

MAJOR BODY VEINS



Khaleel Alyahya, PhD, MEd
King Saud University
School of Medicine
@khaleelya

MEDICAL SCHOOL BE LIKE



ANATOMY CLUB

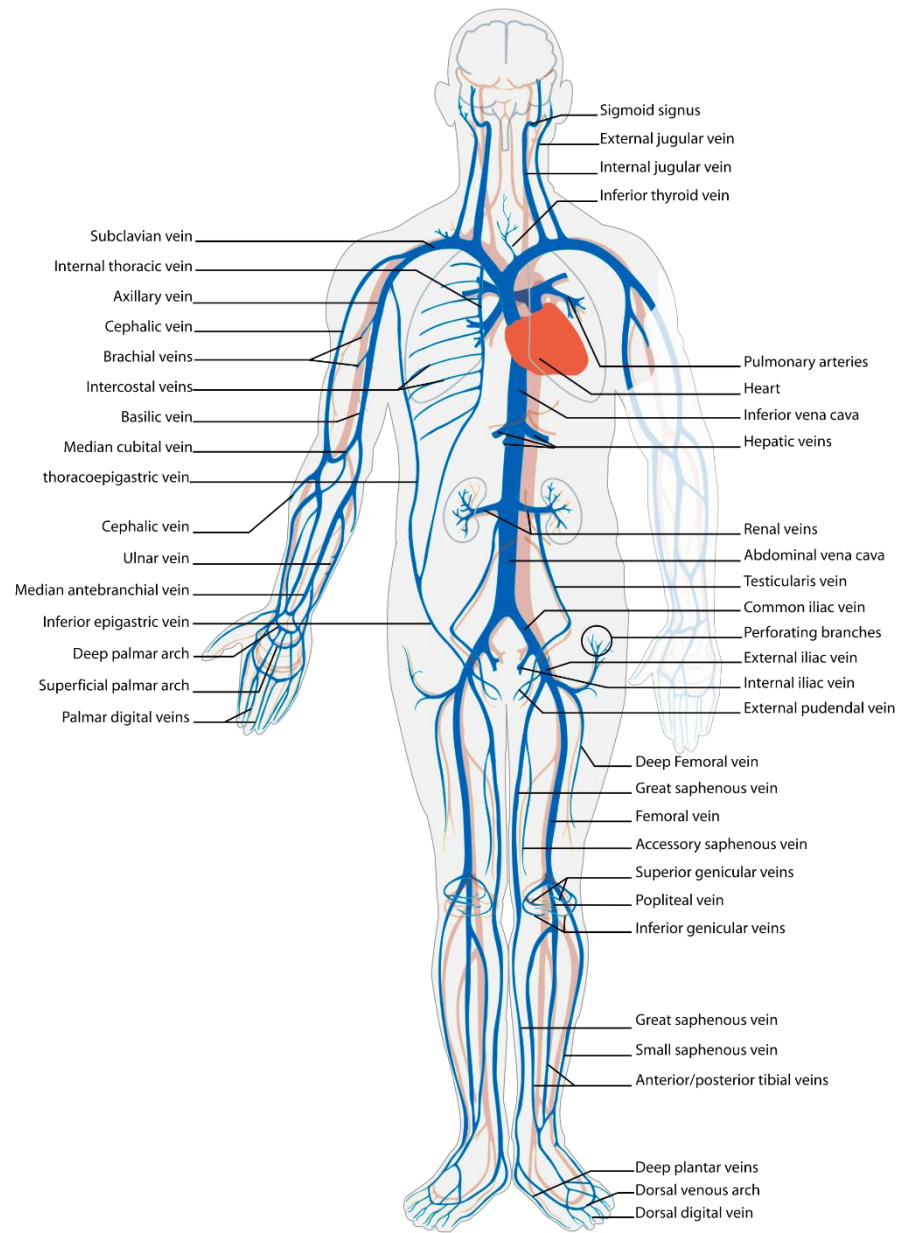
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OBJECTIVES

At the end of the lecture, the student should be able to:

- ❑ Define veins and understand the general principle of venous system.
- ❑ Describe the superior & inferior Vena Cava.
 - formation and their tributaries
- ❑ List major veins and their tributaries in;
 - head & neck
 - thorax & abdomen
 - upper & lower limbs
- ❑ Describe the Portal Vein.
 - formation & tributaries.
- ❑ Describe the Portocaval Anastomosis.
 - formation, sites and importance

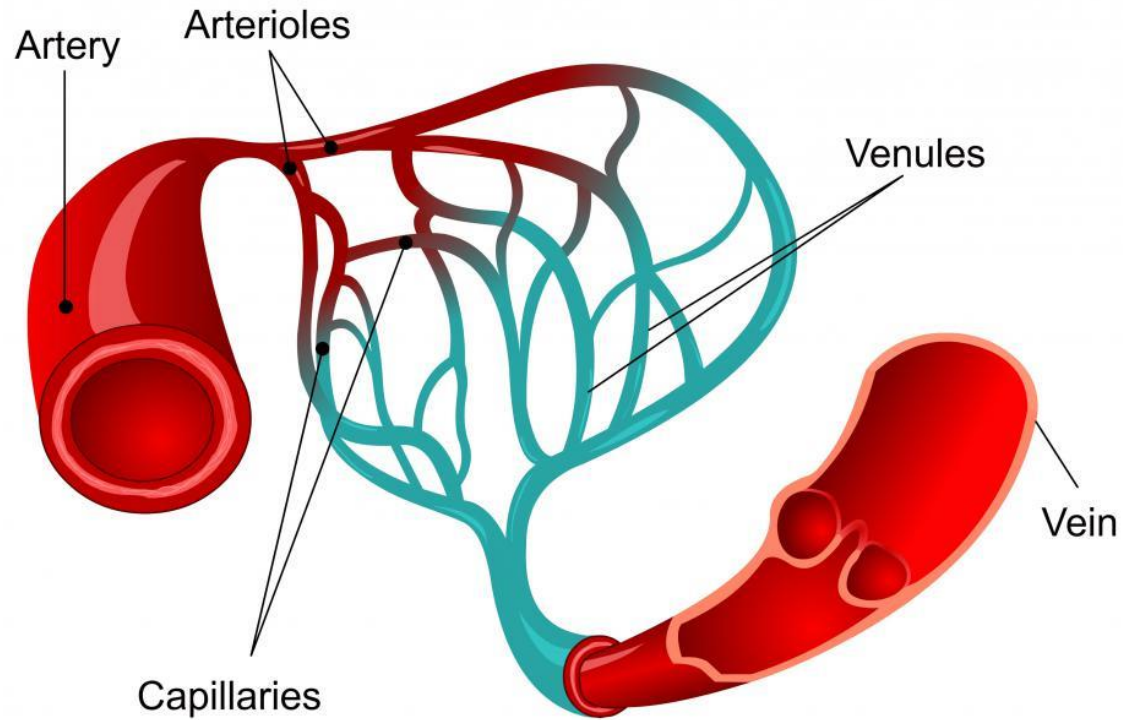


VEINS

- ❑ Veins are blood vessels that bring blood back to the heart.
- ❑ All veins carry deoxygenated blood
 - with the exception of the pulmonary veins and umbilical veins
- ❑ There are two types of veins:
 - Superficial veins: close to the surface of the body
 - NO corresponding arteries
 - Deep veins: found deeper in the body
 - With corresponding arteries
- ❑ Veins of the systemic circulation:
 - Superior and inferior vena cava with their tributaries
- ❑ Veins of the portal circulation:
 - Portal vein



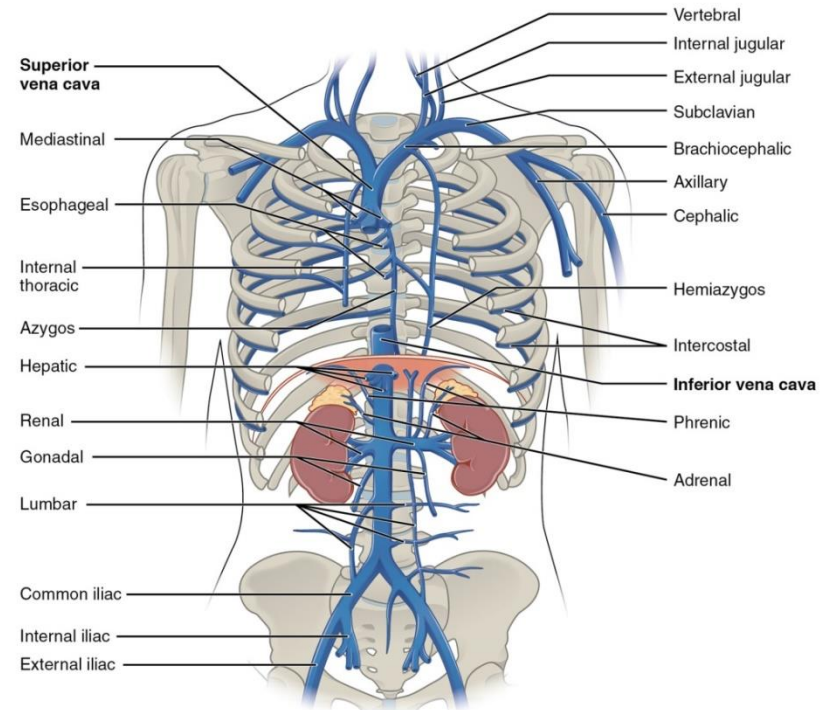
ARTERIES VS. VEINS



wiseGEEK

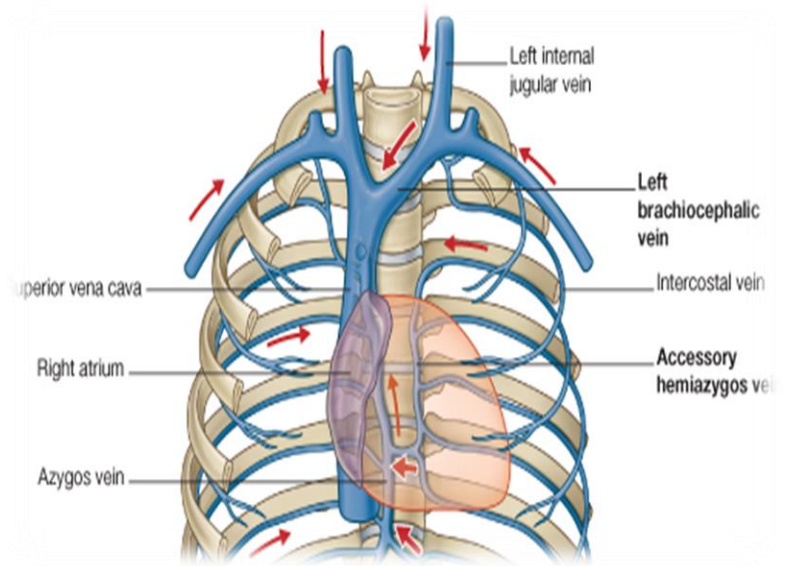
VENA CAVAE

- ❑ They are two large veins that return deoxygenated blood from the body into the heart.
- ❑ There are the **superior vena cava** and the **inferior vena cava**.
- ❑ Both empty into the right atrium.
- ❑ They are located slightly off-center toward the right side of the body.
- ❑ The **superior vena cava** is above the heart, and formed by the union of the left and right brachiocephalic veins, which drain blood from the head and the upper limbs.
- ❑ The **inferior vena cava** travels up alongside the abdominal aorta with blood from the lower part of the body.
- ❑ They are the largest veins in the human body.



