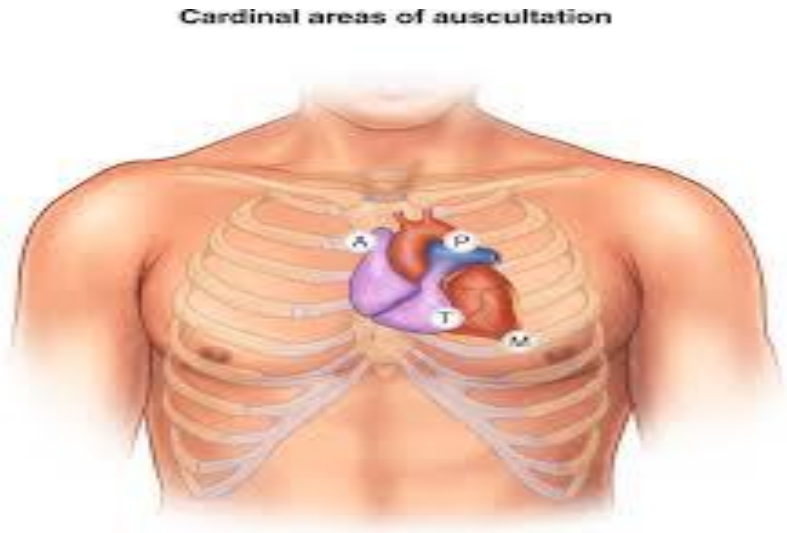
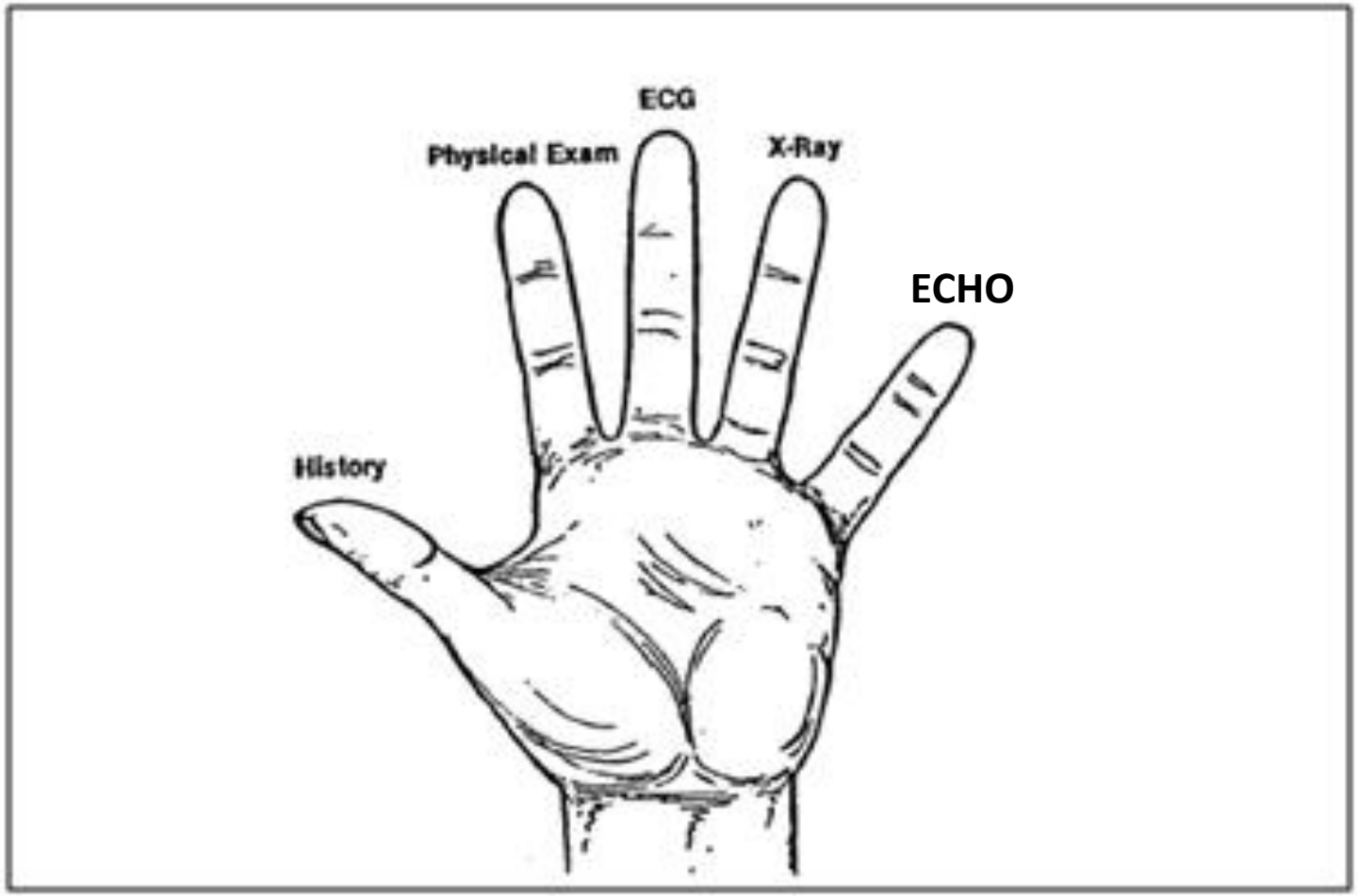


