CLINICAL SKILLS

Subject : Clinical skills 2

Lecture : Peripheral P.E 1&2

Done By : Omar Debas

الفريق العلمي - النادي الطبي

النادي الطبي

Clinical Skills

تفريغ فيديوهات التيمز

Pulses of the body (The first video)

1) Ask the patient for their name, date of birth, etc.
2) Gain consent
3) Ask the patient to uncover the pulsatile areas
4) Wash your hands

The ideal time spent checking the pulse should be 30 seconds. Check whether the rhythm is normal or arrythmic, strong or weak

The radial pulse: is located lateral to the flexor carpi radialis muscle and we use three finger pads.
The radial-radial pulse is checked by measuring the radial pulse of both hands at the same time. If there is a delay to one hand, this can be a coarctation (narrowing) of the aorta.

Assessing the radial-radial pulse

The collapsing pulse: is used to check for severe aortic regurgitation. Here is how it is done:

1. Ask the pain if there is any pain in their shoulder.
2. Explain to the patient what will you do (That you will lift their arm above their head)
3. Put your thumb underneath the patient's wrist and your fingers on the radial pulse site, and lift their arm quickly.

If the pulse rapidly declines, this can mean severe aortic regurgitation.

Setting up the collapsing pulse test

Lifting the arm quickly

The brachial pulse: is located medial to the biceps tendon.

Carotid Pulse: Even though the thumb has its own pulse, it can be used to check for the carotid pulse because the carotid pulse is strong. Use your right thumb to assess the left carotid and vice versa. It is lateral to the trachea and anterior to the sternocleidomastoid muscle.
Be careful not to press too deeply because it can stimulate the carotid sinus and makes the patient dizzy. And never measure both carotid pulses at the same time, otherwise you will cut off blood supply to the head.
If you assess the carotid pulse from the posterior aspect of the patient, use three fingers.

For the abdominal aorta, have your fingers parallel to each other, 2-3 cm slightly appart, and the patient's abdominal muscles should be relaxed. Have the patient breath in and out and press deeply into the abdomen. Move your hands apart to assess the size of the abdominal aorta.
If the abdominal aorta is pulsatile via inspection, this is probably an aneurysm.

Checking the abdominal aortal pulse

The dorsalis pedis artery is 2/3 of the way to the ankle, lateral to the toe tendon (extensor hallucis longus muscle). Do it on both sides to compare.

The posterior tibial artery is 2cm behind and below the medial malleolus. Do it on both sides to compare.

Using the bell of the stethoscope we can listen for bruits (swooshing sound), a sign of stenosed arteries. Have the patient hold their breath as you listen. Bilateral carotid bruit can mean an aortic stenosis radiating to the carotids. The renal, femoral and popliteal arteries are often checked for bruits.

The femoral pulse is located halfway between the anterior superior iliac spine (ASIS) and the simphysis pubis, and we use three fingers. The radial-femoral pulse is checked by measuring the radial and femoral pulse on the ipsilateral side. There should be no delay.

For the popliteal pulse, have the patient's leg be lifted 30-45 degrees, place your thumbs on the anterior tibia, your fingers wrap around the leg and press deeply into the crease of the gastrocnemius muscle.
If you have small hands or the patient's leg is too muscular, you can approach the pulse from the back without the need to place the thumbs.

Peripheral vasular diseases (The second video)

General inspection:

Smoking (nicotine staining),
Lipid deposits around the eye (xanthelasma)
Scars: Chest scar might be a bypass surgery, AAA repair (abdominal aortic aneurysm repair) and the legs (Varicose veins)
Changes in the nail bed.

Specific inspection:

Venous ulcers: are mainly on the medial side, following the saphenous vein. They are bigger than arterial ulcers, have irregular borders and more superficial.
The arterial ulcers: are more common on the lateral side of the leg because it receives a smaller blood supply. They are smaller, have regular margins and they go deep (punch-like lesions)
Lower limb discoloration: Blue (cyanosis), red (erythematous), brown (hemosiderin), black (gangrene, which can be wet or dry).

