MEDICAL EDUCATION RESOURCE

Medial Side of Thigh : Clinicoanatomical problems

Facts to Remember

- **Adductor magnus** and **pectineus** are **hybrid muscles**, each having a dual nerve supply.
- **Adductor magnus** is supplied by both **obturator nerve (adductor part)** and **tibial part of sciatic nerve (hamstring part)**.
- **Pectineus** receives dual supply from **femoral** and **obturator nerves**.
- **Femoral** and **obturator nerves** supply both the **hip** and **knee joints**, which explains **referred pain** between these joints.
- The **obturator nerve** lies along the **medial border of psoas major**, crosses the **ala of sacrum**, enters the **pelvis**, and exits via the **obturator foramen** to reach the **medial thigh**.
- The **obturator artery** (branch of internal iliac) and **medial circumflex femoral artery** (branch of profunda femoris) are the chief vessels in this compartment.
- The **adductor hiatus** is an opening in adductor magnus through which the **femoral vessels** pass from the thigh to the popliteal fossa.
- **Gracilis** is the most superficial and the only **two-joint muscle** in the medial compartment.

- **Obturator externus** is a **lateral rotator** of the thigh despite being located in the adductor region.

- **Adductor longus** gives rise to the term **“rider’s strain”** due to overstretching during horse riding or athletic activity.

Volume 2, BD Chaurasia’s Human …

Clinicoanatomical Problem

Case:
A 50-year-old woman with **right knee osteoarthritis** develops **pain in her right hip** after several months of physiotherapy.

Questions:

1. Why did she develop hip pain along with knee pain?

2. What is the common nerve supply to both joints?

3. What is the root value of this nerve?

Answer:

- The hip pain is **referred pain** from the knee joint because both are supplied by the **obturator nerve**.

- The **obturator nerve** supplies the **hip** and **knee joints**, so irritation in one joint can produce pain in the other.

- The **root value** of the obturator nerve is **L2, L3, L4 (ventral divisions of ventral primary rami)**.

- Similarly, the **femoral nerve** also contributes to both joints (L2, L3, L4 dorsal divisions).

1. Obturator Nerve Injury during Pelvic Surgery

Case:
A woman undergoing **hysterectomy** develops **loss of adduction** of the thigh and numbness over the medial aspect of the thigh.

Explanation:

- The **obturator nerve** runs close to the **lateral pelvic wall** and can be injured during **pelvic operations**, especially when ligating the uterine artery.

- **Effects:**

    - Weakness or paralysis of **adductor muscles** (adductor longus, brevis, magnus, gracilis).

    - **Sensory loss** along the **medial thigh**.

    - Difficulty crossing the legs due to loss of adduction.

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2. Referred Pain from Ovary or Pelvic Organs

Case:
A woman with **ovarian inflammation** experiences pain radiating to the **medial side of the thigh**.

Explanation:

- Pain is **referred via the obturator nerve**, which supplies both the **medial thigh skin** and **pelvic peritoneum**.

- Irritation of the obturator nerve within the pelvis results in **medial thigh pain**, even though the primary pathology is pelvic.

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3. Adductor (Rider's) Strain

Case:
A horse rider complains of **pain near the pubic symphysis** after an abrupt abduction of the thigh.

Explanation:

- The **adductor longus** origin (near pubic body) is overstretched or torn — known as **Rider's Strain**.

- Common in horse riders, sprinters, and footballers.

- May result in local tenderness and hematoma near the **pubic crest**.

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4. Femoral Hernia and Corona Mortis

Case:
During repair of a **femoral hernia**, a surgeon accidentally cuts a large vessel near the **pubic ramus**, causing heavy bleeding.

Explanation:

- The vessel injured is an **aberrant obturator artery** arising from the **inferior epigastric artery** — this connection is called **"corona mortis"** (circle of death).

- Injury to this vessel may cause **fatal hemorrhage** unless promptly ligated.

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5. Obturator Nerve Entrapment Syndrome

Case:
An athlete presents with **deep groin pain radiating to the medial thigh** and **weakness of thigh adduction**.

Explanation:

- Due to **entrapment of the obturator nerve** as it passes through the **obturator canal**.
- Common in runners or individuals with repetitive hip movements.
- Diagnosed by **adduction weakness** and **electromyography (EMG)** changes in adductor muscles.

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6. Avascular Necrosis of Femoral Head

Case:
Following a **fracture neck of femur**, a patient develops **pain and stiffness in hip joint**.

Explanation:

- The **medial circumflex femoral artery** supplies the **head and neck of the femur** through **retinacular arteries**.
- These vessels can be torn in fracture or dislocation ? **avascular necrosis (AVN)**.
- In children, the **foveolar branch of obturator artery** also contributes to the head's blood supply.

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7. Gracilis Muscle Transplant

Case:
A plastic surgeon uses the **gracilis muscle** for reconstructing the **anal sphincter** in a patient with incontinence.

Explanation:

- The gracilis has a **long, slender shape**, **predictable neurovascular pedicle**, and **insignificant loss of function** when removed.
- Hence, it is often used in reconstructive and **microsurgical transplants** (e.g., facial reanimation, anal sphincteroplasty).

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8. Pelvic Fracture Causing Medial Thigh Pain

Case:
After a **pubic ramus fracture**, the patient complains of **pain and weakness in thigh adduction**.

Explanation:

- The **obturator nerve** lies close to the **superior pubic ramus**, so pelvic fractures can **compress or stretch** it.
- Leads to **weakness of adductors** and **pain radiating to the medial thigh**.

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9. Pectineus Weakness after Femoral Nerve Injury

Case:
A patient with a **femoral nerve lesion** complains of difficulty in **flexing and adducting the hip** .

Explanation:

- The **pectineus** (a hybrid muscle) is supplied mainly by the **femoral nerve**, and partly by the **obturator nerve**.
- Damage to femoral nerve weakens both **flexion** and **adduction** at the hip joint.

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10. Pain in Hip Joint after Knee Arthritis

Case:
A patient with **chronic knee arthritis** develops **pain in the hip** though hip imaging is normal.

Explanation:

- Pain is **referred** via **obturator and femoral nerves**, both of which supply **hip and knee joints**.
- Shared segmental innervation (**L2–L4**) explains cross-referral of pain.