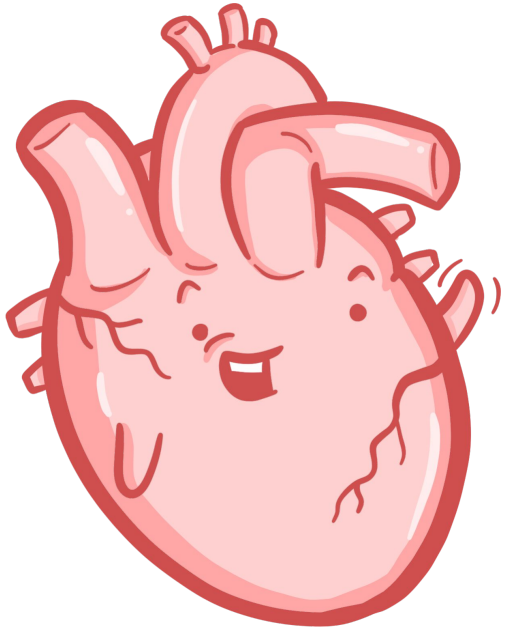

Major Veins of the body

Editing file

Cardiovascular block-Anatomy-Lecture 4

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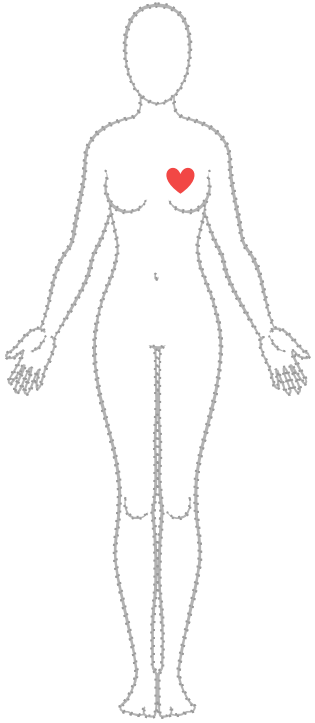
Objectives

Color guide :
Only in boys slides in Green
Only in girls slides in Purple
important in Red
Notes in Grey

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

- Define the veins, and understand the general principle of the venous system.
- Describe the superior & inferior Vena Cava and their tributaries.
- List major veins and their tributaries in the body.
- Describe the Portal Vein.
- Describe the Portocaval Anastomosis.



Veins

- Veins are blood vessels that bring blood back to the heart.
- All veins carry deoxygenated blood with the **exception** of the pulmonary veins (open in the left atrium)and umbilical vein (during fetal development).

Vein can be classified in 2 ways based on

Location

- Superficial veins: close to the surface of the body. **NO** corresponding arteries
- Deep veins: found deeper in the body **With** corresponding arteries

Circulation

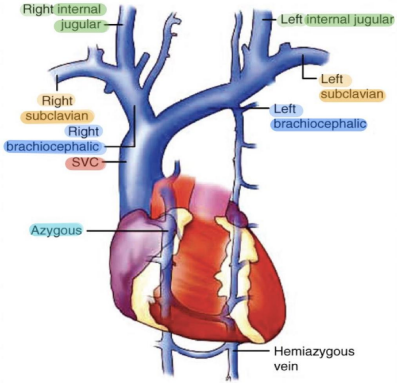
- Veins of the systemic circulation: Superior and Inferior vena cava with their tributaries
- Veins of the portal circulation: Portal vein

Superior vena cava

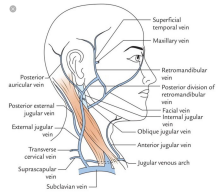
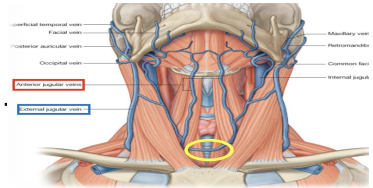
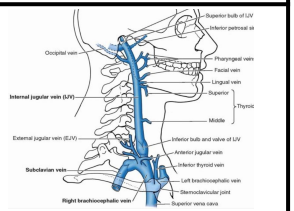
- The superior vena cava is above the heart
- Formed by the union of the right and left Brachiocephalic veins.
  - ➔ **Brachiocephalic** veins are formed by the union of internal jugular and subclavian veins.
- It Passes **downward** and enter the right atrium.
- Receives azygos vein on the posterior aspect just before it enters the heart.