Capillary refill time = 2-3 seconds. Press on the toenail bed and check the time it takes to return to its original colour.

Check temprature changes using the back of the hands, checking both legs simultaneously and starting distal to proximal.

Beurger's test: Lift the leg 30 degrees for 30-60 seconds. Check the color of the tip of the toes to see if they go from red to white. If no colour change happens within 30 degrees, move the leg to 60% and wait for another 30-60 seconds.

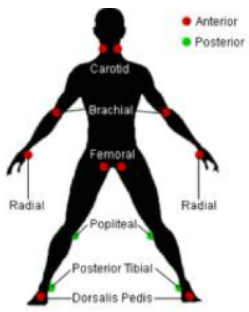
Buerger's test done at 30 degrees

Check the lower limb pulses (Femoral, popliteal, dorsalis pedis, posterior tibial) as well as the abdominal aortic pulse and radio-femoral delay (explained above)

Sensation test: Ask the patient which side (left or right) of the lower limb you are currently touching, and if the patient doesn't sense anything, ask him on what level does the sensation return as you touch the remaining areas of the lower limb.

سلايدات المحاضرة ،يوجد شرح لها بالجامعة لكن

Clinical Skills



Pulse Check

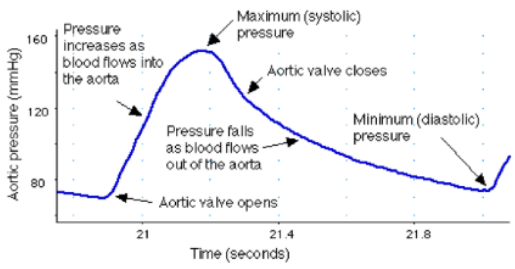
Dr David Harniess
MB ChB MRCGP DCH DRCOG MSc MedEd
Clinical Skills Teaching 2
Hashemite University - CESTC

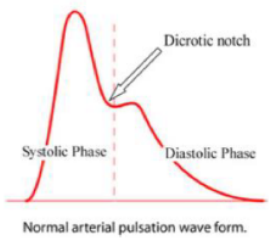
Learning Objectives

- Defining a pulse
- Assessing a pulse and location of pulses
- Specialized tests
- Assessing for peripheral vascular disease
- JVP and its assessment
- Pathological problems identified with pulse checks

What is a pulse?

A pulse is a rhythmic beat felt in an artery. With each systolic beat of the heart, blood is ejected into the arteries. This pumping action (contraction) of the heart causes a rhythmic dilation of the arteries, which is palpable through light touch.





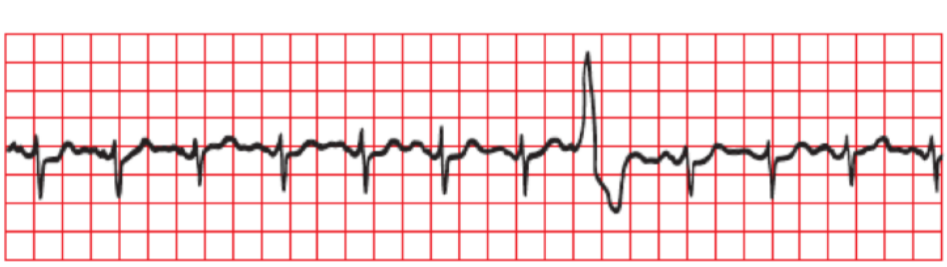
Normal arterial pulsation wave form.

Clinical Skills

What can you assess on a pulse check?

- Rate: Adult 60-100
  Neonate 120-160
  Infant (1m-12m) 80-140
  Toddler 1-5yr 80-130
- Rhythm: normal or irregular / dropped beats or extra beats
- Volume: volume of pulse (difference between systolic and diastolic pressure) best assessed at carotid pulse
- Character: waveform of arterial pulse e.g. collapsing, slow rising or pulsus paradoxus…

What do you expect to find on pulse check after you read the following ECG?



