Venous drainage of the lower limb

INTRODUCTION

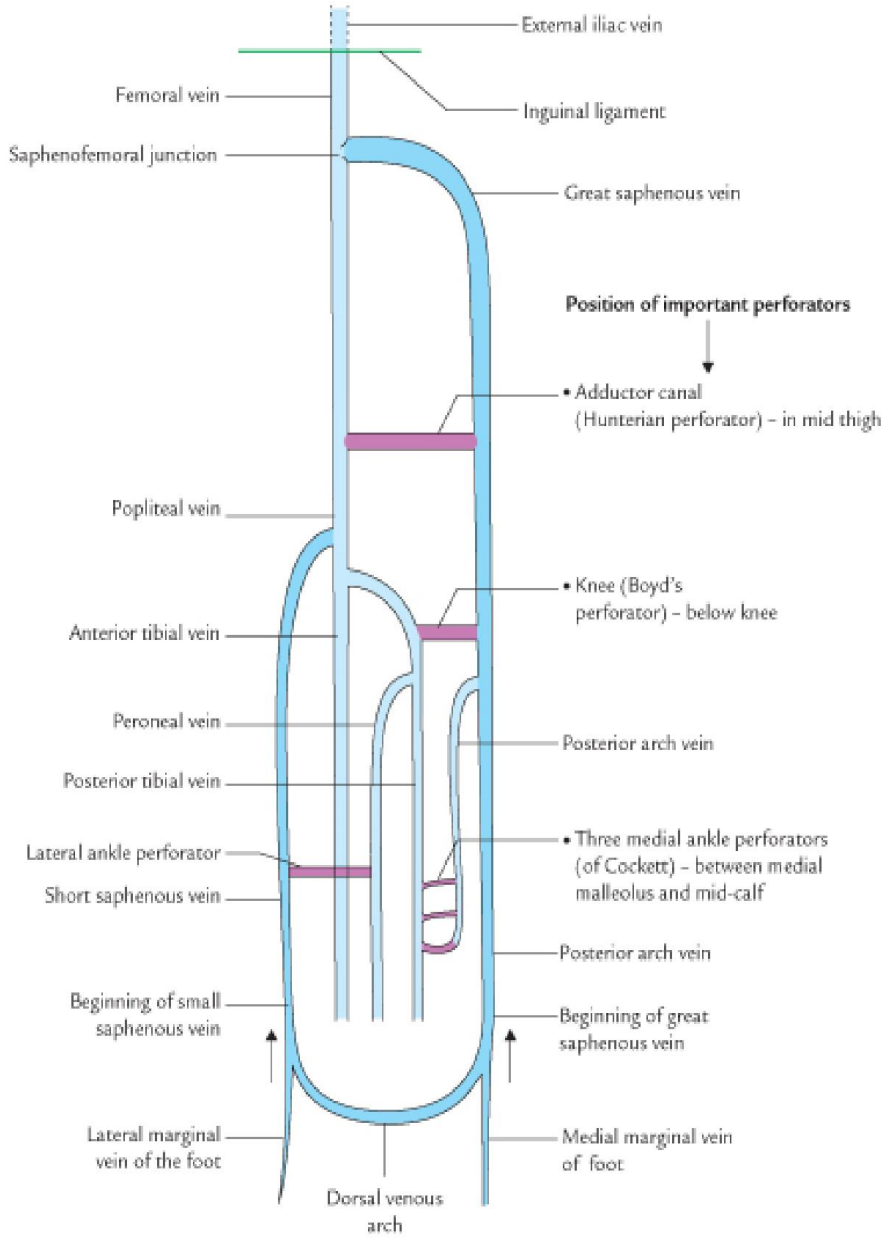
- It is of immense clinical and surgical importance.
- The venous blood against gravity.

❖**FACTORS HELPING THE VENOUS DRAINAGE OF THE LOWER LIMB**

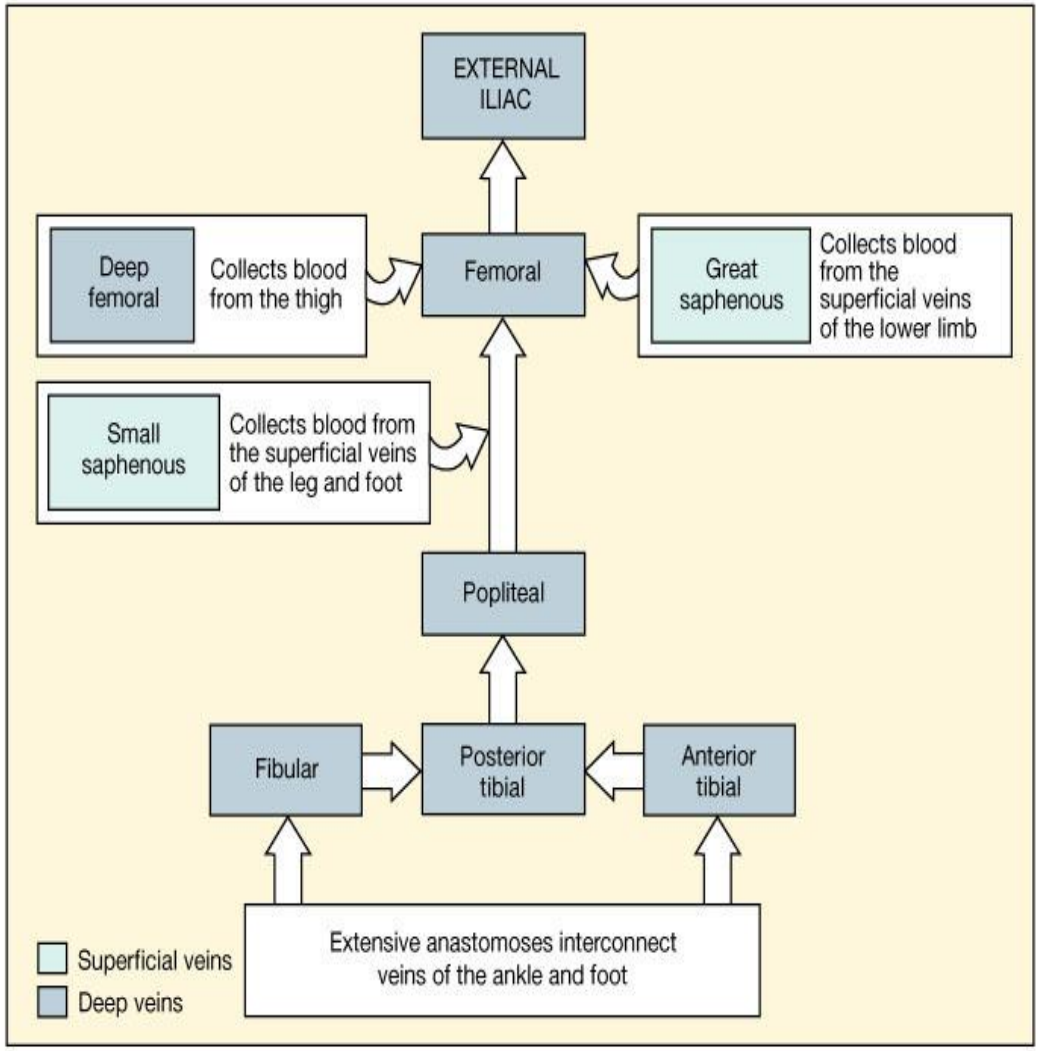
- **The contraction of the calf muscles (Major factor) squeezes the blood upward along the deep veins.**
- **Note the calf muscles act as calf pump (peripheral heart).**
- **Presence of valves in the perforating veins prevents the reflux of blood into the superficial veins during contraction of the calf muscles.**
- **Presence of valves in the deep veins supports the column of blood and maintains unidirectional upward flow of blood.**

CLASSIFICATION OF THE VEINS

- It are classified anatomically and functionally into three types:
- 1. Superficial veins
- 2. Deep veins
- 2. Perforating veins.



