

# **ANATOMY OF THE THIGH**



**1- Lateral cutaneous nerve of the thigh**

## **I) Skin of the thigh**

### **Anterior view**

**2- Femoral branch of the genitofemoral nerve**

**1, 2 and 3 are From the *lumber plexus***

**5- Intermediate cutaneous nerve of the thigh**

**7- Posterior cutaneous nerve of the thigh**

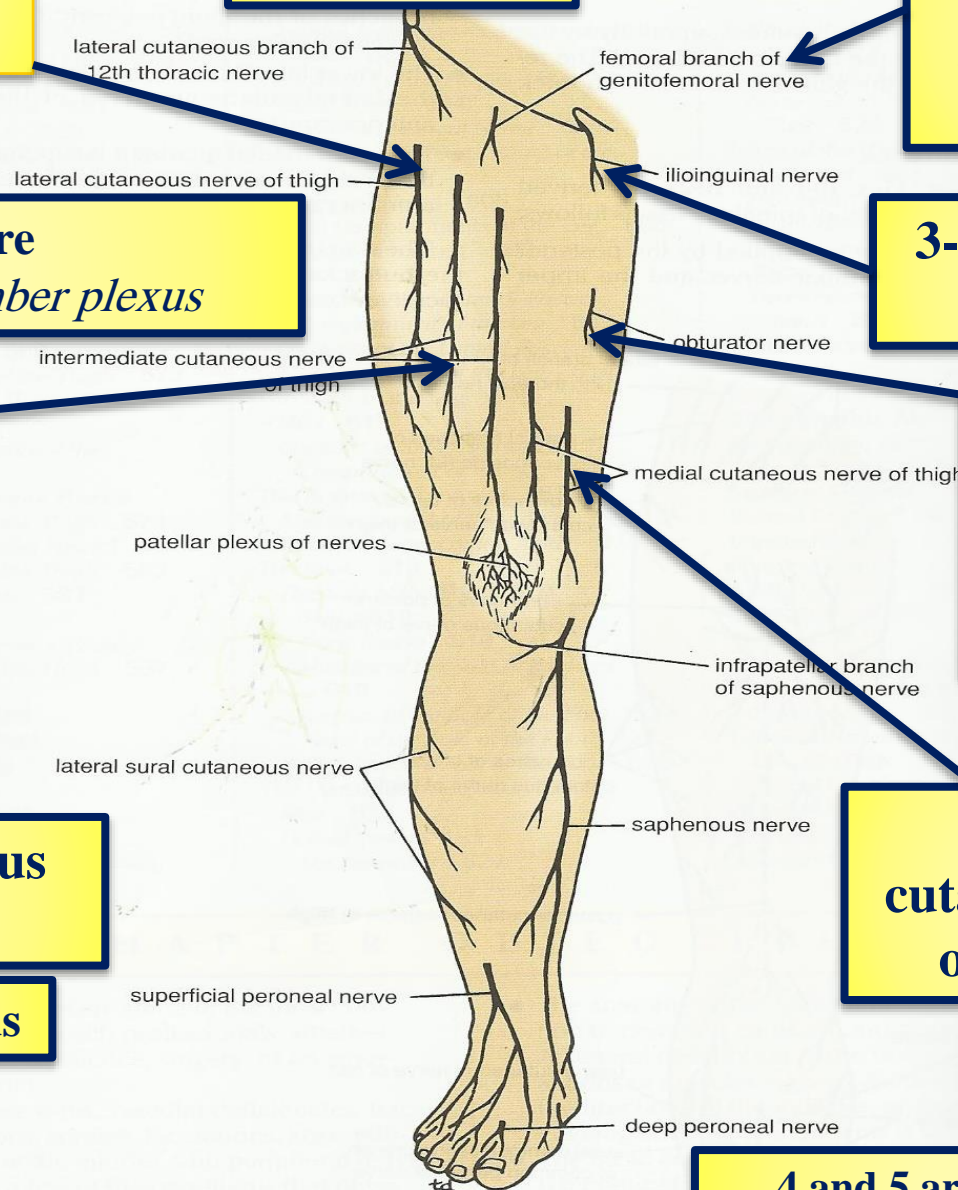
**from the Sacral plexus**

**3- Ilioinguinal nerve**

**6- Branches from the obturator nerve**

**4- Medial cutaneous nerve of the thigh**

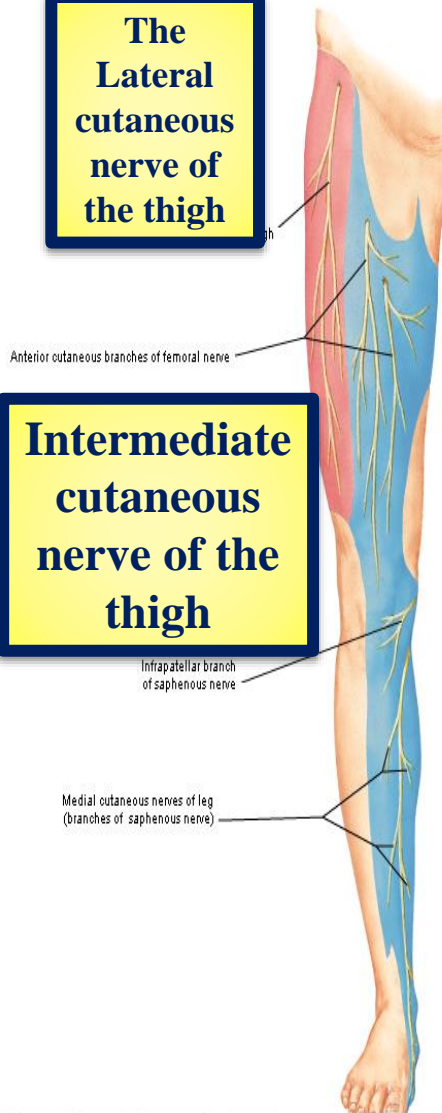
**4 and 5 are branches from the *femoral nerve***



Cutaneous nerves of the anterior surface of the

# Femoral Nerve and Lateral Cutaneous Nerve of Thigh Cutaneous Innervation

**The Lateral cutaneous nerve of the thigh**



**Intermediate cutaneous nerve of the thigh**

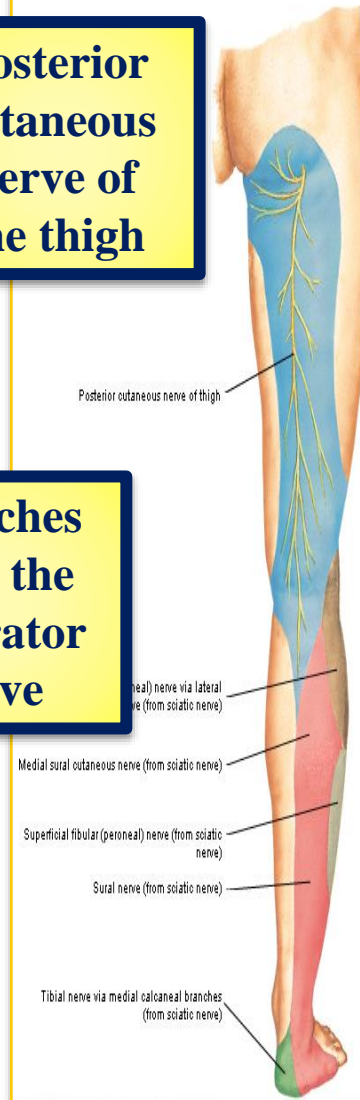
# Obturator Nerve Cutaneous Innervation



**Branches from the obturator nerve**

# Sciatic Nerve and Posterior Cutaneous Nerve of Thigh Cutaneous Innervation

**Posterior cutaneous nerve of the thigh**



# II) Fascia

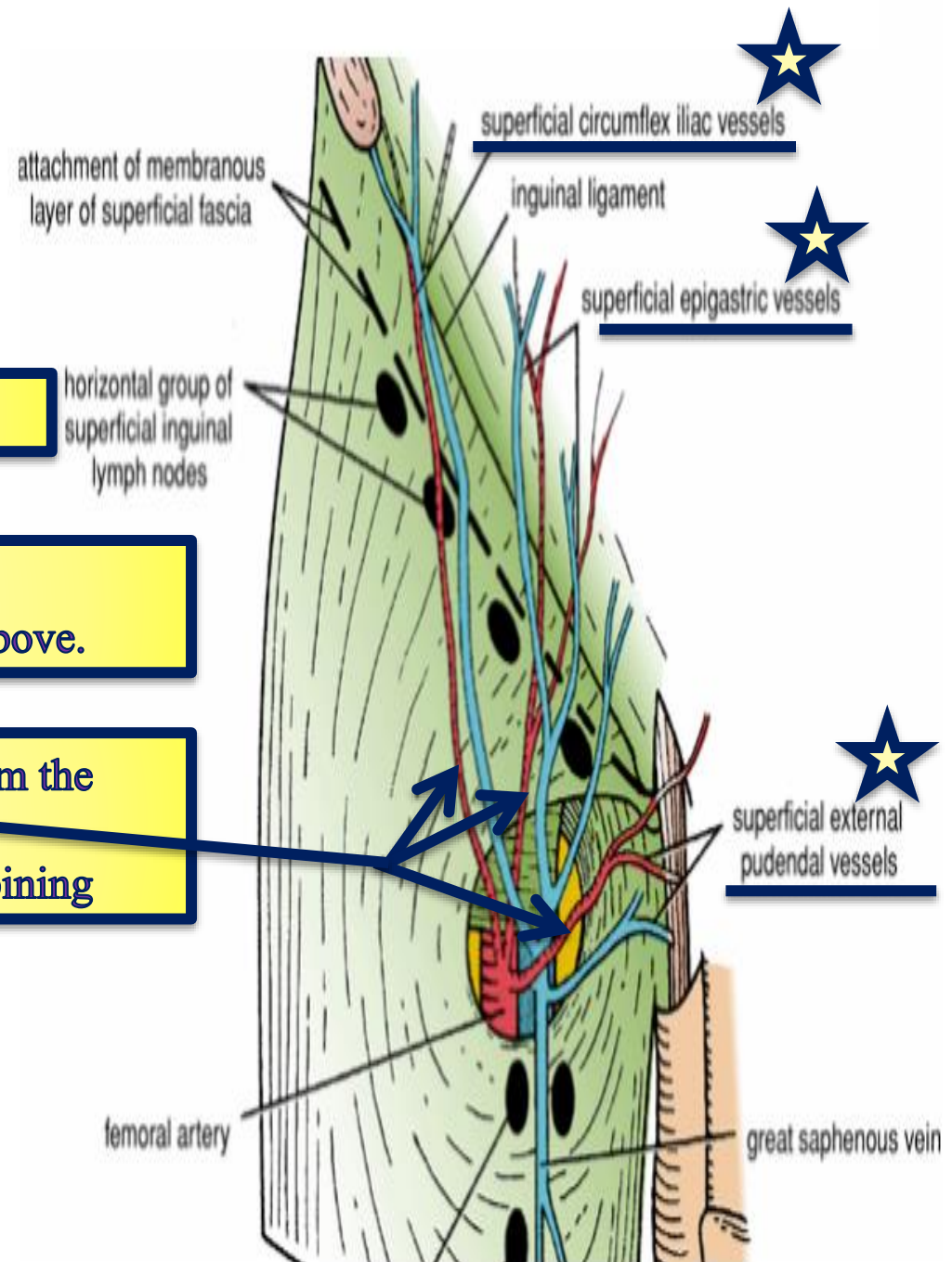
- A- Superficial fascia of the thigh
- B- Deep fascia of the thigh (fascia lata)

## A-The superficial fascia of the thigh

### 1- Cutaneous nerves

all nerves that have been mentioned above.