Local Cardiac Examination

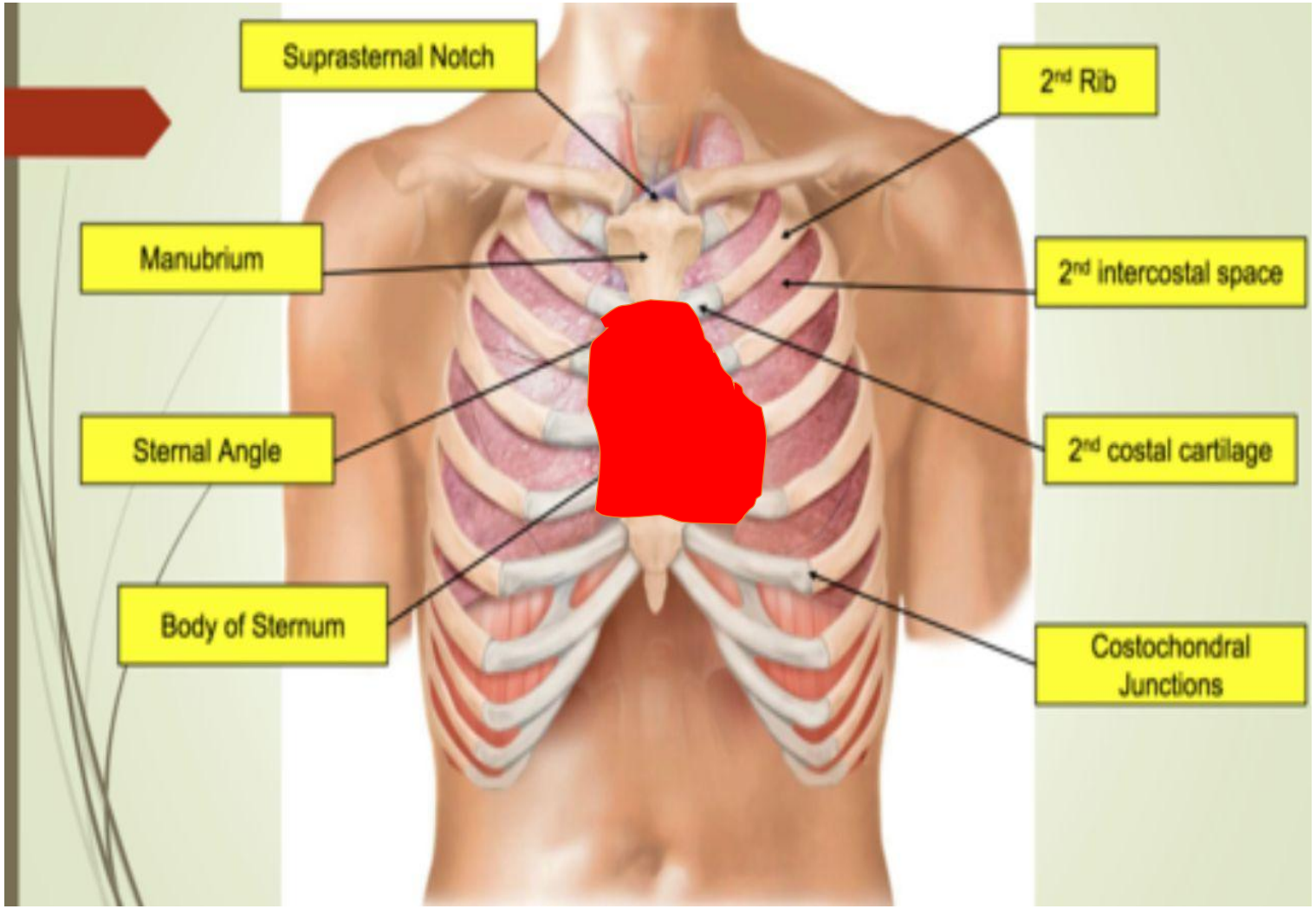
ILOS

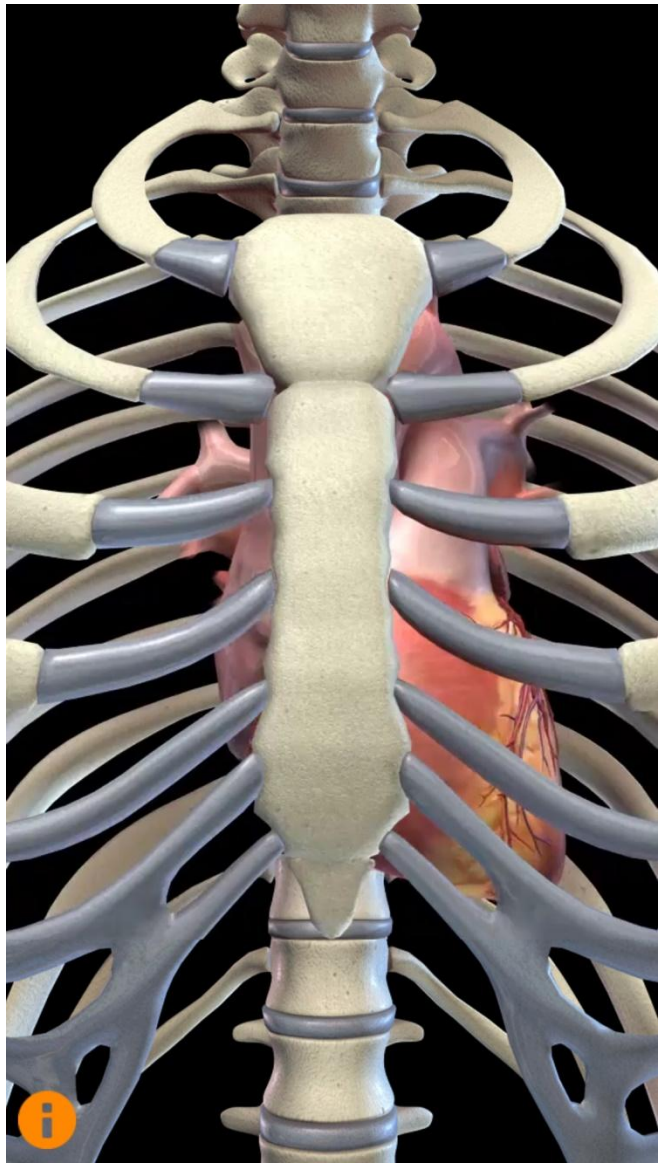
- Know the surface anatomy of the heart
- Know how to perform local cardiac examination:
  - **Inspection**
  - **Palpation**
  - **Auscultation**

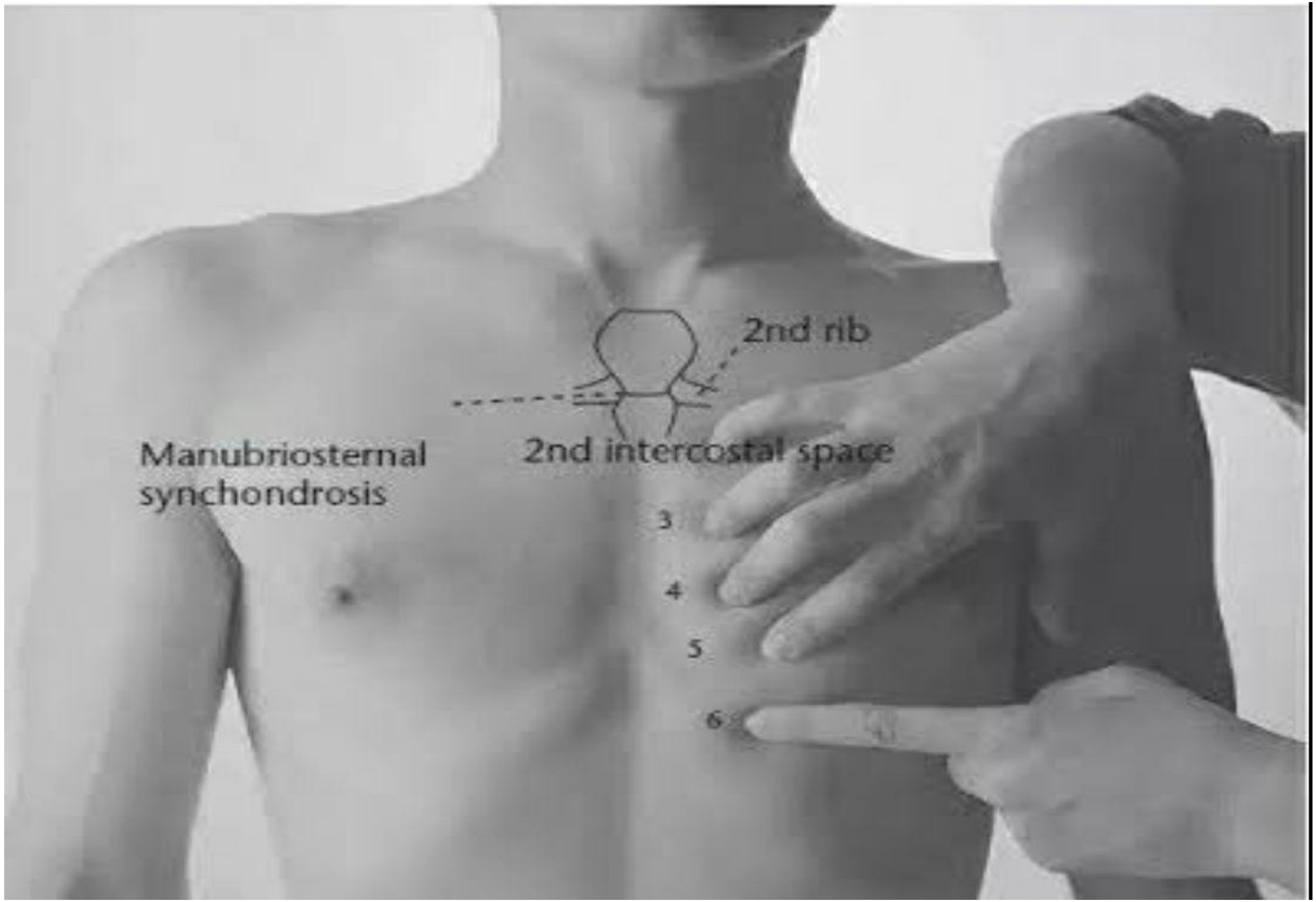
The “five-finger” Approach to Cardiovascular Diagnosis



