

Venous and Lymphatic Drainage; Segmental and Sympathetic InnervationFAQs,MCQs and Viva Voce

? Frequently Asked Questions

1. What are the two main systems of veins in the lower limb?

? The **superficial system** (in superficial fascia) and the **deep system** (accompanying arteries). They communicate via **perforating veins**.

2. What are the main superficial veins of the lower limb?

? **Long (great) saphenous vein** and **short (small) saphenous vein**.

3. What is the course of the long saphenous vein?

? Begins at the medial end of the dorsal venous arch, passes **anterior to the medial malleolus**, ascends along the **medial side of leg and thigh**, and drains into the **femoral vein** through the **saphenous opening**.

4. What is the course of the short saphenous vein?

? Begins at the lateral end of the dorsal venous arch, passes **behind the lateral malleolus**, ascends along the **back of the leg**, and drains into the **popliteal vein**.

5. Which vein is commonly used for coronary artery bypass grafting (CABG)?

? **Long (great) saphenous vein** — due to its length, accessibility, and wall thickness.

6. What is the direction of venous flow in perforating veins?

? From **superficial** ? **deep veins** only, due to the presence of **valves**.

7. What are the major named perforating veins of the leg?

? **Cockett's** (lower leg), **Boyd's** (upper leg), and **Dodd's** (thigh).

8. What is a varicose vein?

? A **dilated, tortuous vein** due to **valvular incompetence** in superficial or perforating veins.

9. Where are venous ulcers commonly seen?

? Just above the **medial malleolus** due to chronic venous stasis.

10. What is a saphenous varix?

? Localized dilatation of the **terminal part of long saphenous vein** at the saphenous opening, often confused with a femoral hernia.

11. What are the factors aiding venous return from the lower limb?

? **Muscle pump, venous valves, deep fascia compression, arterial pulsation, and respiratory suction.**

12. What is deep vein thrombosis (DVT)?

? Thrombus formation in deep veins (usually in calf veins) due to **stasis or hypercoagulability**, with risk of **pulmonary embolism**.

13. What are the groups of inguinal lymph nodes?

? **Superficial** (horizontal and vertical) and **deep** groups.

14. What does the horizontal group of superficial inguinal lymph nodes drain?

? Lower anterior abdominal wall, gluteal region, perineum, and external genitalia (except testis).

15. What does the vertical group of superficial inguinal lymph nodes drain?

? Superficial lymphatics from the **lower limb** via the **long saphenous vein**.

16. What is the node of Cloquet (Rosenmüller)?

? The **highest deep inguinal lymph node**, located in the **femoral canal** beneath the inguinal ligament.

17. Where does the lymph from the lateral side of foot drain first?

? Into popliteal lymph nodes, then to deep inguinal nodes.

18. What is the lymphatic drainage of the glans penis or clitoris?

? Directly into deep inguinal lymph nodes.

19. What is the clinical significance of lymphadenopathy in the groin?

? Indicates infection or malignancy in the **lower limb, perineum, or external genitalia**.

20. What are the sympathetic functions in the lower limb?

? **Vasomotor** (vessel tone), **sudomotor** (sweat secretion), and **pilomotor** (hair erection).

21. What is the spinal origin of sympathetic fibers to the lower limb?

? **T10–L2** spinal segments.

22. What are the effects of lumbar sympathectomy?

? **Warm, dry skin** due to loss of vasomotor and sudomotor tone.

23. What is the dermatome of the great toe?

? **L4**.

24. What is the dermatome of the little toe?

? **S1**.

25. Which nerve root is tested by the knee jerk reflex?

? **L3–L4**.

26. Which nerve root is tested by the ankle jerk reflex?

? **S1–S2**.

27. Which nerve root is responsible for dorsiflexion of the foot?

? **L4–L5 (Tibialis anterior)**.

28. Which nerve root is responsible for plantar flexion?

? **S1–S2 (Gastrocnemius, Soleus).**

29. Why are dermatomes of the lower limb spiral in arrangement?

? Due to **medial rotation of the limb buds** during embryonic development.

30. What is the difference in rotation between upper and lower limbs during development?

? **Upper limb rotates laterally, lower limb rotates medially.**

31. What is the preaxial and postaxial border of the lower limb?

? **Preaxial:** Medial (great toe side); **Postaxial:** Lateral (little toe side).

32. What are the main differences between upper and lower limbs?

? Upper limb is for **mobility and manipulation**, lower limb for **support and locomotion**.

33. What is the commonest nerve lesion of lower limb?

? **Common peroneal nerve injury**, producing **foot drop**.

