

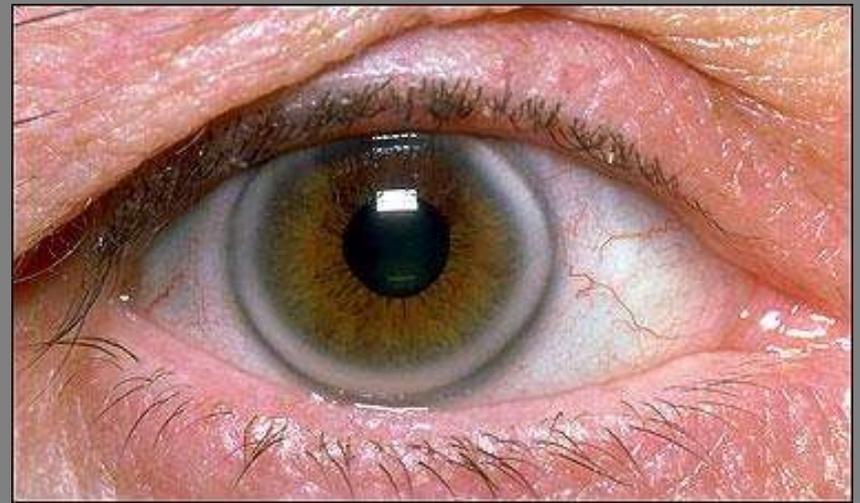
Cardiovascular examination

Dr Khalid Shahab



General examination

- General appearance : unwell, breathless, distressed
- Signs of hyperlipidemia : tendon xanthoma, corneal arcus



Signs of infective endocarditis

- Splinter hemorrhages : multiple linear, reddish brown marks along the axis of fingernails and toe nails

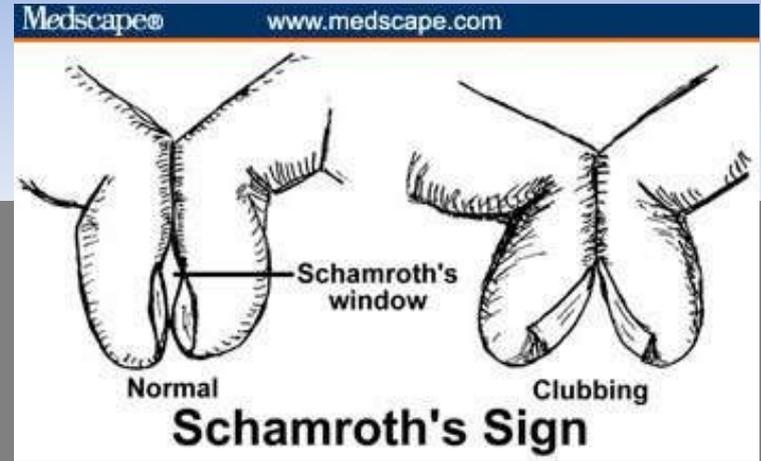
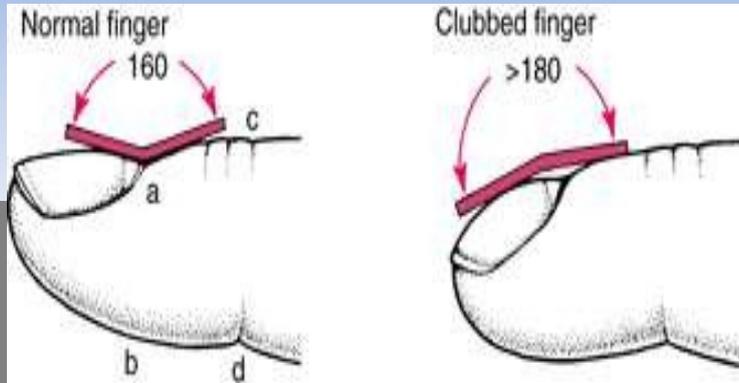


- Purpura: many petichiae are seen in the extremities and soft palate.
- Janeway lesions: painless, erythematous maculopapules on the palms and soles that do not blanch. They are caused by thrombi in small vessels, without vasculitis
- Osler's nodules: painful, red papulo-nodules with a pale center. They are found on the fingertips, and last days to weeks. Caused by microabscesses in the dermis, they may even contain gram-positive cocci.

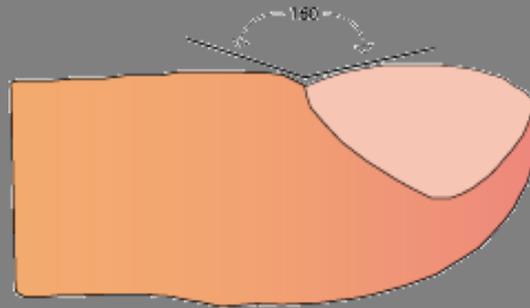


Finger clubbing

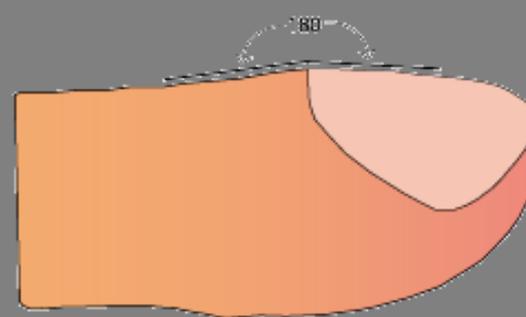
- Clubbing may be present in one of four stages:
 1. Fluctuation and softening of the nail bed (increased ballotability)
 2. Loss of the normal $<165^\circ$ angle between the nailbed and the fold
 3. Increased convexity of the nail fold
 4. Thickening of the whole distal (end part of the) finger (resembling a drumstick)



Normal



Clubbing



Stanford Medicine 25 



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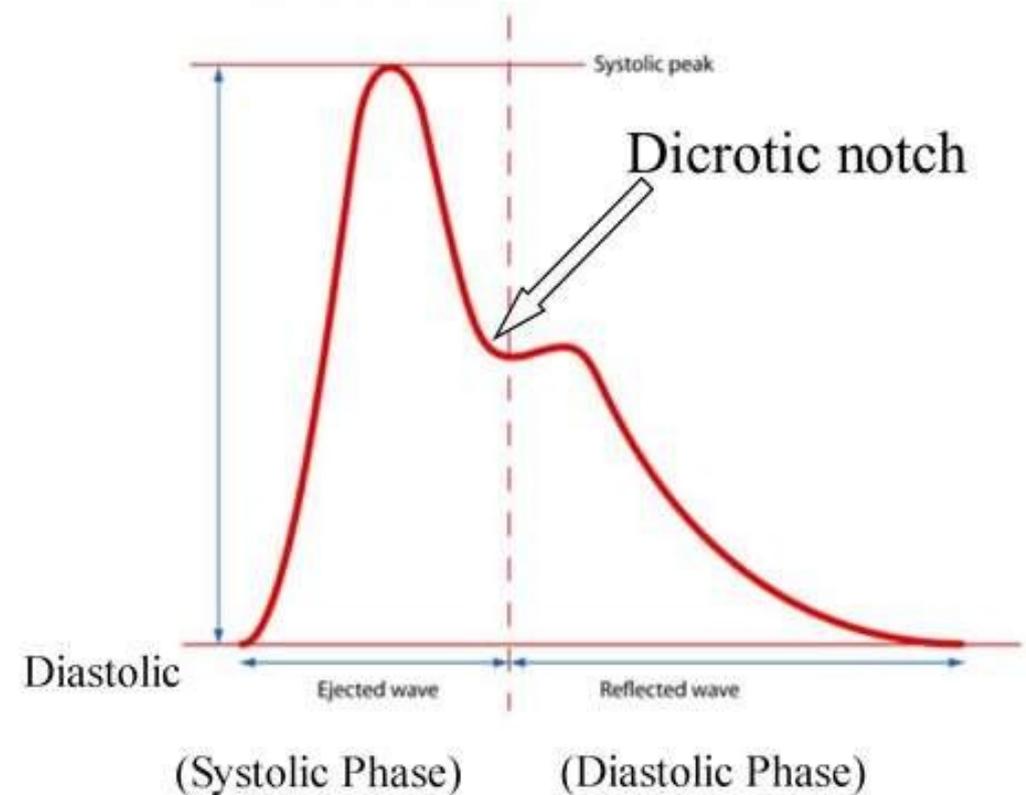
Causes of clubbing

- Cardiac: infective endocarditis, cyanotic heart disease
- Respiratory: suppurative lung disease, bronchogenic carcinoma, interstitial lung disease



