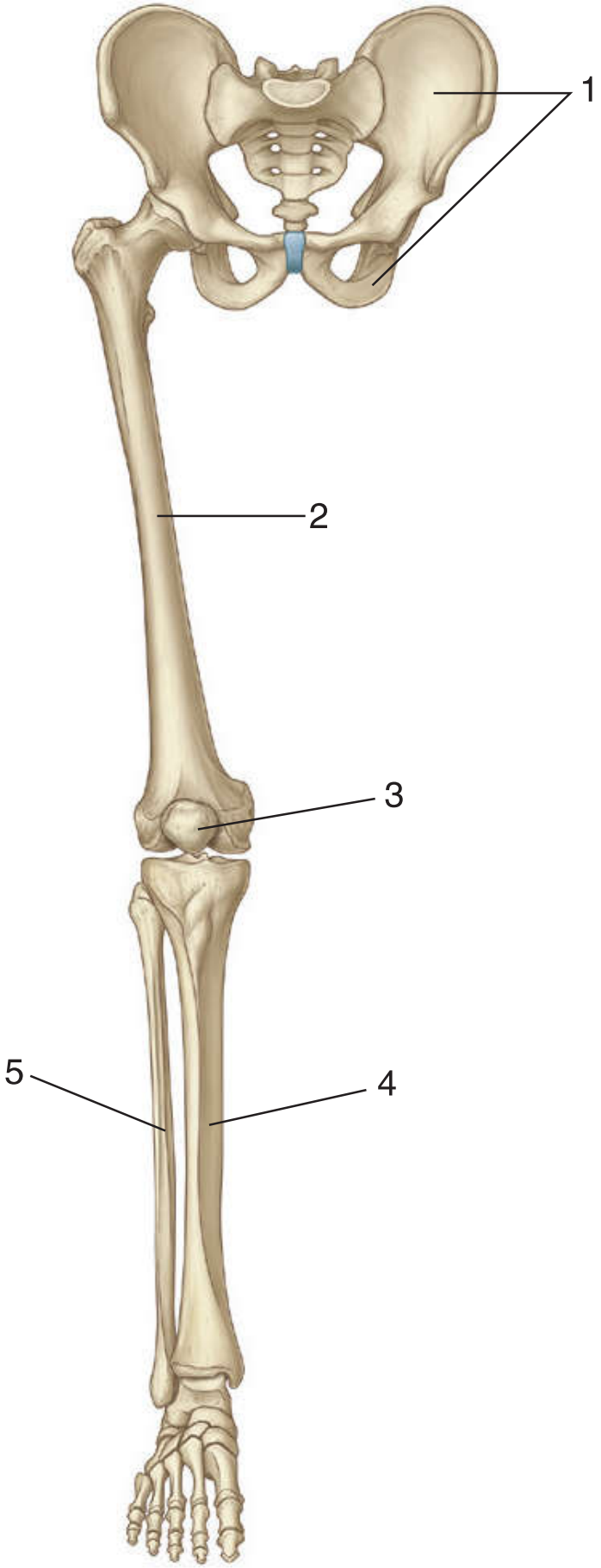
Identify the indicated bones.

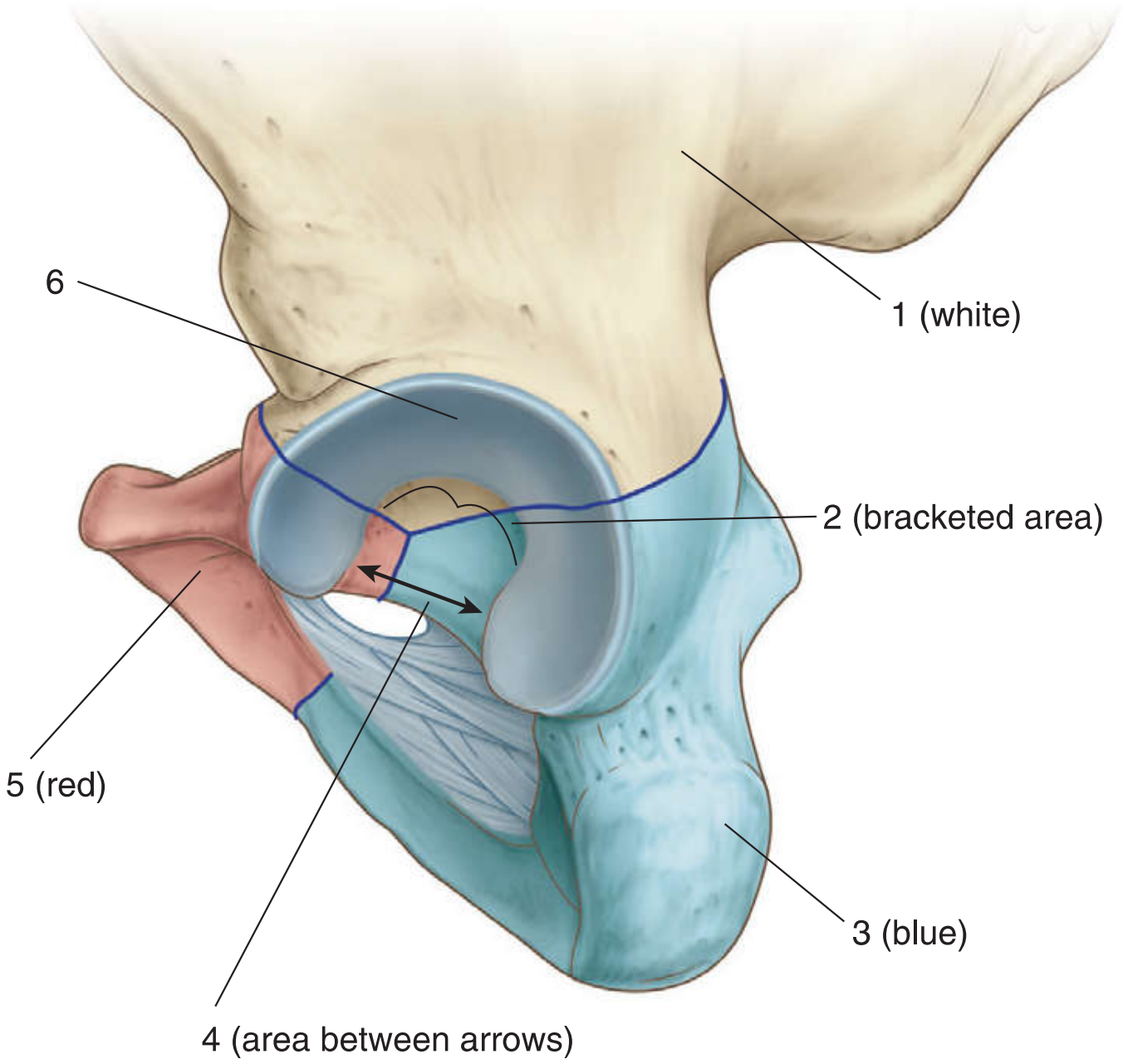


SKELETON: OVERVIEW

1. Pelvic bone
2. Femur
3. Patella
4. Tibia
5. Fibula

Figure from Gray's Anatomy for Students, *3rd edition, p. 541.*

Is this structure from the right or left side of the body? Identify the bones and features.



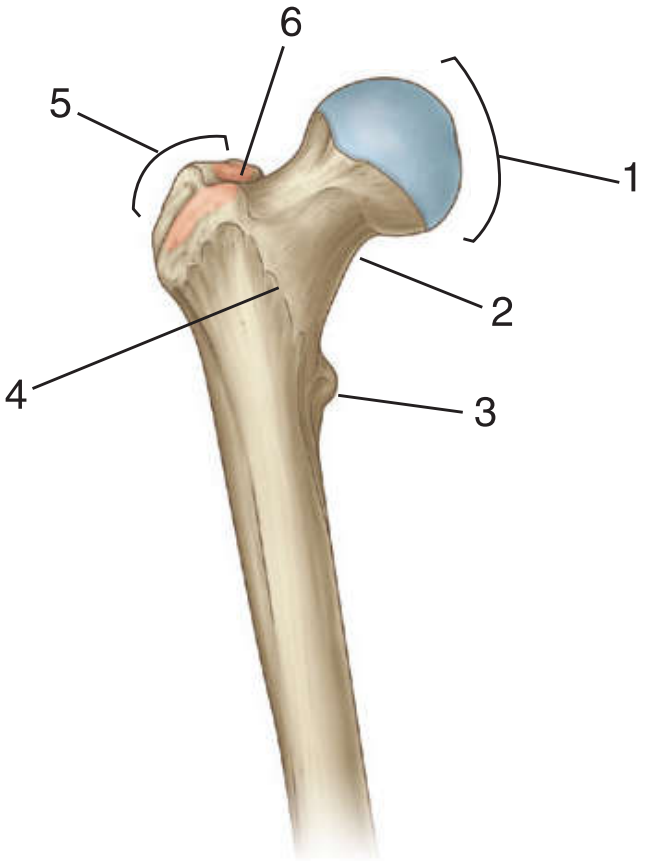
ACETABULUM

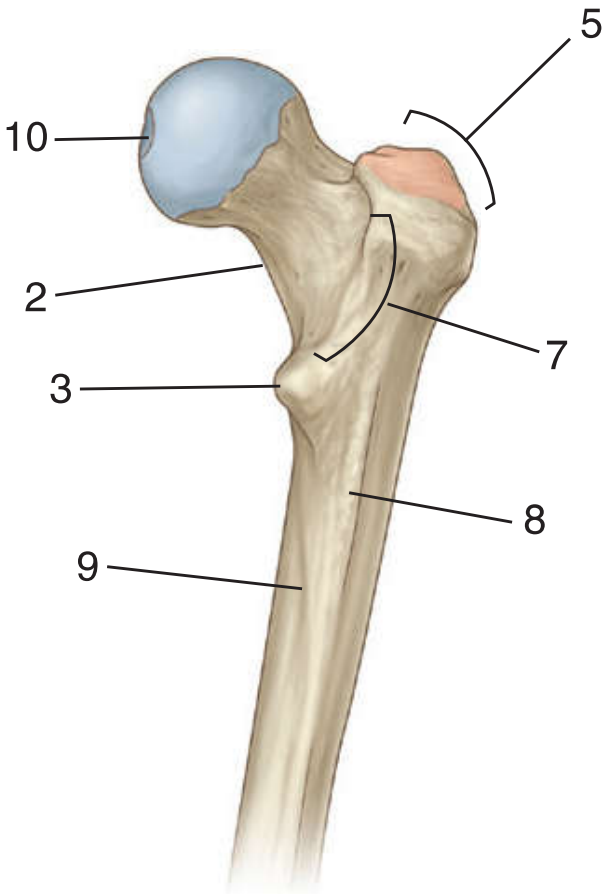
This structure is on the left side of the body.

1. Ilium
2. Acetabular fossa
3. Ischium
4. Acetabular notch
5. Pubis
6. Lunate surface/articular surface

Figure from Gray's Anatomy for Students, *3rd edition, p. 553.*

Identify the indicated features.





FEMUR

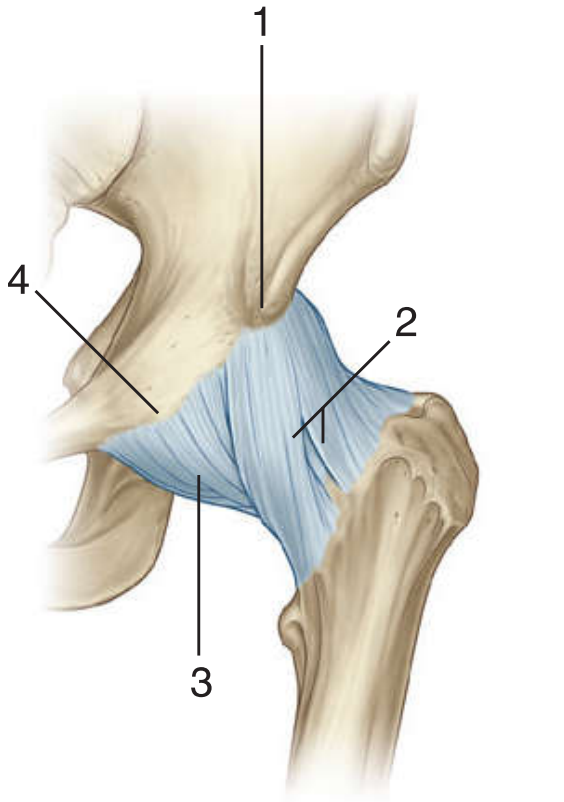
1. Head
2. Neck
3. Lesser trochanter
4. Intertrochanteric line
5. Greater trochanter
6. Trochanteric fossa
7. Intertrochanteric crest
8. Gluteal tuberosity
9. Pectineal line
10. Fovea

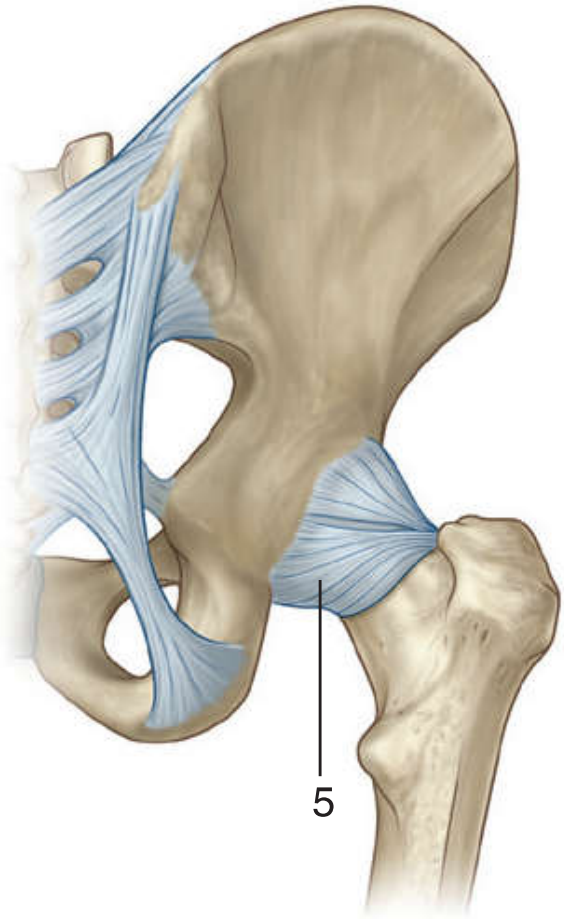
IN THE CLINIC:

- **The femoral neck is a common site of fracture. Fractures of the neck may interrupt the blood supply to the femoral head.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 555.*

Identify the indicated ligaments and bony features.





HIP JOINT LIGAMENTS

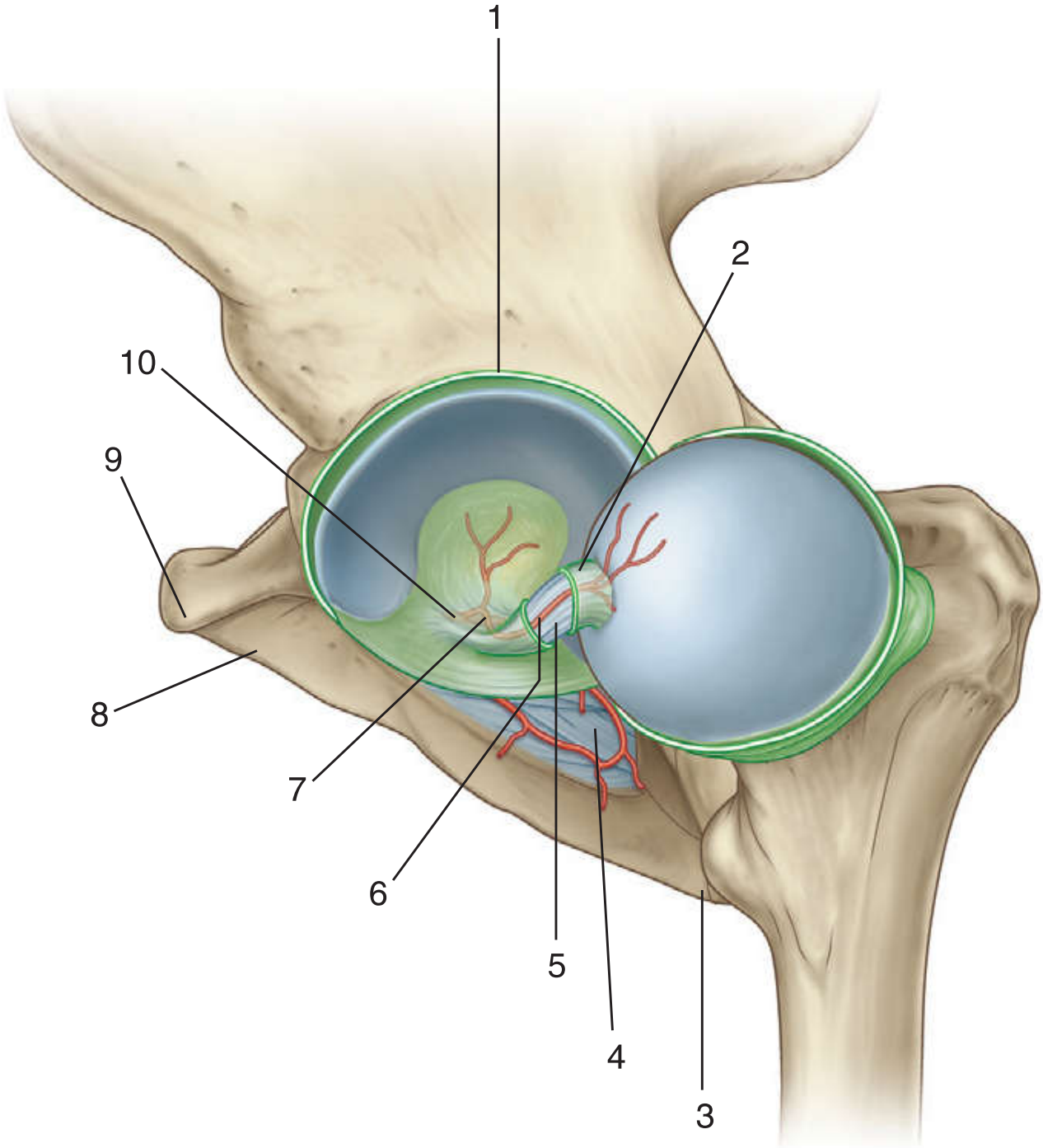
1. Anterior inferior iliac spine
2. Iliofemoral ligament
3. Pubofemoral ligament
4. Iliopubic eminence
5. Ischiofemoral ligament

IN THE CLINIC:

- **The hip joint is most stable when it is extended and the ligaments are taut.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 560.*

Is this joint from the left or right side of the body? Identify the indicated structures and arteries.



LIGAMENT OF HEAD OF FEMUR

The joint is on the left side of the body.

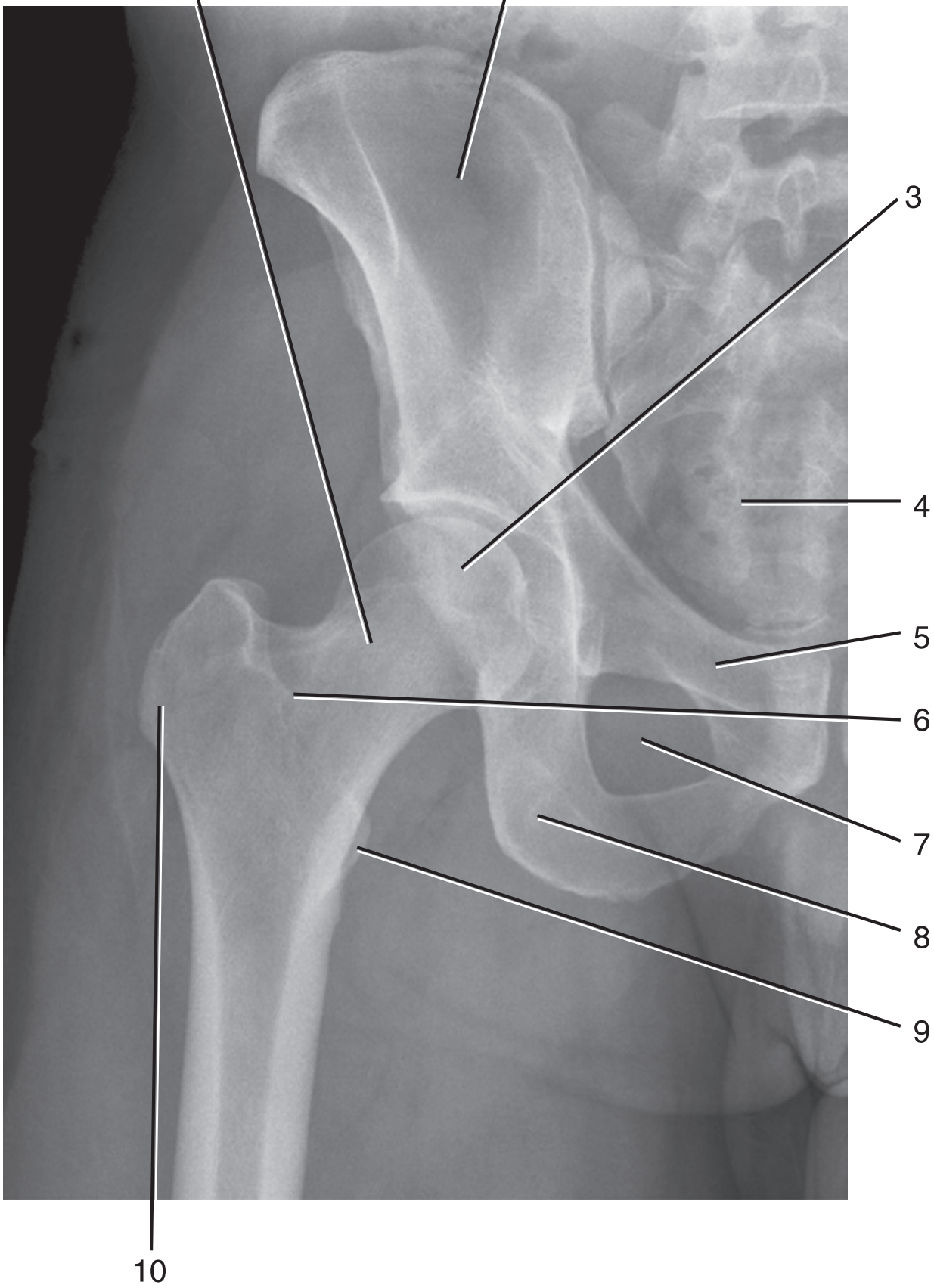
1. Cut synovial membrane
2. Synovial sleeve around ligament of head of femur
3. Ischial tuberosity
4. Obturator membrane
5. Ligament of head of femur
6. Artery of ligament of head
7. Acetabular branch of obturator artery
8. Pubis
9. Pubic tubercle
10. Obturator artery

IN THE CLINIC:

- **The artery in the ligament of the head is important for delivering blood to the femoral head in the growing skeleton. In adults, the predominant blood supply to the head is via arteries along the neck, which, if damaged when the neck is fractured, leads to necrosis of the femoral head.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 559.*

Identify the indicated structures.

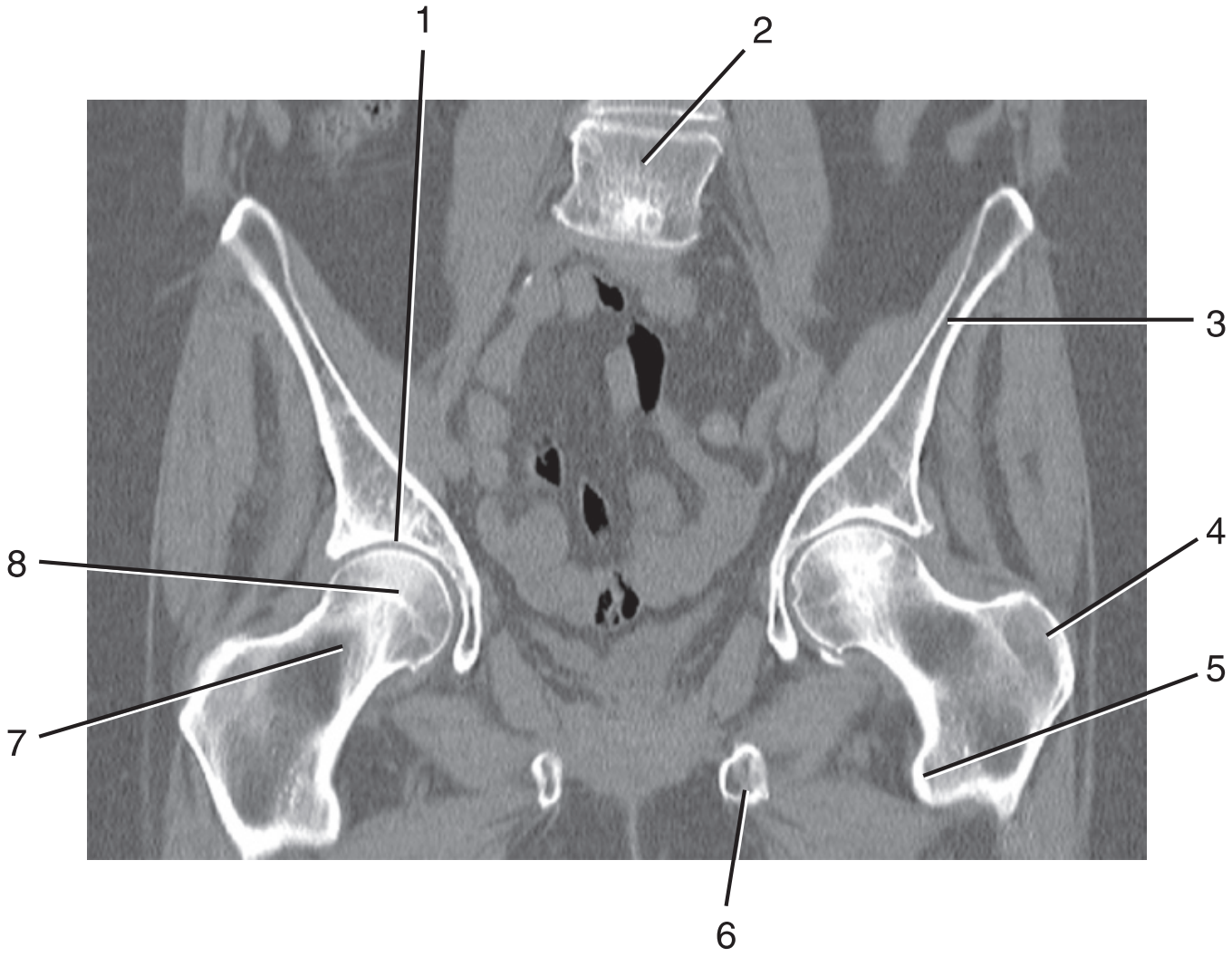


RADIOGRAPH: HIP JOINT

1. Neck of femur
2. Ilium
3. Head of femur
4. Sacrum
5. Pubis
6. Intertrochanteric line
7. Obturator foramen
8. Ischium
9. Lesser trochanter
10. Greater trochanter

Figure from Gray's Basic Anatomy, *p. 275.*

Identify the indicated structures.

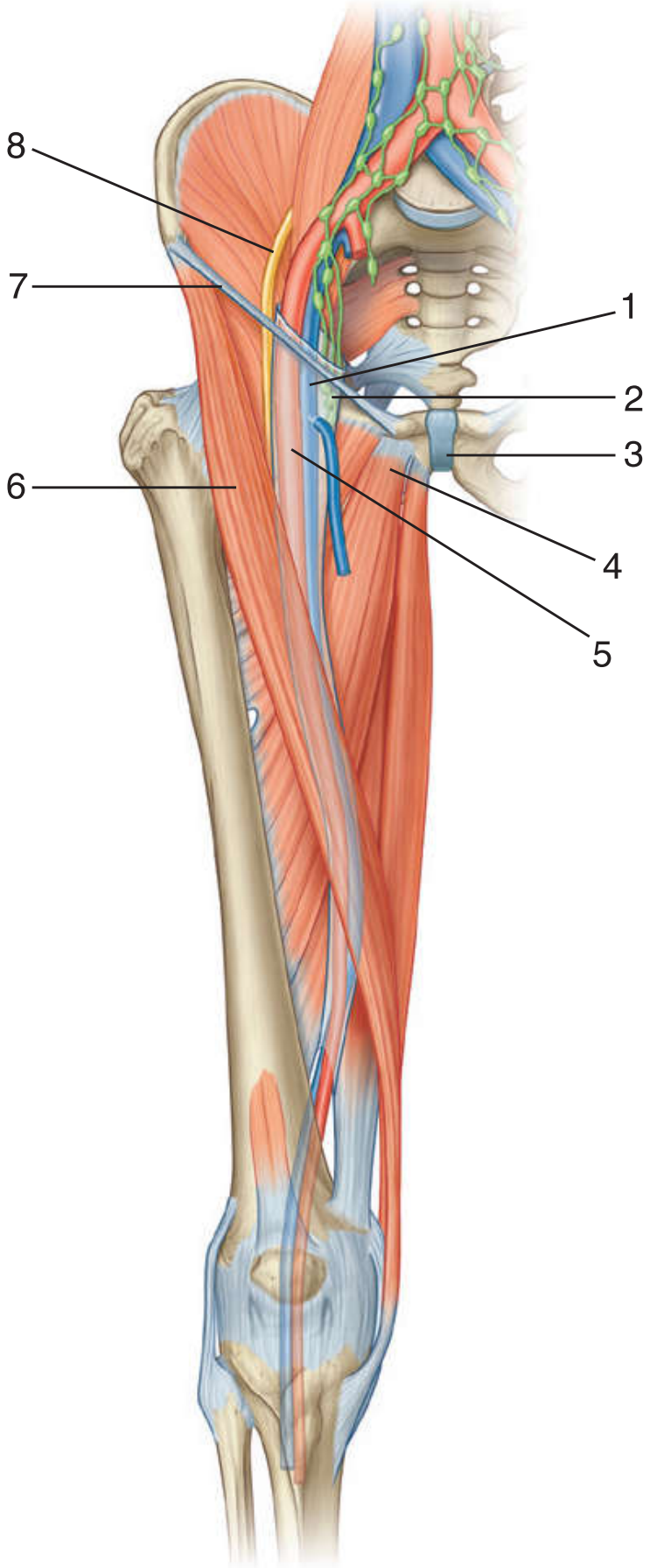


CT: HIP JOINT

1. Acetabulum
2. Body of LIV vertebra
3. Ilium
4. Greater trochanter
5. Lesser trochanter
6. Ischial tuberosity
7. Neck of femur
8. Head of femur

Figure from Gray's Basic Anatomy, *p. 275.*

Identify the indicated structures.