❑ Drains venous blood from :

1. Head & neck : it divided to **superficial** and **deep**
2. Thoracic wall
3. Upper limbs: it divided to **superficial** and **deep**

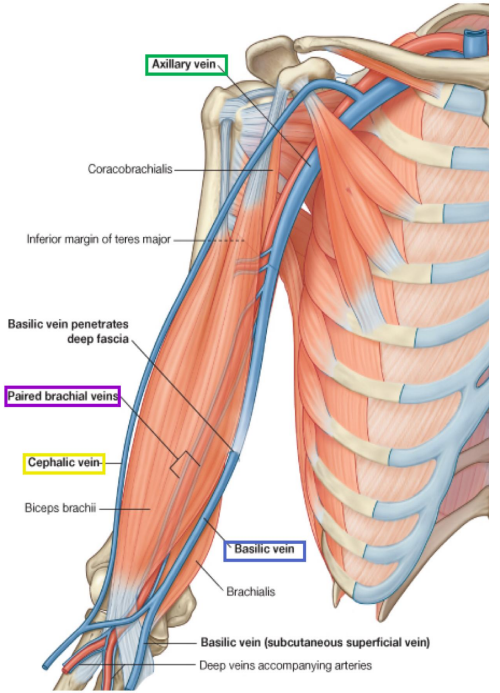


Head and neck

Superficial veins		Deep vein
External jugular vein	**Anterior Jugular Vein**	**Internal Jugular Vein**
Lies superficial to the sternomastoid muscle and It passes down the neck and it is the only tributary of the subclavian vein.	- It descends close to the median line of the neck, medial to the sternomastoid. - At the lower part of the neck, it passes laterally beneath sternomastoid 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	- 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.
Begins just behind the angle of mandible by union of posterior auricular vein with the posterior division of retromandibular vein.	- It begins in the upper part of the neck by the union of the submental veins.	Tributaries : 1-Superior thyroid 2-Lingual. 3-Facial 4-Pharyngeal. 5-Occipital veins. 6-Dural venous sinuses (inferior petrosal sinus).
- It drains blood from: 1- Outside of the skull 2- Deep parts of the face 		-Drains blood from: 1) the brain 2)face 3) head & neck 

Veins Of Upper Limbs

Superficial veins		Deep vein	
Cephalic Vein	Basilic Vein	Venae Comitantes	Axillary Vein
-Ascends in the superficial fascia on the lateral side of the biceps - It drains into the Axillary vein.	-Ascends in the superficial fascia on the medial side of the biceps. -*Halfway* up the arm, it pierces the deep fascia -At the lower border of the teres major it joins the venae **comitantes** of the brachial artery to form the Axillary vein.	Which accompany all the large arteries and are usually in pairs.	**Formed** by the union of basilic vein and the venae comitantes (brachial veins) of the brachial artery. Finally drain into the subclavian vein.