34. What are the spinal segments for plantar reflex?

? **L5–S1.**

35. What are the spinal segments for anal reflex?

? **S3–S5.**

36. What is saddle anesthesia?

? Loss of sensation over perineum (S3–S5 dermatomes) ? seen in **cauda equina syndrome**.

37. Which reflex tests corticospinal tract integrity?

? **Plantar reflex** — Babinski's sign indicates upper motor neuron lesion.

38. What does the term "musculovenous pump" mean?

? Calf muscle contraction squeezes deep veins, forcing blood upward — aided by valves

preventing backflow.

39. Why is the long saphenous vein prone to varicosity?

? Because it runs a long superficial course and has multiple tributaries with valves that can become incompetent.

40. Why is the foot often swollen in lymphatic obstruction?

? The tight deep fascia of leg restricts upward lymph flow, leading to **distal accumulation**.

? Multiple Choice Questions

1. The long (great) saphenous vein begins at:

- A. Lateral end of dorsal venous arch
- B. Medial end of dorsal venous arch
- C. Behind lateral malleolus
- D. Popliteal fossa

? Answer: B

2. The short (small) saphenous vein ends in:

- A. Femoral vein
- B. External iliac vein
- C. Popliteal vein
- D. Posterior tibial vein

? Answer: C

3. The long saphenous vein passes:

- A. Behind the medial malleolus
- B. Anterior to the medial malleolus
- C. Behind the lateral malleolus

D. Between tibia and fibula

? **Answer:** B

4. The short saphenous vein passes:

- A. In front of lateral malleolus
- B. Behind lateral malleolus
- C. In front of medial malleolus
- D. Behind medial malleolus

? **Answer:** B

5. The vein commonly used for coronary artery bypass grafting (CABG) is:

- A. Short saphenous vein
- B. Long saphenous vein
- C. Popliteal vein
- D. Femoral vein

? **Answer:** B

6. Perforating veins connect:

- A. Arteries and veins
- B. Deep veins and superficial veins
- C. Lymphatics and veins
- D. Deep arteries and superficial arteries

? **Answer:** B

7. Valves in veins of lower limb prevent:

- A. Backward flow of blood
- B. Venous collapse
- C. Arterial reflux
- D. Varicose ulcers

? **Answer:** A

8. In varicose veins, the most common site is:

- A. Short saphenous vein
- B. Long saphenous vein and its tributaries

C. Deep femoral vein

D. Perforators only

? **Answer: B**

9. Cockett's perforators are located in:

A. Thigh

B. Upper leg

C. Lower leg near ankle

D. Groin

? **Answer: C**

10. The saphenous varix is:

A. Dilatation of popliteal vein

B. Dilatation of terminal part of long saphenous vein

C. Dilatation of femoral vein

D. Dilatation of deep vein

? **Answer: B**

11. The node of Cloquet is located in:

A. Popliteal fossa

B. Cibriform fascia

C. Femoral canal

D. Saphenous opening

? **Answer: C**

12. Lymph from the lateral side of foot drains first into:

A. Superficial inguinal nodes

B. Deep inguinal nodes

C. Popliteal nodes

D. External iliac nodes

? **Answer: C**

13. Lymph from glans penis drains into:

A. Superficial inguinal nodes

- B. Deep inguinal nodes
- C. External iliac nodes
- D. Lumbar nodes

? Answer: B

14. Superficial inguinal lymph nodes receive lymph from all except:

- A. Lower abdominal wall
- B. Perineum
- C. Testis
- D. External genitalia

? Answer: C

15. Popliteal lymph nodes drain into:

- A. Superficial inguinal nodes
- B. Deep inguinal nodes
- C. External iliac nodes
- D. Common iliac nodes

