

# The Cardio-

# VASCULAR

# System

- ☐ Anatomy
- ☐ Histology
- ☒ Pathology
- ☐ Pharmacology
- ☐ Physiology
- ☐ Microbiology

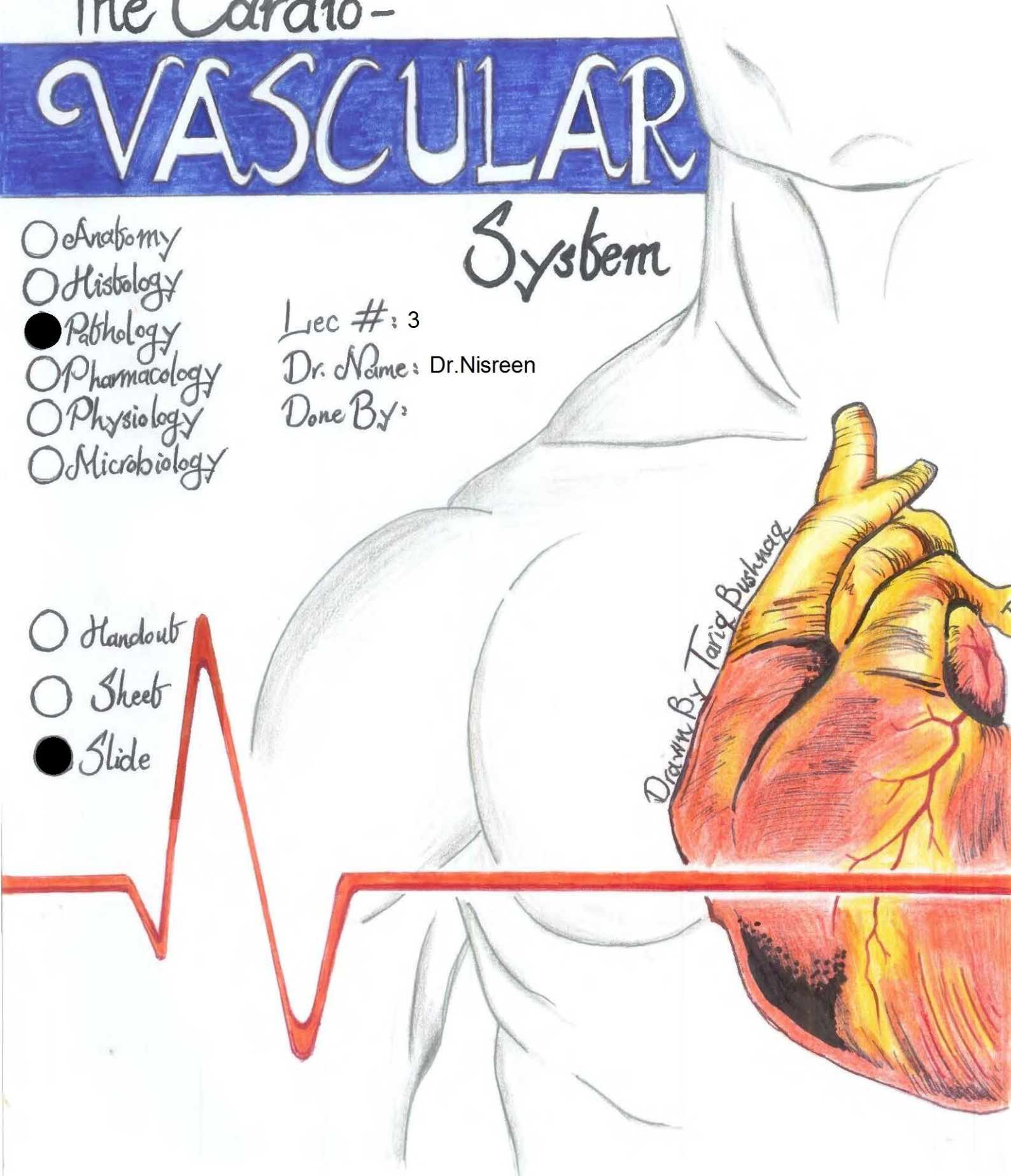
Lec #: 3

Dr. Name: Dr. Nisreen

Done By:

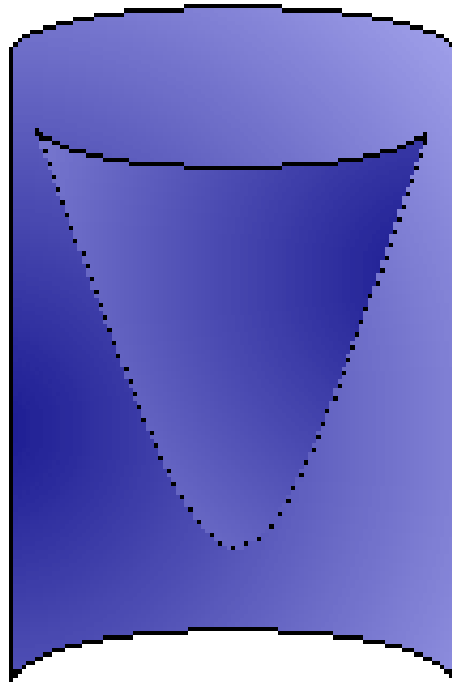
- ☐ Handout
- ☐ Sheet
- ☒ Slide

Drawn By: Tariq Bushnaq

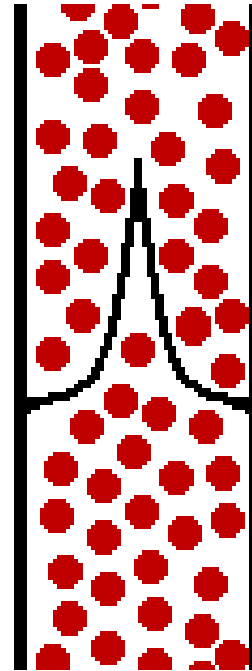


# Veins and lymphatics

# Normal vein physiology



pocket valve



# VEINS AND LYMPHATICS

## ○ *Varicose Veins*

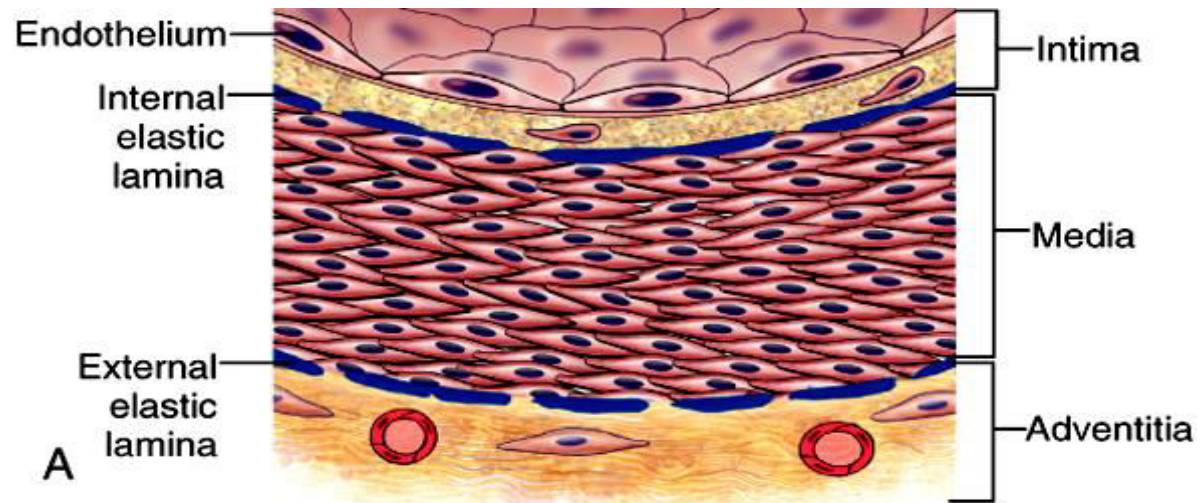
- are abnormally dilated, tortuous veins produced by prolonged increase in intra-luminal pressure and loss of vessel wall support.
- The *superficial veins* of the leg are typically involved