SUPERIOR VENA CAVA

- ❑ Formed by the union of the **right and left brachiocephalic veins**.
- ❑ Brachiocephalic veins are formed by the union of **internal jugular** and **subclavian veins**.
- ❑ Drains venous blood from:
 - Head, neck, thoracic wall & upper limbs
- ❑ It Passes downward and enter the right atrium.
- ❑ Receives **azygos vein** on the posterior aspect just before it enters the heart.



VEINS OF HEAD & NECK

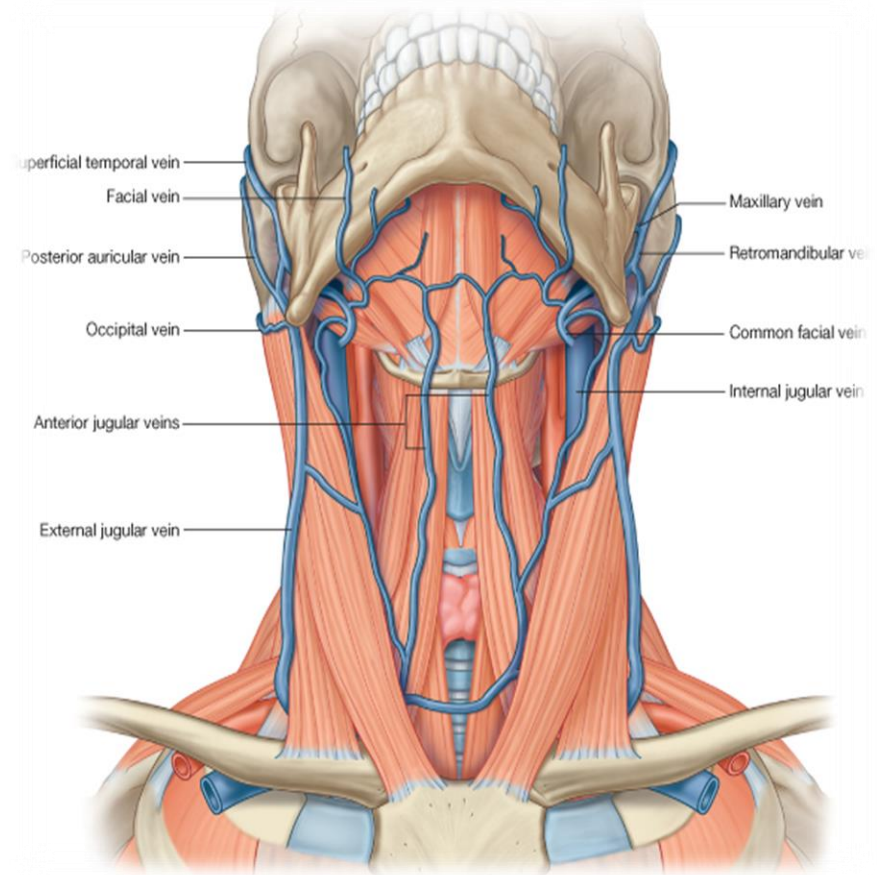
TWO DIVISIONS:

☐ Superficial Veins

- External Jugular veins
- Anterior jugular veins

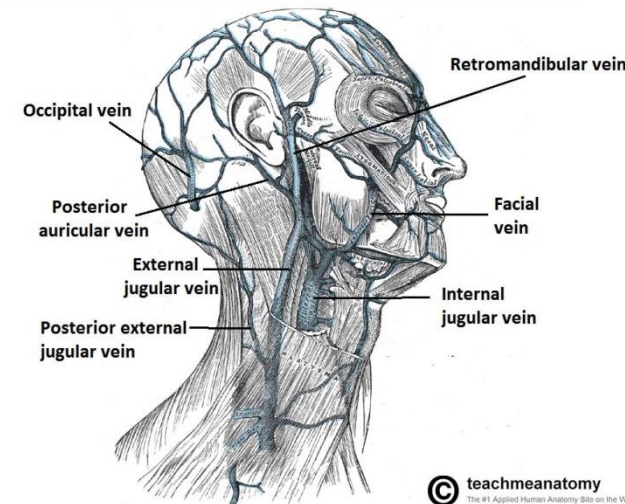
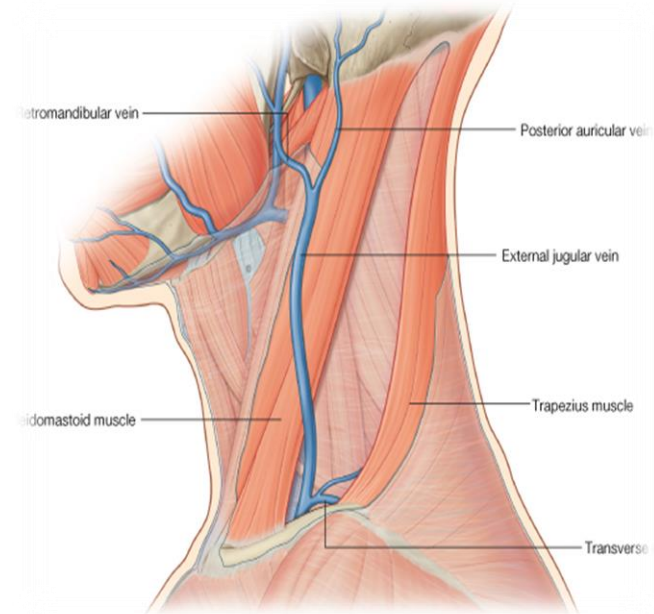
☐ Deep Veins

- Internal Jugulars veins



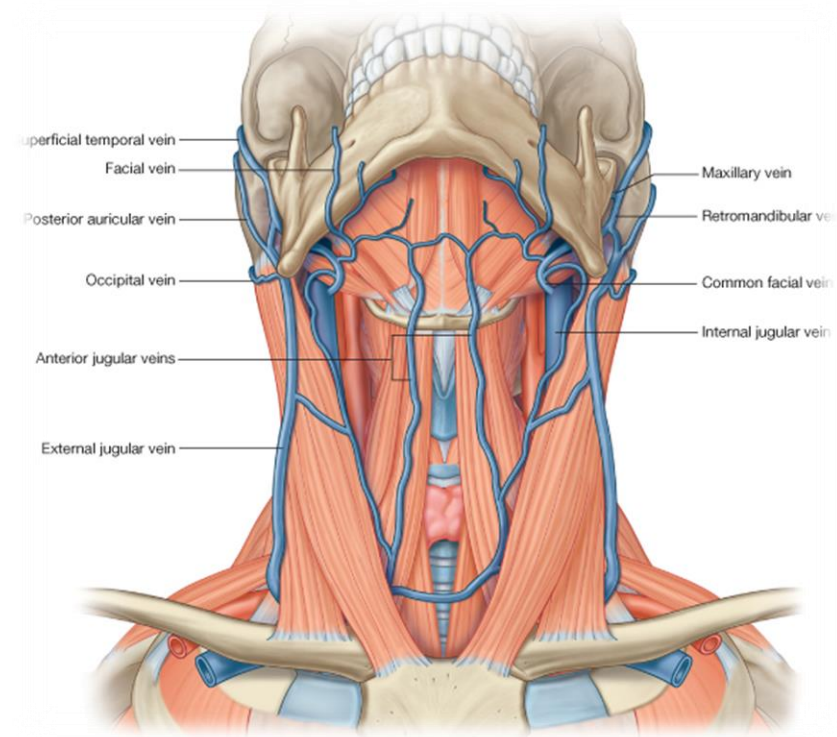
EXTERNAL JUGULAR VEINS

- ❑ Lies superficial to the sternomastoid muscle
- ❑ Formed by the union of **posterior auricular vein** and **retromandibular vein**.
- ❑ It passes down the neck and it is the only tributary of the subclavian vein.
- ❑ It drains blood from:
 - **Outside of the skull**
 - **Deep parts of the face**



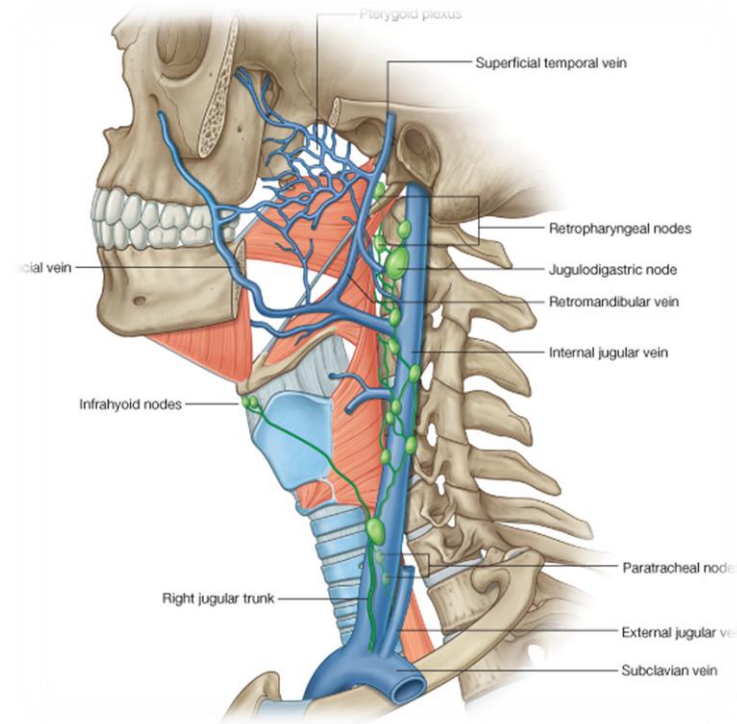
ANTERIOR JUGULAR VEINS

- ❑ It begins in the upper part of the neck by the union of the **submental veins**.
- ❑ It descends close to the median line of the neck, medial to the sternomastoid muscle.
- ❑ At the lower part of the neck, it passes laterally beneath that muscle to drain into the **external jugular vein**.
- ❑ Just above the sternum the two anterior jugular veins communicate by a transverse vein to form the **jugular arch**.