Venous Drainage from the Lower Limb



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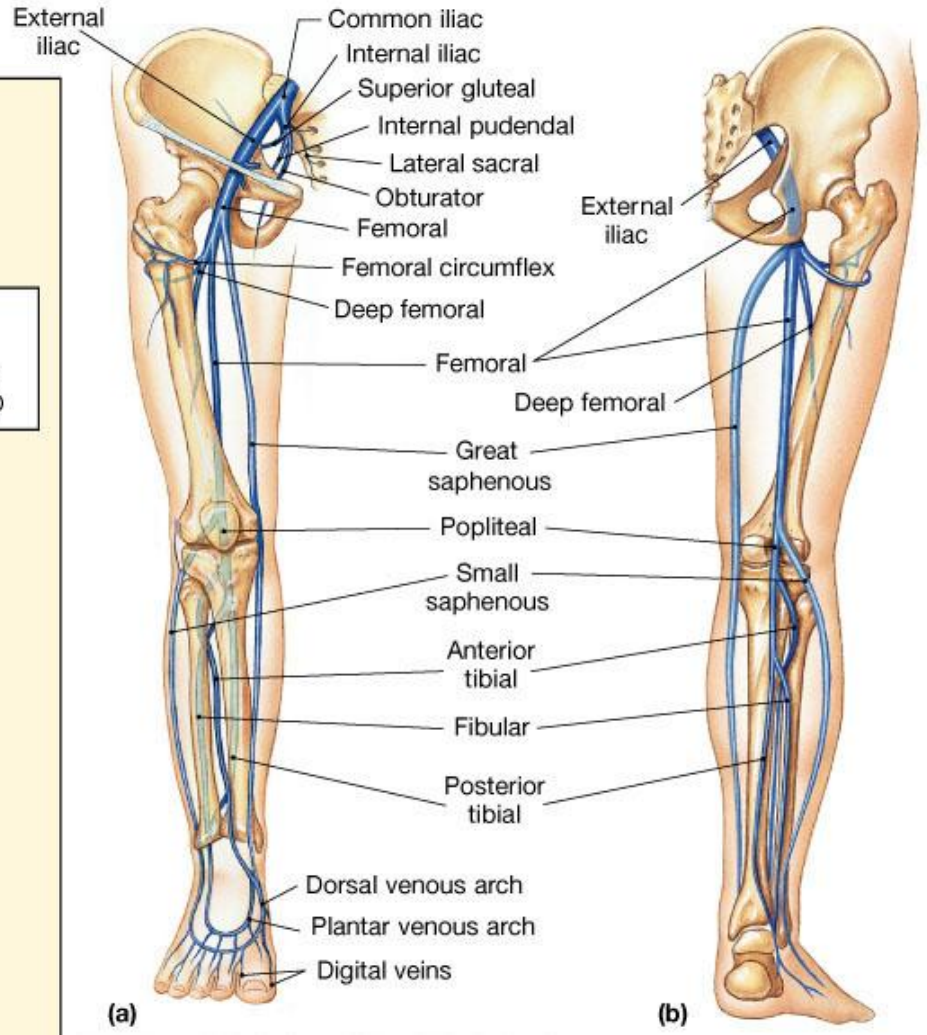
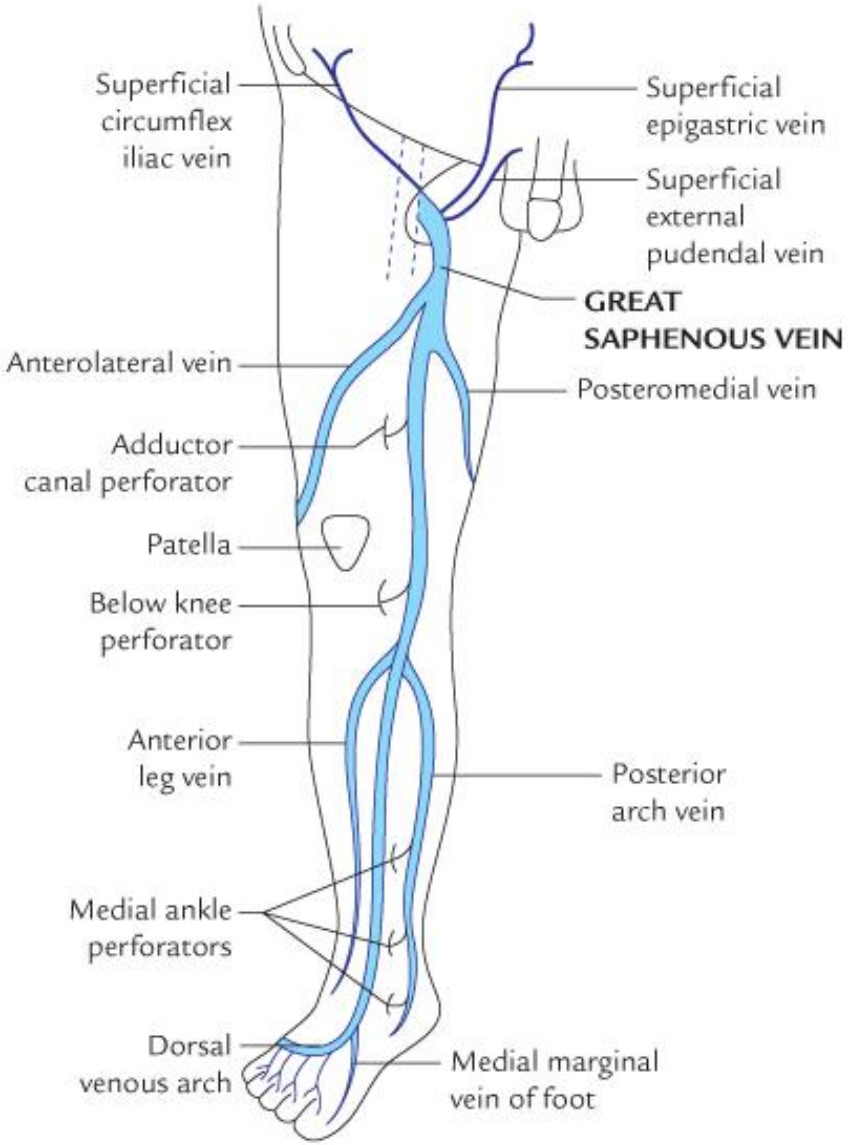


Superficial Veins:-

- Its essentially include the great and small saphenous veins.
- They lie in the superficial facia on the surface of deep facia .



SUPERFICIAL VEINS:-

Great saphenous veins (Greek saphenous= easily seen) :-

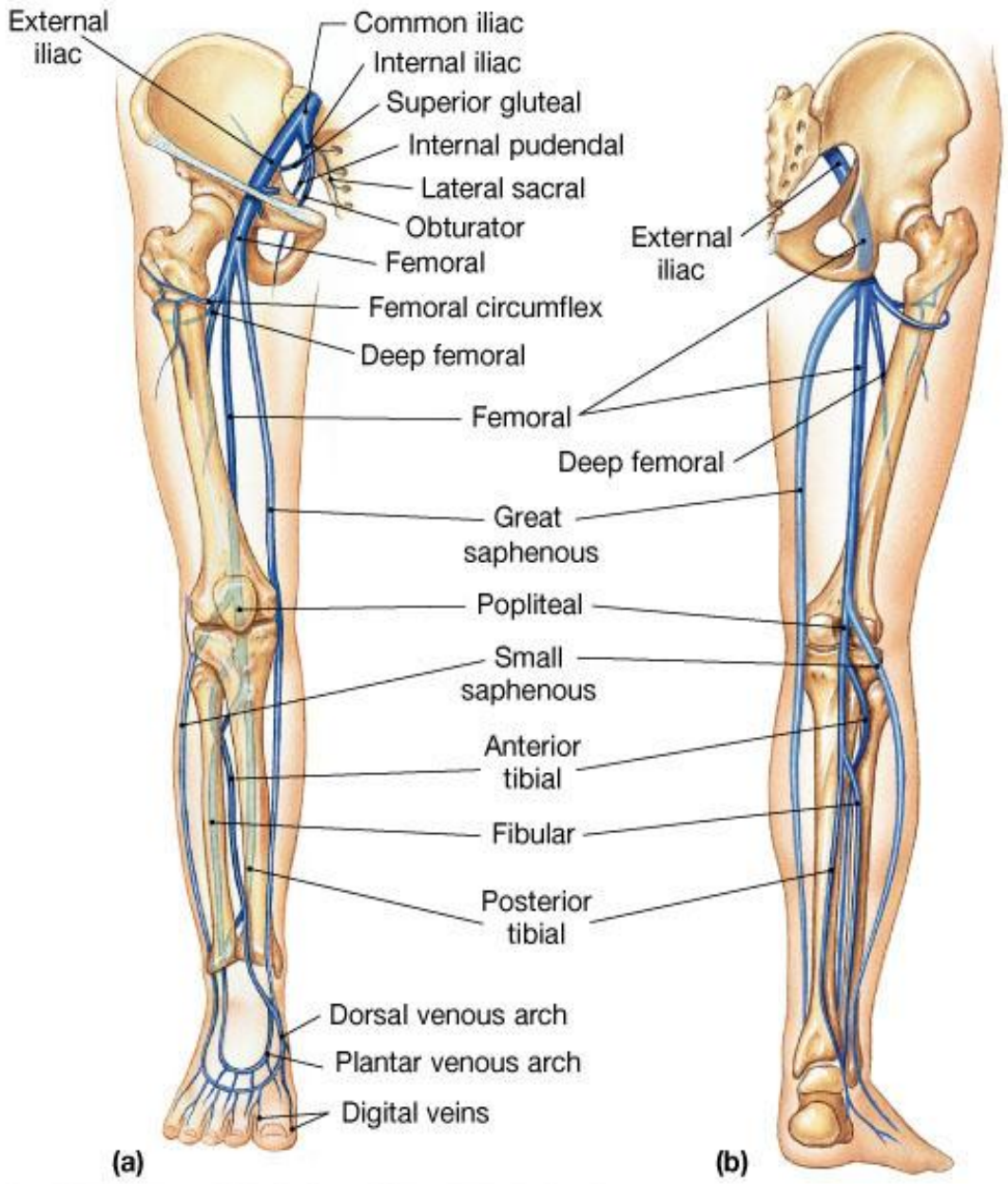
It is the longest vein of the body and represents the pre-axial vein of the lower limb.

It is formed on the dorsum of foot by union of the medial end of the dorsal venous arch of the foot and medial marginal vein of the foot.

Drains medial side of dorsal venous arch.

Ascends anterior to medial malleolus.

Passes posterior to medial border of patella.