? Answer: B

16. Sympathetic supply to lower limb arises from:

- A. T1–T5
- B. T6–T9
- C. T10–L2
- D. L3–S2

? Answer: C

17. Which of the following functions is not sympathetic?

- A. Vasomotor
- B. Sudomotor
- C. Pilomotor
- D. Voluntary movement

? Answer: D

18. The dermatome of the great toe corresponds to:

- A. L3
- B. L4
- C. L5
- D. S1

? Answer: B

19. The dermatome of the little toe corresponds to:

- A. L3
- B. L4
- C. L5
- D. S1

? Answer: D

20. Dorsiflexion of foot tests which spinal segment?

- A. L2
- B. L3
- C. L4–L5
- D. S1

? Answer: C

21. Plantar flexion of foot depends mainly on:

- A. L2–L3
- B. L3–L4
- C. L4–L5
- D. S1–S2

? Answer: D

22. Knee jerk reflex tests integrity of:

- A. L2–L3
- B. L3–L4
- C. L5–S1
- D. S1–S2

? Answer: B

23. Absence of ankle jerk indicates lesion at:

- A. L3–L4
- B. L5–S1
- C. S1–S2
- D. T12–L1

? Answer: C

24. Plantar reflex is mediated through:

- A. L2–L3
- B. L3–L4
- C. L5–S1
- D. S2–S4

? Answer: C

25. Babinski sign indicates:

- A. Lower motor neuron lesion
- B. Sensory loss
- C. Upper motor neuron lesion
- D. Peripheral neuropathy

? Answer: C

26. Dermatomes of the lower limb are arranged:

- A. Longitudinally
- B. Spirally
- C. Horizontally
- D. Randomly

? Answer: B

27. The upper limb rotates _____ during development, while the lower limb rotates _____.

- A. Laterally, medially
- B. Medially, laterally
- C. Anteriorly, posteriorly
- D. Posteriorly, anteriorly

28. Preaxial border of the lower limb is:

- A. Lateral
- B. Medial
- C. Posterior
- D. Anterior

? Answer: B

29. Postaxial border of the lower limb is:

- A. Medial
- B. Lateral
- C. Posterior
- D. Anterior

? Answer: B

30. The most common nerve injury in the lower limb causing foot drop involves:

- A. Tibial nerve
- B. Common peroneal nerve
- C. Femoral nerve
- D. Obturator nerve

? Answer: B

31. The arches of the foot are maintained by all except:

- A. Plantar aponeurosis
- B. Peroneus longus tendon
- C. Adductor longus
- D. Spring ligament

? Answer: C

32. Functionally, the upper limb is specialized for:

- A. Stability
- B. Locomotion
- C. Manipulation

D. Weight bearing

? **Answer:** C

33. Functionally, the lower limb is specialized for:

- A. Fine movement
- B. Weight bearing
- C. Grasping
- D. Rotation

? **Answer:** B

34. The commonest deformity after common peroneal nerve injury is:

- A. Foot drop
- B. Claw foot
- C. Flat foot
- D. Club foot

? **Answer:** A

35. The reflex testing integrity of corticospinal tract is:

- A. Knee jerk
- B. Ankle jerk
- C. Plantar reflex
- D. Cremasteric reflex

? **Answer:** C

36. The dermatome of the posterior thigh corresponds mainly to:

- A. L4
- B. L5
- C. S1
- D. S2

? **Answer:** D

37. The lymph from testis drains into:

- A. Superficial inguinal nodes
- B. Deep inguinal nodes

C. Para-aortic (lumbar) nodes

D. Internal iliac nodes

? **Answer:** C

38. The horizontal group of superficial inguinal nodes lies:

A. Below the inguinal ligament

B. Along femoral vein

C. Around saphenous opening

D. Over the adductor canal

? **Answer:** A

39. The node receiving lymph from glans penis is:

A. Superficial inguinal

B. Deep inguinal

C. External iliac

D. Popliteal

? **Answer:** B

40. Loss of vasomotor and sudomotor tone after sympathectomy leads to:

A. Pale, cold limb

B. Warm, dry limb

C. Blue, moist limb

D. Cold, cyanotic limb

? **Answer:** B

? Viva Voce – Lower Limb: Venous, Lymphatic, and Neural Drainage

1. What are the two systems of veins in the lower limb?

? **Superficial** and **deep** venous systems, interconnected by **perforating veins**.

2. What is the function of perforating veins?

? They connect superficial veins to deep veins and contain valves that allow flow **only from superficial to deep.**

3. Name the major superficial veins of the lower limb.

? **Long (great) saphenous vein** and **short (small) saphenous vein.**

4. Where does the long saphenous vein terminate?

? In the **femoral vein** at the **saphenous opening.**

5. Where does the short saphenous vein terminate?

? In the **popliteal vein** in the popliteal fossa.

6. Which vein passes in front of the medial malleolus?

? **Long saphenous vein.**

7. Which vein passes behind the lateral malleolus?

? **Short saphenous vein.**

8. What are Cockett's perforators?

? Perforating veins connecting the **posterior arch vein** with **posterior tibial veins** in the lower leg.

9. What causes varicose veins?

? **Incompetence of venous valves**, leading to reversal of blood flow and venous dilation.

