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Coursepack Practice Questions

**Anteromedial Thigh**

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**Quiz Level**

1. Which of the following muscles originates from the Anterior Superior Iliac Spine?

A) Gracilis

B) Rectus Femoris

C) Pectineus

D) Adductor Longus

E) Sartorius

2. Which of the following correctly defines the borders of the femoral triangle?

A) Inguinal ligament, Adductor magnus, Sartorius

B) External oblique, Adductor Brevis, Sartorius

C) Ingiunal ligament, Pectineus, Gracilis

D) Inguinal ligament, Adductor longus, Sartorius

E) Internal oblique, Adductor Brevis, Gracilis

3. Which of the following correctly lists the contents of the Adductor Canal?

A) Femoral nerve, Femoral artery, Great Saphenous vein, Nerve to Adductor Magnus

B) Femoral Vein, Femoral artery, Saphenous nerve, Nerve to Vastus Medialis

C) Femoral nerve, Femoral vein, Great Saphenous vein, Nerve to Vastus Medialis

D) Popliteal vein, Popliteal artery, Great Saphenous vein, Saphenous nerve

E) Profunda femoris artery, Saphenous nerve, Popliteal artery

4. The femoral nerve innervates all of the following except:

A) Pectineus

B) Tensor fascia lata

C) Rectus Femoris

D) Illiopsoas

E) Vastus Lateralis

5. Which of the following vessels provides the majority of the blood supply to the femoral head?

A) Lateral circumflex femoral - ascending branch

B) Medial circumflex femoral

C) Articular branch of the obturator

D) Inferior gluteal

E) First perforating branch of the deep femoral

**Test Level**

6. A 58-year-old female undergoes a prolonged gynecological surgery in the lithotomy position (hip and knee flexion, knees to chest). Postoperatively, she complains of weakness and numbness in the anterior thigh, along with difficulty extending her knee. On examination, there is evidence of reduced sensation over the anterior thigh and weakness in knee extension. What nerve is indicated in this case, and where has compression likely occurred that results in the described weakness and sensory deficits?

A) Femoral nerve, under the inguinal liamgent

B) Obturator nerve, Obturator cannal

C) Sciatic nerve, Greater sciatic foramen

D) Femoral nerve, Femoral triangle

E) Obturator nerve, Adductor cannal

7. A 32 yr old male presents to the emergency department with a deep laceration in his groin area resulting from a knife injury. Upon examination, it is noted that the laceration involves the medial thigh, just medial to the pectineus muscle. The patient complains of difficulty with certain movements in the lower limb, including weakness in hip flexion, medial rotation of the thigh, and major weakness of adduction of the thigh. He does not have any noted loss of knee flexion. Which of the following nerves is most likely indicated in his injury?

A) Femoral nerve

B) Obturator nerve - Posterior branch

C) Obturator nerve - Anterior branch

D) Inferior gluteal nerve

E) Superior gluteal nerve

8. A 29-year-old male presents to the emergency department with a stab wound on the lateral aspect of his superior thigh. He reports being involved in a physical altercation earlier in the day. On examination, there is evidence of a deep laceration just lateral to the sartorius muscle. The patient complains of severe pain and difficulty moving his leg. An urgent Doppler ultrasound is performed, which reveals damage to a major blood vessel in the region. Based on the patient's clinical presentation, which blood vessel is most likely damaged in this case?

A) Superficial femoral artery

B) Deep femoral artery

C) Medial circumflex femoral artery

D) Ascending branch of the lateral circumflex femoral artery

E) Descending branch of the lateral circumflex femoral artery

9. A 35-year-old male patient is admitted to the emergency department following a severe trauma. Due to his critical condition, the medical team decides to insert a central line for vascular access. As you palpate the femoral triangle, you feel a strong pulse. What is the next step to ensure proper insertion of the central line in this patient?

A) Insert the catheter lateral to the identified pulse

B) Insert the catheter directly into the area of the identified pulse

C) Insert the catheter just medial to the identified pulse

D) Insert the catheter just inferior to the identified pulse

E) Insert the catheter just superior to the identified pulse

10. A 55-year-old female presents with a painful mass in the groin region that increases in size when she coughs or strains. Physical examination reveals a bulge below the inguinal ligament in the femoral triangle. The indicated structure transversed what path to reach the femoral triangle?

