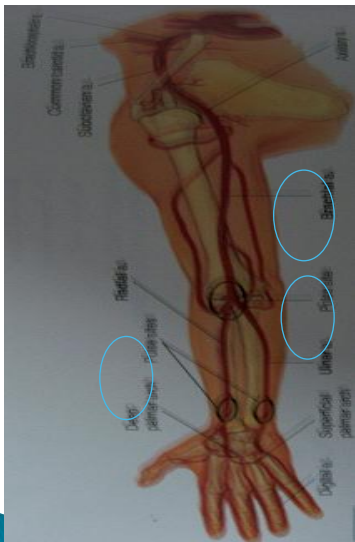


Peripheral Vascular System

Chapter 14

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Anatomy

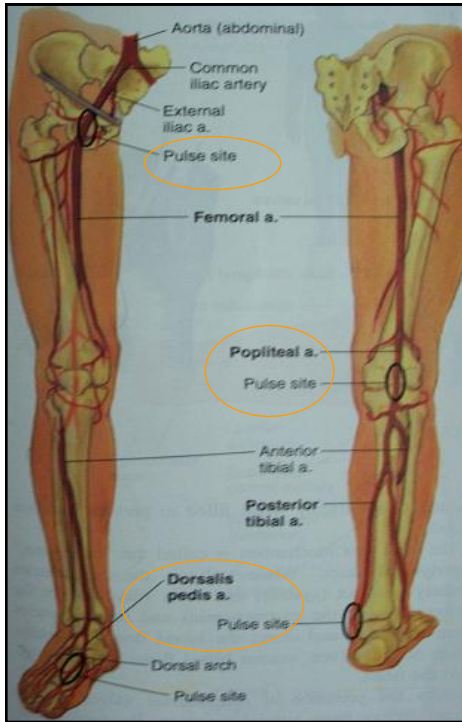


- ▶ Arteries:
in the arms there are 3 arterial pulses:

 1. Brachial pulse
 2. Radial pulse
 3. Ulnar pulse

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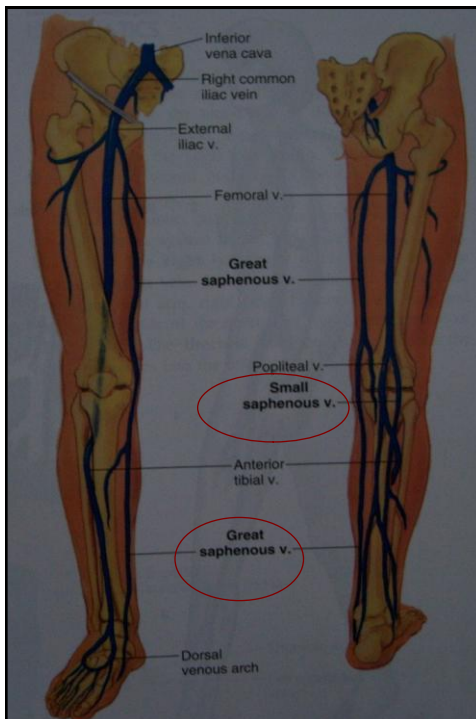
► In the legs:

4 pulses

1. Femoral
2. Popliteal
3. Dorsalis pedis
4. Posterior tibialis

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► Veins

Superficial veins:-

- Great saphenous
- Small saphenous

Deep Vein:

Femoral

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Lymph Node

- ▶ In the arms
epitrochlear node: on the medial surface of the arm, 3cm above the elbow
- ▶ In the legs
superficial inguinal node: 2 group
 1. **Horizontal group** : lies in a chain in the anterior thigh below the inguinal ligament
 2. **Vertical group**: cluster near the upper part of the saphenous vein.