2- Superficial arteries (branches from the femoral artery)  
that emerge through the Saphenous opening





### 3- Superficial inguinal lymph nodes

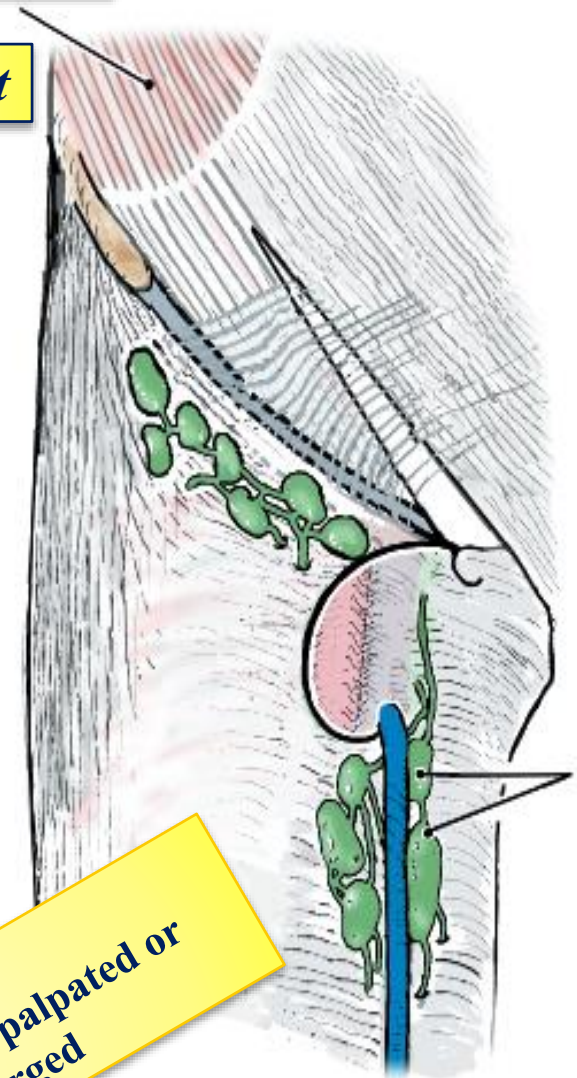
➤ *Lies below the inguinal ligament*

➤ *Divided into two groups;  
horizontal and vertical.*

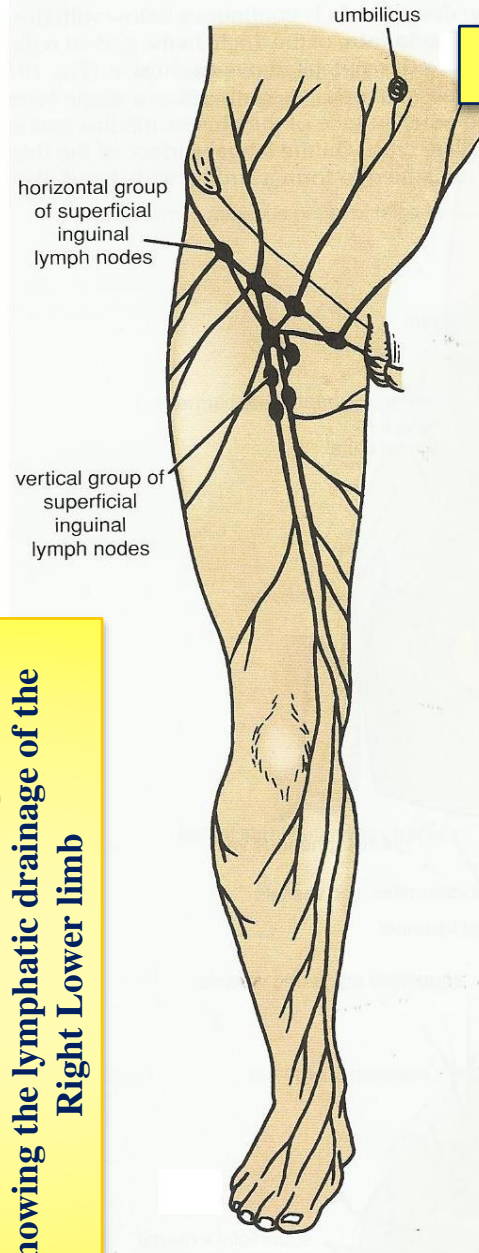
A-The horizontal group lies  
below and parallel to the  
*inguinal ligament*.

It divides into medial and  
lateral groups

B-The vertical group lies  
along the terminal part of  
*Saphenous vein*.



**Note:**  
Lymph nodes cannot be palpated or  
seen unless they are enlarged



Anterior view of the thigh  
Showing the lymphatic drainage of the  
Right Lower limb

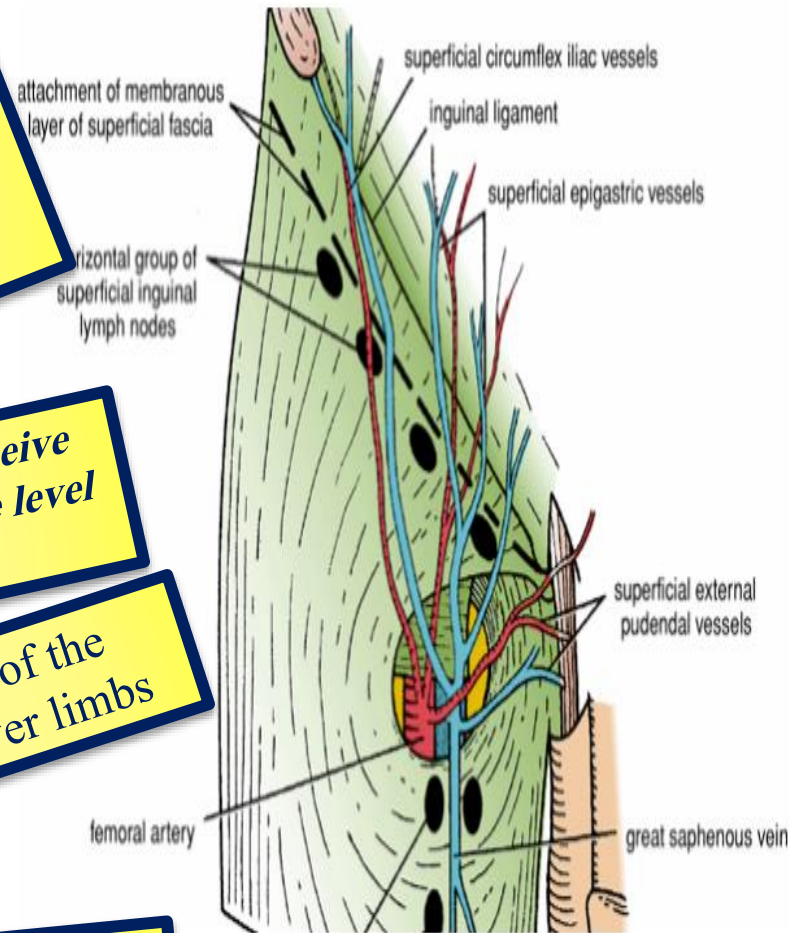
The medial members of the **horizontal group** receive superficial lymph vessels from:

- 1-The anterior abdominal wall below the level of the umbilicus
- 2-The perineum
- 3-The urethra
- 4-The external genitalia of both sexes (EXCEPT the testes)?!!!!
- 5-The lower half of the anal canal
- 6- The lower third of the vagina

The lateral members of the **horizontal group** receive superficial lymph vessels from the back below the level of the iliac crests

The **vertical group** receives most of the superficial lymph vessels of the lower limbs

The efferent lymph vessels from the superficial inguinal nodes pass through the **saphenous opening in the deep fascia** and join the **deep inguinal nodes**.



Remember that if the patient presented to you with an **enlarged superficial inguinal lymph nodes** you should ask about and check the above mentioned areas



## 4- Superficial veins

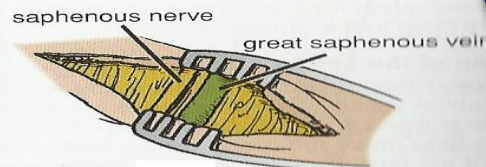
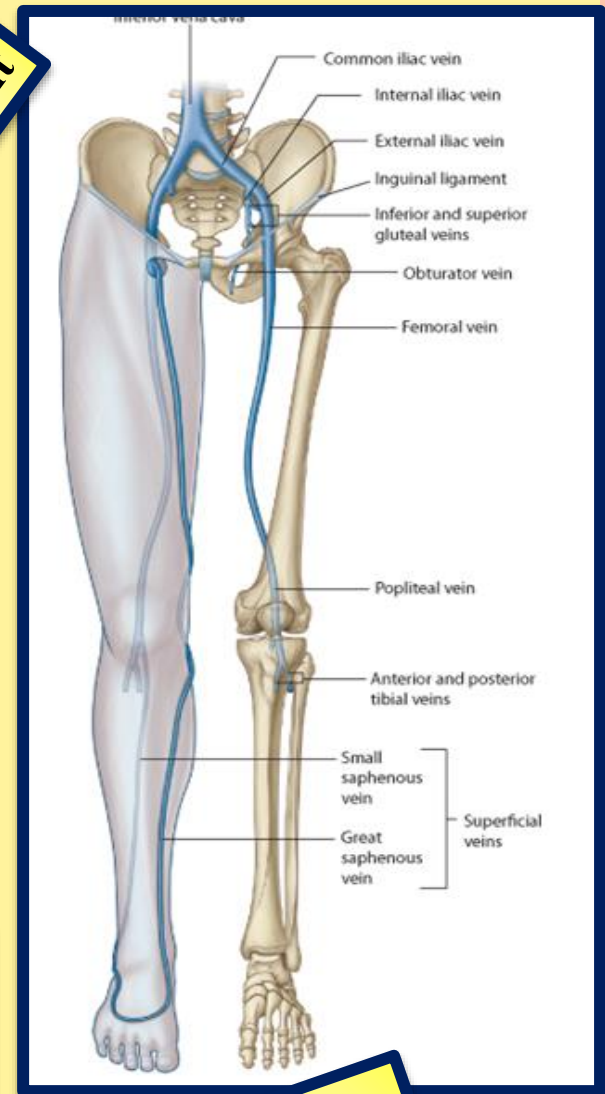
The most important superficial vein is the

important

### *Great Saphenous vein.*

#### *The great Saphenous vein*

- drains **the medial end** of the **dorsal venous arch**.
- passes **directly in front** of **the medial malleolus** of the tibia.
- ascends in a company with **the Saphenous nerve**, in the superficial fascia **over the medial side of the leg**.
- passes **behind the knee** and then curves around the **medial side of the thigh**.
- pierces the **Saphenous opening** and then joins **the femoral vein** about **4cm below and lateral to the pubic tubercle**.



