



MED437
KING SAUD UNIVERSITY



Gluteal region and the Back of the Thigh

Lecture 17

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Revised by

Please check our [Editing File](#).

هذا العمل لا يغني عن المصدر الأساسي للمذاكرة

{ وَمَنْ يَتَوَكَّلْ عَلَى اللَّهِ فَهُوَ حَسْبُهُ }

Objectives

- **Contents of gluteal region:**
- **Groups of Glutei muscles and small muscles (Lateral Rotators).**
- **Nerves & vessels.**
- **Foramina and structures passing through them as:**
 - 1-Greater Sciatic Foramen.**
 - 2-Lesser Sciatic Foramen.**
- **Back of thigh: Hamstring muscles.**

- Text in **BLUE** was found only in the boys' slides
- Text in **PINK** was found only in the girls' slides
- **Text in RED is considered important**
- Text in **GREY** is considered extra notes

Contents of gluteal region

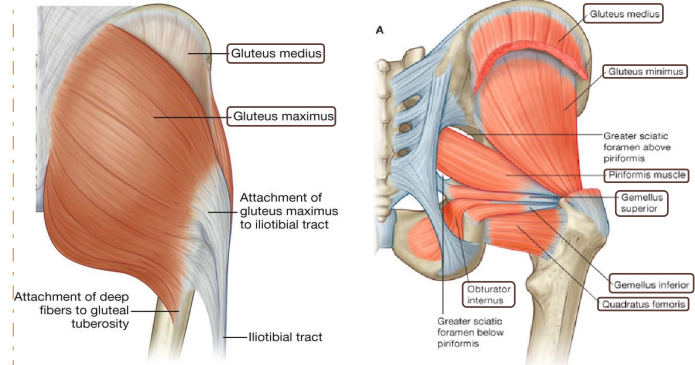
Muscles (8 muscles)

A. GLUTEI

- Gluteus maximus
- Gluteus medius
- Gluteus minimus

B. GROUP OF SMALL MUSCLES (Lateral Rotators)

- Piriformis
- Obturator internus
- Superior gemellus
- Inferior gemellus
- Quadratus femoris



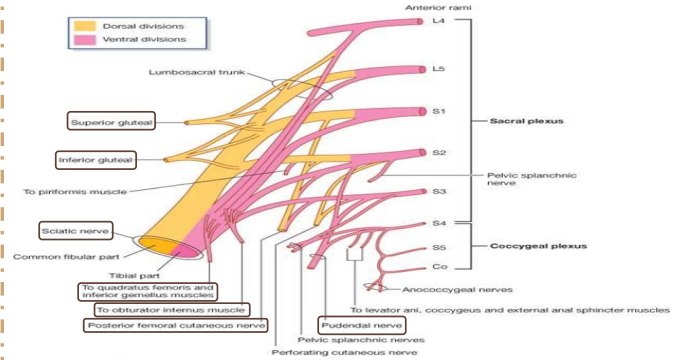
Contents of gluteal region

Nerves

(7 nerves)

(all from sacral plexus)

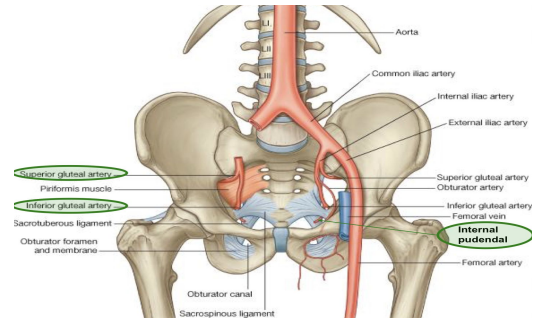
- Sciatic nerve
- Superior gluteal nerve
- Inferior gluteal nerve
- Posterior cutaneous nerve of thigh.
- Nerve to obturator internus
- Nerve to quadratus femoris
- Pudendal nerve



