MEDICAL EDUCATION RESOURCE

Front of Thigh

Front of Thigh

Introduction

- The **front of thigh** extends between the **hip and knee joints**.
- The **superficial fascia** contains:
  - **Great saphenous vein** (largest superficial vein).
  - **Cutaneous nerves**, **superficial vessels**, and **lymph nodes**.
- The **upper one-third (medially)** forms the **femoral triangle**.
- The **middle one-third** contains the **femoral vessels** passing through the **adductor canal**.
- Main muscles:
  - **Quadriceps femoris** (four-headed muscle) — main extensor of knee.
  - **Iliopsoas** — flexor of thigh (upper part).
  - **Adductors** — medial side of thigh.
- **Femoral hernia** appears in the **upper medial part** of the front of thigh

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Surface Landmarks

1. Iliac Crest

- Curved upper border of ilium forming the **lower margin of waist**.
- **Hands rest on iliac crests** in relaxed standing position.

2. Anterior Superior Iliac Spine (ASIS)

- Anterior end of the iliac crest — **easily palpable** bony point.

3. Tubercle of Iliac Crest

- Found about **5 cm behind ASIS** on outer lip of the iliac crest.
- Important reference point for surface anatomy.

4. Fold of Groin (Inguinal Fold)

- Shallow curved line separating **front of thigh from anterior abdominal wall**.
- Corresponds to the **inguinal ligament**, which runs from **ASIS to pubic tubercle**.
- The **downward convexity** of the ligament is due to pull by the **fascia lata**

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5. Pubic Tubercle

- Bony projection at the **medial end of the inguinal ligament** — **palpable** landmark.

6. Pubic Symphysis and Pubic Crest

- **Pubic symphysis** — midline joint between pubic bones.
- **Pubic crest** — ridge between pubic tubercle and symphysis.

7. Greater Trochanter of Femur

- Lies about **12.5 cm below the tubercle of iliac crest**.
- Forms a **wide prominence (4–5 cm)** at the lateral aspect of the thigh.
- Its upper border corresponds roughly to the **level of pubic crest**.

8. Midinguinal Point

- Midway between **ASIS and pubic symphysis**.
- Lies directly above the **femoral artery** and **head of femur**.

9. Midpoint of Inguinal Ligament

- Lies slightly **lateral to midinguinal point**; femoral nerve lies beneath it.

10. Patella

- **Largest sesamoid bone**, located within the *quadriceps femoris tendon*.
- Easily seen and felt in front of knee; movable when knee is extended.

11. Tibial Tuberosity

- Prominent bump below patella on anterior tibia — attachment for **patellar ligament**

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Skin and Superficial Fascia

Skin

- Over the upper medial thigh, the skin is **hair-bearing** (especially near pubic region).
- **Clinical note:** The **upper medial thigh** is commonly used for **embalming incision**, allowing access to femoral artery for fluid injection

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Superficial Fascia

- Composed of **two layers**:
  1. **Superficial fatty layer (Camper's fascia)**
  2. **Deep membranous layer (Scarpa's fascia)**
     - Both continuous with layers of anterior abdominal wall fascia.
- The two layers are **most distinct near the groin**, where cutaneous **nerves, vessels, and lymph nodes** lie between them.
- **Holden's Line:**

- Firm attachment of the membranous layer to the **deep fascia** near the **inguinal ligament**.
- Extends **horizontally 8 cm from the pubic tubercle**.
- Prevents downward spread of **extravasated urine** into the thigh after urethral injury

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Contents of Superficial Fascia

- **Cutaneous nerves**
- **Cutaneous arteries and veins (including great saphenous vein)**
- **Superficial inguinal lymph nodes**

Clinical Note

- **Urethral injury:** Urine may extravasate beneath membranous layer of superficial fascia and spread to lower abdominal wall, but not below **Holden's line**.

Would you like me to continue next with **Cutaneous Nerves of Front of Thigh (next subtopic under Skin and Superficial Fascia)** in the same detailed, pointwise style?