INTERNAL JUGULARS VEIN

- ❑ Drains blood from the head, brain, face & neck.
- ❑ It descends in the neck along with the internal and **common carotid arteries** and **vagus nerve**, within the Carotid Sheath.
- ❑ Joins the **subclavian vein** to form the **brachiocephalic vein**.
- ❑ Tributaries:
 - Superior thyroid
 - Lingual
 - Facial
 - Occipital veins
 - Dural venous sinuses
- ❑ These veins drain blood from anterior face, trachea, thyroid, esophagus, larynx, and muscles of the neck.



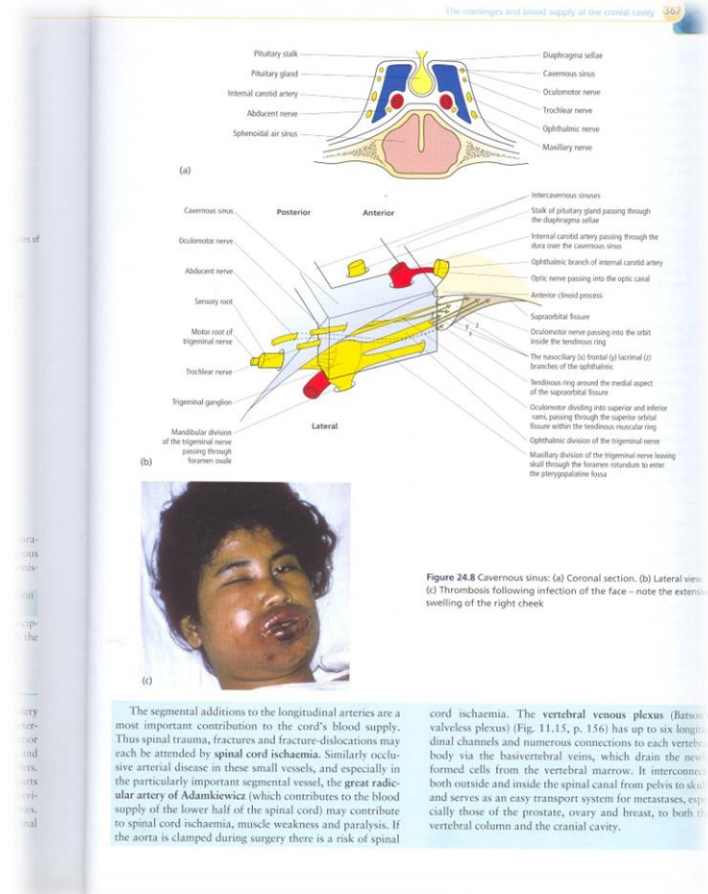
VENOUS DISORDER

INFARCTION

- Refers to tissue death (necrosis) that is caused by a local lack of oxygen due to obstruction of the tissue's blood supply

SINUS THROMBOSIS

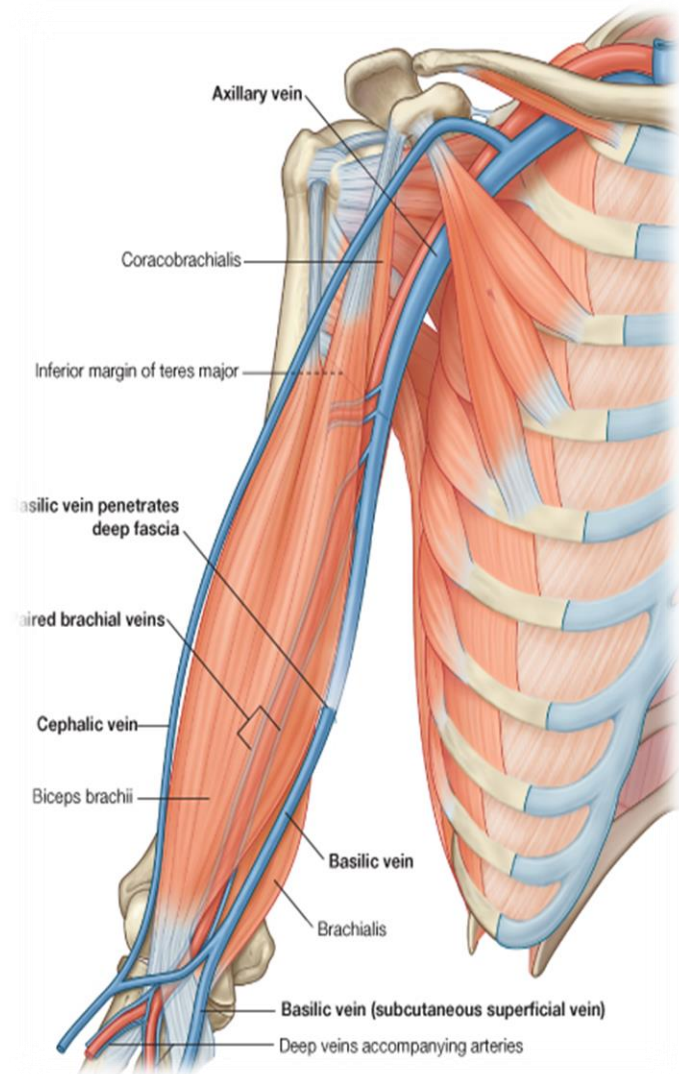
- SSS thrombosis
 - Superior Sagittal Sinus
 - Can complicate ear infection
- Cavernous Sinus thrombosis
 - As a complication of infection in the dangerous area of the face
- Obstruction of venous drainage of the brain leads to Cerebral swelling (edema) and raised Intracranial Pressure.



VEINS OF UPPER LIMBS

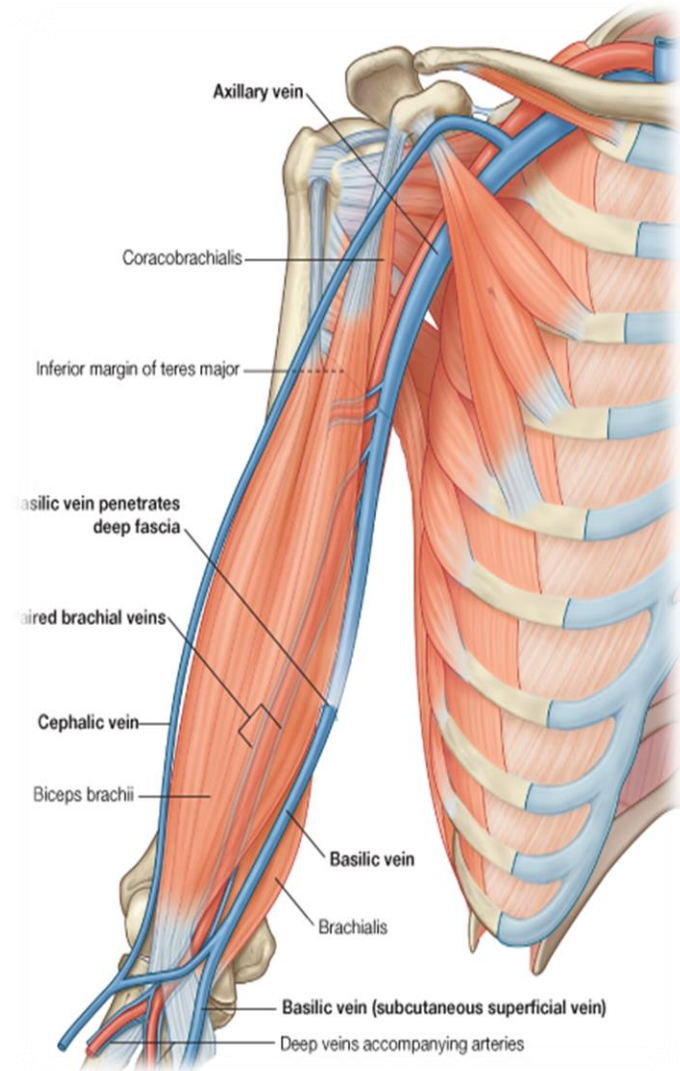
TWO DIVISIONS:

- ❑ SUPERFICIAL VEINS
- ❑ DEEP VEINS



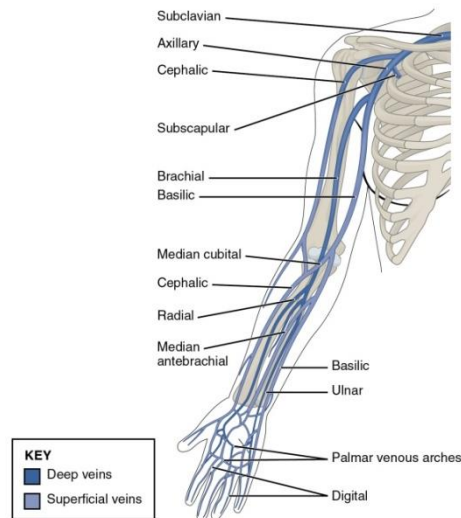
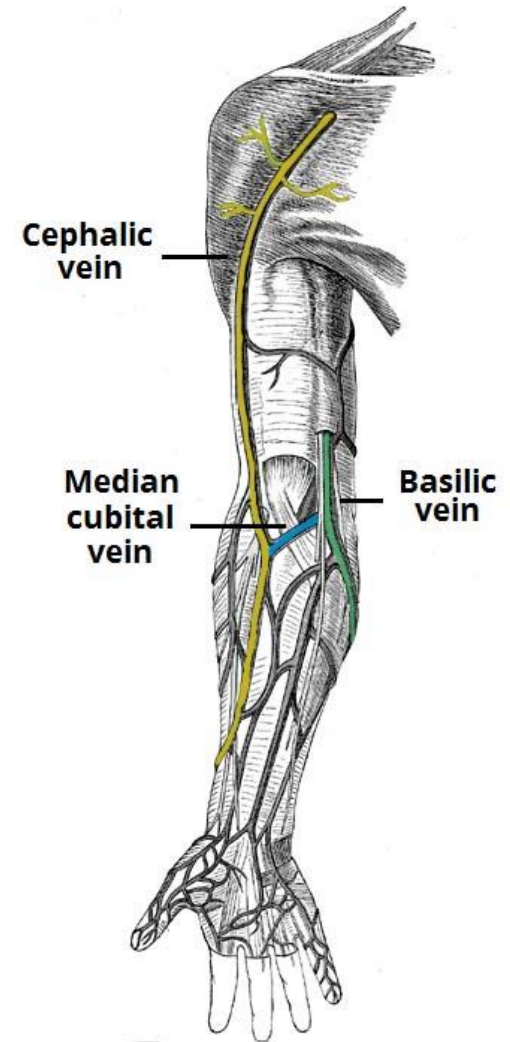
SUPERFICIAL VEINS

- ❑ The major superficial veins of the upper limb are the **cephalic vein** and **basilic vein**.
- ❑ At the elbow, the cephalic and basilic veins are connected by the **median cubital vein**.



