VENOUS AND LYMPHATIC DRAINAGE OF LOWER LIMB

GREAT SAPHENOUS VEIN/ LONG SAPHENOUS VEIN (SE)

Lies in the superficial fascia
Longest vein of the body
It contains about **10 – 20** valves

Formation:

Formed on the dorsum of the foot by the union of **medial end** of the dorsal venous arch of the foot and medial marginal vein of the foot.

Course:

Drains into femoral vein
(By piercing the femoral sheath)

↑

Saphenous opening
(by piercing cribriform fascia)

↑

Medial side of the thigh

↑

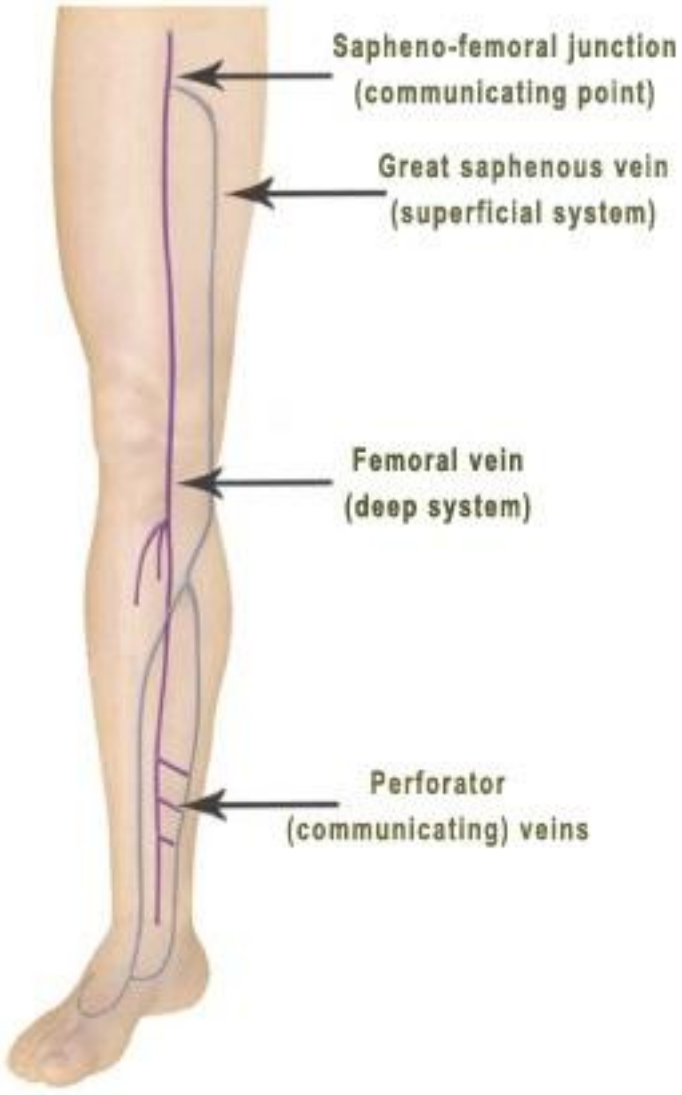
Posteromedial aspect of the knee joint

↑

Behind the Medial border of tibia

↑

Runs upwards 2.5cm in front of medial malloelus



Tributaries:

At the commencement:

Medial marginal vein of the big toe

In the leg:

Communicating veins – with small saphenous and deep veins

Posterior arch vein – connecting three medial ankle perforators

In the thigh:

Superficial epigastric vein

Superficial circumflex iliac vein

Superficial external pudendal vein

Deep external pudendal vein

Applied anatomy

Varicose veins

Incompetency of valves leads to varicose veins.