Great saphenous vein (continued …..:

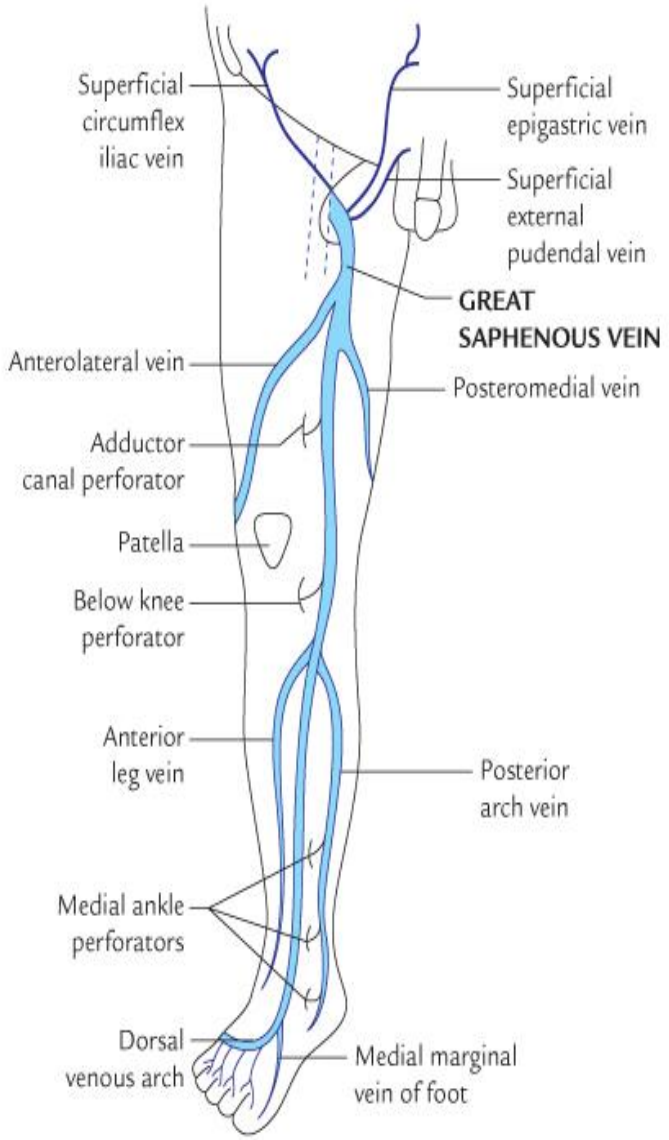
Ascends along medial thigh.

Penetrates deep fascia of femoral triangle:-

Cribriform fascia.

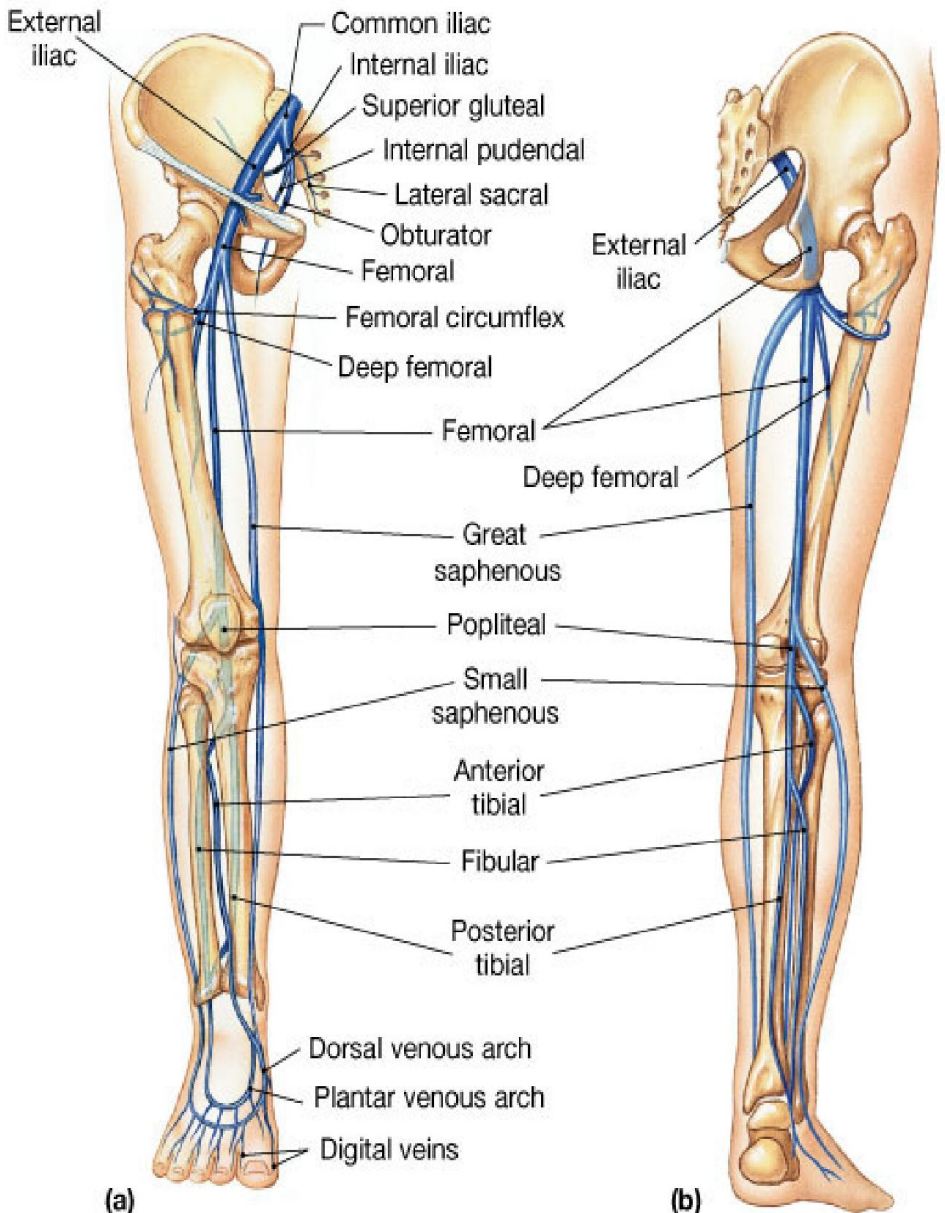
Saphenous opening.

Dumps into femoral vein.



SURFACE MARKING OF THE GREAT SAPHENOUS VEIN

- 1. At ankle, it lies 2.5 cm anterior to medial malleolus.
- 2. In leg, it ascends by crossing the medial surface and medial border of tibia.
- At knee, it lies about a hand's breadth posterior to medial margin of the patella.
- In thigh, ascends obliquely on the medial aspect of the thigh to reach a point 3.5-4cm inferolateral to the pubic tubercle (saphenofemoral junction).



SUPERFICIAL VEINS:-

SMALL (SHORT) SAPHENOUS VEIN:

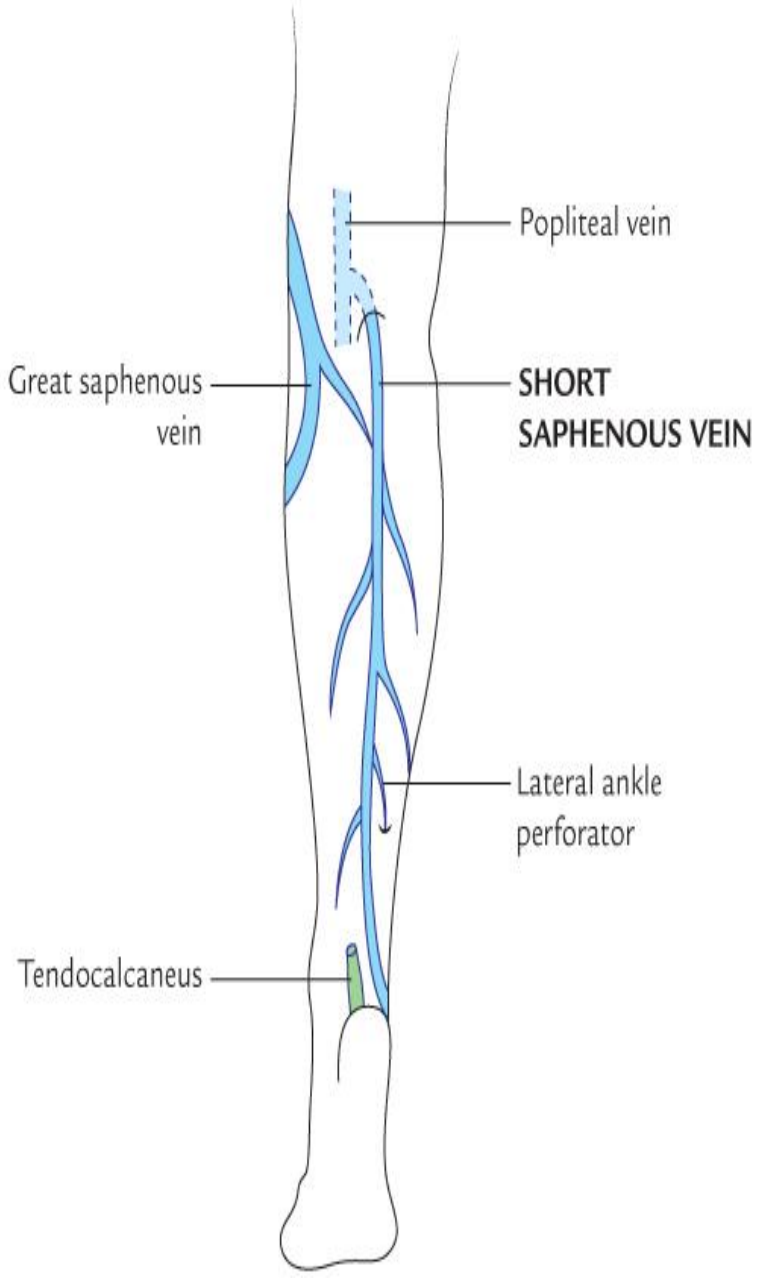
Drains lateral side of dorsal venous arch.

Passes posterior to lateral malleolus.

Accompanies sural nerve.