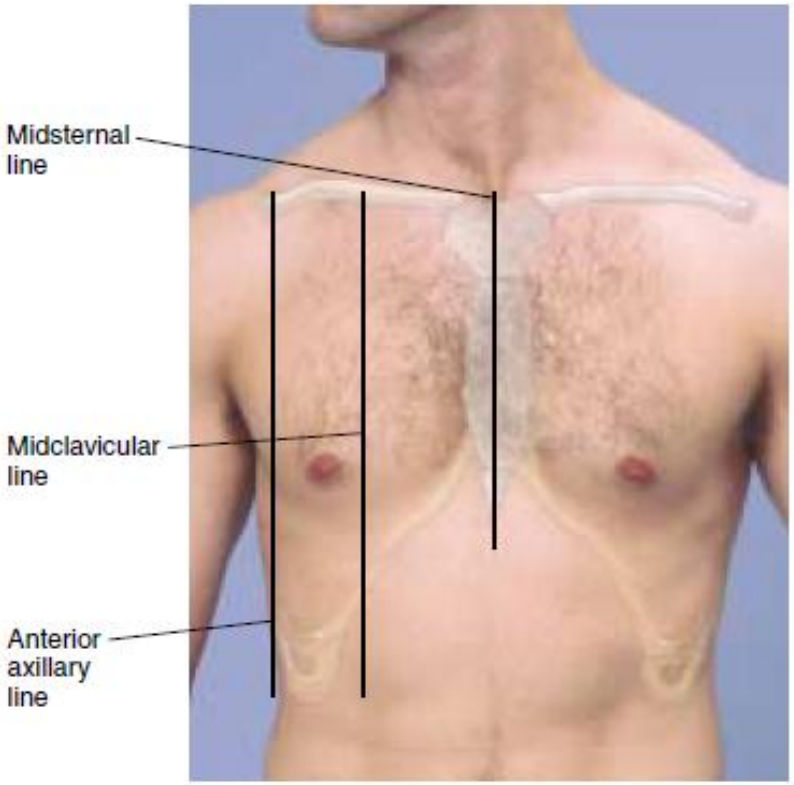
Anatomy of Chest Wall



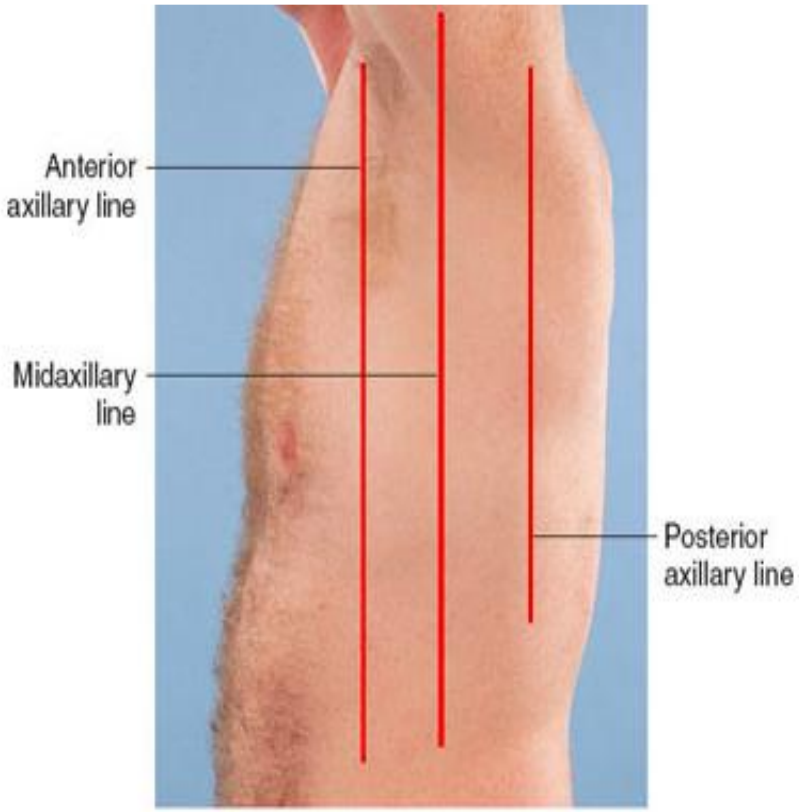


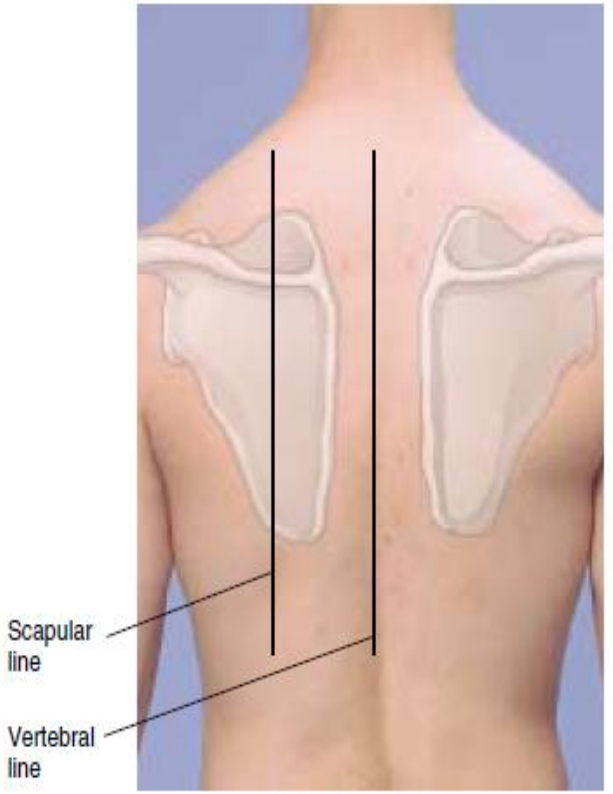

2nd rib
Manubriosternal synchondrosis
2nd intercostal space
3
4
5
6

Vertical Lines



ANTERIOR VIEW

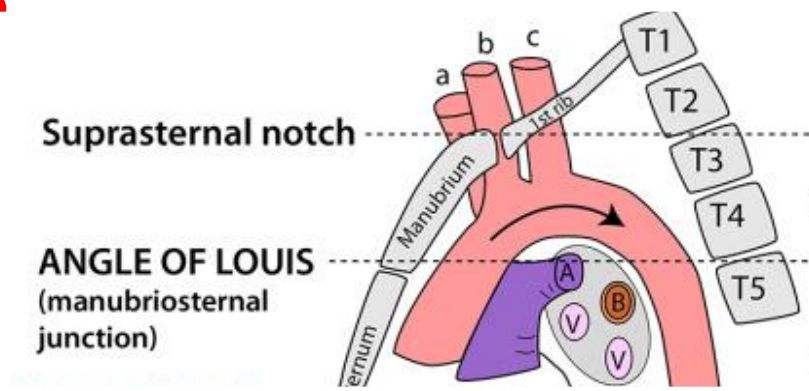




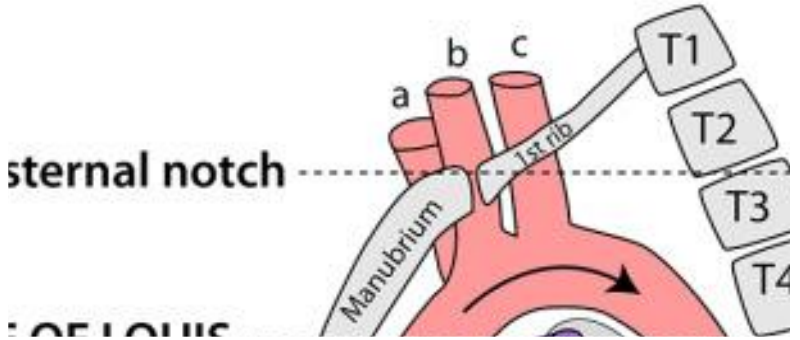
POSTERIOR VIEW

Sternal Angle= Angle of Louis

- Junction of manubrium with body of sternum.
- Level of tracheal bifurcation.
- Meeting of lung borders.
- Upper limit of atria.
- Aortic arch starts and ends at this level.
- Level of separation between superior and inferior mediastinum.
- Pulmnonary artery bifurcates just below this level.
- Center of RA is about 5 cm below sternal angle.
- Azygos vein opens into SVC at this level.
- Opposite the disc between 4th and 5th thoracic vertebrae.

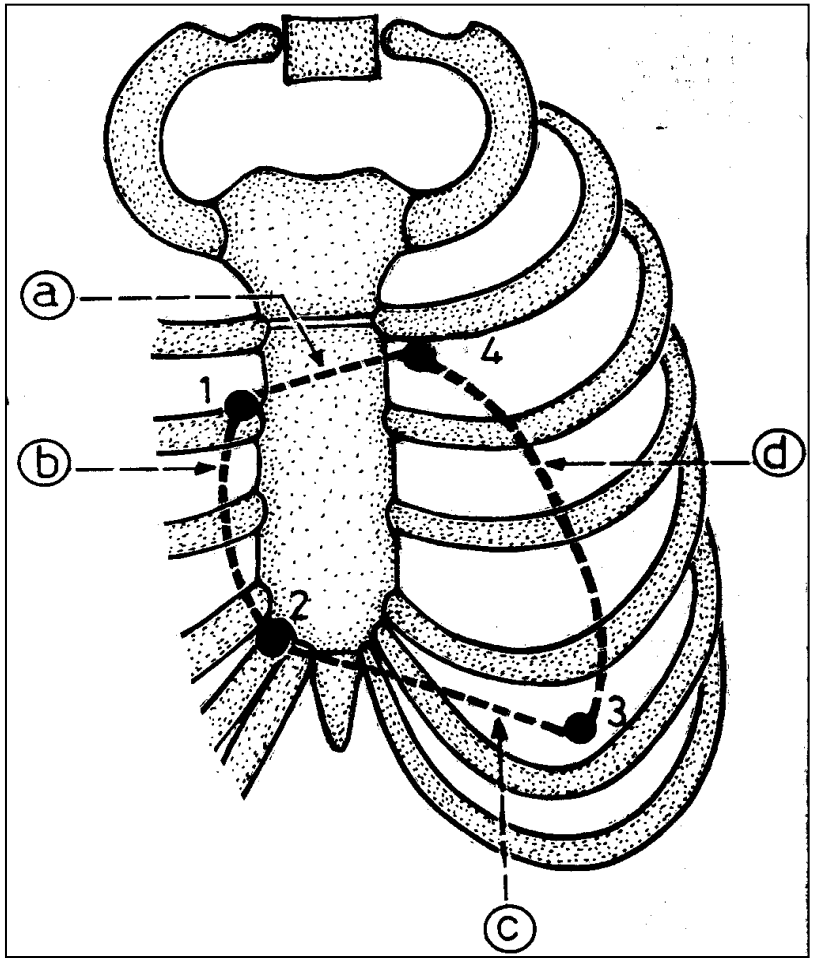


KEY LEVELS IN THORAX



Surface Anatomy of Heart

4 =**1.5** inch from midline on the lower border of 2nd left costal cartilage.
1 =**1** inch from midline on the upper border of the 3rd Rt. costal cartilage.
3 =**3.5** inch from midline in the left 5th intercostal space (apex of heart).
2 =**0.5** inch from midline on the Rt. 6th costal cartilage.



Local Cardiac Examination

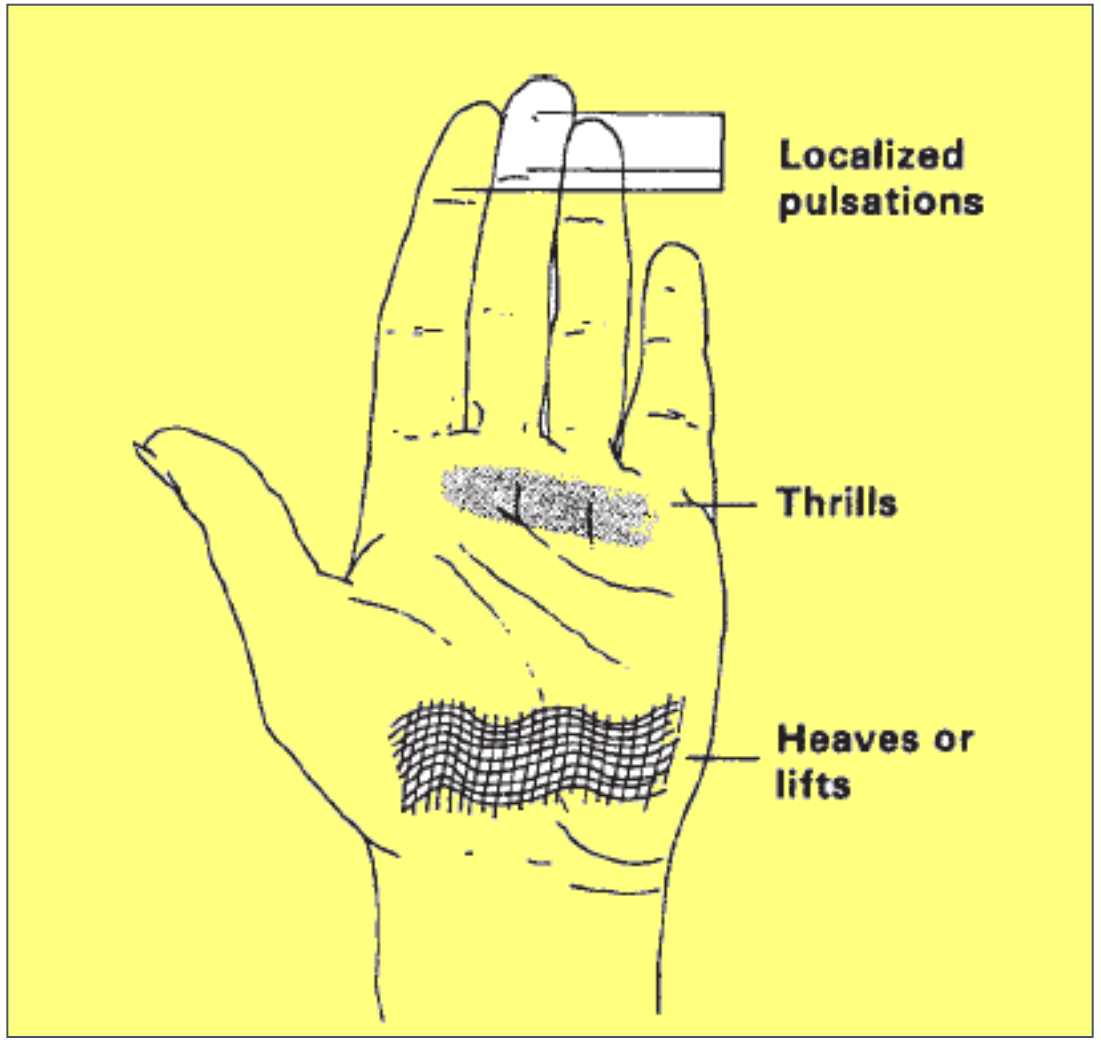
We use the classic methods of exam.:

- Inspection
- Palpation
- Percussion
- Auscultation

In cardiac exam. Inspection & palpation are usually done together

Percussion has lost its clinical significance as plain X-ray chest is more accurate in cardiac size assessment

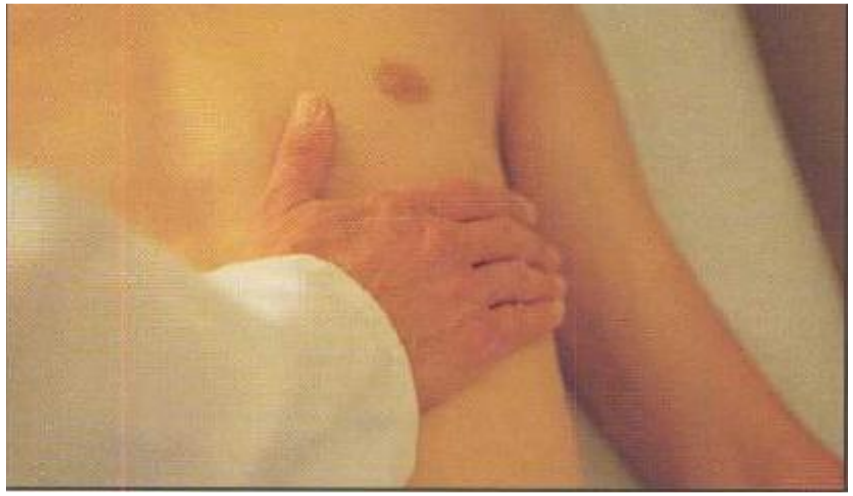
The Best Tool is Your Hand

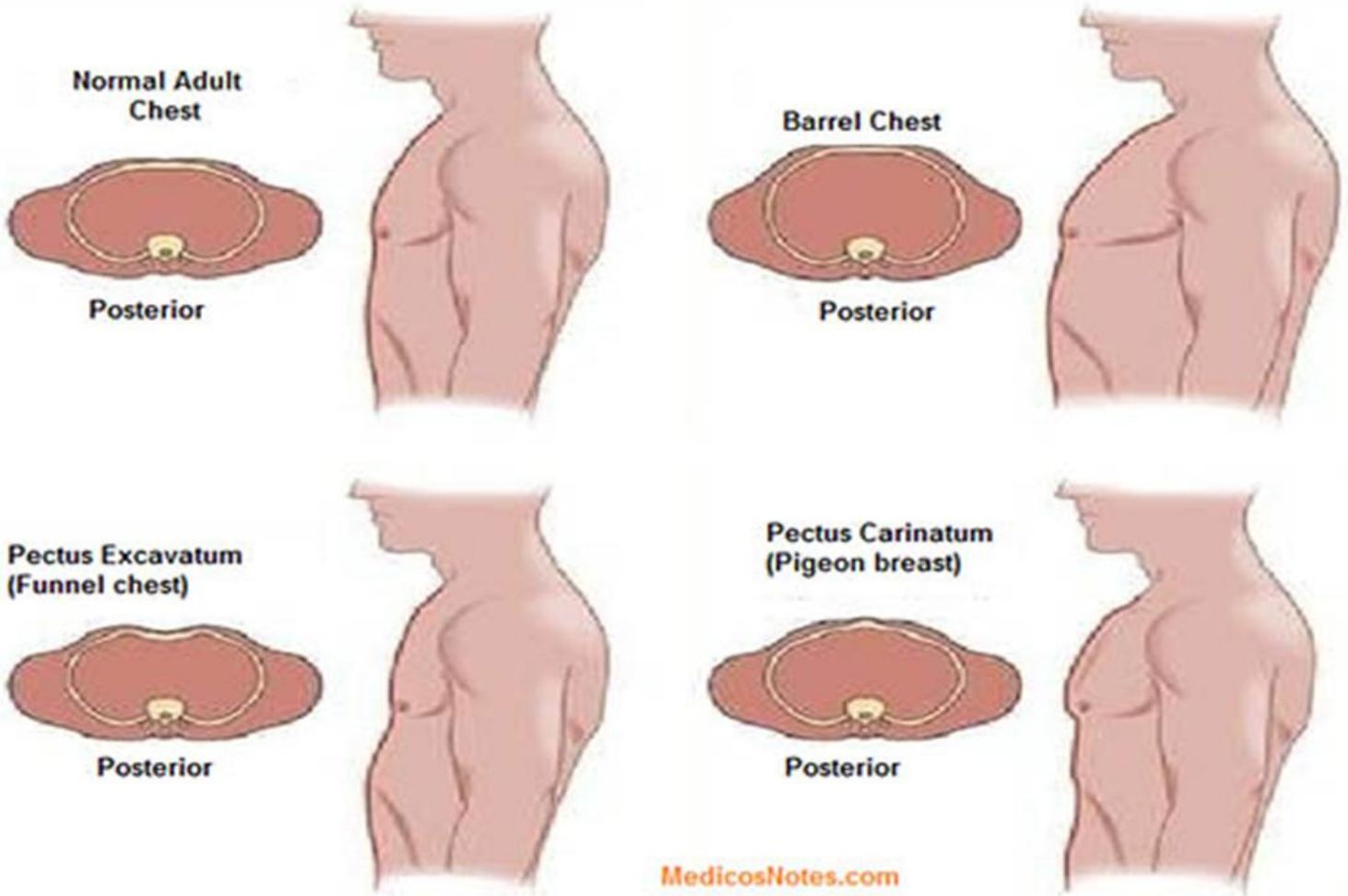


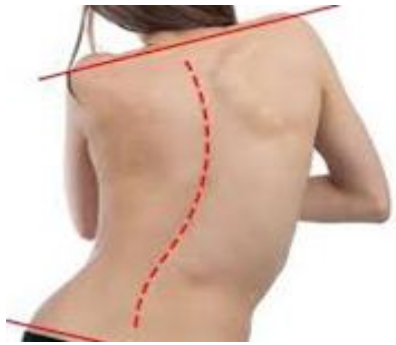
Inspection & Palpation

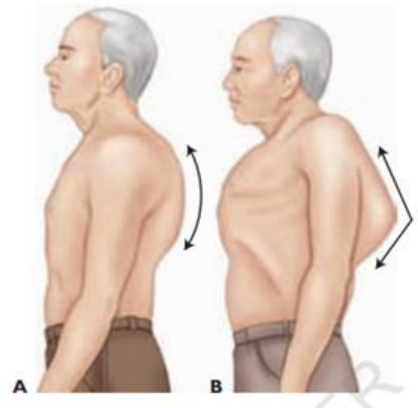
The following are to be noticed

- Shape of the precordium
- Shape of chest wall
- Scar of previous cardiac surgery
- Rate and pattern of respiration
- Dilated veins
- Pulsations




Normal Adult Chest
Posterior
Barrel Chest
Posterior
Pectus Excavatum (Funnel chest)
Posterior
Pectus Carinatum (Pigeon breast)
Posterior
MedicosNotes.com