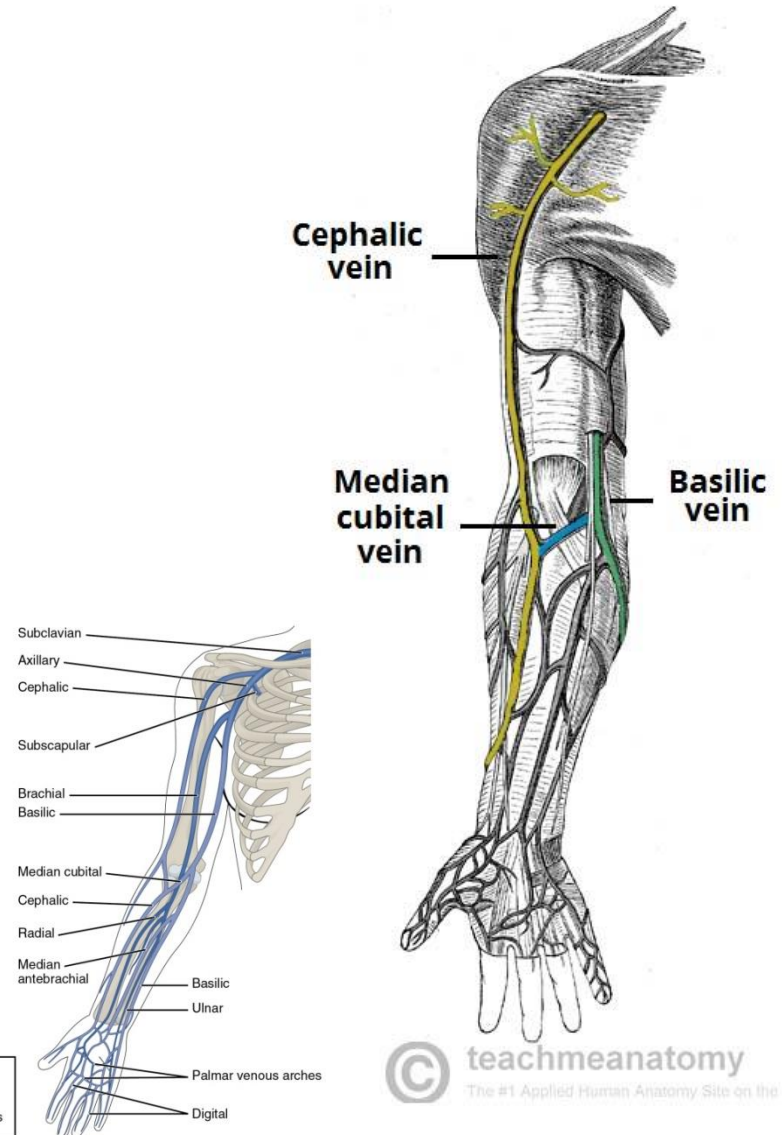
BASILIC VEIN

- ❑ Originates from the dorsal venous network of the hand.
- ❑ It ascends the medial aspect of the upper limb.
- ❑ At the border of the **teres major**, the vein moves deep into the arm.
- ❑ It then combines with the **brachial veins** to form the **axillary vein**.



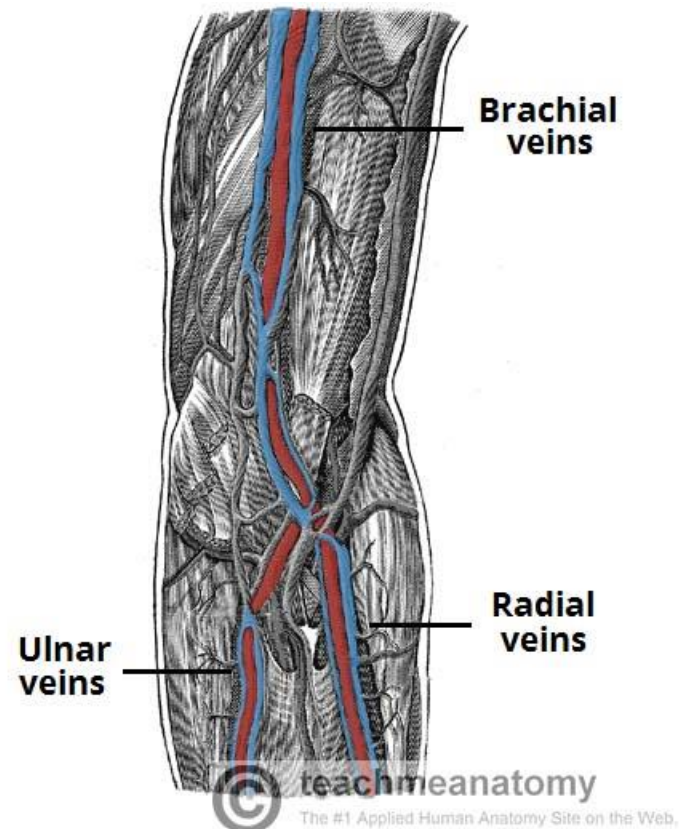
CEPHALIC VEIN

- ❑ Arises from the dorsal venous network of the hand.
- ❑ It ascends the antero-lateral aspect of the upper limb, passing anteriorly at the elbow.
- ❑ At the shoulder, the **cephalic vein** travels between the **deltoid** and **pectoralis major muscles** to enter the axilla region via the **clavipectoral triangle**.
- ❑ Within the axilla, the cephalic vein terminates by joining the **axillary vein**.



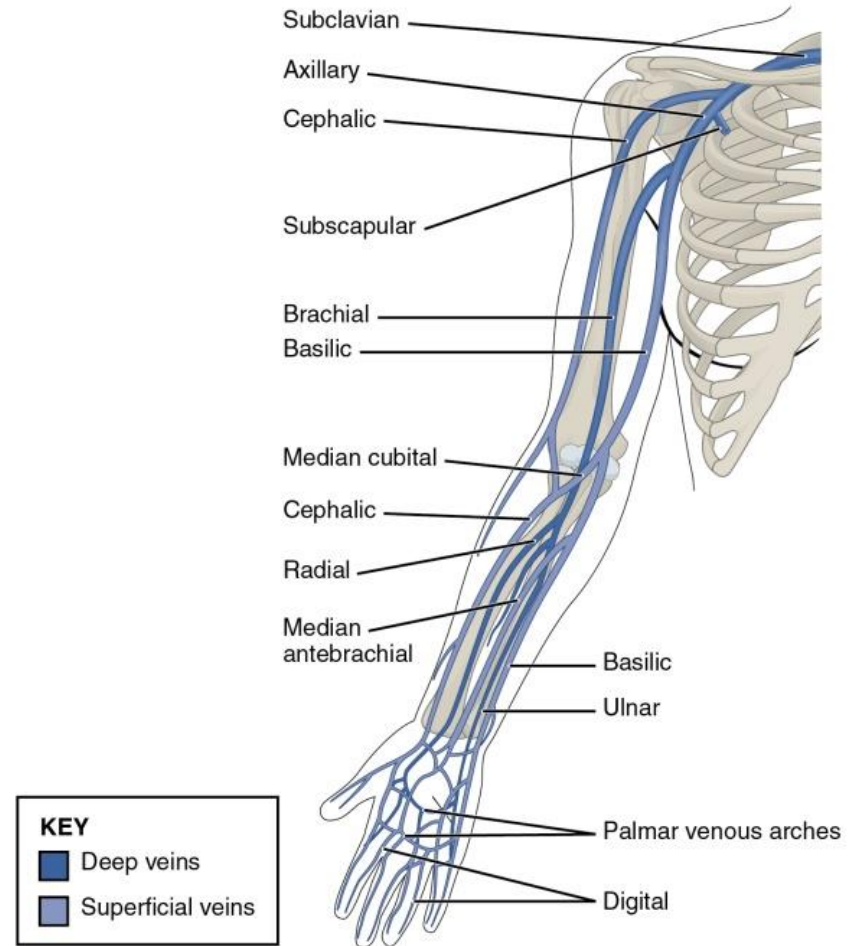
DEEP VEINS

- ❑ The deep veins of the upper limb are situated underneath the deep fascia.
- ❑ They are usually paired veins that accompany one artery.
 - vena comitantes
- ❑ The **brachial veins** are the largest in size, and are situated either side of the **brachial artery**.
- ❑ **Ulnar and radial veins** are vena comitantes of **ulnar and radial arteries**.
- ❑ The pulsations of the brachial artery assists the venous return.
- ❑ Perforating veins run between the deep and superficial veins of the upper limb, connecting the two systems together.



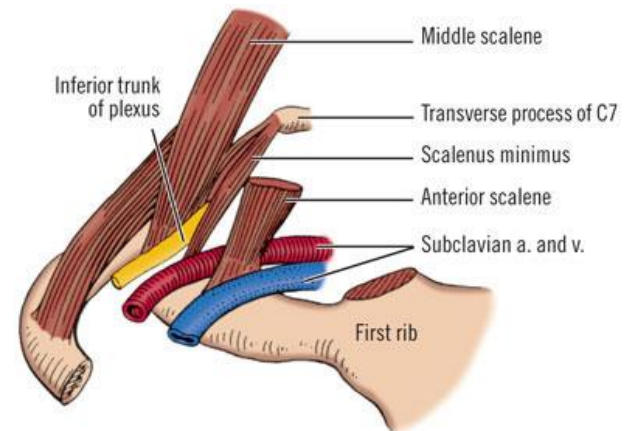
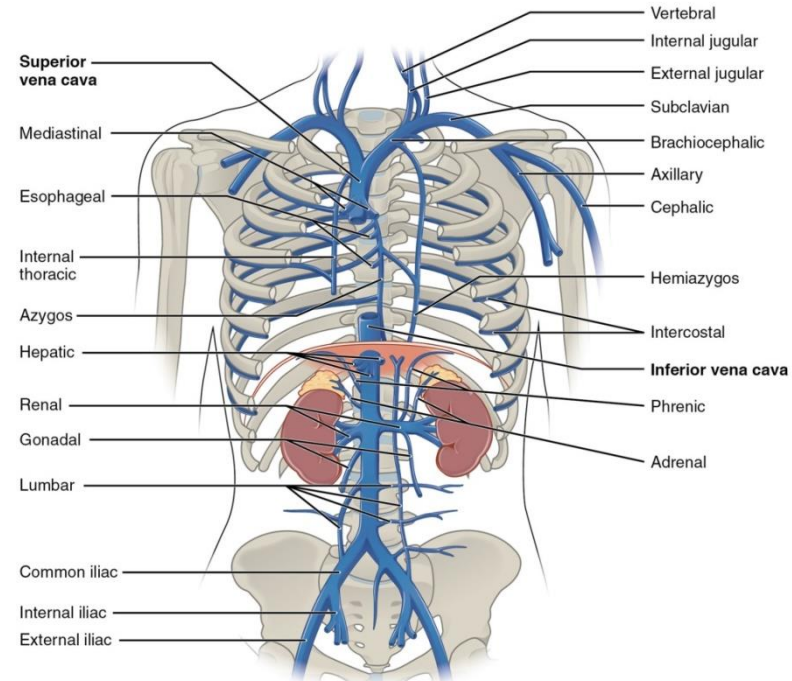
AXILLARY VEIN

- ❑ Formed by the union of **basilic vein** and **brachial veins** (venae comitantes) of the **brachial artery**.