10. Why are venous ulcers common near the medial malleolus?

? Due to **chronic venous stasis** and poor tissue oxygenation in varicose veins.

11. What is a saphenous varix?

? A **localized dilation** of the terminal part of the **long saphenous vein** at the saphenous opening.

12. What factors help venous return from the lower limb?

? **Muscle pump, venous valves, deep fascia compression, arterial pulsation, and respiratory movements.**

13. What is the musculovenous pump?

? Action of **calf muscles** compressing deep veins during walking, forcing blood upward toward the heart.

14. Which lymph nodes drain the superficial tissues of the lower limb?

? **Superficial inguinal lymph nodes.**

15. Which lymph nodes drain the deep structures of the lower limb?

? **Deep inguinal lymph nodes.**

16. Into which lymph nodes does the lateral side of foot drain first?

? **Popliteal lymph nodes.**

17. Which is the highest deep inguinal lymph node?

? **Node of Cloquet (Rosenmüller)** — located in the **femoral canal**.

18. What is the drainage of the glans penis or clitoris?

? Directly into **deep inguinal lymph nodes**.

19. Lymph from the testis drains into which nodes?

? **Para-aortic (lumbar) lymph nodes.**

20. What are the sympathetic root levels supplying the lower limb?

? **T10–L2.**

21. What structures receive sympathetic supply in the lower limb?

? **Blood vessels, sweat glands, and arrector pili muscles.**

22. What are the effects of lumbar sympathectomy?

? **Warm, dry limb** due to loss of vasomotor and sudomotor tone.

23. What are the components of sympathetic function in the limb?

? **Vasomotor, sudomotor, and pilomotor.**

24. Which dermatome corresponds to the medial side of leg and great toe?

? **L4.**

25. Which dermatome corresponds to the lateral side of foot and little toe?

? **S1.**

26. Which spinal segment controls dorsiflexion of the foot?

? **L4–L5.**

27. Which spinal segment controls plantar flexion?

? **S1–S2.**

28. What is the root value of knee jerk reflex?

? **L3–L4.**

29. What is the root value of ankle jerk reflex?

? **S1–S2.**

30. What is the root value of plantar reflex?

? **L5–S1.**

31. What does a positive Babinski sign indicate?

? **Upper motor neuron lesion** of the corticospinal tract.

32. Why are dermatomes of the lower limb spiral in arrangement?

? Due to **medial rotation** of the limb buds during development.

33. Which border of the lower limb is preaxial and which is postaxial?

? **Preaxial:** Medial (great toe side)

Postaxial: Lateral (little toe side)

34. How does the development of upper and lower limbs differ?

? Upper limb rotates **laterally**, lower limb rotates **medially**.

35. What is the functional difference between upper and lower limbs?

? **Upper limb:** Mobility and manipulation.

Lower limb: Support and locomotion.

36. Which muscle corresponds to the flexor digitorum superficialis of hand?

? **Flexor digitorum brevis** of foot.

37. Which muscle corresponds to the flexor digitorum profundus of hand?

? **Flexor digitorum longus** of foot.

38. Which deformity occurs after common peroneal nerve injury?

? **Foot drop.**

39. Which deformity occurs after tibial nerve injury?

? **Calcaneovalgus deformity** — loss of plantar flexion.

40. Which is the commonest site for varicose ulcer?

? **Above the medial malleolus.**

41. What causes lymphoedema of the lower limb?

? **Obstruction of lymphatic drainage** due to filariasis, surgery, or malignancy.

42. What is elephantiasis?

? **Gross thickening and enlargement** of the limb due to **chronic filarial lymphatic obstruction.**

43. Which reflex tests the integrity of S3–S5 segments?

? Anal reflex.

44. What is saddle anesthesia?

? Loss of sensation over perineum (S3–S5 dermatomes), seen in **cauda equina syndrome.**

45. Which nerve lesion is tested by loss of dorsiflexion of the foot?

? Common peroneal nerve lesion.

46. Which nerve lesion causes loss of plantar flexion?

? Tibial nerve lesion.

47. What maintains the longitudinal arches of the foot?

? Tibialis posterior, plantar aponeurosis, spring ligament, and flexor tendons.

48. What maintains the transverse arch of the foot?

? Peroneus longus tendon, adductor hallucis (transverse head), and deep transverse metatarsal ligament.

49. What are the homologous arteries of the upper and lower limbs?

? Brachial artery ? Femoral artery.

50. What are the homologous nerves of the upper and lower limbs?

? Median nerve ? Medial plantar nerve; Ulnar nerve ? Lateral plantar nerve.