Superficial Fascia (Front of Thigh)

- Consists of **two layers**:
    1. **Superficial fatty layer (Camper’s fascia)**
    2. **Deep membranous layer (Scarpa’s fascia)**
- Both are **continuous** with the corresponding layers of the **anterior abdominal wall**.
- Layers are **most distinct in the groin region**, where **cutaneous nerves, vessels, and lymph nodes** lie between them

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Holden’s Line

- Firm attachment of the **membranous layer** to the **deep fascia** along a **horizontal line** called **Holden’s line**.
- Begins slightly **lateral to the pubic tubercle** and extends **laterally about 8 cm**

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- Prevents downward spread of **extravasated urine** into thigh after **urethral injury**

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Contents of Superficial Fascia

- **Cutaneous nerves**

- **Cutaneous arteries**
- **Great saphenous vein** and its **tributaries**
- **Superficial inguinal lymph nodes**

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Cutaneous Nerves of Front of Thigh

1. Ilioinguinal Nerve (L1)

- Emerges through the **superficial inguinal ring**.
- Supplies:
  - Skin at the **root of penis** (or **mons pubis** in females).
  - **Anterior one-third** of the scrotum or labium majus.
  - **Superomedial part** of thigh

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2. Femoral Branch of Genitofemoral Nerve (L1, L2)

- Pierces the **femoral sheath and deep fascia** about **2 cm below the midinguinal point**.
- Supplies most of the **skin over the femoral triangle**

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3. Lateral Cutaneous Nerve of Thigh (L2, L3)

- Branch of **lumbar plexus**.
- Emerges behind **lateral end of inguinal ligament**.
- Divides into **anterior and posterior branches**.
- Supplies **anterolateral thigh** and **anterior part of gluteal region**

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4. Intermediate Cutaneous Nerve of Thigh (L2, L3)

- Branch of **anterior division of femoral nerve**.
- Pierces deep fascia at the junction of **upper and middle thirds** of thigh.
- Supplies **anterior surface** of thigh between **sartorius and midline** down to **knee**

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5. Medial Cutaneous Nerve of Thigh (L2, L3)

- Branch of **anterior division of femoral nerve**.
- Has **anterior and posterior divisions**.
- Supplies **medial side** of lower two-thirds of thigh

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6. Saphenous Nerve (L3, L4)

- Longest cutaneous branch of femoral nerve.
- Pierces deep fascia on **medial side of knee** and runs with **great saphenous vein**.
- Supplies **skin on medial side of leg and foot up to ball of great toe**.
- Gives **infrapatellar branch** to skin over **ligamentum patellae**

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Patellar Plexus

- Plexus of fine nerves in front of **patella**, **ligamentum patellae**, and **upper tibia**.
- Formed by:
  1. Anterior division of **lateral cutaneous nerve of thigh**
  2. **Intermediate cutaneous nerve of thigh**
  3. Anterior division of **medial cutaneous nerve of thigh**
  4. **Infrapatellar branch** of **saphenous nerve**

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Cutaneous Arteries

Three small arteries arise from the **femoral artery** just below the **inguinal ligament**:

1. Superficial External Pudendal Artery

- Pierces **cribriform fascia**.
- Runs **medially in front of spermatic cord**.
- Supplies **external genitalia**

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2. Superficial Epigastric Artery

- Pierces **cribriform fascia**, ascends toward **umbilicus**.
- Supplies **lower part of anterior abdominal wall**

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3. Superficial Circumflex Iliac Artery

- (Next part in continuation, described below)
- Runs **laterally**, parallel to the **inguinal ligament**, supplying the **skin of upper lateral thigh and inguinal region**.

Clinical Note

- **Holden's line** acts as a **barrier** to spread of urine after **urethral rupture**.

- **Cutaneous nerves** are important for **nerve blocks** in thigh surgeries and for identifying **nerve injury levels**.
- **Superficial arteries** are often seen in dissection near the **femoral triangle** and may be injured during **venous cutdown** procedures.

