



Musculoskeletal System

Sub-System

Anatomy – Lecture 20

Lecture Title

Lower Limb – Part 3

Lecture Date

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The Adductor canal (Sub-Sartorial, Hunter Canal)

It's a 15cm long triangular passageway in the middle 3rd of the thigh.

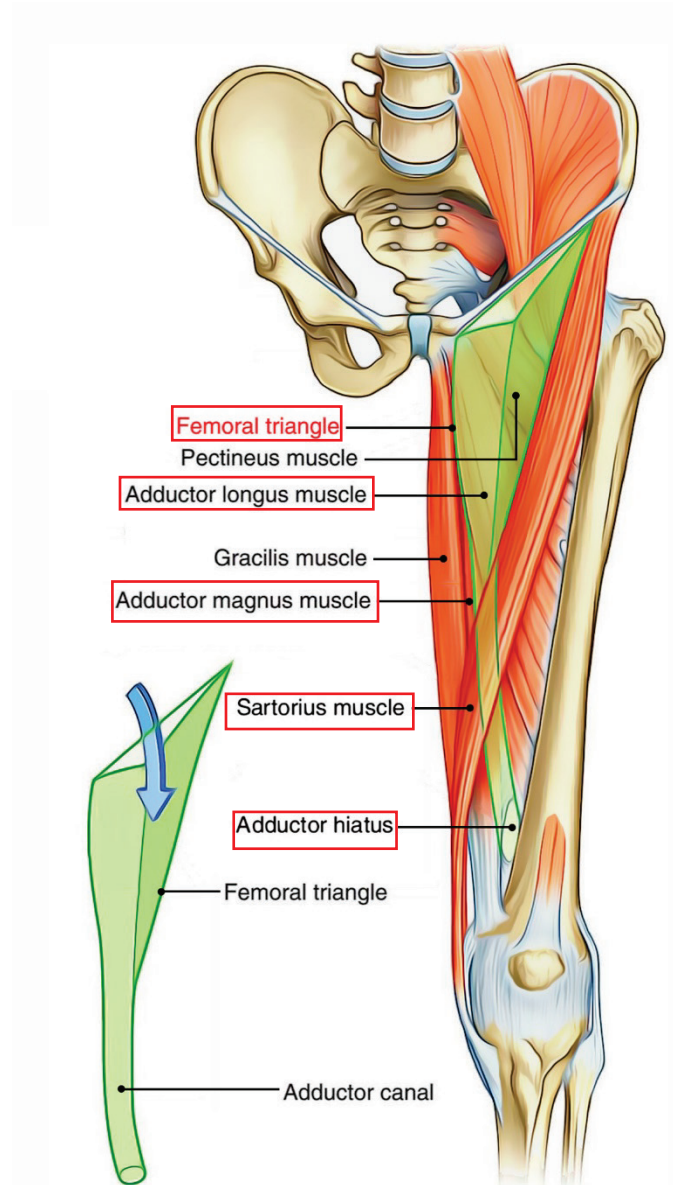
It extends from the **apex** of the **femoral triangle** (inferior angle) to the adductor hiatus deep to the **Sartorius muscle**.

It provides a passageway for the:

- **Femoral artery** & **vein**.
- **Saphenous nerve** (a branch from the femoral nerve which accompanies the great saphenous vein).
Note: the doctor said it's the longest nerve in the body but according to the web the longest nerve is the sciatic nerve
- Nerve to the **vastus medialis**
- & A **genicular (to the joint) branch** from the **posterior division** of the **obturator artery**.
Note: the posterior branch of the obturator a. is the **main** blood supply of the head of the femur in children, so if it's cut it will cause avascular necrosis of the head of the femur

It has **three** walls:

- **Anteromedial:** Sartorius m. & its fascia.
- **Posterior:** Adductor longus & Adductor magus muscles.
- **Lateral:** Vastus medialis muscle.



The abdominal aorta ends at the level of **L4** as the Lt & Rt **Common iliac arteries** each of which divides into an **External** & an **Internal iliac artery**.

The **External iliac** continues as the **Femoral artery** after passing the **inguinal point** of the **inguinal ligament**.