Arterial pulse

- As ventricles eject blood, a pressure wave (pulse) is transmitted and can be felt
- Rate : 60-100/minute
- Rhythm : regular/irregular
- Volume : Large artery (femoral, carotid, brachial) pulses are used to assess pulse volume and character



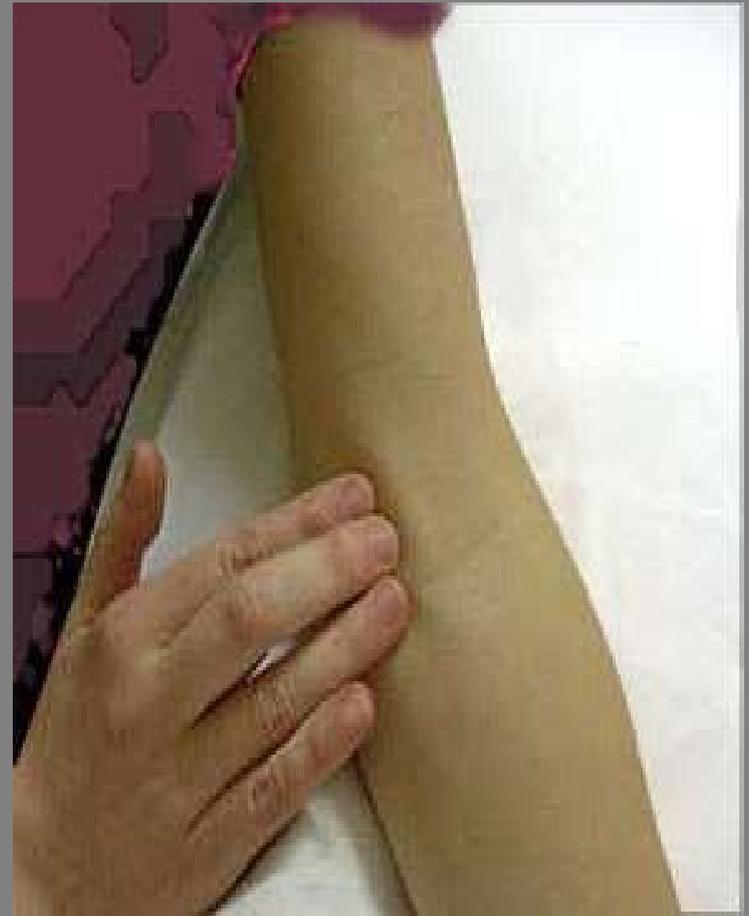
Radial pulse

- Place the pads of your three middle fingers over the right radial artery
- To detect collapsing pulse, feel the pulse with the base of your fingers, then raise the patient arm above
- Palpate both radial pulses simultaneously



Brachial pulse

- Artery is located medial to the biceps tendon
- Use the thumb to palpate it
- Character and volume



Carotid pulse

- Never assess both carotid pulses
- Place the thumb between larynx and the anterior border of sternomastoid



Large pulse volume

- Large pulse pressure : AR, anemia, thyrotoxicosis, pregnancy

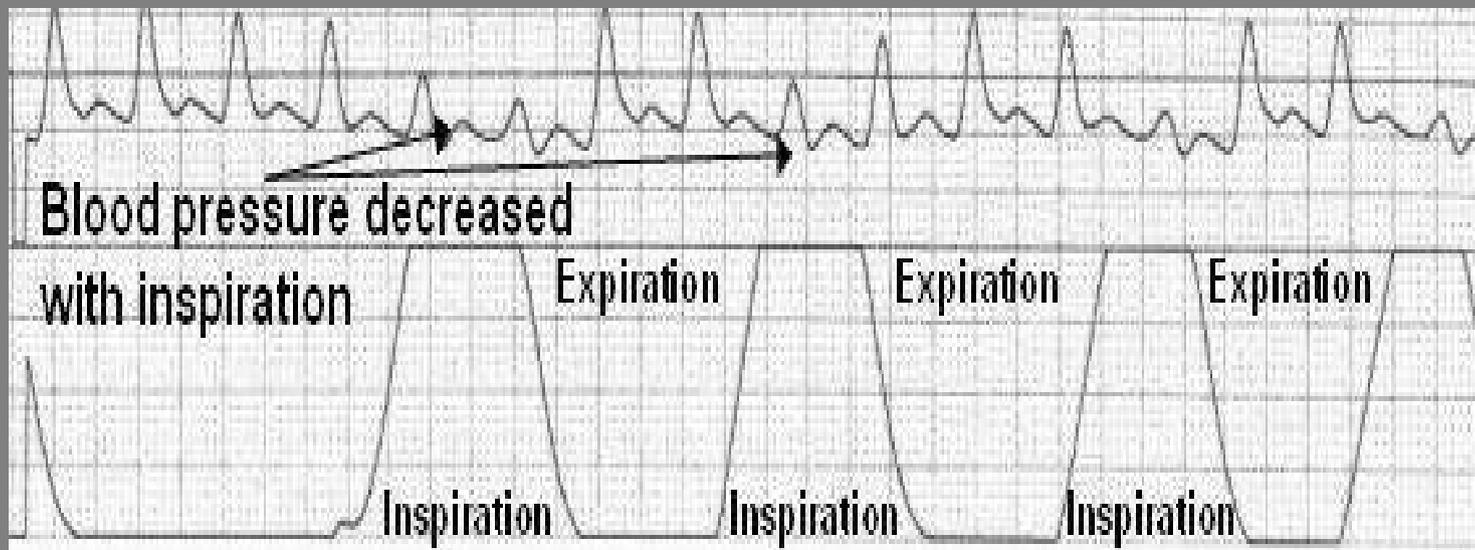
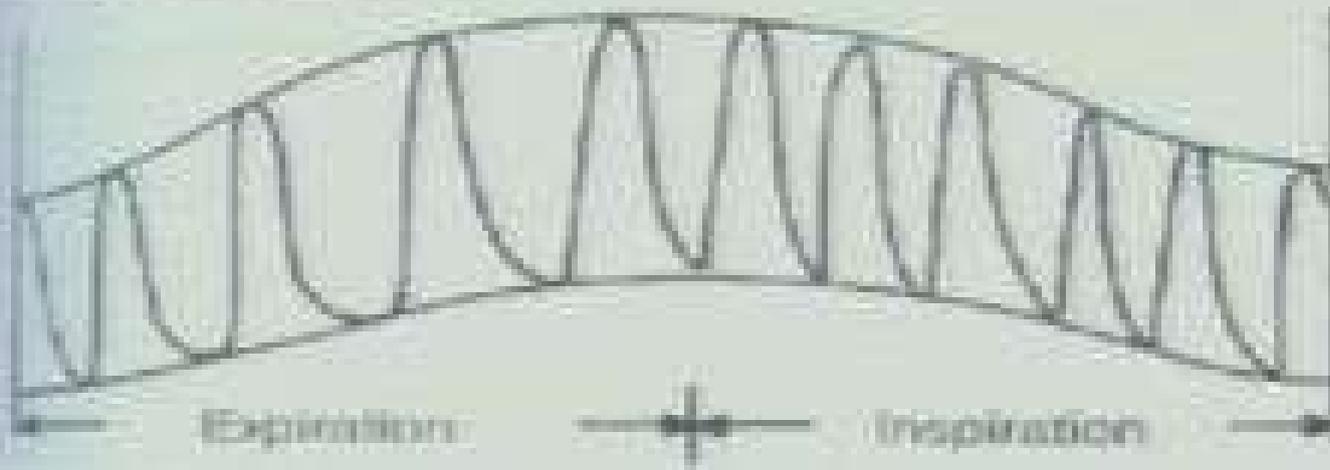


Pulsus paradoxus

- Exaggeration of normal decrease in pulse volume during inspiration
- Acute severe asthma, pericardial effusion
- Decrease in SBP > 15 mmhg with inspiration