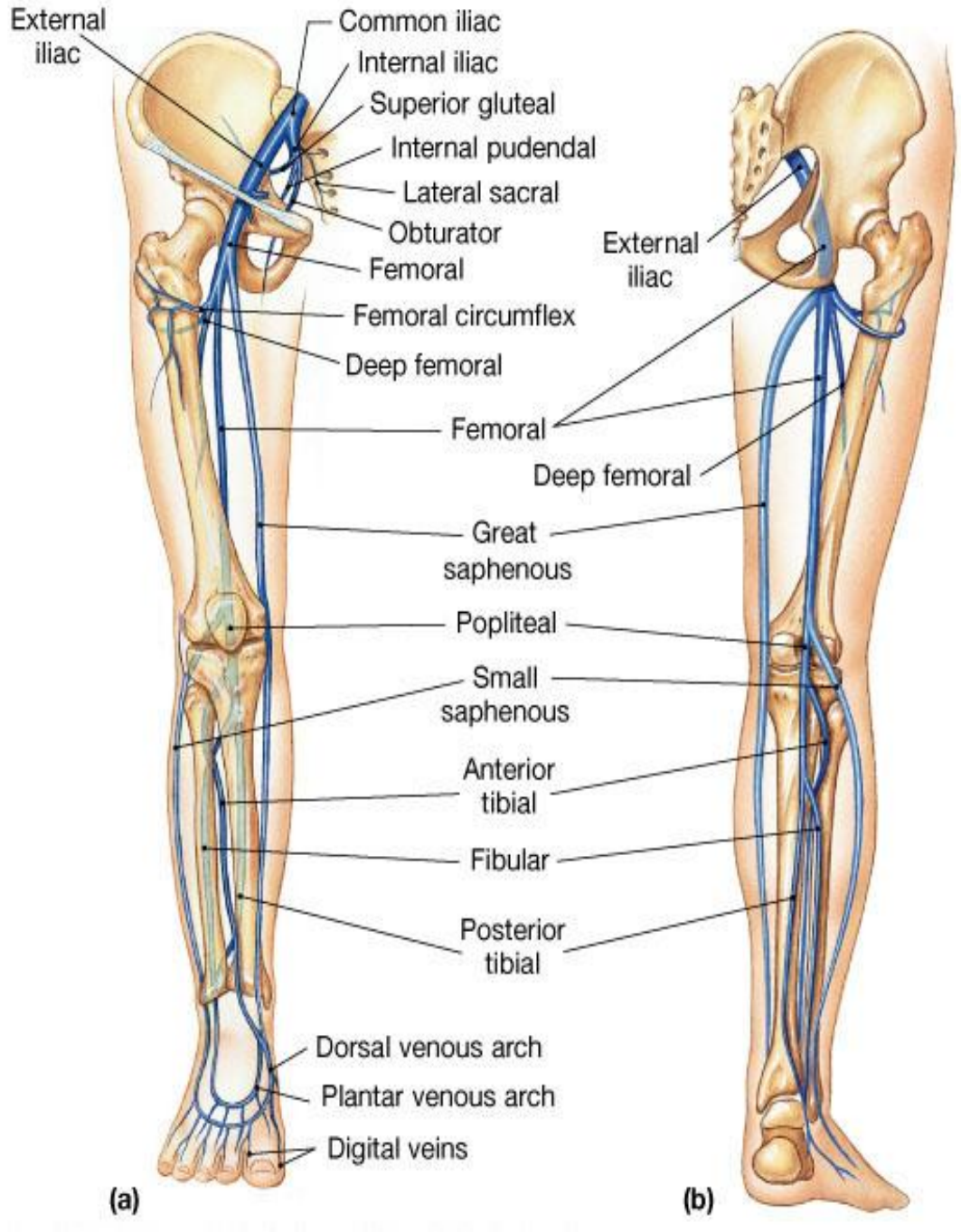
Ascends along midline of calf.

Empties into popliteal vein in popliteal fossa.



DEEP VEINS:

- **Mostly share names of arteries**
  - **Ultimately empty into Inferior Vena Cava**
    - **Plantar**
    - **Tibial**
    - **Fibular**
    - **Popliteal**
    - **Femoral**
    - **External/internal iliac**
    - **Common iliac**



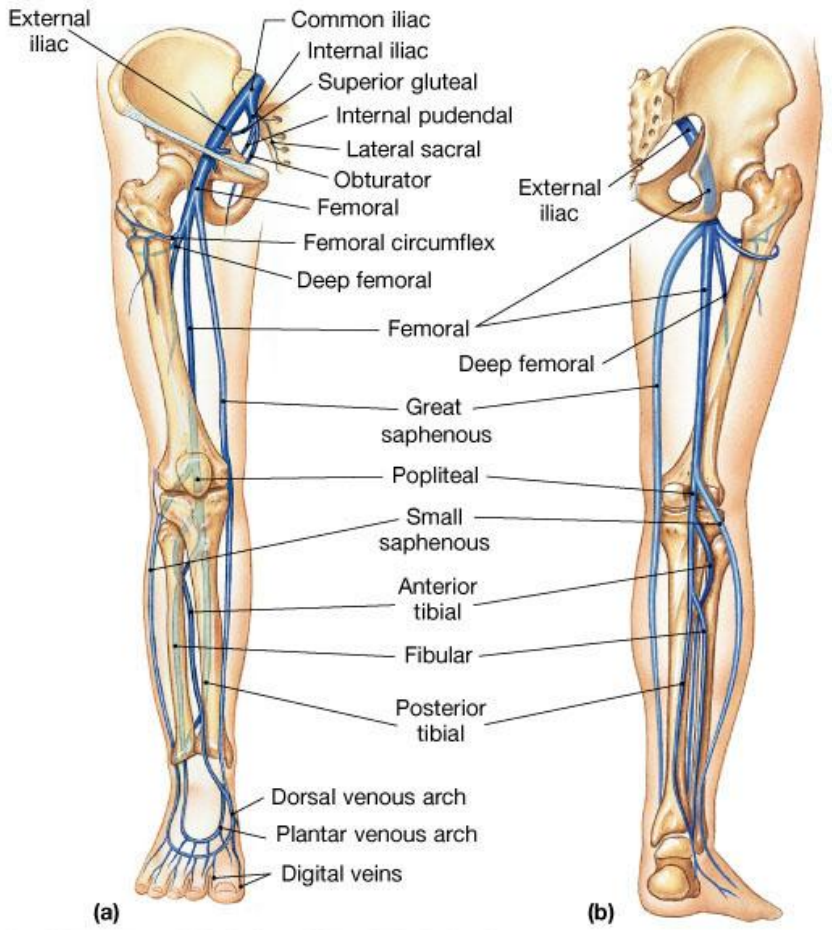
Lower Limb Venous Drainage

- Deep Veins:

  Venae comitantes:

  Accompany deep arteries of the leg.

  Unite to form popliteal vein in popliteal space.