Great or Long Saphenous Vein

- **Largest and longest superficial vein** of the lower limb (*saphes* = easily seen).
- **Origin:** Medial end of **dorsal venous arch** of foot.
- **Course:**
  - Begins on **dorsum of foot**, passes **in front of the medial malleolus**.
  - Ascends along **medial side of leg**, **behind knee**, and then **forwards in thigh**.
  - At the upper thigh, it **pierces the cribriform fascia** at the **saphenous opening** to drain into the **femoral vein**.
- **Tributaries before piercing cribriform fascia:**
  - **Superficial external pudendal vein**
  - **Superficial epigastric vein**
  - **Superficial circumflex iliac vein**
  - Numerous unnamed tributaries

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- **Clinical Note:**
  - Commonly used for **venous cutdown** and **coronary bypass grafting**.
  - **Varicosity** of this vein is a frequent cause of visible tortuous veins on the leg.

Superficial Inguinal Lymph Nodes

- **Variable in number and size**, arranged in a **T-shaped pattern** with:
  - **Upper horizontal group**
  - **Lower vertical group**
- **Upper horizontal group** subdivided into:
  - **Upper lateral group** – drains **lateral infraumbilical abdominal wall** and **gluteal region**.
  - **Upper medial group** – drains **medial infraumbilical wall**, **external genitalia**, **urethra**, **vagina**, and **anal canal**.
- **Lower vertical group** – drains **most of the lower limb**, along the **upper part of great saphenous vein**

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- **Clinical Note:**

- Enlarged in **lower limb infections**, **STDs**, and **carcinoma of vulva or penis**.

Subcutaneous Bursae

- **Definition:** Fluid-filled sacs reducing friction between skin and bone at points of pressure.
- **Function:** Provide lubrication and smooth movement; **excessive pressure** can lead to **bursitis**

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1. Prepatellar Bursa

- Lies **in front of lower part of patella** and **upper part of ligamentum patellae**.
- **Inflammation:** *Prepatellar bursitis* ? "**Housemaid's knee**" or "**Miner's knee**".

2. Subcutaneous Infrapatellar Bursa

- Lies **in front of lower part of tibial tuberosity** and **lower part of ligamentum patellae**.
- **Inflammation:** *Subcutaneous infrapatellar bursitis* ? "**Clergyman's knee**".

3. Deep Bursae (for reference)

- **Suprapatellar bursa** and **Deep infrapatellar bursa** lie deeper beneath quadriceps tendon and ligamentum patellae

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Clinical Summary

CONDITION	SITE OF BURSA	COMMON NAME
Prepatellar bursitis	Front of patella	*Housemaid's knee*
Subcutaneous infrapatellar bursitis	Over tibial tuberosity	*Clergyman's knee*

Dissection of the Front of Thigh

- After reflecting the **superficial fascia**, the **deep fascia (fascia lata)** becomes visible.
- Study its **attachments, modifications, and extensions**.
- The **great saphenous vein** is traced through the **cribriform fascia** to the **femoral vein** via the **femoral sheath**:
    - **Medial compartment** of the sheath ? *femoral canal* (contains lymph node).
    - **Intermediate compartment** ? *femoral vein*.
    - **Lateral compartment** ? *femoral artery*.
- A **vertical incision** in the deep fascia from the **iliac tubercle** to the **lateral condyle of femur** exposes:
    - **Tensor fasciae latae** and **gluteus maximus** attaching to the *iliotibial tract*.

    - **Quadriceps femoris** with its four distinct heads (rectus femoris, vastus medialis, lateralis, and intermedius).

- Remove deep fascia from the **upper one-third of the front of thigh** to display:
    - **Sartorius muscle** (obliquely crossing from lateral to medial).
    - **Adductor longus** (arising medially, directed laterally).
    - These muscles form the **femoral triangle** —
        - **Base:** inguinal ligament
        - **Lateral boundary:** medial border of sartorius
        - **Medial boundary:** medial border of adductor longus
- Within the femoral triangle, dissect and identify **femoral nerve, artery, vein**, and accompanying lymphatics

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Clinical Anatomy of Front of Thigh

1. Varicose Veins

- Due to **incompetent valves** in the great saphenous vein or its perforators.
- Leads to **venous dilation and tortuosity** along the medial thigh and leg.
- Common in people with **prolonged standing** (shopkeepers, nurses).

- **Saphenofemoral incompetence** can be tested by **Trendelenburg's test**.

2. Saphenous Vein Cutdown

- Performed **anterior to the medial malleolus** to access the vein for **intravenous infusion**.
- Must avoid injury to the **saphenous nerve**, which accompanies it in the lower leg.

