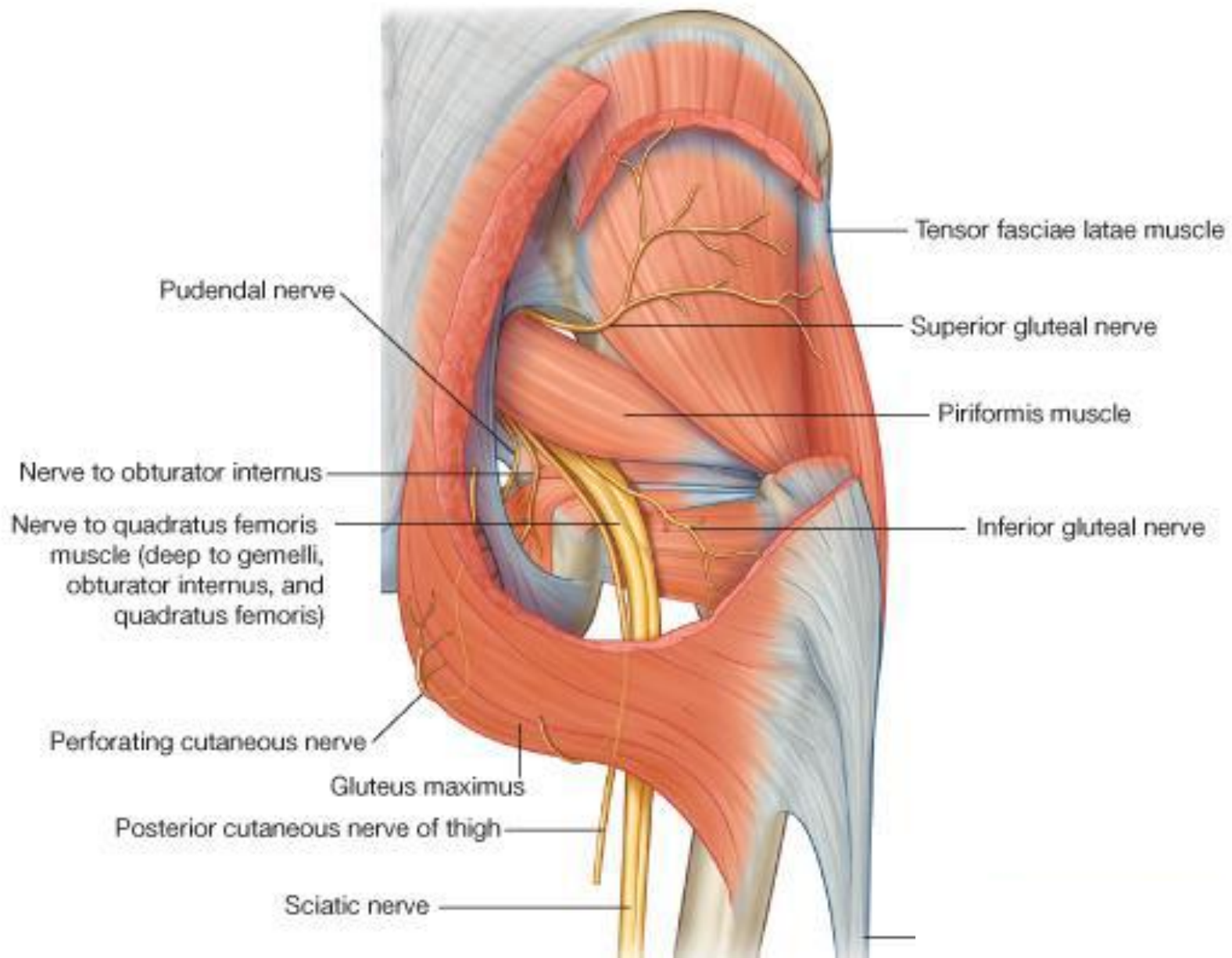
Sciatic nerve

Posterior cutaneous nerve of thigh

Pudendal nerve & Internal pudendal vessels

Nerve to obturator internus

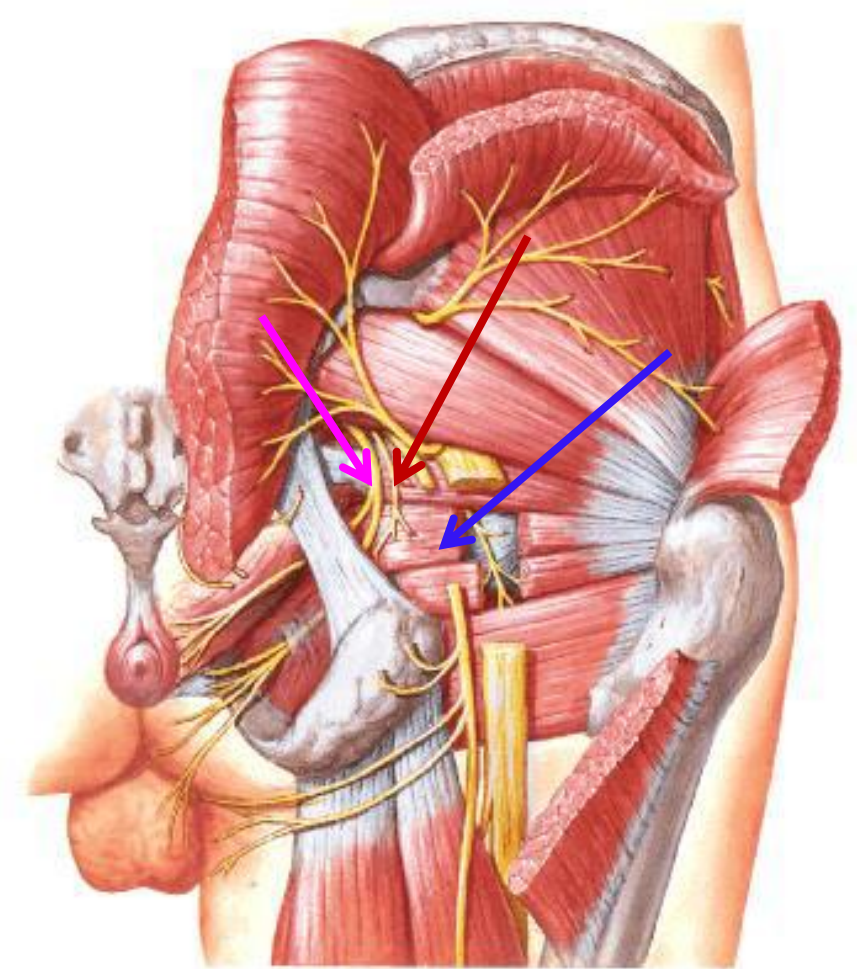