FEMORAL TRIANGLE

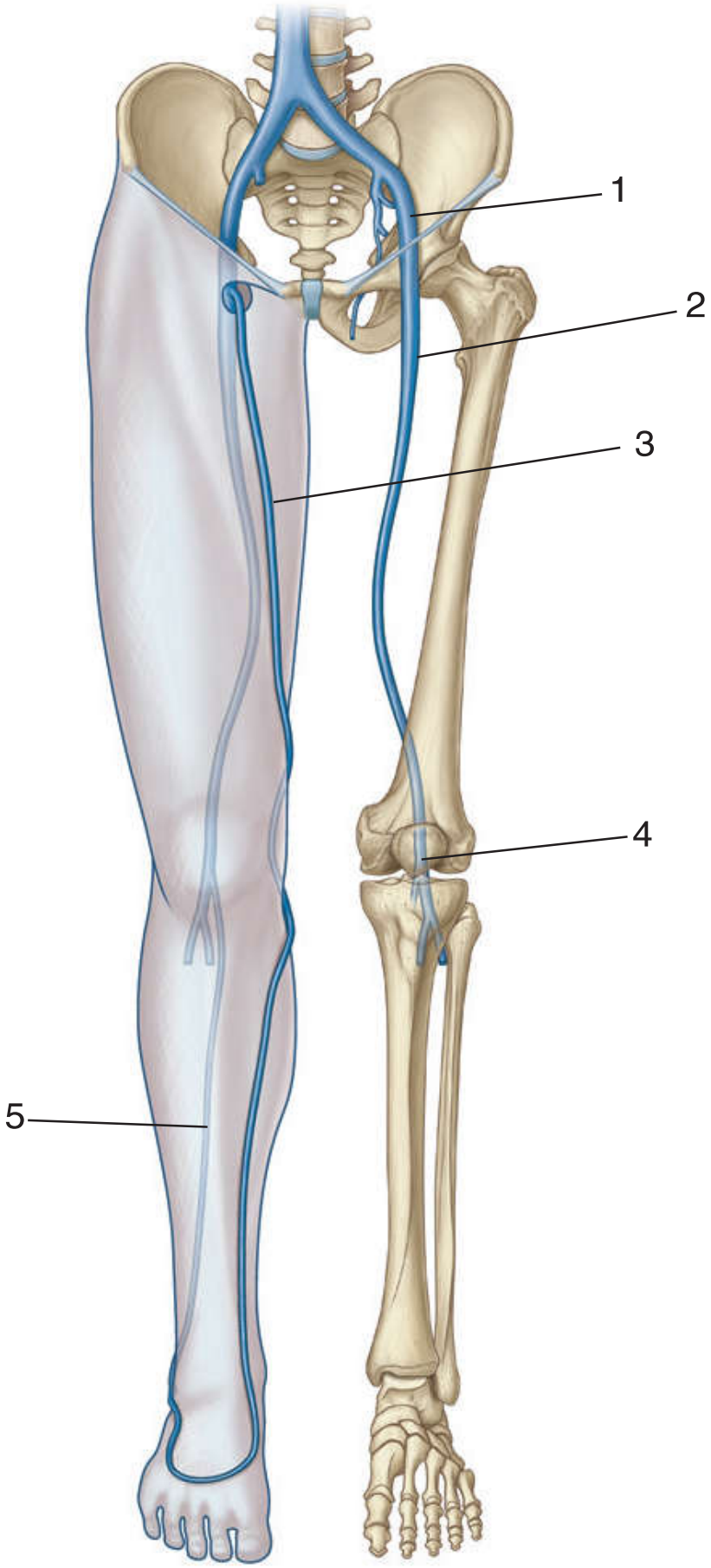
1. Femoral vein
2. Lymphatic vessels in the femoral canal
3. Pubic symphysis
4. Adductor longus muscle
5. Femoral artery
6. Sartorius muscle
7. Inguinal ligament
8. Femoral nerve

IN THE CLINIC:

- **The pulse of the femoral artery can be felt in the femoral triangle immediately below the inguinal ligament midway between the anterior superior iliac spine and the pubic symphysis.**
- **Femoral hernias occur in the femoral canal, which is medial to the femoral artery and vein, and inferior to the inguinal ligament.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 573.*

Identify the indicated veins.



SAPHENOUS VEIN

1. External iliac vein
2. Femoral vein
3. Great saphenous vein
4. Popliteal vein
5. Small saphenous vein

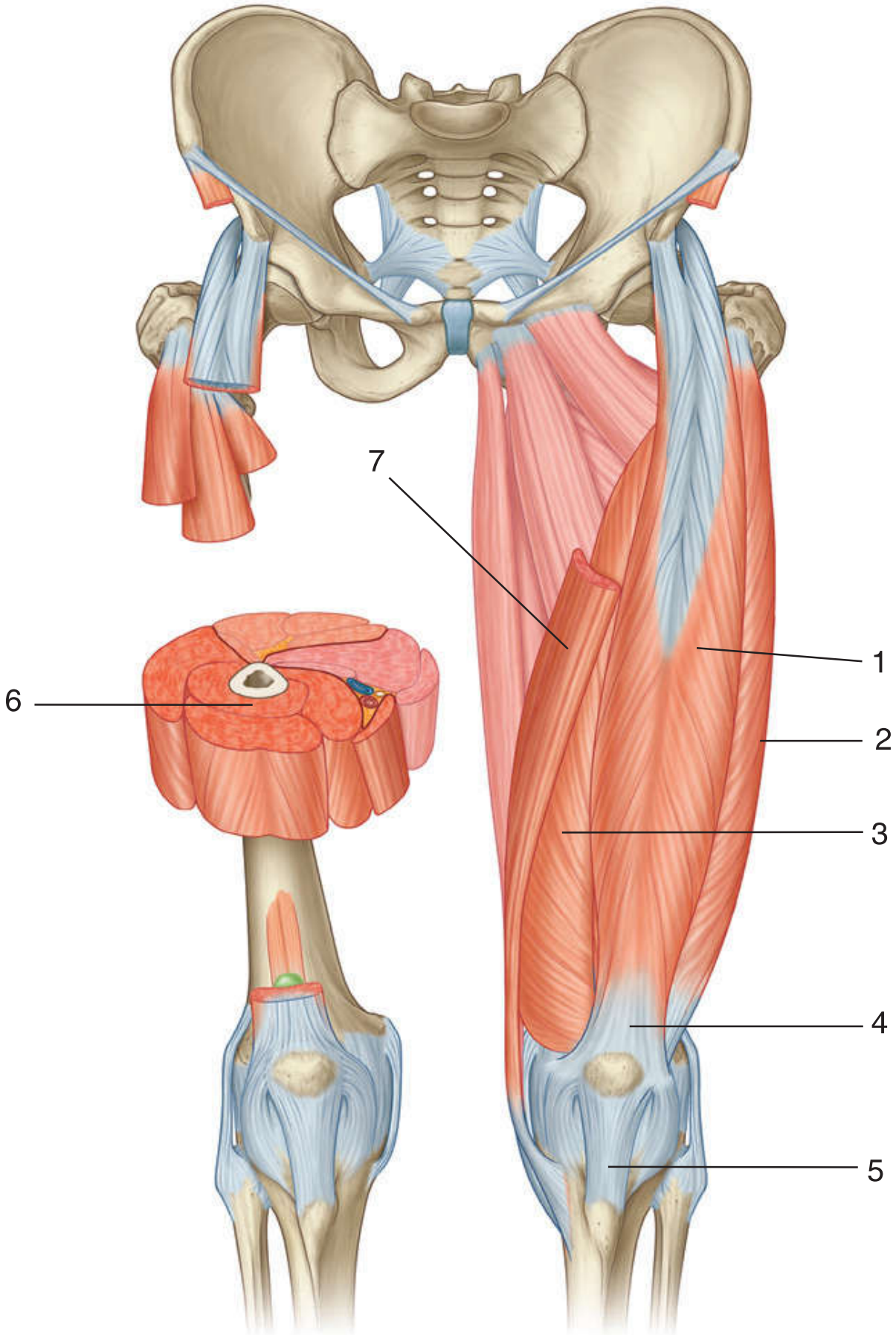
IN THE CLINIC:

- **Valve failure in the great and small saphenous veins leads to the pooling of blood in the vessels. As a result, the vessels become enlarged and tortuous, a condition known as "varicose veins."**

- **Because the great saphenous vein is long and there are regions with few branches, the vessel can be used for transplant into other regions, for example, into the heart during bypass surgery.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 568.*

Identify the indicated muscles and tendons.



ANTERIOR COMPARTMENT: MUSCLES

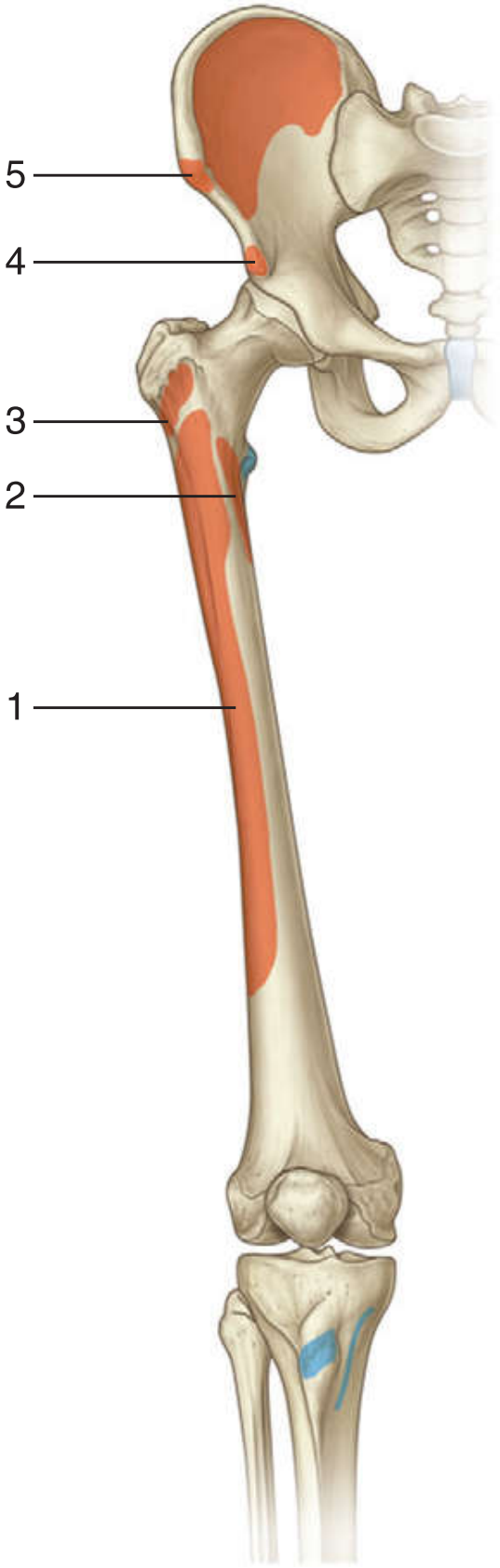
1. Rectus femoris muscle
2. Vastus lateralis muscle
3. Vastus medialis muscle
4. Quadriceps femoris tendon
5. Patellar ligament
6. Vastus intermedius muscle
7. Sartorius muscle

IN THE CLINIC:

- **A "tap" on the patellar ligament tests spinal level L3/4.**
- **Muscles in the anterior compartment of the thigh are innervated by the femoral nerve. A lesion in this nerve leads to a loss mainly of knee extension.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 592.*

Identify the muscles that attach to the areas indicated. What is the major function and innervation of each muscle?

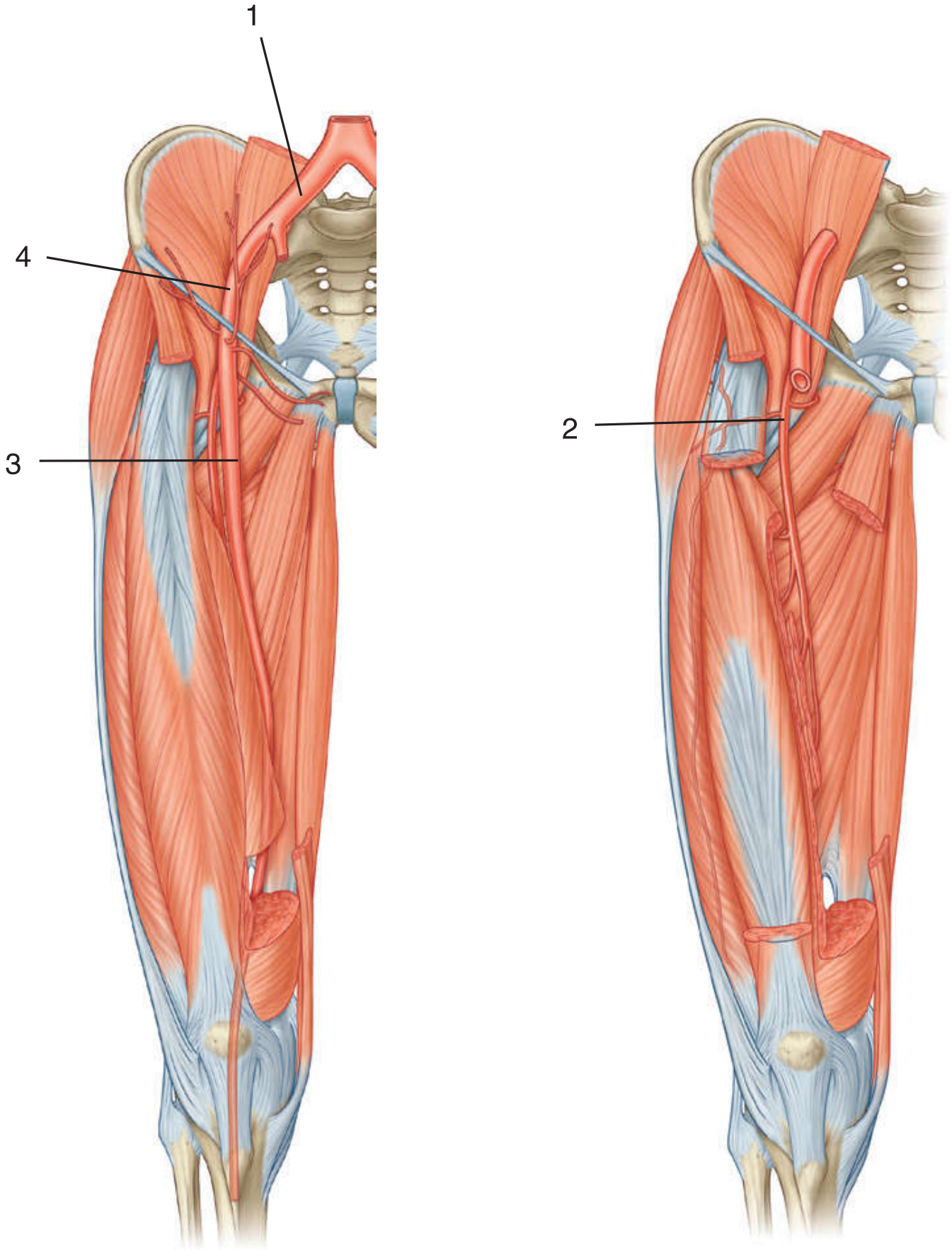


MUSCLES OF THE ANTERIOR COMPARTMENT OF THIGH (SPINAL SEGMENTS IN BOLD ARE THE MAJOR SEGMENTS INNERVATING THE MUSCLE)

Muscle	Origin	Insertion	Innervation	Function
1. Vastus intermedius	Femur–upper two thirds of anterior and lateral surfaces	Quadriceps femoris tendon and lateral margin of patella	Femoral nerve (L2, **L3, L4**)	Extends the leg at the knee joint
2. Vastus medialis	Femur–medial part of intertrochanteric line, pectineal line, medial lip of the linea aspera, medial supracondylar line	Quadriceps femoris tendon and medial border of patella	Femoral nerve (L2, **L3, L4**)	Extends the leg at the knee joint
3. Vastus lateralis	Femur–lateral part of intertrochanteric line, margin of greater trochanter, lateral margin of gluteal tuberosity, lateral lip of the linea aspera	Quadriceps femoris tendon	Femoral nerve (L2, **L3, L4**)	Extends the leg at the knee joint
4. Rectus femoris	Straight head originates from the anterior inferior iliac spine; reflected head originates from the ilium just superior to the acetabulum	Quadriceps femoris tendon	Femoral nerve (L2, **L3, L4**)	Flexes the thigh at the hip joint and extends the leg at the knee joint
5. Sartorius	Anterior superior iliac spine	Medial surface of tibia just inferomedial to tibial tuberosity	Femoral nerve (L2, L3)	Flexes the thigh at the hip joint and flexes the leg at the knee joint

Figure from Gray's Atlas of Anatomy, *2nd edition, p. 305*

Identify the indicated arteries.



FEMORAL ARTERY

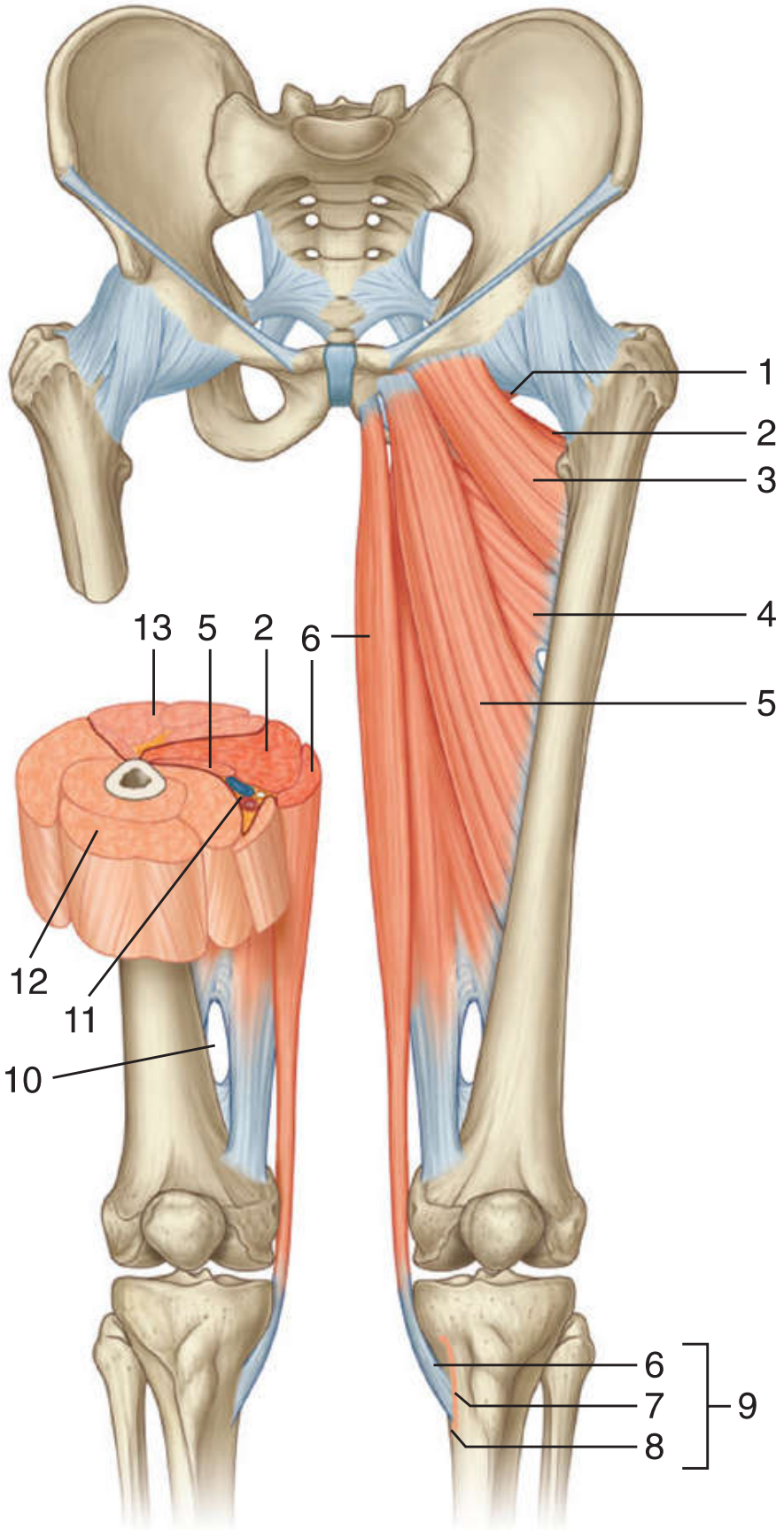
1. Common iliac artery
2. Deep artery of thigh
3. Femoral artery
4. External iliac artery

IN THE CLINIC:

- **Reduced blood flow through the common iliac artery reduces blood flow to the lower limb, pelvis, and perineum. When blood flow is reduced only in the external iliac, anastomoses between branches of the femoral artery in the thigh and branches of the internal iliac may maintain blood flow to the limb.**

Figure from Gray's Anatomy for Students, *3rd edition, pp. 600 and 601.*

Identify the indicated muscles, related structures, and muscle compartments.



MEDIAL COMPARTMENT: MUSCLES

1. Obturator externus
2. Adductor magnus
3. Pectineus
4. Adductor brevis
5. Adductor longus
6. Gracilis
7. Sartorius attachment
8. Semitendinosus attachment
9. Pes anserinus
10. Adductor hiatus
11. Adductor canal
12. Anterior compartment of thigh
13. Posterior compartment of thigh

Figure from Gray's Anatomy for Students, *3rd edition, p. 595.*

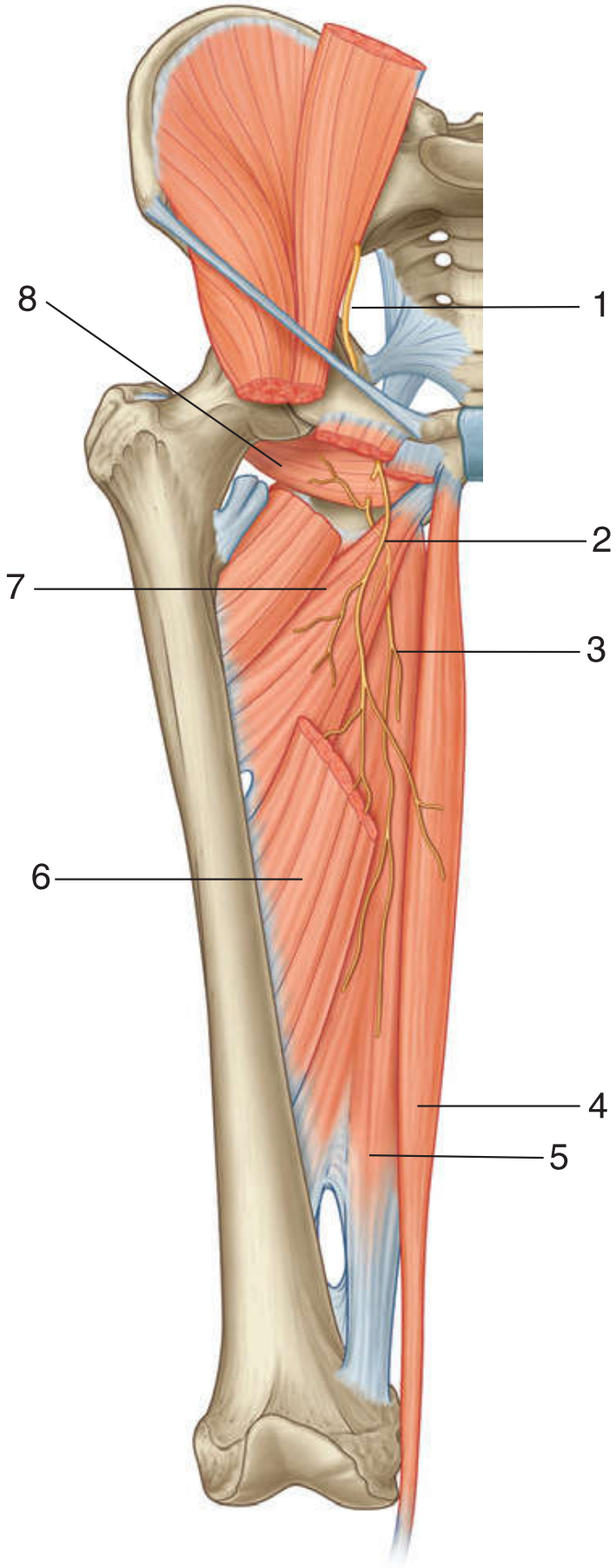
Identify the muscles that attach to the areas indicated. What is the major function and innervation of each muscle?

MUSCLES OF THE MEDIAL COMPARTMENT OF THIGH (SPINAL SEGMENTS IN BOLD ARE THE MAJOR SEGMENTS)

Muscle	Origin	Insertion	Innervation	Function
1. Gracilis	A line on the external surfaces of the body of the pubis, the inferior pubic ramus, and the ramus of the ischium	Medial surface of proximal shaft of the tibia	Obturator nerve (**L2**,L3)	Adducts thigh at hip joint and flexes leg at knee joint
2. Adductor brevis	External surface of body of pubis and inferior pubic ramus	Posterior surface of proximal femur and upper third of linea aspera	Obturator nerve (L2,L3)	Adducts thigh at hip joint
3. Adductor longus	External surface of body of pubis (triangular depression inferior to pubic crest and lateral to pubic symphysis)	Linea aspera on middle third of shaft of femur	Obturator nerve (anterior division) (**L2**,L3,L4)	Adducts and medially rotates thigh at hip joint
4. Adductor magnus	Adductor part—ischiopubic ramus Hamstring part—ischial tuberosity	Posterior surface of proximal femur, linea aspera, medial supracondylar line Adductor tubercle and supracondylar line	Obturator nerve (**L2,L3,L4**) Sciatic nerve (tibial division) (**L2,L3,L4**)	Adducts and medially rotates thigh at hip joint
5. Pectineus	Pectineal line (pecten pubis) and adjacent bone of pelvis	Oblique line extending from base of lesser trochanter to linea aspera on posterior surface of proximal femur	Femoral nerve (**L2**,L3)	Adducts and flexes thigh at hip joint
6. Obturator externus	External surface of obturator membrane and adjacent bone	Trochanteric fossa	Obturator nerve (posterior division) (L3,**L4**)	Laterally rotates thigh at hip joint

Figure from Gray's Atlas of Anatomy, *2nd edition, p. 305.*

Identify the indicated nerves and muscles.