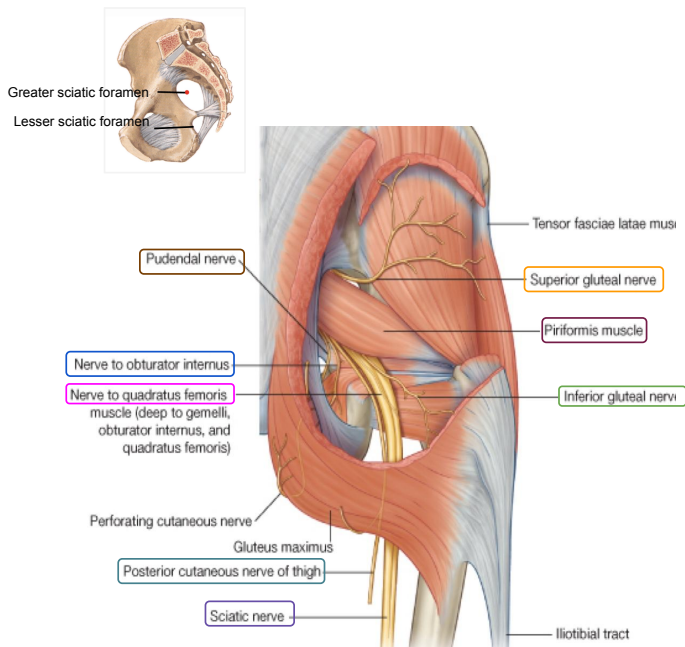
Vessels

(all from internal iliac vessels)

- Superior gluteal
- Inferior gluteal
- Internal pudendal vessels



Greater sciatic foramen



- Greater sciatic notch of hip bone is transformed **into foramen** by **Sacrospinous** (between the sacrum to ischial spine) & **sacrospinous ligaments** (between the sacrum to ischial tuberosity)
- **Structures passing through Greater sciatic foramen:**
 - Piriformis muscle.

Above piriformis:

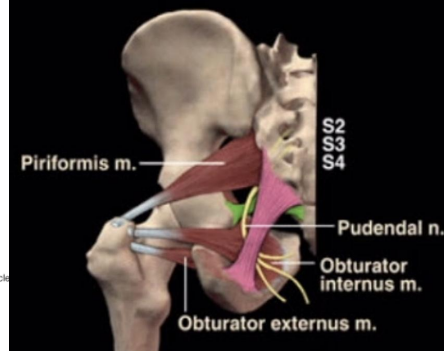
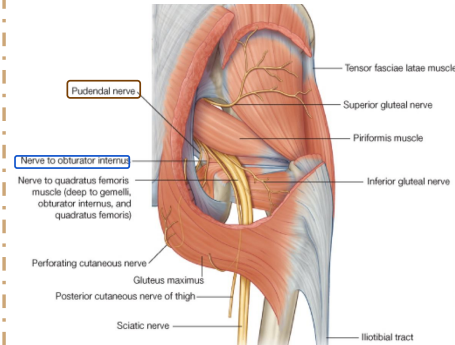
- **Superior** gluteal nerves & vessels.

Below piriformis:

- **Inferior** gluteal nerves & vessels.
- Sciatic nerve.
- **Posterior** cutaneous nerve of thigh.
- **Nerve to quadratus femoris.**
- **Nerve to obturator internus.**
- **Pudendal nerve**
- **Internal pudendal vessels.**

Pass through both greater and lesser foramen.

Lesser sciatic foramen



Lesser sciatic notch of hip bone is transformed into foramen by **Sacro**tuberous & **sacro**spinous ligaments.

- **Structures passing through Lesser sciatic foramen:**
 - Tendon of obturator internus.
 - **Nerve to obturator internus.**
 - **Pudendal nerve.**
 - Internal pudendal vessels.

Pass through both greater sciatic and lesser foramen:

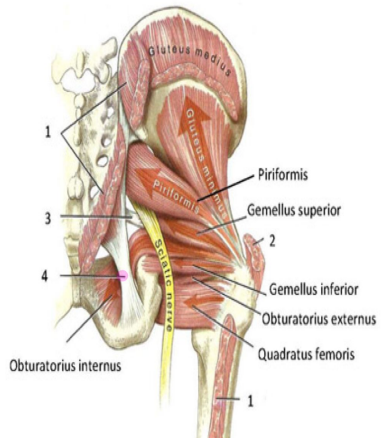
- Nerve to obturator internus.
- pudendal nerve.
- internal pudendal vessels.