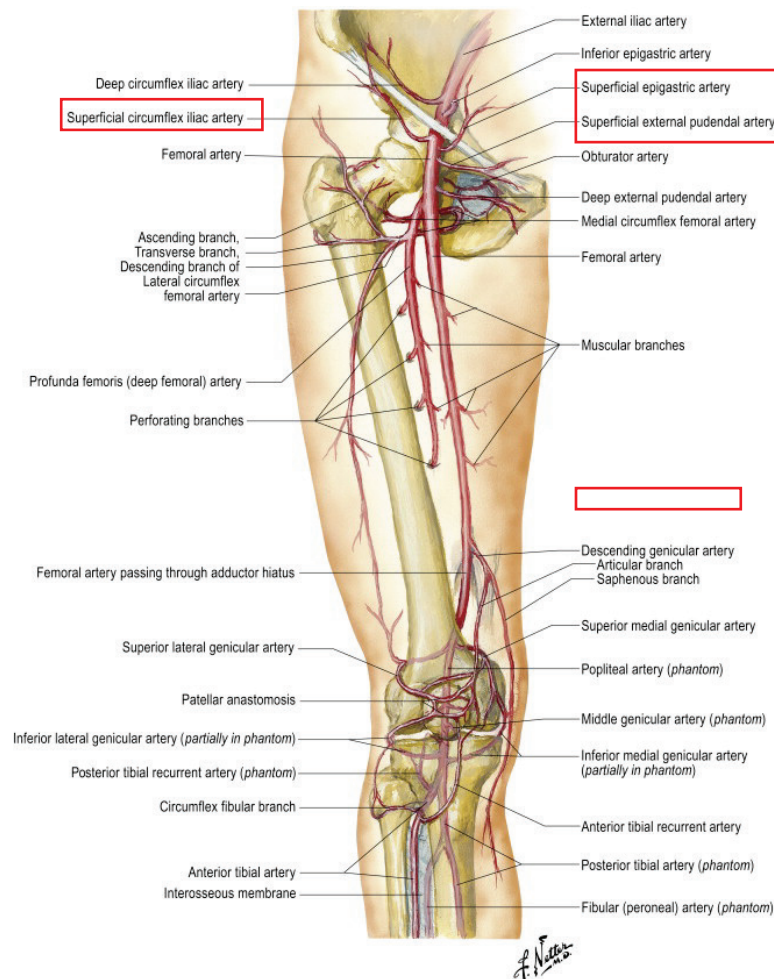
The **Internal iliac** supplies the **pelvic** & **gluteal** regions.

The Femoral Artery

- Chief artery of the thigh.
- Enters the femoral triangle deep to the mid-inguinal point between the **femoral nerve laterally** and the **femoral vein medially**.
- Courses through the adductor canal.
- Terminates at the adductor opening to become the popliteal artery.

Branches

- **Three** superficial branches from its proximal part (inside the femoral triangle) :
 - Superficial circumflex iliac
 - Superficial external pudendal
 - Superficial epigastric
- Profunda (deep) femoris
- Descending genicular artery from its distal part to the knee joint



Surface anatomy of the femoral artery

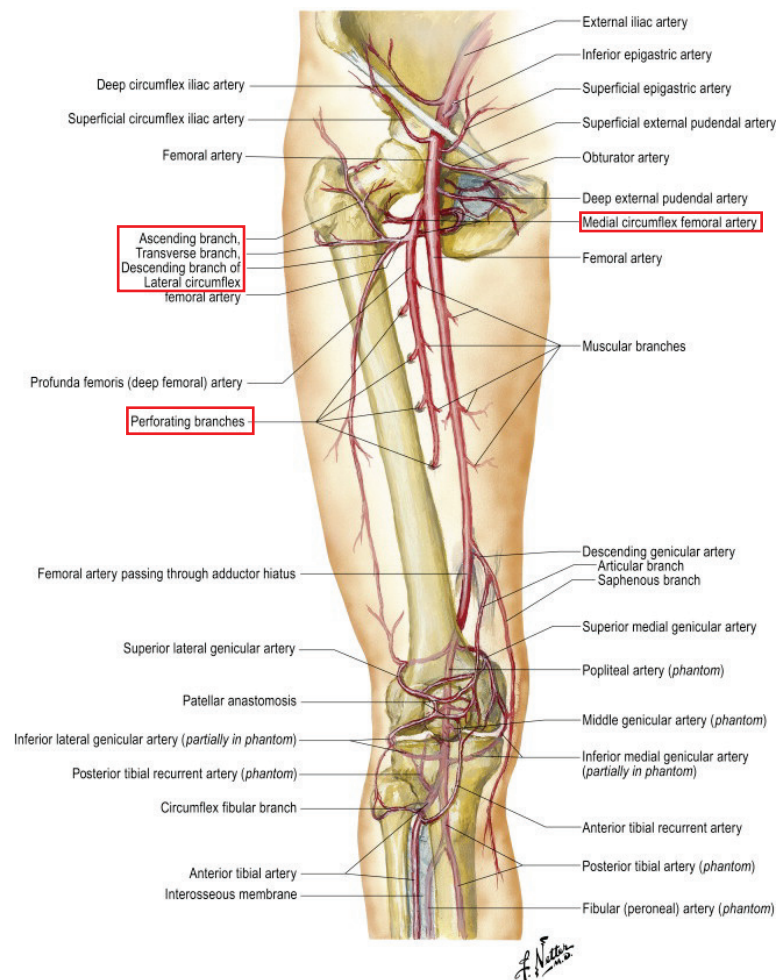
- Represented by the proximal 2/3 of a line extending from the mid-inguinal point to the adductor tubercle when the thigh is flexed, abducted, and laterally rotated (cross legs).
 - Superficial in the femoral triangle, represented by the upper 3rd of this line.
 - Deep in the adductor canal, represented by the lower 2/3 of this line.
- Pulsation can be felt just inferior to the mid-inguinal point.
- **Clinical Note:** if we want to reach the coronary arteries we can insert a catheter into the femoral a. just below the mid-inguinal point, then ascending up (guided by fluoroscopy) we pass through the arteries until we reach the coronary arteries. We can also measure the pressure at the Left Ventricle using this method. *We usually use veins though.*