OBTURATOR NERVE

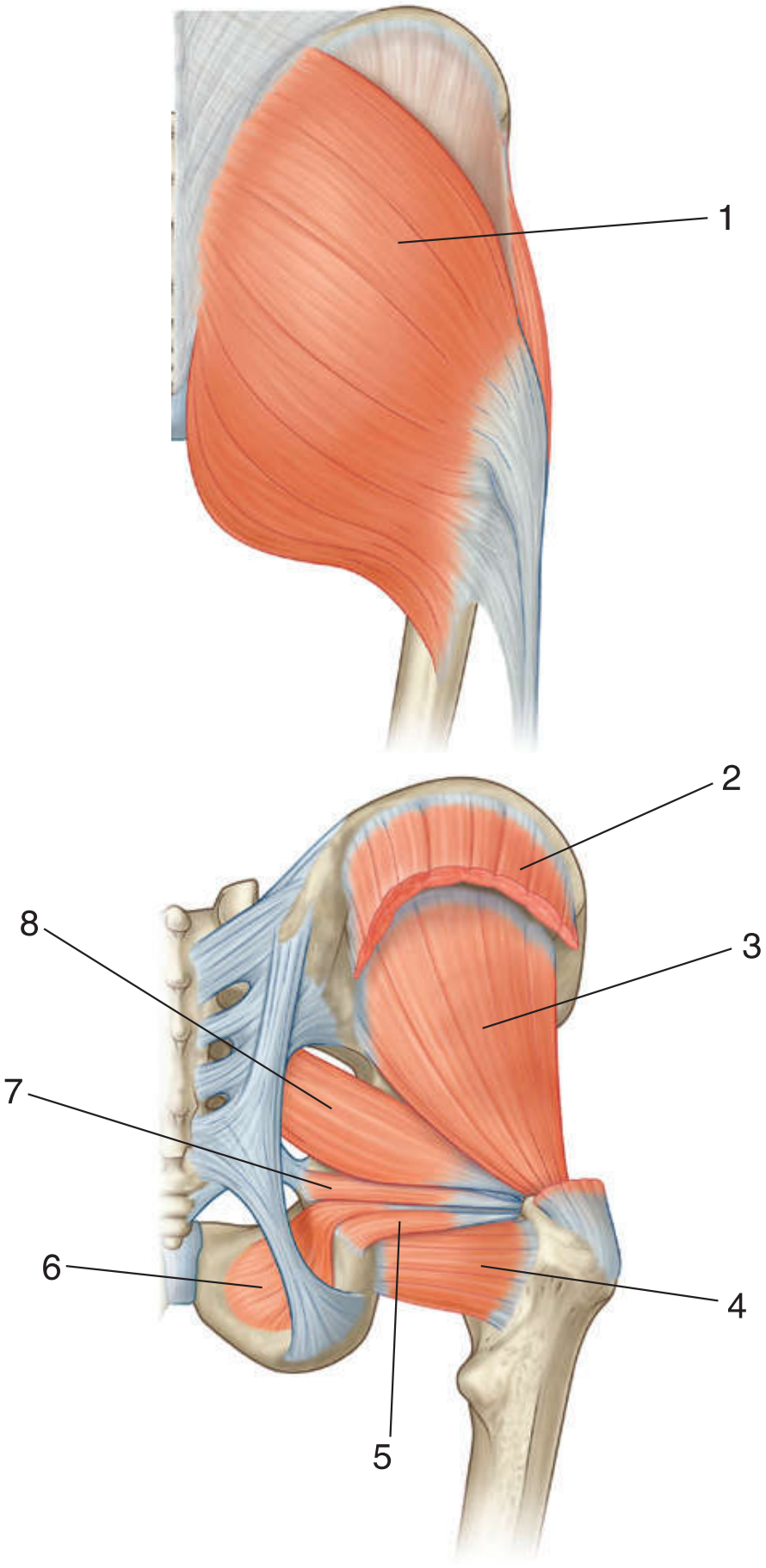
1. Obturator nerve
2. Anterior branch of obturator nerve
3. Posterior branch of obturator nerve
4. Gracilis muscle
5. Adductor magnus muscle
6. Adductor longus muscle
7. Adductor brevis muscle
8. Obturator externus muscle

IN THE CLINIC:

- **Muscles in the medial compartment of the thigh are innervated mainly by the obturator nerve. Reduced function of this nerve leads to a reduced ability to adduct the thigh at the hip joint.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 605.*

Identify the indicated muscles.



GLUTEAL REGION: MUSCLES

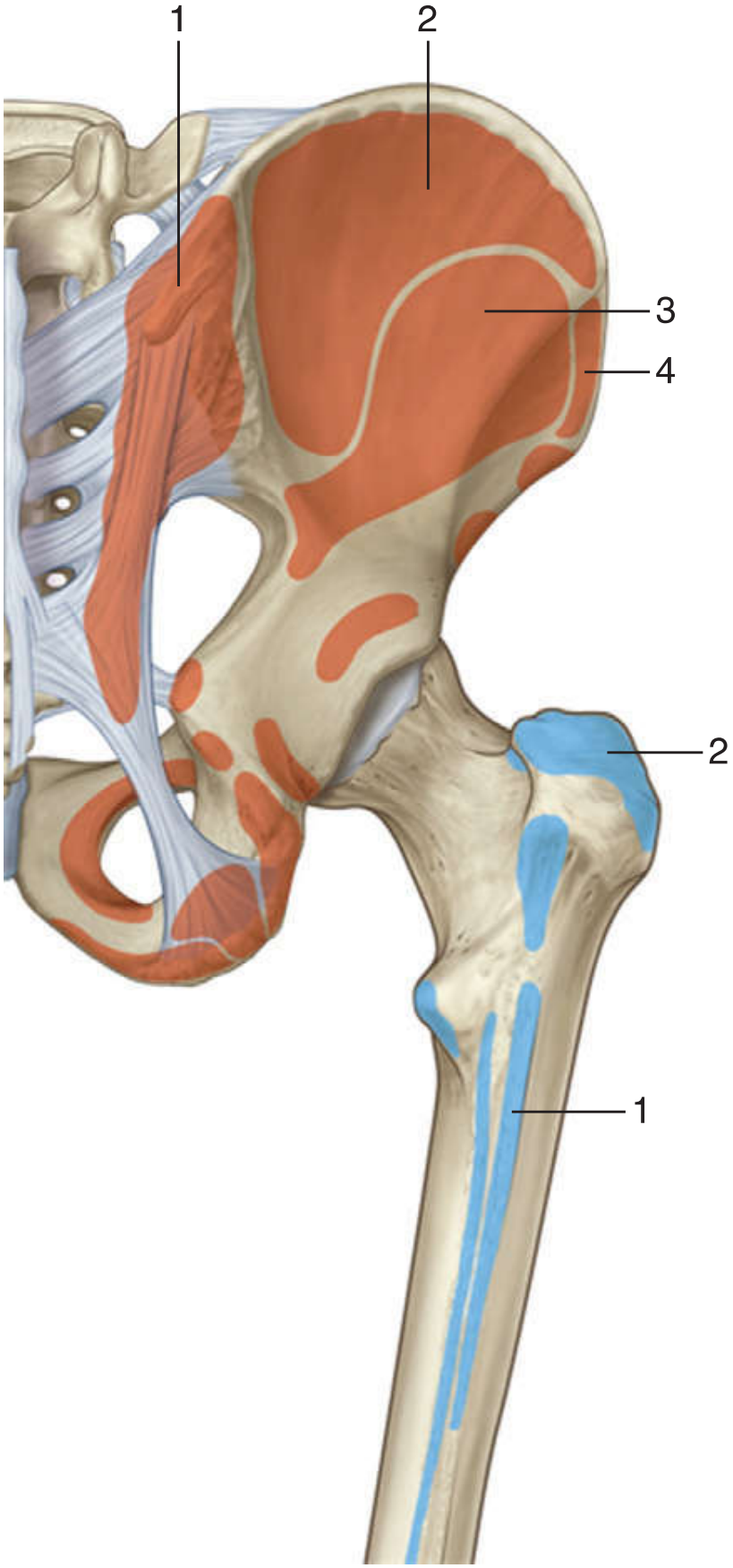
1. Gluteus maximus
2. Gluteus medius
3. Gluteus minimus
4. Quadratus femoris
5. Gemellus inferior
6. Obturator internus
7. Gemellus superior
8. Piriformis

IN THE CLINIC:

- **Gluteus medius and minimus are abductors of the hip joint. They prevent excessive pelvic tilt on the stance leg when the opposite limb swings forward during walking.**
- **Gluteus maximus is a powerful extensor of the hip joint and is most active when standing from a sitting position or when walking up stairs.**
- **The other small muscles in the gluteal region are mainly external rotators of the hip joint.**

Figure from Gray's Anatomy for Students, *3rd edition, pp. 576 and 578.*

Identify the muscle and its attachments, innervation, and actions.

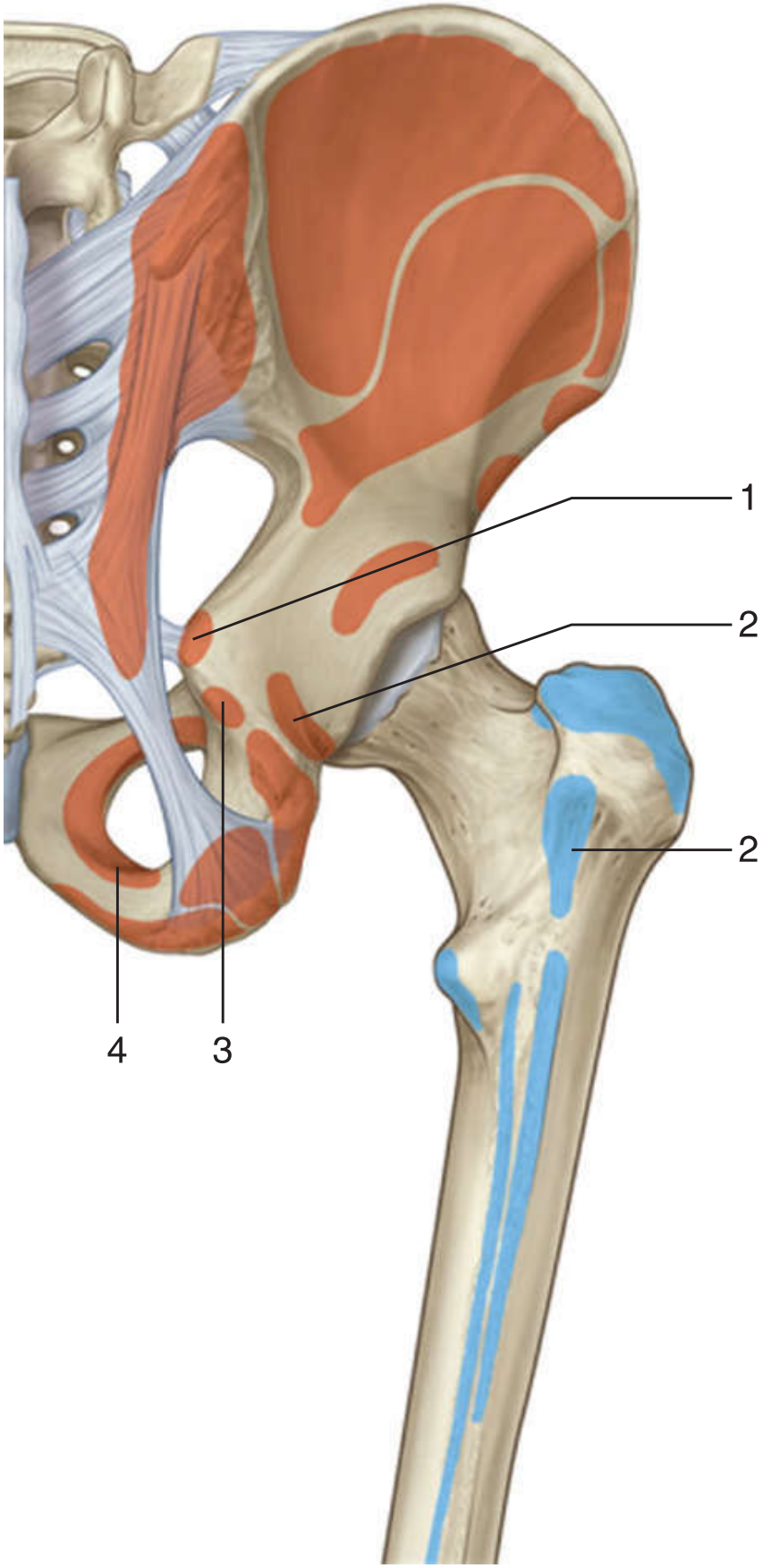


MUSCLES OF THE GLUTEAL REGION (SPINAL SEGMENTS IN BOLD ARE THE MAJOR SEGMENTS INNERVATING THE MUSCLE)

Muscle	Origin	Insertion	Innervation	Function
1. Gluteus maximus	Fascia covering gluteus medius, external surface of ilium behind posterior gluteal line, fascia of erector spinae, dorsal surface of lower sacrum, lateral margin of coccyx, external surface of sacrotuberous ligament	Posterior aspect of iliotibial tract of fascia lata and gluteal tuberosity of proximal femur	Inferior gluteal nerve (**L5,S1,S2**)	Powerful extensor of flexed femur at hip joint; lateral stabilizer of hip joint and knee joint; laterally rotates and abducts thigh
2. Gluteus medius	External surface of ilium between anterior and posterior gluteal lines	Elongate facet on the lateral surface of the greater trochanter	Superior gluteal nerve (**L4,L5,S1**)	Abducts femur at hip joint; holds pelvis secure over stance leg and prevents pelvic drop on the opposite swing side during walking; medially rotates thigh
3. Gluteus minimus	External surface of ilium between inferior and anterior gluteal lines	Linear facet on anterolateral aspect of greater trochanter	Superior gluteal nerve (**L4,L5,S1**)	Abducts femur at hip joint; holds pelvis secure over stance leg and prevents pelvic drop on the opposite swing side during walking; medially rotates thigh
4. Tensor fasciae latae	Lateral aspect of crest of ilium between anterior superior iliac spine and tubercle of the crest	Iliotibial tract of fascia lata	Superior gluteal nerve (**L4,L5,S1**)	Stabilizes the knee in extension

Figure from Gray's Atlas of Anatomy, *2nd edition, p. 300.*

Identify the muscle and its attachments, innervation, and actions.

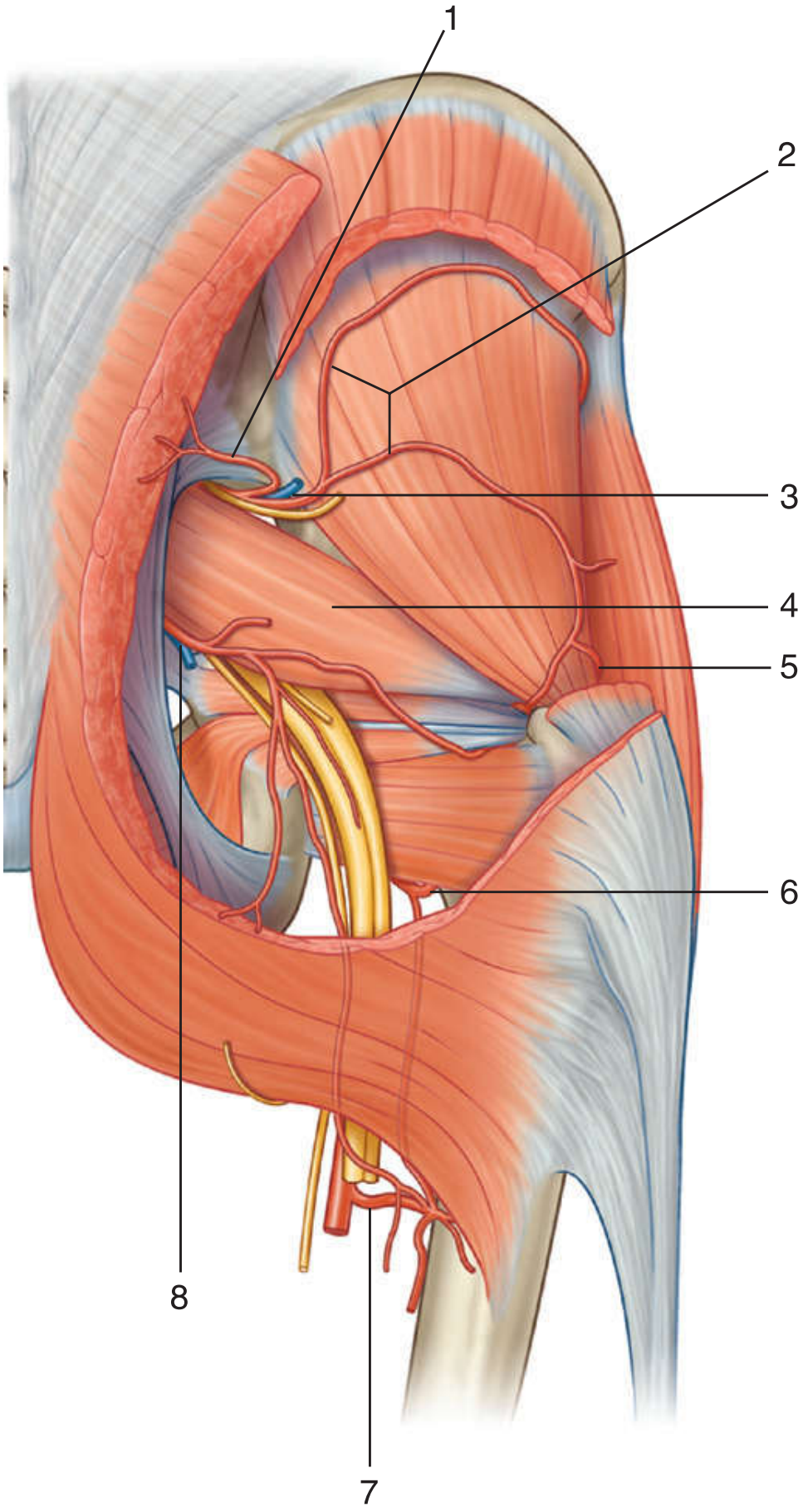


MUSCLES OF THE GLUTEAL REGION (SPINAL SEGMENTS IN BOLD ARE THE MAJOR SEGMENTS INNERVATING THE MUSCLE)

Muscle	Origin	Insertion	Innervation	Function
1. Gemellus superior	External surface of ischial spine	Along length of superior surface of the obturator internus tendon and into the medial side of greater trochanter of femur with obturator internus tendon	Nerve to obturator internus (L5,**S1**)	Laterally rotates the extended femur at hip joint; abduction of flexed femur at hip joint
2. Quadratus femoris	Lateral aspect of the ischium just anterior to the ischial tuberosity	Quadrate tubercle on the intertrochanteric crest of the proximal femur	Nerve to quadratus femoris (L5,**S1**)	Laterally rotates femur at hip joint
3. Gemellus inferior	Upper aspect of ischial tuberosity	Along length of inferior surface of the obturator internus tendon and into the medial side of greater trochanter of femur with obturator internus tendon	Nerve to quadratus femoris (L5,S1)	Laterally rotates the extended femur at hip joint; abducts flexed femur at hip joint
4. Obturator internus	Anterolateral wall of true pelvis; deep surface of obturator membrane and surrounding bone	Medial side of greater trochanter of femur	Nerve to obturator internus (L5,**S1**)	Laterally rotates the extended femur at hip joint; abducts flexed femur at hip joint

Figure from Gray's Atlas of Anatomy, *2nd edition, p. 300.*

Identify the indicated arteries.



GLUTEAL REGION: ARTERIES

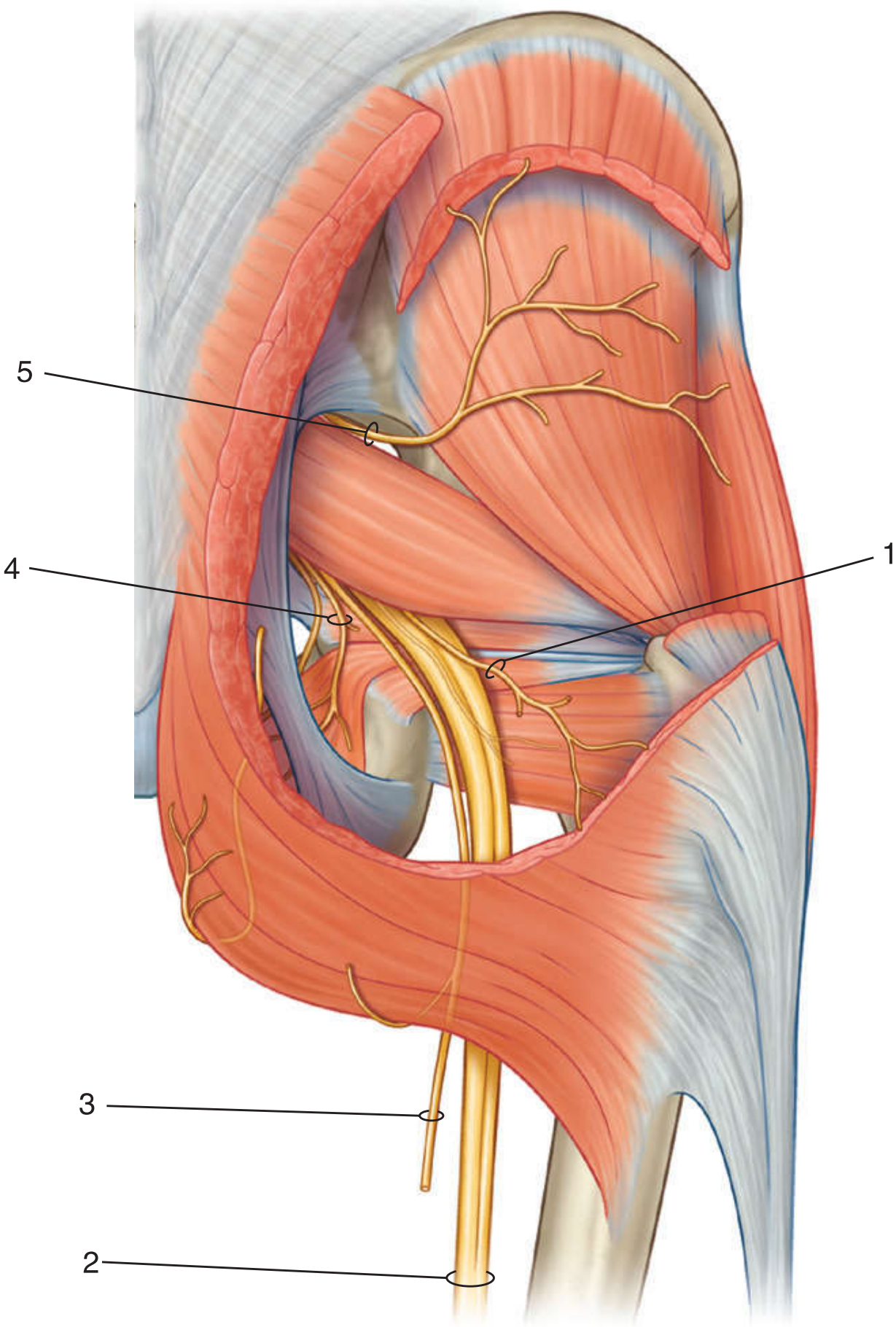
1. Superficial branch
2. Deep branch
3. Superior gluteal artery and vein
4. Piriformis muscle
5. Lateral femoral circumflex artery
6. Medial femoral circumflex artery
7. First perforating artery from deep artery of thigh
8. Inferior gluteal artery and vein

IN THE CLINIC:

- **The gluteal arteries from the internal iliac artery form an anastomotic network of vessels around the hip with branches of the femoral artery from the external iliac artery. This network may maintain blood flow to the limb when one of the supply vessels is blocked.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 582.*

Identify the indicated nerves.



GLUTEAL REGION: NERVES

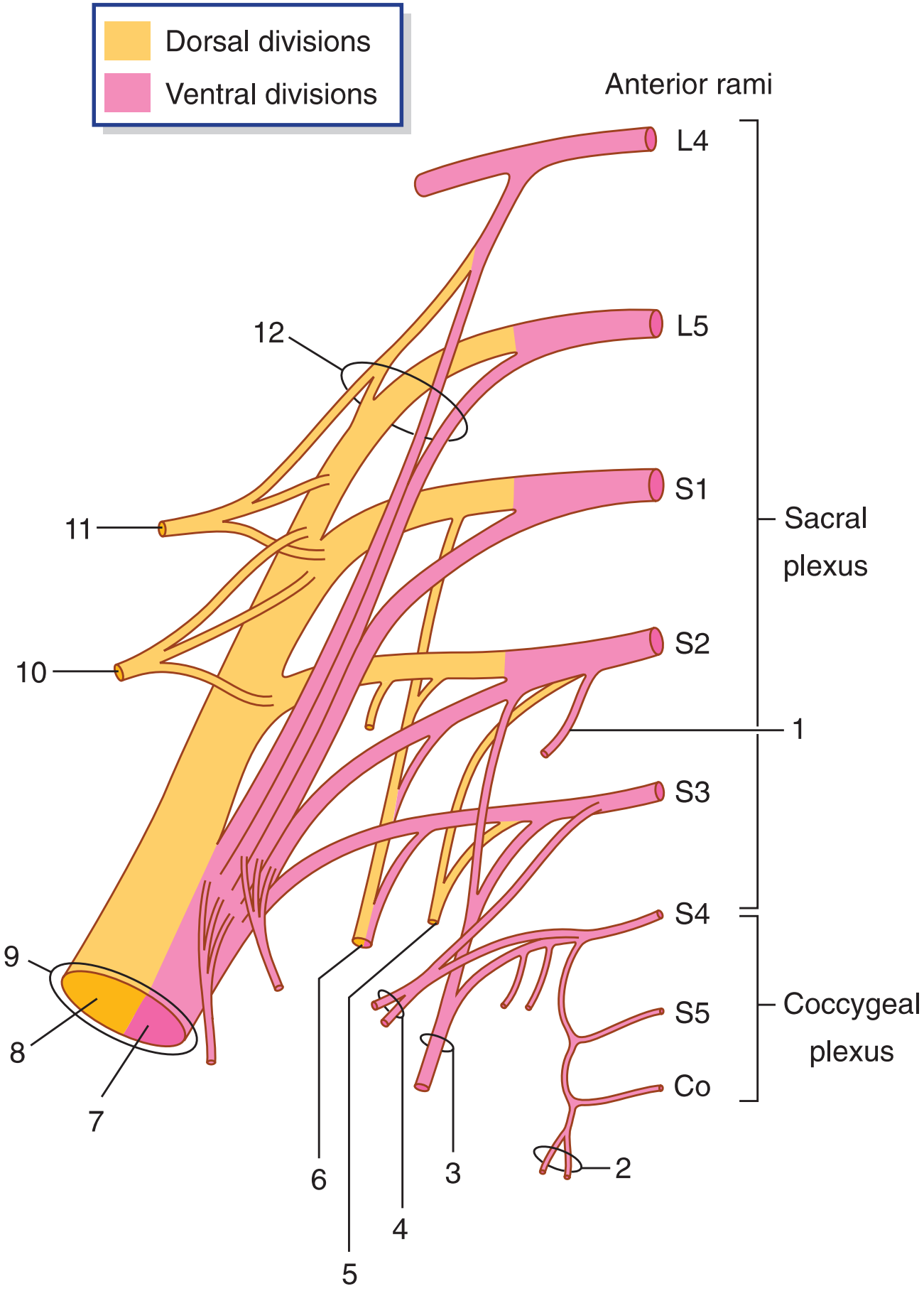
1. Inferior gluteal nerve
2. Sciatic nerve
3. Posterior cutaneous nerve of thigh
4. Nerve to obturator internus
5. Superior gluteal nerve

IN THE CLINIC:

- **A lesion of the superior gluteal nerve leads to reduced ability to abduct the thigh and to excessive pelvic tilt over the swing leg during walking.**
- **A lesion of the inferior gluteal nerve leads to a reduced ability to extend the hip.**
- **A lesion of the sciatic nerve leads to loss of muscle function in the foot, leg, and posterior thigh, as well as to sensory loss from the foot and lateral leg.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 579.*

Identify the indicated nerves.