# *VARICOSE VEINS*







- venous pressures in legs can be markedly elevated → venous stasis and pedal edema (*simple orthostatic edema*).
- Some 10% to 20% of adult males and 25% to 33% of adult females develop lower extremity varicose veins



# RISK FACTORS

- Obesity
- Female gender
- Pregnancy.
- *Familial tendency* (premature varicosities results from imperfect venous wall development)





## ○ Morphology (microscopic)

- wall thinning
- intimal fibrosis in adjacent segments
- spotty medial calcifications (phlebosclerosis)
- Focal intraluminal thrombosis
- venous valve deformities (rolling and shortening)



# COMPLICATIONS

- stasis, congestion, edema, pain, and thrombosis
- chronic *varicose ulcers*
- *embolism is very rare.*



# THROMBOPHLEBITIS AND PHLEBOTHROMBOSIS

- *interchangeable terms*
- *= Inflammation + thrombosis of veins*
- *The deep leg veins account for more than 90% of cases*
- the most important clinical **predispositions** are: congestive heart failure, neoplasia, pregnancy, obesity, the postoperative state, and prolonged bed rest or immobilization



- **Thrombophlebitis of upper limb veins are usually associated with local risk factors like: catheter or canula site; or in some cases can be associated with systemic hypercoagulabilities.**

- **local manifestations:** distal edema, cyanosis, superficial vein dilation, heat, tenderness, redness, swelling, and pain

- *Distant manifestations: emboli*



○ *Clinical syndromes associated with venous thrombosis:*

*1- Migratory thrombophlebitis (Trousseau sign):*

- hypercoagulability occurs as a paraneoplastic syndrome related to tumor elaboration of pro-coagulant factors
- Most often related to GI carcinomas



## 2- THE SUPERIOR VENA CAVAL SYNDROME

- caused by neoplasms that compress or invade the superior vena cava.
- A characteristic clinical complex including marked dilation of the veins of the head, neck, and arms with cyanosis.





### **3- THE *INFERIOR VENA CAVAL SYNDROME***

- can be caused by neoplasms that compress or invade the inferior vena cava (IVC)- particularly hepatocellular carcinoma and renal cell carcinoma, which show a striking tendency to grow within veins-**
- induces marked lower extremity edema, distention of the superficial collateral veins of the lower abdomen, and-with renal vein involvement-massive proteinuria.**



# LYMPHANGITIS

- is the acute inflammation due to bacterial infections spread into the lymphatics
- most common are group A  $\beta$ -hemolytic streptococci.
- lymphatics are dilated and filled with an exudate of neutrophils and monocytes.
- red, painful subcutaneous streaks (the inflamed lymphatics), with painful enlargement of the draining lymph nodes (*acute lymphadenitis*).
- Sometimes, subsequent passage into the venous circulation can result in bacteremia or sepsis.



# *LYMPHEDEMA*

○ can occur as:

**1- Primary (A congenital defect)**, resulting from lymphatic agenesis or hypoplasia.

**2- *Secondary or obstructive lymphedema***

- blockage of a previously normal lymphatic; e.g. Malignant tumors
- Surgical procedures that remove lymph nodes
- Post-irradiation (e.g. breast cancer)
- Fibrosis
- Filariasis
- Post-inflammatory thrombosis and scarring



# CHYLOUS

- Milky accumulations of lymph in various *body cavities*
- caused by rupture of dilated lymphatics, typically obstructed secondary to an infiltrating tumor mass
  - *chylous ascites* (abdomen)
  - *Chylothorax* (chest)
  - *Chylopericardium* (pericardium)