Health History

- ▶ Ask pt about pain In the arms or legs to assess for peripheral vascular diseases
- ▶ Ask if there is an intermittent claudication
 - Have you ever had any pain or cramping in your leg when you walk or exercise?
 - how far can you walk without stopping to rest?
 - dose the pain get better with rest?
- ▶ coldness, numbness, pallor in leg or feet
- ▶ Hair loss over the anterior tibial surface

- ▶ Assess pt risk factors (HTN, Diabetes, tobacco use, hyperlipedemia, MI, CVA)
- ▶ Elicit symptoms of arterial spasm:
 - Do your fingertips ever change color in cold weather or when you handle cold objects
 - what color changes do you notice?
- ▶ ask for symptoms of venous peripheral vascular diseases: swelling of feet and leg, ulcer on lower leg near the ankle
- ▶ Ask if there is swelling with redness or tenderness unilateral or bilateral

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Technique of examination

▶ Arms

Inspect both arms from the fingertips to the shoulder. Note

- size, symmetry, any swelling
- venous pattern
- color of nail beds, texture of skin
- capillary refill (<2sec), turgour of skin, temp, lesions or scars

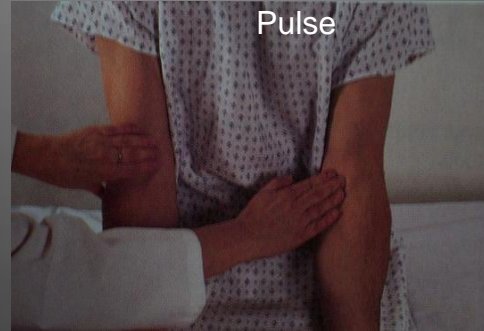
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Palpate the arms for pulses:



Radial pulse



Brachial Pulse



Ulnar Pulse

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Note: rate, rhythm, elasticity of wall, and force (amplitude)

Grade the force (amplitude) on a 4-point scale as follow:

- 4+: bounding (may occur with hyperthyroidism, exercise, fever, anxiety)
- 3+: increased
- **2+: Normal**
- 1+: weak/ thready (may occur with shock, peripheral arterial diseases)
- 0 : Absent

Palpate the epitrochlear lymph node: ◦

- flex pt elbow to 90°
- support pt forearm by your hand
- from behind the arm feel the node, 3cm above the medial epicondyle.

note its ◦

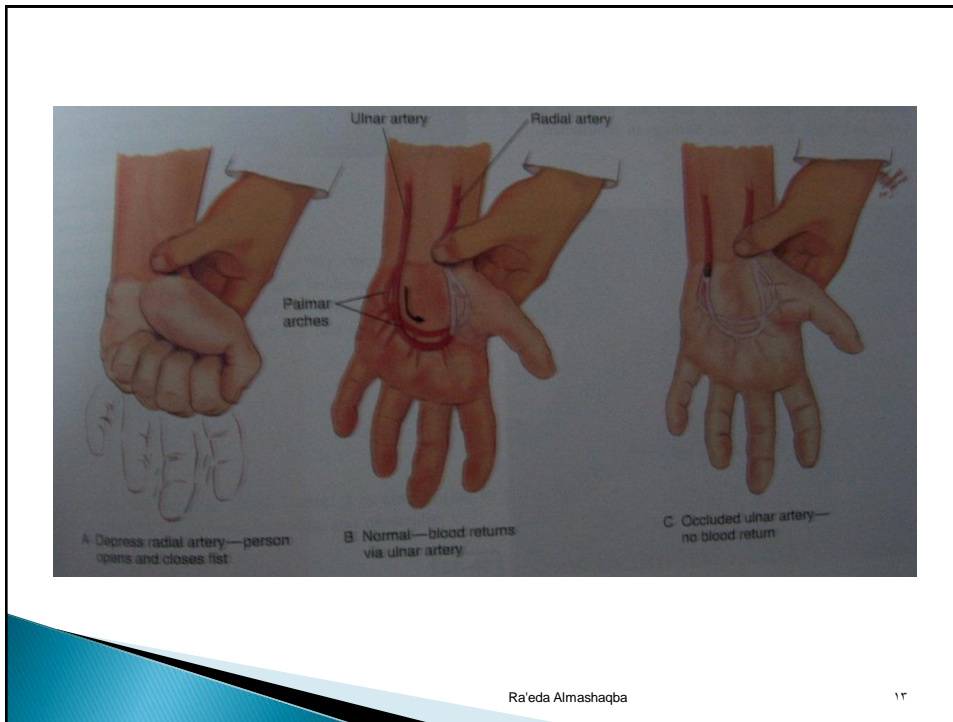
Size, consistency, mobility, tenderness

Evaluating the arterial supply to the hand

► Use Allen Test:

to determine the patency of radial & Ulnar arteries

- Ask the pt to make a tight fist with one hand, then compress both radial and ulnar arteries firmly between your thumb and fingers
- Ask pt to open the hand into a relaxed slightly flexed position (the palm will be pale)
- Release the pressure over the ulnar artery (if it is patent the palm will flushes within 3-5 second
- Patency of the radial artery may be tested by releasing the pressure from the radial artery while you compress the ulnar



► **Legs:**

Inspect legs from groin to the feet. Note:

- size, symmetry, any swelling
- venous pattern & any venous enlargement
- pigmentation, scars, ulcers, rashes
- T^o, color of skin, texture, color of nail beds, hair distribution on the lower leg, feet and toe

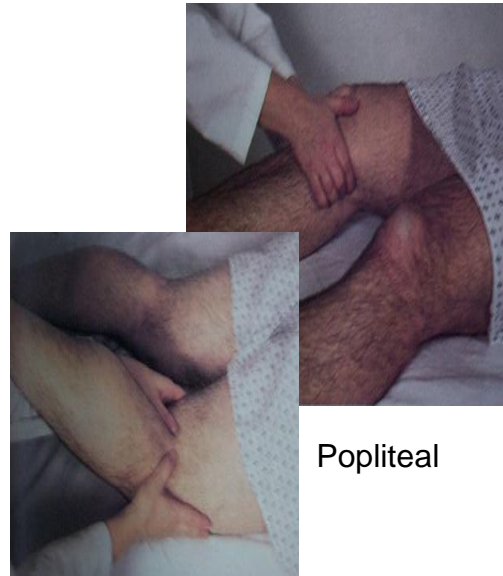
Palpate the legs for

1. LN(lymph node):

Superficial inguinal LN (horizontal & vertical group)

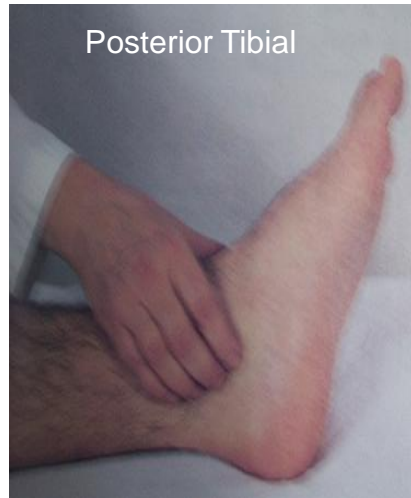
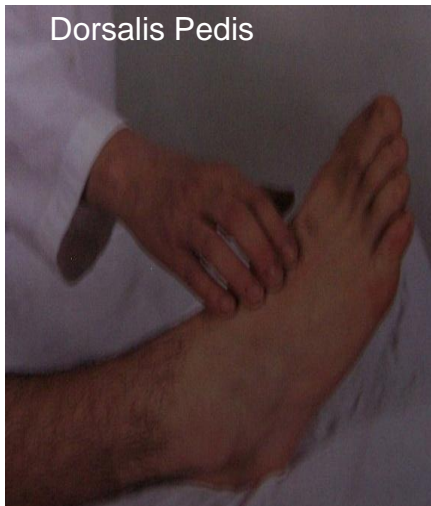
Note: size, consistency, discreteness, tenderness

2- Pulses (to assess arterial circulation):