Glutei muscles

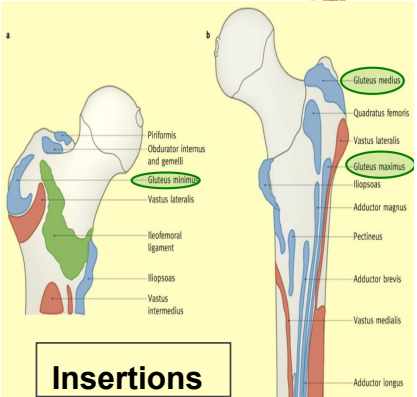
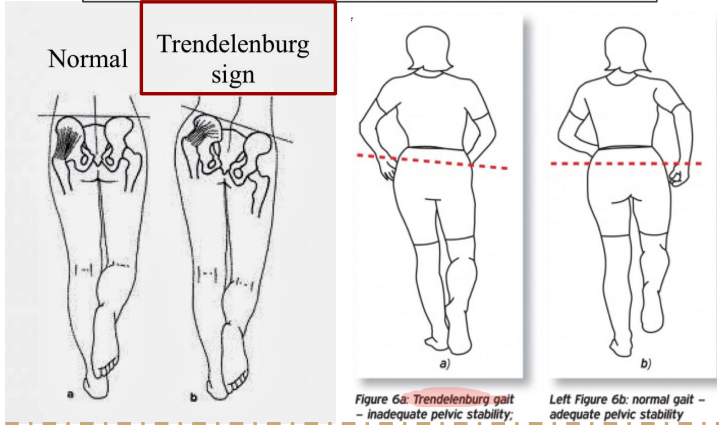
Name of the muscle	Gluteus minimus	Gluteus medius
Origin	Anterior part of the gluteal surface of ilium	Middle part of the gluteal surface of ilium
Insertion	Anterior surface of greater trochanter	Lateral surface of greater trochanter
Nerve supply	Superior gluteal nerve	
Action	Abduction and medial rotation of <u>hip joint</u>. Normally they prevent lateral tilt of the pelvis by contraction ABDUCTORS of opposite side, on raising the other limb from ground. if the pelvis tilts this is mean positive Trendlenburge's sign .	



Glutei muscles



Action of gluteus minimus and medius



Right pelvic tilt as is the right picture means :
 paralysis of abductor of the OPPOSITE side
 -the left side of the pelvis is elevated higher than
 the right side-

يعني الپلفس اذا مال من جهته اليسار يعني العضلة بجهة اليمين فيها
 مشكلة لانها ماشدت كويس والعكس

Glutei muscles

Gluteus maximus

origin

Posterior part of the gluteal surface of ilium

The main origin: Back of sacrum ,coccyx and back of Sacrotuberous ligament.

insertion

- 1- main insertion : iliotibial tract
- 2- other insertion : gluteal tuberosity of the femur

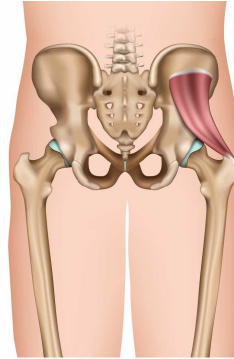
Nerve supply

Inferior gluteal nerve

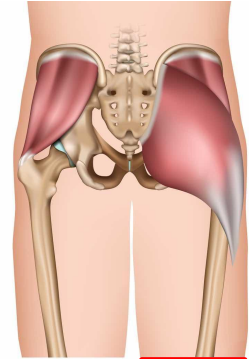
Action

Extension and **lateral rotation** of the hip joint.

Through its attachment to iliotibial tract, it stabilize the femur on tibia during standing.