Great Saphenous vein  
cutdown at the ankle?  
When we need this  
procedure



## B- Deep fascia of the thigh (fascia lata)

➤ Forms on the antero-medial side of the thigh the

***Saphenous opening (fossa ovalis).***

**Saphenous opening (fossa ovalis)** is a gap in the fascia lata which is covered by *loose connective tissue* called **cribriform fascia**.

The **cribriform fascia** is pierced by:

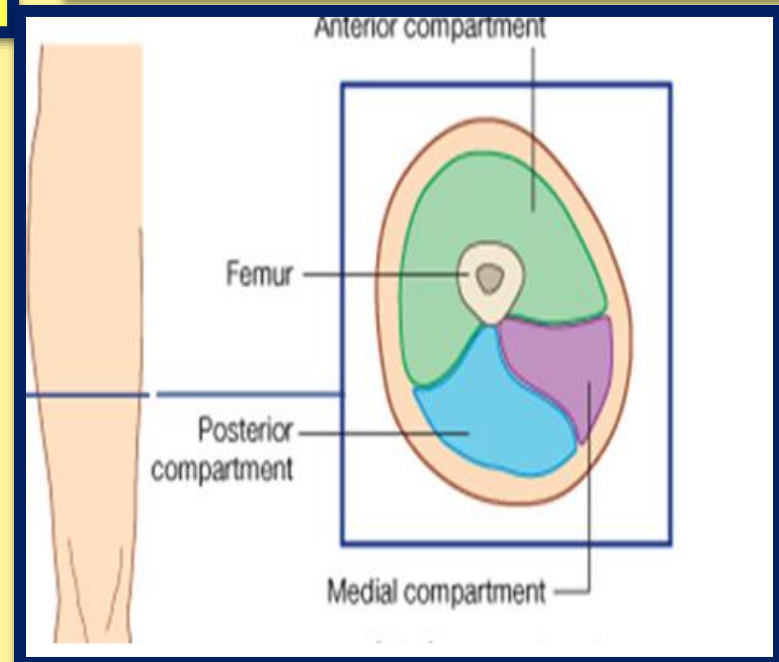
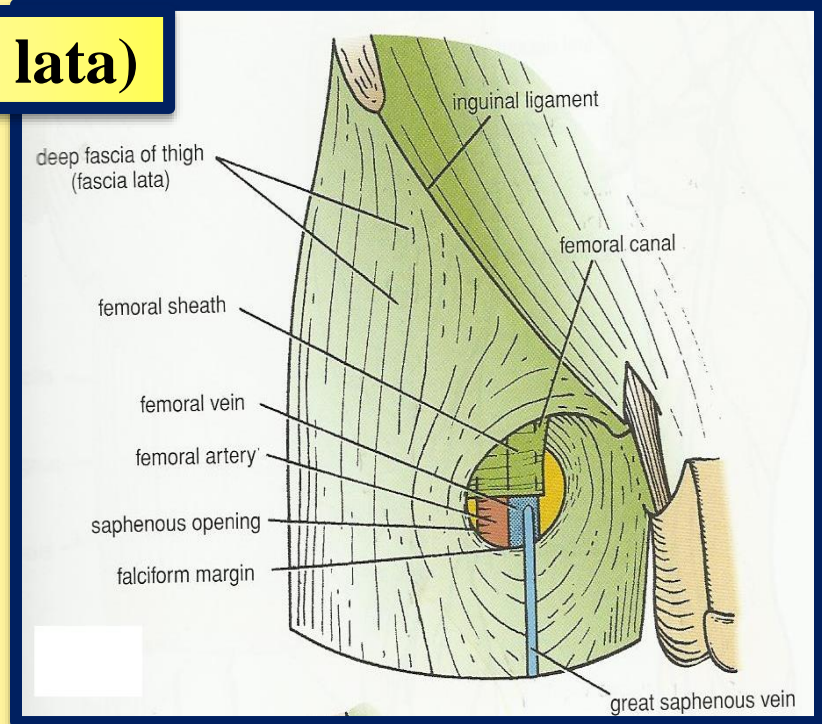
- 1- Great Saphenous vein
- 2- superficial branches of the femoral artery
- 3- Lymphatics.

Fascia lata is connected to the linea aspera by

**three intermuscular septa;**

- 1- *Medial intermuscular septum*
- 2- *Lateral intermuscular septum*
- 3- *Posterior intermuscular septum*

Thus the deep fascia and septa divide the thigh into three compartment; **Anterior**, **Posterior** and **Medial**.





# **FASCIAL COMPARTMENTS OF THE THIGH**



# Fascial Compartments of the Thigh

Fascia lata is connected to the  
linea aspera by

three intermuscular septa;

*1- Medial intermuscular septum*

*2- Lateral intermuscular  
septum*

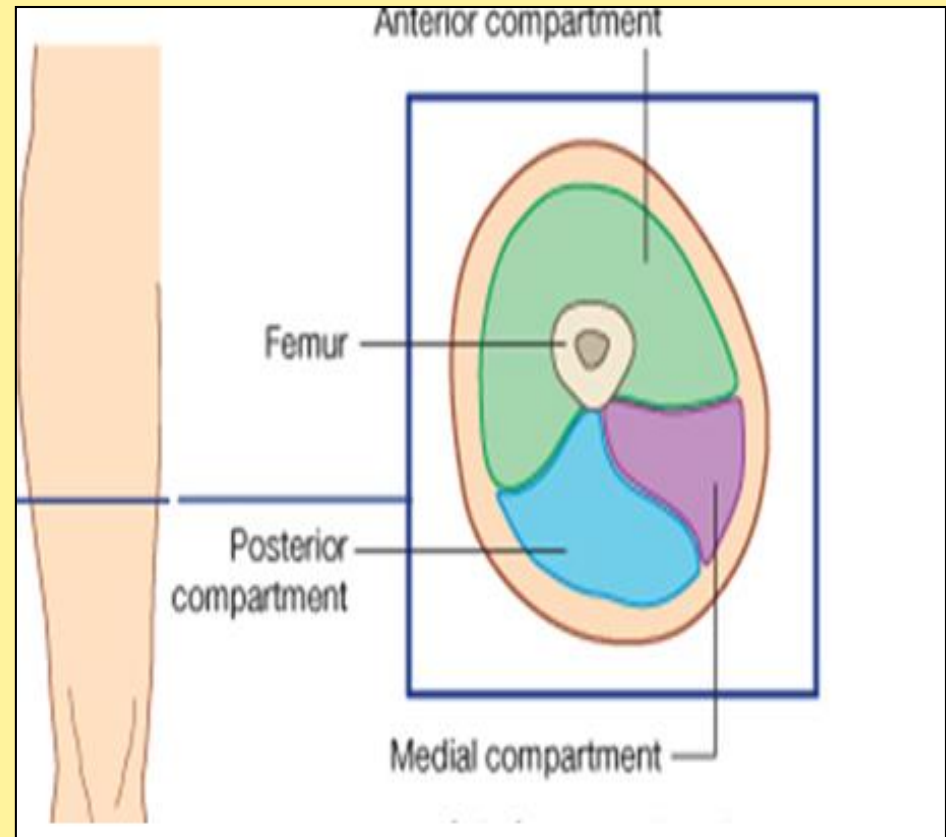
*3- Posterior intermuscular  
septum*

Thus the deep fascia and septa  
divide the thigh into three  
compartment;

Anterior

Posterior

Medial.



# Contents of the Anterior Fascial Compartment of the Thigh

1-Muscles: *Sartorius, iliacus, psoas, pectineus, and quadriceps femoris*

2-Blood supply: *Femoral artery*

3-Nerve supply: *Femoral nerve*

*Note: that not all the contents of the anterior compartment have the Same function. For example psoas is the **main flexor** of the thigh at the hip joint while quadriceps femoris is the **main extensor** of the leg at the knee joint.*