Paradoxical Pulse



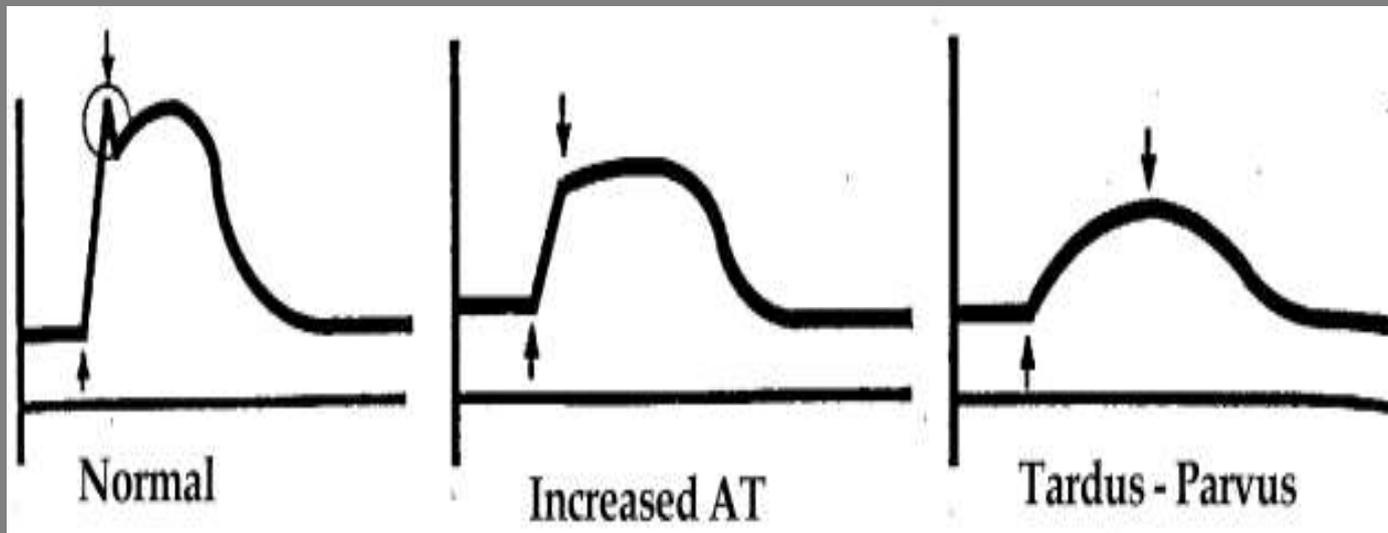
Pulsus alternans

- Beat to beat variation in pulse volume
- Advanced heart failure



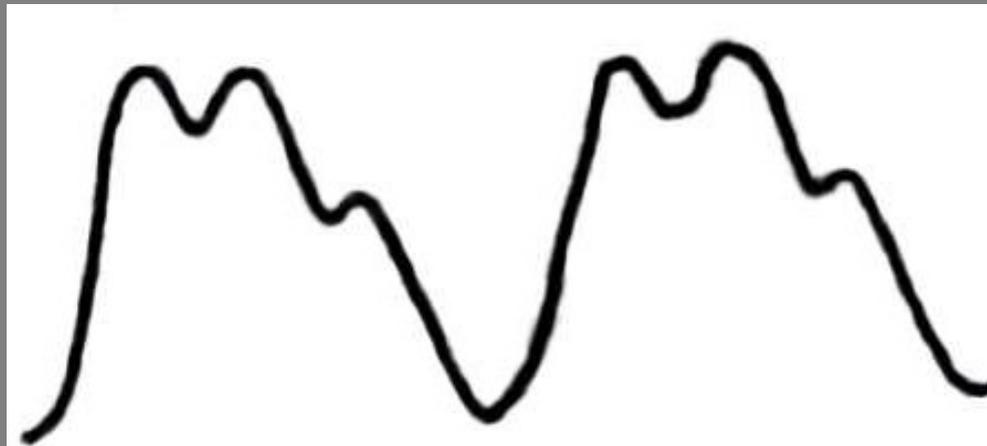
Slow rising pulse

- Aortic stenosis : gradual upstroke with decreased peak occurring late in systole

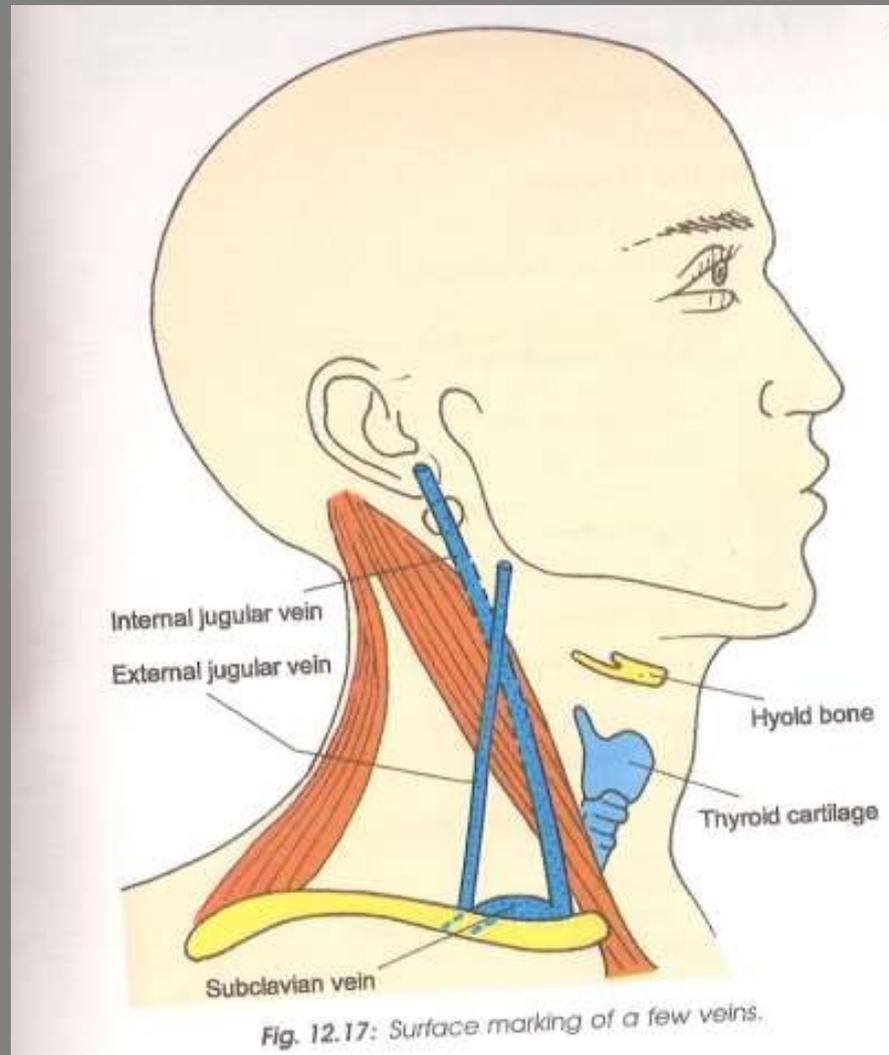


Pulsus bisferiens

- Two systolic beats separated by a distinct mid-systolic dip
- Mixed aortic stenosis and regurgitation



Jugular venous pulsation



Carotid pulsation

- Medial to sternomastoid
- One peak
- Unaffected by posture
- Unaffected by respiration
- Better felt than seen