A) Passage through the inguinal cannal

B) Passage through the femoral ring

C) Direct penetration into the femoral triangle

D) Saphenous opening

E) Obturator cannal

Answers

**1. The correct answer is E) Sartorius**

The muscle that originates from the Anterior Superior Iliac Spine (ASIS) is the Sartorius muscle. The ASIS is a bony prominence located on the anterior aspect of the iliac crest, which is part of the hip bone.The Sartorius muscle is a long, thin muscle that runs obliquely across the anterior thigh. It originates from the ASIS and descends diagonally across the anterior thigh to insert on the medial surface of the tibia, just below the knee joint. The Sartorius muscle has multiple actions. It flexes, abducts, and laterally rotates the hip joint, allowing for movements such as crossing the legs in a sitting position. It also flexes the knee joint, assisting in movements like climbing stairs and squatting. In the given options, the Sartorius muscle (Option E) is the only muscle that originates from the ASIS. The other muscles listed have different origins. Gracilis originates from the pubic symphysis and adjacent ischial ramus (Option A). Rectus Femoris originates from the anterior inferior iliac spine (AIIS) (Option B). Pectineus originates from the superior ramus of the pubic bone (Option C). Adductor Longus originates from the body of the pubic bone (Option D).

**2. The correct answer is: D) Inguinal ligament, Sartorius, Adductor longus**

The femoral triangle is a triangular-shaped region located in the upper thigh, bounded by three structures: **Inguinal ligament**: The inguinal ligament is a band of connective tissue that extends from the anterior superior iliac spine (ASIS) to the pubic tubercle. It forms the superior border of the femoral triangle. **Adductor longus**: The adductor longus is a long muscle located in the upper medial thigh thigh. It forms the medial border of the femoral triangle. **Sartorius muscle:** The sartorius muscle is a long, strap-like muscle that runs diagonally across the anterior thigh. It forms the lateral border of the femoral triangle. Together, these three structures define the boundaries of the femoral triangle. The femoral triangle is an important anatomical landmark and serves as a passageway for structures entering and exiting the thigh. It contains several important structures, including the femoral nerve, femoral artery, femoral vein, and lymph nodes. *Remember NAVEL → From lateral to medial the contents are: Nerve, Artery, Vein, Empty space, Lymphatics*

**3. The correct answer is B) Femoral artery, Femoral Vein, Saphenous Nerve, Nerve to Vastus Medialis**

The adductor canal, also known as Hunter's canal, is an anatomical passageway located in the medial part of the thigh. It lies just deep to the sartorius muscle and extends from the apex of the femoral triangle to the opening in the adductor magnus muscle tendon. The contents of the adductor canal include the femoral artery, femoral vein, saphenous nerve, and nerve to vastus medialis. **Femoral Artery:** The femoral artery is a major blood vessel that arises from the external iliac artery in the abdomen and passes through the femoral triangle. In the adductor canal, the femoral artery continues its course, giving off various branches that supply blood to the muscles and tissues of the thigh. **Femoral Vein**: The femoral vein accompanies the femoral artery and is responsible for returning deoxygenated blood from the lower limb back to the heart. It runs parallel to the femoral artery in the adductor canal. **Saphenous Nerve:** The saphenous nerve is a branch of the femoral nerve, which is derived from the lumbar plexus. It travels through the adductor canal along with the femoral vessels. The saphenous nerve provides sensory innervation to the skin of the medial leg and foot, as well as the medial aspect of the knee joint. **Nerve to Vastus Medialis:** The nerve to vastus medialis is a motor branch of the femoral nerve. It innervates the vastus medialis muscle, which is one of the quadriceps muscles responsible for extending the leg at the knee joint. The nerve to vastus medialis travels through the adductor canal along with the other structures. The adductor canal is an important anatomical pathway as it allows for the passage of neurovascular structures between the anterior and posterior compartments of the thigh. It serves as a conduit for the femoral artery, femoral vein, saphenous nerve, and nerve to vastus medialis, providing essential blood supply, sensory innervation, and motor control to the lower limb.