GLUTEUS MINIMUS

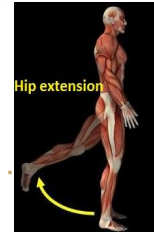


GLUTEUS MEDIUS

GLUTEUS MAXIMUS



Iliotibial Tract (Band, ITB)

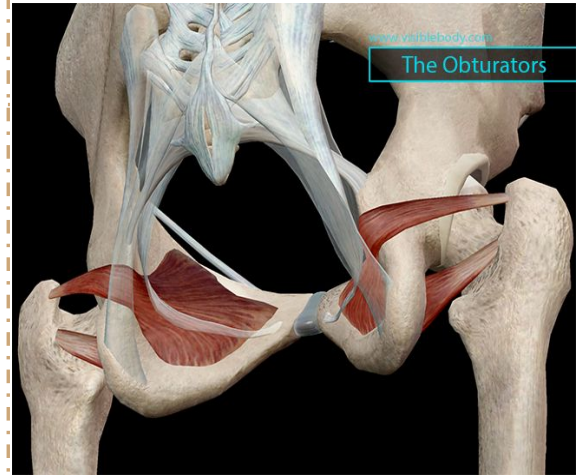


Hip extension

Small muscles (lateral rotators)

Obturator internus

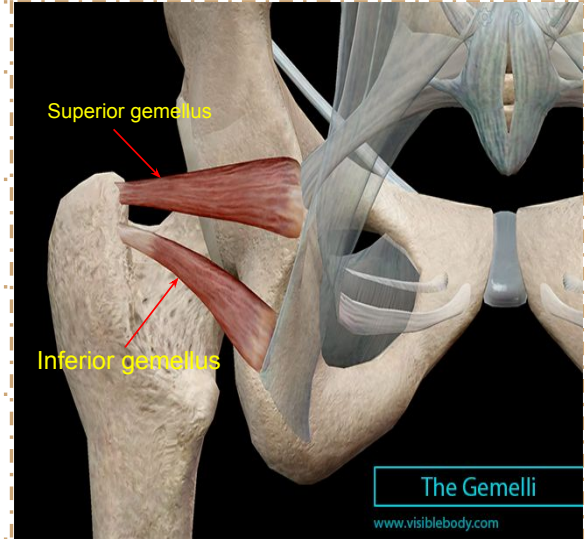
origin	Inner surface of the side wall of the <u>pelvis</u>
insertion	Into the medial surface of the <u>greater trochanter</u>
Nerve supply	Nerve to obturator internus
Action	Lateral rotation of the <u>hip joint</u> & Control movement of the hip joint.



Small muscles (lateral rotators)

Superior & inferior Gemelli

	Superior gemellus	Inferior gemellus
origin	Upper part of <u>lesser sciatic notch</u>	Lower border of <u>lesser sciatic notch</u>
insertion	Upper & lower parts into tendon of obturator internus	
Nerve supply*	Nerve to obturator internus	Nerve to quadratus femoris
Action	Lateral rotation of hip joint & control movement of hip joint	Lateral rotation of hip joint & control movement of hip joint

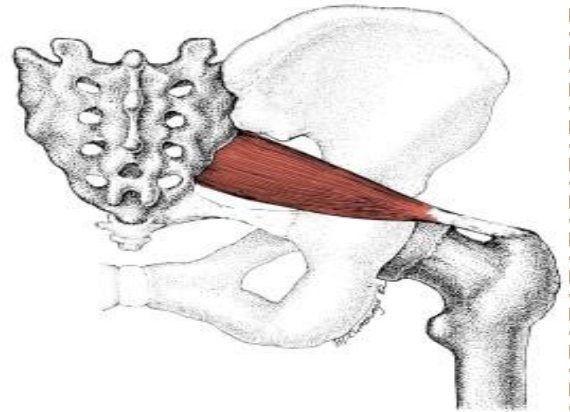


كل وحده منهم يغذيها النيرف اللي يغذي المسل اللي تحتها*

Small muscles (lateral rotators)

Piriformis

origin	Pelvic surface of middle 3 sacral vertebrae
insertion	It passes through GSF* to be inserted into the upper border of the <u>greater trochanter</u>
Nerve supply	Anterior rami of S1, S2
Action	Lateral rotation of <u>hip joint</u> & control movement of hip joint.



*Greater sciatic foramen

-almost all small muscles in the gluteal region make an insertion in greater trochanter Except, Quadratus femoris.