# *Sartorius*

**Origin:** *Anterior superior iliac spine*

**Insertion:** *Upper medial surface of shaft of tibia*

**Nerve supply:** *Femoral nerve*

**Actions:** *Flexes, abducts, laterally rotates thigh at hip joint*  
*Flexes and medially rotates leg at knee joint*

# *Pectineus*

**Origin:** *Superior ramus of pubis*

**Insertion:** *Upper end of linea aspera of shaft of femur*

**Nerve supply:** *Femoral nerve?*

**Actions:** *Flexes and adducts thigh at hip joint*



# ***Psoas***

**Origin:** *Transverse processes, bodies, and intervertebral discs of the 12th thoracic and five lumbar vertebrae*

**Insertion:** *With iliacus into lesser trochanter of femur*

**Nerve supply:** *Lumbar plexus*

**Actions:** *Flexes thigh on trunk; if thigh is fixed, it flexes the trunk on thigh as in sitting up from lying down.*

## ***Iliacus***

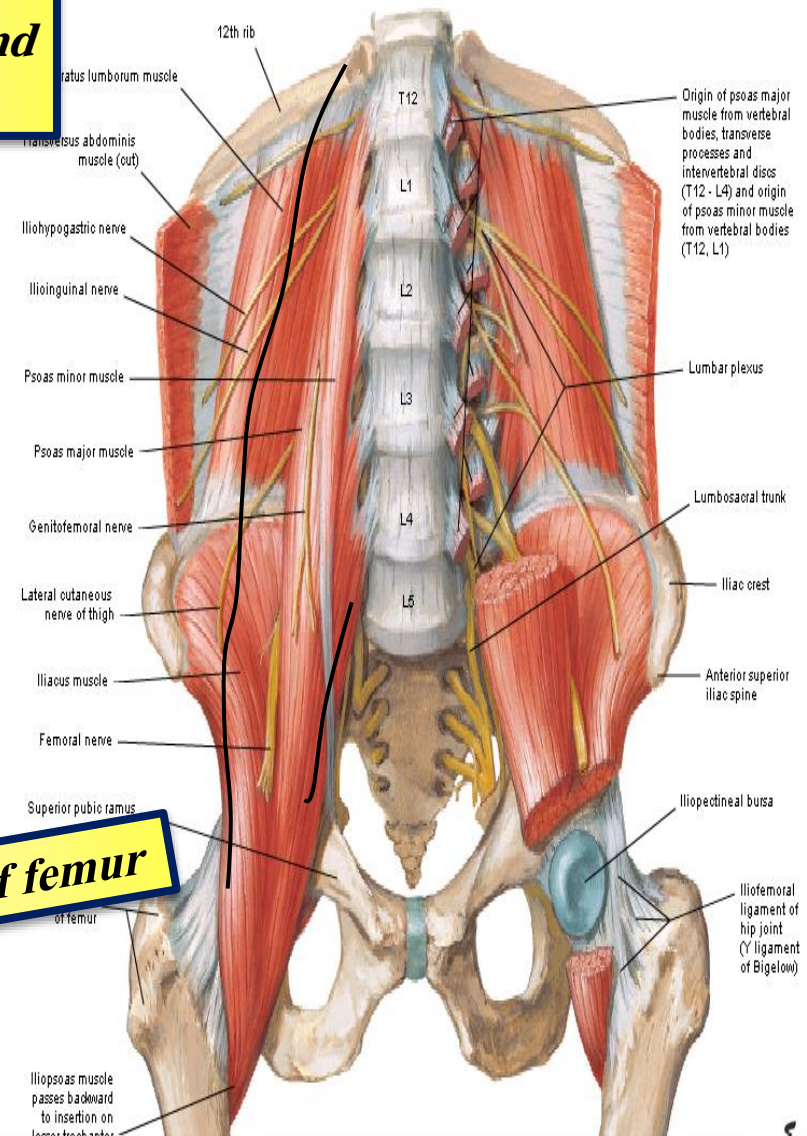
**Origin:** *Iliac fossa of hip bone*

**Insertion:** *With psoas into lesser trochanter of femur*

**Nerve supply:** *Femoral nerve*

**Actions:** *Flexes thigh on trunk; if thigh is fixed, it flexes the trunk on the thigh as in sitting up from lying down (the same as psoas).*

Psoas and Iliacus Muscles



Consisting of:

- 1- The rectus femoris
- 2- The vastus intermedius
- 3- The vastus lateralis
- 4- The vastus medialis

## *Rectus femoris*

*Originates by two heads*

**Straight** head from *anterior inferior iliac spine*  
**Reflected** head from *ilium above acetabulum*

## *Vastus lateralis*

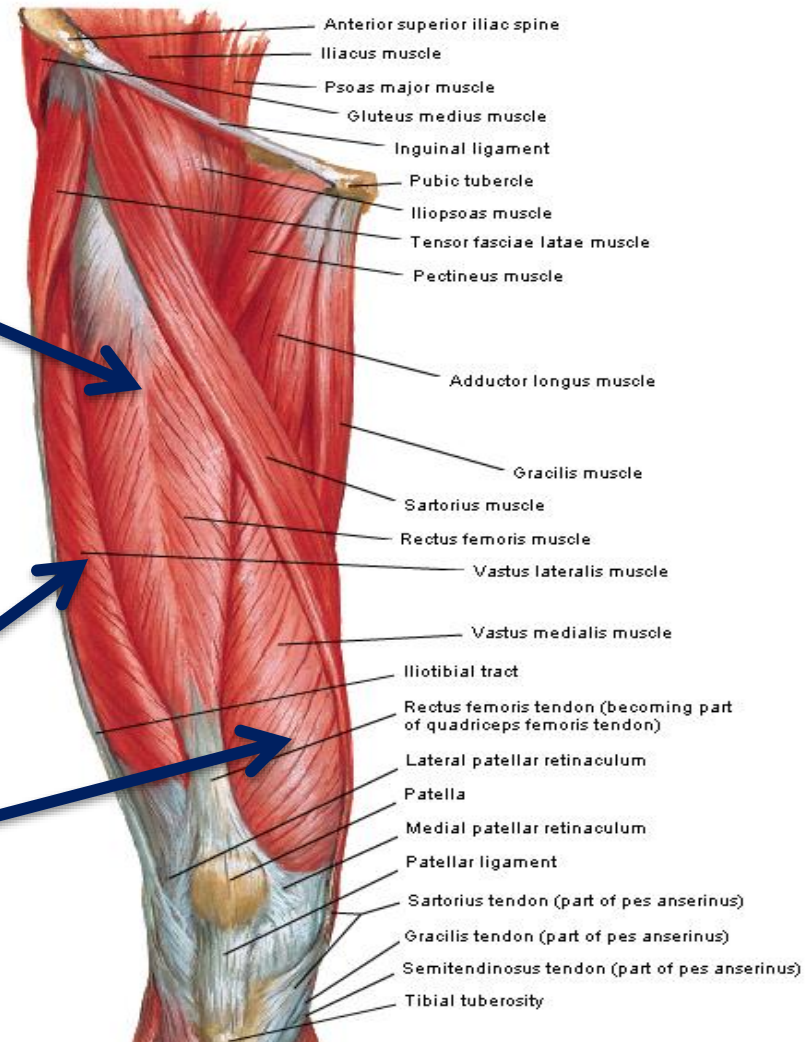
**Origin** : Upper end and shaft of femur  
(linear origin)

## *Vastus medialis*

**Origin** : Upper end and shaft of femur (linear origin)

## The quadriceps femoris muscle

Muscles of Thigh  
Anterior View - Superficial Dissection





# *Vastus intermedius*

***Origin:*** Anterior and lateral surfaces of shaft of femur

***Insertion:*** the four heads are attached to the patella and, via the ligamentum patellae, to the tibial tuberosity (the real insertion)

***Actions:*** the quadriceps femoris muscle

Extends the leg at knee joint; flexes thigh at hip joint (only the rectus femoris head).

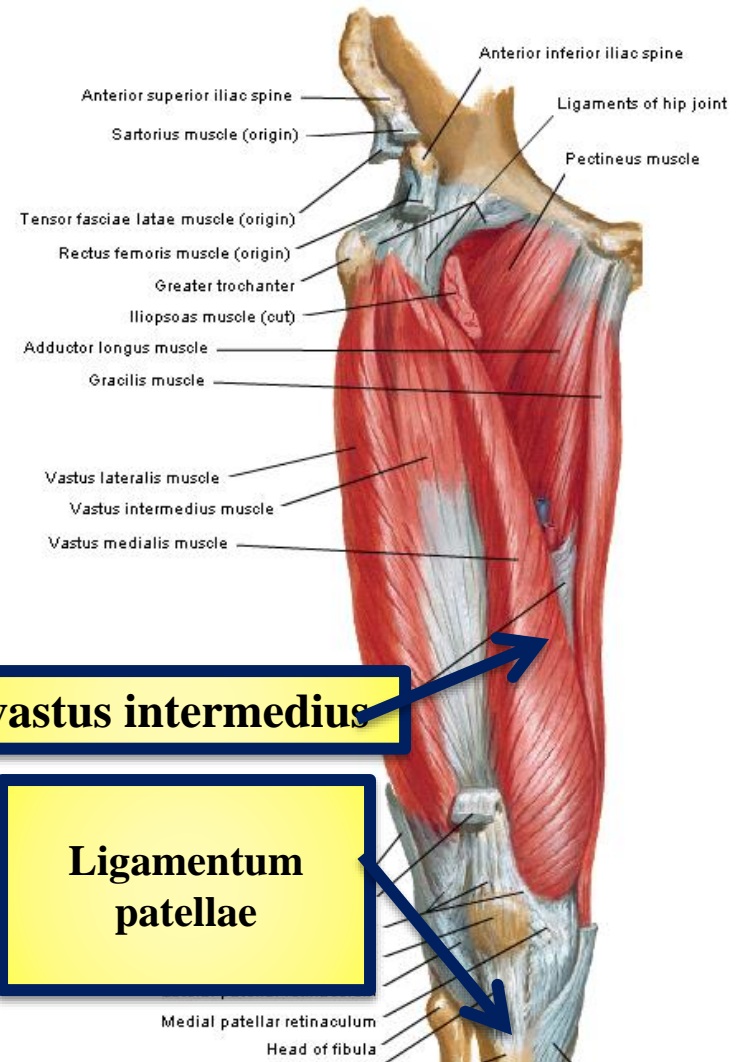
***R e m e m b e r***

**Quadriceps femoris is the main extensor of the knee joint**

***Nerve supply :*** femoral nerve

## The quadriceps femoris muscle

Muscles of Thigh  
Anterior View - Deeper Dissection



# ***Femoral Nerve***

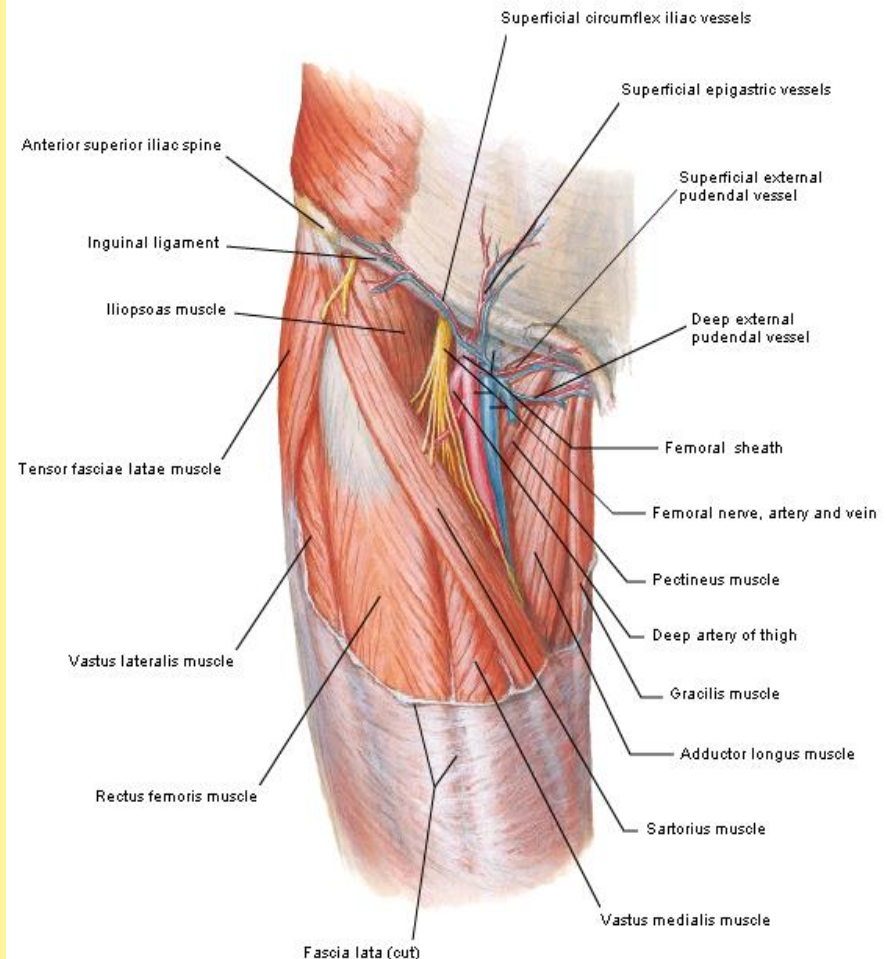
- is the largest branch of the lumbar plexus (L2, 3, and 4).
- It emerges from **the lateral border** of the psoas muscle
- enters the thigh lateral to the femoral artery and the femoral sheath, behind the inguinal ligament.
- it terminates by dividing into anterior and posterior divisions.