Nerve to quadratus femoris



Structures Passing Through Lesser Sciatic Foramen

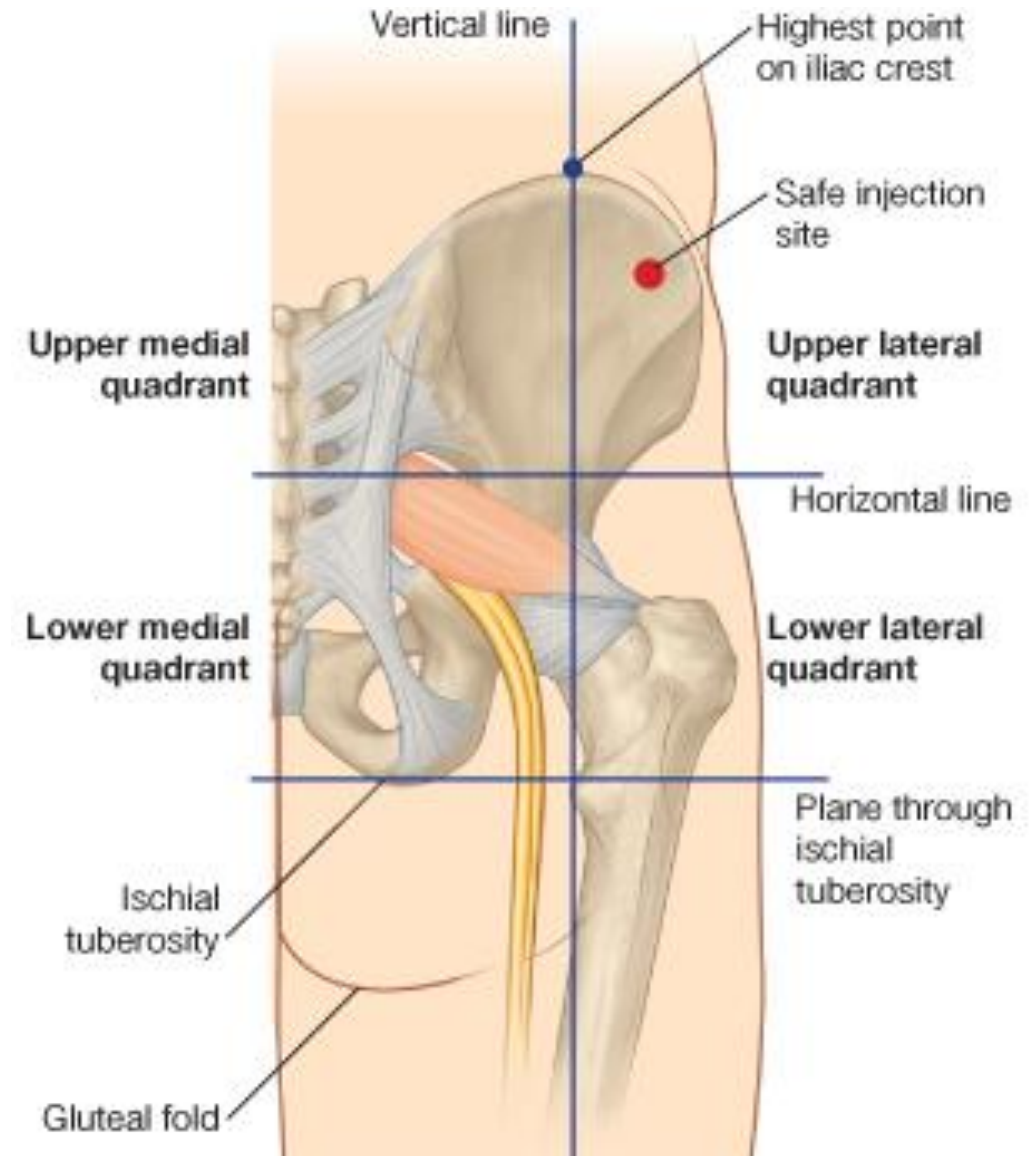
- **Lesser sciatic foramen** is a gateway between the gluteal region and the perineum.