Small muscles (lateral rotators)

Quadratus femoris

origin

Lateral border of the ischial tuberosity.

insertion

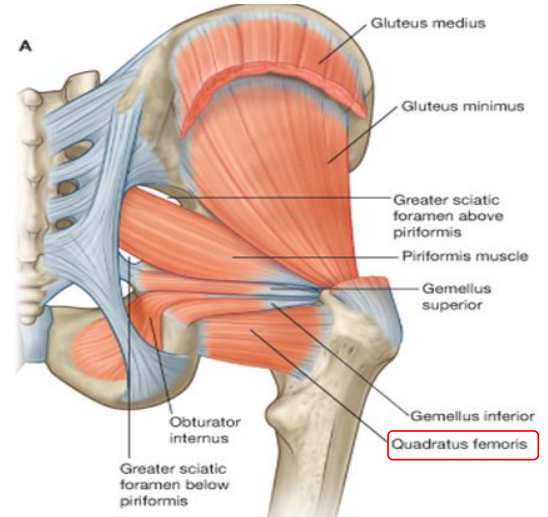
Quadrate tubercle & intertrochanteric crest.

Nerve supply

Nerve to quadratus femoris

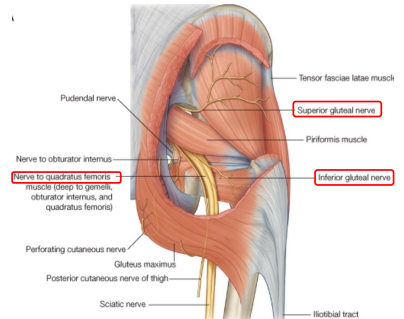
Action

1. Lateral rotation of the hip joint.
2. Control movement of the hip joint.



Nerves

	Course	Branches
Superior gluteal	Passes through GSF (greater sciatic foramen), above <u>piriformis</u> , then between gluteus medius & minimus	<ol style="list-style-type: none">1. <u>Muscular</u> to gluteus medius, minimus & tensor fasciae lata2. <u>Articular</u> to hip joint
Inferior gluteal	Passes through GSF , below <u>piriformis</u> , then deep to gluteus maximus .	Muscular to gluteus maximus
To quadratus femoris	Passes through GSF , below <u>piriformis</u>	<ol style="list-style-type: none">1. Muscular to quadratus femoris & inferior gemellus2. Articular to hip joint



Nerves

Course

Posterior cutaneous

Passes through **GSF**, **below piriformis**, then descends deep to deep fascia.

Sciatic

Passes through GSF, below piriformis, then superficial to:

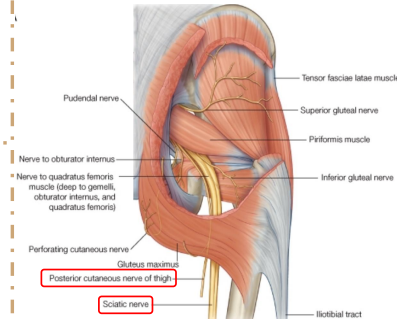
- Ischial spine
- Superior gemellus
- Tendon of obturator Internus
- Inferior gemellus
- Quadratus femoris
- Adductor magnus.

Branches

Cutaneous branches to:

- **Gluteal region**
- **Back of scrotum** in males
(labium majus) in females
- **Back of thigh & upper part of back of leg.**

- **No branches** in gluteal region
- Divides into **tibial & common peroneal nerves**, in the **middle of back of thigh**



Posterior compartment of the thigh Contents

Muscles

Hamstring muscles:

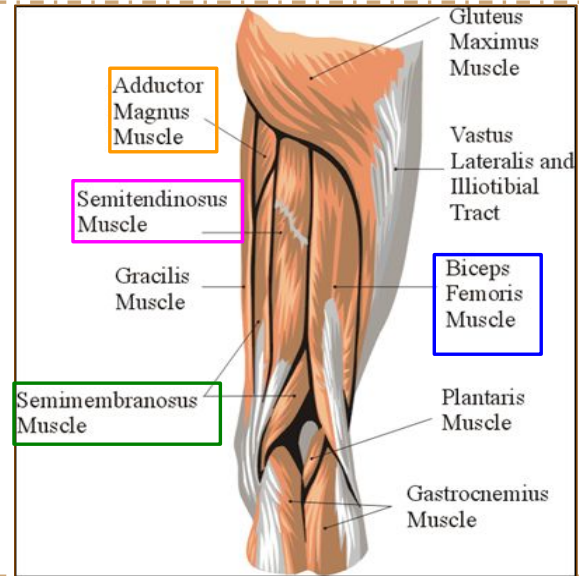
- Biceps femoris.
- Semitendinosus.
- Semimembranosus.
- Ischial part of adductor magnus.

Blood supply

Branches of the **profunda femoris artery**

Nerve supply

Sciatic nerve



Hamstring muscles

Biceps Femoris

origin

- The long head from the ischial tuberosity.
- The short head from the linea aspera .

insertion

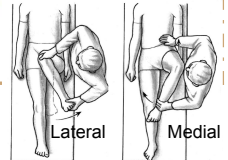
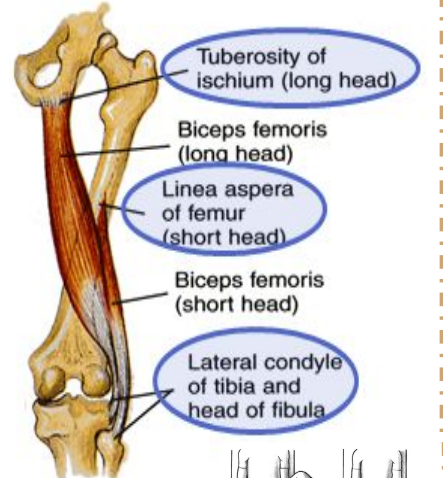
Mainly into the head of the fibula

Nerve supply

- **The long head** is supplied by the tibial part of sciatic;
- **The short head** is supplied by the common peroneal part of the sciatic.

Action

- Flexion of knee.
- Lateral rotation of flexed leg.
- Long head: extends hip.



Hamstring muscles

SEMITENDINOSUS

origin

Ischial tuberosity

insertion

Upper part of the medial surface of the shaft of the tibia (SGS)

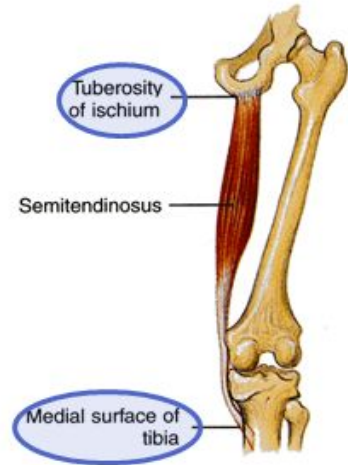
*SGS (semitendinosus / gracialis / sartorius): Three muscles that have the same insertions.

Nerve supply

Tibial portion of the sciatic.

Action

- Flexes and medially rotates the leg at the knee joint;
- Extends the thigh at the hip joint.



Hamstring muscles

SEMIMEMBRANOSUS

origin

Ischial tuberosity.

insertion

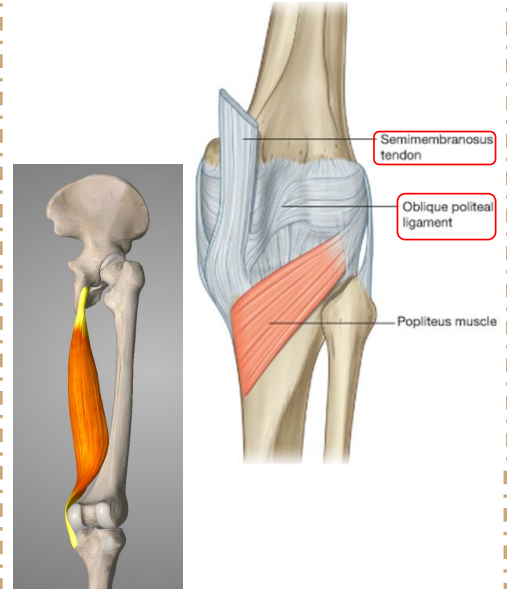
- Posterior surface of the medial condyle of the tibia.
- It forms the oblique popliteal ligament, which reinforces the capsule on the back of the knee joint.