**4. The correct answer is B) Tensor fascia lata**

The femoral nerve is a major nerve of the lumbar plexus that innervates various muscles in the anterior compartment of the thigh. It provides motor innervation to some of the muscles involved in hip flexion and knee extension, as well as sensory innervation to the anterior thigh and medial leg. The femoral nerve does not innervate the tensor fascia lata muscle. Instead, the tensor fascia lata is innervated by the superior gluteal nerve, which arises from the sacral plexus. **Pectineus:** The pectineus muscle is innervated by the femoral nerve along with the anterior division of the obturator nerve. It is a short muscle located in the medial part of the thigh and contributes to hip flexion and adduction. **Rectus Femoris**: The rectus femoris muscle is one of the quadriceps muscles and is innervated by the femoral nerve. It is responsible for knee extension and also assists in hip flexion. **Iliopsoas:** The iliopsoas is a composite muscle consisting of the iliacus and psoas major muscles. Both muscles receive innervation from the femoral nerve. The iliopsoas muscle plays a significant role in hip flexion. **Vastus Lateralis:** The vastus lateralis muscle is one of the quadriceps muscles and is innervated by the femoral nerve. It works together with the other quadriceps muscles to extend the knee.

**5. The correct answer is B) Medial circumflex femoral artery.**

The femoral head is predominantly supplied by the medial circumflex femoral artery, which is a branch of the deep femoral artery. The deep femoral artery, also known as the profunda femoris artery, arises from the femoral artery in the thigh. It gives off several branches, including the medial circumflex femoral artery. The medial circumflex femoral artery takes a course around the neck of the femur and provides blood supply to the femoral head through its branches. These branches form a network of vessels within the femoral head known as the retinacular arteries. The retinacular arteries help in maintaining the blood supply to the femoral head, which is important for the nutrition and overall health of the bone. A) The ascending branch of the lateral circumflex femoral artery primarily supplies the lateral aspect of the thigh and hip joint, but not the femoral head. C) The articular branch of the obturator artery supplies the hip joint, including the acetabulum, but it does not provide the majority of blood supply to the femoral head. D) The inferior gluteal artery supplies the gluteal region and the posterior thigh but does not have a significant role in the blood supply to the femoral head.E) The perforating branches of the deep femoral artery supplies the posterior compartment of the thigh and is a minor component of blood supply of the femoral head.

6. **The correct answer is A) Femoral nerve, under the inguinal ligament.**

In this scenario, the patient's symptoms of weakness and numbness in the anterior thigh, along with difficulty extending the knee, indicate a nerve-related issue. The femoral nerve is the nerve implicated in this case. The femoral nerve arises from the lumbar plexus, specifically from the ventral rami of L2-L4 spinal nerves. The compression of the femoral nerve is likely occurring under the inguinal ligament. The inguinal ligament is a fibrous band that extends from the anterior superior iliac spine to the pubic tubercle. It forms the superior border of the femoral triangle. The femoral nerve passes beneath the inguinal ligament and enters the femoral triangle, where it continues its course down the anterior thigh. Prolonged surgery in the lithotomy position can cause compression or stretching of the femoral nerve as it passes under the inguinal ligament. This can lead to weakness in knee extension, as the femoral nerve innervates the quadriceps femoris muscle group, which is responsible for knee extension. The sensory deficits in the anterior thigh result from compromised sensory innervation by the femoral nerve. Therefore, in this case, the symptoms suggest compression of the femoral nerve under the inguinal ligament, likely due to the patient's positioning during the gynecological surgery.