3. Great Saphenous Vein in Surgery

- Used as **graft vessel** in **coronary artery bypass** operations due to its length and superficial accessibility.

4. Femoral Triangle Palpation

- The **femoral artery** pulsation can be felt at the **midinguinal point** (between ASIS and pubic symphysis).
- Used for **arterial catheterization** or **pulse assessment**.

5. Femoral Hernia

- Occurs through the **femoral canal** (medial compartment of femoral sheath).
- More common in **females** due to wider pelvis.
- Lies **below and lateral to the pubic tubercle** (differentiating from inguinal hernia).

6. Superficial Inguinal Lymphadenopathy

- **Infection of lower limb, perineum, or external genitalia** causes enlargement of the **superficial inguinal lymph nodes**.
- **Upper horizontal group** affected in genital infections; **lower vertical group** in leg infections.

7. Bursitis

- **Prepatellar bursitis** ? inflammation of bursa anterior to patella (*Housemaid's knee*).
- **Subcutaneous infrapatellar bursitis** ? over tibial tuberosity (*Clergyman's knee*).
- Both result from **chronic friction or kneeling posture**.

8. Patellar Reflex

- Tested by tapping the **ligamentum patellae**; a normal reflex indicates **integrity of L2–L4 (femoral nerve)**.
- Absence suggests **femoral nerve lesion or L4 radiculopathy**.

9. Cutaneous Nerve Injuries

- **Lateral cutaneous nerve of thigh** ? compressed beneath the **inguinal ligament**, producing **meralgia paraesthetica** (tingling and burning over anterolateral thigh).
- **Saphenous nerve** ? may be injured in **knee surgeries**, causing sensory loss along medial leg.

10. Urethral Injury and Holden's Line

- In **straddle injury** with urethral rupture, urine extravasates into the **superficial perineal pouch**, but **cannot descend into the thigh** due to firm attachment of the membranous

layer (Scarpa's fascia) to **deep fascia along Holden's line**.

Deep Fascia / Fascia Lata

Definition

- A **tough fibrous sheath** that **encloses the entire thigh like a sleeve**.
- Continuous with **deep fascia of gluteal region above** and **leg below**

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Attachments of Fascia Lata

- **Superiorly:** Along the line separating thigh from pelvis—
  - **Anteriorly:** Inguinal ligament
  - **Laterally:** Iliac crest
  - **Posteriorly:** Gluteal fascia, sacrum, coccyx, sacrotuberous ligament
  - **Medially:** Pubis, pubic arch, and ischial tuberosity

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- **Inferiorly:**
  - Front and sides ? attached to **bony prominences** and **capsule of knee joint**.

- Posteriorly ? forms **popliteal fascia**, continuous with fascia of back of leg

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Modifications of Fascia Lata

1. Iliotibial Tract (IT Tract)

- Thickened **lateral part** of fascia lata forming a **5 cm wide band**.
- **Superior attachments:** Splits into two laminae—
  - *Superficial lamina* ? tubercle of iliac crest.
  - *Deep lamina* ? capsule of hip joint.
- **Inferior attachment:** Anterior surface of **lateral condyle of tibia**

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Muscular Insertions:

- Between laminae —
  - **Tensor fasciae latae**
  - **Gluteus maximus (upper three-fourths part)**

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Functions:

- Stabilizes **knee joint** in **extension and partial flexion**.
- Acts as **support against gravity** during leaning forward or walking

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2. Saphenous Opening

- **Oval gap** in fascia lata ? about **2.5 cm long, 2 cm broad**.
- **Position:** 4 cm below and 4 cm lateral to pubic tubercle.
- **Margins:**
  - *Lateral margin:* Sharp and crescentic — **falciform margin**.
  - *Medial margin:* Ill-defined, deeper, formed by fascia over **pectineus muscle**.
- Closed by **cribriform fascia** (specialized part of superficial fascia).
- **Structures passing through:**
  - **Great saphenous vein**
  - **Superficial branches of femoral artery and vein**
  - **Lymphatic vessels**