SMALL (SHORT) SAPHENOUS VEIN- FORMATION, COURSE AND TRIBUTARIES (SE)

Formation:

Below and behind the lateral malleolus by the union of **lateral end** of dorsal venous arch and the lateral marginal vein of the foot

Course:

Drains into **popliteal vein**

↑

Popliteal fossa

↑

Middle of the back of the leg

(pierces deep fascia and undergoes subfascial course between two heads of gastrocnemius)

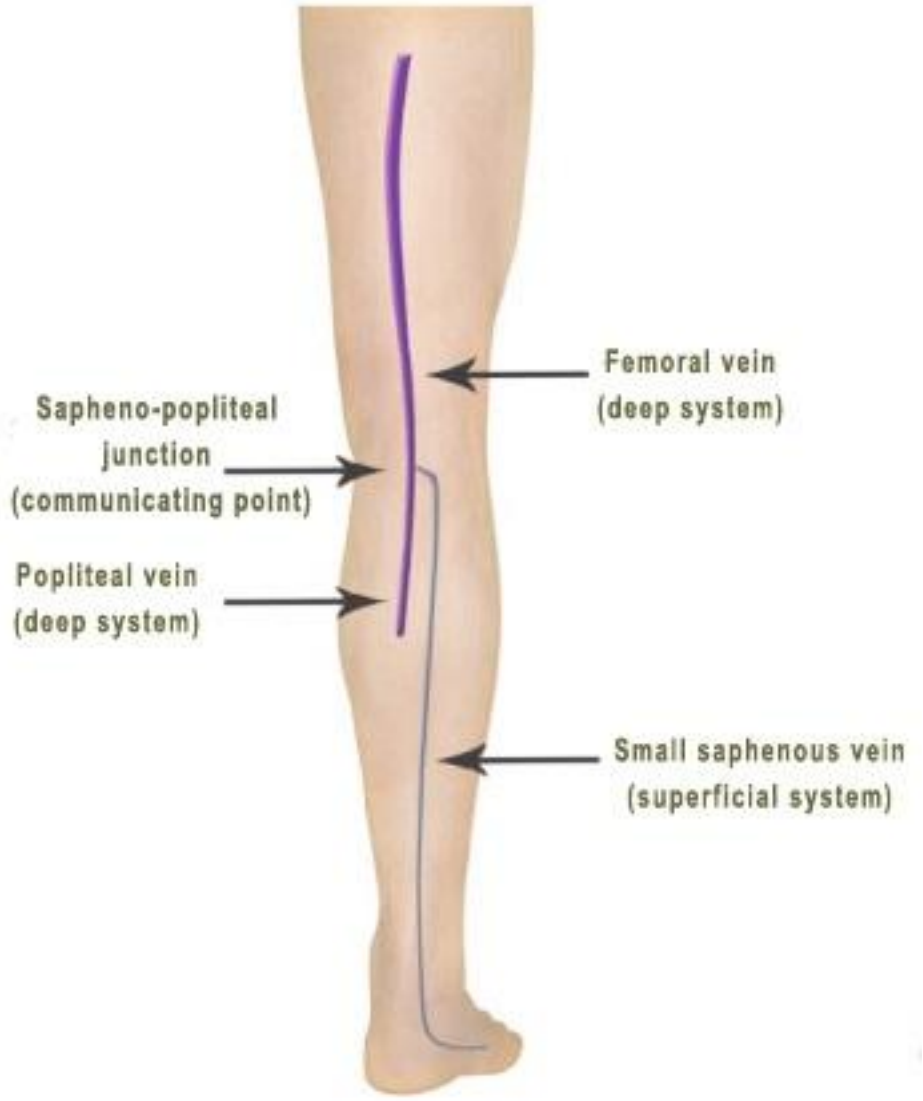
↑

Runs upward behind the lateral malleolus

(along the lateral edge of tendocalacaneus)

↑

Drains lateral border of the foot, the heel and the back of the leg



Tributaries:

In the leg

Communicating veins

Just below the knee:

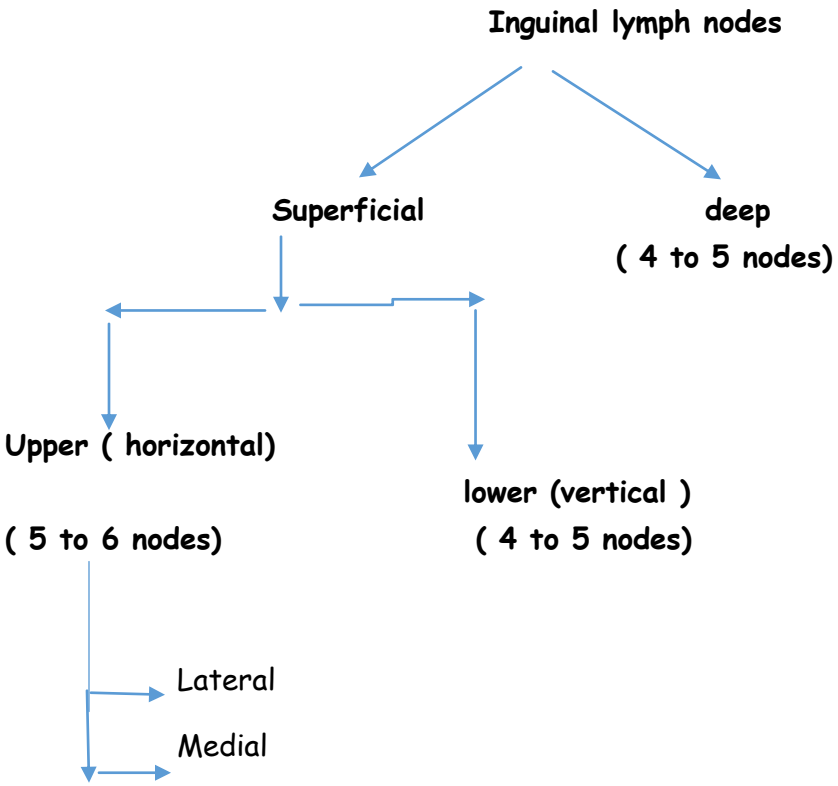
A vein from the calf

Before piercing popliteal fascia:

Communicating branch to Posteromedial vein / accessory saphenous vein:

INGUINAL LYMPH NODES – GROUPS, AREAS OF DRAINAGE AND APPLIED IMPORTANCE (SE)

Groups:



Upper and lower groups of superficial inguinal lymph nodes arrange in the form of letter 'T

Areas of drainage:

Superficial inguinal lymph nodes

Upper horizontal – lie below the inguinal ligament

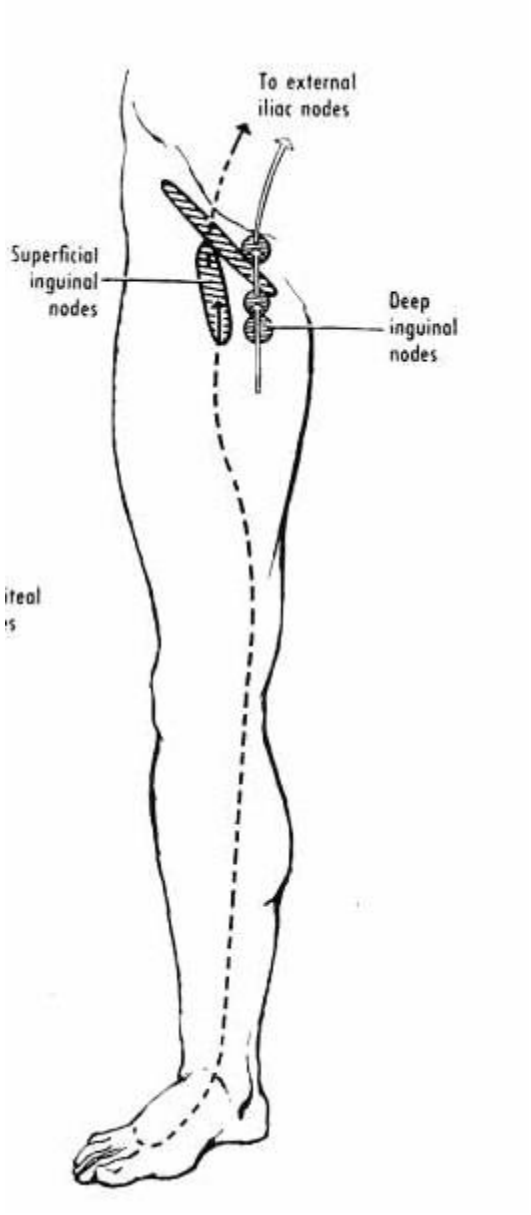
Lateral group:

Drains from-

Gluteal region
Upper part of the lateral side of the thigh
Flank and back of the abdominal wall below the umbilical plane

Drain into

Deep inguinal nodes



Medial group:

Drains from

Anterior abdominal wall below the umbilicus
Penis and scrotum in males, vulva and vagina below hymen in females
Perineum and lower part of anal canal below the pectinate line
Superolateral angle of the uterus via round ligament of the uterus

Drains into

Deep inguinal lymph nodes

Lower vertical- along both sides of the terminal part of great saphenous vein
Drains from
Skin and fasciae of great saphenous territory except the buttock and short saphenous territory
Drains into
Deep inguinal lymph nodes

Deep inguinal lymph nodes

Lie on the medial side of the upper part of femoral vein in the femoral triangle
The most proximal node of this group are called **glands of Cloquet or Rosenmuller** lies in the femoral canal.

Drains from

Superficial inguinal lymph nodes
Glans of penis/clitoris
Deep lymphatics of lower limb accompanying femoral vessels

Drains into

External iliac lymph nodes

Applied importance:

Enlargement of inguinal lymph nodes_Commonest cause of swelling in subinguinal region. The causes of enlargement is infection,boil or abscess in the drainage area. Other causes are filariasis and hodgkins disease.

Elephantiasis:

The lymph vessels of the lower limb are blocked by filarial parasites (Wuchereria bancrofti) resulting in massive edema of lower limb with hypertrophy of skin and subcutaneous tissue.

VARICOSE VEINS IN LOWER LIMB (SE)

When the superficial veins become **dilated and tortuous** they are called varicose veins.

Etiology:

The superficial veins of the lower limbs commonly become varicose due to incompetency of the valves, following prolonged standing.

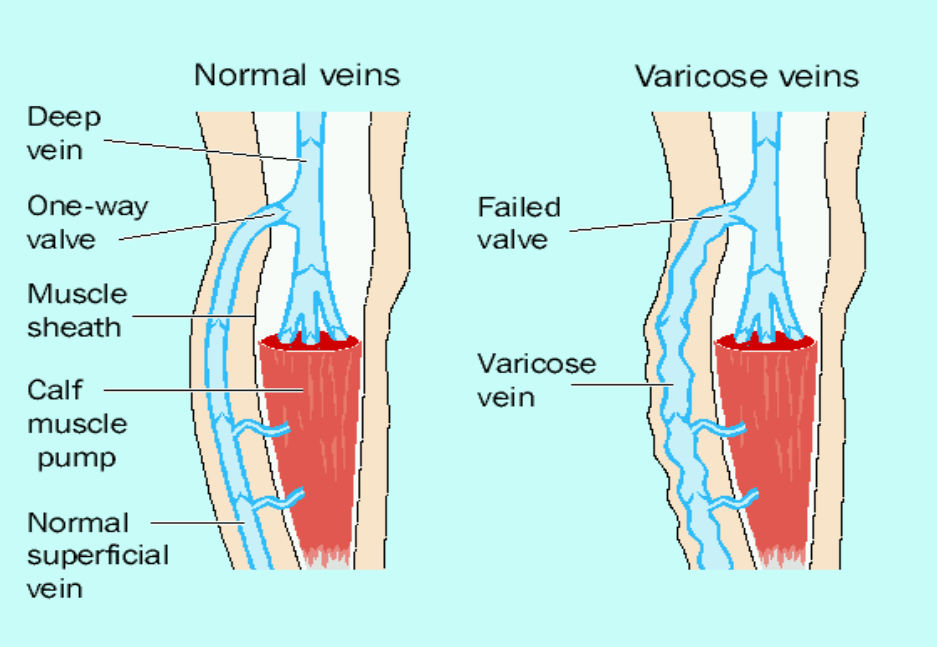
Mechanism:

Incompetency of valves in the perforating veins:

Causes **high pressure leaks** during muscular contraction. This results in the transmission of high pressure to the superficial veins from the deep veins which make it dilated and tortuous.