SACRAL PLEXUS

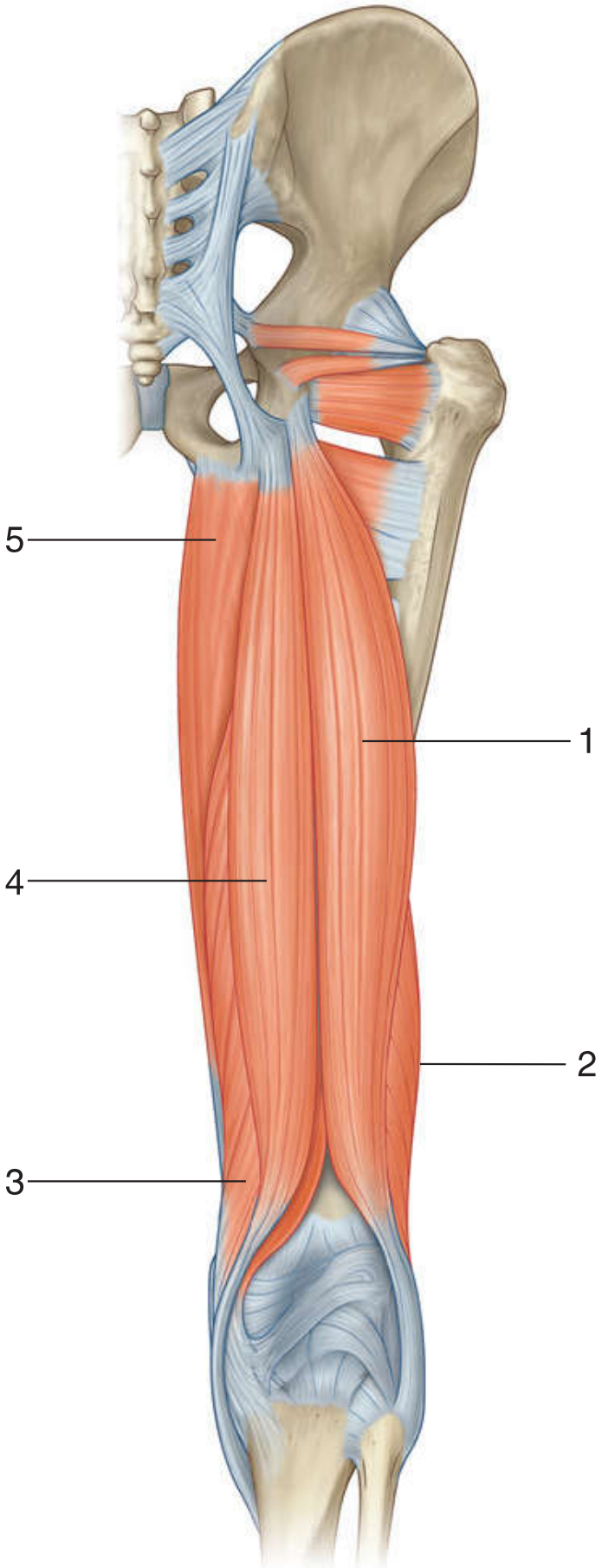
1. Pelvic splanchnic nerve
2. Anococcygeal nerves
3. Pudendal nerve
4. Pelvic splanchnic nerves
5. Perforating cutaneous nerve
6. Posterior femoral cutaneous nerve
7. Tibial part
8. Common fibular part
9. Sciatic nerve
10. Inferior gluteal nerve
11. Superior gluteal nerve
12. Lumbosacral trunk

IN THE CLINIC:

- **Nerves in the lower limb originate from the lumbosacral plexus. As a result, a pathologic process that affects the anterior rami of lumbar and sacral spinal nerves can appear as motor and sensory "signs" in the lower limb. Problems with spinal nerves L4 and L5 can appear as problems with the sciatic nerve or gluteal nerves.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 487.*

Identify the indicated muscles.



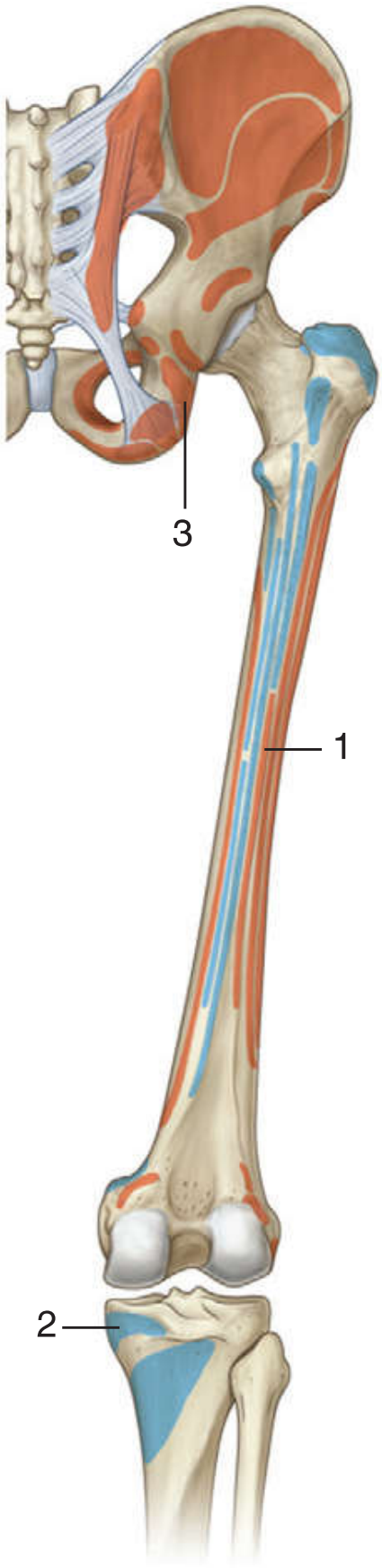
1. Long head of biceps femoris
2. Short head of biceps femoris
3. Semimembranosus
4. Semitendinosus
5. Hamstring part of adductor magnus

IN THE CLINIC:

- **As a group, the hamstring muscles extend the hip and flex the knee. The long head of biceps femoris and the semitendinosus and semimembranosus muscles cross both the hip and knee joints and are innervated by the tibial part of the sciatic nerve. The hamstring part of adductor longus also is innervated by the tibial nerve but functions only on the hip joint. The short head of biceps femoris crosses only the knee joint and is innervated by the common fibular part of the sciatic nerve.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 599.*

Identify the muscle and its attachments, innervation, and actions.

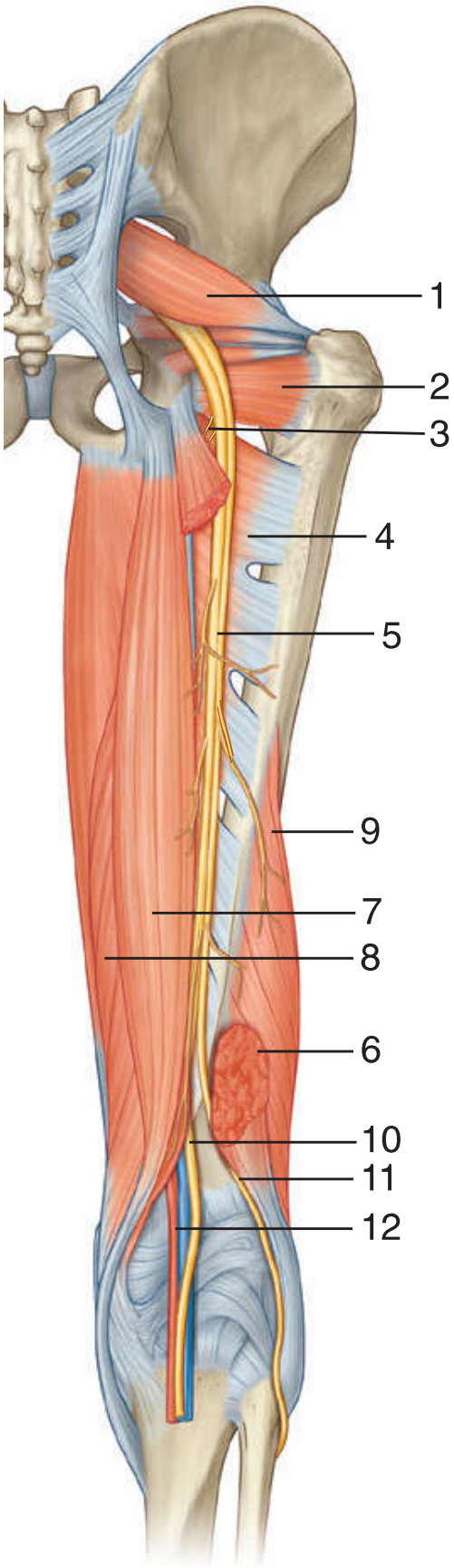


MUSCLES OF THE POSTERIOR COMPARTMENT OF THIGH (SPINAL SEGMENTS IN BOLD ARE THE MAJOR SEGMENTS INNERVATING THE MUSCLE)

Muscle	Origin	Insertion	Innervation	Function
1. Biceps femoris	Long head—inferomedial part of the upper area of the ischial tuberosity; short head—lateral lip of linea aspera	Head of fibula	Sciatic nerve (L5, **S1**, S2)	Flexes leg at knee joint; extends and laterally rotates thigh at hip joint and laterally rotates leg at knee joint
2. Semimembranosus	Superolateral impression on the ischial tuberosity	Groove and adjacent bone on medial and posterior surface of medial tibial condyle	Sciatic nerve (L5,**S1**,S2)	Flexes leg at knee joint and extends thigh at hip joint; medially rotates thigh at the hip joint and leg at the knee joint
3. Semitendinosus	Semitendinosus Inferomedial part of the upper area of the ischial tuberosity	Medial surface of proximal tibia	Sciatic nerve (L5, **S1**, S2)	Flexes leg at knee joint and extends thigh at hip joint; medially rotates the thigh at the hip joint and leg at the knee joint

Figure from Gray's Atlas of Anatomy, *p. 305.*

Identify the indicated nerves, vessels, and muscles.



SCIATIC NERVE

1. Piriformis muscle
2. Quadratus femoris muscle
3. Branch to part of adductor magnus originating from ischial tuberosity
4. Adductor magnus muscle
5. Sciatic nerve
6. Long head of biceps femoris muscle
7. Semitendinosus muscle
8. Semimembranosus muscle
9. Short head of biceps femoris muscle
10. Tibial nerve
11. Common fibular nerve
12. Popliteal artery and vein

IN THE CLINIC:

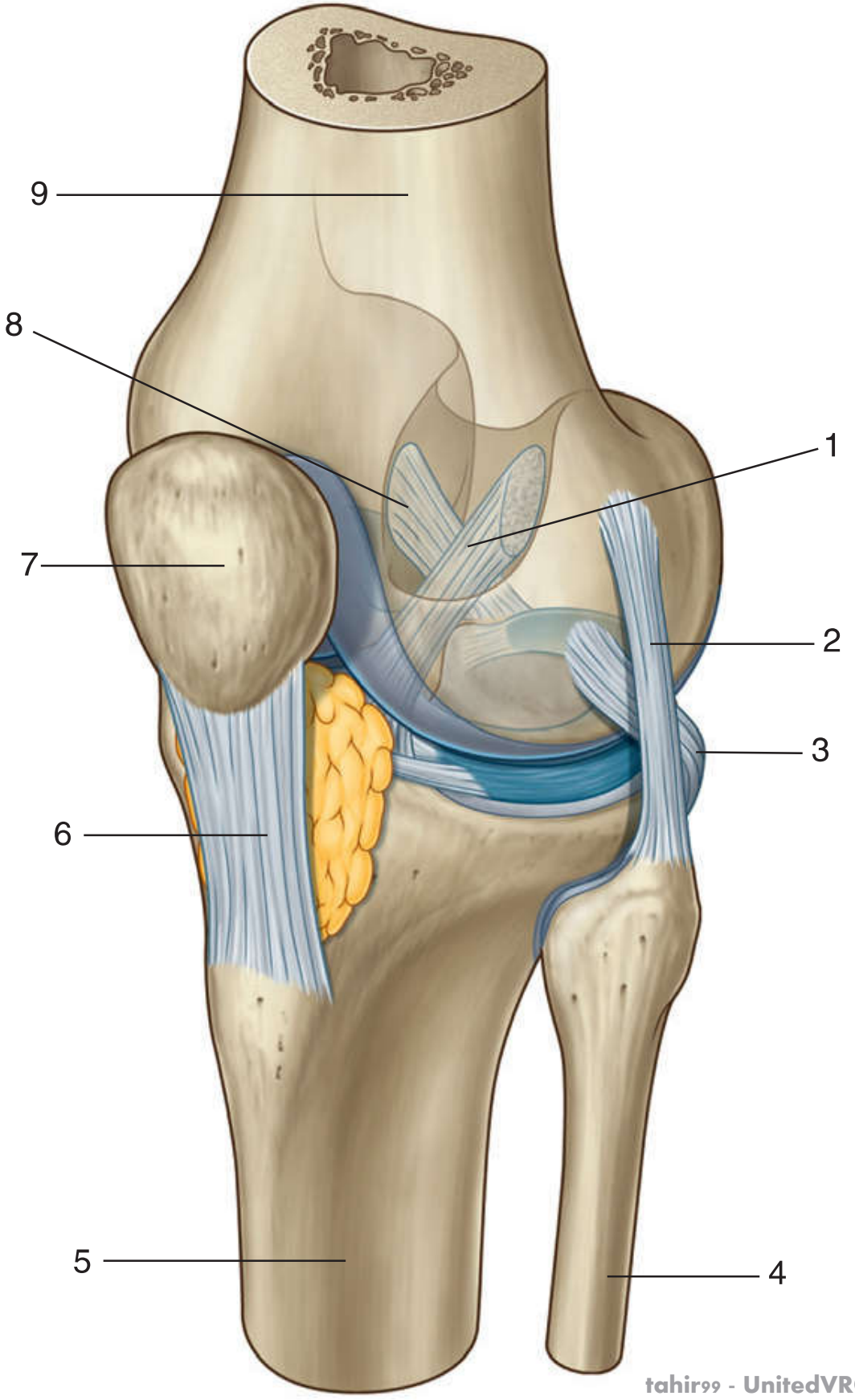
- **The sciatic nerve can be damaged when giving intramuscular injections in the gluteal region if the injections are not done in the correct location.**

- **Irritation or compression of the anterior rami of spinal nerves, particularly from L4 and L5, that contribute to formation of the sciatic nerve can result in sensory and motor dysfunction of the sciatic nerve. Diffuse pain from the area of distribution of the sciatic nerve is termed *sciatica*.**

- **The common fibular nerve courses laterally around the neck of the fibula, where it can be damaged by impact or compression injuries. Damage to the common fibular nerve leads to footdrop (the inability to dorsiflex the foot) and to sensory loss over the lateral leg and dorsal surface of the foot.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 605.*

Is this a left or a right knee joint?
Identify the indicated structures.



KNEE: ANTEROLATERAL VIEW

This is a left knee joint.

1. Anterior cruciate ligament
2. Fibular collateral ligament
3. Tendon of popliteus muscle
4. Fibula
5. Tibia
6. Patellar ligament
7. Patella
8. Posterior cruciate ligament
9. Femur

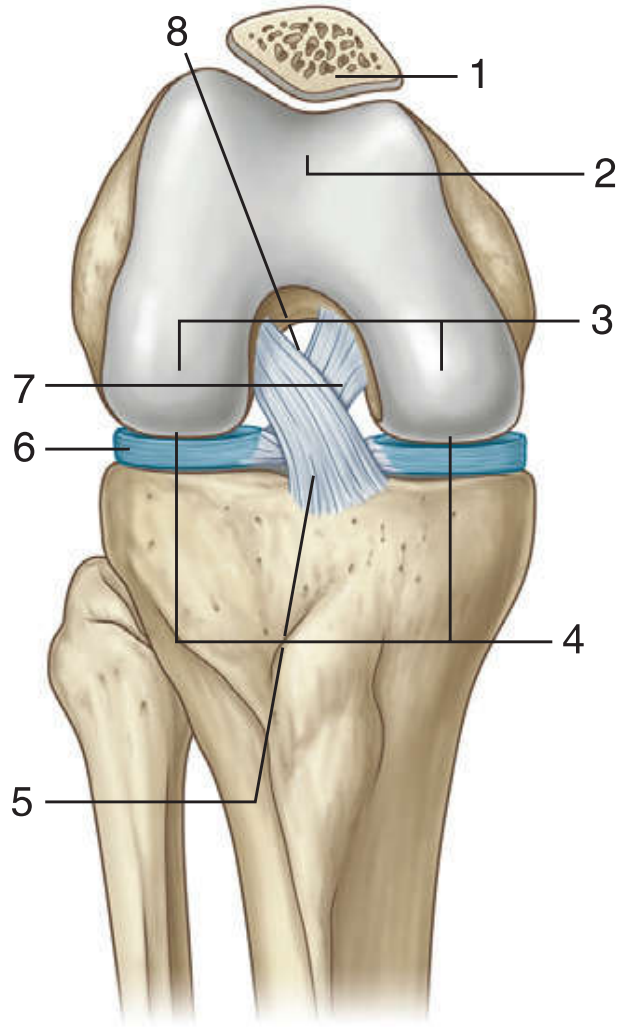
IN THE CLINIC:

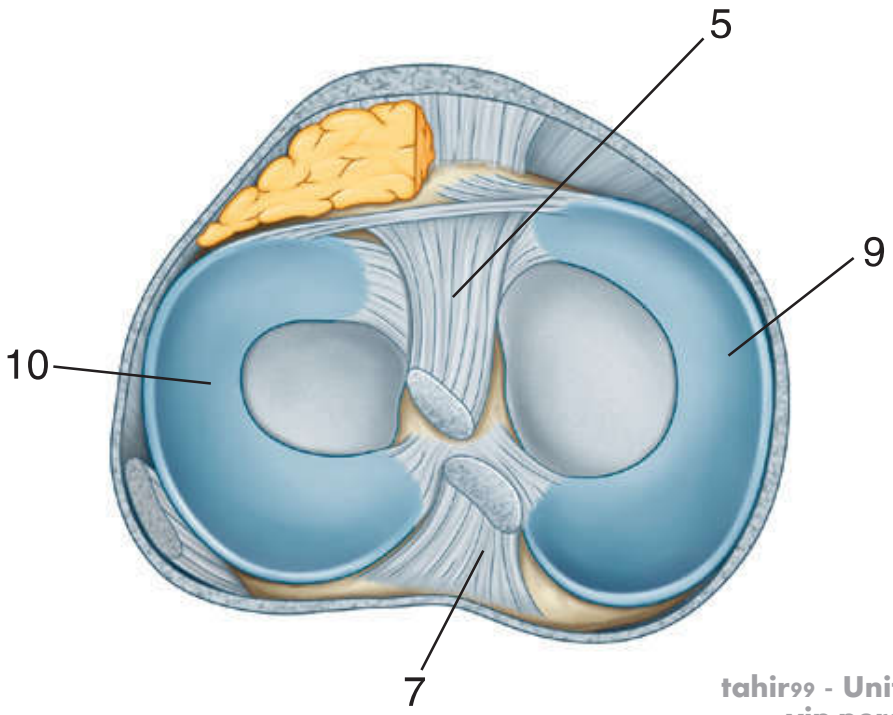
- **When the posterior cruciate ligament is torn, the head of the femur moves forward on the tibia (or a clinician can push the tibia posteriorly on the fixed femur of a patient—a positive posterior "drawer" sign).**

- **When the anterior cruciate ligament is torn, the head of the femur moves backward on the tibia (or a clinician can pull the tibia forward on the fixed femur of a patient—a positive anterior "drawer" sign).**

Figure from Gray's Anatomy for Students, *3rd edition, p. 606.*

Identify the indicated structures.





KNEE: MENISCI AND LIGAMENTS

1. Patella
2. Surface for articulation with patella
3. Flat surfaces for articulation with tibia in extension
4. Round surfaces for articulation with tibia in flexion
5. Anterior cruciate ligament
6. Meniscus
7. Posterior cruciate ligament
8. Intercondylar region
9. Medial meniscus
10. Lateral meniscus

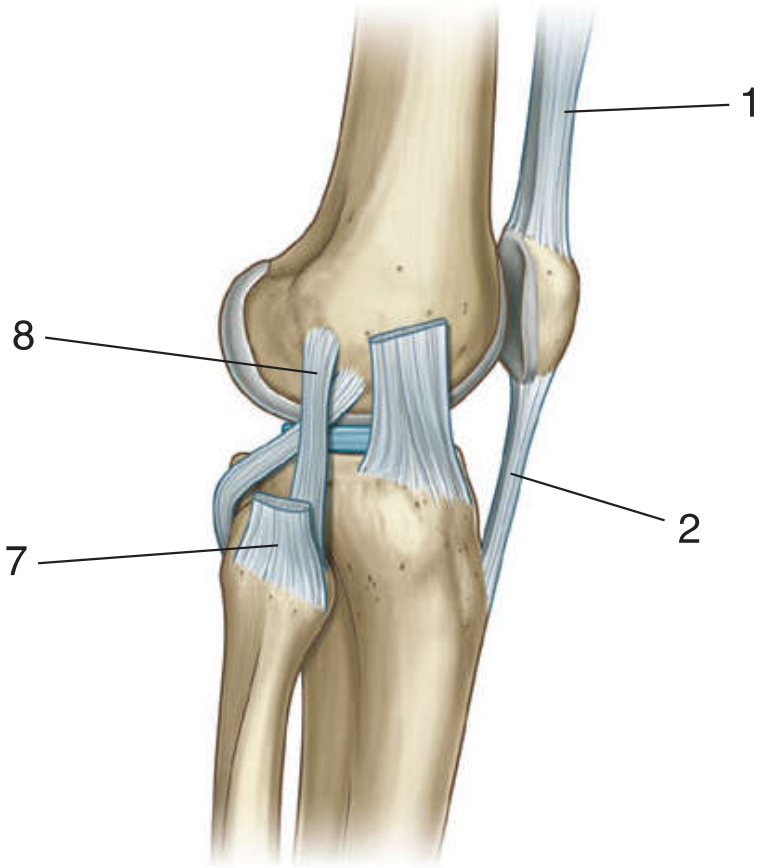
IN THE CLINIC:

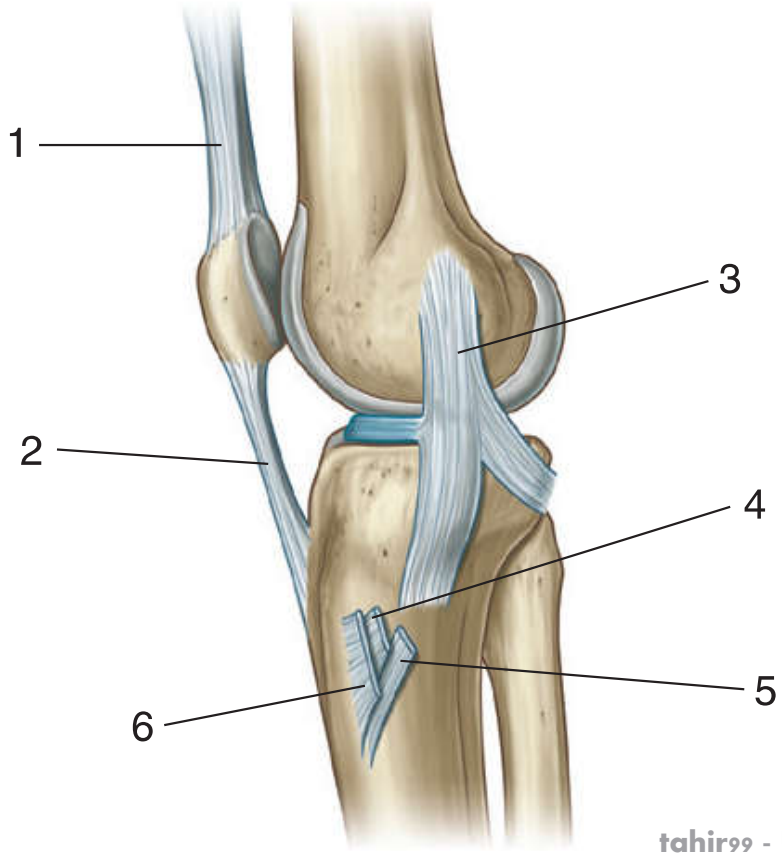
- **The patella dislocates more often laterally than medially because the angle of pull of the quadriceps muscle tends to pull more laterally than medially.**

- **In lateral blows to the knee on the standing leg, the tibial collateral ligament and the medial meniscus can be torn. It is also possible in this type of injury to tear the lateral meniscus due to compression forces on the lateral side of the knee joint.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 607.*

Identify the indicated ligaments and tendons.





KNEE: COLLATERAL LIGAMENTS

1. Tendon of quadriceps muscles
2. Patellar ligament
3. Tibial collateral ligament
4. Tendon of gracilis
5. Tendon of semitendinosus
6. Tendon of sartorius
7. Tendon of biceps femoris muscle
8. Fibular collateral ligament

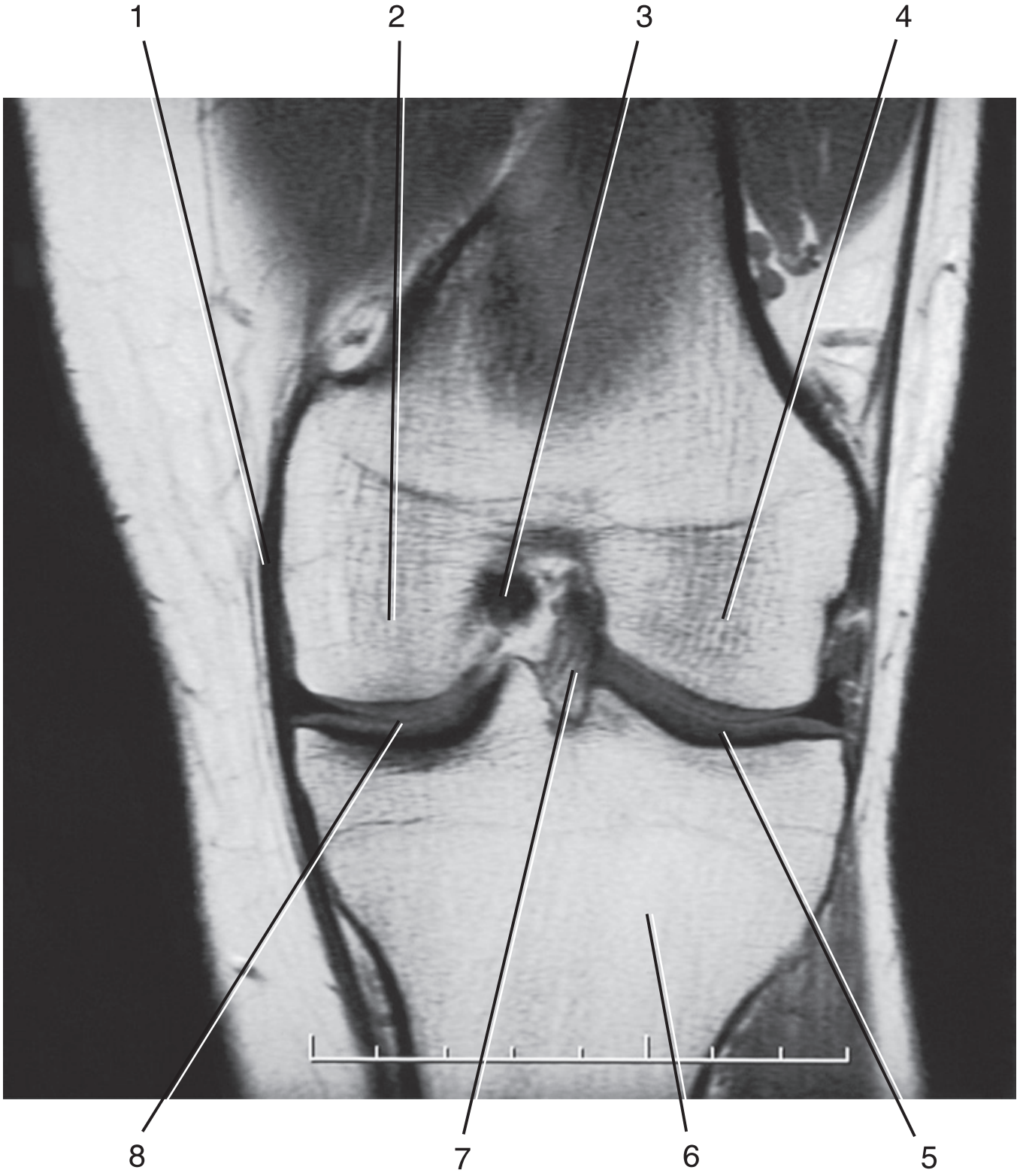
IN THE CLINIC:

- **Lateral and medial blows to the knee can tear the tibial and fibular collateral ligaments, respectively, of the knee. When the fibular collateral ligament is torn in these injuries, the medial meniscus also can be injured because of compression forces that occur on the medial side of the joint. For the same reason, when the tibial collateral ligament is torn, the lateral meniscus can be injured.**

- **In posterior and posterolateral blows to the knee, it is possible to tear the tibial collateral ligament, the medial meniscus, and the anterior cruciate ligament. This injury is sometimes referred to as the "unlucky triad."**

Figure from Gray's Anatomy for Students, *3rd edition, p. 611.*

Identify the indicated structures.