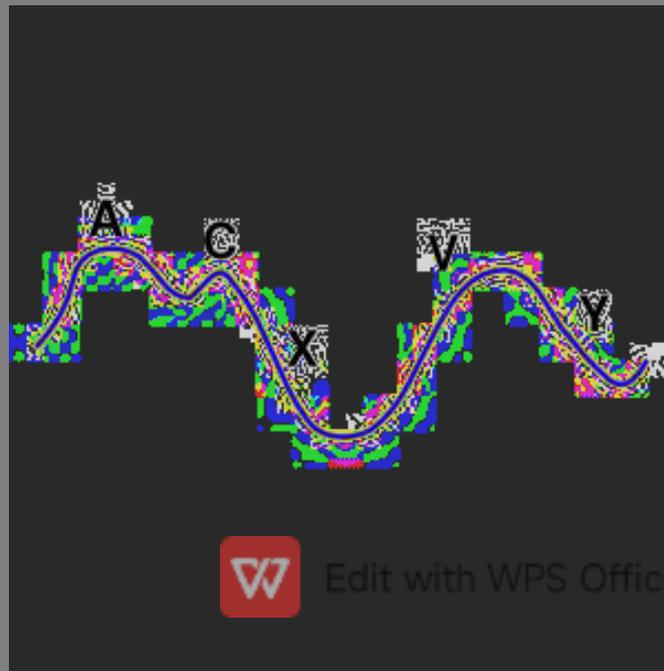
JVP

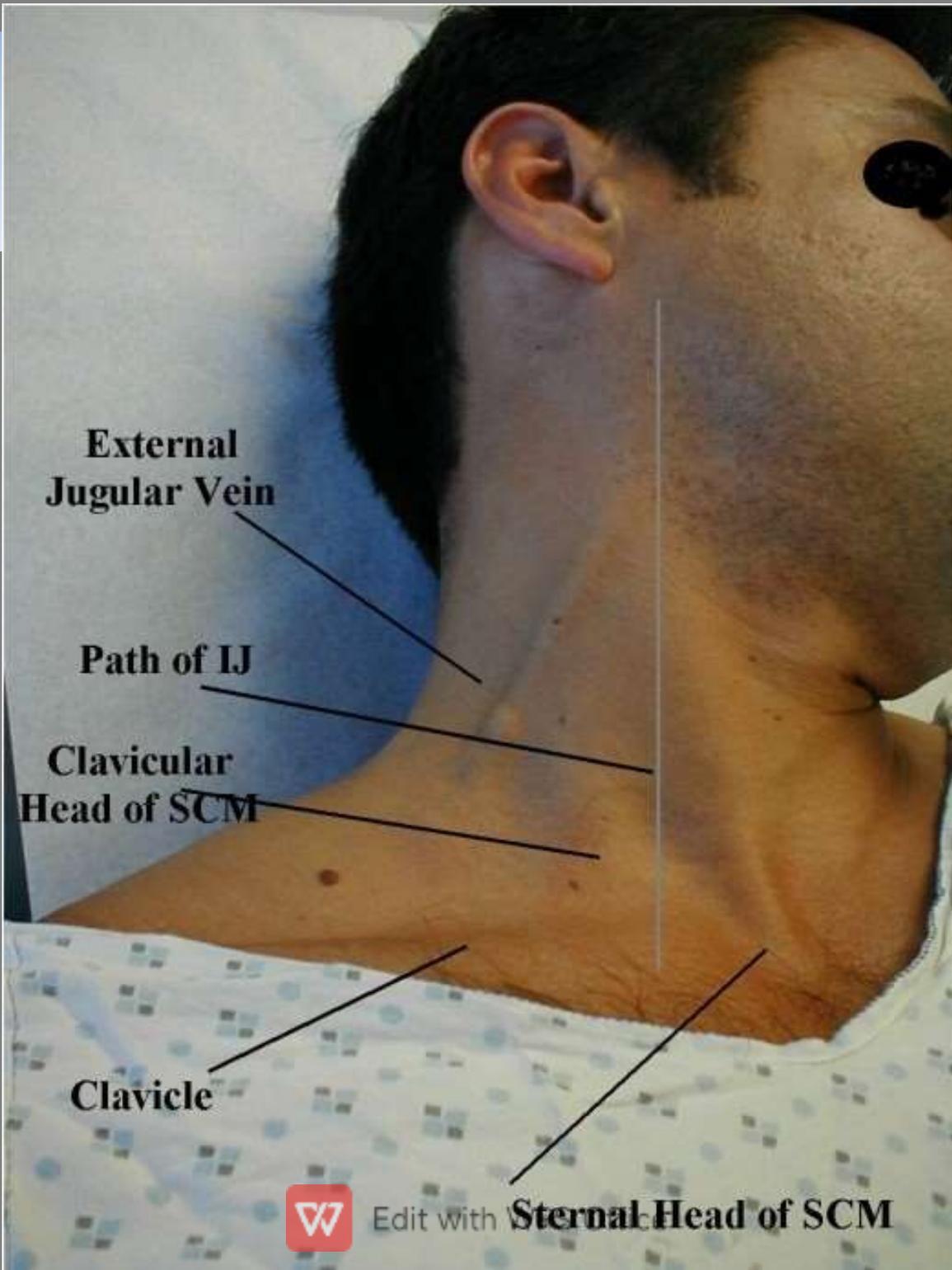
- Lateral to sternomastoid
- Wavy pulsation
- Prominent on lying down
- Decrease by inspiration