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3. Intermuscular Septa

- The fascia lata sends **three septa** inward to the linea aspera:
    - **Lateral intermuscular septum:** Thickest; separates *anterior* from *posterior* compartment.
    - **Medial intermuscular septum:** Between *anterior* and *medial* compartments.
    - **Posterior intermuscular septum:** Poorly defined; between *medial* and *posterior* compartments

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Dissection of Fascia Lata

- After removing **superficial fascia**, the **deep fascia (fascia lata)** is seen.
- Identify:
    - **Attachments**, **iliotibial tract**, and **saphenous opening**.
- Trace the **great saphenous vein** through the **cribriform fascia** into the **femoral vein** within the **femoral sheath**:
    - *Medial compartment* ? femoral canal (with lymph node).
    - *Intermediate compartment* ? femoral vein.
    - *Lateral compartment* ? femoral artery.

- Make a **vertical incision** in fascia lata from **iliac tubercle** to **lateral condyle of femur**.
    - Expose **tensor fasciae latae**, **gluteus maximus**, and **iliotibial tract**.
- Remove fascia lata from **upper one-third of thigh** to expose **sartorius** (crossing obliquely) and **adductor longus** (forming femoral triangle).
- Identify **femoral nerve, artery, and vein** in the triangle

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Clinical Anatomy of Fascia Lata

1. Femoral Hernia

- Occurs through **femoral canal** (medial compartment of femoral sheath).
- Appears **below and lateral to pubic tubercle**.
- Common in females; may strangulate.

2. Varicose Veins

- **Incompetent valves** in the **great saphenous vein** cause **varicosities**.
- Related to **weakness in fascia lata** at the **saphenous opening**.

3. Iliotibial Band Syndrome

- Due to **friction** between **IT tract** and **lateral femoral condyle** during repeated knee flexion-extension.

- Common in **runners and cyclists**.

4. Surgical Importance

- **Fascia lata grafts** are used for **reconstructive surgeries** (e.g., dura repair, ptosis correction).

5. Patellar Reflex

- Clinical testing site lies under the **fascia lata**; reflex loss indicates **femoral nerve or L3–L4 lesion**.

Femoral Triangle

Definition

- A **triangular depression** on the **front of the upper one-third of thigh**, just **below the inguinal ligament**

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Boundaries

Base (Superior):

- **Inguinal ligament**

Apex (Inferior):

- Point where **sartorius** (lateral boundary) and **adductor longus** (medial boundary) meet.
- Continuous below with **adductor canal**

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Lateral Boundary:

- **Medial border of sartorius**

Medial Boundary:

- **Medial border of adductor longus**

Roof:

- **Skin**
- **Superficial fascia** (contains superficial inguinal lymph nodes, femoral branch of genitofemoral nerve, ilioinguinal branches, superficial vessels, upper part of great saphenous vein)
- **Deep fascia** (including cribriform fascia over saphenous opening)

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Floor:

- **Medially:** Pectineus and adductor longus
- **Laterally:** Psoas major and iliacus

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Contents of Femoral Triangle

1. **Femoral Artery and Branches**
    - Extends from **midinguinal point** to **apex of triangle**.
    - **Branches (6 total):**
        - *Superficial:* Superficial epigastric, superficial circumflex iliac, superficial external pudendal.
        - *Deep:* Profunda femoris, lateral and medial circumflex femoral arteries

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2. **Femoral Vein and Tributaries**
    - Lies **medial to artery at base**, **posteromedial at apex**.
    - Receives **great saphenous vein**, **circumflex veins**, and veins corresponding to arterial branches

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3. **Femoral Sheath**
    - Encloses **upper 3–4 cm** of femoral vessels.
    - Divided into **three compartments:**

- *Lateral:* Femoral artery + femoral branch of genitofemoral nerve
- *Intermediate:* Femoral vein
- *Medial:* Femoral canal

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4. **Nerves**
   - **Femoral nerve** (lateral to artery, outside sheath)
   - **Nerve to pectineus** (passes behind sheath to pectineus)
   - **Femoral branch of genitofemoral nerve** (within sheath, lateral compartment)
   - **Lateral cutaneous nerve of thigh** (crosses lateral angle)

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5. **Deep Inguinal Lymph Nodes**
   - Medial to upper part of **femoral vein**.
   - Drain **glans penis or clitoris**, **deep lower limb lymphatics**, and **superficial inguinal nodes**