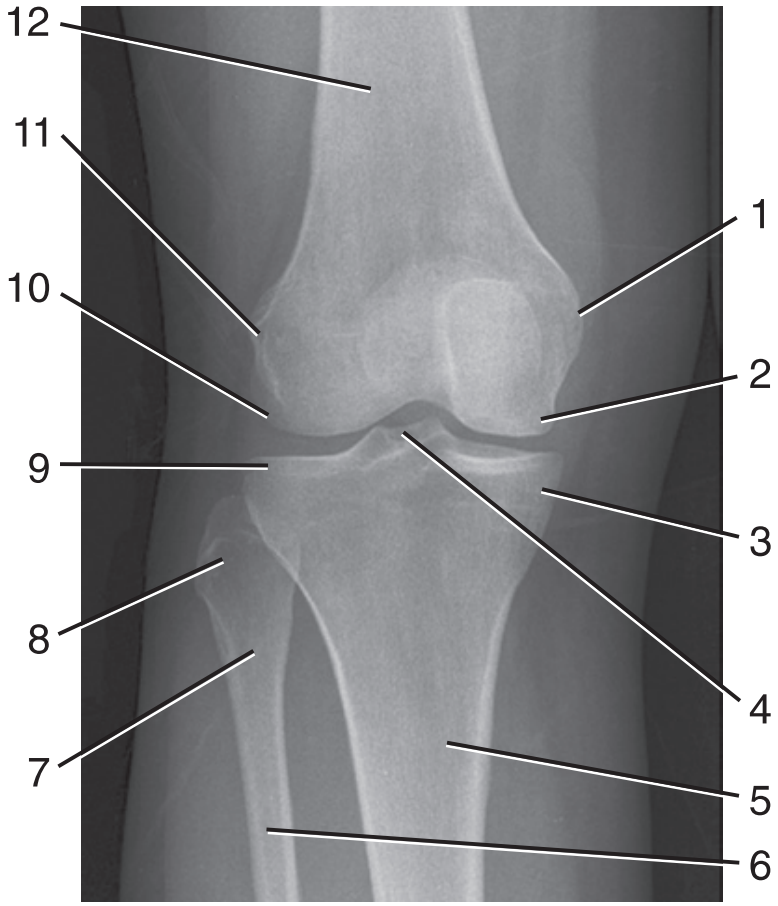


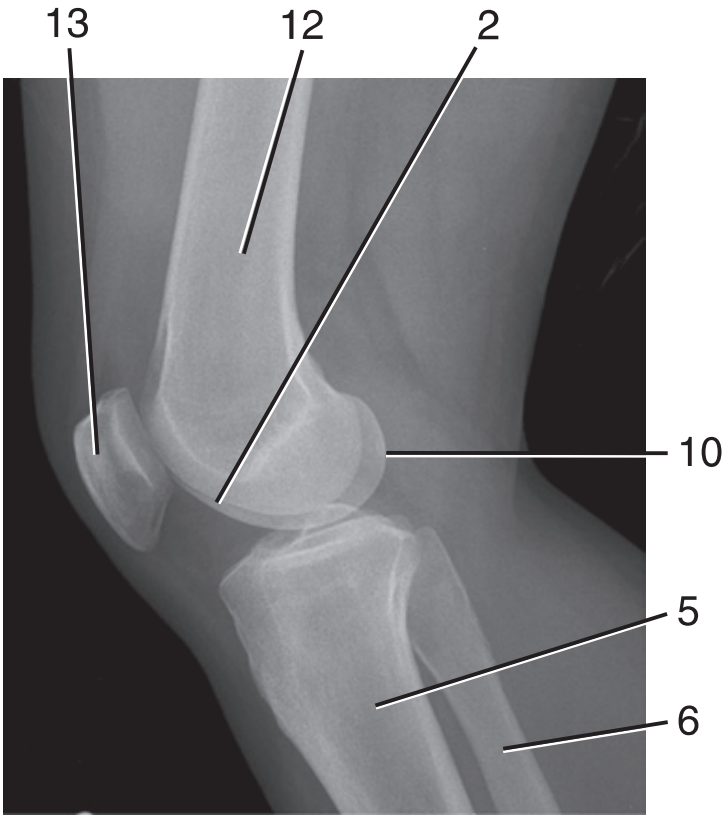
MRI: KNEE JOINT

1. Tibial collateral ligament
2. Medial femoral condyle
3. Posterior cruciate ligament
4. Lateral femoral condyle
5. Lateral meniscus
6. Tibia
7. Anterior cruciate ligament
8. Medial meniscus

Figure from Gray's Basic Anatomy, *p. 304.*

Identify the indicated structures.



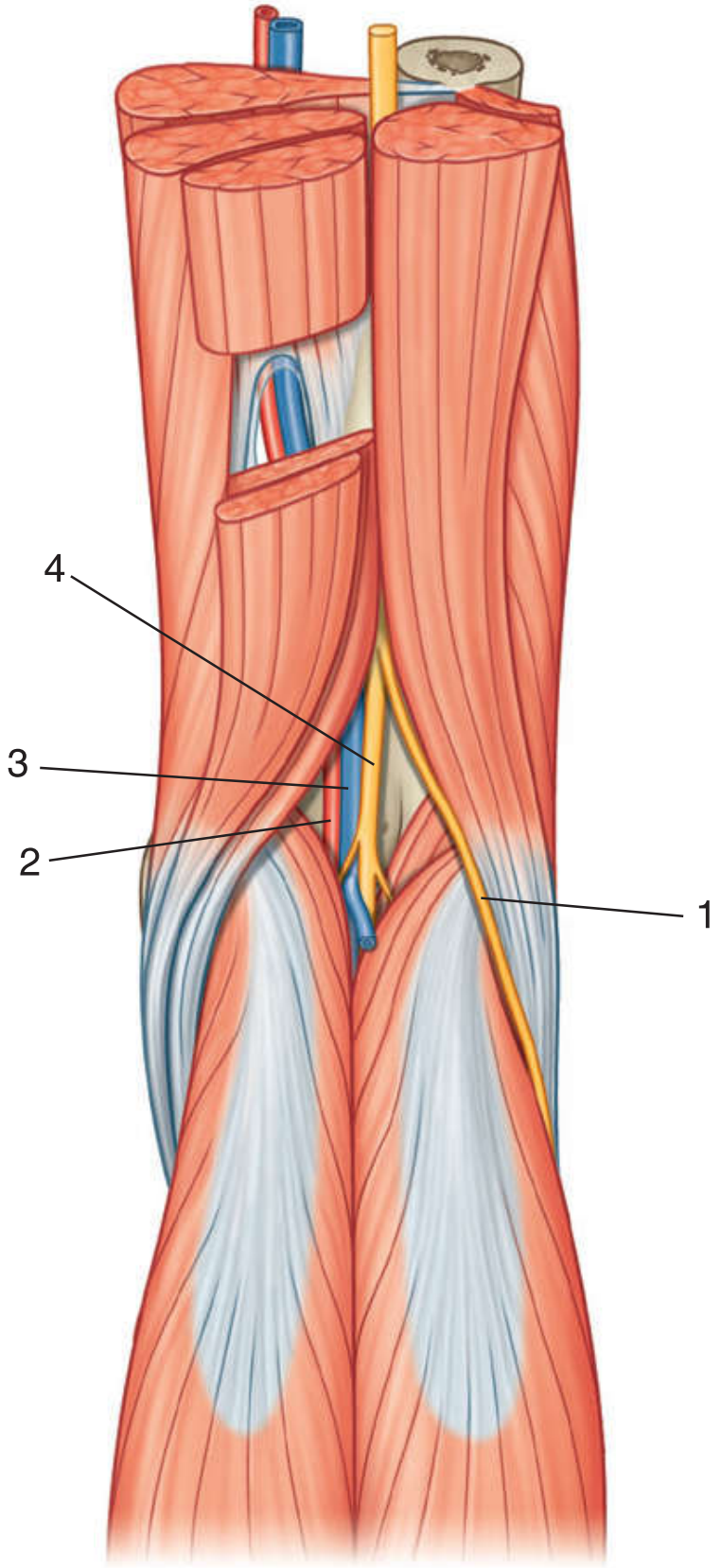


RADIOGRAPHS: KNEE JOINT

1. Medial epicondyle
2. Medial femoral condyle
3. Medial tibial condyle
4. Intercondylar eminence
5. Tibia
6. Fibula
7. Neck of fibula
8. Head of fibula
9. Lateral tibial condyle
10. Lateral femoral condyle
11. Lateral epicondyle
12. Femur
13. Patella

Figure from Gray's Basic Anatomy, *p. 304.*

Is this region from the left or right side of the body? Identify the indicated structures.



KNEE: POPLITEAL FOSSA

This region is on the right side of the body.

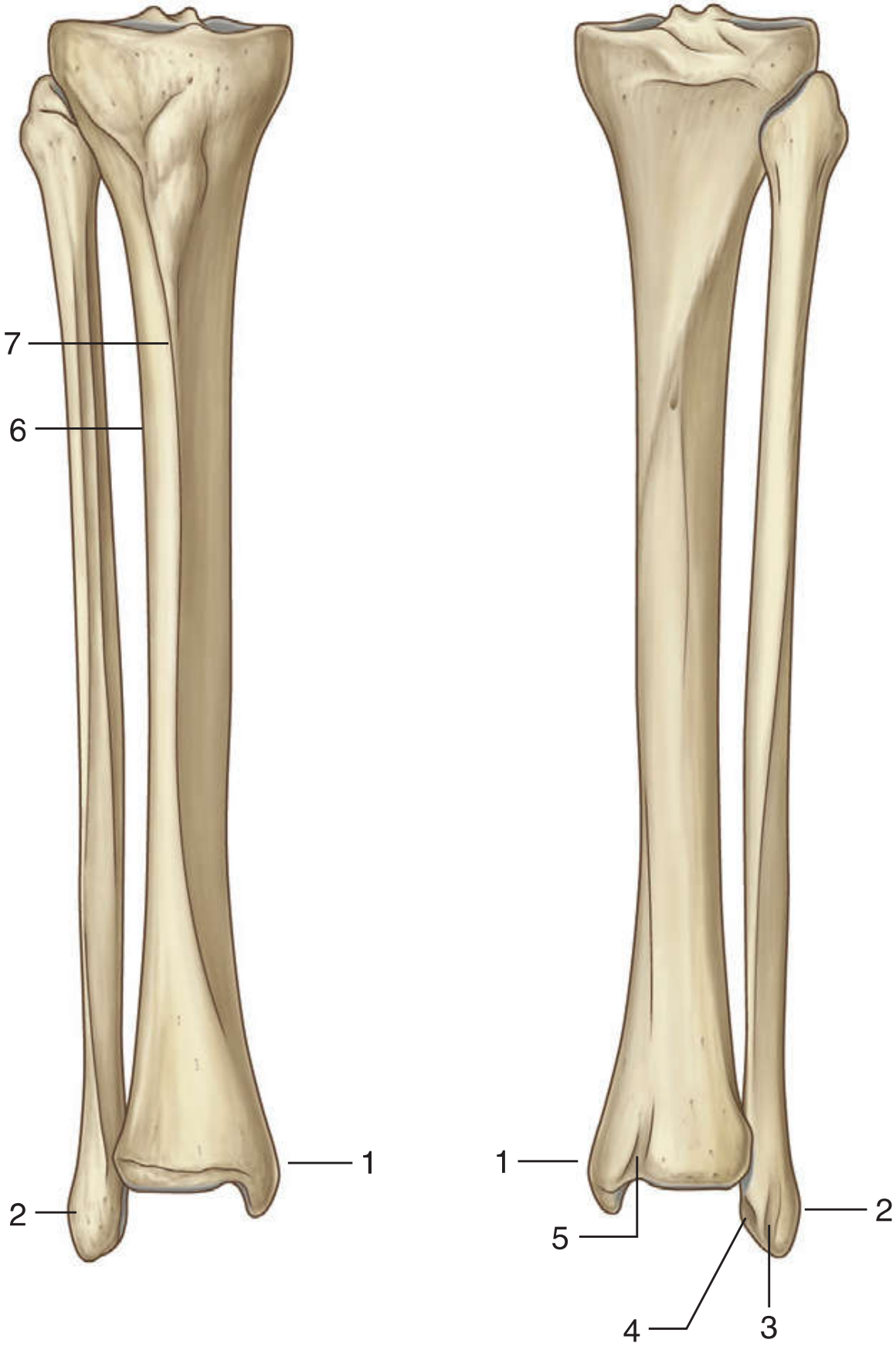
1. Common fibular nerve
2. Popliteal artery
3. Popliteal vein
4. Tibial nerve

IN THE CLINIC:

- **A popliteal pulse is difficult to feel because the artery is deep within the popliteal fossa; however, the pulse can be detected by palpating just medial to the midline.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 616.*

Are these bones from the right or left side of the body? Identify the indicated bones and features.



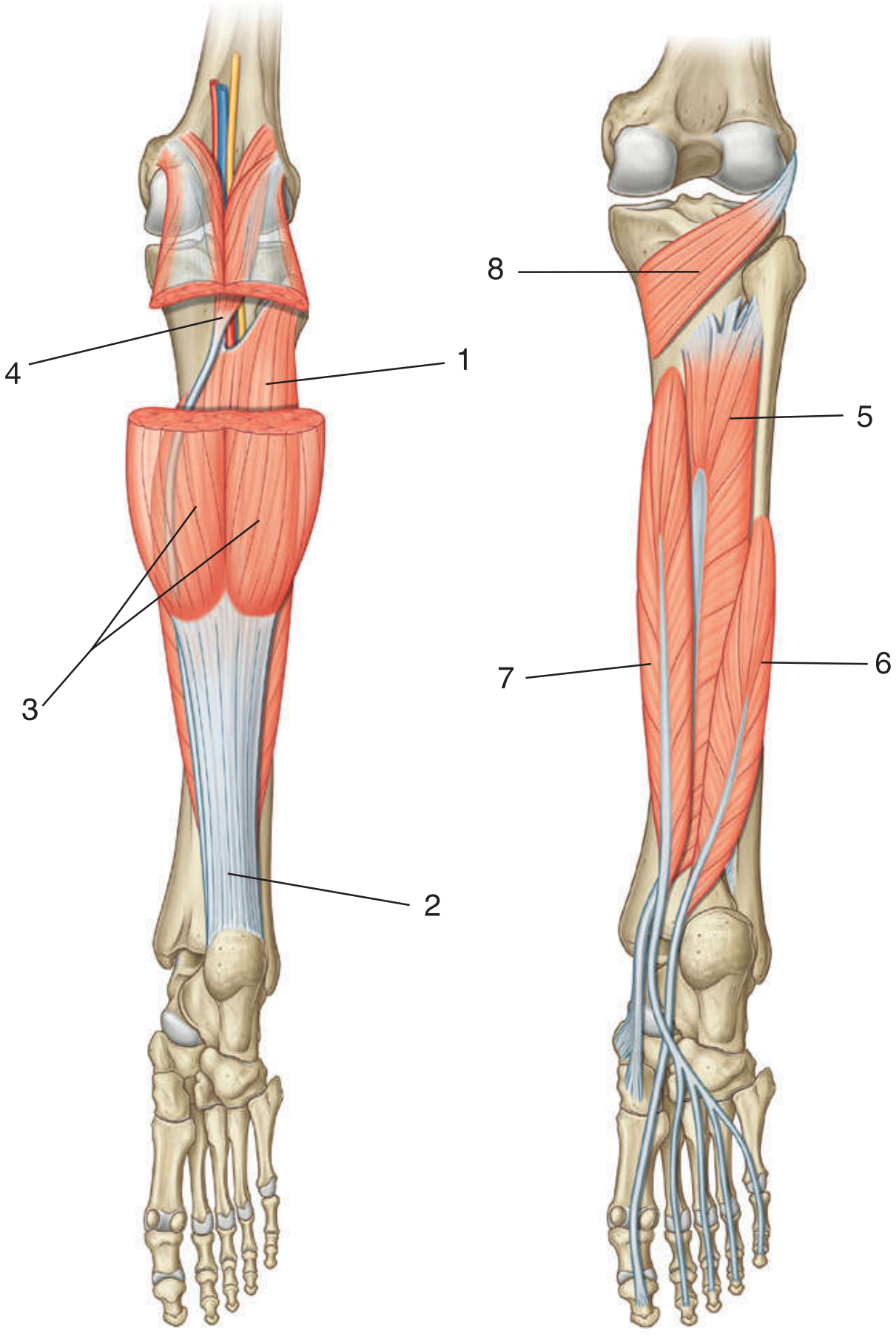
LEG: BONES

These bones are on the right side of the body.

1. Medial malleolus
2. Lateral malleolus
3. Groove for fibularis longus and brevis muscles
4. Malleolar fossa
5. Groove for tendon of tibialis posterior muscle
6. Interosseous border
7. Anterior border

Figure from Gray's Anatomy for Students, *3rd edition, p. 619.*

Identify the indicated muscles and tendons.



LEG POSTERIOR COMPARTMENT: MUSCLES

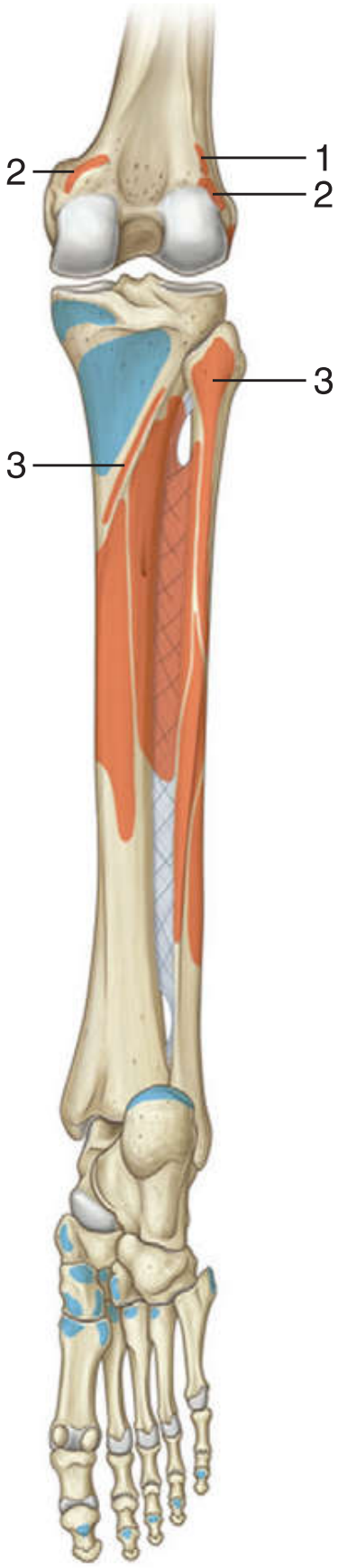
1. Soleus
2. Calcaneal (Achilles) tendon
3. Gastrocnemius
4. Plantaris
5. Tibialis posterior
6. Flexor hallucis longus
7. Flexor digitorum longus
8. Popliteus

IN THE CLINIC:

- **All muscles in the posterior compartment of the leg are innervated by the tibial branch of the sciatic nerve.**

Figure from Gray's Anatomy for Students, *3rd edition, pp. 622-623.*

Identify the muscle and its attachments, innervation, and actions.

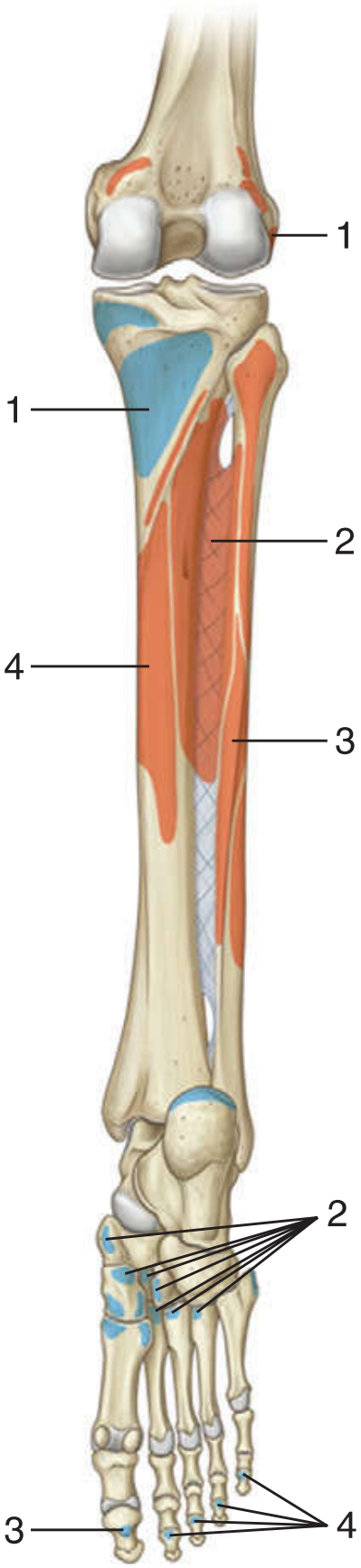


SUPERFICIAL GROUP OF MUSCLES IN THE POSTERIOR COMPARTMENT OF LEG (SPINAL SEGMENTS IN BOLD ARE THE MAJOR SEGMENTS INNERVATING THE MUSCLE)

Muscle	Origin	Insertion	Innervation	Function
1. Plantaris	Inferior part of lateral supracondylar line of femur and oblique popliteal ligament of knee	Via calcaneal tendon, to posterior surface of calcaneus	Tibial nerve (**S1,S2**)	Plantarflexes foot and flexes knee
2. Gastrocnemius	Medial head—posterior surface of distal femur just superior to medial condyle; lateral head—upper posterolateral surface of lateral femoral condyle	Via calcaneal tendon, to posterior surface of calcaneus	Tibial nerve (**S1,S2**)	Plantarflexes foot and flexes knee
3. Soleus	Soleal line and medial border of tibia; posterior aspect of fibular head and adjacent surfaces of neck and proximal shaft; tendinous arch between tibial and fibular attachments	Via calcaneal tendon, to posterior surface of calcaneus	Tibial nerve (**S1,S2**)	Plantarflexes foot

Figure from Gray's Atlas of Anatomy, *2nd edition, p. 339.*

Identify the muscle and its attachments, innervation, and actions.

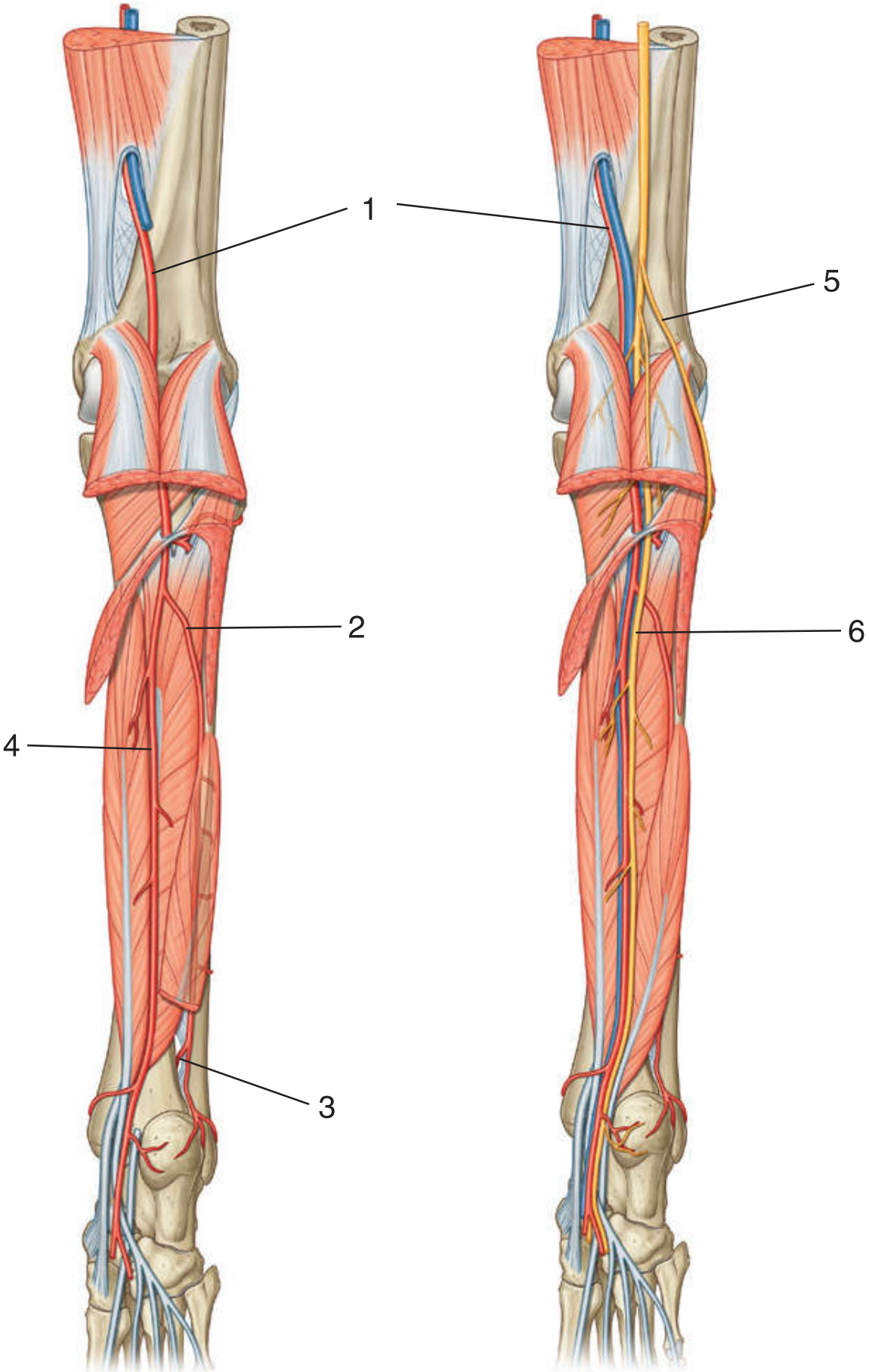


DEEP GROUP OF MUSCLES IN THE POSTERIOR COMPARTMENT OF LEG (SPINAL SEGMENTS IN BOLD ARE THE MAJOR SEGMENTS INNERVATING THE MUSCLE)

Muscle	Origin	Insertion	Innervation	Function
1. Popliteus	Lateral femoral condyle	Posterior surface of proximal tibia	Tibial nerve (L4 to S1)	Unlocks knee joint (laterally rotates femur on fixed tibia)
2. Tibialis posterior	Posterior surfaces of interosseous membrane and adjacent regions of tibia and fibula	Mainly to tuberosity of navicular and adjacent region of medial cuneiform	Tibial nerve (L4,L5)	Inversion and plantar flexion of foot; support of medial arch of foot during walking
3. Flexor hallucis longus	Posterior surface of fibula and adjacent interosseous membrane	Plantar surface of distal phalanx of great toe	Tibial nerve (**S2**,S3)	Flexes great toe
4. Flexor digitorum longus	Medial side of posterior surface of the tibia	Plantar surfaces of bases of distal phalanges of the lateral four toes	Tibial nerve (**S2**,S3)	Flexes lateral four toes

Figure from Gray's Atlas of Anatomy, *2nd edition, p. 339.*

Identify the indicated nerves and arteries.



LEG POSTERIOR COMPARTMENT: ARTERIES AND NERVES

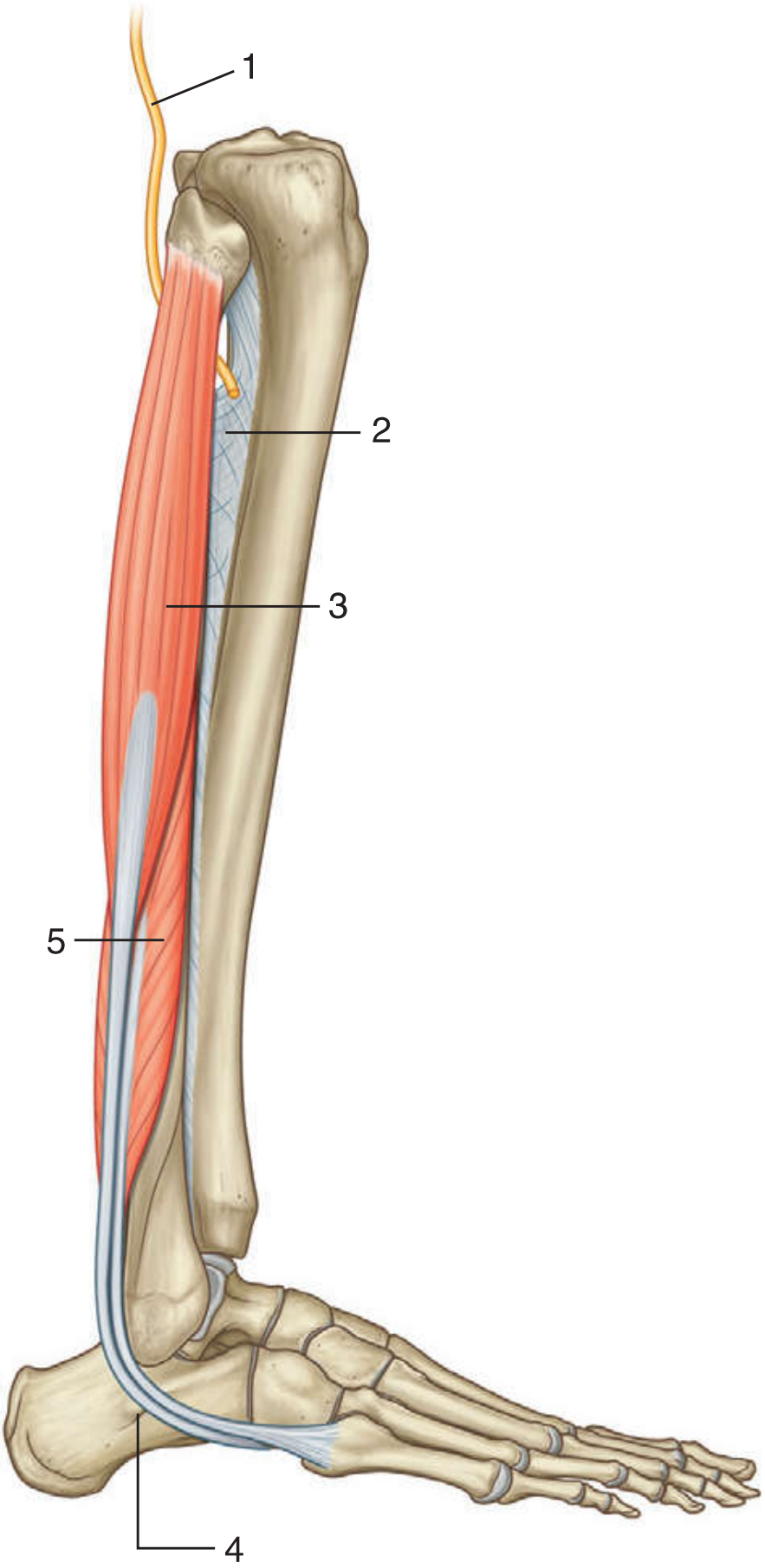
1. Popliteal artery
2. Fibular artery
3. Perforating terminal branch of fibular artery
4. Posterior tibial artery
5. Common fibular nerve
6. Tibial nerve

IN THE CLINIC:

- **Lesions to the tibial nerve in the thigh result in loss of function of muscles in both the leg and the foot. Because nerves in general innervate muscles soon after entering a compartment, lesions of the nerves in the middle or near the end of their course through a compartment spare muscle function in that compartment but result in loss of function more distally. Therefore, lesions to the tibial nerve in the middle and lower leg result in loss of function of muscles in the foot and spare muscle function in the posterior compartment of the leg.**

Figure from Gray's Anatomy for Students, *3rd edition, pp. 626-627.*

Identify the indicated muscles.