SUBCLAVIAN VEIN

- ❑ Each **subclavian vein** is a continuation of the **axillary vein** and runs from the outer border of the first rib to the medial border of **anterior scalene muscle**.
- ❑ It then joins with the **internal jugular vein** to form the **brachiocephalic vein**.
- ❑ The **subclavian vein** follows the **subclavian artery**.
- ❑ The **right and left brachiocephalic veins** form **superior vena cava** that enters right atrium. (anterior to the middle scalene).



PULSE POINTS IN UPPER LIMB

AXILLARY PULSE

- ❑ Located inferiorly of the lateral wall of the axilla.

BRACHIAL PULSE

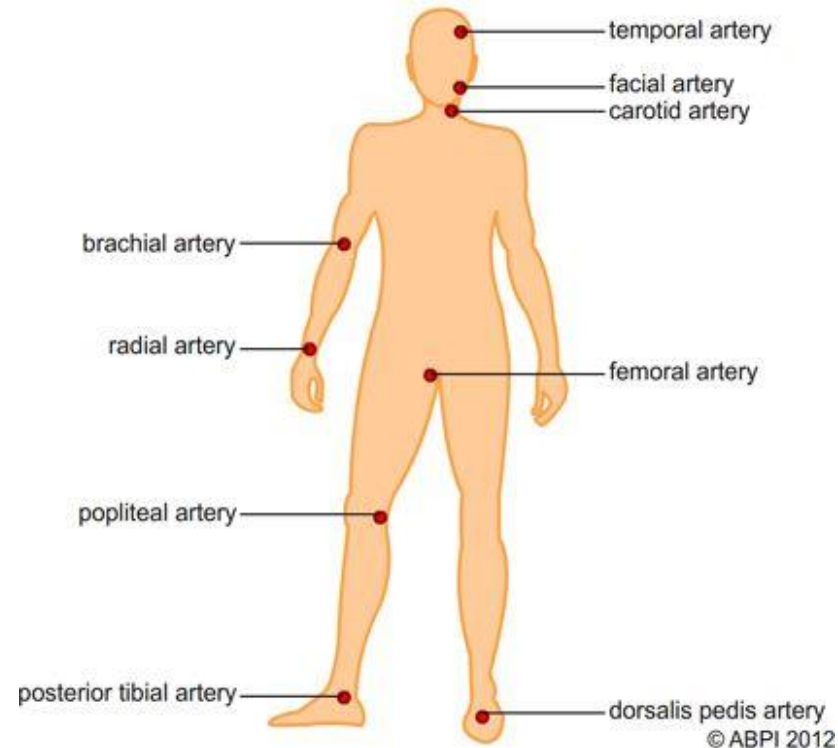
- ❑ Located on the inside of the upper arm near the elbow, frequently used in place of carotid pulse in infants (brachial artery).

ULNAR PULSE

- ❑ Located on the medial of the wrist (ulnar artery).

RADIAL PULSE

- ❑ Located on the lateral of the wrist (radial artery).
- ❑ It can also be found in the anatomical snuff box.



CLINICAL SIGNIFICANCE

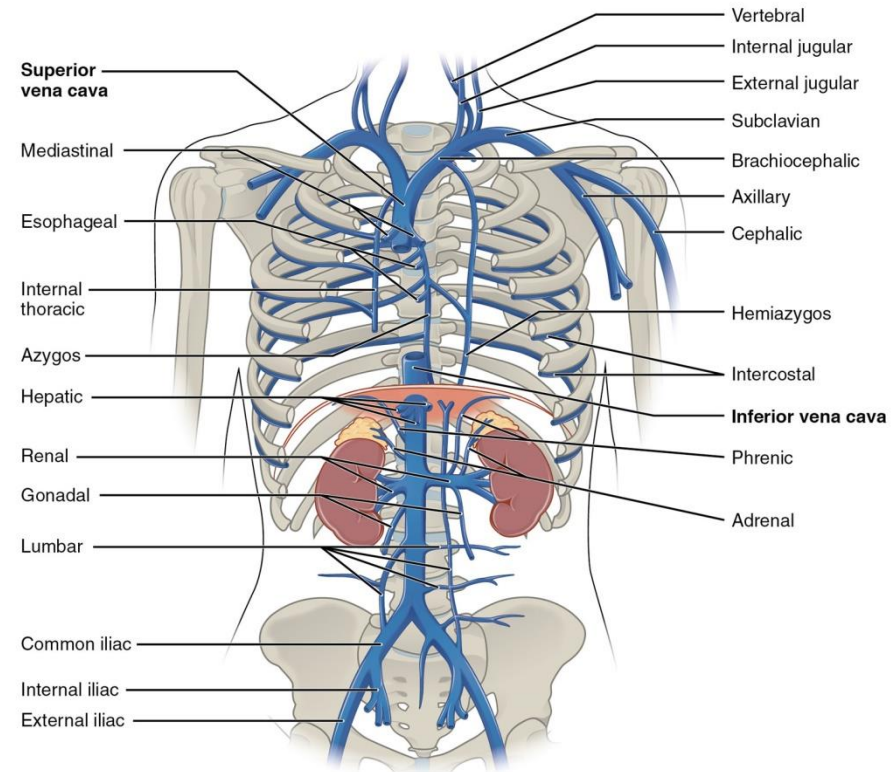
VENEPUNCTURE

- ❑ The practice of obtaining intravenous access. This can be for intravenous therapy or obtaining a blood sample.
- ❑ The main vein used in venipuncture is the median cubital vein.
- ❑ It is a superficial vein that is situated anteriorly at the cubital fossa region.
- ❑ It is commonly used due to its accessible and superficial position.



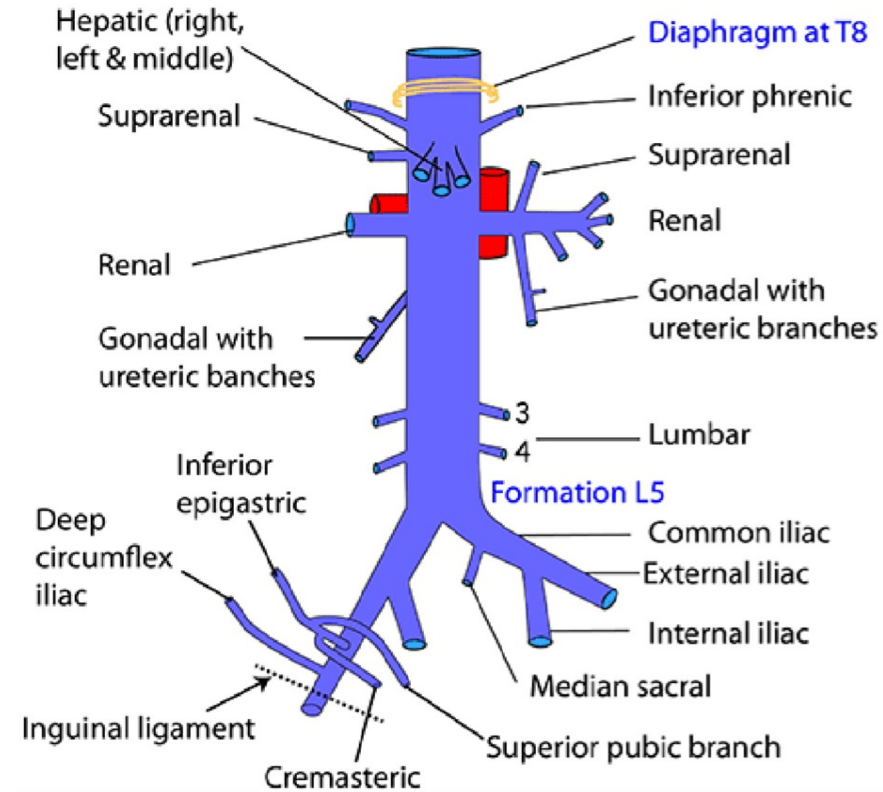
INFERIOR VENA CAVA

- ❑ Drains most of the blood from the body below the diaphragm to the right atrium.
- ❑ Formed by the union of the **two common iliac veins** behind the right **common iliac artery** at the level of the **5th lumbar vertebra**.
- ❑ Ascends on the right side of the aorta
- ❑ Pierces the central tendon of diaphragm at the level of the 8th thoracic vertebra.