EXAMINATION

- Position patient to lie down 45 degrees
- Identify JVP on the right side





**External
Jugular Vein**

Path of IJ

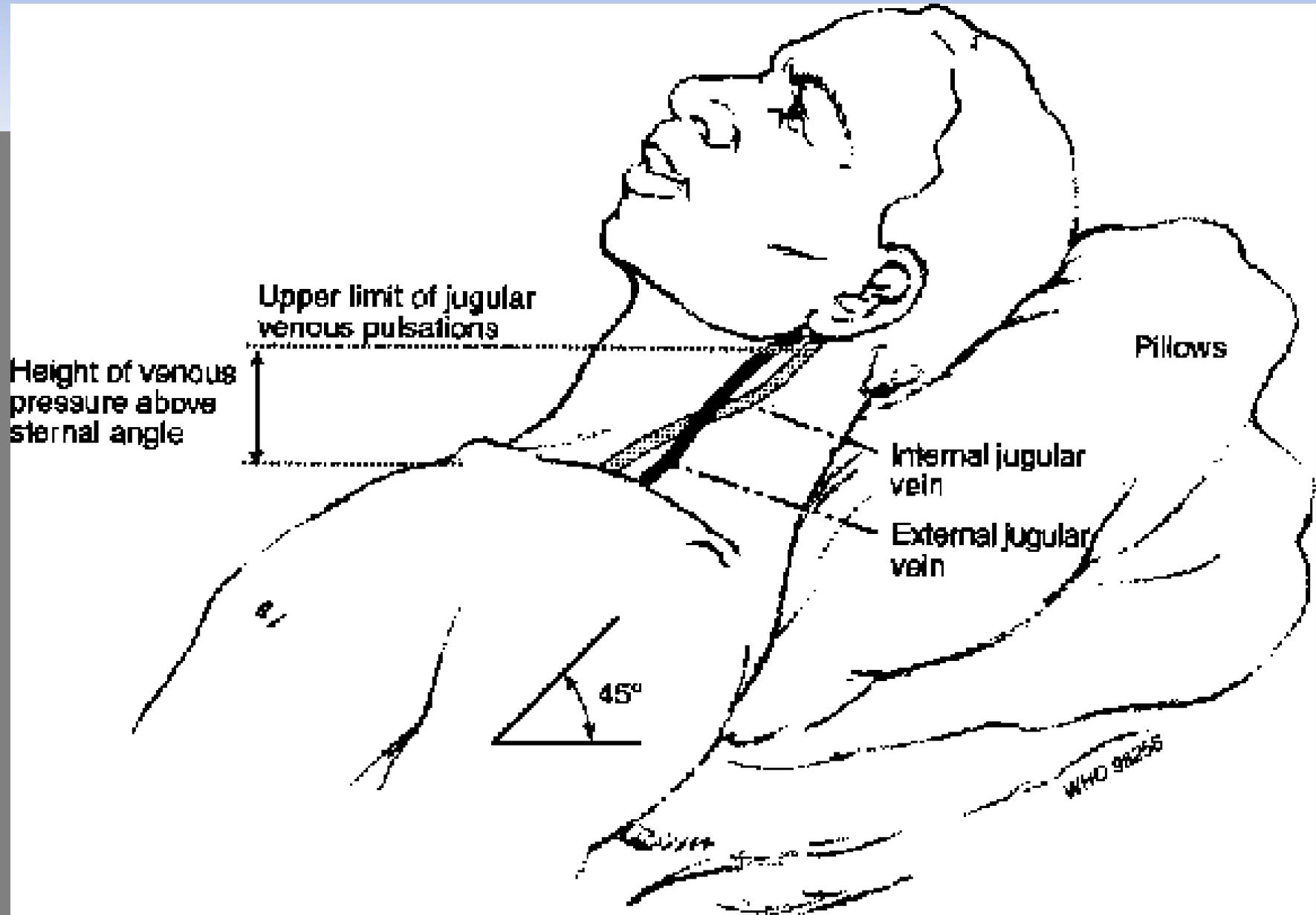
**Clavicular
Head of SCM**

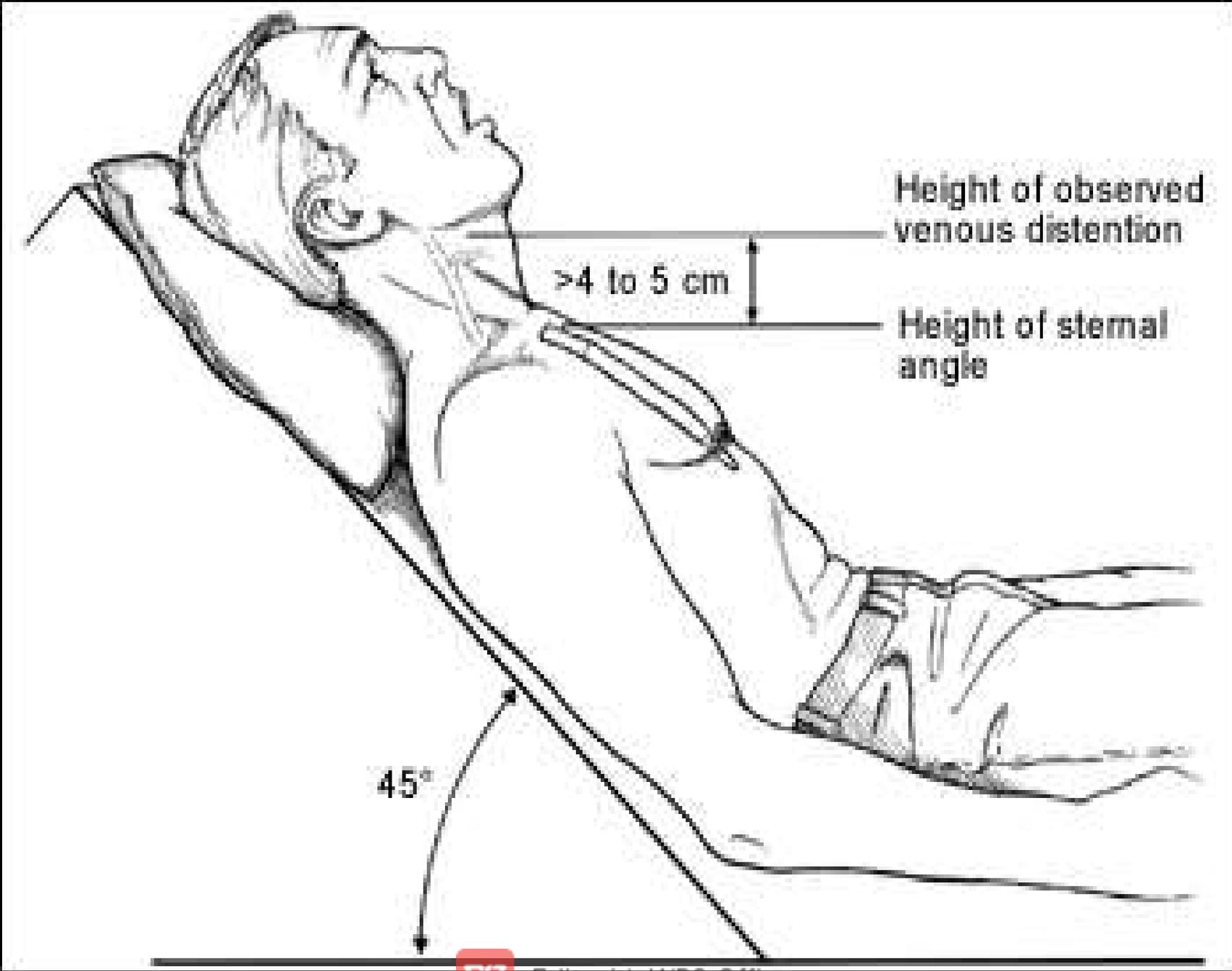
Clavicle

Sternal Head of SCM

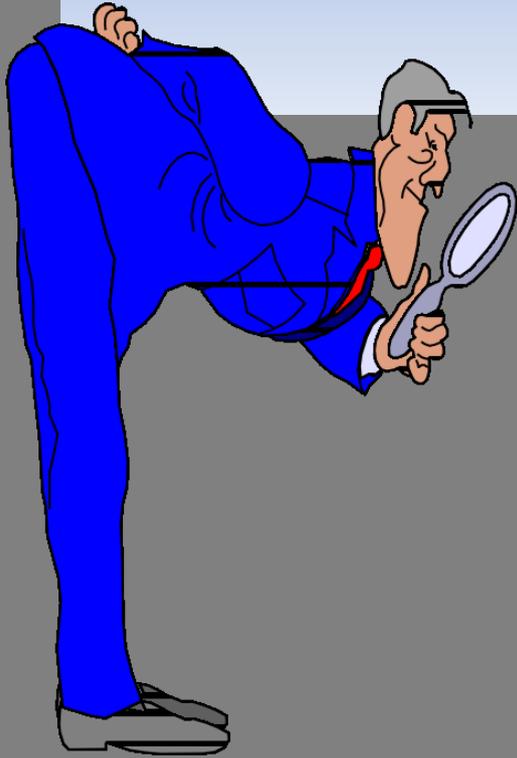


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Inspection



**Precordial bulge, funnel chest,
sternotomy scar**

Apical impulse

**Abnormal pulsations of
precordium**









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Inspection

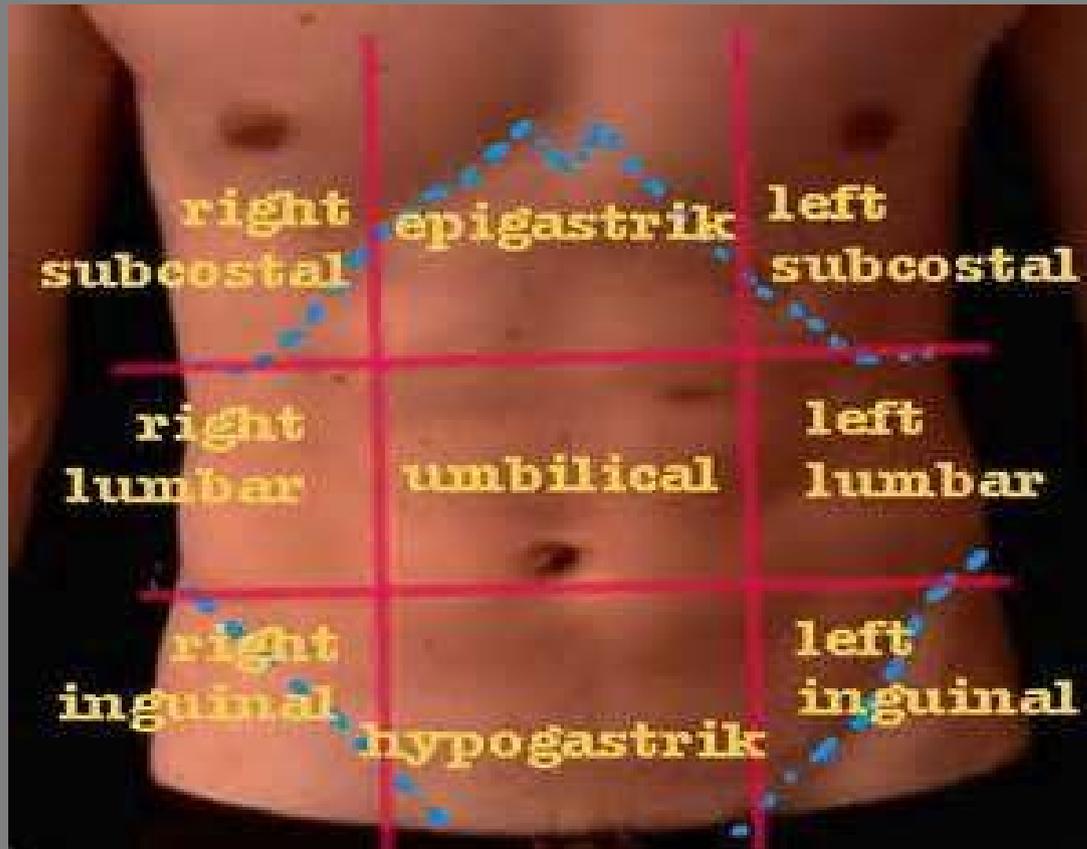
Apical impulse

* Normal:

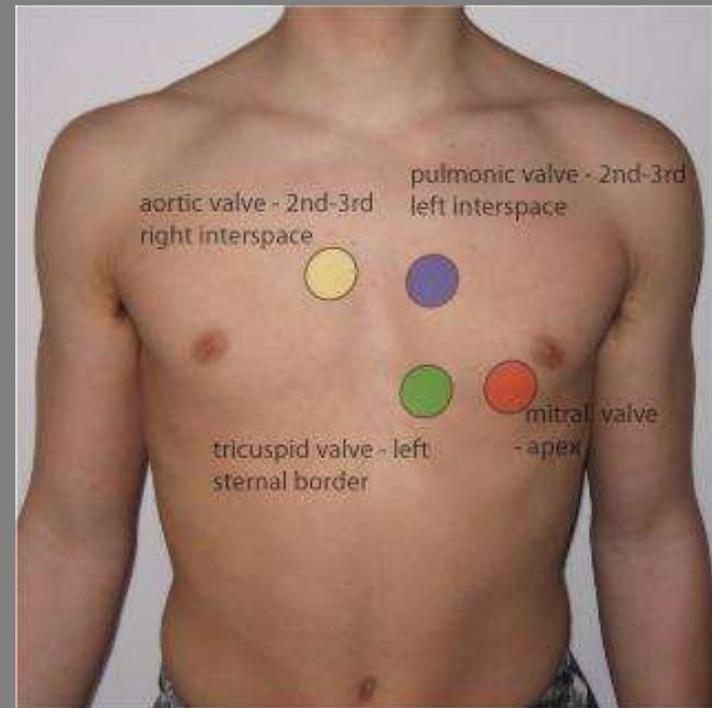
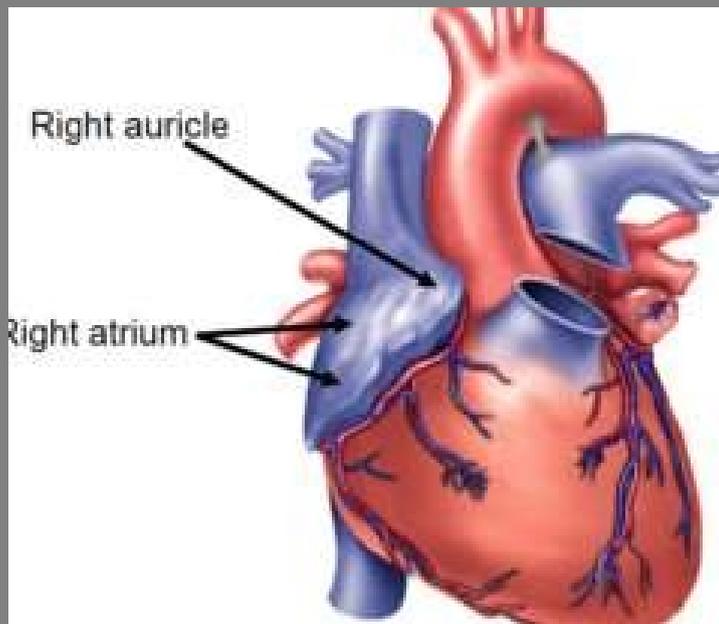
- Position—the fifth left intercostal space
midclavicular line range—2.0–2.5cm in diameter
- The most lateral and inferior palpable impulse



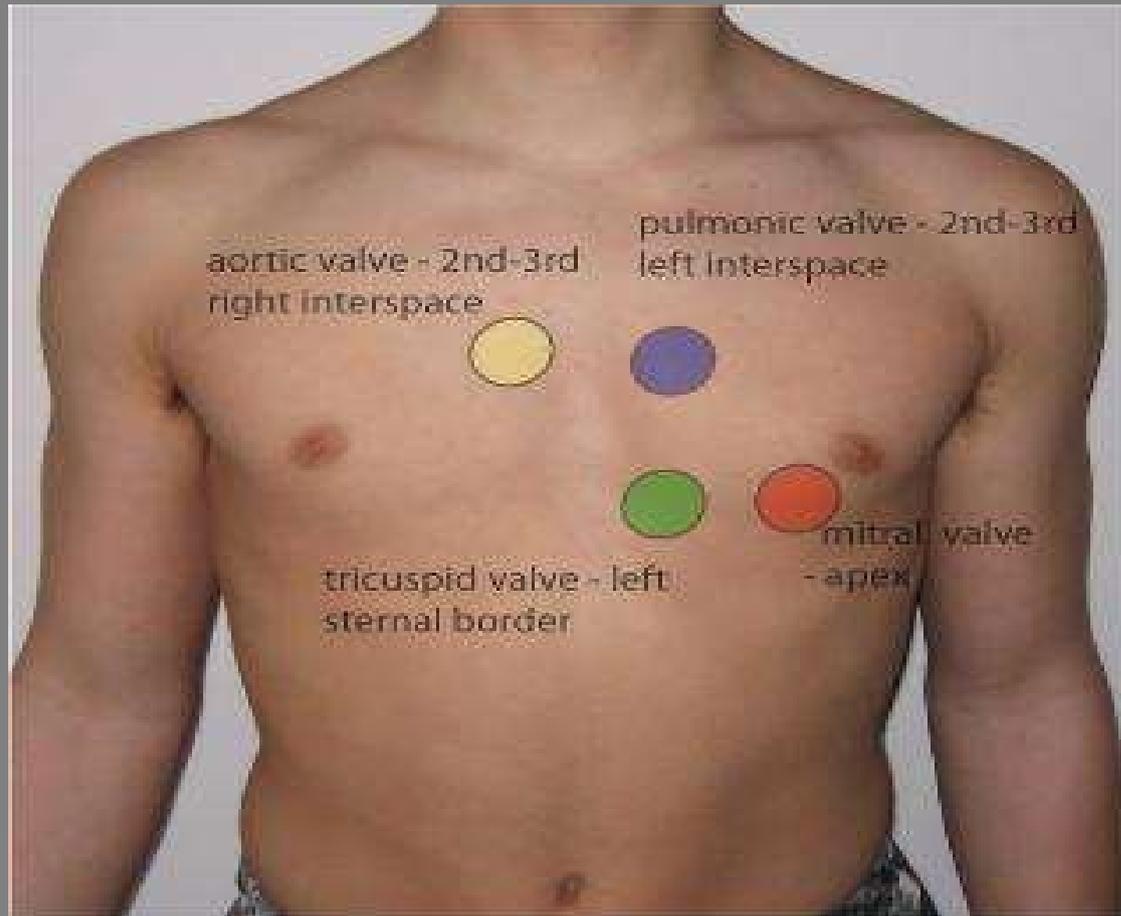
EPIGASTRIC PULSATION



LEFT PARASTERNAL PULSATION



CARDIAC BASE PULSATION



Palpation

**Apical impulse and
pulsation of precordium**

Thrill



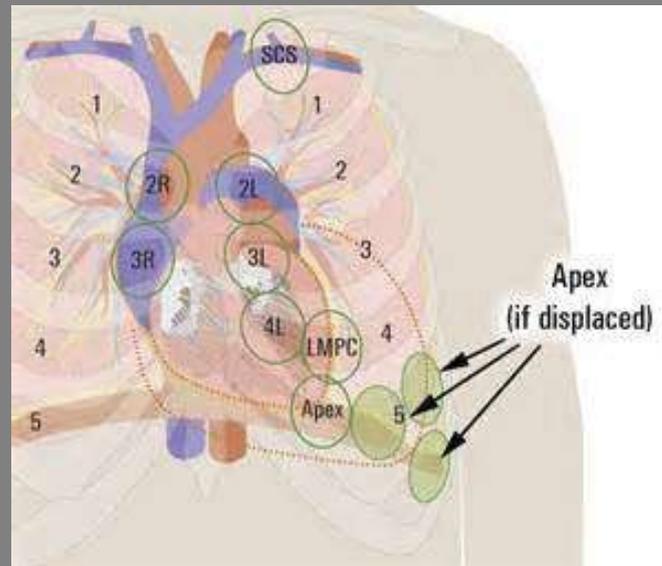
APICAL PULSE

- Outermost lower most palpable impulse
- Located while patient lie flat
- If not felt. Turn patient to left side
- Count spaces starting from angle of Lewis



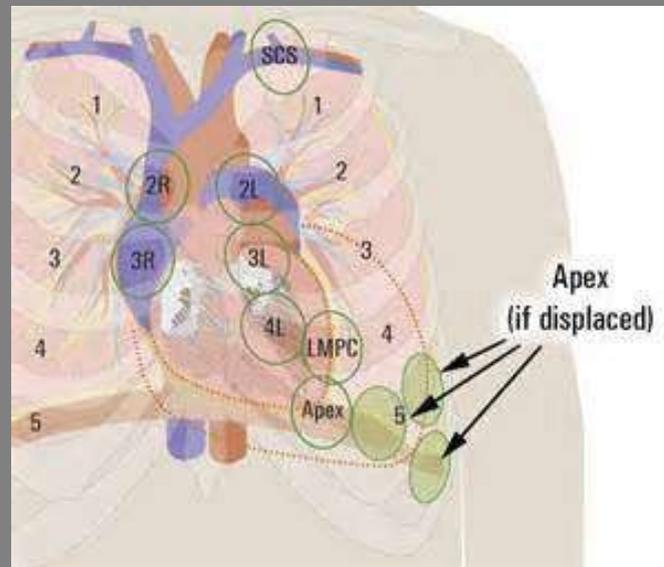
Left Ventricular Hypertrophy

- APEX IN PLACE, FORCEFUL SUSTAINED (HEAVING APEX)



Left Ventricular Dilatation

- APEX DISPLACED DOWN AND OUT
- FORCIBLE NON SUSTAINED (HYPERDYNAMIC APEX)