LEG LATERAL COMPARTMENT: MUSCLES

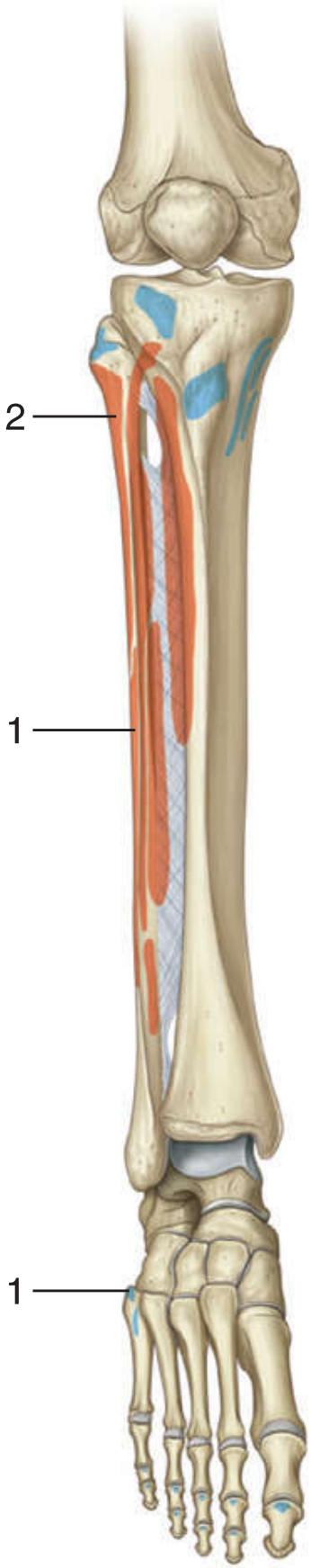
1. Common fibular nerve
2. Interosseous membrane
3. Fibularis longus
4. Fibular trochlea of calcaneus bone
5. Fibularis brevis

IN THE CLINIC:

- **The fibular muscles are innervated by the superficial fibular nerve.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 627.*

Identify the muscle and its attachments, innervation, and actions.



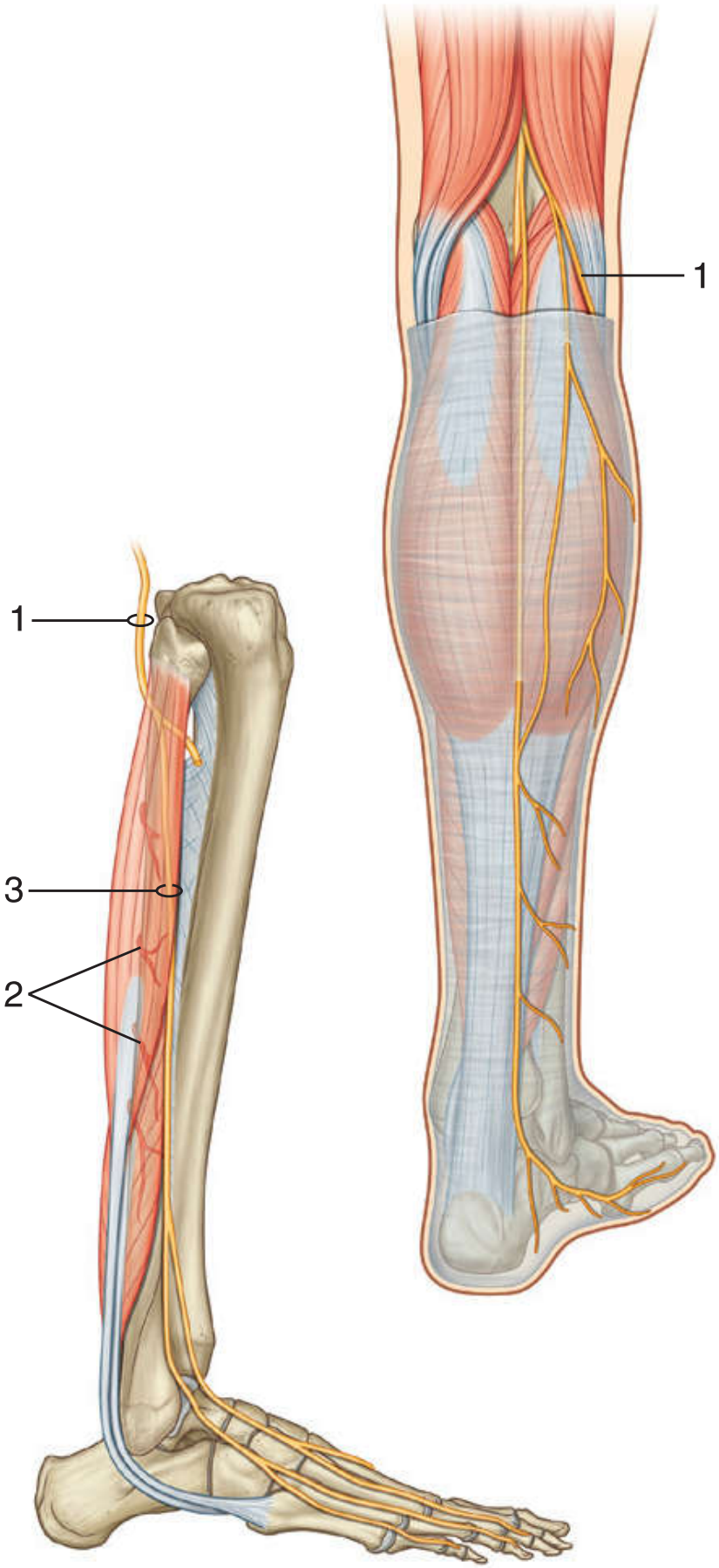
LEG LATERAL COMPARTMENT: MUSCLE ATTACHMENTS

Muscles of the Lateral Compartment of Leg (Spinal Segments in Bold Are the Major Segments Innervating the Muscle)

Muscle	Origin	Insertion	Innervation	Function
1. Fibularis brevis	Lower two thirds of lateral surface of shaft of fibula	Lateral tubercle at base of metatarsal V	Superficial fibular nerve (**L5,S1**,S2)	Eversion of foot
2. Fibularis longus	Upper lateral surface of fibula, head of fibula and occasionally the lateral tibial condyle	Undersurface of lateral sides of distal end of medial cuneiform and base of metatarsal I	Superficial fibular nerve (**L5,S1**,S2)	Eversion and plantarflexion of foot; supports arches of foot

Figure from Gray's Atlas of Anatomy, *2nd edition, p. 339.*

Identify the indicated nerves and arteries.



LEG LATERAL COMPARTMENT: NERVES

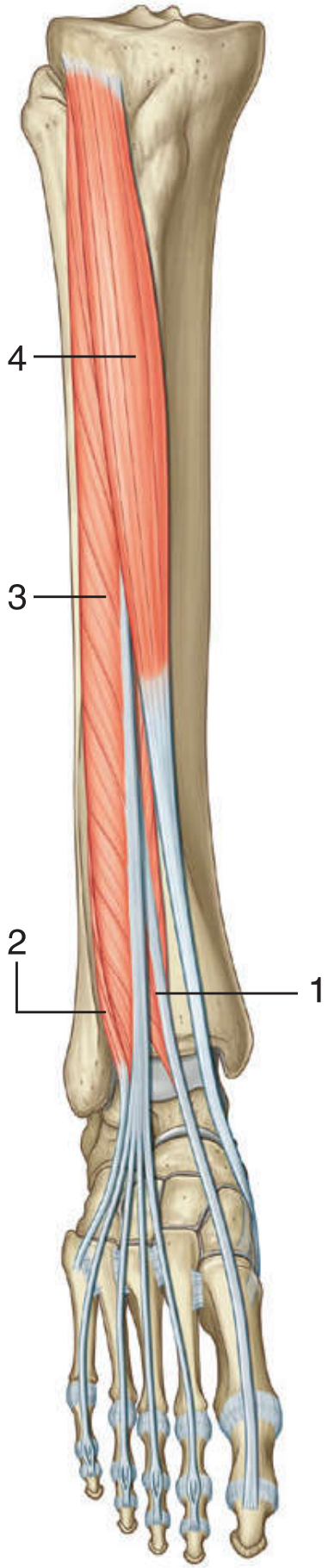
1. Common fibular nerve
2. Perforating branches of fibular artery
3. Superficial fibular nerve

IN THE CLINIC:

- **The lateral compartment of the leg derives its blood supply from the fibular artery in the posterior compartment. Branches from this vessel perforate the intermuscular septum to enter the lateral compartment.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 629.*

Identify the indicated muscles.



LEG ANTERIOR COMPARTMENT: MUSCLES

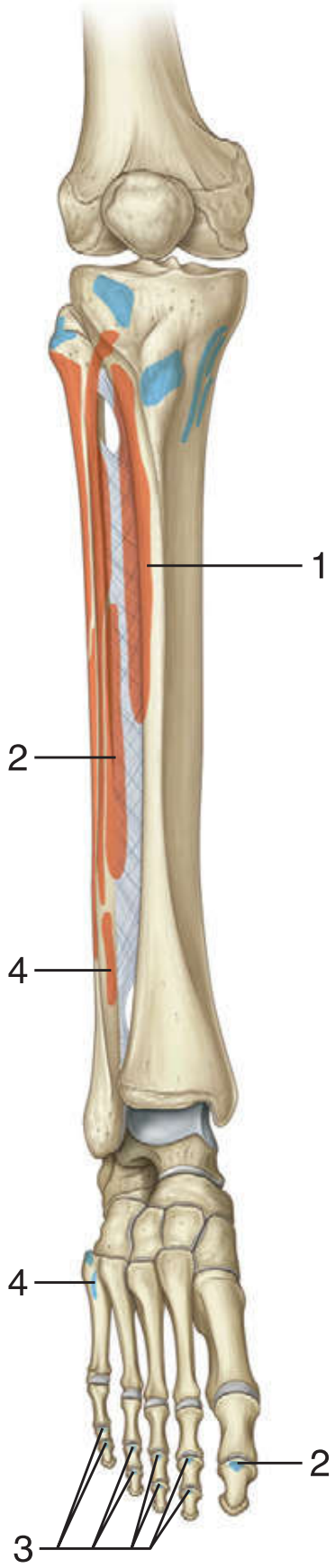
1. Extensor hallucis longus
2. Fibularis tertius
3. Extensor digitorum longus
4. Tibialis anterior

IN THE CLINIC:

- **Muscles in the anterior compartment of the leg dorsiflex and invert the foot and extend the digits.**
- **Loss of motor function in the anterior compartment of the leg results in footdrop.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 630.*

Identify the muscle and its attachments, innervation, and actions.

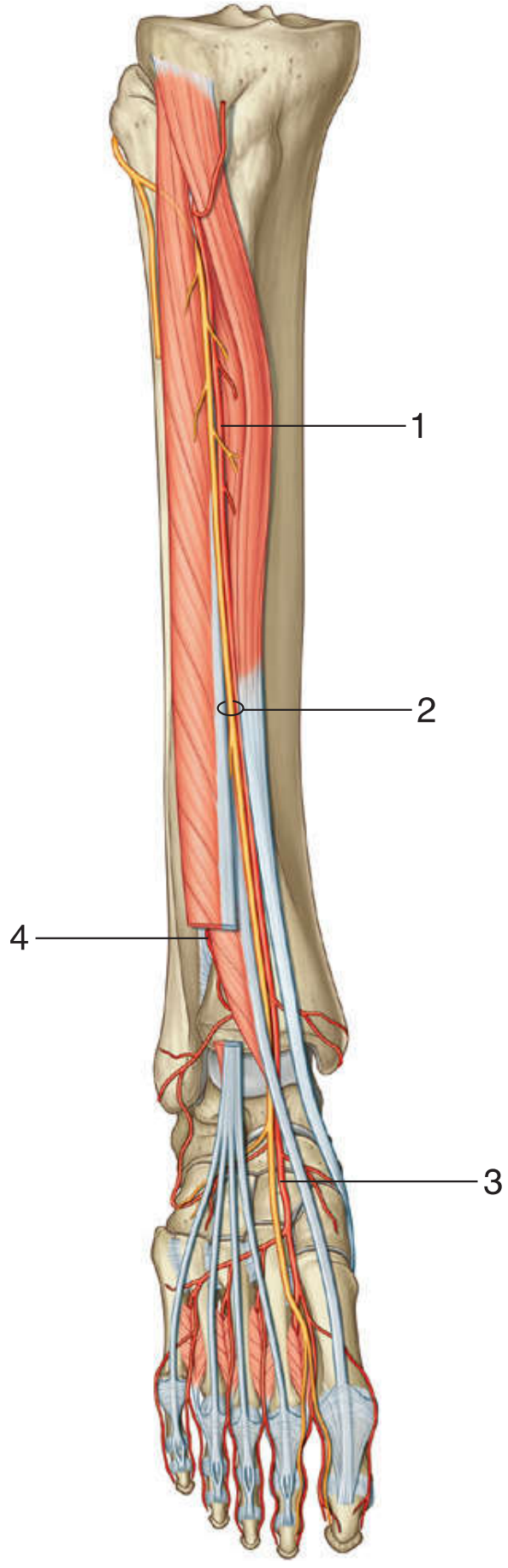


MUSCLES OF THE ANTERIOR COMPARTMENT OF LEG (SPINAL SEGMENTS IN BOLD ARE THE MAJOR SEGMENTS INNERVATING THE MUSCLE)

Muscle	Origin	Insertion	Innervation	Function
1. Tibialis anterior	Lateral surface of tibia and adjacent interosseous membrane	Medial and inferior surfaces of medial cuneiform and adjacent surfaces on base of metatarsal I	Deep fibular nerve (**L4**,L5)	Dorsiflexion of foot at ankle joint; inversion of foot; dynamic support of medial arch of foot
2. Extensor hallucis longus	Middle half of medial surface of fibula and adjacent surface of interosseous membrane	Dorsal surface of base of distal phalanx of great toe	Deep fibular nerve (**L5,S1**)	Extension of great toe and dorsiflexion of foot
3. Extensor digitorum longus	Proximal half of medial surface of fibula and related surface of lateral tibial condyle	Via dorsal digital expansions into bases of distal and middle phalanges of lateral four toes	Deep fibular nerve (**L5,S1**)	Extension of lateral four toes and dorsiflexion of foot
4. Fibularis tertius	Distal part of medial surface of fibula	Dorsomedial surface of base of metatarsal V	Deep fibular nerve (**L5,S1**)	Dorsiflexion and eversion of foot

Figure from Gray's Atlas of Anatomy, *2nd edition, p. 339.*

Identify the indicated nerves and arteries.



LEG ANTERIOR COMPARTMENT: ARTERIES AND NERVES

1. Anterior tibial artery
2. Deep fibular nerve
3. Dorsalis pedis artery
4. Perforating branch of fibular artery

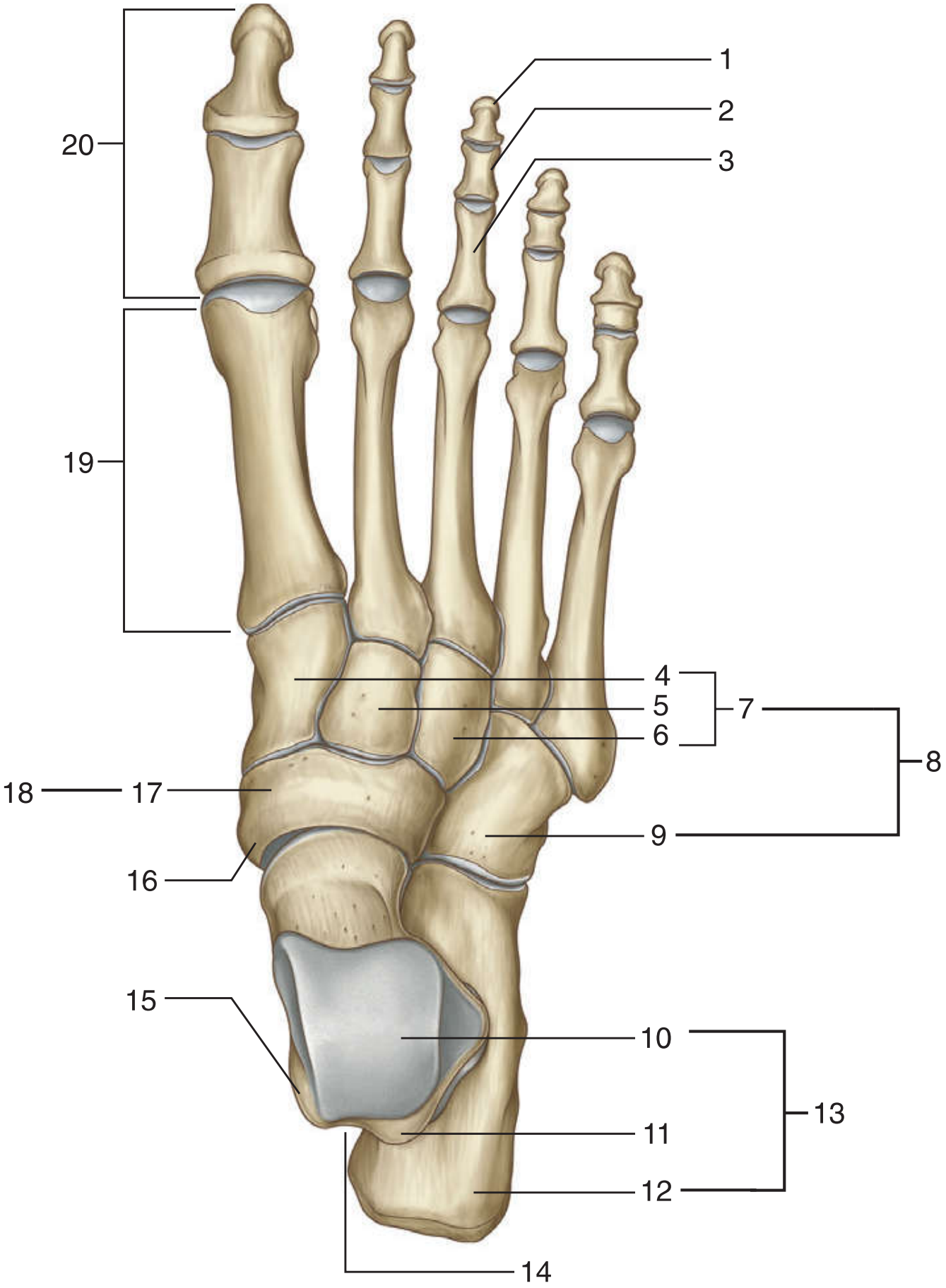
IN THE CLINIC:

- **All muscles in the anterior compartment of the leg are innervated by the deep fibular nerve. Terminal branches of the nerve innervate skin between the first and second toes. Sensation between the first and second toes can be used to monitor the status of the common or deep fibular nerve when motor function cannot be assessed, for example, when the leg and foot are in a cast.**

- **Loss of the common fibular nerve or the deep fibular nerve leads to footdrop.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 632.*

Identify the indicated bones.



FOOT: BONES

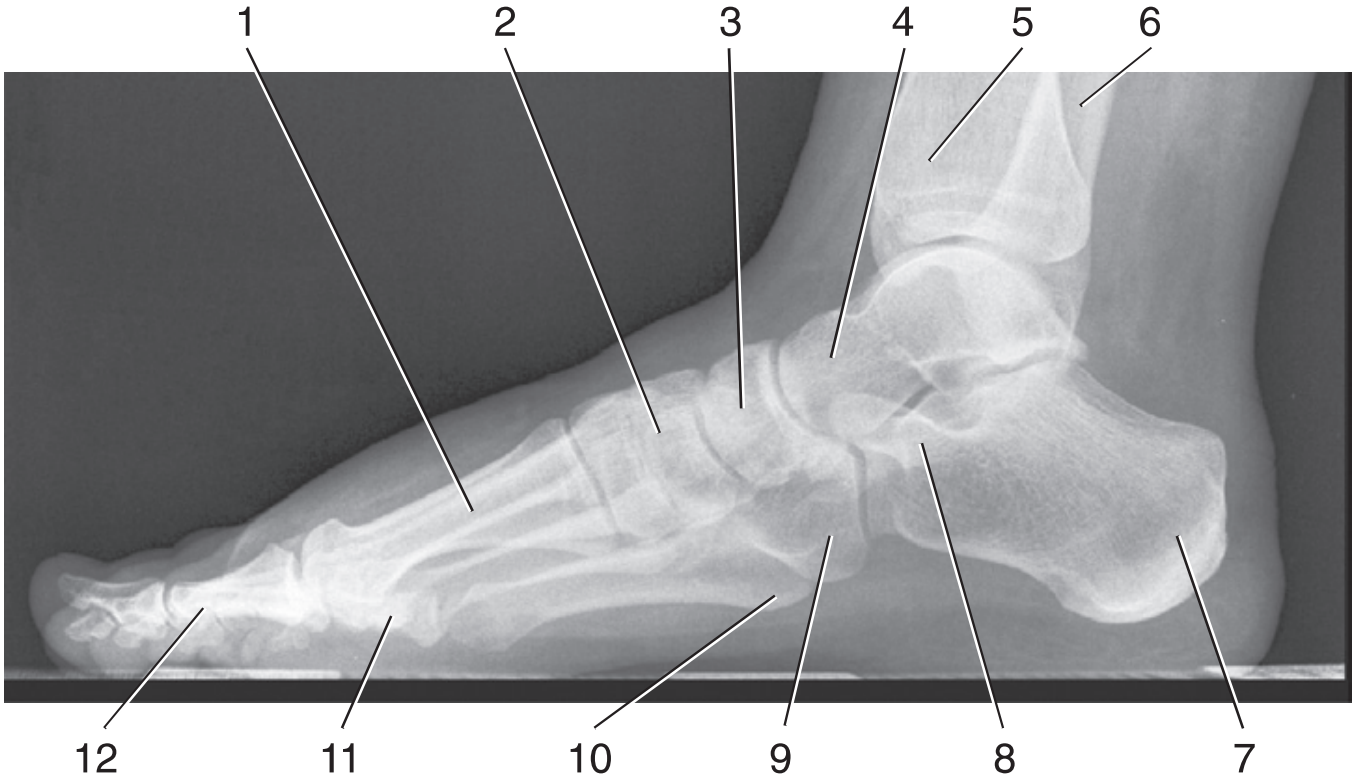
1. Distal
2. Middle
3. Proximal
4. Medial
5. Intermediate
6. Lateral
7. Cuneiforms
8. Distal group of tarsal bones
9. Cuboid
10. Talus
11. Lateral tubercle
12. Calcaneus
13. Proximal group of tarsal bones
14. Groove for tendon of flexor hallucis longus
15. Medial tubercle
16. Tubercle (on undersurface)
17. Navicular
18. Intermediate tarsal bone
19. Metatarsals
20. Phalanges

IN THE CLINIC:

- **The talus is the only bone of the foot that participates in forming the ankle joint.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 634.*

Identify the indicated structures.

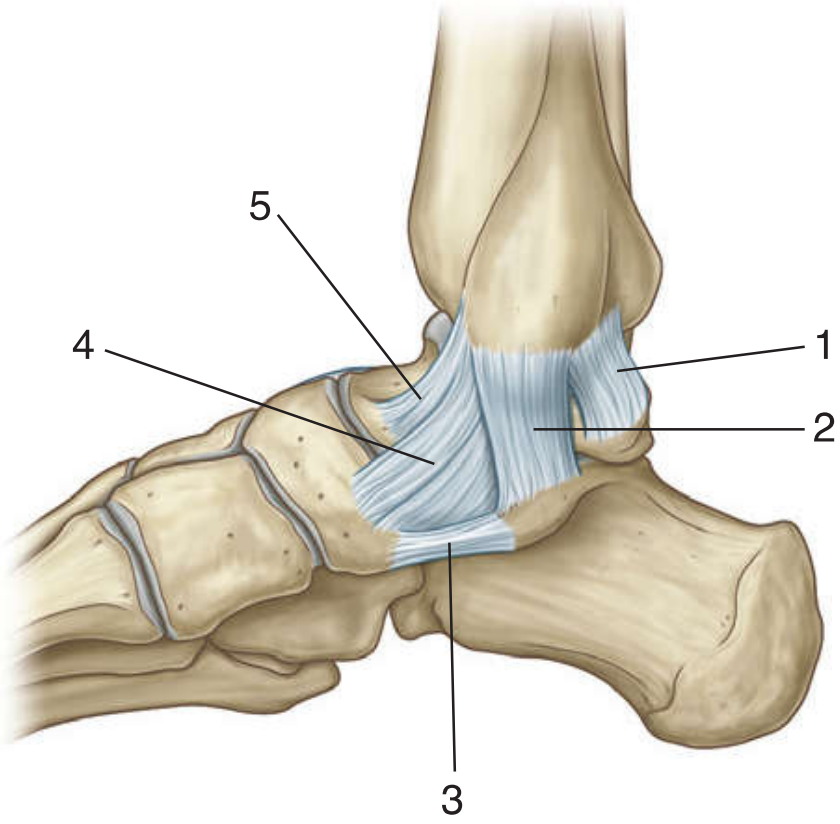


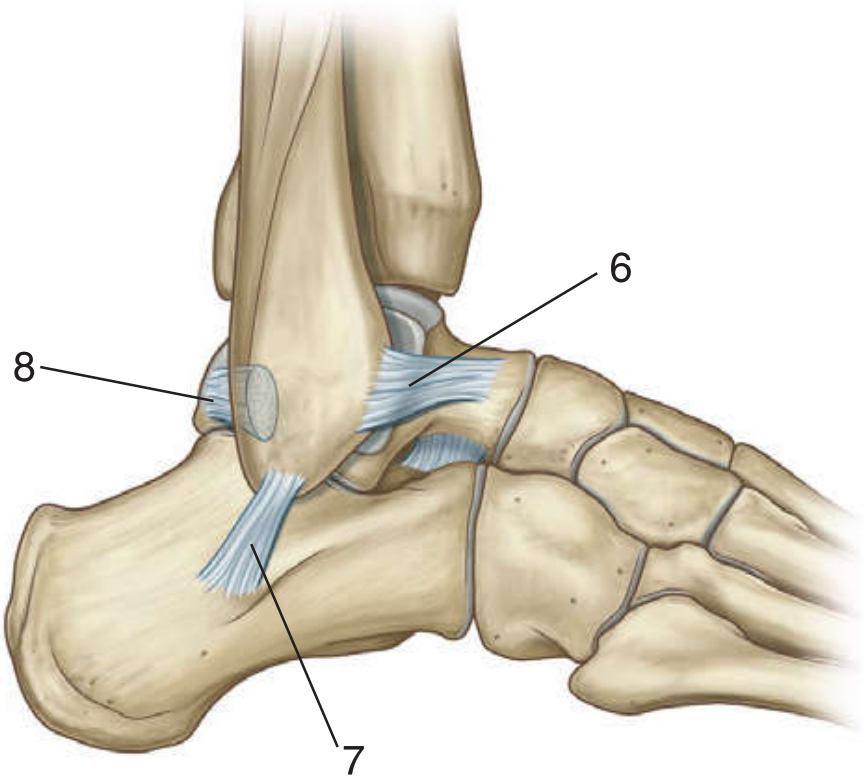
RADIOGRAPH: FOOT

1. Metatarsals
2. Medial cuneiform
3. Navicular
4. Talus
5. Tibia
6. Fibula
7. Calcaneus
8. Sustenaculum tali
9. Cuboid
10. Tuberosity of fifth metatarsal bone
11. Sesamoid bone
12. Phalanges

Figure from Gray's Basic Anatomy, *p. 319.*

Identify the indicated ligaments.





