Lecture 08

THIGH MUSCLES
ANTERIOR COMPARTMENT

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(a) Patella (kneecap)

- Apex
- Anterior
- Facet for medial condyle of femur
- Surface for patellar ligament

(b) Femur (thigh bone)

- Neck
- Fovea capitis
- Head
- Greater trochanter
- Lesser trochanter
- Intertrochanteric line
- Intertrochanteric crest
- Gluteal tuberosity
- Linea aspera
- Medial and lateral supracondylar lines
- Intercondylar fossa
- Medial condyle
- Adductor tubercle
- Medial epicondyle
- Lateral epicondyle
- Lateral condyle
- Lateral epicondyle
INTRODUCTION TO THE THIGH MUSCLES.

- The musculature of the thigh can be split into three sections by intermuscular septa; Anterior, Medial and Posterior.
- Each compartment has a distinct innervation and function.
  - The Anterior compartment muscle are the extensors of knee.
  - The Medial compartment muscle are adductors of thigh.
  - The Posterior compartment muscle are extensor of hip and flexors of knee.
ANTERIOR MUSCLES OF THIGH

- The muscles in the anterior compartment of the thigh are innervated by the femoral nerve (L2-L4), and as a general rule, act to extend the leg at the knee joint.

- There are three major muscles in the anterior thigh –:
  - The pectineus,
  - Sartorius and
  - Quadriceps femoris.

- In addition to these, the end of the iliopsoas muscle passes into the anterior compartment.
ANTERIOR COMPARTMENT MUSCLE

**Sartorius:**
- Is a long strap like and the most superficial muscle of the thigh desends obliquely
- Is making one of the tendon of Pes anserinus.
- In the upper 1/3 of the thigh the med margin of it makes the lat margin of Femoral triangle.

**Origin:**
- Anterior superior iliac spine.

**Insertion:**
- Anterior surface of Tibia just inferiolateral to its tuberosity.

**Action:**
- Flexes the thigh at hip and leg at knee joint.

**Innervation:**
- Femoral nerve (L2-L3)
**QUADRICEPS FEMORIS**

- The quadriceps femoris consists of four individual muscles; three *vasti* muscles and the *rectus femoris*.

- They form the main bulk of the thigh, and collectively are one of the most powerful muscle in the body.

- The muscles that form quadriceps femoris unite proximal to the knee, and distally **attach to the patella via the patella tendon.**

- The patella attaches to the tibia by the **patella ligament.**

- The quadriceps femoris is the main extensor of the knee.
Quadriceps Femoris MUSCLE ORIGIN

- **Rectus Femoris:**
  - Ant. inf. iliac spine and Ilium superior to acetabulum.

- **Vastus Lateralis:**
  - Largest bulk of muscle
  - Greater trochanter and lateral lip of linea aspera of Femur.

- **Vastus Medialis:**
  - Intertrochantric line and medial lip of linea aspera of Femur.

- **Vastus Intermedius:**
  - Anterior and Lateral surface of shaft of Femur.
Quadriceps Femoris

**INSERTION:**

- **Rectus femoris:**
  - Quadriceps Femoris tendon.

- **Vastus Lateralis:**
  - Q F T

- **Vastus Medialis:**
  - Q F T and medial border of Patella

- **Vastus Intermedius:**
  - Q F T and lateral margin of Patella
Anterior Compartment

- **Psoas major:**
  - **Origin:** Post abdominal wall, transverse processes of all lumbar vertebrae and disk between them.
  - **Insertion:** Lesser trochanter of Femur.
  - **Action:** Flexing thigh at hip joint and stabilizing the joint.
  - **Innervation:** Ant rami of lumbar (L1-L2)

**Note:** It is the only muscle of the body which is present in three regions of the body, i.e.: Abdomen, pelvis and thigh.
Anterior Compartment

- **Iliacus**:  
  - **Origin**: Interior of the ilium i.e: iliac fossa and ASIS.  
  - **Insertion**: Lesser trochanter of Femur.  
  - **Action**: Flexing the thigh at hip joint and stabilizing the hip joint.  
  - **Innervation**: Femoral nerve (L2-L3)
**PECTINEUS**

- The pectineus muscle is a flat muscle that forms the base of the femoral triangle.
- It has a dual innervation, and thus can be considered a transitional muscle between the anterior thigh and medial thigh compartments.