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Femoral Sheath

- **Funnel-shaped fascial sleeve** enclosing the upper **3–4 cm** of femoral vessels.
- **Formation:**
  - *Anterior wall* ? from **fascia transversalis**.
  - *Posterior wall* ? from **fascia iliaca**.
- **Inferiorly:** Merges with **connective tissue** around femoral vessels

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- **Asymmetrical shape:**
  - *Lateral wall* ? vertical
  - *Medial wall* ? oblique (directed downward and laterally)

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- **Compartments:**
  1. *Lateral (arterial)* ? Femoral artery + femoral branch of genitofemoral nerve
  2. *Intermediate (venous)* ? Femoral vein
  3. *Medial (lymphatic)* ? Femoral canal

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Femoral Canal

- **Medial compartment** of femoral sheath.
- **Shape:** Conical; **wide above, narrow below**.
- **Length:** ~1.5 cm; **Width at base:** ~1.5 cm.
- **Upper end:** *Femoral ring* — the entrance into canal

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Boundaries of Femoral Ring

- **Anterior:** Inguinal ligament
- **Posterior:** Pectineus + fascia over it
- **Medial:** Lacunar ligament
- **Lateral:** Femoral vein

Contents of Femoral Canal

- **Areolar tissue**
- **Fat**
- **Deep inguinal lymph node (of Cloquet/Rosenmüller)**
- **Lymphatic vessels** connecting superficial and deep systems

Clinical Anatomy

1. Femoral Hernia

- Protrusion of abdominal contents through **femoral ring** into **femoral canal**.
- Appears **below and lateral to pubic tubercle** (distinguishes it from inguinal hernia).
- Common in **females** due to wider pelvis and smaller femoral ring.
- **Complication:** May become **strangulated**.

2. Femoral Artery Catheterization

- Artery can be **palpated at midinguinal point** — access for **angiography or catheterization**.

3. Lymphadenopathy

- **Enlargement of deep or superficial inguinal nodes** in infections of lower limb or genitalia.

4. Clinical Surface Marking

- Femoral pulse ? halfway between **ASIS** and **pubic symphysis**.
- Pressure here controls **bleeding** from lower limb injuries.

5. Surgical Significance

- Femoral sheath and canal are key landmarks in **hernia repair** and **vascular surgeries** of groin.

These sections complete the **Femoral Triangle** with its **Boundaries, Contents, Femoral Sheath, Femoral Canal, and Clinical Anatomy** for both practical dissection and exam theory.

Femoral Artery

Origin

- Continuation of the **external iliac artery** beyond the **inguinal ligament**, beginning at the **midinguinal point**.
- Lies in the **femoral triangle**, just **lateral to the femoral vein** and **medial to the femoral nerve**.

Course

- Passes downward through the **femoral triangle**, then enters the **adductor canal**.
- Terminates at the **adductor hiatus**, where it continues as the **popliteal artery**.

Relations

- **Anteriorly:** Skin, fasciae, superficial branches, and femoral branch of genitofemoral nerve.
- **Posteriorly:** Psoas major, pectineus, adductor longus, and adductor magnus.

- **Medially:** Femoral vein.
- **Laterally:** Femoral nerve and its branches.

Branches

In the Femoral Triangle

Superficial Branches

1. **Superficial external pudendal artery** – to skin of scrotum/labia and lower abdominal wall.
2. **Superficial epigastric artery** – to lower part of anterior abdominal wall.
3. **Superficial circumflex iliac artery** – to skin and fascia along iliac crest.

Deep Branches

1. **Profunda femoris artery** – chief artery of the thigh.
2. **Deep external pudendal artery** – to external genitalia.
3. **Muscular branches** – to sartorius, quadriceps, and adductors.

Profunda Femoris Artery

- Arises from the **lateral side of the femoral artery**, about **4 cm below the inguinal ligament**.
- Descends **posterior to the femoral vessels**, passing between adductor muscles.

- Gives off:
    - **Medial circumflex femoral artery** – to head and neck of femur and adductors.
    - **Lateral circumflex femoral artery** – divides into ascending, transverse, and descending branches.
    - **Perforating arteries (4 in total)** – pierce adductor magnus to supply the posterior thigh.