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- ▶ Look for edema: compare the size of both leg and if there is prominence of veins, tendons and bones
- ▶ Check for pitting edema:
 - press by your thumb for at least 5 sec over
 1. Dorsum of each foot
 2. Behind each medial malleous
 3. the shin
 - Grade edema on this scale
 - 1+: Mild pitting, slight indentation, no perceptible swelling of the leg
 - 2+: Moderate pitting, indentation subsides rapidly
 - 3+: Deep pitting, indentation remains for a short time, leg looks swollen
 - 4+: Very deep pitting, indentation last a long time, leg is very swollen
 - May be graded by measuring the depth of pitting in centimeters, or by weight change, or the time pitting remains after releasing the pressure.

if edema present measure the leg at:

- forefoot
- the smallest circumference above the ankle
- the largest circumference at the calf
- midhigh

➤ 1cm difference above the ankle or 2cm at the calf indicate edema

If edema present look for DVT(deep vein thromboses):

- Flex the knee or sharply dorsiflex the foot
 - Normally **NO** tenderness present
 - If pain present with this maneuver, it is considered Positive Homan's Sign
- A Sign for DVT

- ▶ Palpate the calf muscle for tenderness
with your fingerpads compress the calf muscle gently
against the tibia
- ▶ Inspect the saphenous system for varicosities while pt
standing look for dilated tortuous vein

▶ Postural Color Changes

For chronic arterial insufficiency

- Pt in supine position
- Raise both legs to 60° until maximal pallor of the
feet developed (within minute)
- Then ask pt to sit up with legs dangling compare
both feet, noting the time for:
 1. pinkness color return to skin ----- 10 sec or less
 2. Filling of the veins of the feet and ankle -----15 sec
 3. Look for unusual rubor (dusky redness) in
dependant foot

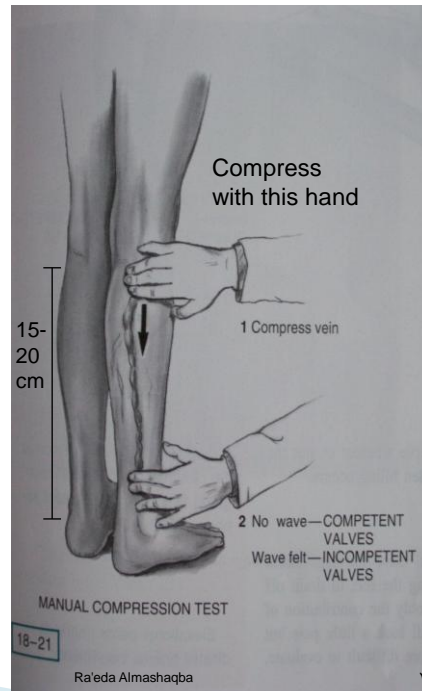


► Mapping Varicose Vein

to map the course and connections of VV

- while pt stand
- place your palpating fingers on a vein (upper thigh)
- and other hand below it (under the knee)
- compress the vein sharply
- feel for a pressure wave transmitted to the fingers of your upper hand
- palpable pressure wave ----- vein connected

- Manual compression test:
to test venous **valve competence** in patients with varicose vein.
- If **no wave felt** with the lower hand, the patient have **Competent valves**
- If wave **was felt**, **Incompetent Valves**



- ▶ Retrograde filling (trendelenburg test):
to assess valvular competency in both communicating veins and saphenous system
- Pt supine
- Raise one leg to 90° (to empty venous blood)
- Occlude great saphenous vein in the upper thigh by manual compression
- Keep the vein occluded ask the pt to stand watch for venous filling in the leg ---- 35 sec
- after pt stand for 20 sec release the compression and look for sudden additional filling ----- none



	Chronic arterial insufficiency	Chronic venous insufficiency
Pain	Intermittent claudicating progressing to pain at rest	None to an aching pain
Pulse	Decrease or absent	Normal, difficult to feel through edema
Color	pale	Normal or cyanotic
Temperature	Cool	normal
Edema	Absent or mild	Present often marked
Skin changes	Trophic changes,	Often brown pigmentation around the ankle
Ulceration	If present involve toes or points of trauma on feet	If present , develops at sides of ankle
Gangrene	May develop	Dose not develop
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