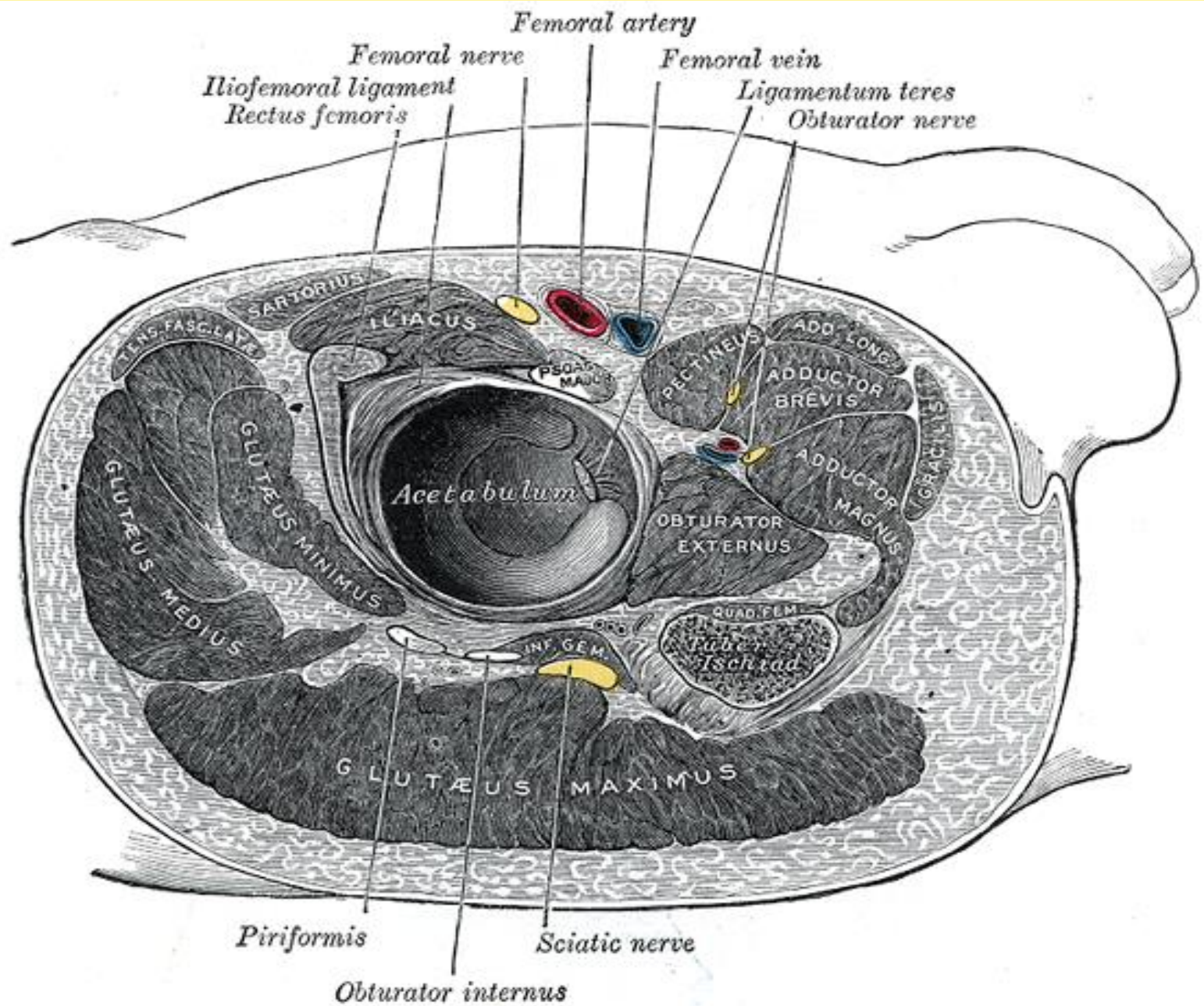
## **Anterior Division**

The anterior division gives off **two cutaneous branches**

- 1- the medial cutaneous nerve of the thigh.**
- 2- the intermediate cutaneous nerve of the thigh**  
and **two muscular branches.**  
Nerve to **sartorius** and nerve to **pectineus muscles.**

## Arteries and Nerves of Thigh Superficial Anterior View







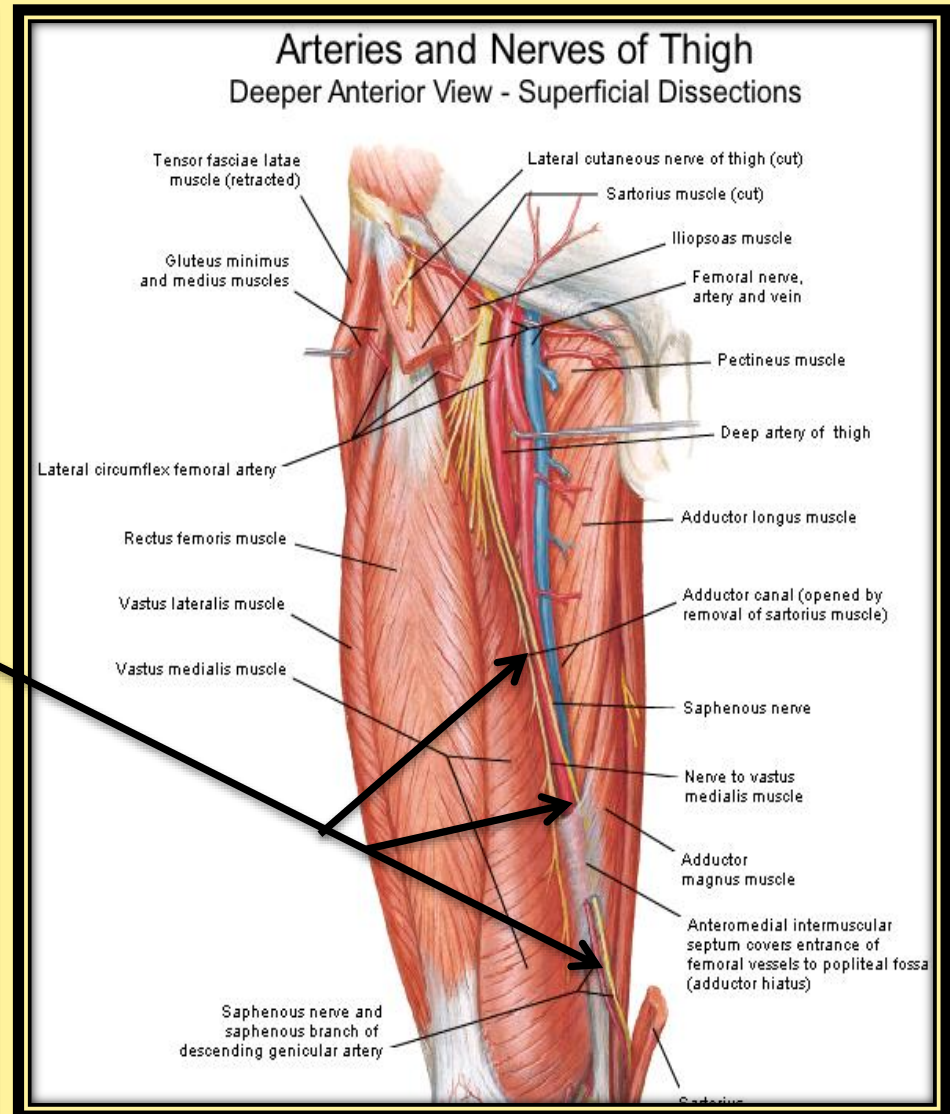
## Posterior Division

The posterior division gives off **one cutaneous branch**

**The Saphenous nerve**  
and *muscular branches to the quadriceps muscle.*

# THE SAPHENOUS NERVE

- runs downward and medially.
- It emerges between the tendons of sartorius and gracilis
- It then runs down in company with the **great Saphenous vein**.
- It passes **in front of the medial** malleolus and along the medial border of the foot, where it terminates in the region **of the ball of the big toe**



# articular branch

To the hip joint

Why?

is derived from the nerve to the rectus femoris muscle

are three in number.