Nerve supply

Tibial portion of the sciatic nerve.

Action

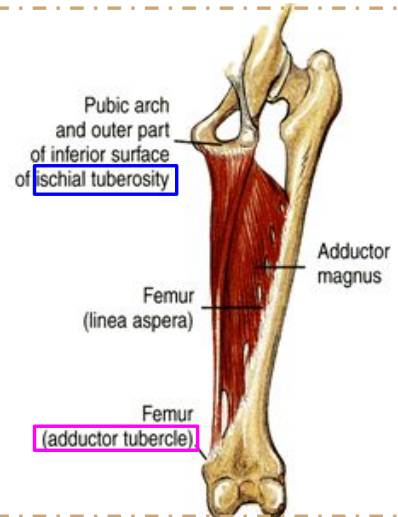
- Flexes and medially rotates the leg at the knee joint;
- Extends the thigh at the hip.



Hamstring muscles

Adductor magnus (hamstring part)

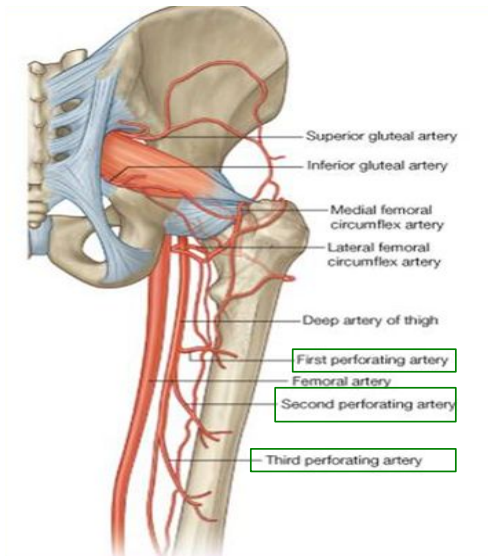
origin	Ischial ramus and ischial tuberosity
insertion	Adductor tubercle of the medial condyle of the femur
Nerve supply	The tibial portion of the sciatic
Action	Extends the thigh at the hip joint *it doesn't reach the tibia or fibula so it can't move the knee joint.



The adductor magnus has 2 parts: adductor part and hamstring part. The 2 parts have different origin, insertion, action and nerve supply. They are also in different compartments of the thigh

Blood supply

Blood supply



perforating branches shown in green

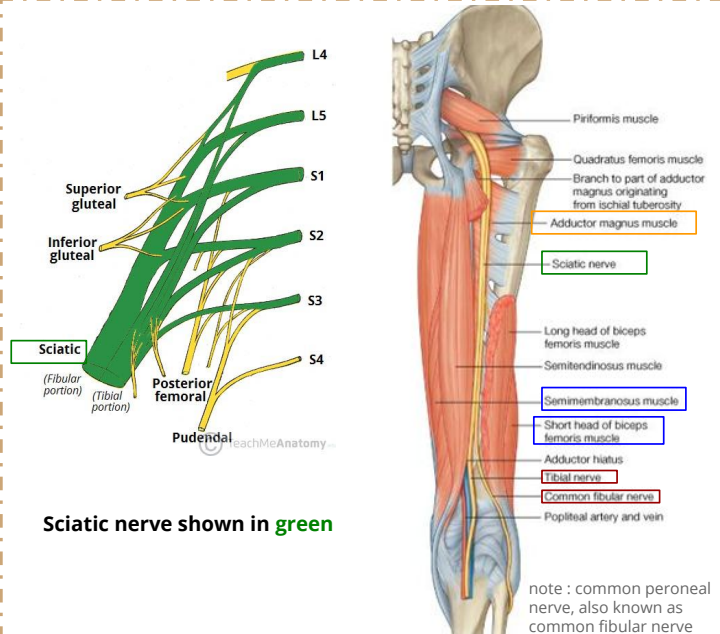
- The **four perforating branches** of the **profunda femoris artery** (deep artery of thigh) provide a rich blood supply to this compartment.