1. Tendon of obturator internus
2. Nerve to obturator internus
3. Internal pudendal vessels
4. Pudendal nerve

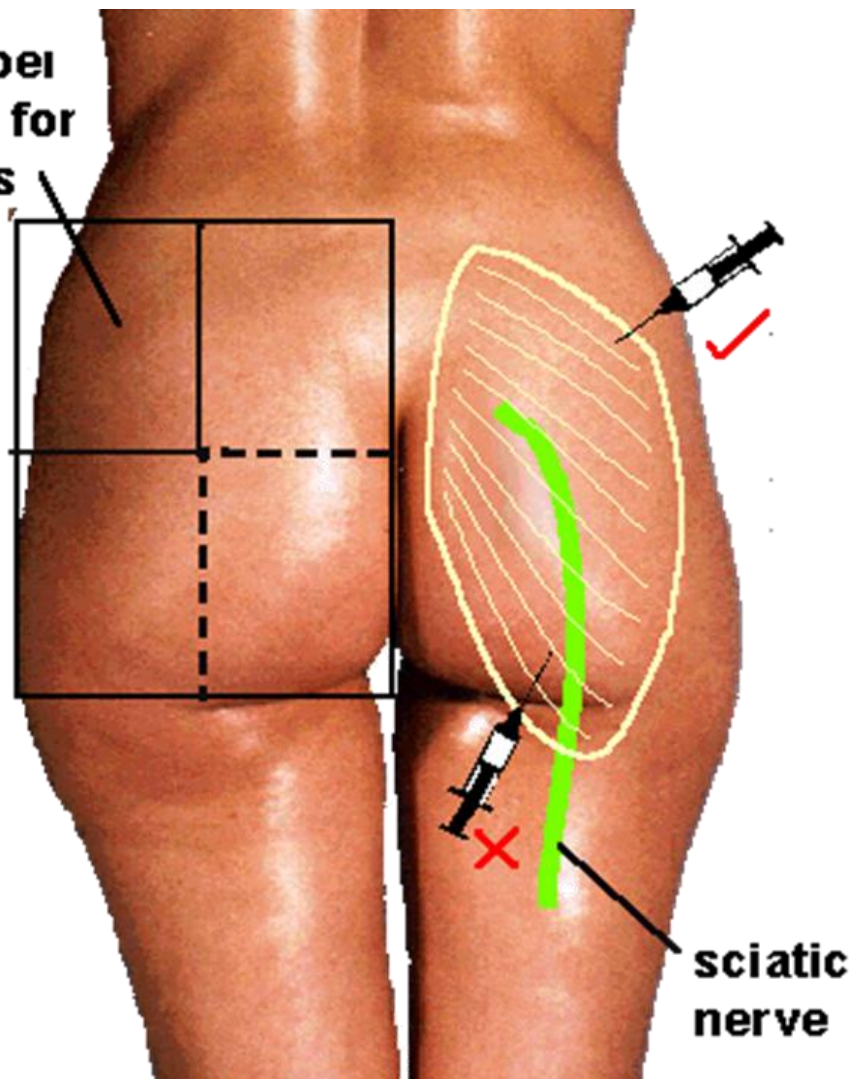


Safe Area for Intramuscular Injection

- Intramuscular injection enables a large amount of a drug to be introduced at once but absorbed gradually.
- The injection site must be carefully selected to avoid injury to the underlying large vessels and nerves.
- **Outer upper quadrant of the buttock** is the safe area for intramuscular injection to avoid injury to the underlying **sciatic nerve**