FOOT: LIGAMENTS

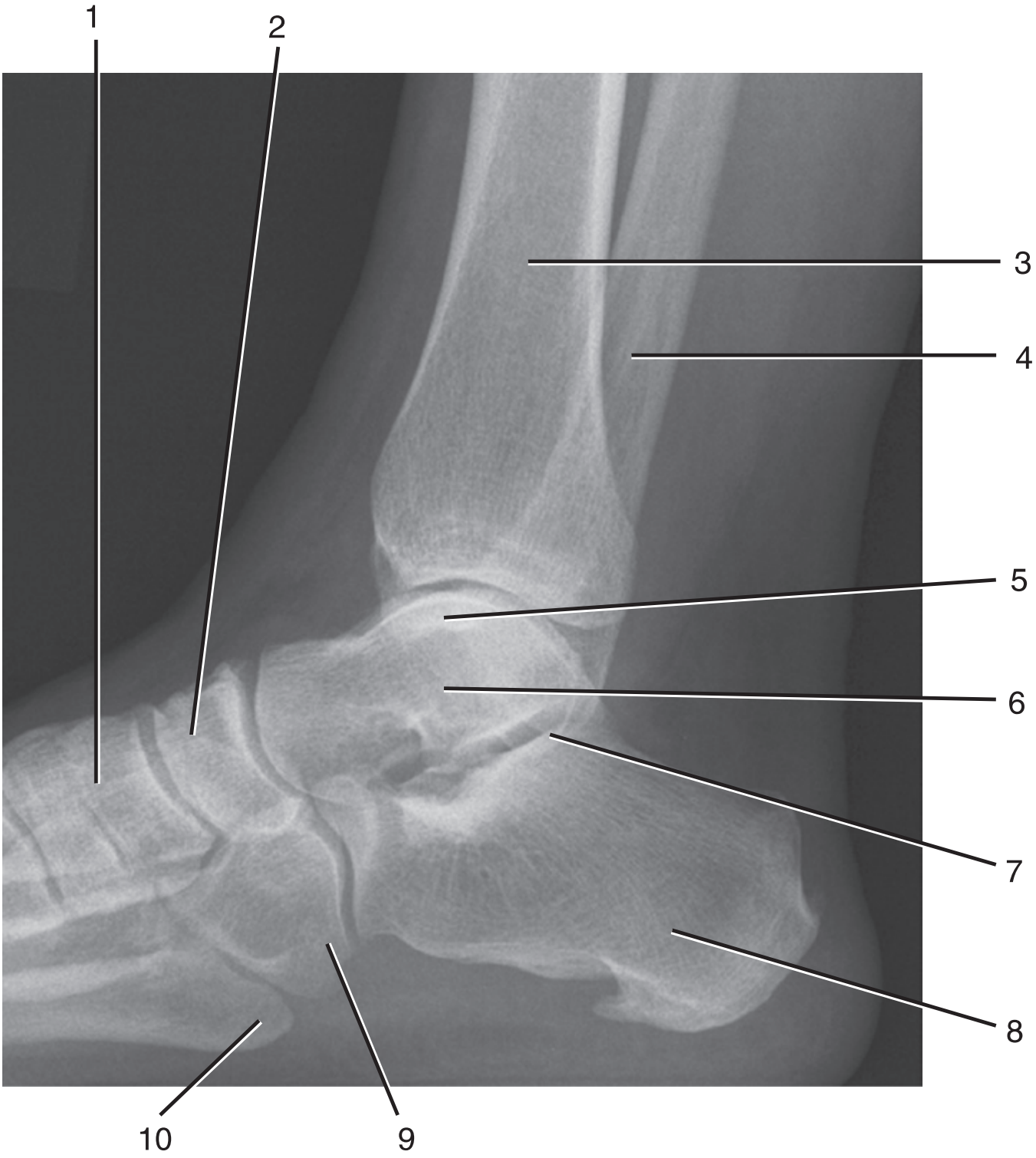
1. Posterior tibiotalar part of the medial ligament of the ankle joint
2. Tibiocalcaneal part of the medial ligament of the ankle joint
3. Plantar calcaneonavicular ligament
4. Tibionavicular part of the medial ligament of the ankle joint
5. Anterior tibiotalar part of the medial ligament of the ankle joint
6. Anterior talofibular ligament
7. Calcaneofibular ligament
8. Posterior talofibular ligament

IN THE CLINIC:

- **The deltoid ligament consists of parts 1, 2, 4, and 5.**

Figure from Gray's Anatomy for Students, *3rd edition, pp. 6399-640.*

Identify the indicated structures.

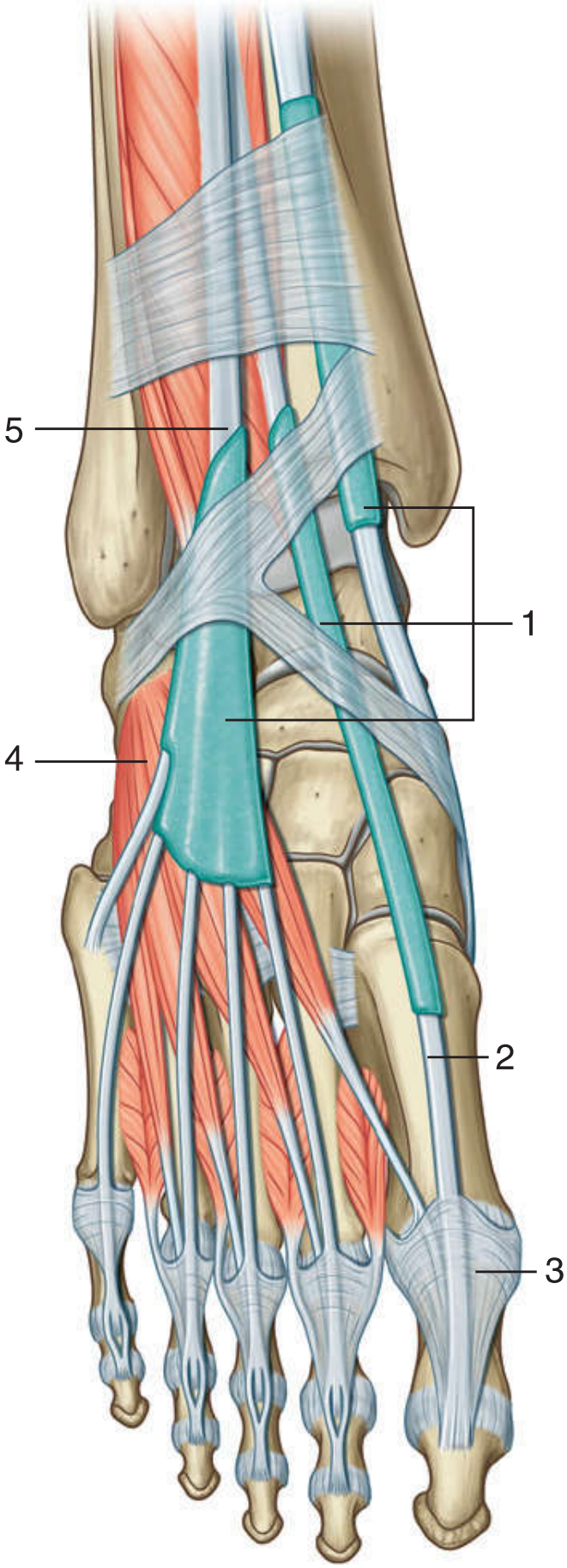


RADIOGRAPH: ANKLE

1. Cuneiforms
2. Navicular
3. Tibia
4. Fibula
5. Medial malleolus
6. Talus
7. Lateral malleolus
8. Calcaneus
9. Cuboid
10. Tuberosity of fifth metatarsal

Figure from Gray's Basic Anatomy, *p. 322.*

Identify the indicated muscle.



DORSAL FOOT: MUSCLES

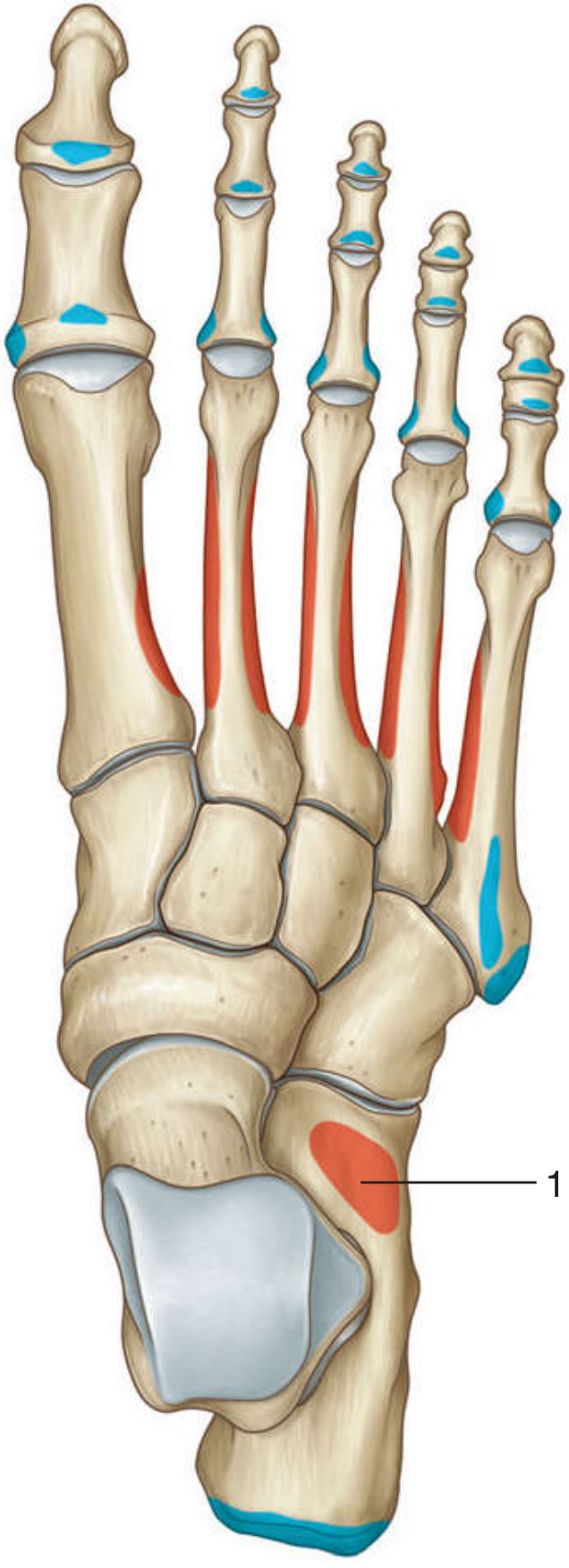
1. Synovial sheaths
2. Extensor hallucis longus
3. Extensor hood
4. Extensor digitorum brevis
5. Extensor digitorum longus

IN THE CLINIC:

- **The extensor digitorum brevis is innervated by the deep fibular nerve.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 651.*

Identify the muscle and its attachments, innervation, and actions.



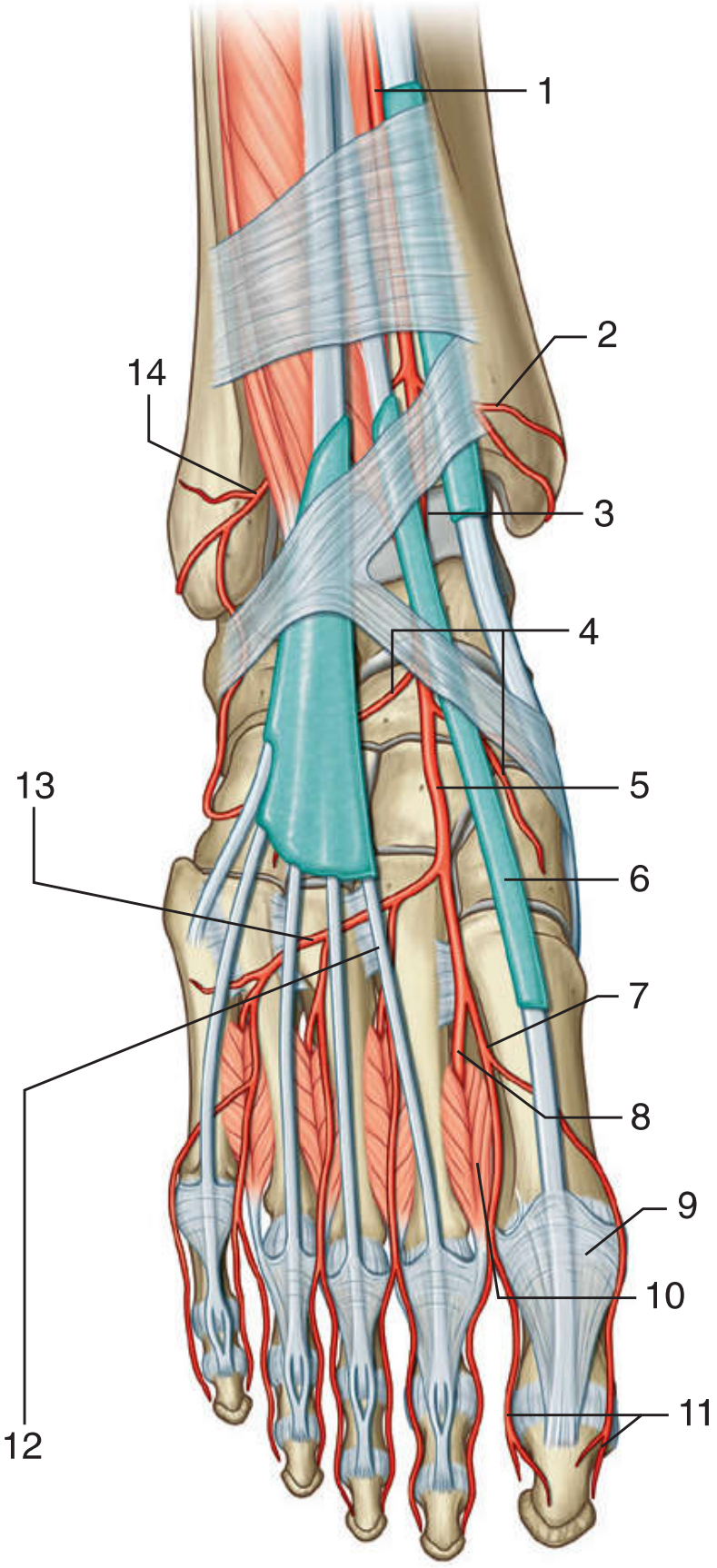
DORSAL FOOT: MUSCLE ATTACHMENTS

Muscle of the Dorsal Aspect of the Foot

Muscle	Origin	Insertion	Innervation	Function
1. Extensor digitorum brevis	Superolateral surface of the calcaneus	Base of proximal phalanx of great toe and lateral sides of the tendons of extensor digitorum longus of toes II to IV	Deep fibular nerve (**S1,S2**)	Extension of metatarsophalangeal joint of great toe and extension of toes II to IV

Figure from Gray's Atlas of Anatomy, *2nd edition, p. 350.*

Identify the indicated arteries, tendons, and muscles.



DORSAL FOOT: ARTERIES

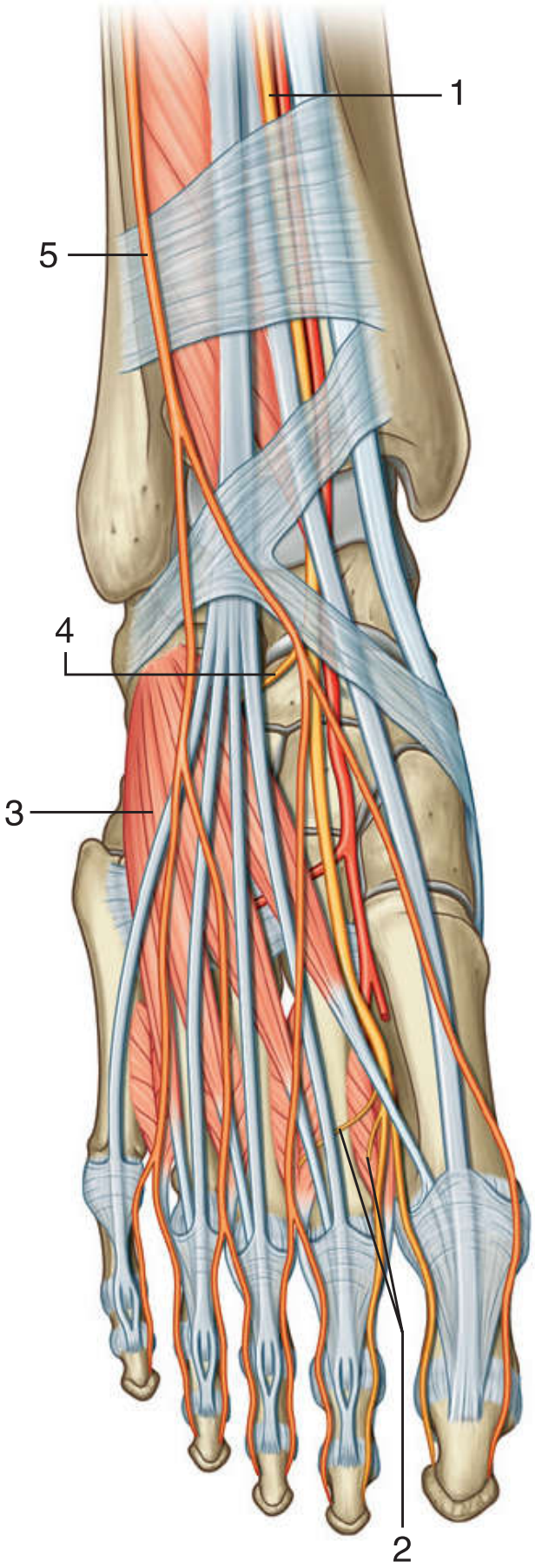
1. Anterior tibial artery
2. Anterior medial malleolar artery
3. Dorsalis pedis artery
4. Medial and lateral tarsal branches
5. Dorsalis pedis artery
6. Extensor hallucis longus
7. First dorsal metatarsal muscle
8. Deep plantar artery
9. Extensor hood
10. First dorsal interosseous muscle
11. Dorsal digital arteries
12. Tendon of extensor digitorum longus to toe II
13. Arcuate artery
14. Anterior lateral malleolar artery

IN THE CLINIC:

- **The dorsalis pedis artery is palpable on the dorsal aspect of the foot between the tendon of the extensor hallucis longus muscle and the tendon of the extensor digitorum longus to the second toe.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 651.*

Identify the indicated nerves and muscles.



DORSAL FOOT: NERVES

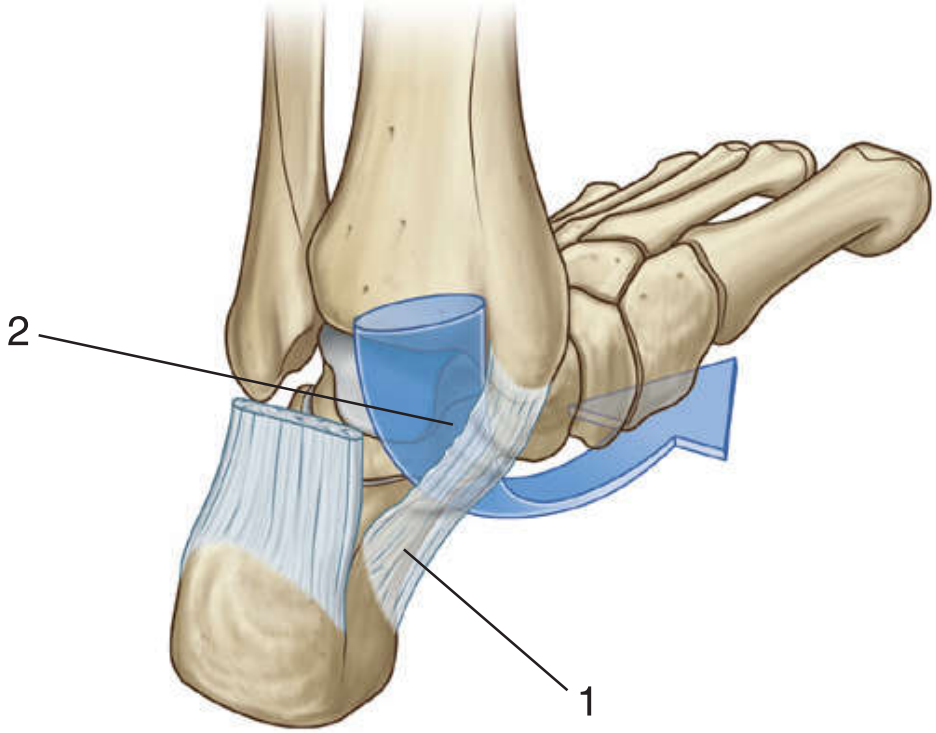
1. Deep fibular nerve
2. Branches to first and second dorsal interosseous
3. Extensor digitorum brevis
4. Branch of deep fibular to extensor digitorum brevis
5. Superficial fibular nerve

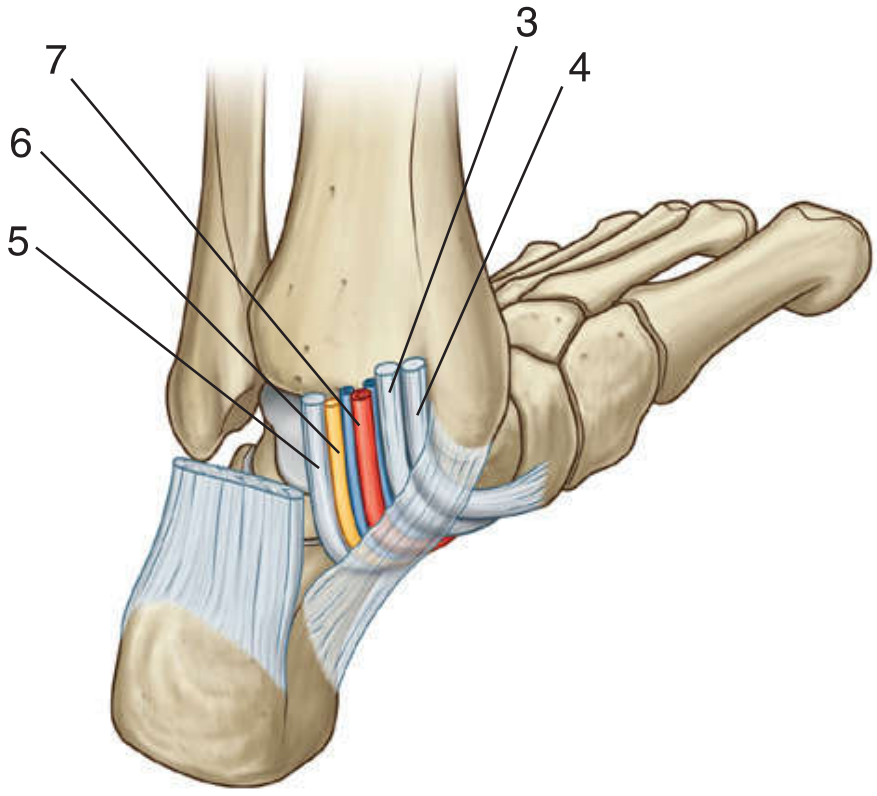
IN THE CLINIC:

- **Sensation in the web space between the first and second toes can be used to monitor the status of the fibular nerves when the leg and foot are in a cast.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 661.*

Is this the left or the right foot?
Identify the indicated structures.





TARSAL TUNNEL

This is the medial side of the left foot.

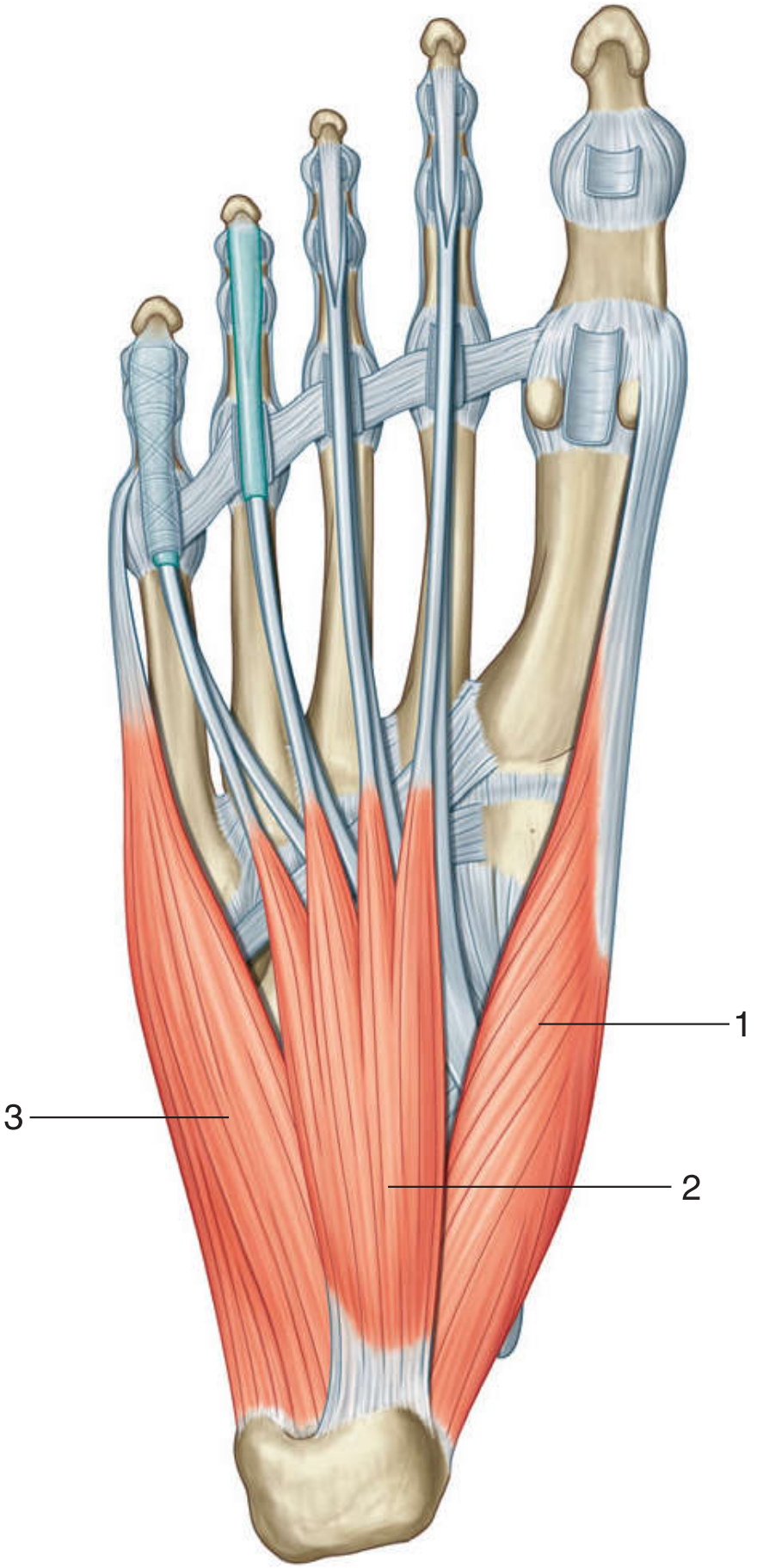
1. Flexor retinaculum
2. Tarsal tunnel
3. Tendon of flexor digitorum longus
4. Tendon of tibialis posterior
5. Tendon of flexor hallucis longus
6. Tibial nerve
7. Posterior tibial artery

IN THE CLINIC:

- **The pulse of the posterior tibial artery can be felt approximately midway between the medial malleolus and the calcaneus.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 646.*

Identify the indicated muscles.