Lower Limb Venous Drainage

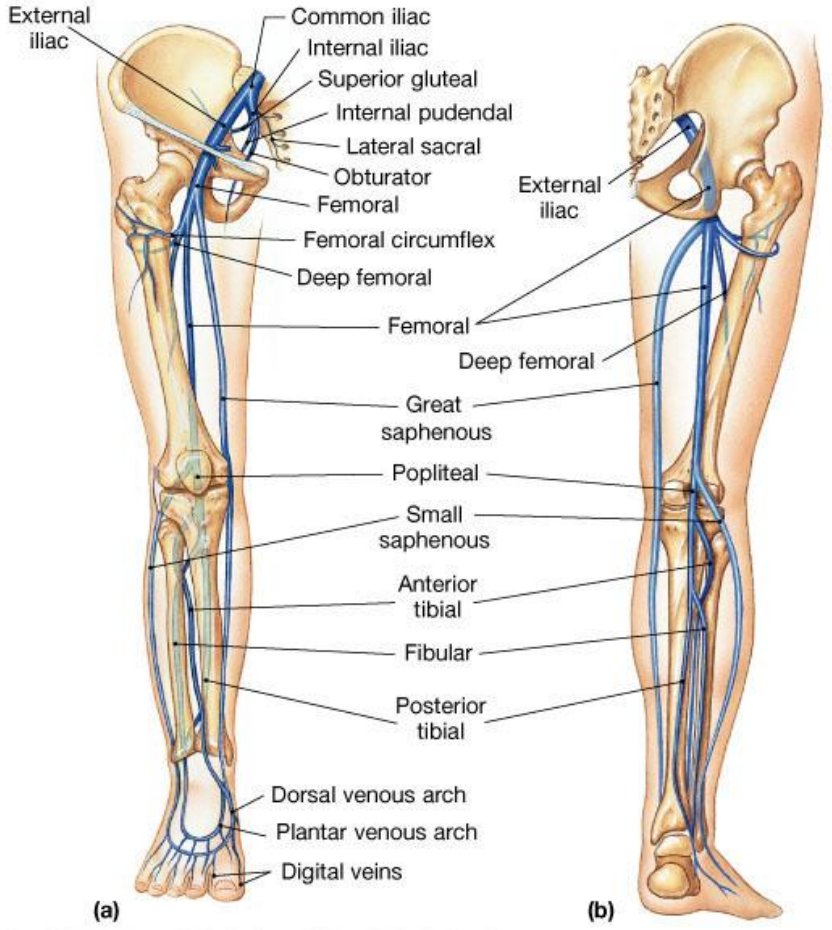
- Deep Veins:-

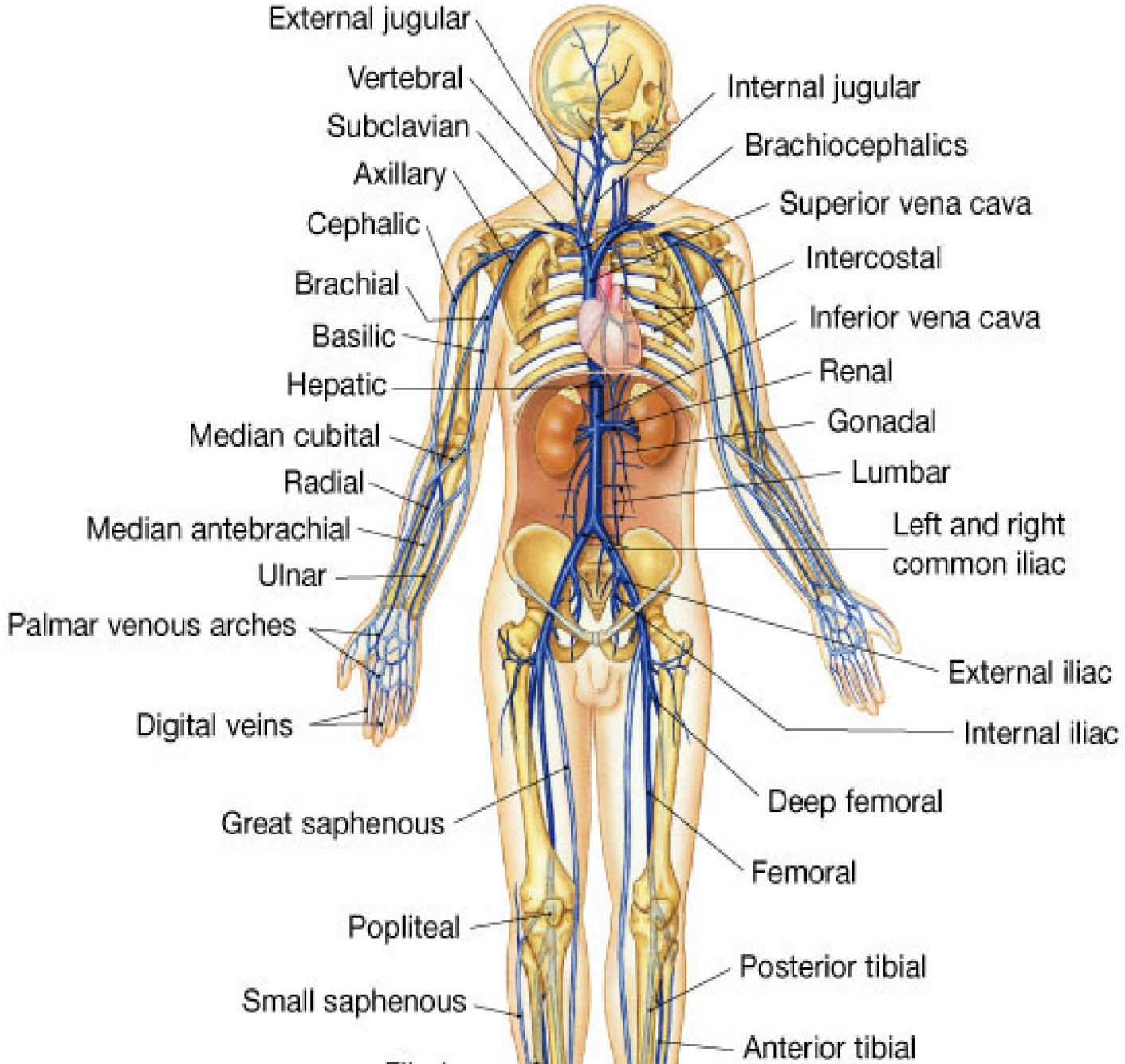
  Popliteal vein:

  Passes through adductor hiatus.

  Renamed femoral vein.

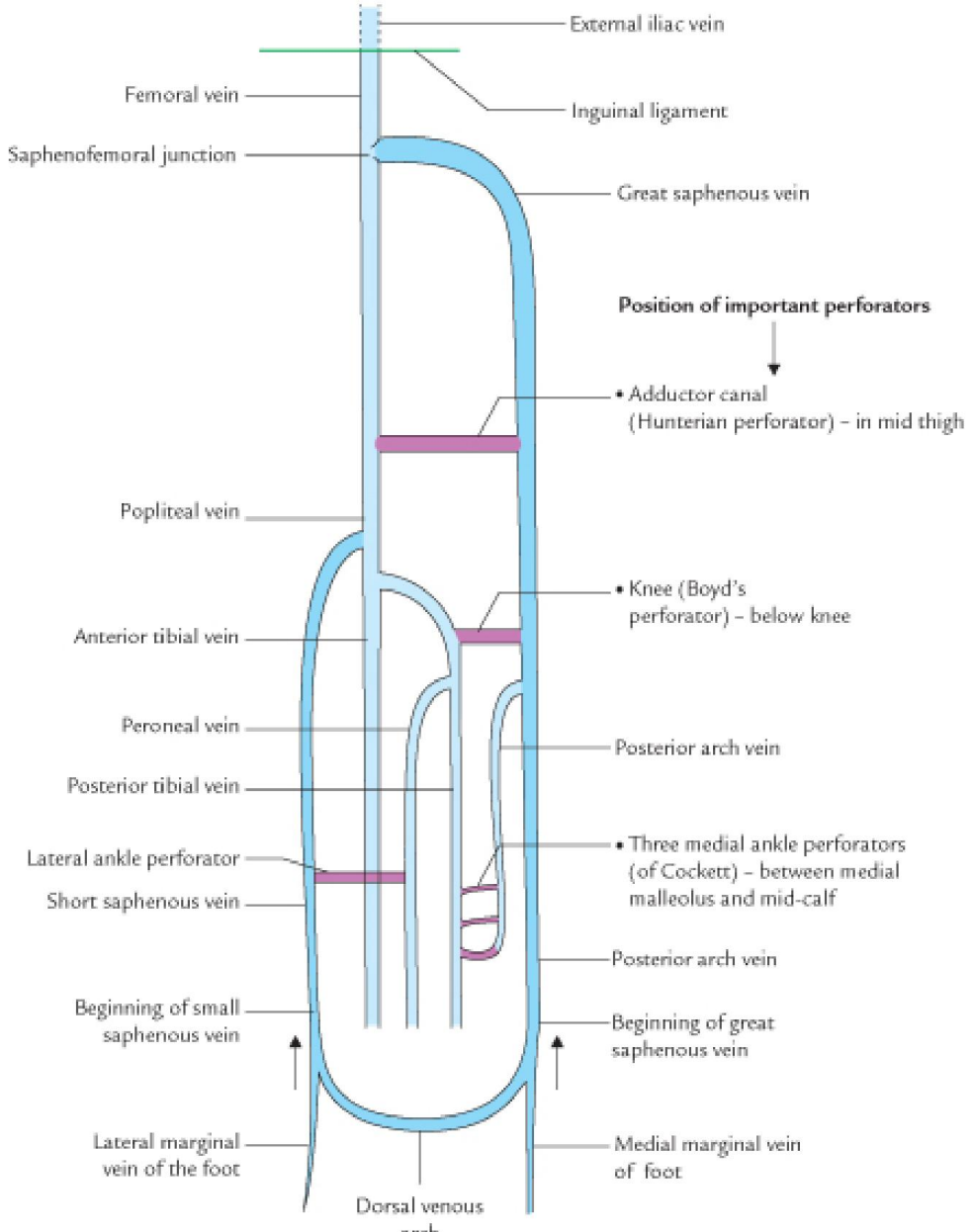
  Communicating veins.




External jugular
Vertebral
Subclavian
Axillary
Cephalic
Brachial
Basilic
Hepatic
Median cubital
Radial
Median antebrachial
Ulnar
Palmar venous arches
Digital veins
Great saphenous
Popliteal
Small saphenous
Internal jugular
Brachiocephalics
Superior vena cava
Intercostal
Inferior vena cava
Renal
Gonadal
Lumbar
Left and right common iliac
External iliac
Internal iliac
Deep femoral
Femoral
Posterior tibial
Anterior tibial

Perforating veins (PERFORATORS)

- They are communicating venous channels between the superficial and deep veins.
- These veins are called perforators because they perforate the deep fascia.

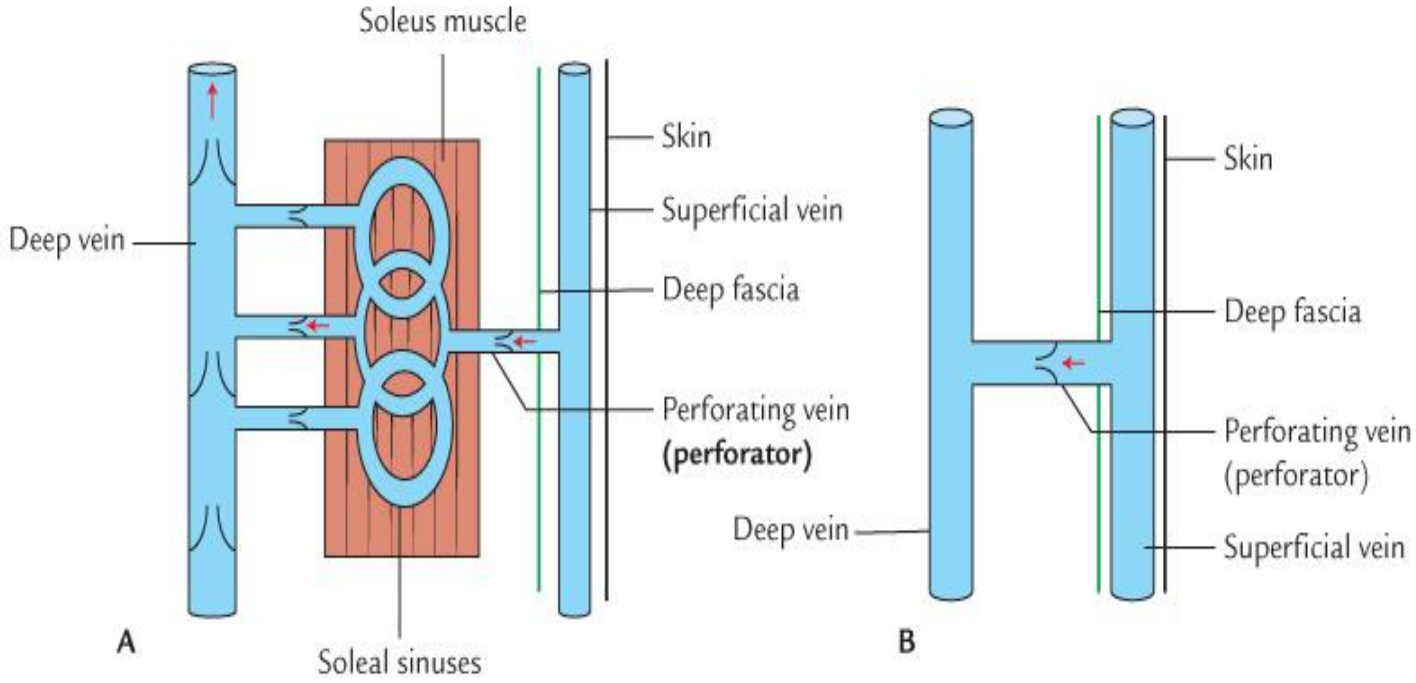


Perforating veins (PERFORATORS) Continu….