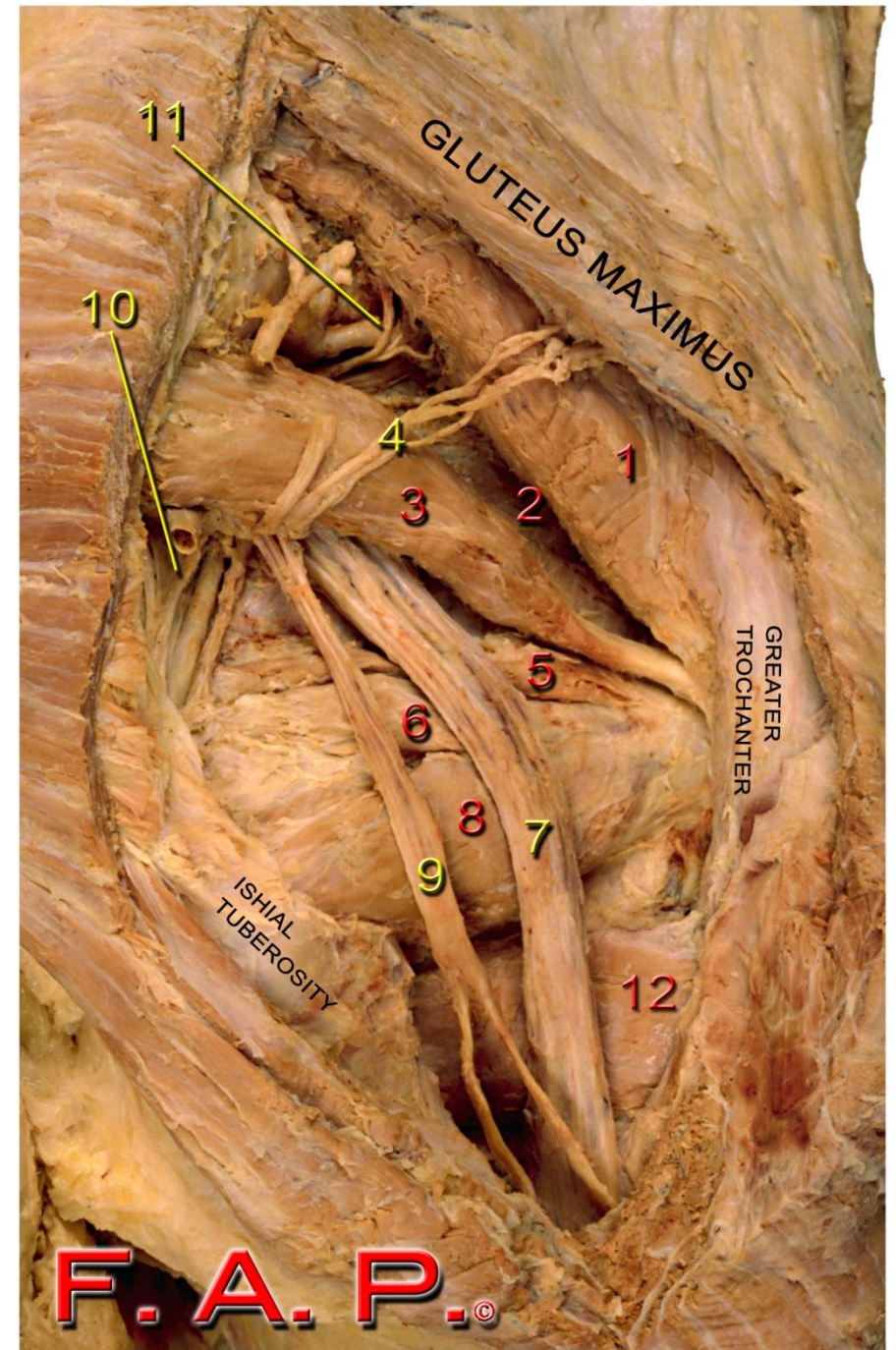


**outer upper
quadrant for
injections**



**sciatic
nerve**

Quiz: Identify the labeled structures



Thank you

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