Clinical Anatomy of Femoral Artery

- **Pulse:** Felt at the **midinguinal point**, midway between ASIS and pubic symphysis.
- **Compression:** Can be pressed against the femoral head to control bleeding.
- **Catheterization:** Common access site for diagnostic and interventional cardiac procedures.
- **Aneurysm:** Appears as a pulsatile swelling in the upper thigh.
- **Occlusion:** Causes feeble or absent femoral pulse; may indicate coarctation or thrombosis.

Femoral Vein

Origin

- Continuation of the **popliteal vein** at the **lower end of the adductor canal**.
- Ends by becoming the **external iliac vein** behind the **inguinal ligament**.

Course and Relations

- Lies **medial to the artery** in upper thigh, **posterior** to it at the apex of femoral triangle, and **lateral** at the lower end.

Tributaries

1. **Great saphenous vein**.
2. Veins accompanying **profunda femoris**, **deep external pudendal**, and **muscular branches**.
3. **Lateral and medial circumflex femoral veins**.
4. **Descending genicular vein**.

Clinical Notes

- Used for **intravenous infusion** in infants and in adults with **collapsed peripheral veins**.
- Injury may occur during venous puncture at the femoral triangle.

Femoral Nerve

Origin and Root Value

- Arises from **posterior divisions of L2, L3, and L4** spinal nerves of the **lumbar plexus**.
- It is the **largest branch** of the lumbar plexus.

Course

- Enters the thigh **behind the inguinal ligament**, **lateral to the femoral artery**.
- Lies in the groove between **psoas major** and **iliacus**.
- Divides into **anterior and posterior divisions** about 2.5 cm below the inguinal ligament.
- The **lateral circumflex femoral artery** passes between these two divisions.

Branches and Distribution

1. Muscular Branches

- **From the trunk:** To iliacus and pectineus.
- **From anterior division:** To sartorius.
- **From posterior division:** To rectus femoris, vastus lateralis, vastus intermedius, vastus medialis, and articularis genu.
    - Nerve to vastus medialis carries **proprioceptive fibers** for the knee joint.

2. Cutaneous Branches

- **From anterior division:** Intermediate and medial cutaneous nerves of thigh.
- **From posterior division:** Saphenous nerve (continues to leg and foot).

3. Articular Branches

- **Hip joint:** From nerve to rectus femoris.

- **Knee joint:** From nerves to vasti muscles.
    - Follows *Hilton's Law* – a nerve supplying a muscle also supplies the joint the muscle acts upon.

4. Vascular Branches

- Small branches to the **femoral artery and its branches**.

Clinical Anatomy of Femoral Nerve

- **Injury:**
    - Causes paralysis of **quadriceps femoris** ? loss of **knee extension**.
    - **Patellar reflex** is absent.
    - **Sensory loss** over anterior and medial thigh and medial leg (via saphenous nerve).
- **Femoral nerve block:**
    - Performed for surgeries on the **knee joint** or **anterior thigh** to achieve regional anesthesia.
- **Palsy:**
    - Results in difficulty **climbing stairs** or **rising from sitting position** due to weak quadriceps.

Summary Table

STRUCTURE	KEY FEATURES	CLINICAL RELEVANCE
Femoral artery	Continuation of external iliac artery through femoral triangle	Pulse, catheterization, aneurysm
Femoral vein	Upward continuation of popliteal vein	IV access in infants, circulation collapse
Femoral nerve	L2–L4; divides into anterior and posterior divisions	Injury ? loss of knee extension, sensory loss

Muscles of the Front of Thigh

Main Muscles

1. **Sartorius**
    - Longest muscle in the body.
    - **Origin:** Anterior superior iliac spine (ASIS).
    - **Insertion:** Upper part of medial surface of tibia.
    - **Nerve supply:** Femoral nerve.
    - **Action:** Flexes thigh and leg, abducts and laterally rotates thigh.
2. **Quadriceps Femoris**
    - Large extensor muscle with **four heads**:

        - **Rectus femoris:** From AIIS; flexes thigh and extends leg.
        - **Vastus lateralis:** From greater trochanter and linea aspera; extends leg.
        - **Vastus medialis:** From intertrochanteric line and linea aspera; extends leg and prevents lateral patellar displacement.
        - **Vastus intermedius:** From anterior femoral shaft; extends leg.
    - **Nerve supply:** Femoral nerve.
    - **Insertion:** Common tendon into the base of patella; via ligamentum patellae to tibial tuberosity.