A
B

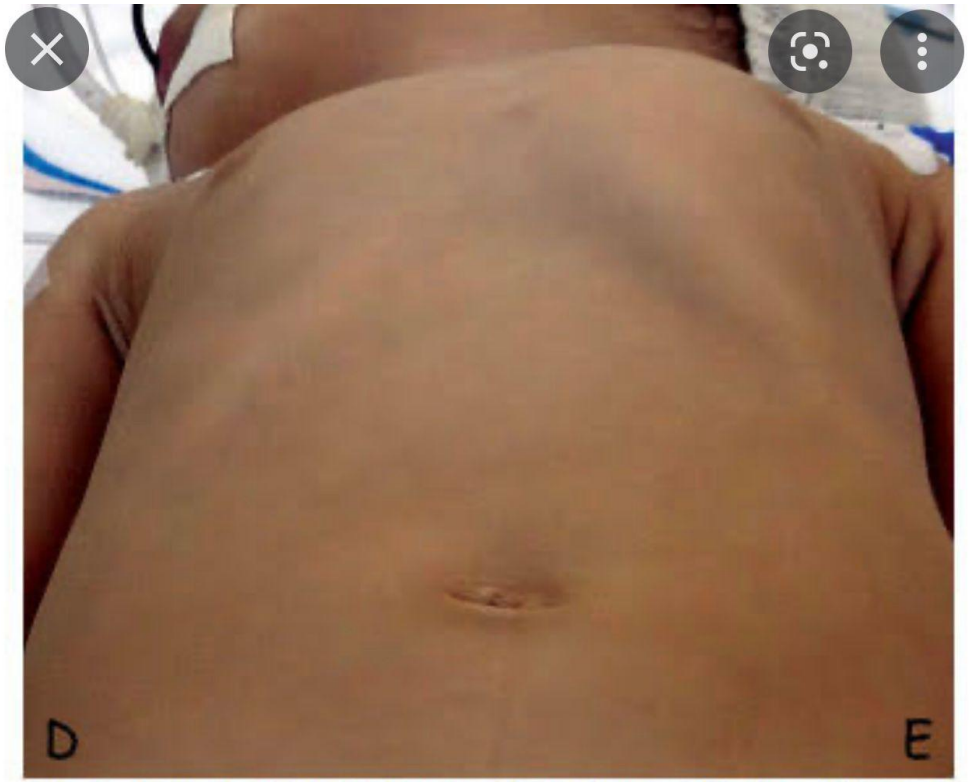
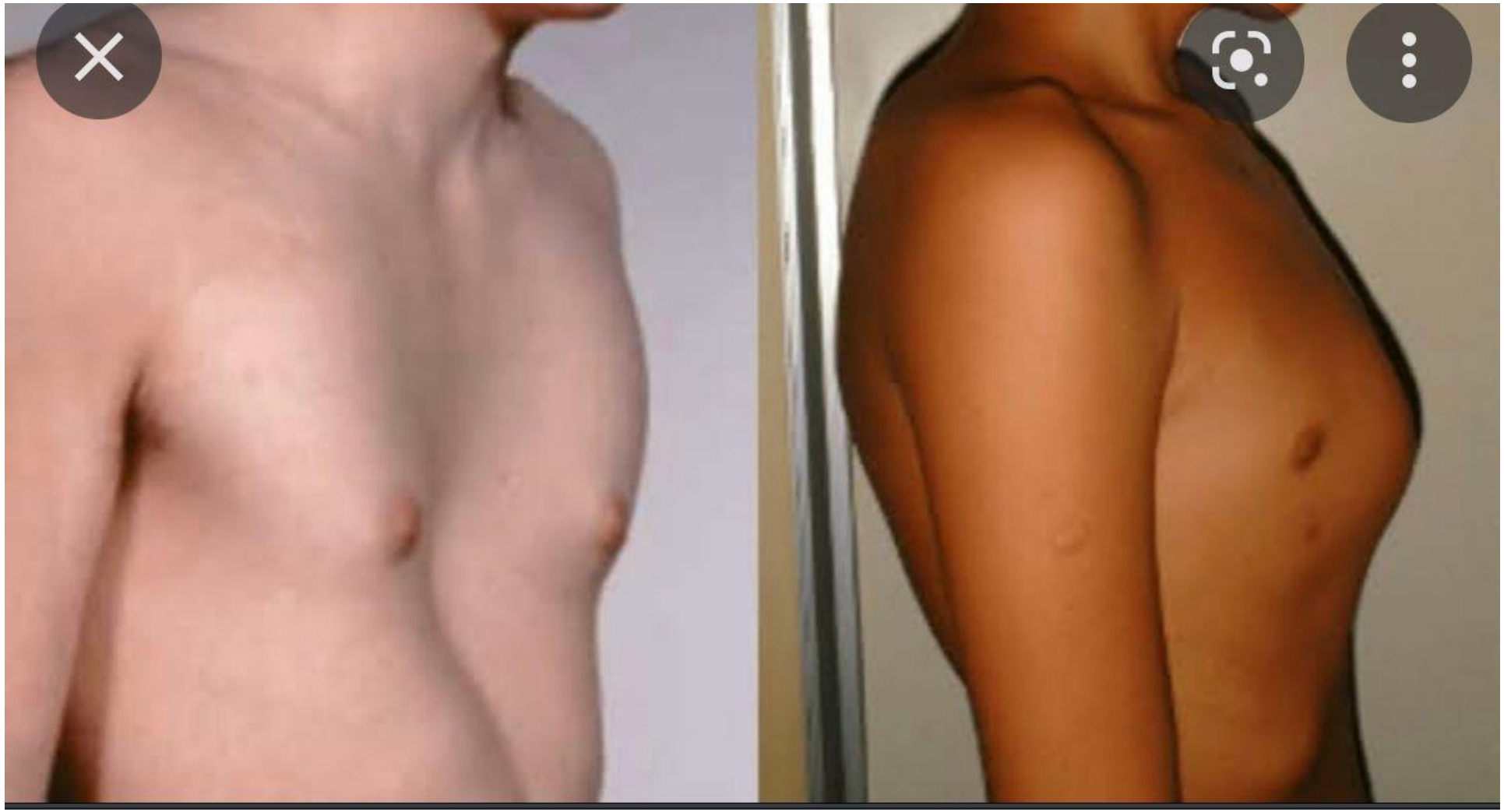
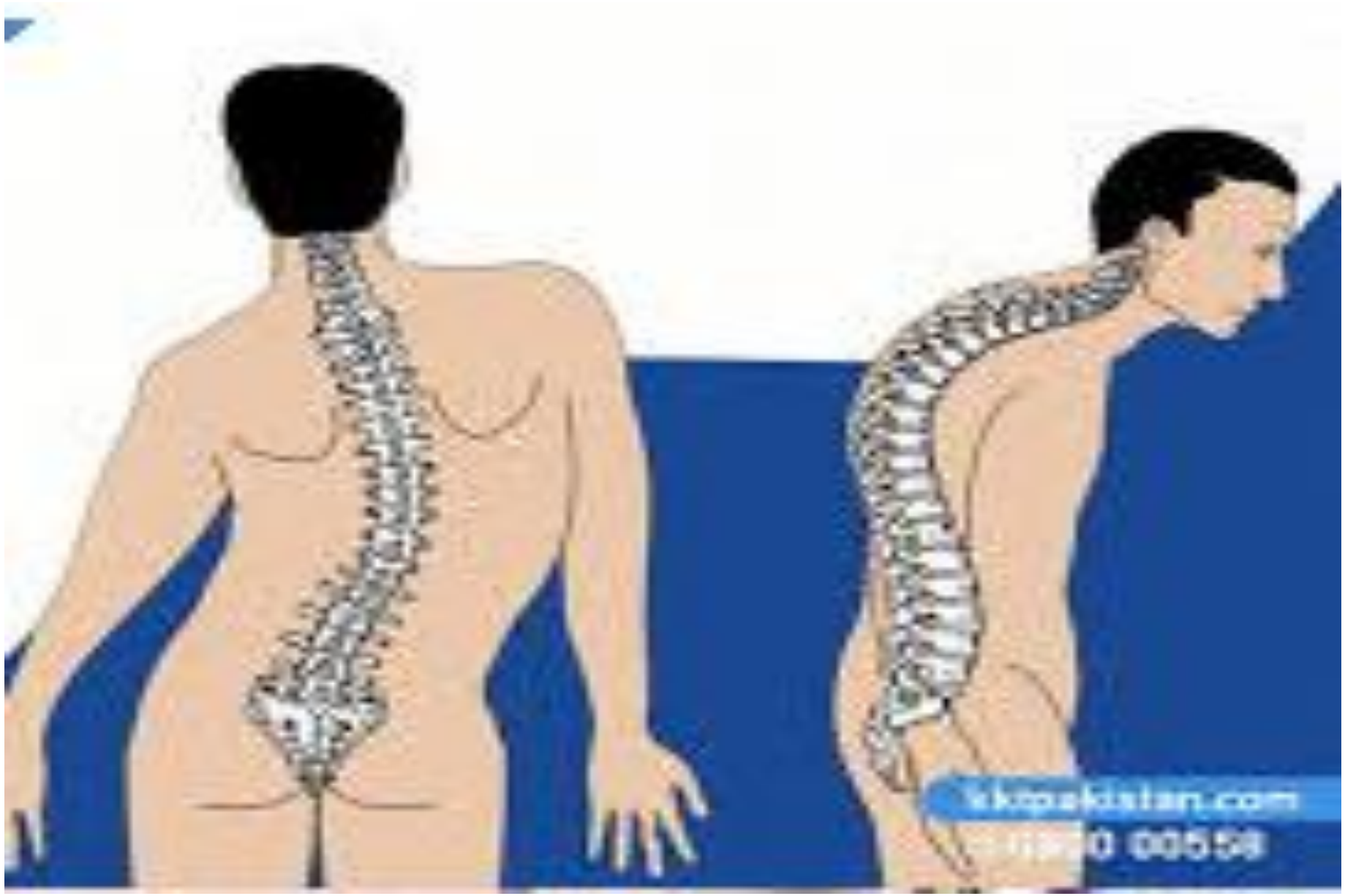
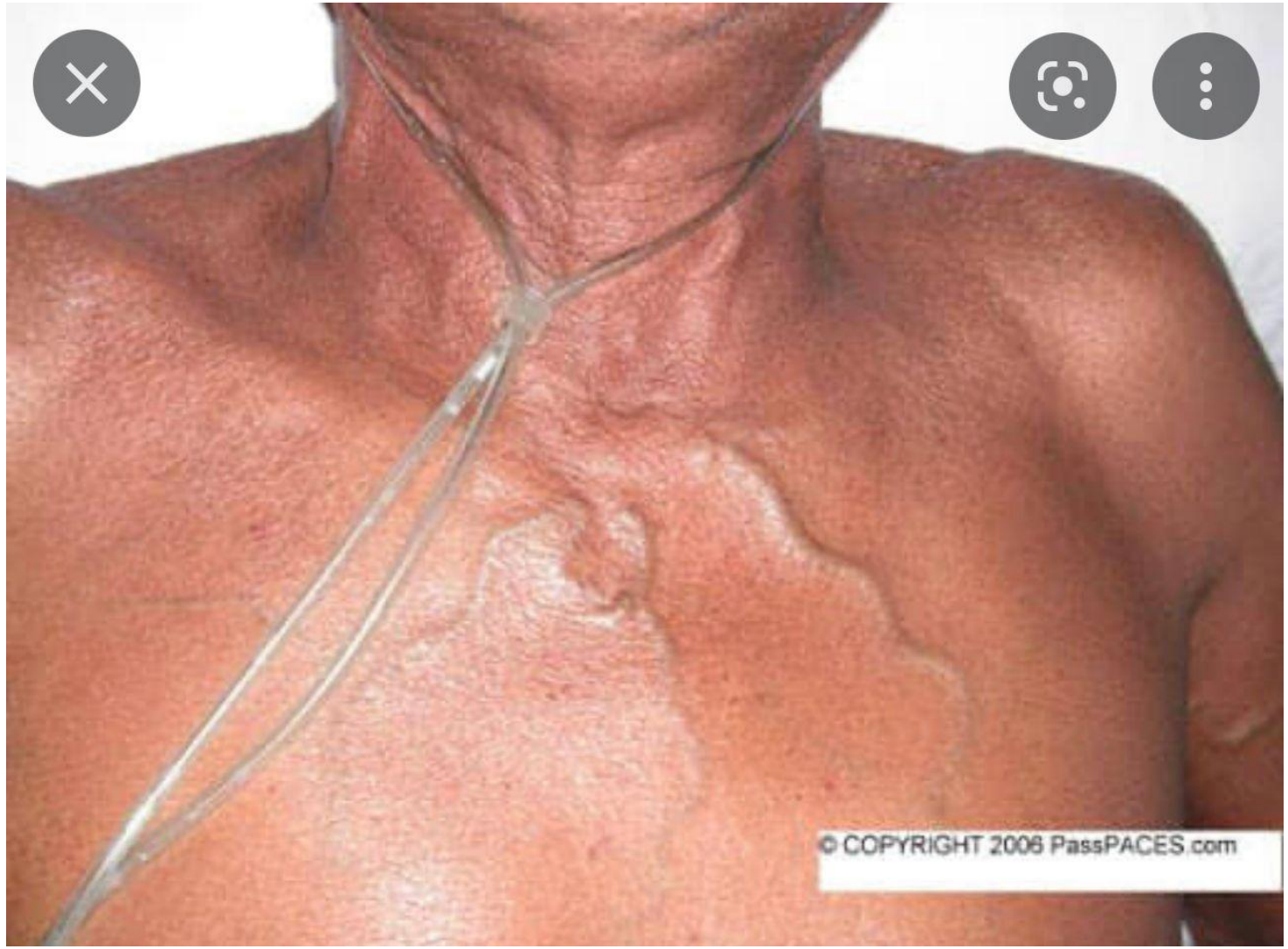