Inferior vena cava

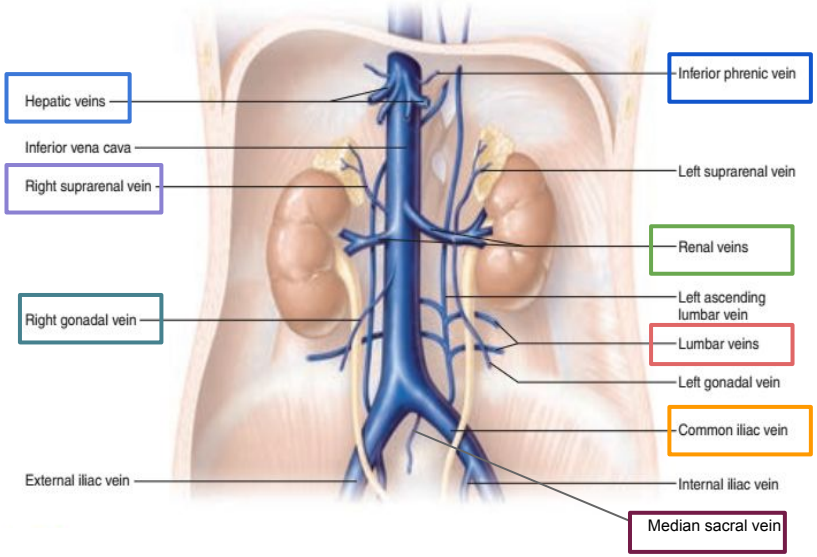
- Drains most of the blood from the body below the diaphragm to the **right atrium.**
  Formed by the union of the 2 common iliac veins behind the right common iliac artery at the level of the **(L5)**.
- Ascends on the right side of aorta. → **Pierces** the central tendon of diaphragm at the level **(T8).**

  Note : opening of the diaphragm : I ate ten eggs at twelve
  I (IVC) ate (8) ten (10) eggs (esophagus) at (aorta) twelve (12).

Tributaries of Inferior Vena Cava:

(from above to below)

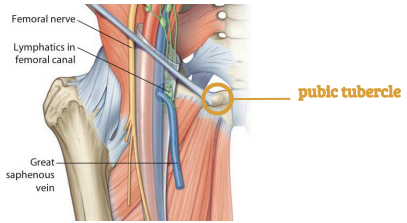
- **Paired** inferior phrenic veins.
- Hepatic veins
- **Right** suprarenal vein.
  - ➔ the left vein drains into the left renal vein
- **Paired** renal veins
- **Right** gonadal vein
  - ➔ the left vein drains into the left renal vein
- Four paired lumbar veins
- Two common iliac veins
- Median sacral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



Veins Of Lower Limbs: divided to **superficial** and **deep**

1. **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

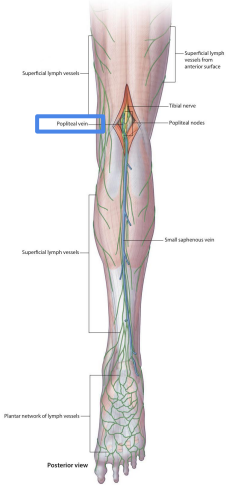
Beginning	Course	Termination
from the **medial end** of the dorsal venous arch of the foot It is The longest vein	•Passes upward in front of the medial malleolus with the **saphenous nerve**. •Then it ascends in accompany with the **saphenous nerve** in the superficial fascia over the medial side of 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 join the **femoral vein** about 1.5 inch (4 cm) below and lateral to the pubic tubercle. 

- It is connected to the **small saphenous** vein by one or two branches that pass behind the knee.
- It's connected to the **deep veins** by **numerous perforating veins**
- The perforating veins have valves which allow blood flow from superficial to deep veins.
- It is clinically significant in coronary bypass surgery and in intravenous delivery of fluids due to other venous collapse.
- used in venous grafting and saphenous vein cutdown may be necessary for inserting the needle or cannula (take care of the saphenous nerve)

Veins Of Lower Limbs

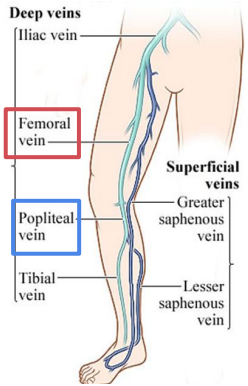
Small Saphenous Vein

Beginning	Course	Termination
from the **lateral end** of the dorsal venous arch of the foot. •Has numerous valves along its course. •Anastomoses freely with great saphenous vein.	•Ascends behind the **lateral malleolus** in company with the sural nerve. •Follows the lateral border of the tendocalcaneus and then runs up to the back of the leg. •Pierces the deep fascia in the lower part of the popliteal fossa	Drains into the popliteal vein.