7. **The correct answer is C) Obturator nerve - Anterior branch.**

Based on the patient's presentation, with a deep laceration involving the medial thigh just medial to the pectineus muscle, and the specific pattern of weakness and difficulty with movements described, the most likely nerve involved is the anterior branch of the obturator nerve. The obturator nerve arises from the lumbar plexus, specifically from the ventral rami of L2-L4 spinal nerves. It travels through the pelvis and divides into an anterior and a posterior branch. The anterior branch supplies motor innervation to the muscles of the medial compartment of the thigh, including the adductor muscles (adductor brevis, adductor longus, gracilis) and pectineus, while the posterior division supplies the obturator externus and half the adductor magnus (adductor portion). The patient's symptoms of weakness in hip flexion, medial rotation of the thigh, and major weakness of adduction of the thigh are consistent with the motor functions of the muscles innervated by the anterior branch of the obturator nerve. The adductor muscles are primarily responsible for hip adduction, and their weakness can result in difficulty with adduction movements. Hip flexion is also affected due to the involvement of the pectineus muscle, which is a hip flexor. However, the patient does not have any noted loss of knee extension, which suggests that the injury does not involve the femoral nerve, as the femoral nerve innervates the major muscles responsible for knee extension. Additionally, there is no indicated loss of lateral rotation, indicating the obturator extraneous has not been damaged, thus the posterior branch of the obturator nerve is not indicated by this clinical presentation.

8. **The correct answer is D) Ascending branch of the lateral circumflex femoral artery**

The patient's clinical presentation of a stab wound just lateral to the sartorius muscle in the region of the superior thigh, along with severe pain and difficulty moving the leg, suggests damage to a major blood vessel. The ascending branch of the lateral circumflex femoral artery is the most likely vessel to be injured in this case. Injury to this vessel can lead to significant bleeding and compromised blood flow to the affected area. The ascending branch of the lateral circumflex femoral artery is a branch of the deep femoral artery that provides blood supply to the lateral thigh. It runs in close proximity to the sartorius muscle and can be at risk of injury in cases of trauma or stab wounds to the lateral thigh region. Damage to this vessel can result in significant bleeding and compromised blood flow to the affected area, leading to symptoms such as severe pain and difficulty moving the leg. The other options listed, such as the superficial femoral artery, deep femoral artery, and medial circumflex femoral artery, are not directly associated with the described region or the likely site of injury in this case.

9. **The correct answer is C) Insert the catheter just medial to the identified pulse**

When palpating a strong pulse in the region of the femoral triangle during central line insertion, it is important to insert into the femoral vein and not injure other structures in the area. The femoral triangle is an anatomical area located in the upper thigh, bounded by the inguinal ligament superiorly, the sartorius muscle laterally, and adductor longus muscle medially. In this scenario, feeling a strong pulse indicates proximity to the femoral artery, which runs through the femoral triangle. Inserting the catheter lateral to the identified pulse (option A) would not be the appropriate approach as it may still put the femoral artery as well as the femoral nerve. Inserting the catheter directly into the area of the identified pulse (option B) is not recommended due to the potential for arterial injury. Inserting the catheter just inferior to the identified pulse (option D) or just superior to the identified pulse (option E) does not provide a proper orientation for accessing the femoral vein. The ideal placement is just medial to the pulse, as it allows for safer access to the femoral vein while minimizing the risk of arterial complications.*Remember NAVEL → From lateral to medial the contents are: Nerve, Artery, Vein, Empty space, Lymphatics*

**10. The correct answer is B) Femoral ring**

The femoral hernia is a protrusion of abdominal contents through the femoral ring, which is located below the inguinal ligament in the femoral triangle. In this clinical scenario, the patient presents with a painful mass in the groin region that increases in size with coughing or straining, indicating the possibility of a *femoral hernia*. To understand the path taken by the herniated structure to reach the femoral triangle, it is important to consider the anatomy. The femoral ring is an opening in the fascia lata of the thigh, located just below the inguinal ligament. The herniated contents pass through this femoral ring and emerge in the femoral triangle. The femoral triangle is a space in the anterior aspect of the thigh, bordered by the inguinal ligament superiorly, the sartorius muscle laterally, and the adductor longus medially. Options A, C, D, and E are incorrect because they do not accurately describe the path taken by the herniated structure in a femoral hernia. The inguinal canal is associated with inguinal hernias, the direct penetration into the femoral triangle is not a typical pathway for herniation, the saphenous opening is related to the great saphenous vein, and the obturator canal is associated with the passage of the obturator vessels and nerve. In summary, a femoral hernia occurs when abdominal contents protrude through the femoral ring, which is located below the inguinal ligament in the femoral triangle.