Fig. 4 - Important left bulging chest by an enlarged cardiac silhouette due to aneurysm of the left atrium associated with patent ductus arteriosus with mitral valve prolapse. R: Right, L: left



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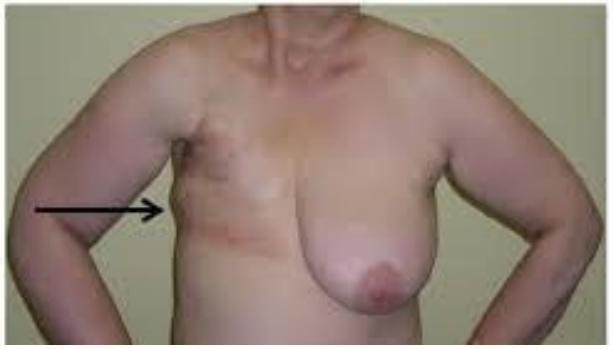
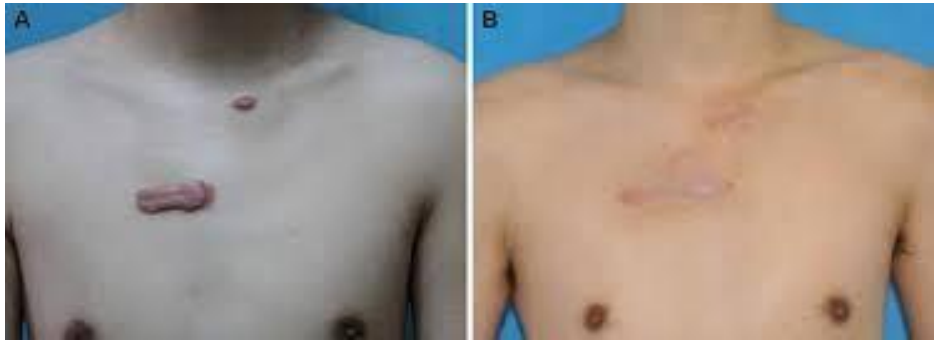
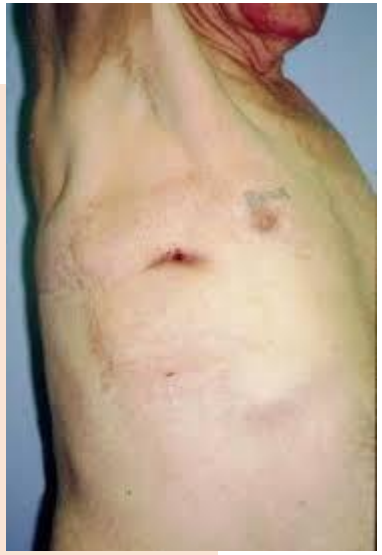
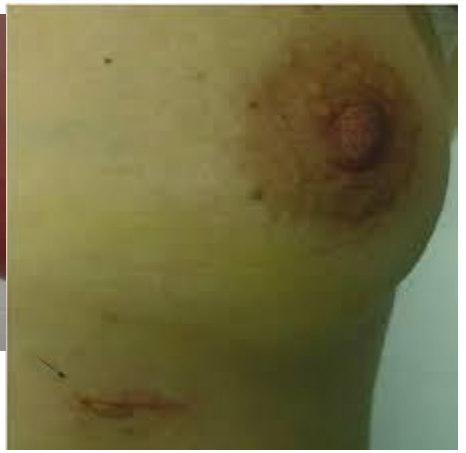




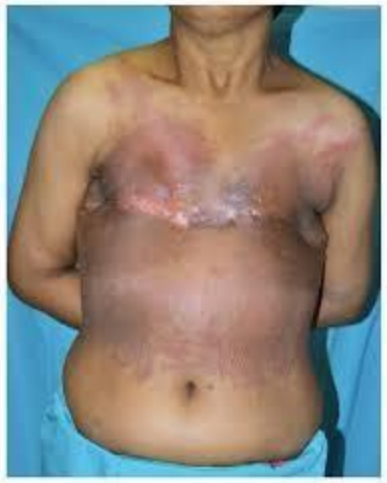




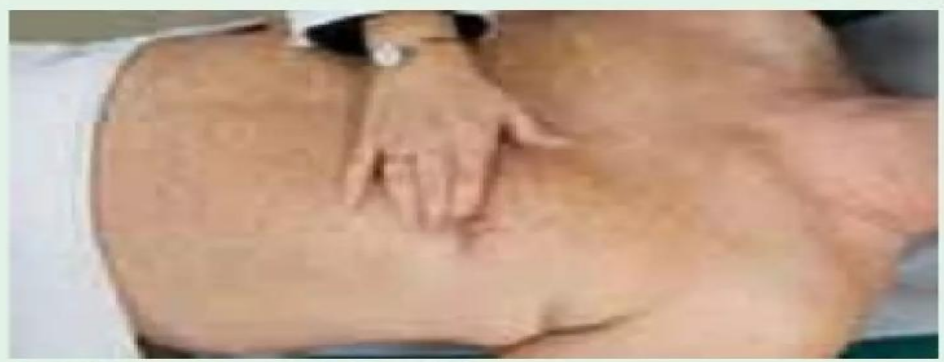
Scars:

- Scar of wounds
- Scar of burn
- Scar of irradiations
- Scars of operations:

1. Mid line sternal inscision (Sternotomy)
2. Axillary scar for inter costal tube insertion & thoracoscopy
3. Minithoracotomy scar



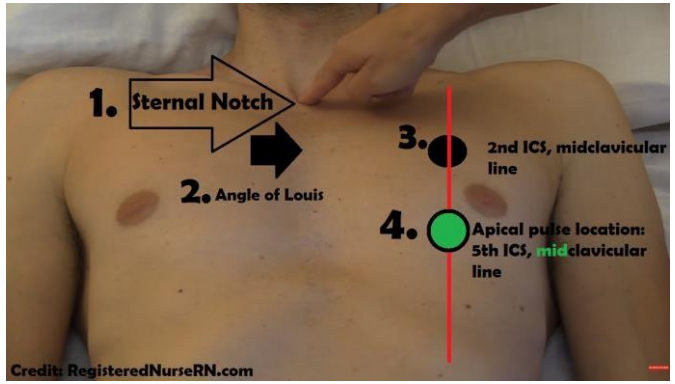
- **Palpating the Precordium**
- - Identify and palpate each cardiac site for pulsations, and thrills:
- - Apex (left ventricular area), or mitral area fifth intercostals space, midclavicular line.