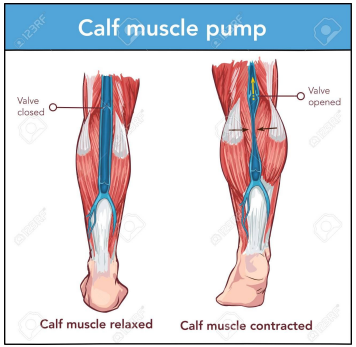
2. Deep veins: venae comitantes

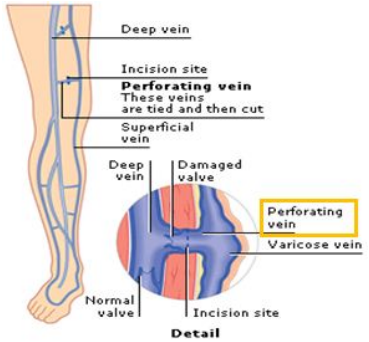
	Course	
accompany all the **large arteries**, usually in pairs.	-Venae comitantes unite to form the popliteal vein -which continues as the femoral vein.	**Deep veins** receive blood from **superficial veins** through **perforating veins**.



Mechanism Of Venous Return From Lower Limb (For Your Information)

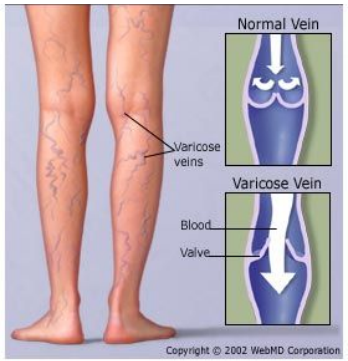
- Much of the saphenous blood passes from superficial to deep veins through the perforating veins
- The blood is pumped upwards in the deep veins by the contraction of the calf muscles (calf pump).
- This action of calf pump is assisted by the **tight sleeve of deep fascia** surrounding these muscles.





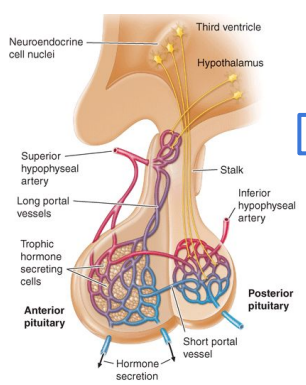
Varicose Veins

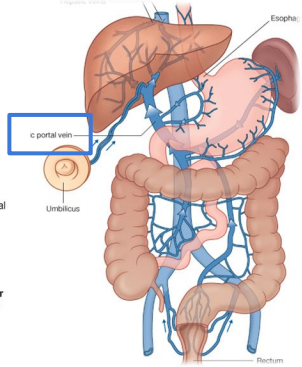
- If the valves in the perforating veins become incompetent, the **direction** of blood flow is **reversed** and the veins become varicose.
- Most common in **posterior** & **medial** parts of the lower limb, particularly in old people.



Portal Circulation

- A **portal venous system** is a **series** of veins or venules that directly connect two capillary beds (of arteriole & venule)
- Examples of such systems include
  1. hepatic portal vein
  2. hypophyseal portal system.



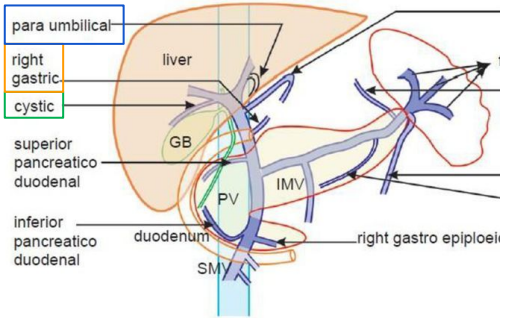


Hepatic Portal Vein:

- Drains blood from the **GIT** and **spleen** to the liver.
- It is formed by the **union** of the superior mesenteric and splenic veins behind the neck of pancreas.
- Immediately before reaching the liver, the portal vein divides into right and left that enter the liver.