- The perforators are classified into Two types:

- **Indirect perforators:-** They connect the superficial veins with the deep veins through muscular veins(A).

- **Direct perforators:-** They connect the superficial veins with the deep veins directly(B).

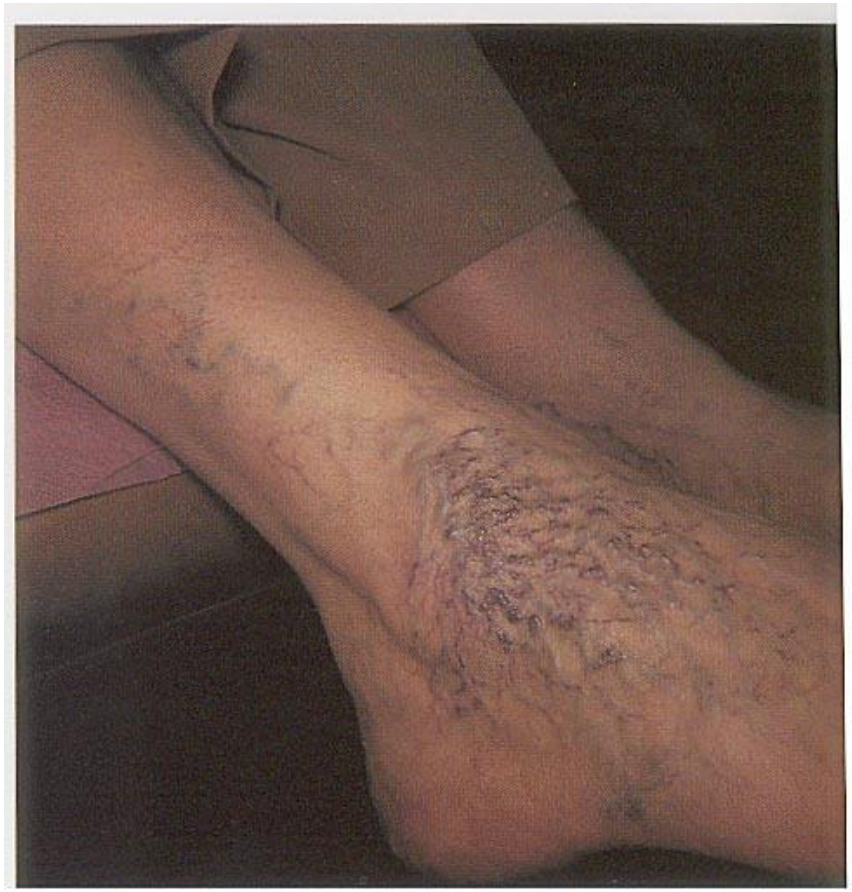


VARICOSE VEINS OF LOWER LIMB

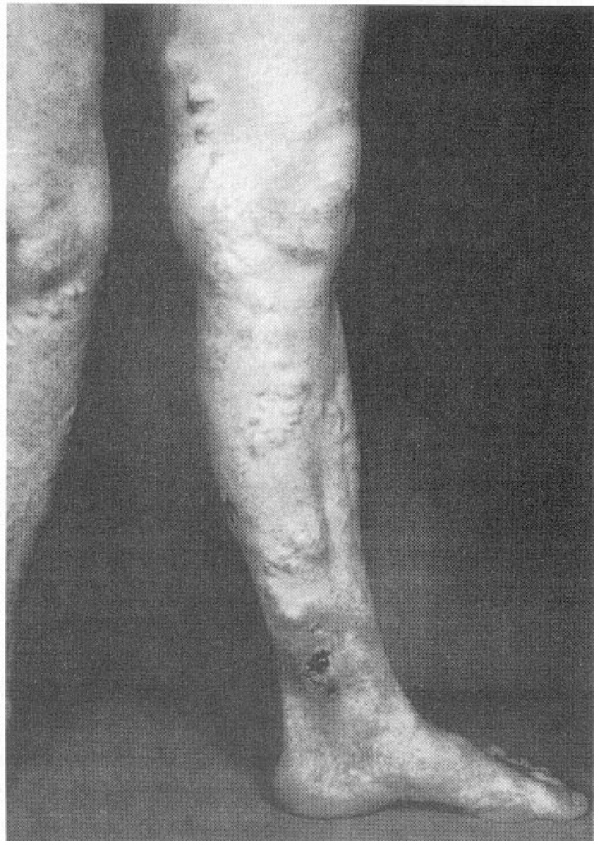
- A condition in which superficial veins of lower limb are elongated & tortuous
- Causes:

1. Weakness of the walls of veins & incompetence of their valves
2. Incompetence of valves in perforating veins
3. Lack of power of calf muscles
4. Treatment: ligation & division of superficial veins

Varicose Veins



Venous Stasis Ulcer

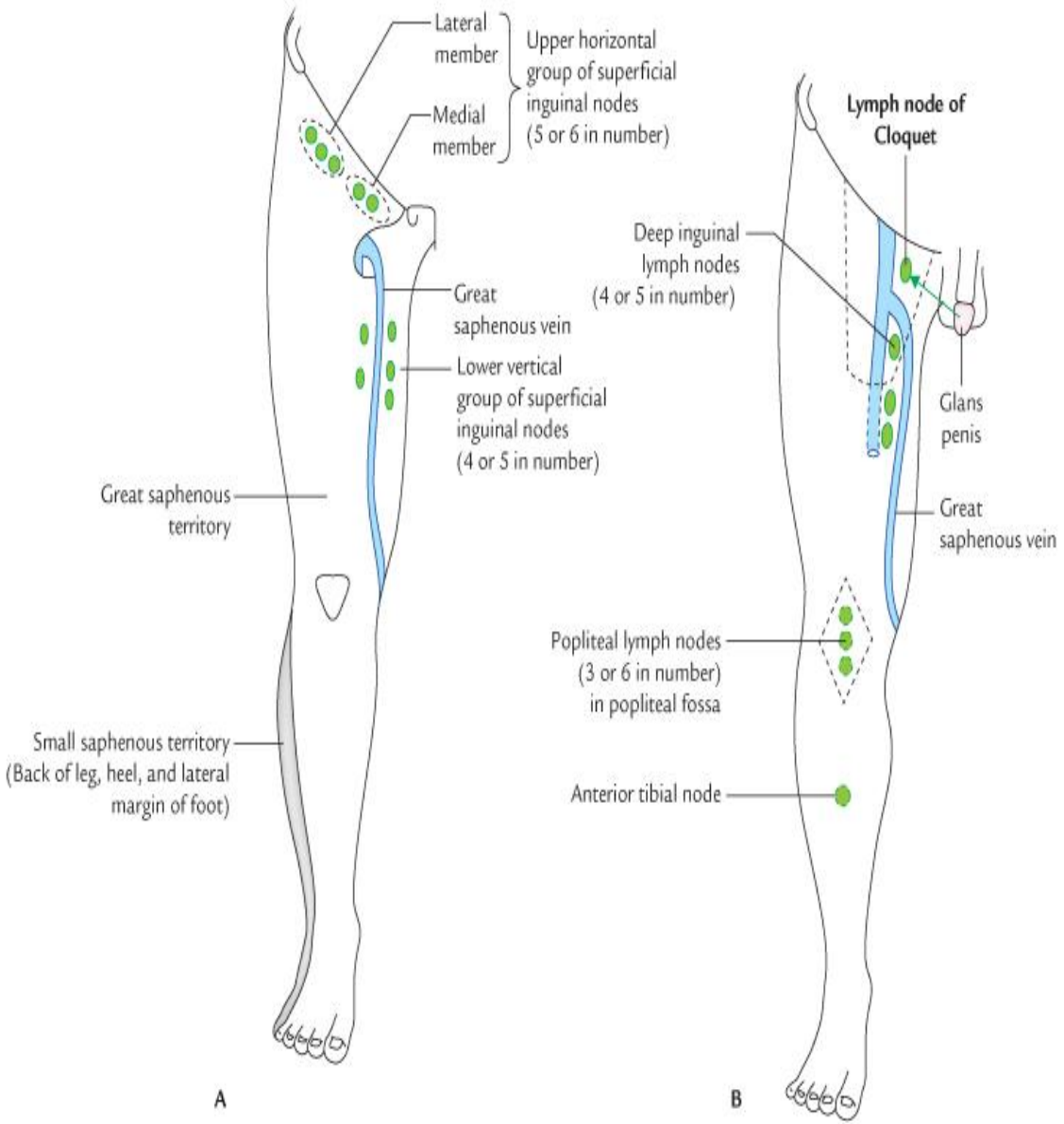


Lymphatics Drainage of the Lower Limb

- **INTRODUCTION :-** The lymphatic drainage of the lower limb is of great clinical importance because inflammatory lesion of limb cause painful enlargement of the lymph nodes.
- Most of the lymph from lower limb is drained into the inguinal lymph node, either directly (mostly) or indirectly (partly) through the popliteal and tibial nodes.
- Note:- The deep structures of the gluteal region and upper part of the back of thigh are drained into the internal iliac nodes.
- **LYMPH NODES:-**
- Classified into two types:- Superficial and deep.
- Superficial lymph nodes include the superficial inguinal nodes.
- Deep lymph nodes include the deep inguinal nodes, popliteal nodes and anterior tibial nodes.