(perforating= to pierce or to make a hole)

- The **profunda femoris vein** drains the greater part of the blood from the compartment.

Nerve supply

Nerve supply



- The **sciatic nerve**, a branch of the sacral plexus (L4 and L5; S1, S2, and S3), leaves the gluteal region as it descends in the midline of the thigh.

sciatic nerve

It is overlapped posteriorly by

the adjacent margins of the biceps femoris and semimembranosus muscles

It lies on

the posterior aspect of the adductor magnus.

In the lower third of the thigh

it ends by dividing into the **tibial** and **common peroneal nerves**.

MCQs

(1) How many vessels are supplying the gluteal region?

- A- 2
- B- 3
- C- 4

(2) Which one of the following muscles abduct & medially rotates the hip in the gluteal region?

- A- Gluteus medius & minimus
- B- Gluteus medius & maximus
- C- Gluteus maximus & minimus

(3) Sciatic nerve passes through GSF, _____ piriformis?

- A- below
- B- above
- C- beside

(4) If someone comes to ER with injury in his semitendinosus muscle, Which one of these nerves may be affected?

- A- Superior gemellus
- B- Sciatic nerve
- C- Tibial portion of the sciatic nerve

(5) Gluteal region consists of glutei and group of small muscles, Which one of the following isn't a glutei muscle?

- A- Gluteus maximus
- B- Gluteus minimus
- C- Quadratus femoris

SAQ

A patient came to the clinic complaining from difficulty of extending his thigh at the hip joint:

- (1) List the muscles responsible for this action:
- (2) Name The nerve responsible of these muscles:
- (3) Name the muscles that are responsible of lateral rotation of hip joint?

Answers (MCQs)

1-B

2-A

3-A

4-C

5-C

Answers (SAQ)

(1)

Semimembranosus

Semitendinosus

Long head : biceps femoris

Adductor magnus (hamstring part)

(2)

Tibial portion of sciatic nerve

(3)

Gluteus maximus

quadratus femoris

piriformis

obturator internus.

Superior & inferior gemelli

Team Members

Lamia Abdullah Alkuwaiz (Team Leader)

Rawan Mohammad Alharbi

Abeer Alabduljabbar

Afnan Abdulaziz Almustafa

Ahad Algrain

Alanoud Almansour

Albandari Alshaye

AlFhadah abdullah alsaleem

Arwa Alzahrani

Dana Abdulaziz Alrasheed

Dimah Khalid Alaraifi

Ghada Alhaidari

Ghada Almuhanana

Ghaida Alsanad

Hadeel Khalid Awartani

Haifa Alessa

Khulood Alwehabi

Layan Hassan Alwatban

Lojain Azizalrahman

Lujain Tariq AlZaid

Maha Barakah

Majd Khalid AlBarrak

Norah Alharbi

Nouf Alotaibi

Noura Mohammed Alothaim

Rahaf Turki Alshammari

Reham Alhalabi

Rinad Musaed Alghoraiby

Sara AlSultan

Shahad Alzahrani

Wafa Alotaibi

Wejdan Fahad Albadrani

Wjdan AlShamry

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Fahad Alfaiz

Akram Alfandi

Saad Aloqile

Saleh Almoaiqel

Abdulaziz Alabdulkareem

Abdullah Almeaither

Yazeed Aldossari

Muath Alhumood

Abdulrahman Almotairi

Abdulelah Aldossari

Abdulrahman Alduhayyim

Hamdan Aldossari

Abdullah Alqarni

Mohammed Alomar

Abdulrahman Aldawood

Saud Alghufaily

Hassan Aloraini

Khalid Almutairi

Abdulmajeed

Alwardi

Abdulrahman Alageel

Rayyan Almousa

Sultan Alfuhaid

Ali Alammari

Fahad alshughaihithry

Fayez Ghiyath

Aldarsouni

Mohammed Alquwayfili

Abduljabbar Al-yamani

Sultan Al-nasser

Majed Aljohani

Zeyad Al-khenaizan

Mohammed Nouri

Abdulaziz Al-drgam

Fahad Aldhowaihy

Omar alyabis