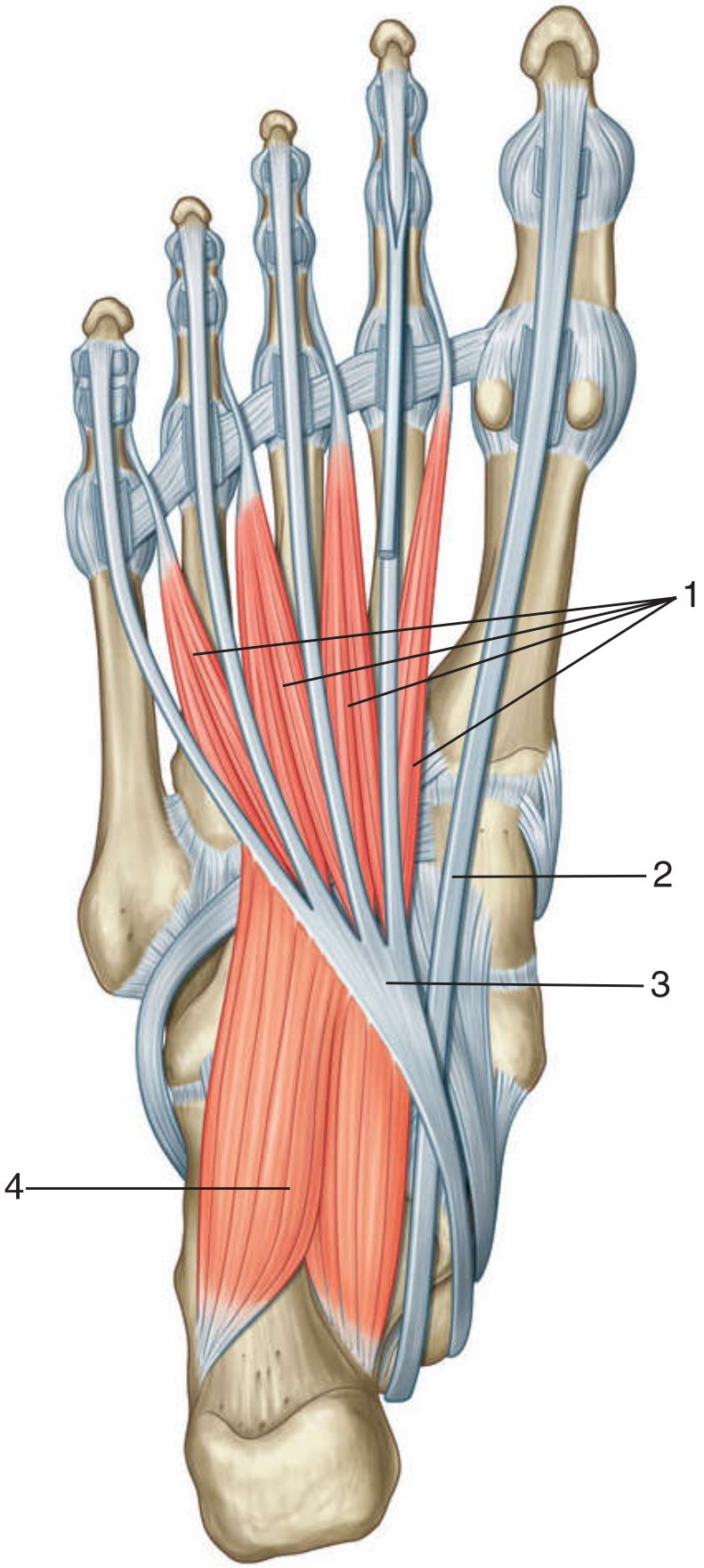


SOLE OF FOOT: MUSCLES, FIRST LAYER

1. **Abductor hallucis**
2. **Flexor digitorum brevis**
3. **Abductor digiti minimi**

Figure from Gray's Anatomy for Students, *3rd edition, p. 652.*

Identify the indicated muscles and tendons.

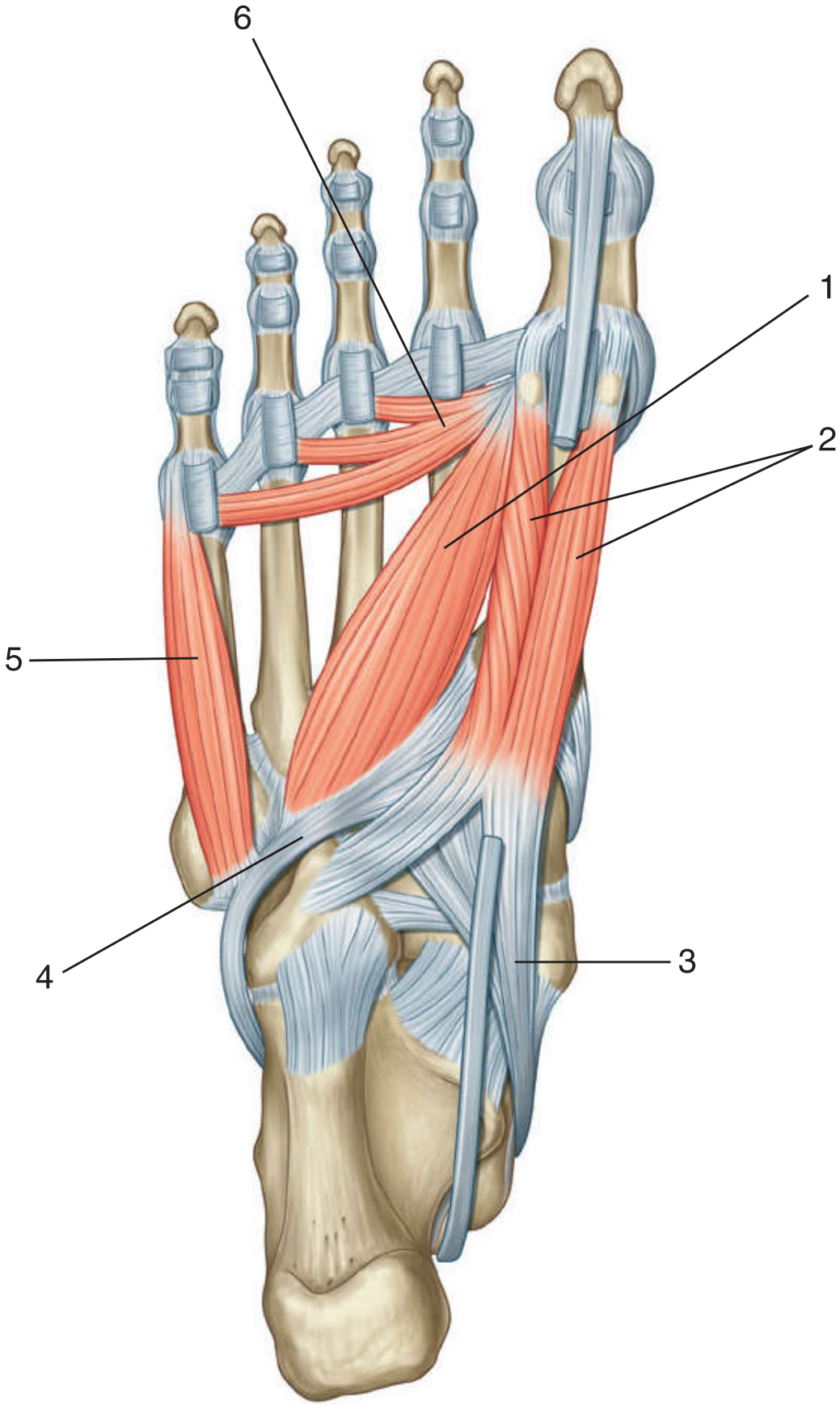


SOLE OF FOOT: MUSCLES, SECOND LAYER

1. Lumbrical muscles
2. Tendon of flexor hallucis longus
3. Tendon of flexor digitorum longus
4. Quadratus plantae

Figure from Gray's Anatomy for Students, *3rd edition, p. 653.*

Identify the indicated muscles and tendons.

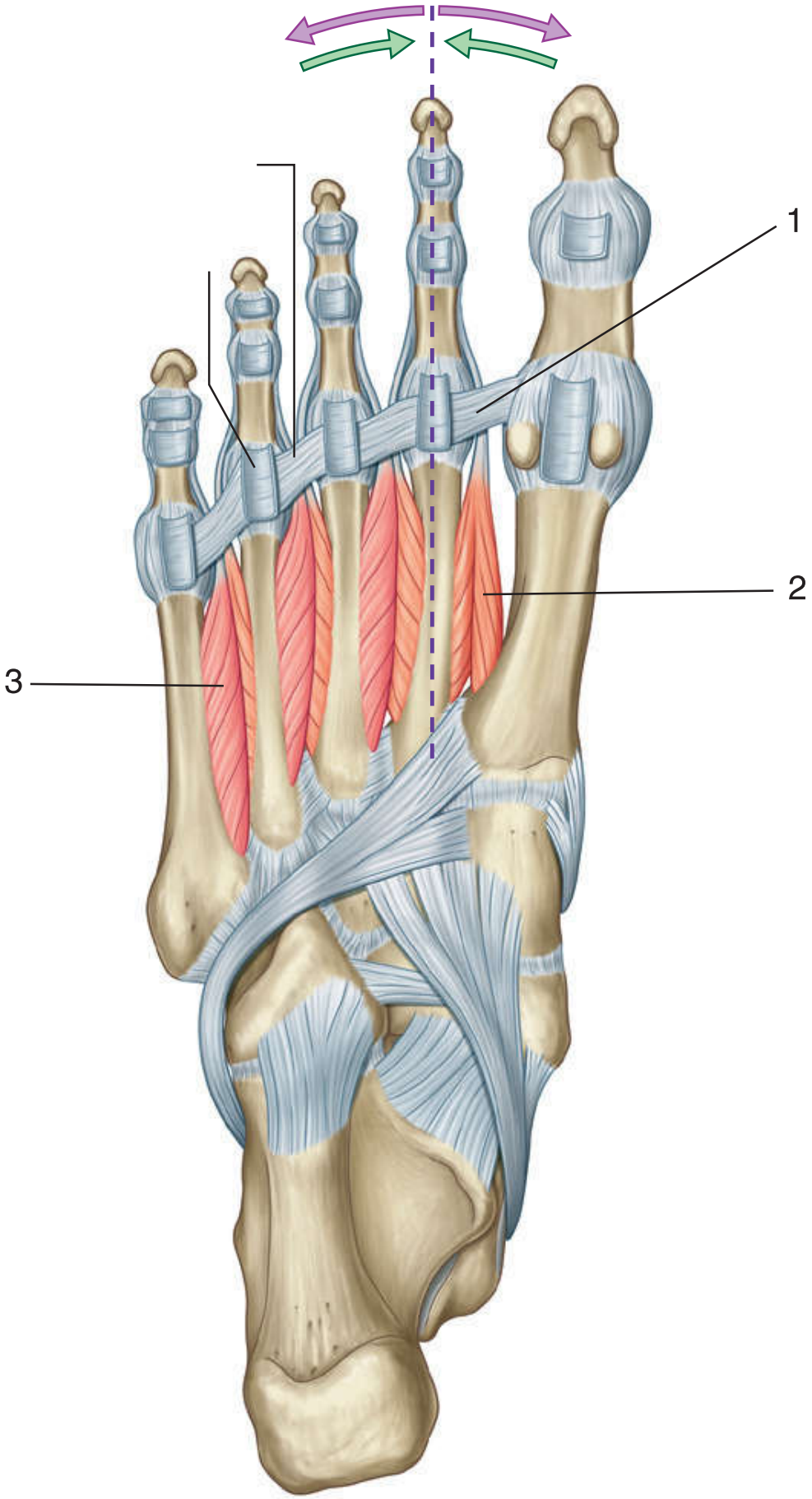


SOLE OF FOOT: MUSCLES, THIRD LAYER

1. Oblique head of adductor hallucis
2. Flexor hallucis brevis
3. Tendon of tibialis posterior
4. Tendon of fibularis longus
5. Flexor digiti minimi
6. Transverse head of adductor hallucis

Figure from Gray's Anatomy for Students, *3rd edition, p. 654.*

Identify the indicated ligament and muscles.

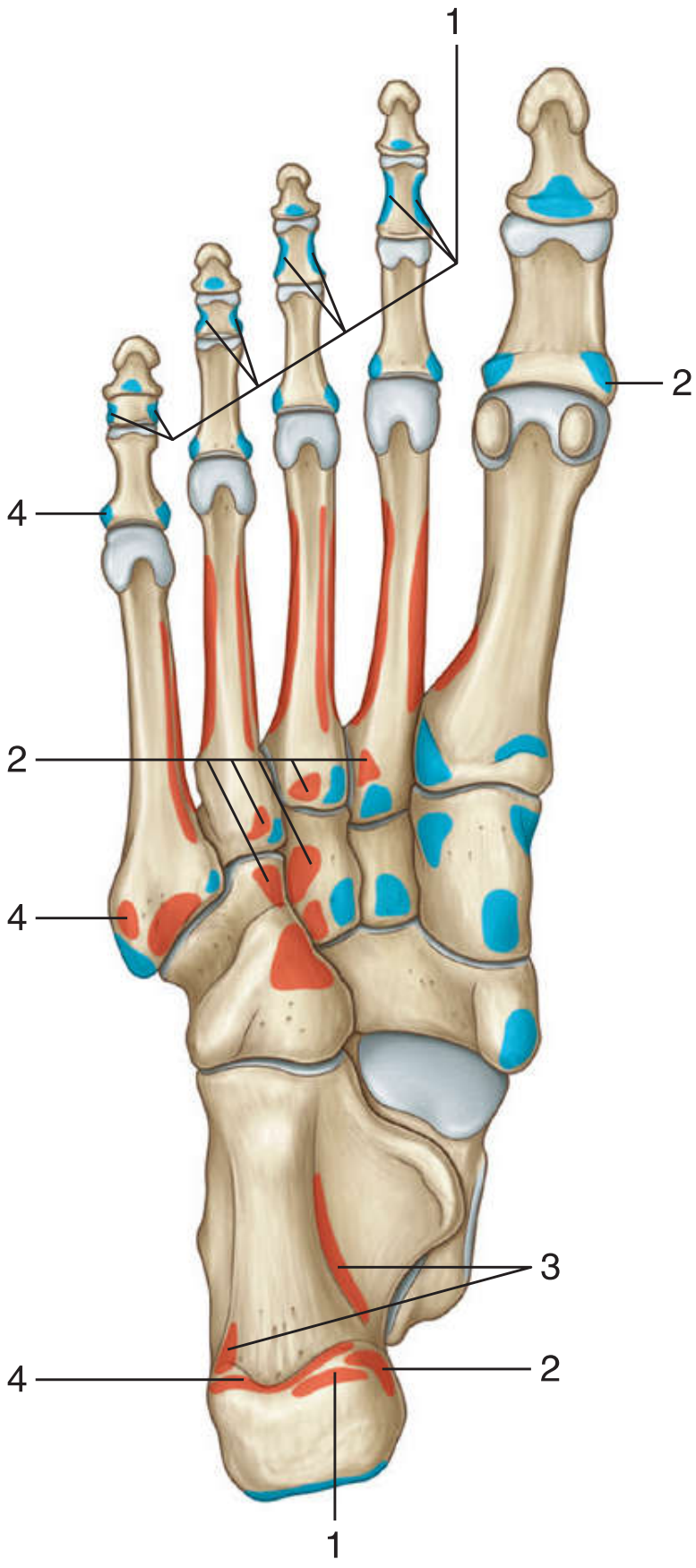


SOLE OF FOOT: MUSCLES, FOURTH LAYER

1. Deep transverse metatarsal ligament
2. First dorsal interosseous muscle
3. Third plantar interosseous muscle

Figure from Gray's Anatomy for Students, *3rd edition, p. 656.*

Identify the muscle and its attachments, innervation, and actions.

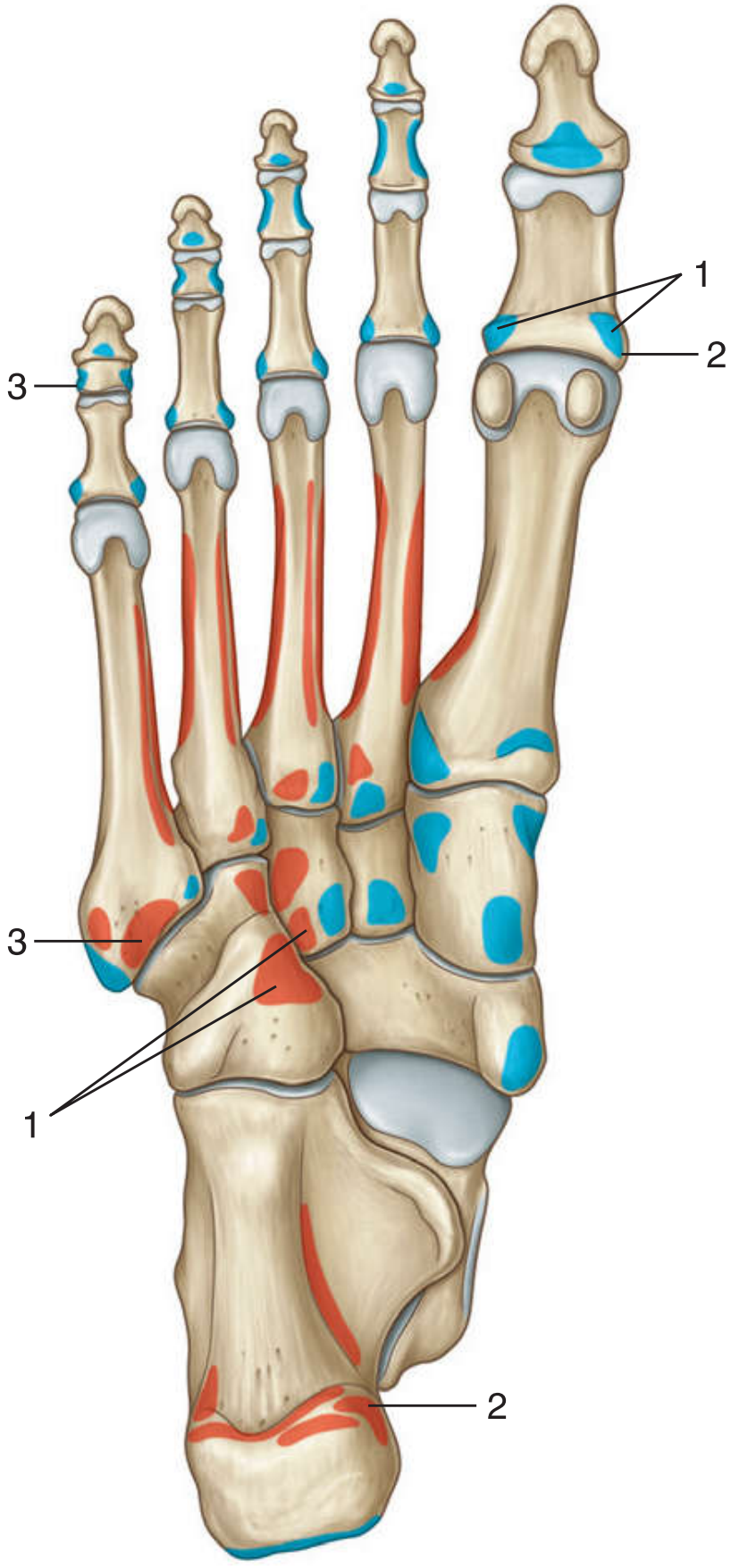


FIRST AND SECOND MUSCLE LAYERS IN THE SOLE OF THE FOOT (SPINAL SEGMENTS IN BOLD ARE THE MAJOR SEGMENTS INNERVATING THE MUSCLE)

Muscle	Origin	Insertion	Innervation	Function
1. Flexor digitorum brevis	Medial process of calcaneal tuberosity and plantar aponeurosis	Sides of plantar surface of middle phalanges of lateral four toes	Medial plantar nerve from the tibial nerve (**S2,S3**)	Flexes lateral four toes at proximal interphalangeal joint
2. Abductor hallucis	Medial process of calcaneal tuberosity	Medial side of base of proximal phalanx of great toe	Medial plantar nerve from the tibial nerve (**S2,S3**)	Abducts and flexes great toe at metatarsophalangeal joint
3. Quadratus plantae	Medial surface of calcaneus and lateral process of calcaneal tuberosity	Lateral side of tendon of flexor digitorum longus in proximal sole of the foot	Lateral plantar nerve from tibial nerve (**S1 to S3**)	Assists flexor digitorum longus tendon in flexing toes II to V
4. Abductor digiti minimi	Lateral and medial processes of calcaneal tuberosity, and band of connective tissue connecting calcaneus with base of metatarsal V	Lateral side of base of proximal phalanx of little toe	Lateral plantar nerve from tibial nerve (**S2,S3**)	Abducts little toe at the metatarsophalangeal joint

Figure from Gray's Atlas of Anatomy, *2nd edition, p. 350.*

Identify the muscle and its attachments, innervation, and actions.

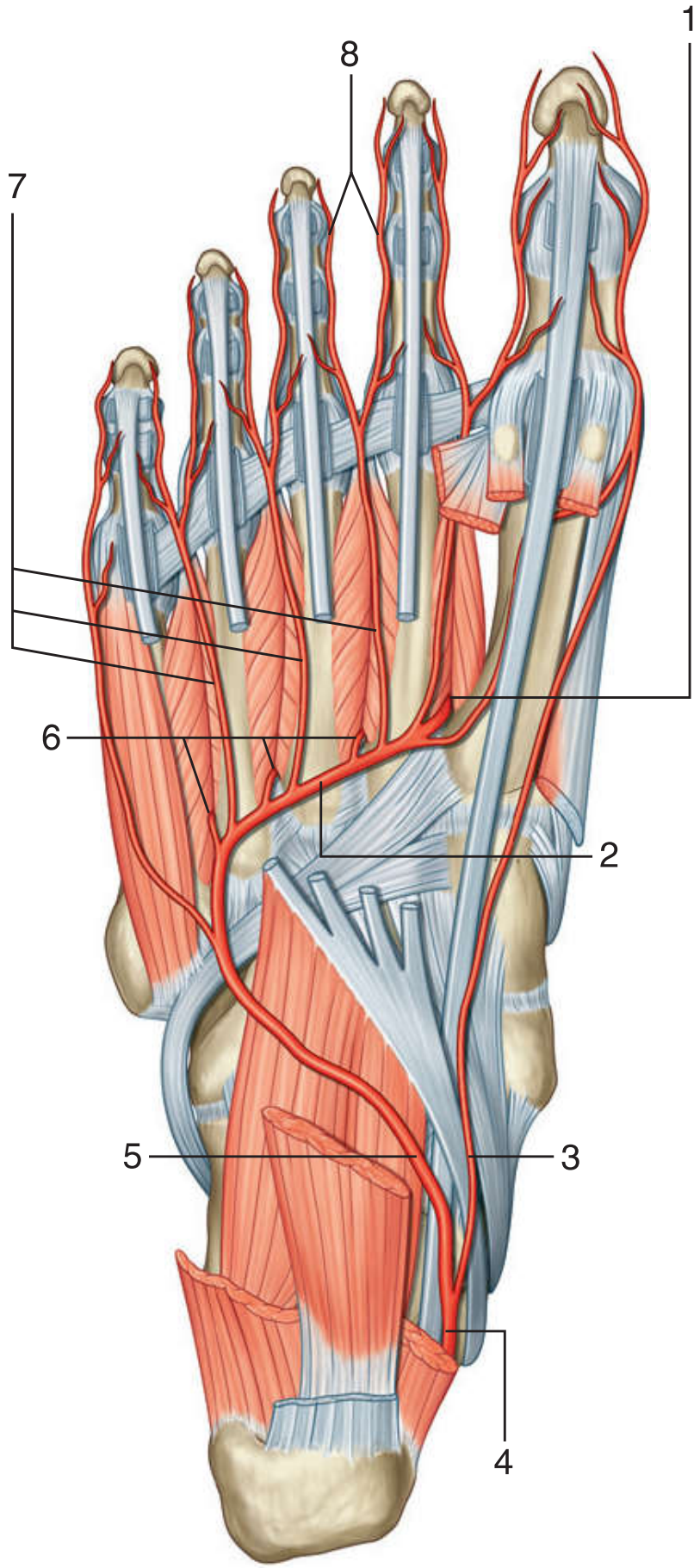


THIRD LAYER OF MUSCLES IN THE SOLE OF THE FOOT (SPINAL SEGMENTS IN BOLD ARE THE MAJOR SEGMENTS INNERVATING THE MUSCLE)

Muscle	Origin	Insertion	Innervation	Function
1. Flexor hallucis brevis	Plantar surface of cuboid and lateral cuneiform; tendon of tibialis posterior	Lateral and medial sides of base of proximal phalanx of the great toe	Medial plantar nerve from tibial nerve (**S1**,S2)	Flexes metatarsophalangeal joint of the great toe
2. Adductor hallucis	Transverse head—ligaments associated with metatarsophalangeal joints of lateral three toes; oblique head—bases of metatarsals II to IV and from sheath covering fibularis longus	Lateral side of base of proximal phalanx of great toe	Lateral plantar nerve from tibial nerve (**S2,S3**)	Adducts great toe at metatarsophalangeal joint
3. Flexor digiti minimi brevis	Base of metatarsal V and related sheath of fibularis longus tendon	Lateral side of base of proximal phalanx of little toe	Lateral plantar nerve from tibial nerve (**S2,S3**)	Flexes little toe at metatarsophalangeal joint

Figure from Gray's Atlas of Anatomy, *2nd edition, p. 350.*

Identify the indicated arteries.



SOLE OF FOOT: ARTERIES

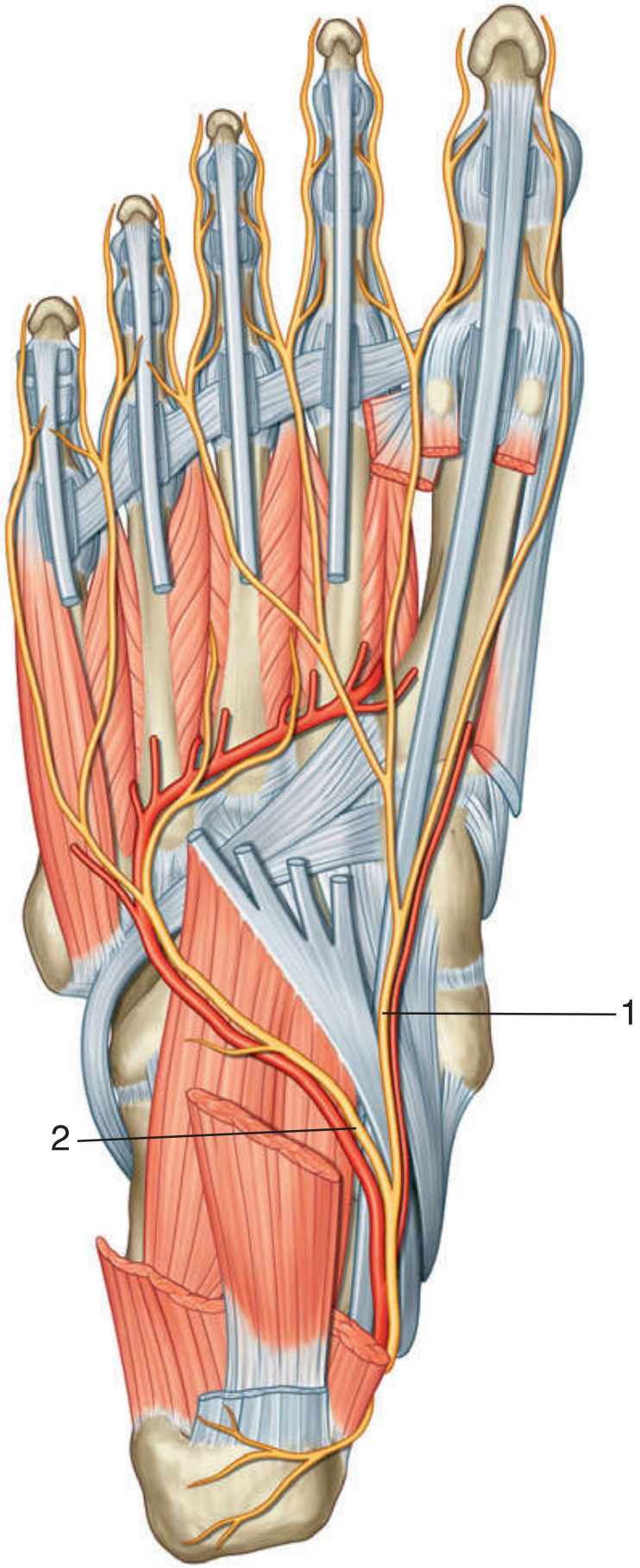
1. Deep plantar artery: terminal branch of dorsalis pedis artery
2. Deep plantar arch
3. Medial plantar artery
4. Posterior tibial artery
5. Lateral plantar artery
6. Perforating vessels
7. Plantar metatarsal artery
8. Digital branches

IN THE CLINIC:

- **The deep plantar arch connects with the posterior tibial artery through the lateral plantar artery and with the anterior tibial artery through the deep plantar artery.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 657.*

Identify the indicated nerves.



SOLE OF FOOT: NERVES

1. Medial plantar nerve
2. Lateral plantar nerve

IN THE CLINIC:

- **A lesion to the lateral plantar nerve results in loss of function of most intrinsic muscles in the sole of the foot except for three muscles (abductor hallucis, flexor digitorum brevis, and the first lumbrical) that are supplied by the medial plantar nerve. Also lost is sensation from skin on the lateral side of the sole of the foot.**

- **A lesion to the medial plantar nerve results in loss of sensation from a large area of the sole of the foot and in function of abductor hallucis, flexor digitorum brevis, and the first lumbrical.**

Figure from Gray's Anatomy for Students, *3rd edition, p. 660.*