**Attachments:**
- It originates from the pectineal line on the anterior surface of the pelvis, and
- Attaches to the pectineal line on the posterior side of the femur, just inferior to the lesser trochanter.

**Actions:**
- Adduction and flexion at the hip joint.

**Innervation:**
- Femoral nerve.
- May also receive a branch from the obturator nerve.
The femoral artery is a large artery in the thigh and the main arterial supply to the leg.

It enters the thigh from behind the inguinal ligament as the common femoral artery, a continuation of the external iliac artery.

Here, it lies midway between the anterior superior iliac spine and the symphysis pubis.
FEMORAL ARTERY......CONT

- The common femoral artery gives off the profunda femoris artery and becomes the superficial femoral artery to descend along the anteromedial part of the thigh in the femoral triangle.

- It enters and passes through the adductor canal, and becomes the popliteal artery as it passes through an opening in adductor magnus near the junction of the middle and distal thirds of the thigh.

- Its first three or four centimetres are enclosed, with the femoral vein, in the femoral sheath.
Femoral Artery......Relations:

The *relations* of the femoral artery are as follows:

**Anteriorly:**
- In the upper part of its course, it is superficial and is covered by skin and fascia.
- In the lower part of its course, it passes behind the sartorius muscle.

**Posteriorly:**
- The artery lies on the psoas, which separates it from the hip joint, the pectineus, and the adductor longus.
- The femoral vein intervenes between the artery and the adductor longus.

**Medially:**
- It is related to the femoral vein in the upper part of its course.

**Laterally:**
- The femoral nerve and its branches.
The femoral artery gives off several branches in the thigh which include:

- The superficial circumflex iliac artery is a small branch that runs up to the region of the anterior superior iliac spine.

- The superficial epigastric artery is a small branch that crosses the inguinal ligament and runs to the region of the **umbilicus**.

- The superficial external pudendal artery is a small branch that runs medially to supply the skin of the scrotum (or labium majus).

- The deep external pudendal artery runs medially and supplies the skin of the scrotum (or labium majus).
The **profunda femoris artery** is a large and important branch that arises from the lateral side of the femoral artery about 1.5 in. (4 cm) below the inguinal ligament.

It passes medially behind the femoral vessels and enters the medial fascial compartment of the thigh.

It ends by becoming the fourth perforating artery.

At its origin, it gives off the medial and lateral femoral circumflex arteries, and during its course it gives off three perforating arteries.

The **descending genicular artery** is a small branch that arises from the femoral artery near its termination within the adductor canal. It assists in supplying the knee joint.

In clinical parlance, the part of the femoral artery proximal to the origin of profunda femoris is often termed the common femoral artery, while that distal to the origin of the profunda is termed the superficial femoral artery.
Femoral vein

- The femoral vein is a blood vessel that accompanies the femoral artery in the femoral sheath.
- It begins at the adductor canal (also known as *Hunter's canal*) and is a continuation of the popliteal vein.
- It ends at the inferior margin of the inguinal ligament, where it becomes the external iliac vein.

**Drainage:**

- Several large veins drain into the Femoral vein:
  - Popliteal vein.
  - Profunda femoris vein.
  - Great saphenous vein.
Superficial circumflex iliac V
Femoral V
Anterior lateral tributary
Superficial epigastric V
Superficial ext pudendal V
Posterior medial tributary
Posterior arch vein
GSV
To GSV
To deep system via perforator
Popliteal V
SSV
CLINICAL SIGNIFICANCE

- Occlusion of the femoral vein can be life-threatening.

- The practice of delivering recreational drugs intravenously using the femoral vein is relatively common amongst injecting drug users (IDUs).
Enjoy the little things in life... for one day you'll look back and realize they were the big things.

Robert Brault

Thank You......