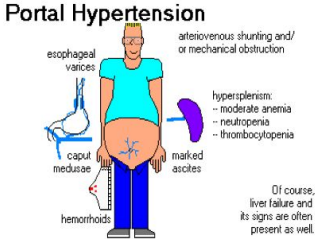
Tributaries: (4)

- Right and Left Gastric veins.
- Cystic vein from the gallbladder joins its right branch.
- Para-umbilical veins that drain veins from anterior abdominal wall to the hepatic portal vein.



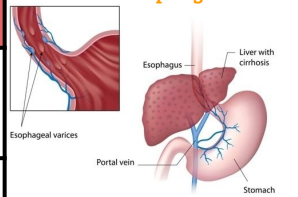
Portocaval Anastomosis

- 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 (IVC)**.
- The anastomotic channels become dilated (varicosed) in case of **portal hypertension**.

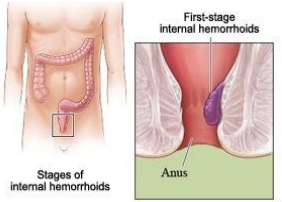


Site	Portal Vein	Systemic Vein	Associated condition
Lower end of esophagus	Left gastric vein	Esophageal branch of azygos vein	Esophageal Varices
Lower part of rectum	Superior rectal vein	Middle and inferior rectal veins	Hemorrhoids
Paraumbilical region	Paraumbilical veins	Superficial epigastric vein	Caput Medusae
Retroperitoneal	Colic veins	Veins of the posterior abdominal wall (retroperitoneal veins)	
Patent ductus venosus (intrahepatic portosystemic shunt)	Umbilical vein and portal vein	Inferior Vena Cava	
Bare area of liver	There is some anastomosis between portal venous channels in the liver and azygous system of veins above the diaphragm.		

Esophageal Varices



Hemorrhoids



caput Medusae

MCQs

Question 1: Which of the following veins is the only tributary of the subclavian vein?

A. External jugular vein

B. Internal jugular vein

C. Anterior jugular vein

D. Occipital vein

Question 2: which of the following is a tributary for the internal jugular vein?

A. anterior jugular vein

B. Transverse cervical vein

C. Facial vein

D. Suprascapular vein

Question 3: Which one of the following nerves accompany the great saphenous vein in the medial side of the leg ?

A. Sural nerve

B. Sciatic nerve

C. Saphenous nerve

D. Tibial nerve

Question 4: Which one of the following veins can be used in coronary artery bypass ?

A. Small saphenous vein

B. Hepatic vein

C. Renal vein

D. Great saphenous vein

Question 5: The anastomotic channels of portocaval become dilated (varicosed) in case of?

A. Portal hypotension

B. Portal hypertension

C. None of them

D. Both a,b

Question 6: The following anatomical structures are penetrated by a needle intravenous to deliver fluids when other vein collapse?

A. Small saphenous vein

B. Great saphenous vein

C. Femoral vein

D. Both a,b

Answers: Q1.A- Q2.C -Q3.C -Q4.D- Q5.B- Q6.B

Team members

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- Ziyad Al-jofan
- Ali Aldawood
- Khalid Nagshabandi
- Omar Alammari

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- Amirah Al-Zahrani
- Alhanouf Al-haluli
- ★ Sara Al-Abdulkarem
- Rawan Al Zayed
- Renad Al Haqbani
- Nouf Al Humaidhi
- Jude Al Khalifah
- Nouf Al Hussaini
- Alwateen Al Balawi
- Rahaf Al Shabri
- Danah Al Halees
- Rema Al Mutawa
- Amirah Al Dakhilallah
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THANKS!

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med 438

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