Right Ventricular Hypertrophy

- LEFT PARATERNAL PULSATION
- HEAVING
- LEFT PARASTERNAL UPLEFT

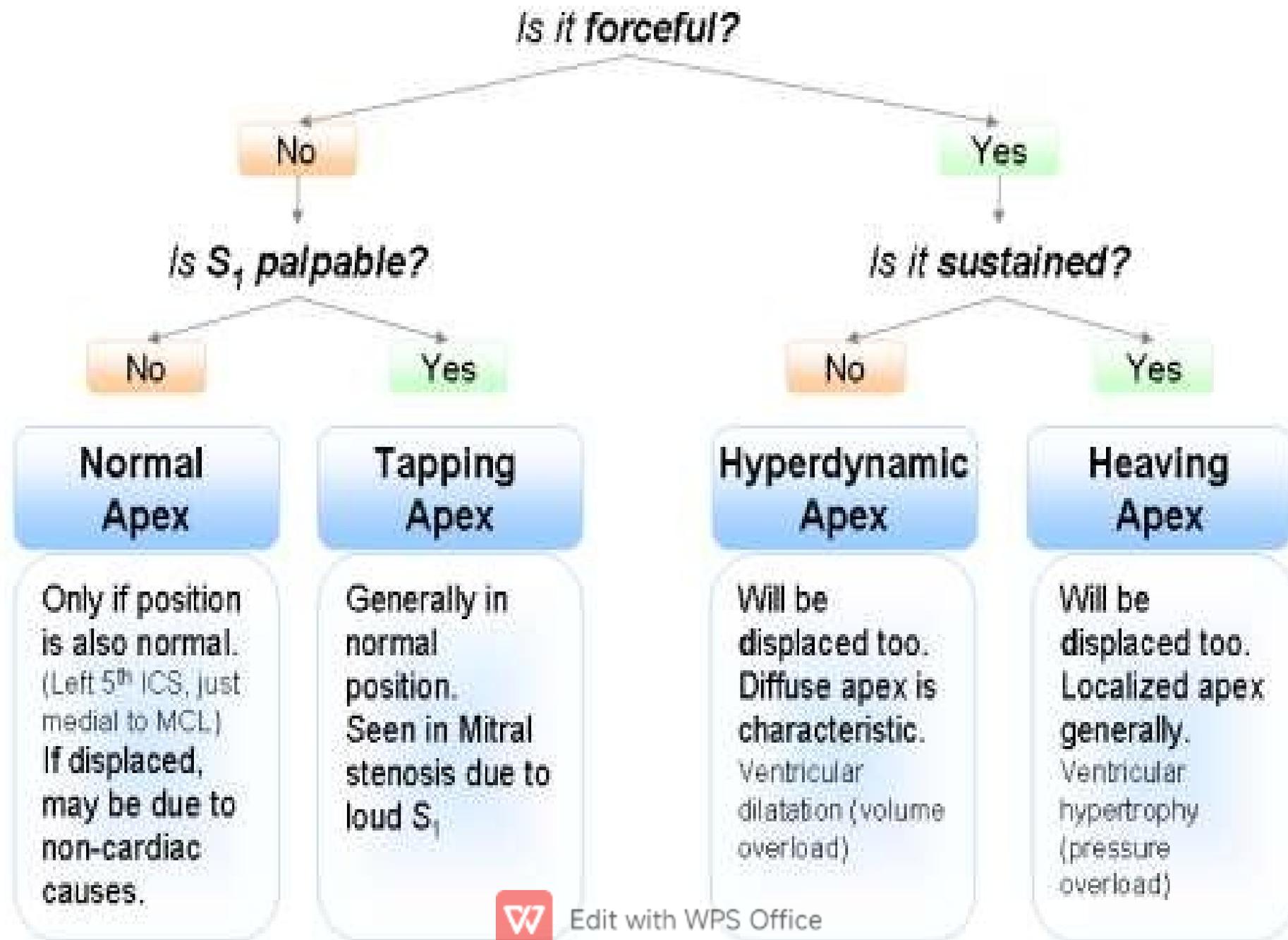


TAPPING APEX

- OCCURS WITH MITRAL STENOSIS
- PALPABLE FIRST HEART SOUND
- APEX IN PLACE



Analysis of the type of Apex beat

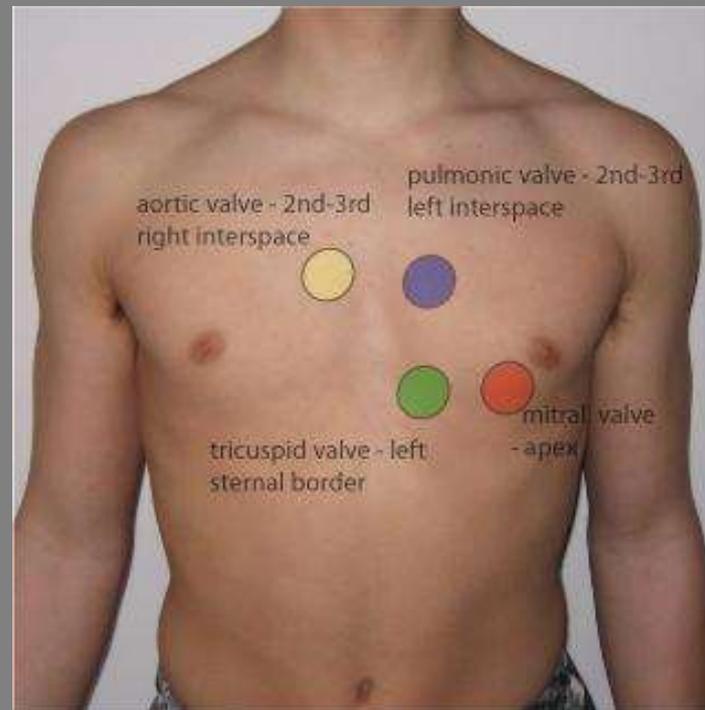


Epigastric pulsation

- RV
- Aortic
- Hepatic



Cardiac base



Thrill

- PALPABLE MURMUR
- SIMILAR TO MOBILE PHONE VIBRATING
- SAME AREAS LIKE VALVE



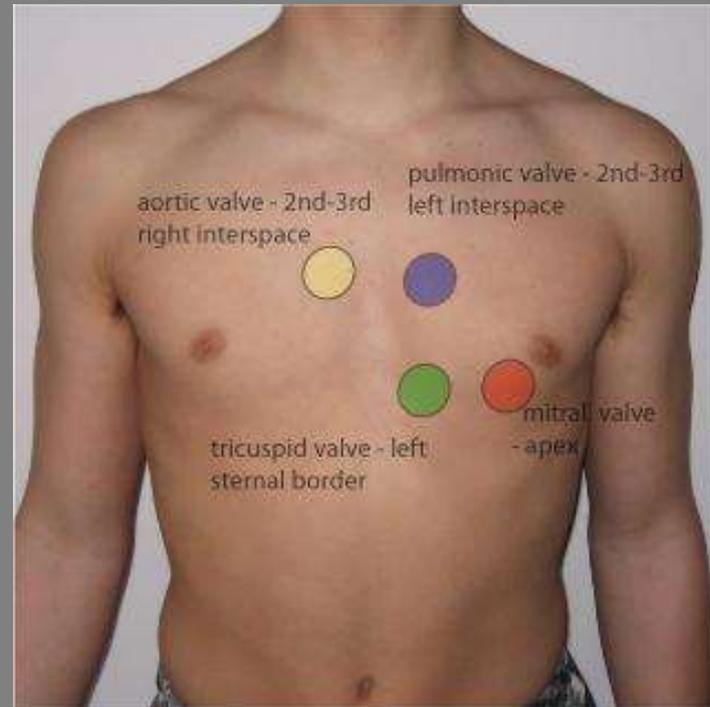
Ausclutatio



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Auscultation

- Heart sounds
- Murmurs
- Additional sounds
- Pericardial rub



HEART SOUNDS