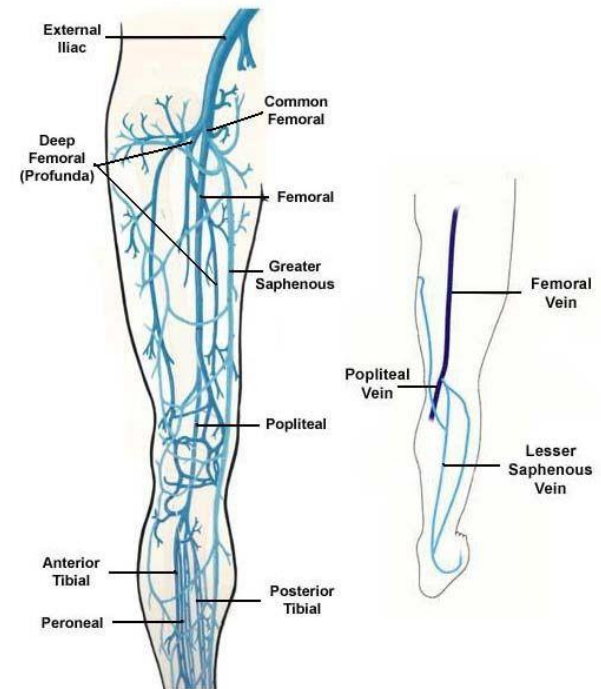
TRIBUTARIES OF INFERIOR VENA CAVA

- Two common iliac veins
- Median sacral vein
- Four paired lumbar veins
- Right gonadal vein
 - the left vein drains into the left renal vein
- Paired renal veins
- Right suprarenal vein
 - the left vein drains into the left renal vein
- Hepatic veins
- Paired inferior phrenic vein



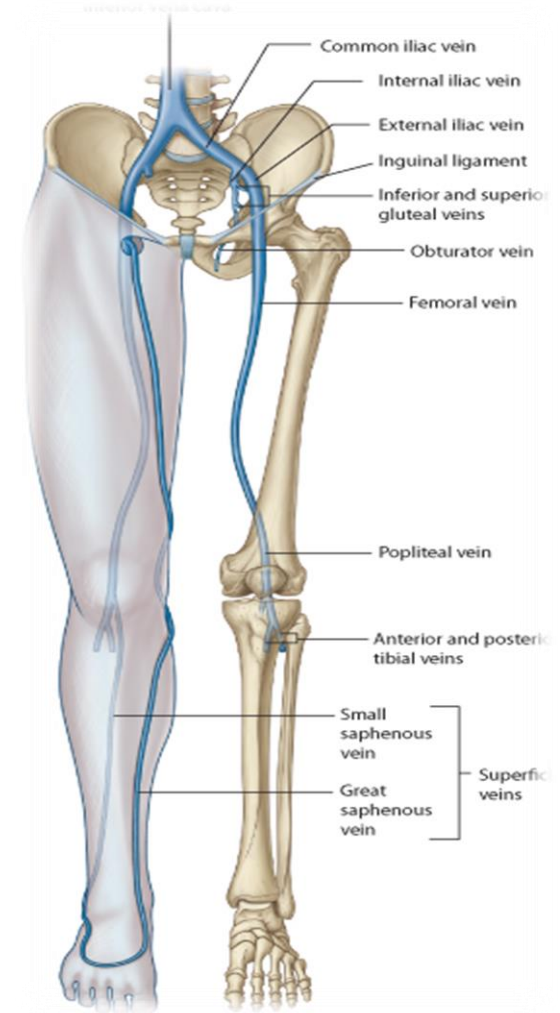
VEINS OF LOWER LIMBS

- ❑ The venous system of the lower limb drains deoxygenated blood from the foot, legs and thigh.
- ❑ It also divided into **superficial veins** and **deep veins**.
- ❑ Superficial veins are located within the subcutaneous tissue of the lower limb.
- ❑ Deep veins are running in deep fascia with arteries.



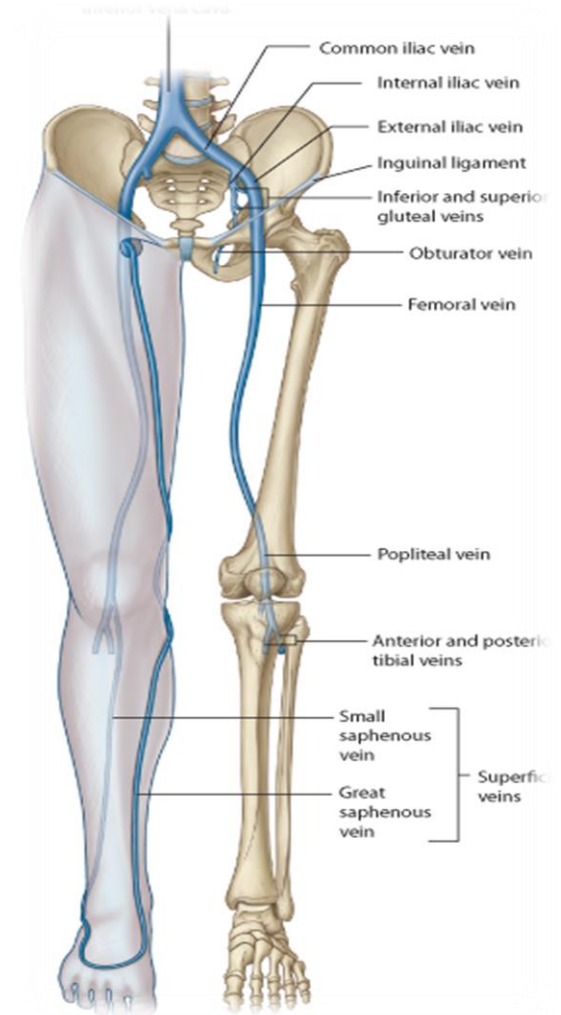
SUPERFICIAL VEINS

- ❑ Form a network in the subcutaneous tissue
- ❑ Pattern is variable
- ❑ They are the tributaries of the:
 - Great (long) saphenous vein
 - Small (short) saphenous vein



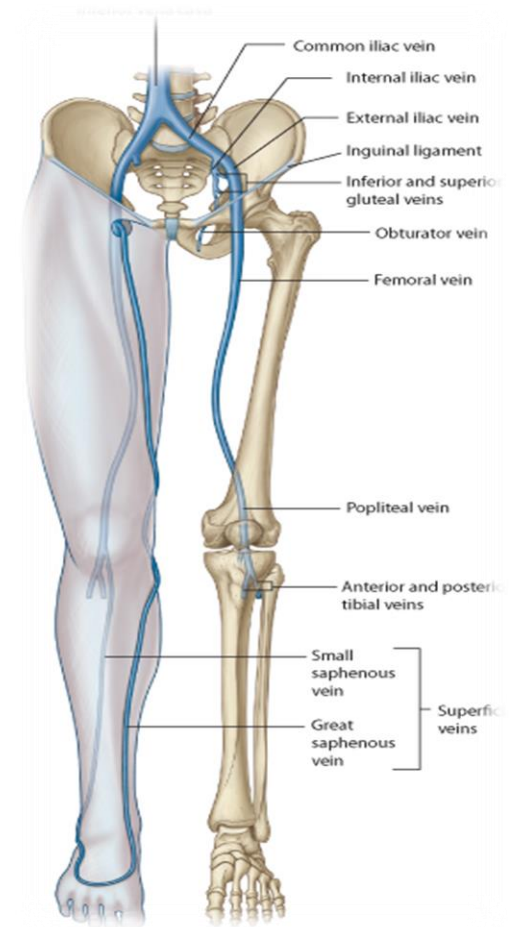
GREAT SAPHENOUS VEIN

- ❑ The longest vein
- ❑ Begins from the medial end of the dorsal venous arch of the foot.
- ❑ Passes upward in front of the medial malleolus with the saphenous nerve.
- ❑ Then it ascends in accompany with the **saphenous nerve** in the superficial fascia over the medial side of the leg.
- ❑ Ascends obliquely upwards, and lies behind the medial border of the patella.
- ❑ Passes behind the knee and curves forward around the medial side of the thigh.
- ❑ Hooks through the lower part of the **saphenous opening** in the deep fascia to joins the **femoral vein** about 4 cm below and lateral to the pubic tubercle.



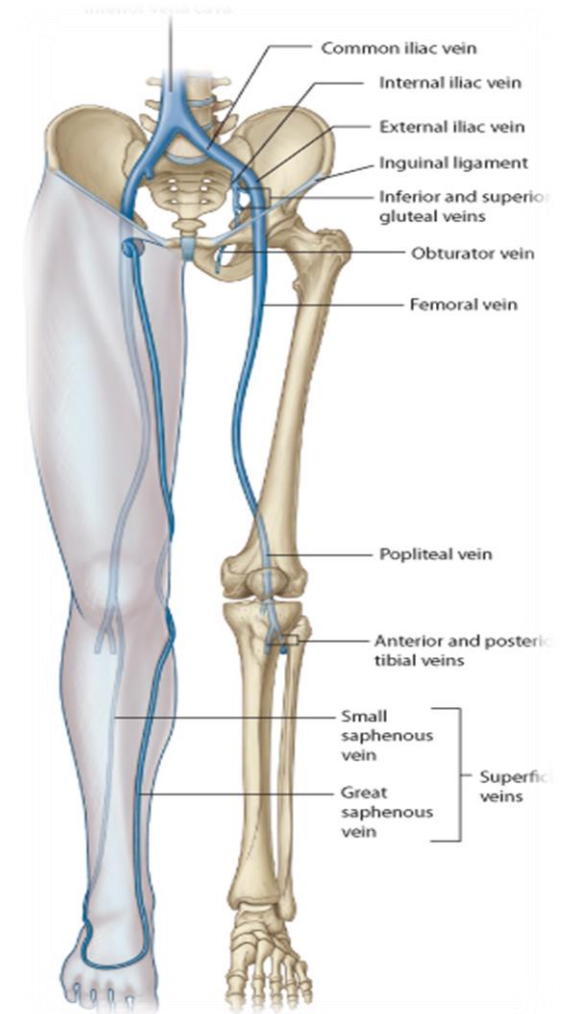
GREAT SAPHENOUS VEIN

- ❑ It is connected to the small saphenous vein by one or two branches that pass behind the knee.
- ❑ Numerous perforating veins connect the great saphenous vein with the deep veins.
- ❑ The perforating veins have **valves** which allow blood flow from superficial to deep veins.
- ❑ The great saphenous vein is used in **venous grafting** and saphenous cut down (take care of the saphenous nerve)



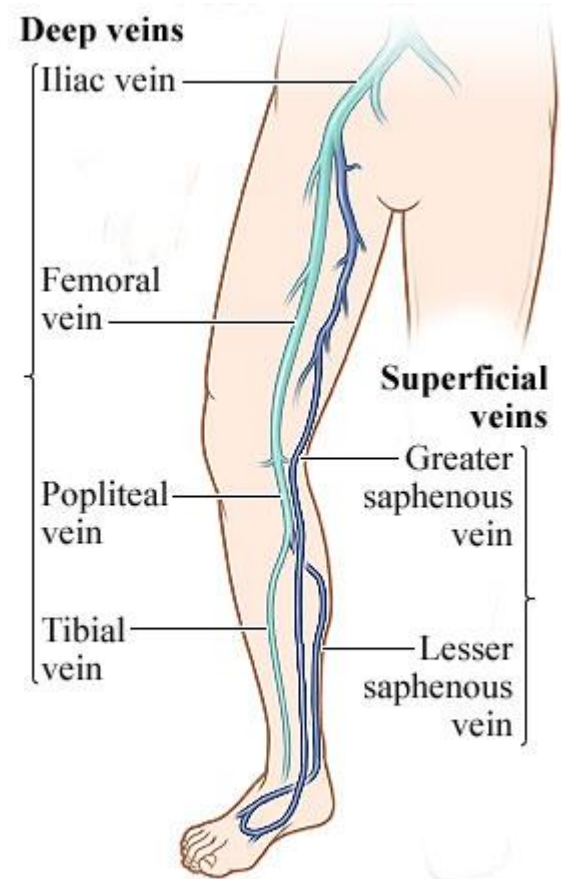
SMALL SAPHENOUS VEIN

- ❑ Arises from the lateral end of the dorsal venous arch.
- ❑ Ascends behind the lateral malleolus in company with the **sural nerve**.
- ❑ Follows the lateral border of the tendocalcaneus and then runs up to the middle of the back of the leg.
 - Pierces the deep fascia in the lower part of the popliteal fossa
 - Drains into the popliteal vein
 - Has numerous valves along its course.
 - Anastomosis with great saphenous vein.