SUPERFICIAL LIMPH NODES

- They are arranged in two groups:
- Upper and lower, resembling the letter “T”.
- The upper horizontal group contains five or six nodes, which lie below the inguinal ligament.
- The lateral members of upper group (2 or 3 nodes) receive afferent from:-
- (A) Gluteal Region
- (B) Upper part of lateral side of thigh
- © Back of abdominal wall bellow the umbilical plane



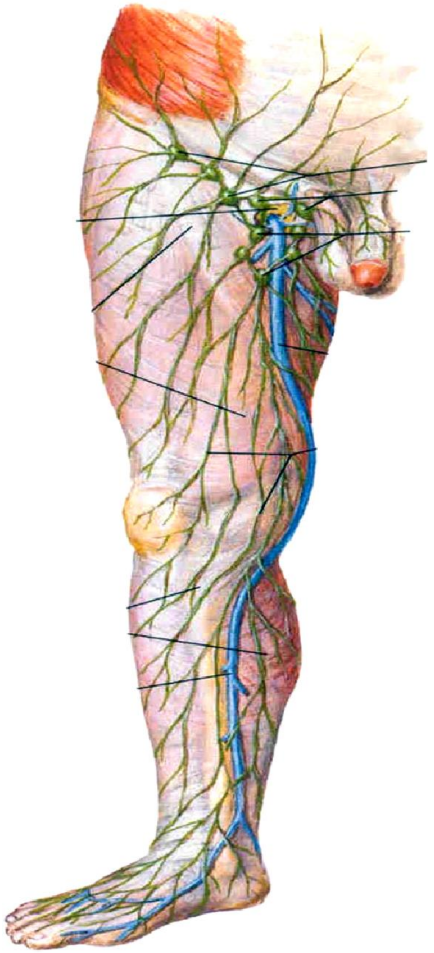
Lymphatics Drainage of the Lower Limb

Lymphatics draining medial foot:-

Ascend with great saphenous vein.

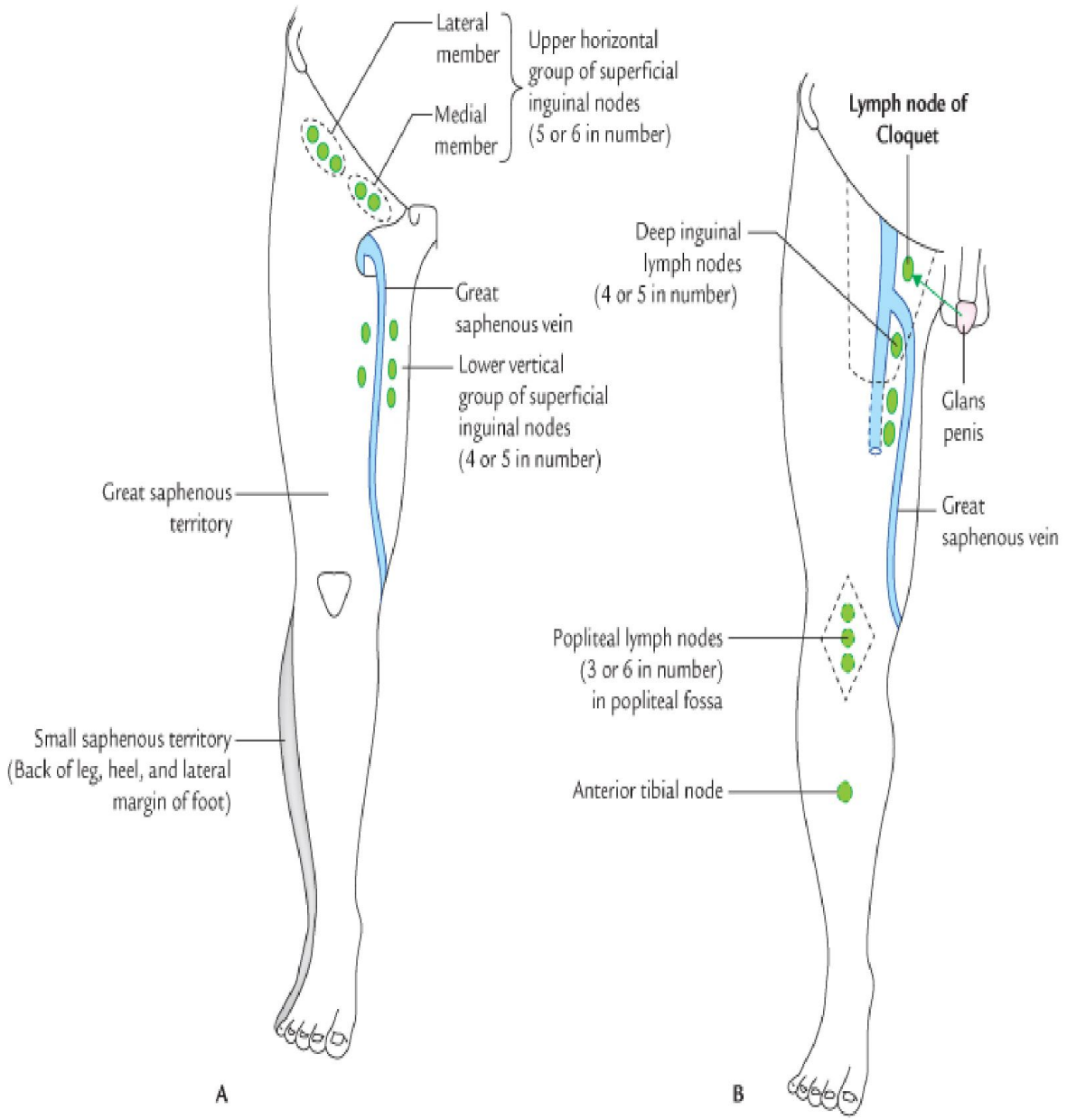
End in superficial inguinal lymph nodes:-

Also drain lower Ant. abdominal wall, external genitalia, perineum, anal region, uterine fundus.



DEEP LYMPH NODES

- **DEEP INGUANAL LYMPH NODES:-**
- The are about 4-5 No., lie on **medial side** of the upper part of **femoral vein** in the **femoral triangle.**
- The most **proximal node** of this group lies in the **femoral canal**.
- These nodes received afferents from:-
- (a) The superficial Inguinal nodes
- (b) Popliteal nodes(3-6 No.)
- © Glans of penis/clitoris
- (d)Deep lymphatics of the lower limb accompanying femoral vessels.



Lower Limb Lymphatics

- Lymphatics draining lateral foot:-

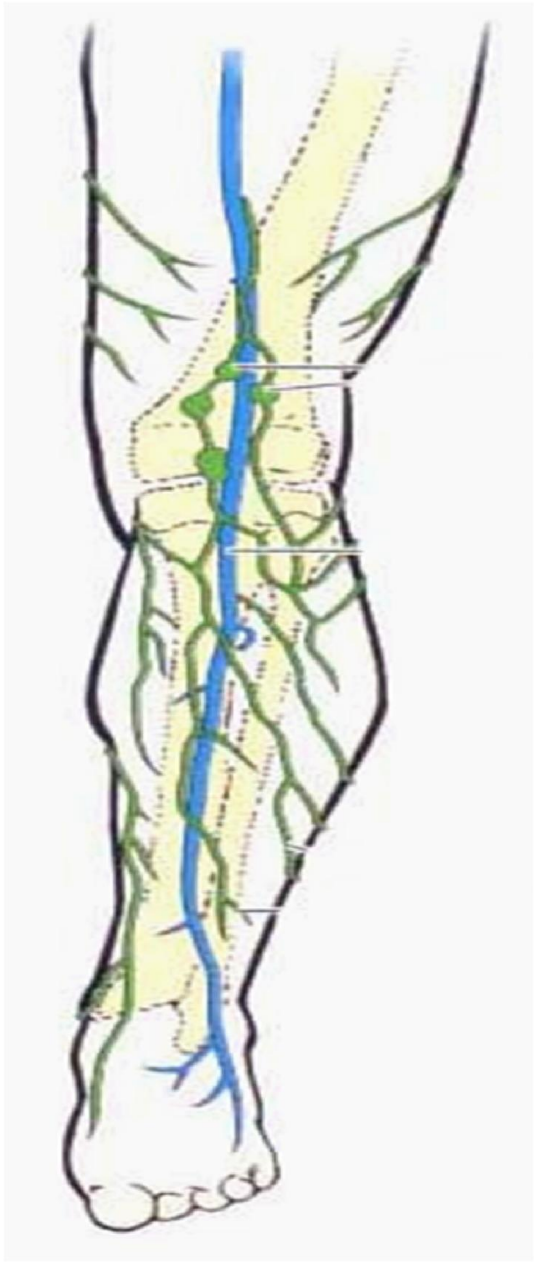
  Ascend with small saphenous vein.

  End in lymph nodes in popliteal fossa.

  Ascend with femoral vein to deep inguinal nodes.