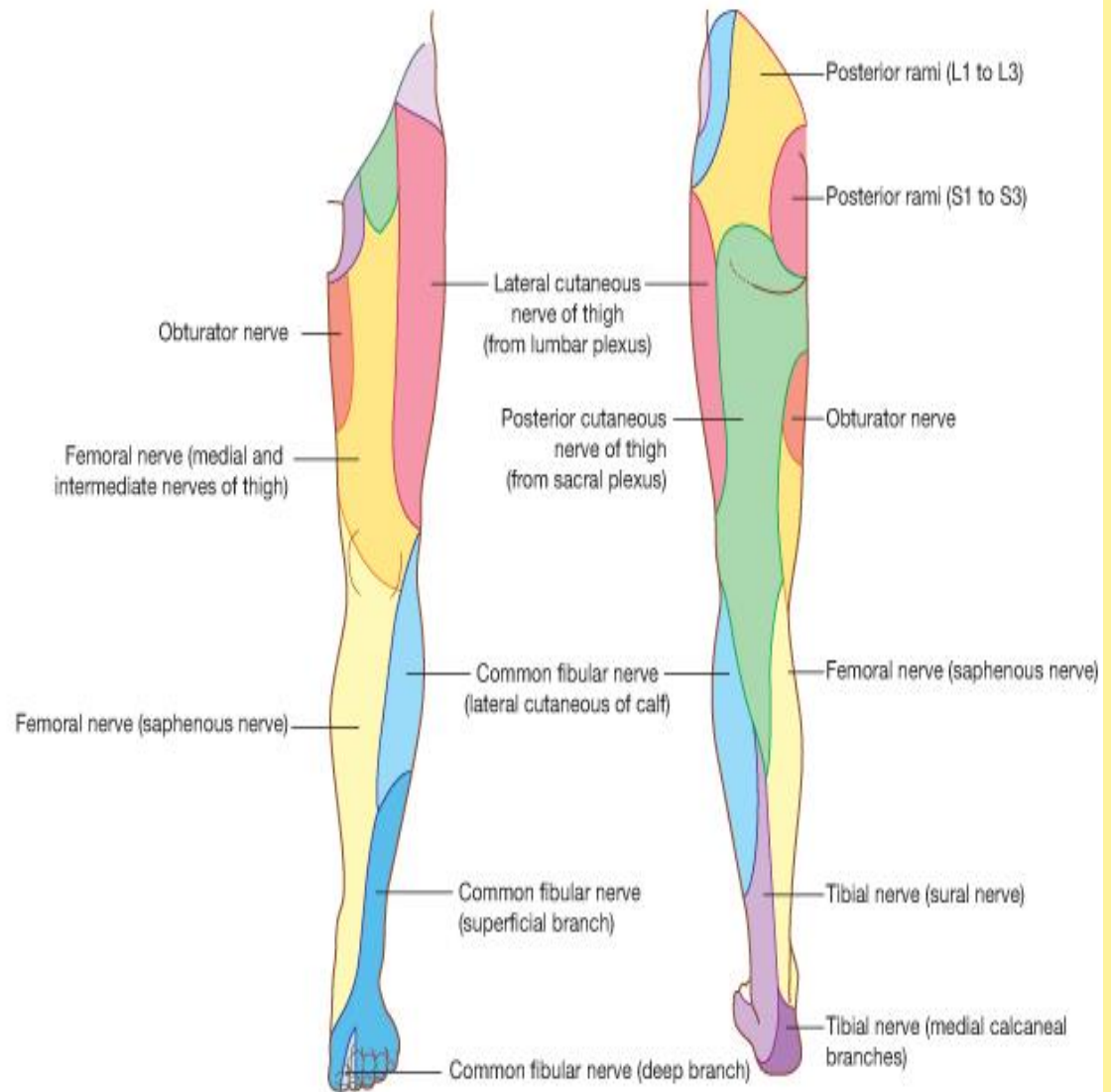
To the knee joint

➤ *the first one* is derived from the nerve to the *vastus lateralis* muscle. Which penetrates the capsule of the joint on its anterior aspect.

➤ *The second one* which is derived from the nerve to the *vastus medialis*, can usually descend downward on the surface of this muscle (*to reach the joint the nerve then penetrates the muscular fibers to accompany the articular branch of the highest genicular artery where it pierces the medial side of the articular capsule, and supplies the synovial membrane*)

*The third branch* is derived from the nerve to the *vastus intermedius*

The **saphenous nerve** accompanies the femoral artery through the adductor canal, but does not pass through the adductor hiatus with the femoral artery. Rather, the saphenous nerve penetrates directly through connective tissues near the end of the canal to appear between the sartorius and gracilis muscles on the medial side of the knee. Here the saphenous nerve penetrates deep fascia and continues down the medial side of the leg to the foot, and supplies skin on the medial side of the knee, leg, and foot.



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# MEDIAL FASCIAL COMPARTMENT OF THE THIGH



**Why do we need adductors for the hip joint**

!

**Can you think of a bone that can be suitable to provide an origin for an adductor muscle of the hip joint?**

**The Pubic bone**

**Why?**

**Would you be able to think of a bone that can be a good insertion FOR the adductor muscles ?**

**The femur**  
**Why?**



# *Contents of the medial fascial compartment*

## **1-Muscles**

*GRACILIS*

*ADDUCTOR LONGUS*

*ADDUCTOR BREVIS*

*ADDUCTOR MAGNUS*

*OBTURATOR EXTERNUS*

In the practical sessions  
Remember that the adductor muscles are  
arranged in three layers in similar way to  
that of the pages of the book .  
The first layer (page) contains: pectineus  
and adductor longus  
The second layer contains: add. Brevis only  
The third layer contains: add. Magnus only

**2-Nerve supply:** *Obturator nerve*

**3-blood supply:** *Profunda femoris  
artery  
and obturator artery*



# Muscles of the Medial Fascial Compartment of the Thigh

## *Adductor longus*

**Origin:** *Body of pubis, medial to pubic tubercle*

**Insertion:** *Posterior surface of shaft of femur (linea aspera)*

**Nerve supply:** *Obturator nerve*

**Actions:** *Adducts thigh at hip joint*

## *Adductor brevis*

**Origin:** *Inferior ramus of pubis*

**Insertion:** *Posterior surface of shaft of femur (linea aspera)*

**Nerve supply:** *Obturator nerve*

**Actions:** *Adducts thigh at hip joint*

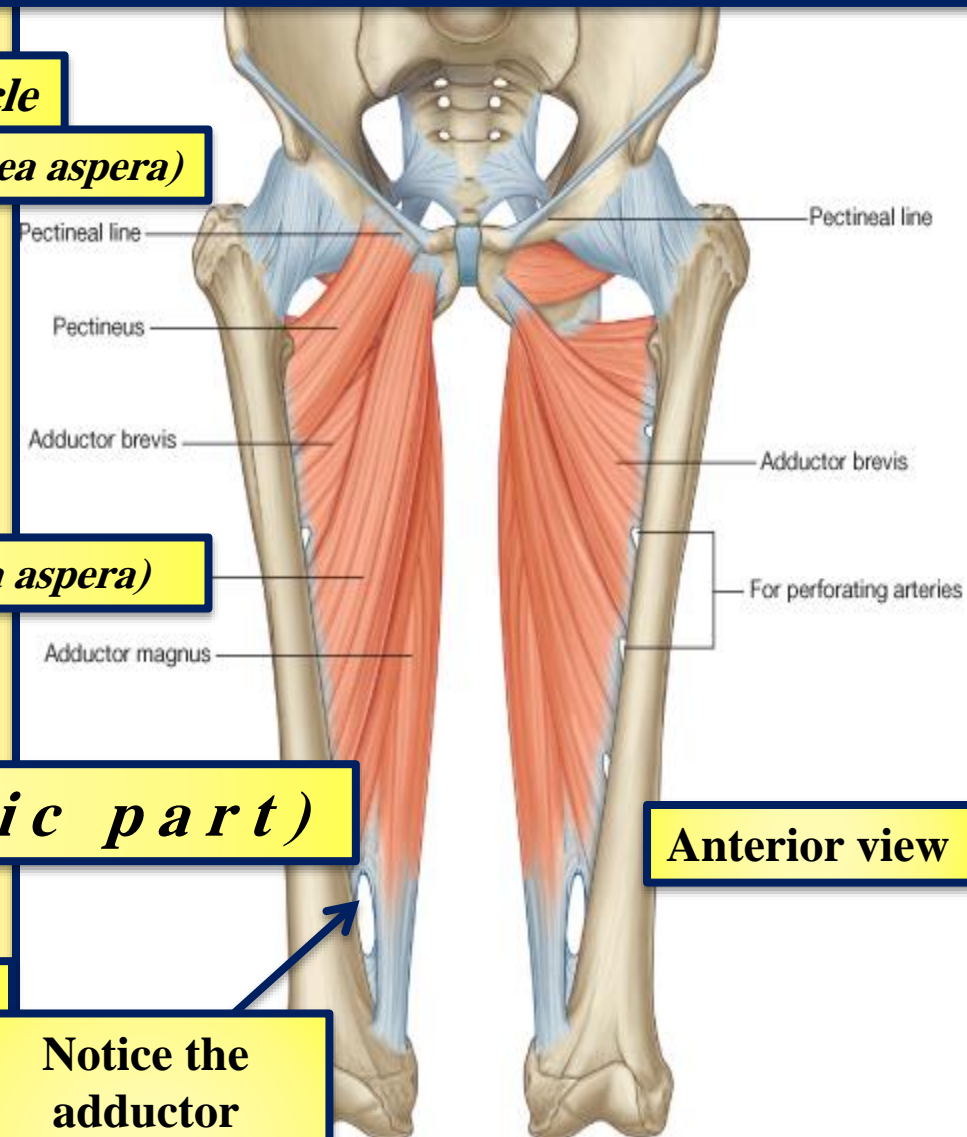
## *Adductor magnus (pubic part)*

**Origin:** *Ischio-pubic ramus*

**Insertion:** *mainly linea aspera, gluteal tuberosity and medial supracondylar line*

**Nerve supply:** *obturator nerve*

**Actions:** *Adducts thigh at hip joint*



Notice the adductor hiatus. Which structures pass through it?