- FIRST HEART SOUND: CLOSURE OF MITRAL AND TRICUSPED VALVE
- ATTENUATED IN MR
- ACCENTUATED IN MS



SECOND HEART SOUND

- CLOSURE OF AORTIC AND PULMONARY VALVE
- ACCENTUATED IN TACHCARDIA
- MUFFELED IN AR, AS



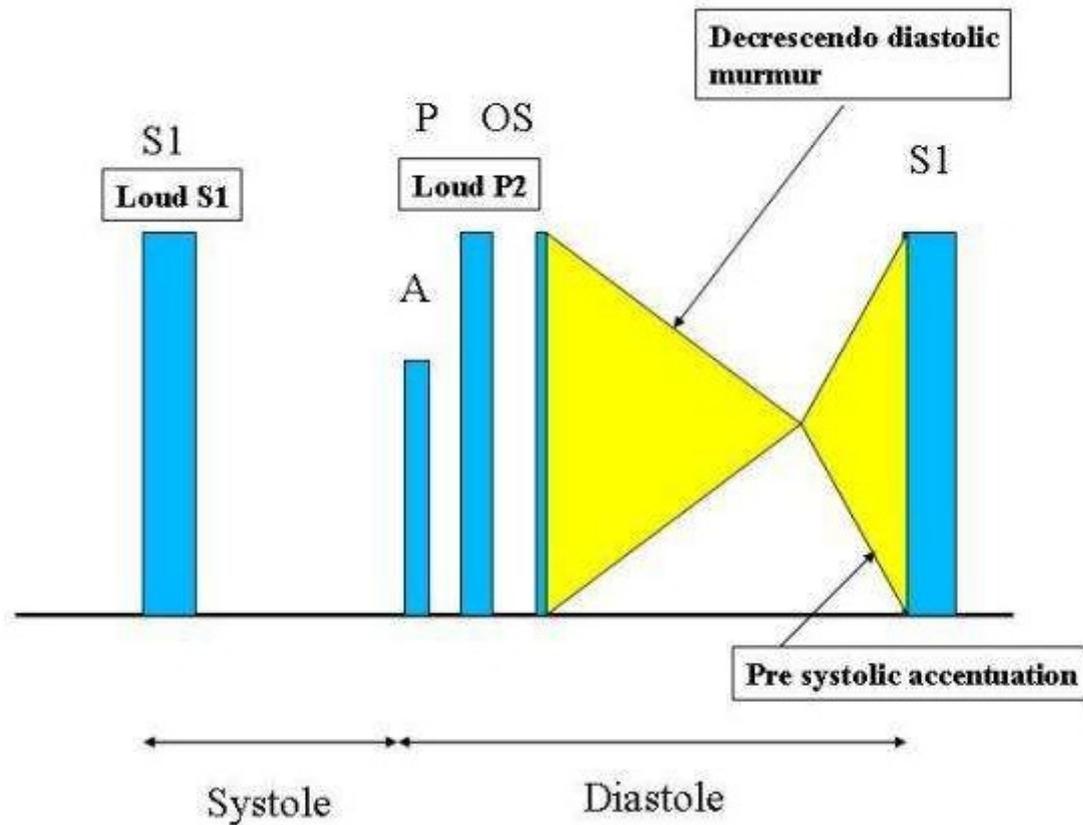
MURMUR

- ABNORMAL SOUND CAUSED BY TURBULENT BLOOD FLOW ACROSS ABNORMAL VALVE
- TIMING (SYSTOLE/DIASTOLE) INTENSITY, RADIATION, THRILL, CHARACTER



Mitral stenosis

Heart Sounds (Mitral Stenosis)

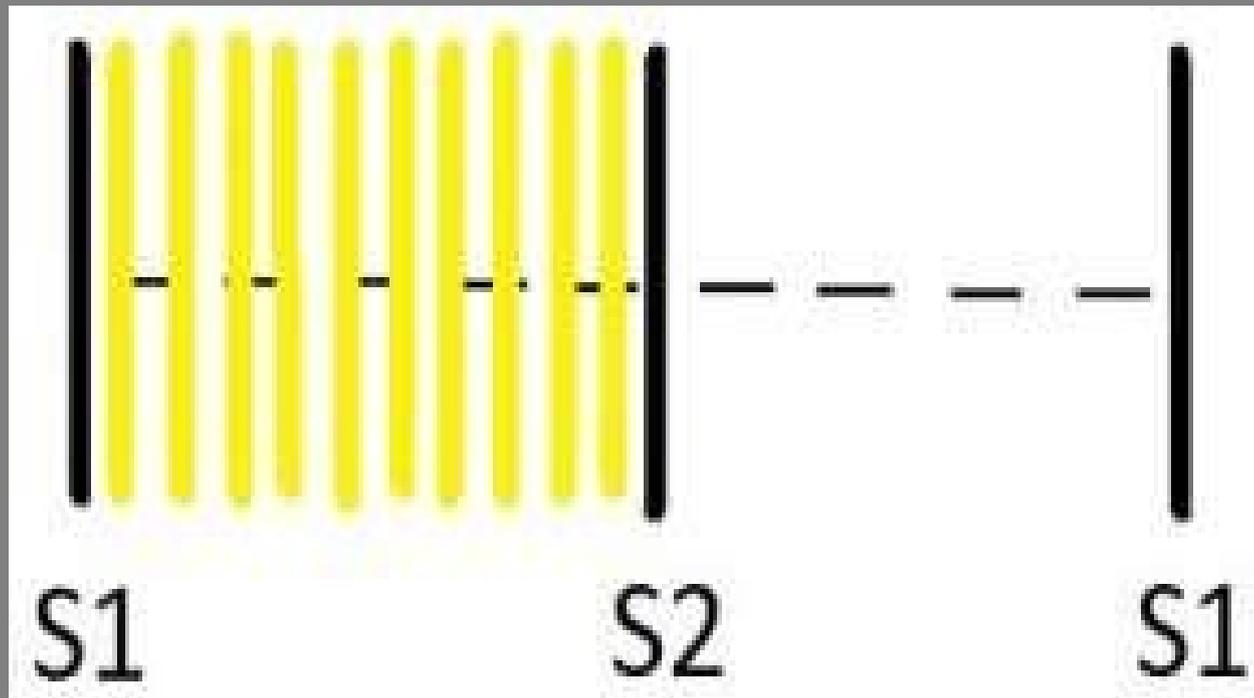


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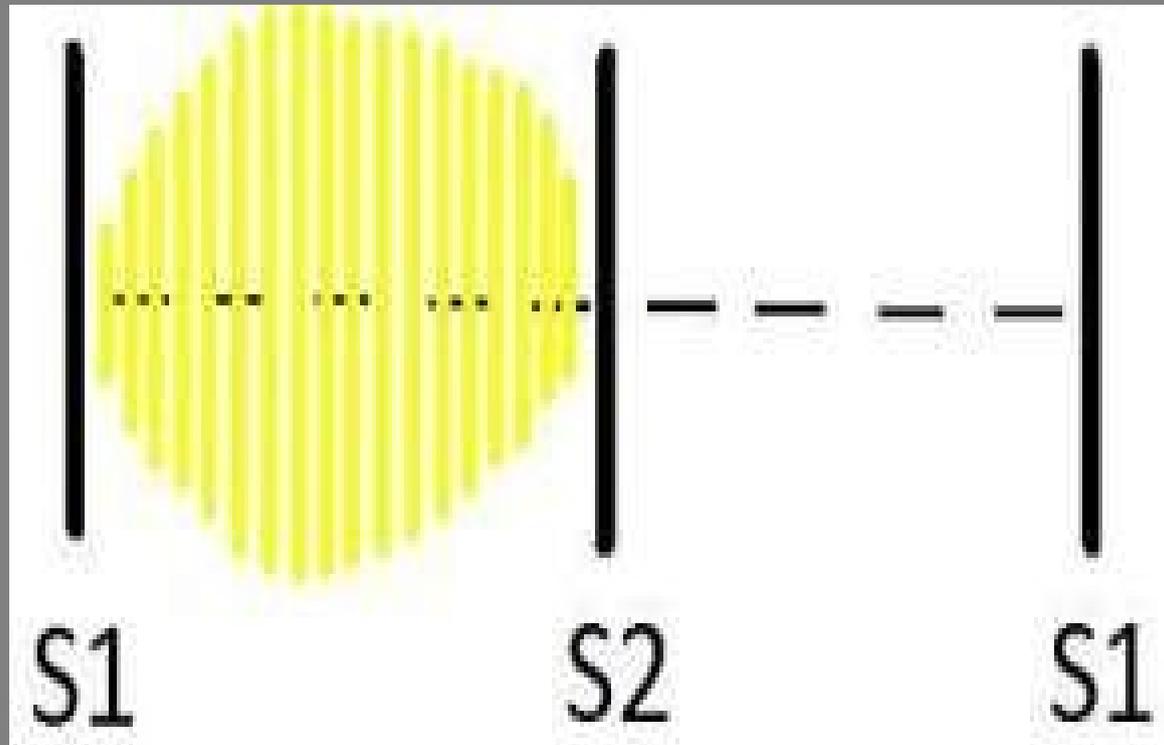
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Mitral Regurgitate



AORTIC STENOSIS



AORTIC INCOMPETENCE