Clinical Scenario

65 year old Mohammed Al-Sherif comes to you with new onset of palpitations. He has suffered with hypertension for the last 15 years. You find he has an irregular, irregular pulse of 120.

a) What is your likely diagnosis?

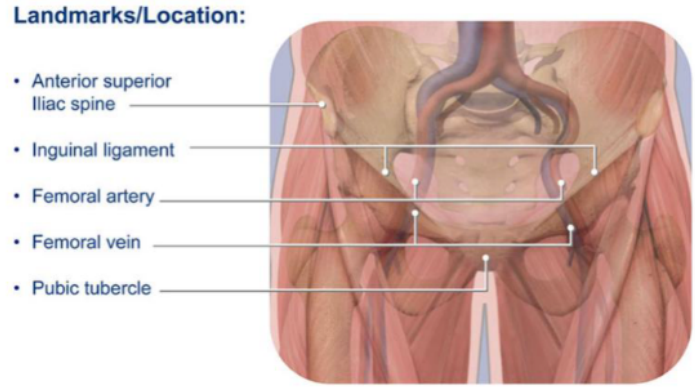
b) What risk factors does this man have for this condition?
c) What other particular examinations and investigations would you make?

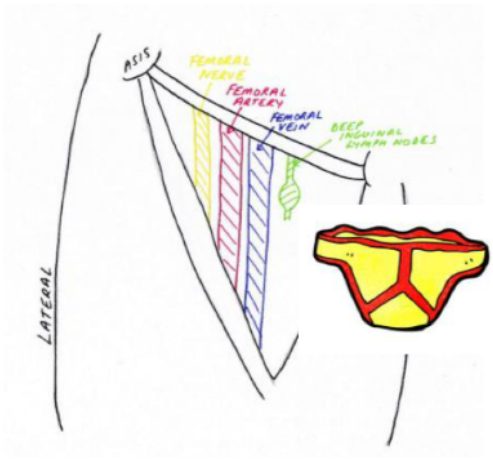
Where are your pulses?

- Radial pulse (lateral to flexor carpi radialis tendon - use 3 middle fingers)
- Brachial pulse (antecubital fossa medial to biceps tendon –use thumb)
- Carotid pulse (angle of jaw, anterior to sternocleidomastoid muscle and larynx - use right thumb for left carotid and vice versa)
- Abdominal aorta (abdominal midline above umbilicus–use flat of hands)
- Femoral artery (midline between ASIS and pubic tubercle – 1-3 finger(s)

(Remember NAVY for arterial blood gas or venous blood taking – Nerve, Artery, Vein and Y-fronts!)

Femoral Artery

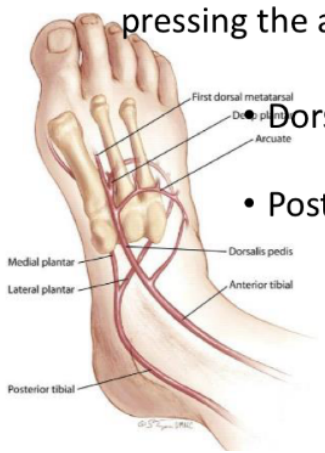




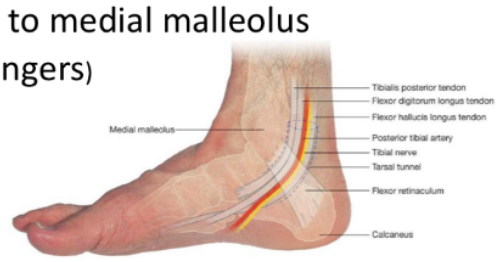
NAV-Y

Where are your pulses?