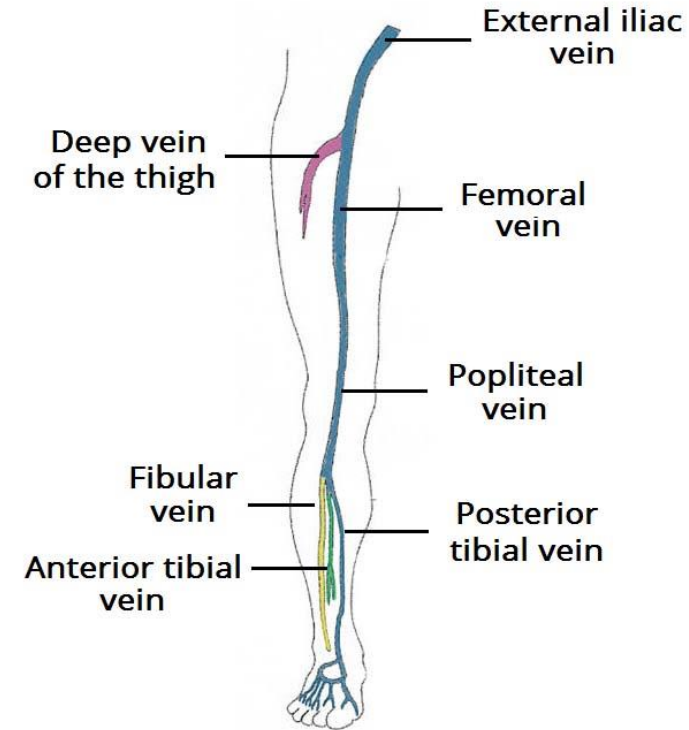
DEEP VEINS

- ❑ Comprise the **venae comitantes**, which accompany all the large arteries, usually in pairs.
- ❑ Venae comitantes unite to form the **popliteal vein**, which continues as the **femoral vein**.
- ❑ Receive blood from superficial veins through perforating veins.
- ❑ The deep veins Including:
 - Anterior and posterior tibial veins
 - Popliteal vein
 - Femoral vein



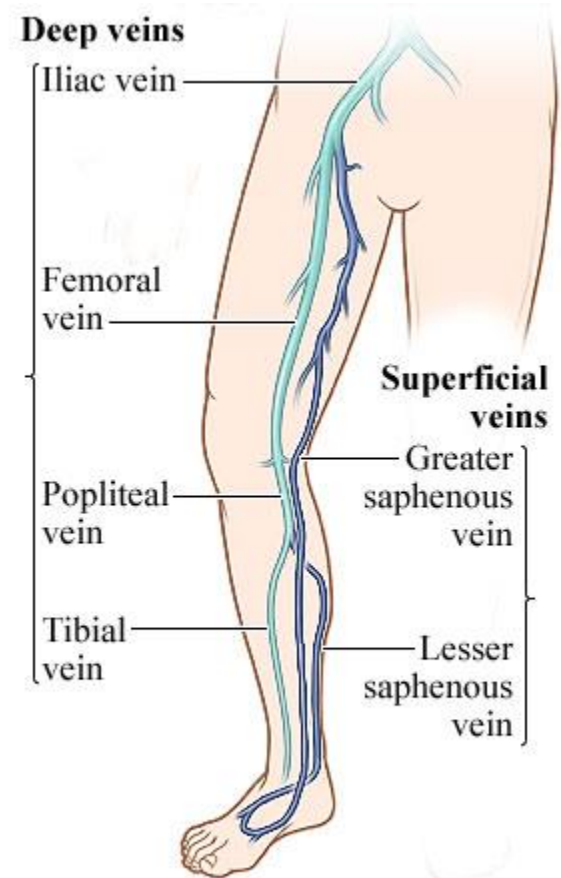
ANTERIOR AND POSTERIOR TIBIAL

- ❑ The **posterior tibial vein** accompanies the **posterior tibial artery**, entering the leg posteriorly to the medial malleolus.
- ❑ On the posterior surface of the knee, the **anterior tibial**, **posterior tibial** and **fibular veins** unite to form the **popliteal vein**.



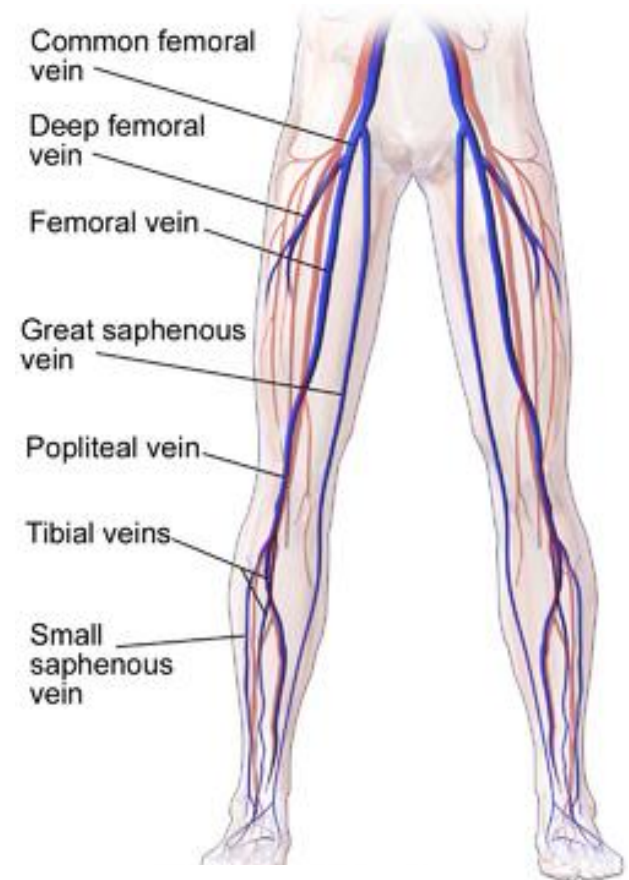
POPLITEAL VEIN

- ❑ Comprise the venae comitantes, which accompany **popliteal artery**.
- ❑ Formed by the unite of **anterior, posterior tibial and fibluar veins**.
- ❑ Popliteal vein then continues as the **femoral vein**.
- ❑ Receive blood from superficial veins through perforating veins.



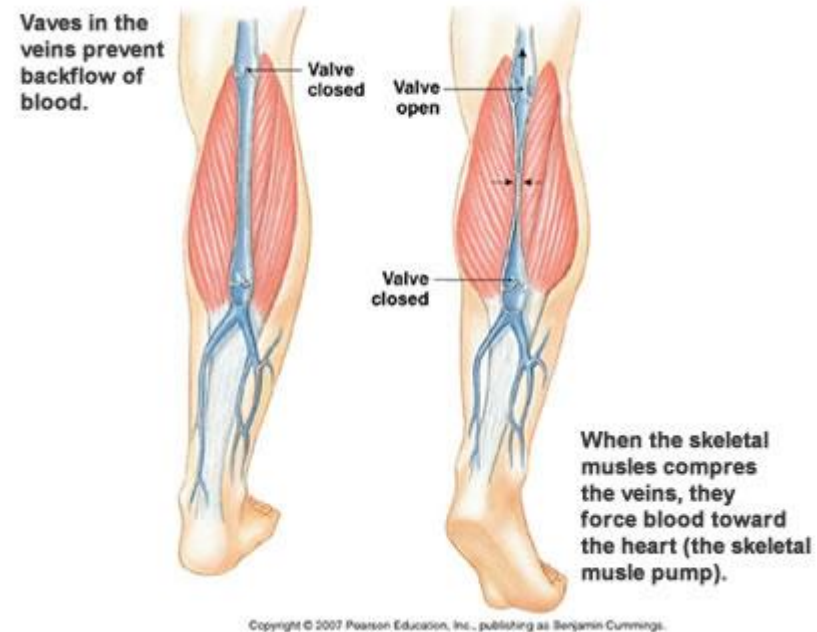
FEMORAL VEINS

- ❑ The femoral vein is a blood vessel that accompanies the **femoral artery** in the femoral sheath.
- ❑ It is a continuation of the **popliteal vein**.
- ❑ Ends at the inferior margin of the **inguinal ligament**, where it becomes the **external iliac vein**.
- ❑ External iliac join **internal iliac** to form **common iliac veins**.
- ❑ Both right and left common iliac veins form **inferior vena cava** that drains the entire low part of the body.
- ❑ Inferior vena cava drains into right atrium.



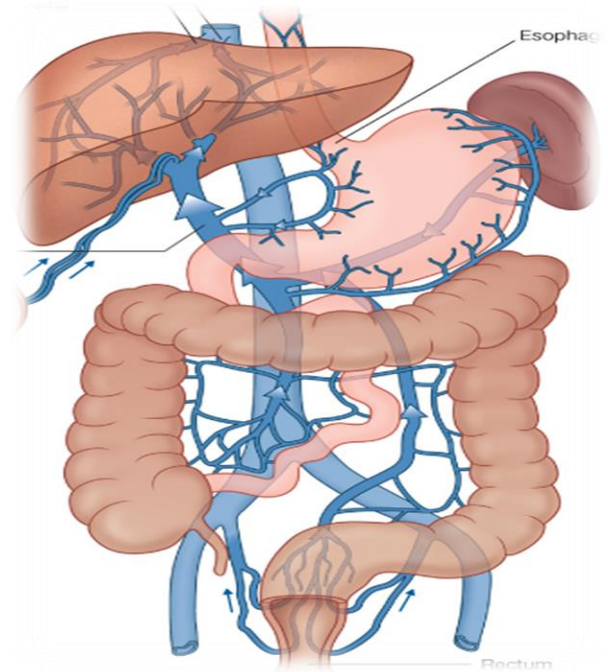
MECHANISM OF VENOUS RETURN FROM LOWER LIMB

- ❑ Much of the saphenous blood passes from superficial to deep veins through the perforating veins
- ❑ The blood is pumped upwards in the deep veins by the contraction of the **calf muscles** (calf pump).
- ❑ This action of calf pump is assisted by the tight sleeve of deep fascia surrounding these muscles.