Profunda femoris artery

- Largest branch, arises from the lateral side of the femoral artery about 4cm below the inguinal ligament.
- Passes medially to the medial compartment of the thigh (adductors).

Branches

- **Four perforating arteries**, supplying muscles in the three compartments of the thigh.
 - They perforate the **adductor compartment** (mainly the adductor magnus) to reach the posterior compartment since they're the **main blood supply** of the **medial** and **posterior** compartments.



-The Profunda femoris terminates as the 4th perforating artery.

- **Medial femoral circumflex**, Important in adults because it supplies most of the blood to the head and neck of the femur via the **retinacular** (synovial folds) **arteries**.
- **Lateral femoral circumflex**, mainly supplies muscles on the lateral side of the thigh.

-It **divides** into **ascending**, **descending** (joins the anastomosis of the knee joint), and **transverse** branches.

Note: the arterial anastomosis of the knee compensates for compression of the popliteal vessels during excessive flexion.

Trochanteric anastomosis

- Provides the main blood supply to the head of the femur.
- Formed by: **(SILM)**

Superior gluteal artery

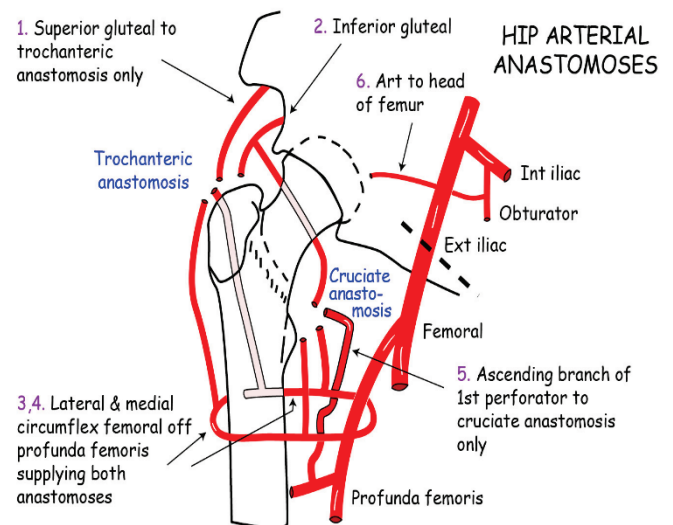
- branch from the internal iliac a.
- passes superior to the piriformis m.

Inferior gluteal artery

- branch from the internal iliac a.
- passes inferior to the piriformis m.

Lateral femoral circumflex artery.

Medial femoral circumflex artery.



Notes:

- The greater sciatic foramen is called the gateway to the pelvis, the lesser sciatic foramen is called the gateway to the perineum (external genitalia = pudendal)
- Through the greater sciatic foramen passes the **piriformis muscle** (it's called "*the key of the gluteal region*" because most **structures passing above** it are called **superior** and most of **those passing below** it are called **inferior**) therefore the superior and inferior gluteal arteries got their names based on their position relative to this muscle.
- VAN = Vein, Artery & Nerve, most vessels in the body pass as a bundle containing (an artery, a vein, a nerve & accompanying lymphatics).
- The medial & lateral circumflex arteries pass to the hip joint through the synovial reflection (retinacula)

Cruciate anastomosis

- Provides a collateral union between the internal iliac and the femoral arteries.
- Located at the level of the lesser trochanter of the femur.
- Formed by: (1st LIM)
 - 1st perforating artery of the Profunda femoris artery
 - Lateral femoral circumflex artery
 - Inferior gluteal artery
 - Medial femoral circumflex artery

The lumbar plexus will be explained in detail in the next lecture.

THE END