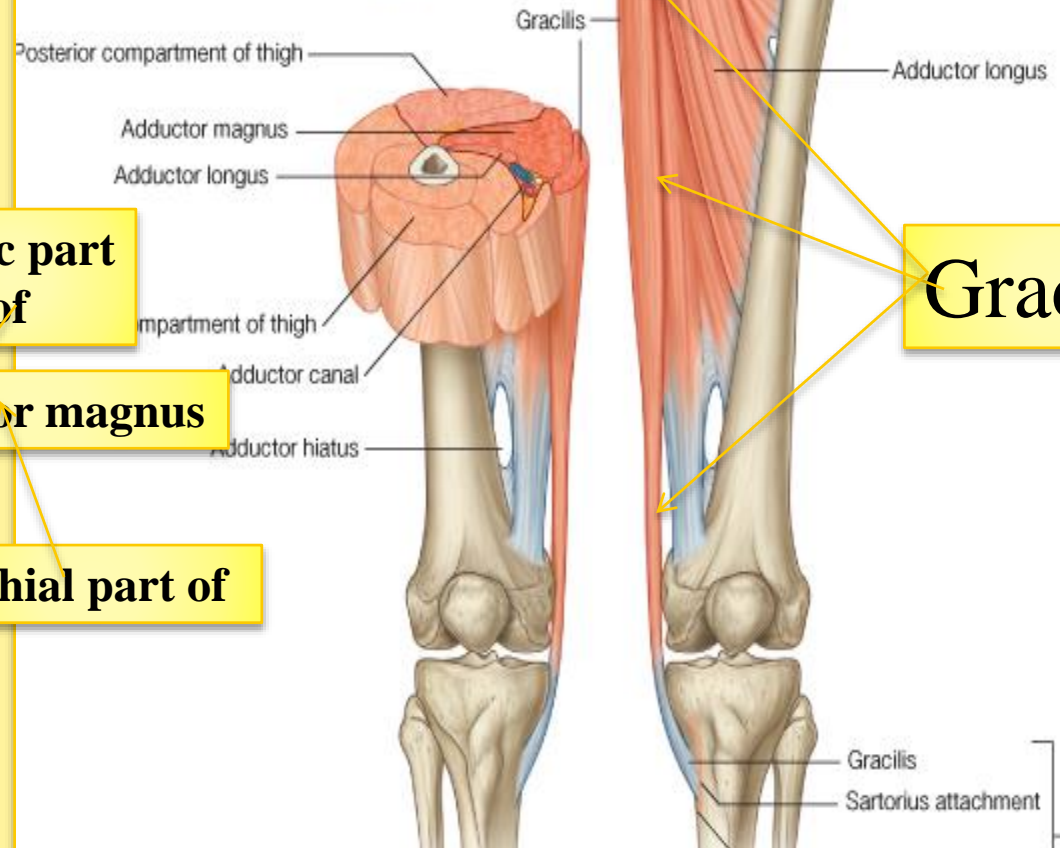
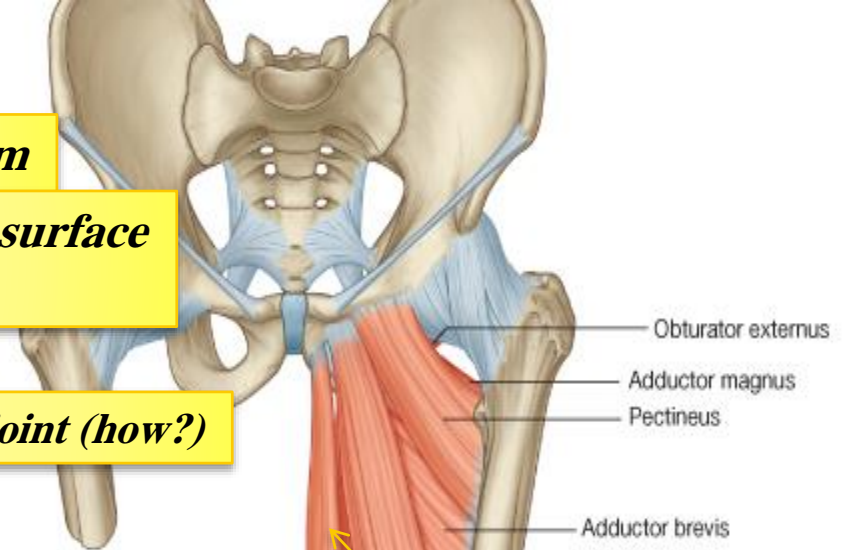
# Gracilis muscle

**Origin:** *Inferior ramus of pubis, ramus of ischium*

**Insertion:** *Upper part of shaft of tibia on medial surface (SGS) area*

**Nerve supply:** *Obturator nerve*

**Actions:** *Adducts thigh at hip joint; flexes leg at knee joint (how?)*

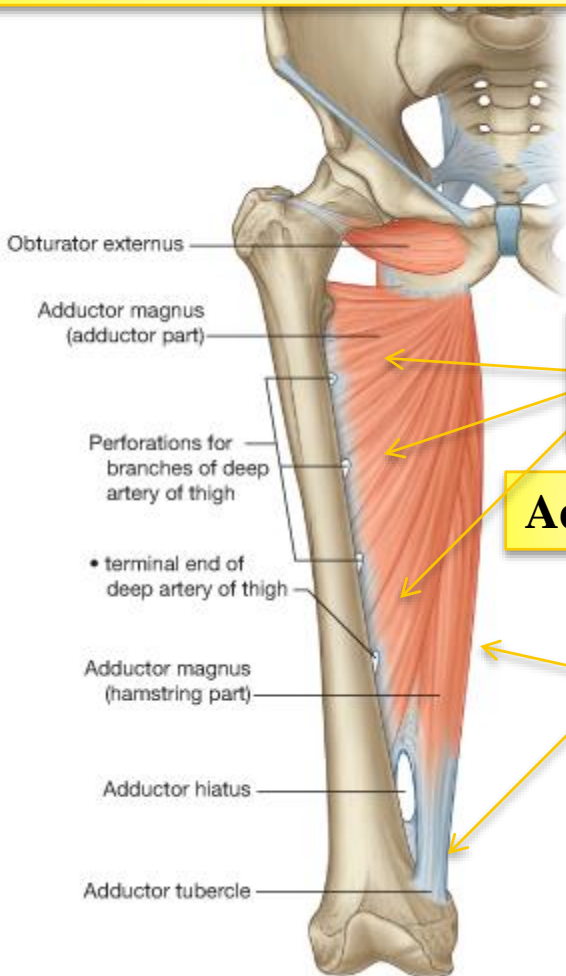


**pubic part  
of**

**Adductor magnus**

**Ischial part of**

**Gracilis**



# Obturator externus

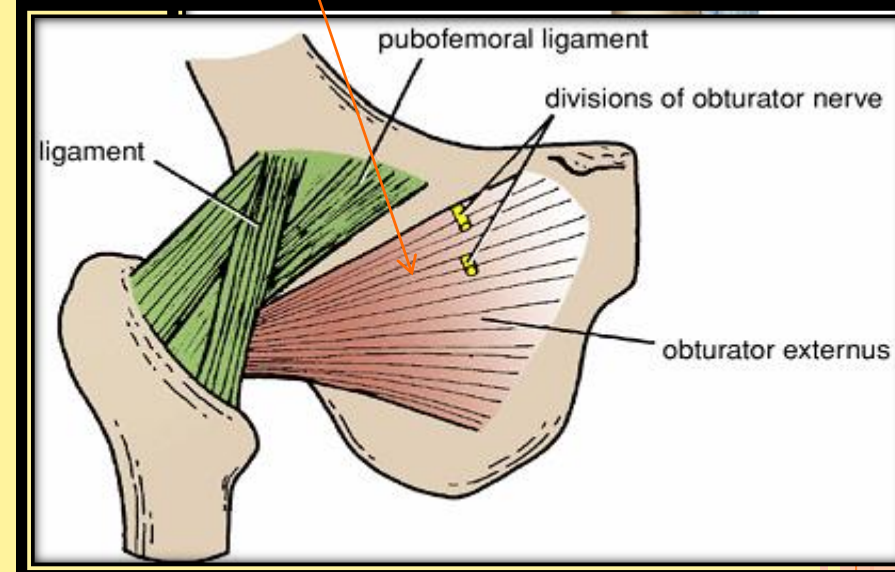
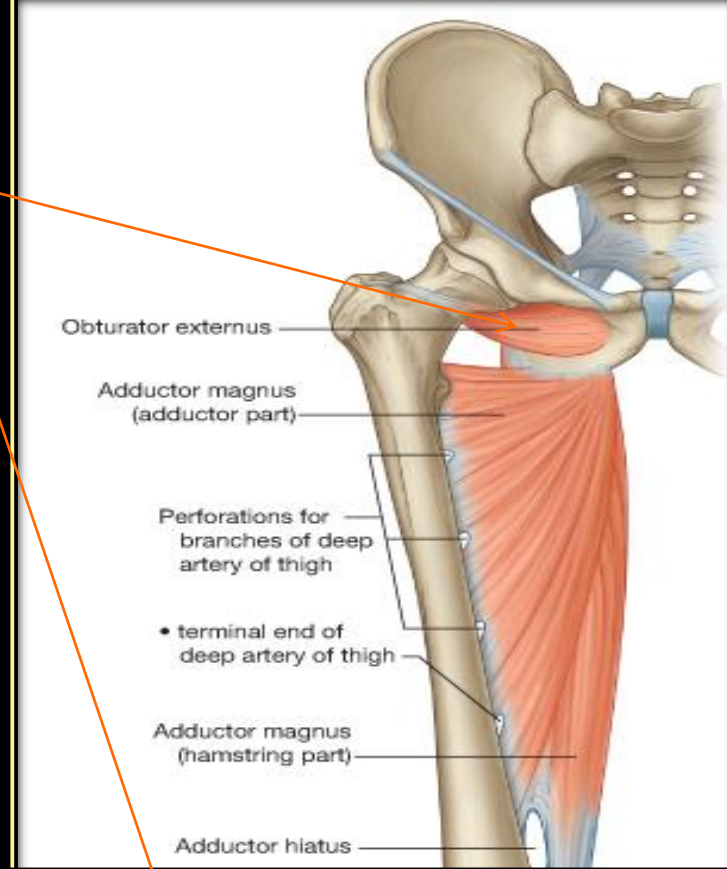
**Origin:** Outer surface of obturator membrane and pubic and ischial rami

**Insertion:** Medial surface of greater trochanter

**Nerve supply:** Obturator nerve

**Action:** Laterally rotates thigh at hip joint

**One of the short lateral rotator muscles of the hip joint**



# **Action of the adductor muscles as a group**

**1) Adduct the thigh although adduction of the thigh is not important in the mechanism of walking and standing**

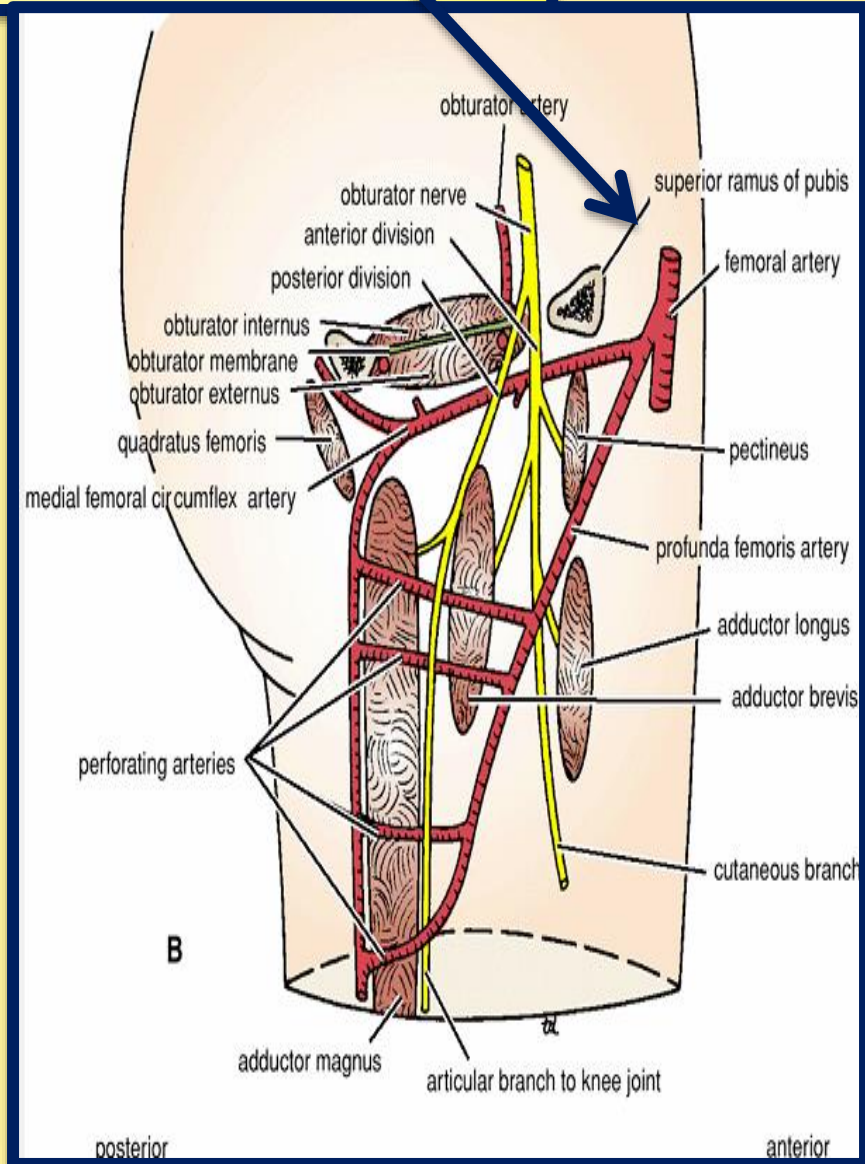
**2-Because their origin is in front of the hip joint ( in a plane that is in front of the hip joint) they can flex the thigh at the hip joint**