- Popliteal pulse (deep in popliteal fossa with knee flexed at 30 degree – thumbs on tibia anteriorly and press middle fingers firmly in midline pressing the artery against the back of the tibia)



- Dorsalis pedis pulse (lateral to hallucis extensor longus – 3 middle fingers)
- Posterior Tibialis pulse (posterior to medial malleolus – 3 middle fingers)



Specialized tests

- Collapsing pulse – hold radial pulse with hand and lift patients hand above their head (severe aortic regurgitation)
- Check for radial – femoral delay – palpate radial and femoral pulses (on same ipsilateral side) and check for delay (coarctation of aorta)
- Pulsus paradoxus – exaggerated normal phenomenon where increase in pulse volume on expiration and decreases in inspiration (asthma, cardiac tamponade with pericardial effusion)
- Auscultate for carotid bruits with bell of stethoscope - ?carotid stenosis if unilateral or radiating aortic systolic murmur if bilateral
- Buerger's test - *Buerger's angle*, is the angle to which the leg has to be raised before it becomes pale, whilst the patient is supine. In a limb with a normal circulation the toes and sole of the foot, stay pink, even when the limb is raised by 90 degrees. In an ischaemic leg, elevation to 15 degrees or 30 degrees for 30 to 60 seconds may cause pallor.
- Ankle Brachial Pressure Index (ABPI) – Doppler used over brachial and DP pulses and ratio calculated (used to assess arterial and venous insufficiency)

Sequencing of radial pulse assessment

- Place pads of index and middle finger over right radial artery
- Assess rate and rhythm
- Palpate both radial pulses – assess for any delay and any difference in volume
- Detect for radio-femoral delay – palpate radial and femoral pulses simultaneously (on ipsilateral side) noting for any timing and volume difference
- Detect for collapsing pulse (checking patient has no shoulder or arm pain or restriction) and feel pulse with base of fingers then lift arm vertically above head

Clinical Skills

Clinical Scenario

74 year old gentleman Abdullah Abu Shemasani lifelong smoker has been developing right calf pain climbing the hill to his house. He has to stop and then his pain eases off. What clinical assessment would you make of this man?

Assessment for peripheral vascular assessment

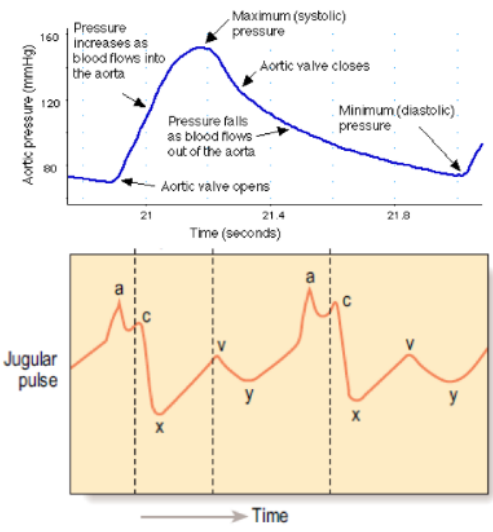
- Begin by washing hands
- Introduce yourself and check ID of patient
- Explain procedure and gain consent / chaperone if necessary
- **Inspection**

General: nicotine staining, scars (CABG / AAA repair…)

Specific : gangrene, arterial / venous ulcers, varicose veins, check between toes and underneath legs, colour changes – black / brown (hemosiderin deposits) / pallor, shiny skin, loss of hair

- **Palpation** – test for temperature with back of hands – start distally and more proximally
- Check for capillary return (squeezing toe) and if more than 2secs go on to perform Buerger's test
- Check for AAA, femoral, popliteal pulses, dorsalis pedis, posterior tibial – checking both sides to compare for presence and strength
- Check for radio-femoral delay on same side of body
- Check for sensation of light touch – cotton wool – testing with patient's eyes closed and asking which foot / leg is being touched?
- Ausculate for abdominal aortic, femoral and popliteal bruits

Jugular Venous Pressure



m and internal jugular vein therefore the
ein is dictated by the right atrial pressure.
mation about the cardiac function.