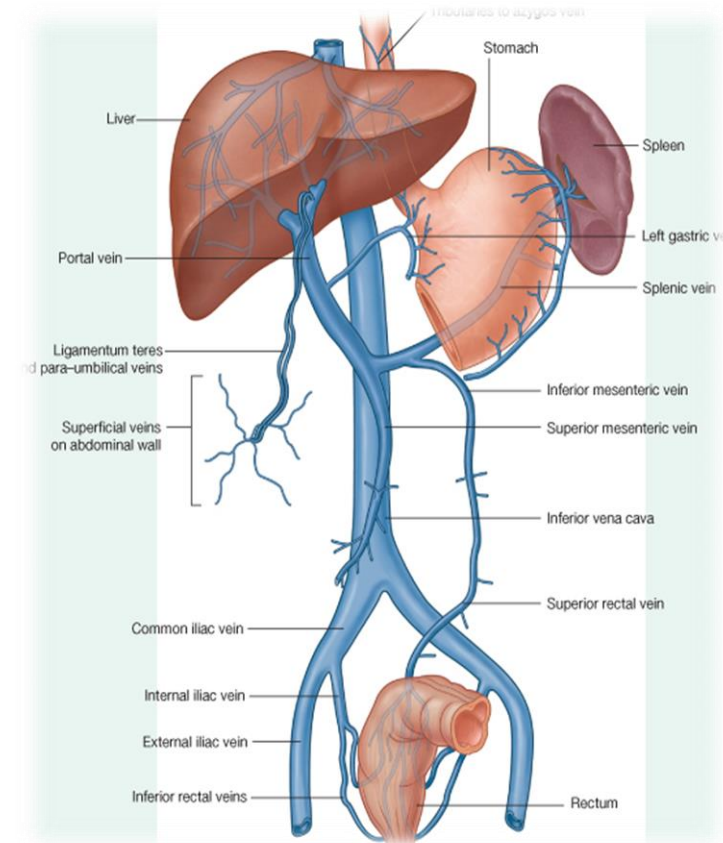
PORTAL VEIN

- ❑ Drains blood from the gastrointestinal tract and spleen
- ❑ It is formed by the union of the **superior mesenteric** and **splenic veins**.
- ❑ Immediately before reaching the liver, the portal vein divides into right and left that enter the liver.
- ❑ Tributaries: **Gastric** and **cystic veins**



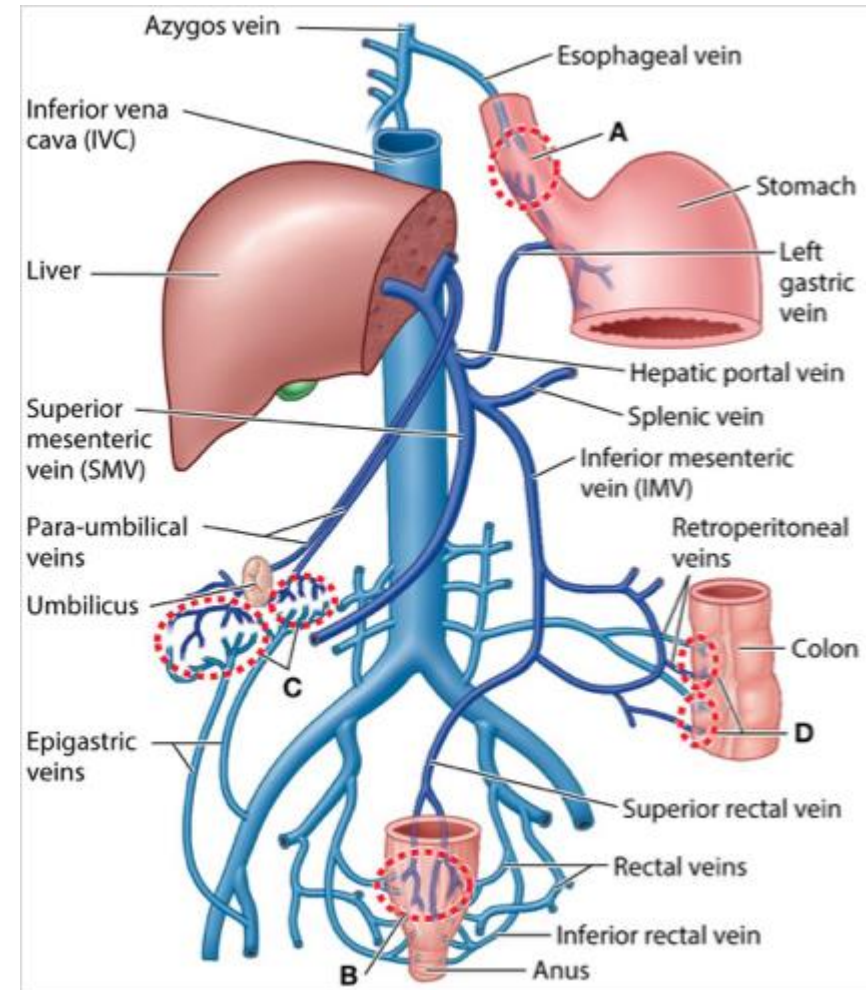
PORTOCAVAL ANASTOMOSIS

- ❑ A **portacaval anastomosis** (also known as portal systemic anastomosis) is a specific type of anastomosis that occurs between the veins of portal circulation and those of systemic circulation.
- ❑ The anastomotic channels become dilated (varicosed) in case of portal hypertension.



SITES OF PORTOCAVAL ANASTOMOSIS

- ❑ Lower end of esophagus: left gastric vein & azygos vein
- ❑ Lower part of rectum: (Hemorrhoids) superior and middle rectal veins & inferior rectal vein
- ❑ Para umbilical region: (Caput Medusae) Para umbilical veins & superficial epigastric vein
- ❑ Retroperitoneal: Veins draining colon & veins of the posterior abdominal wall
- ❑ Bare area of liver: There is some anastomosis between portal venous channels in the liver and azygous system of veins above the diaphragm.



PULSE POINTS IN LOWER LIMB

FEMORAL PULSE

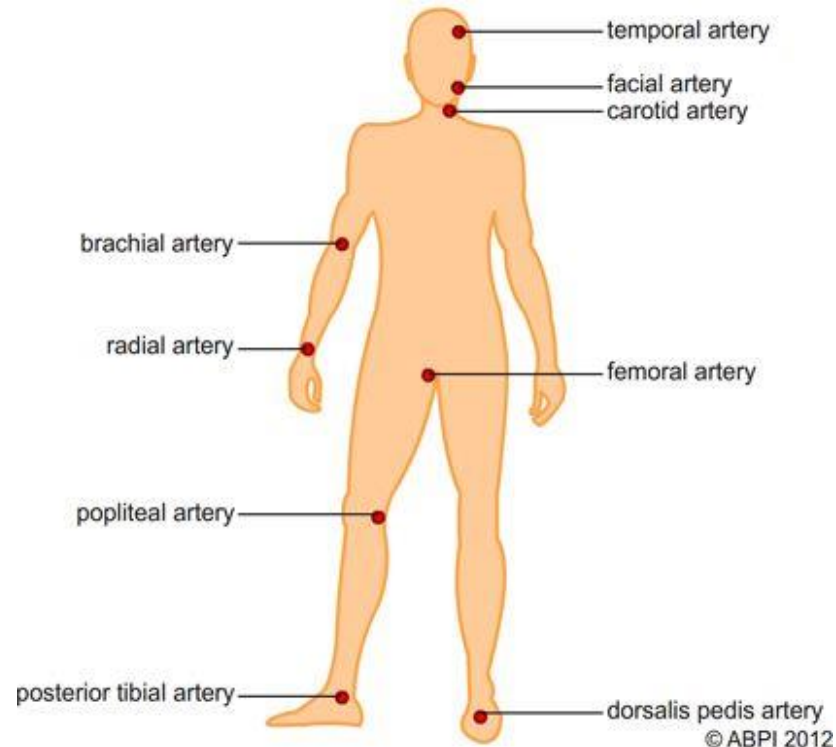
- Located in the inner thigh, at the mid-inguinal point, halfway between the pubic symphysis and anterior superior iliac spine (femoral artery).

POPLITEAL PULSE

- Located above the knee in the popliteal fossa.
- The patient bends the knee at approximately 124° , and the physician holds it in both hands to find the popliteal artery in the pit behind the knee (**Popliteal artery**).

DORSALIS PEDIS PULSE

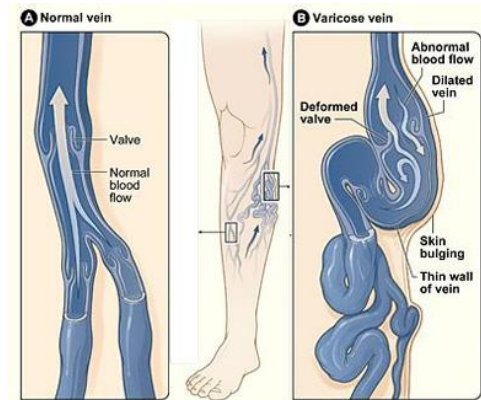
- Located on top of the foot, immediately lateral to the extensor of hallucis longus (dorsalis pedis artery).



CLINICAL SIGNIFICANCE

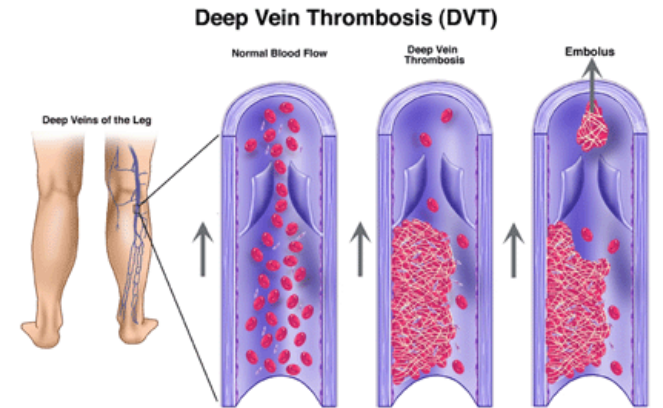
VARICOSE VEINS

- ❑ If the valves in the perforating veins become incompetent, the direction of blood flow is reversed and the veins become varicosed.
- ❑ Most common in posterior & medial parts of the lower limb, particularly in old people.



DEEP VEIN THROMBOSIS (DVT)

- ❑ Occurs when a blood clot (thrombus) forms in one or more of the deep veins in your body, usually in your legs. Deep vein thrombosis can cause leg pain or swelling, but may occur without any symptoms.
- ❑ Deep vein thrombosis is a serious condition because blood clots in your veins can break loose, travel through your bloodstream and lodge in your lungs, blocking blood flow (pulmonary embolism).



QUESTIONS!