**3- Because their origin is from the medial Side of the hip while their insertion is on the back of the thigh They can assist in lateral rotation of the thigh**



# Obturator Nerve

- Arises from the lumbar plexus (L2, 3, and 4) anterior divisions
- Emerges on the **medial border of the psoas muscle**
- *It divides into anterior and posterior divisions*
- The anterior division (**Motor**) it gives muscular branches to :  
*Gracilis*  
*Adductor brevis*  
*Adductor longus*  
and occasionally to the *Pectineus*.
- Sensory
- It gives articular branches to the hip joint



➤ contributes to the **subsartorial plexus**  
supplies the skin **on the medial side of the thigh.**



### ➤ *The posterior division*

It gives muscular branches (MOTOR) to the

*Obturator externus*

*The adductor part of the adductor magnus*

and occasionally to *The adductor brevis*

It supplies the knee joint (SENSORY).

Referred pain

Is the pain perceived at a location other than the site of the painful stimulus.

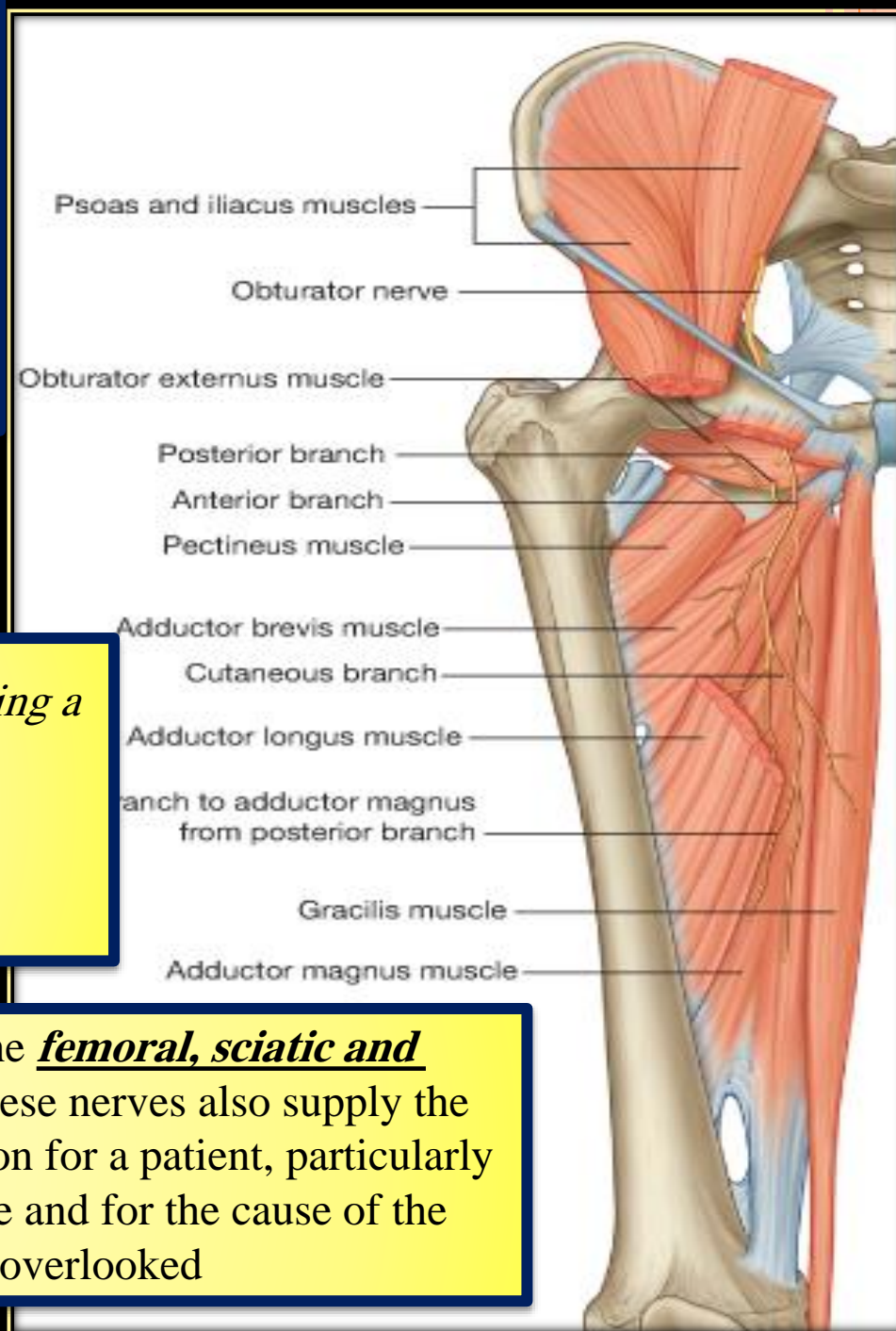
**Hilton's law** states that the nerves crossing a joint supply

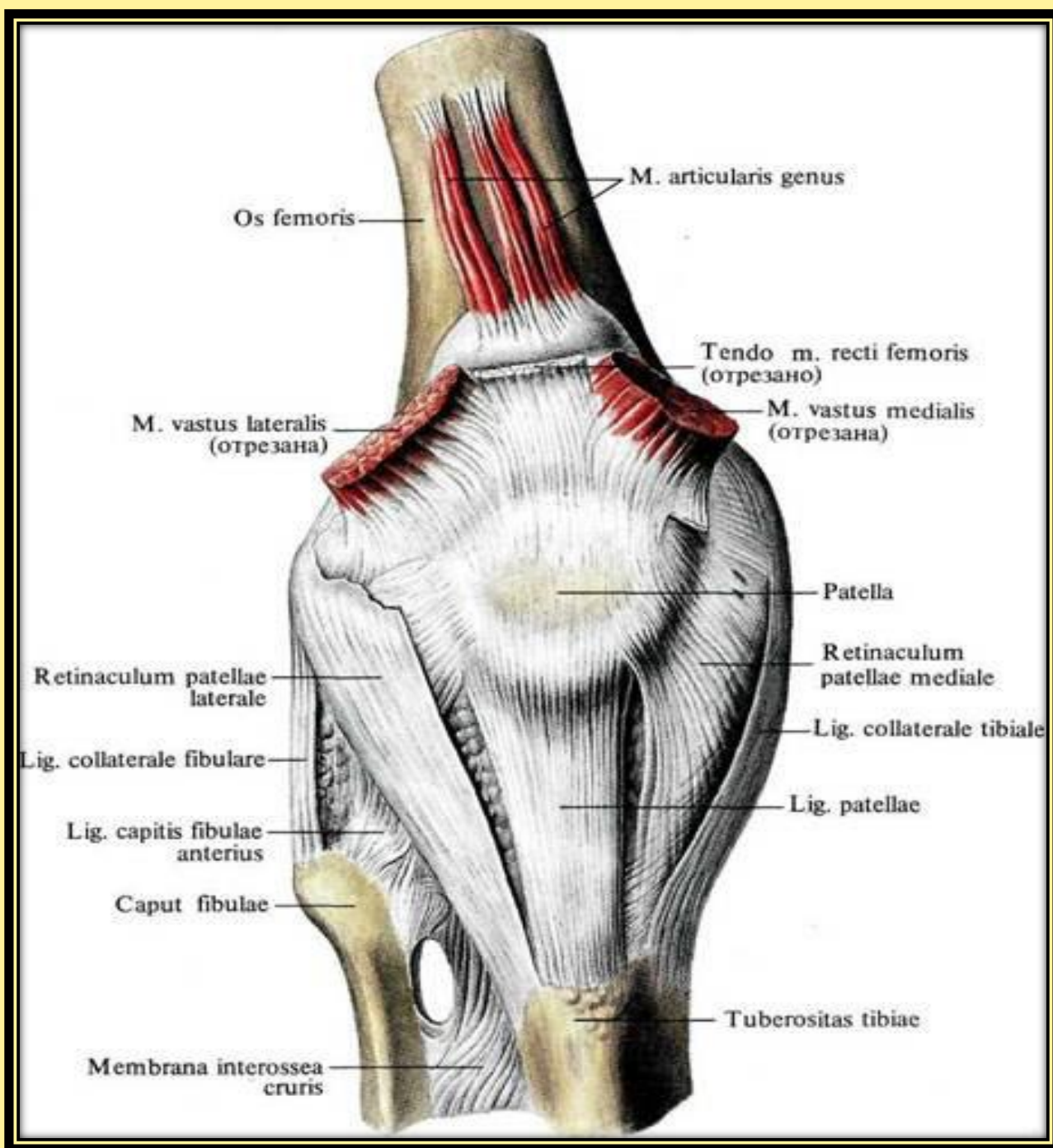
1- the muscles acting on it

2- the skin over the joint

3- the joint itself.

For example, The hip receives fibres from the femoral, sciatic and obturator nerves. It is important to note that these nerves also supply the knee joint and, for this reason, it is not uncommon for a patient, particularly a child, to complain bitterly of pain in the knee and for the cause of the mischief, the diseased hip, to be overlooked





Articularis Genu – Originating from the latin roots “articularis” – pertaining to the joints, and “Genu” – pertaining to or relating to the knee (or knee shaped).

**Articularis Genu:**

Origin: Anterior surface of distal part of the body of the femur

Insertion: Proximal part of the suprapatellar bursa (an extension of the synovial cavity of the knee joint) and proximal anterior joint capsule of the knee

The articularis genu is a small muscle that may be blended with the vastus intermedius, but is usually distinct from it. This muscle lies deep to the vastus intermedius and rectus femoris and inserts deep to the patella.