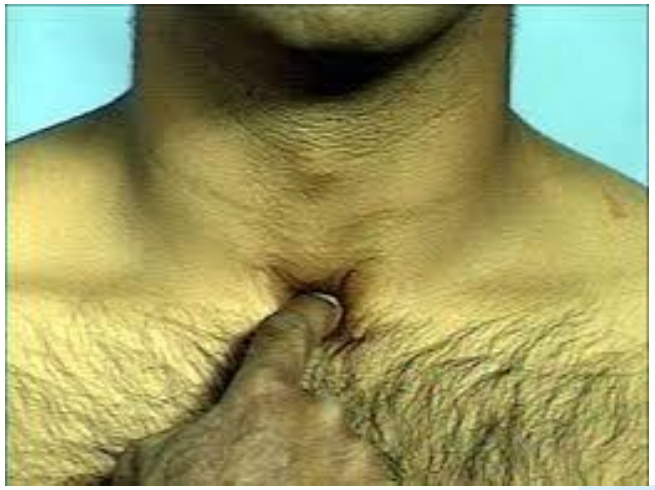


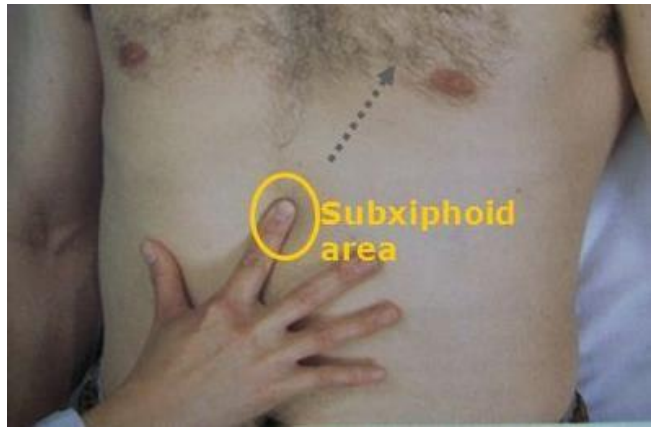
Palpating apex of heart

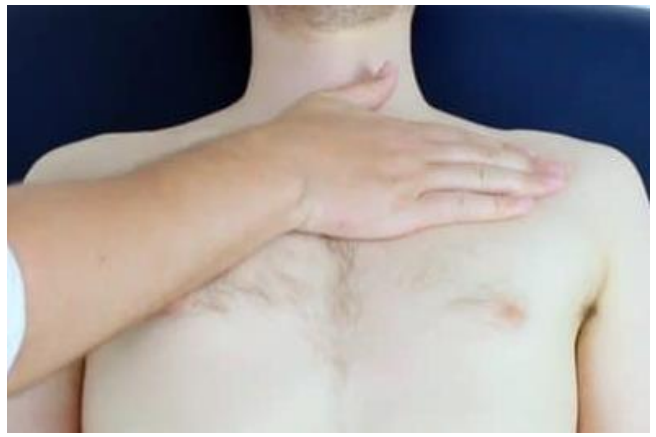
Pulsation: (Clockwise distribution)

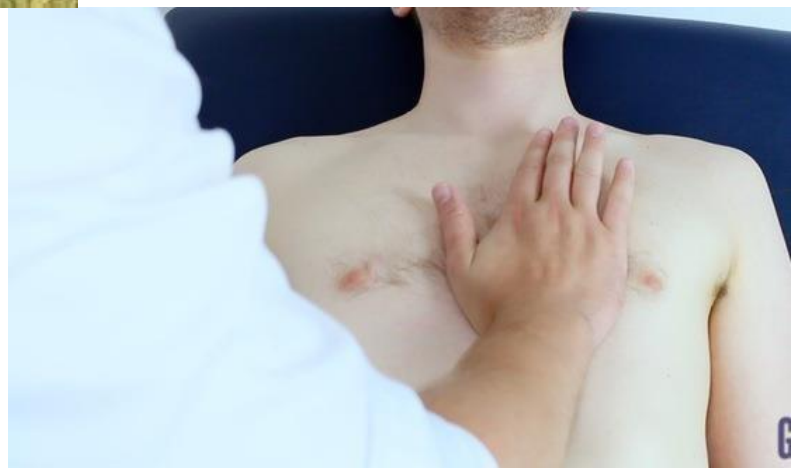
- Apical pulsation
- Epigastric pulsation
- Right parasternal pulsation
- Suprasternal pulsation
-Pulsation in 2nd left intercostal space.
- Left parasternal pulsation.





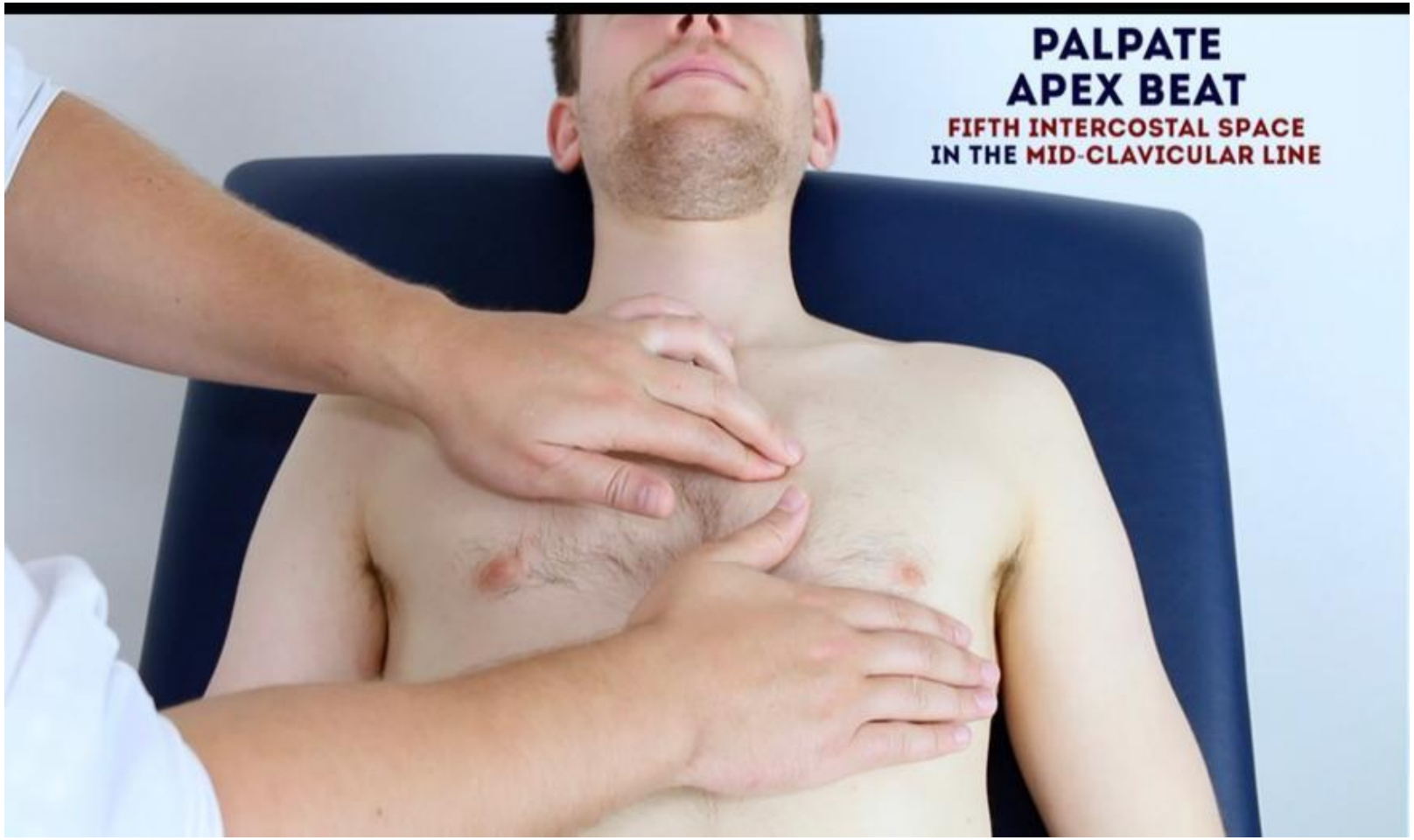




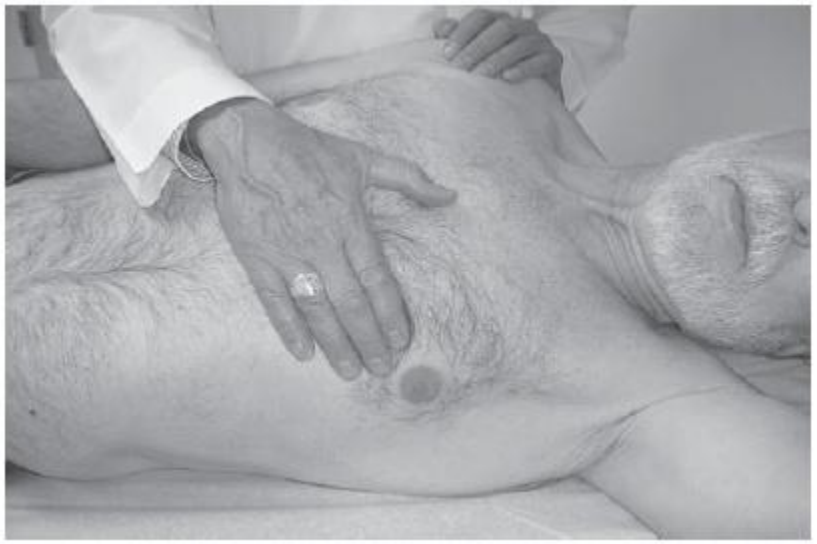


Apical pulsation

- Definition: lower-most outer-most visible and palpable cardiac impulse
- We examine for:
  - Site
  - Extent (localized or diffuse)
  - Character (hyperdynamic, heaving, weak or absent)
  - Form (systolic bulge or retraction)
  - Palpable sound or thrill
- From this criteria we can DD LV from RV apex