a = atrial systole
c = transmitted pulsation of carotid artery at onset of ventricular systole
x = descent, due to atrial relaxation
v-y = descent at commencement of ventricular filling

Clinical Skills

How to examine for JVP

- Position patient at supine at 45 degrees
- Ensure neck muscles are relaxed by resting back of head on pillow and turn head away slightly
- Look across neck from right side of patient
- Identify internal jugular pulsation (use abdominojugular reflux if necessary)
- Estimate vertical height in cm between top of venous pulsation and sternal angle to give venous pressure
- Identify timing an form of pulsation and note any abnormality

Jugular Venous Pressure

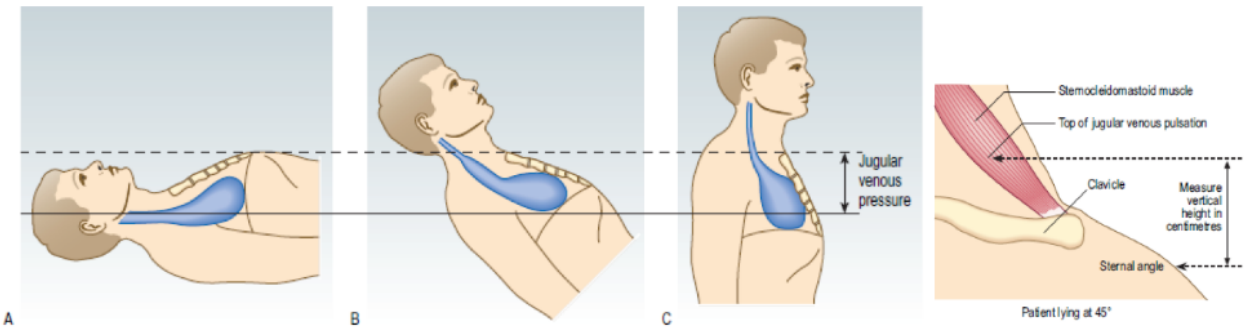
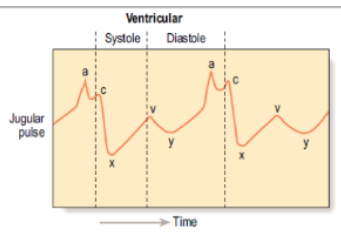


Fig. 6.18 Jugular venous pressure in a healthy subject. (A) Supine: jugular vein distended, pulsation not visible. **(B)** Reclining at 45°: point of transition between distended and collapsed vein can usually be seen to pulsate just above the clavicle. **(C)** Upright: upper part of vein collapsed and transition point obscured.

Normal JVP up to 4cm above sternal angle

Abnormal JVP



- Elevated JVP most commonly heart failure
  - Other causes: pulmonary embolism, pericardial effusion, pericardial constriction, superior vena caval obstruction (loss of pulsation too)
- Absent `a' waves (no atrial systole) – atrial fibrillation
- Giant `a' waves (due to restriction of blood flow from atrial to right ventricle) – pulmonary hypertension, rarely tricuspid regurgitation
- Giant `v' waves – severe tricuspid regurgitation
- Cannon waves (giant `a' waves when right atrium contracts against closed tricuspid valve) – complete heart block, some VT and SVT
- Kussmaul's sign – paradoxical rise of JVP on inspiration – pericardial constriction and tamponade, severe right ventricular failure and restrictive cardiomyopathy

Clinical Skills

Abnormalities in pulses

Bradycardia (>60 bpm)	Tachycardia (<100 bpm)
Athletic training	Exercise
Hypothyroidism	Fever
Medication e.g. beta-blockers, digoxin, verapamil	Pain / Excitement / Anxiety
	Hyperthyroidism
	Medication e.g. Ventolin inhaler, vasodilators
	Arrhythmia e.g. AF, SVT, VT

Resources

- Macleod's Clinical Examination – Graham Douglas, Fiona Nicol, Colin Robertson.
- www.patient.info/doctor/pulse-examination