- Drainage pathway:-

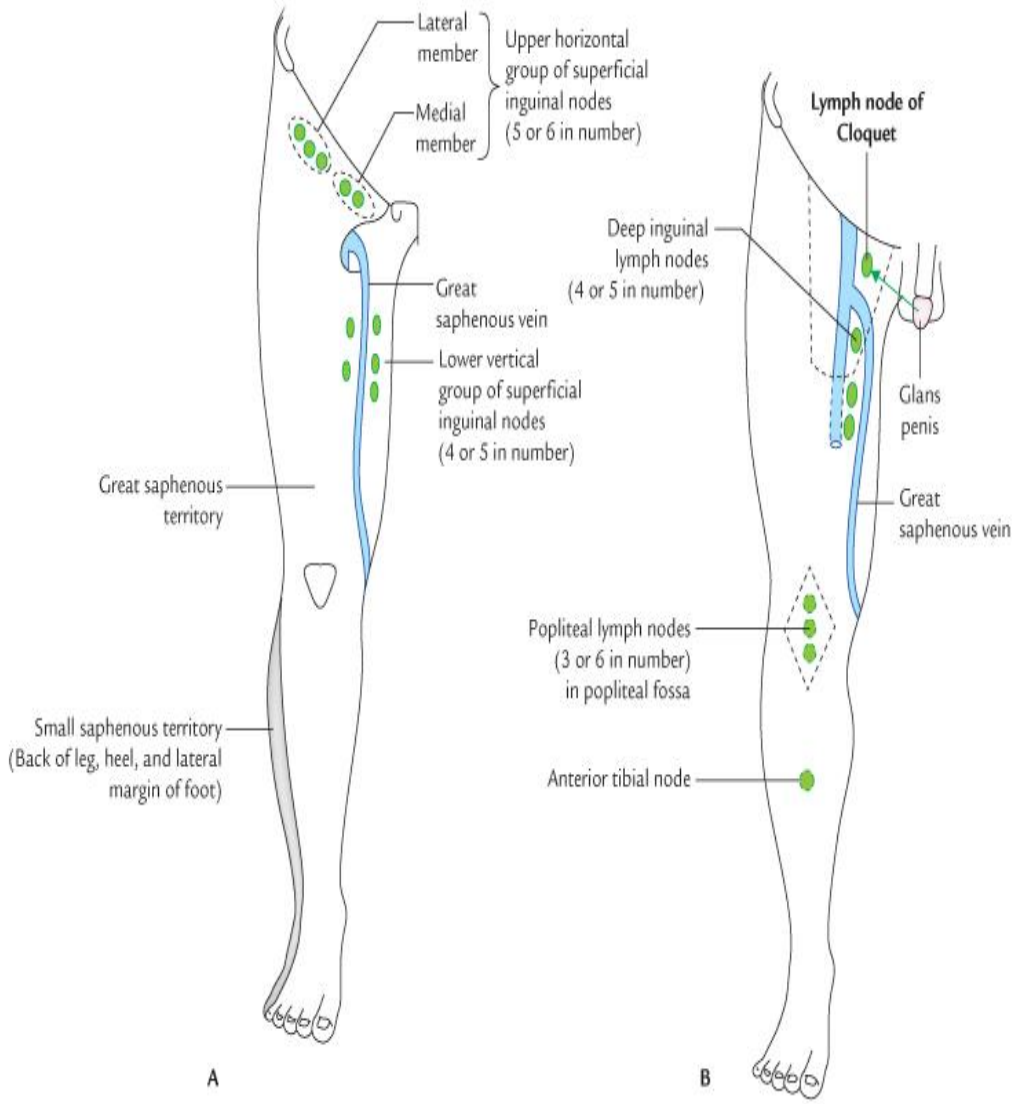
  Superficial inguinal to deep inguinal to external iliacs.



LYMPHATIC DRAINAGE OF LOWER LIMB

Superficial inguinal lymph nodes: see front of thigh I

Deep inguinal lymph nodes: see front of thigh II



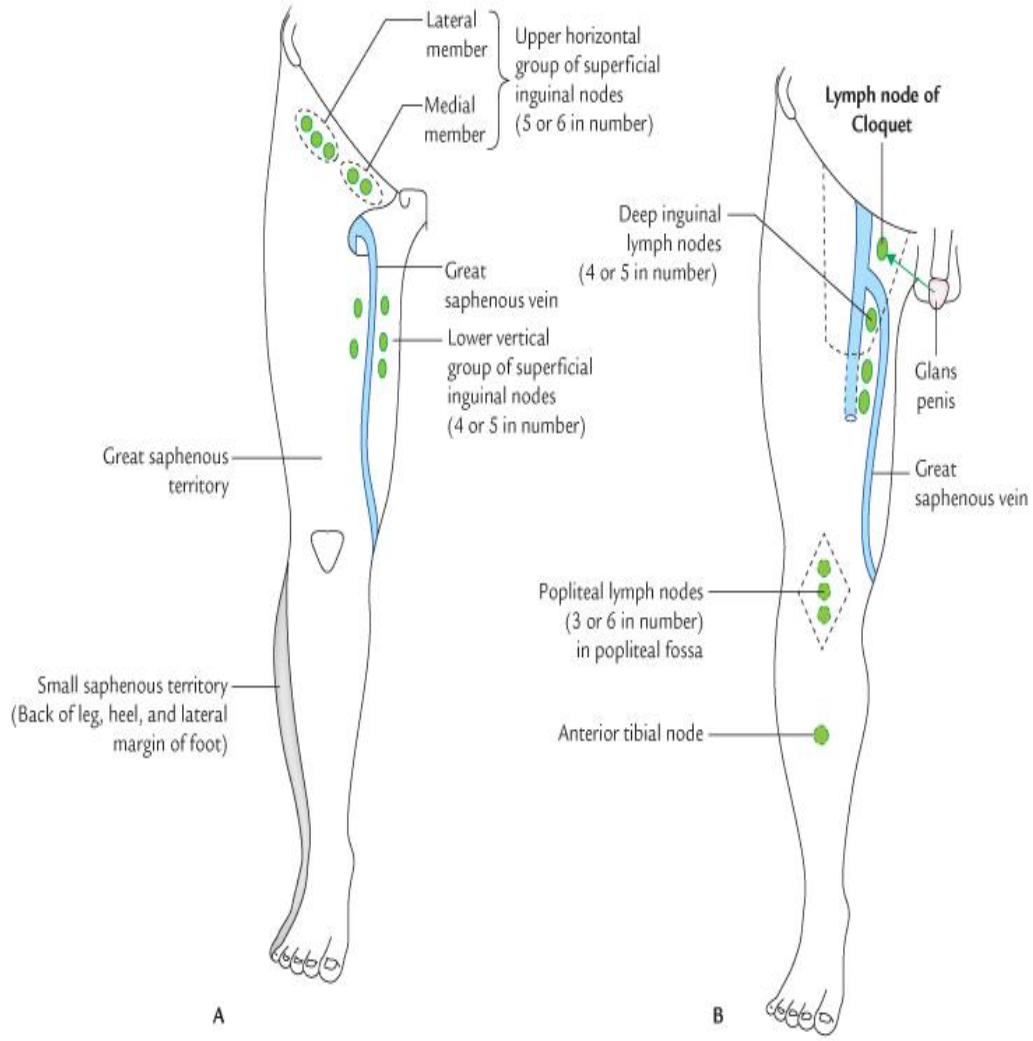
LYMPHATIC DRAINAGE OF LOWER LIMB

Popliteal lymph nodes:

- They lie in popliteal fossa
- They receive lymph from:

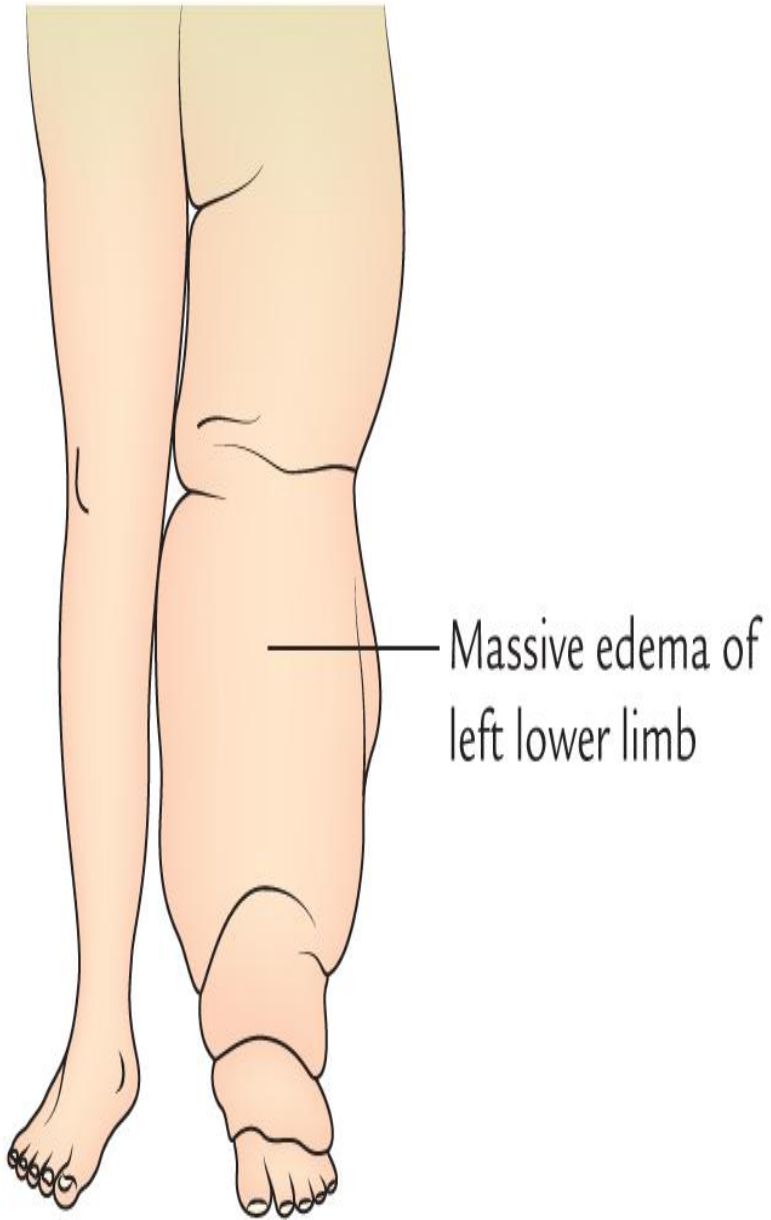
1. knee joint
2. Deep lymph vessels from leg along anterior & posterior tibial arteries
3. Some superficial lymph vessels from leg & foot along small saphenous vein

- Their efferents drain into deep inguinal lymph nodes



Clinical Anatomy

- **Elephatiasis:-** The lymph vessels of the lower limb are often blocked, particularly in the endemic area, by the microfilarial parasites (Wuchereria bancrofti).
- This cause massive edema of the lower limb producing a clinical condition called **elephantiasis.**
- In this condition, there is hypertrophy of the skin and subcutaneous tissue to an unusual proportion.



THANK YOU