PALPATE
APEX BEAT
FIFTH INTERCOSTAL SPACE
IN THE MID-CLAVICULAR LINE

Palpation of the apex impulse, left lateral decubitus position

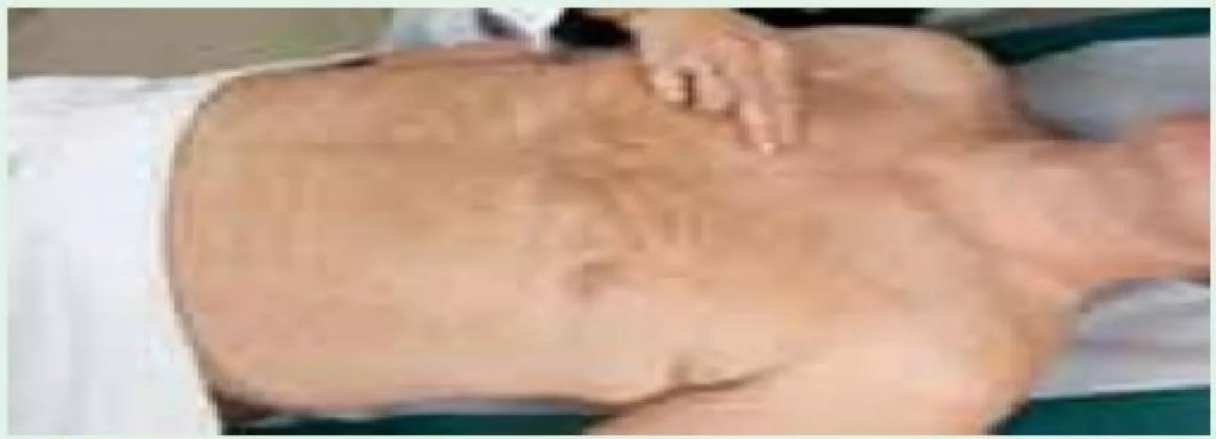


If you cannot identify the apical impulse with the patient supine, ask the patient to roll partly onto the left side—this is the *left lateral decubitus position.* Palpate again using the palmar surfaces of several fingers. If you cannot find the apical impulse, ask the patient to *exhale fully and stop breathing for a few seconds*

Other Pulsations

- Epigastric pulsations
- Left parasternal pulsation = RVE
- Second left space as PA Dilatation
- Second right space as Aortic aneurysm
- Suprasternal as aortic aneurysm, hyperdynamic circulation

- - Base right (aortic area), second intercostals space right sternal border.

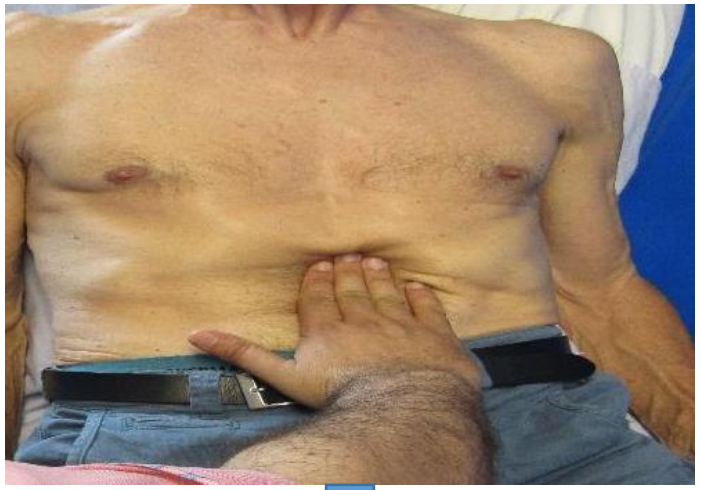


Palpating base right

- - Base left (pulmonic area), second intercostal space left sternal border.

Palpating base left

Epigastric Pulsations



Hepatic	Aortic	Cardiac
To the right	At midline	To the left
■Systolic in TR (prominent V wave) ■Presystolic in TS (prominent a wave)	■Thin persons ■Abdominal aortic aneurysm ■Transmission by a tumour	RV dilatation

Thrills

- Sensation similar to a vibrating mobile phone.
- Best felt by finger roots.
- They are palpable murmurs.
- Palpable with loud murmurs > 4/6.
- Usually indicate organic murmur.

Auscultation

A stethoscope has the following four basic parts

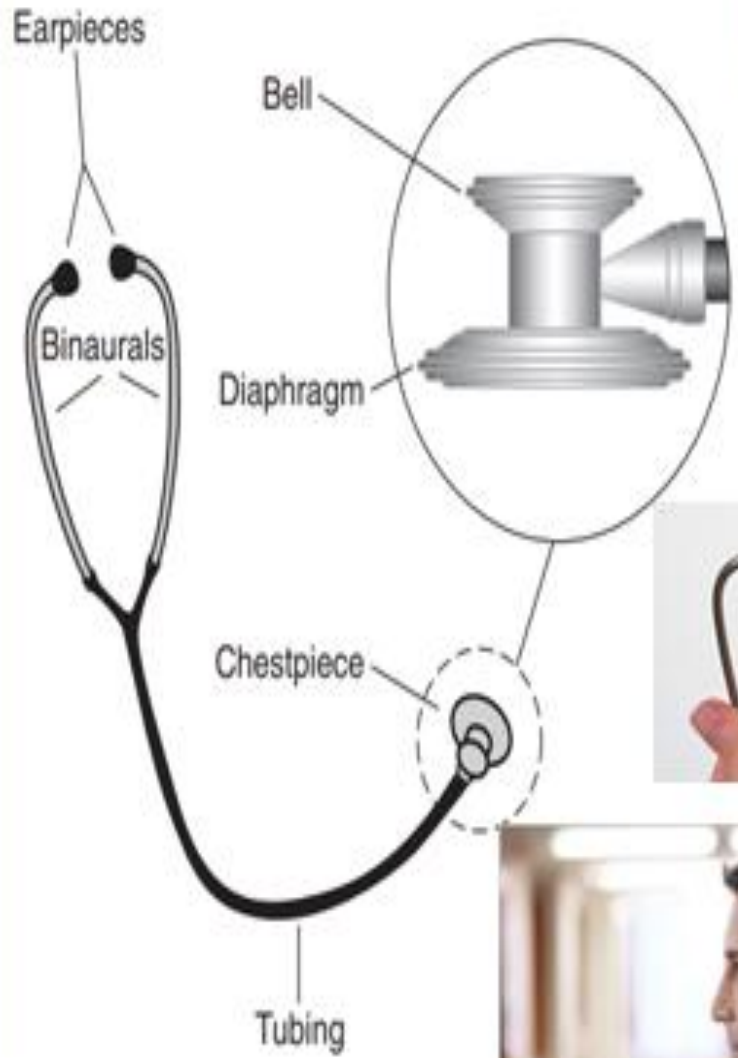
1. cone(bell)

to detect low-pitched sounds (e.g., heart S) , press lightly against the skin

2. diaphragm:
detect high-pitched sounds (e.g., Lung S). press firmly against the skin

3.Tubing

4.earpieces: should point in a forward direction as you insert them into your ears. The stethoscope headset is angled to complement the anatomy of the typical ear canal.



Auscultation

1. Position the patient supine with the head of the table slightly elevated.

2. Always examine from the patient's right side. A quiet room is essential.

3. Listen with the diaphragm at the right 2nd intercostal near the sternum (aortic area).

4. Listen with the diaphragm at the left 2nd intercostal near the sternum (pulmonic area).

5. Listen with the diaphragm at the left 3rd, 4th, and 5th interspaces near the sternum (tricuspid area).

6. Listen with the diaphragm at the apex (mitral area).
7. Listen with the bell at the apex.
8. Listen with the bell at the left 4th and 5th intercostal near the sternum.
9. Have the patient roll on their left side.
   - Listen with the **bell** at the apex.
   - This position brings out S3 and mitral murmurs.
10. Have the patient sit up, lean forward, and hold their breath in exhalation.
    - Listen with the diaphragm at the left 3rd and 4th intercostal near the sternum.
    - This position brings out aortic murmurs.
11. Record S1, S2.
12. Auscultate the carotid arteries.

- Right 2nd intercostal space Aortic Area
- Left 2nd intercostal space Pulmonic Area
- Left lower sternal border Tricuspid area
- Apex – over apical impulse Mitral area

- S_1 – closure of mitral and tricuspid valves
- S_2 – closure of aortic and pulmonic valves
- Low pitched sounds S_3, S_4, mitral stenosis

- *S 1 "lub" is caused by closing of the mitral and tricuspid valves.*
- *S 2 "dub" is caused by closing of the aortic and the pulmonic valves.*

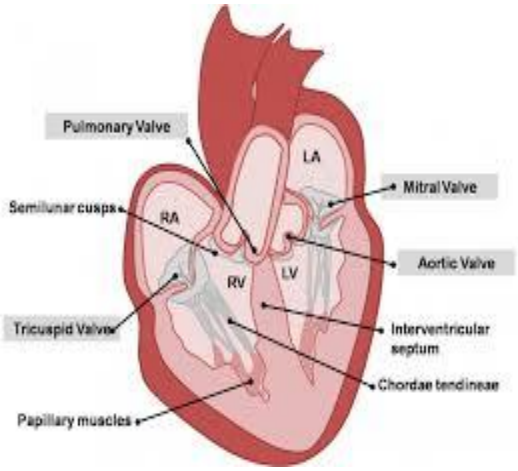
Heart murmurs

Timing in the Heart Cycle

- This is the main clinical classification:

A. **Systolic Murmurs** : Occur during heart contraction (systole). Examples:

- Mitral regurgitation
- Aortic stenosis
- Ventricular septal defect (VSD)



B. **Diastolic Murmurs** :Occur when the heart relaxes (diastole).

Examples:

- Mitral stenosis
- Aortic regurgitation

C. **Continuous Murmurs** :Happen throughout the cardiac cycle, both systole and diastole.

Example:

- Patent ductus arteriosus (PDA)


Thank
you