Incompetency of valves at the termination of the superficial veins

If the saphenofemoral valve becomes incompetent,the great saphenous vein become dilated and tortuous. The varicosity commences from saphenofemoral junction and extend gradually downward.



Recognition of sites of incompetent valves:

Trendelenberg test:

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The patient is asked to lie down and the veins are emptied by raising the lower imb and stroking the veins proximally.

Now pressure is applied with the thumb **at the saphenofemoral junction** and the patient is asked to stand up quickly.

To test the superficial veins:

The pressure is released. If the varicose veins are filled quickly from above, the test is positive.

To test the perforating veins.

The pressure is not released but maintained about a minute. Gradual filling of the superficial veins indicate the test is positive.

Perthes' test(tourniquet test)

A tourniquet is tied round the upper part of the thigh tight enough to occlude the saphenous vein but not the femoral vein. The patient is asked to walk quickly for a while.
If the perforating and deep veins are
Normal -the varicose veins will shrink
blocked -varicose veins will distend

GREAT SAPHENOUS VEIN - ORIGIN , TERMINATION AND NAMED TRIBUTARIES (SA)

Origin:

Dorsal venous arch of the footand medial marginal vein of the foot.

Termination:

Femoral vein after piercing the femoral sheath

Tributaries:

At the commencement:

Medial marginal vein of the big toe

In the leg:

Communicating veins – with small saphenous and deep veins

Posterior arch vein

Just below the knee:

Anterior veins of the leg

A vein from the calf

In the thigh:

Anterolateral vein

Posteromedial vein

Before piercing cribriform fascia:

Superficial epigastric vein

Superficial circumflex iliac vein

Superficial external pudendal vein

Before termination:

Deep external pudendal vein

VEINS CONNECTED BY MEDIAL ANKLE PERFORATORS(SA)

There are **three medial ankle perforators of Cockett,** between the medial malleolus and mid calf

Connects the **great saphenous veins** with the **posterior tibial veins.**

Upper medial ankle perforator:

Lies at the junction of middle and lower third of the leg

Middle medial ankle perforator:

Lies 4cm above the medial malleolus

Lower medial ankle perforator:

Lies postero inferior to the medial malleolus

INGUINAL LYMPH NODES (SUPERFICIAL GROUP)(SA)

Superficial inguinal lymph nodes consists of Upper horizontal and lower vertical groups arranged in the form of letter 'T

Upper horizontal – lie below the inguinal ligament

Lateral group:

Drains from

Gluteal region

Upper part of the lateral side of the thigh

Flank and back of the abdominal wall below the umblical plane

Medial group:

Drains into

Anterior abdominal wall below the umbilicus

Penis and scrotum in males, vulva and vagina below hymen in females

Perineum and lower part of anal canal below the pectinate line

Superolateral angle of the uterus via round ligament of the uterus

Lower vertical- along both sides of the terminal part of great saphenous vein

Drains from

Skin and fasciae of great saphenous territory except the buttock and short saphenous territory

For all the groups, the efferents are Deep inguinal lymph nodes

AREAS OF DRAINAGE OF HORIZONTAL SUPERFICIAL INGUINAL LYMPH NODES (SA)

Upper horizontal – lie below the inguinal ligament

Lateral group:

Drains from

Gluteal region

Upper part of the lateral side of the thigh

Flank and back of the abdominal wall below the umblical plane

Drains into

Deep inguinal nodes

Medial group:

Afferents:

Anterior abdominal wall below the umbilicus

Penis and scrotum in males, vulva and vagina below hymen in females

Perineum and lower part of anal canal below the pectinate line

Superolateral angle of the uterus via round ligament of the uterus

Efferents:

Deep inguinal lymph nodes

AREAS OF DRAINAGE OF POPLITEAL LYMPH NODES (SA)

Afferents:

Territory of small saphenous vein

Deep parts of leg ,running along anterior and posterior tibial vessels

Knee joint

Efferents:

Deep inguinal lymph nodes

VARICOSE VEINS (SA)

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Mechanism:

Incompetency of valves in the perforating veins:

Incompetency of valves at the termination of the superficial veins:

Recognition of sites of incompetent valves:

Trendelenberg test

Perthes's test (tourniquet test)