3. **Articularis Genu**
    - Small flat muscle deep to vastus intermedius.
    - **Action:** Pulls synovial membrane of knee joint upward during extension to prevent pinching.

Iliacus and Psoas Major (Iliopsoas)

Psoas Major

- **Origin:** Anterior surfaces and lower borders of transverse processes of lumbar vertebrae (T12–L5).
- **Insertion:** Joins tendon of iliacus to insert on **lesser trochanter of femur**.
- **Nerve supply:** Ventral rami of L1–L3.

- **Action:** Flexes thigh at hip joint; assists in flexion of trunk.

Iliacus

- **Origin:** Upper two-thirds of iliac fossa, inner lip of iliac crest, and ventral sacroiliac ligaments.
- **Insertion:** Lateral part of anterior surface of **lesser trochanter** (with psoas).
- **Nerve supply:** Femoral nerve.
- **Action:** Chief flexor of thigh; stabilizes hip joint during walking and standing.

Clinical Anatomy

1. **Psoas Abscess**
    - Tubercular infection of lumbar vertebrae may spread along the psoas sheath into the **femoral triangle**, presenting as a swelling that mimics an enlarged lymph node.
    - Flexion of thigh causes pain.
2. **Patellar Reflex (Knee Jerk)**
    - Reflex contraction of quadriceps when **ligamentum patellae** is tapped.
    - Tests **L3–L4 spinal segments** and integrity of **femoral nerve**.
3. **Intramuscular Injection Site**

- **Vastus lateralis** is a safe and preferred muscle for **IM injections** in infants and adults.

4. **Quadriceps Paralysis**
   - Injury to femoral nerve results in **loss of knee extension** and **absent patellar reflex**.

Adductor / Hunter's / Subsartorial Canal

Overview

- Intermuscular passage on the **medial side of the middle one-third of thigh**.
- Also called **Hunter's canal** after John Hunter, who performed femoral artery ligation here for popliteal aneurysm

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Extent

- **Superior limit:** Apex of femoral triangle.
- **Inferior limit:** Tendinous opening in adductor magnus.

Shape

- **Triangular** in cross-section.

Boundaries

- **Anterolateral wall:** Vastus medialis.
- **Posteromedial wall (floor):** Adductor longus (above) and adductor magnus (below).
- **Medial wall (roof):** Strong fibrous membrane joining the other two walls; covered by **sartorius muscle**.

Contents

1. **Femoral artery**
    - Gives muscular branches and **descending genicular artery** (divides into superficial and deep branches).
    - Continues as **popliteal artery** through adductor hiatus.
2. **Femoral vein** – lies **posterior in upper part**, **lateral in lower part**.
3. **Saphenous nerve** – crosses artery from lateral to medial, exits through roof.
4. **Nerve to vastus medialis** – lateral to artery, enters muscle.
5. **Branches of obturator nerve:**
    - *Anterior division* ? joins subsartorial plexus and supplies femoral artery.
    - *Posterior division* ? accompanies femoral vessels to the knee joint.

Subsartorial Plexus

- Lies on the fibrous roof under sartorius.

- Formed by branches of:
    - Medial cutaneous nerve of thigh
    - Saphenous nerve
    - Anterior division of obturator nerve
- Supplies skin and fascia over medial thigh

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Dissection of Adductor Canal

- Reflect sartorius laterally to expose the **fibrous roof**.
- Identify:
    - **Femoral artery** and its **descending genicular branch**.
    - **Femoral vein** and its position relative to artery.
    - **Saphenous nerve** crossing artery from lateral to medial.
    - **Nerve to vastus medialis** entering muscle laterally.
- The canal opens distally into the **popliteal fossa** through the **adductor hiatus**.

This completes the section on the **Muscles of the Front of Thigh**, **Iliopsoas Complex**, and **Adductor Canal** with its **Dissection and Clinical Correlations** — ideal for both dissection hall and exam revision.