HKU Med
LKS Faculty of Medicine
School of Biomedical Sciences
香港大學生物醫學學院

MBBS1 CPRS Anatomy Dissection Practical I

Surface Anatomy and Chest Wall

Anatomy Team
School of Biomedical Sciences

Learning Outcomes

- Know the importance of cadaveric dissection
- Know the proper laboratory ethics/decorum
- Know the techniques of body dissection
- Identify the important surface anatomy of the anterior thoracic wall
- Identify the structures located within the intercostal space
- Know the procedures involved in the removal of the chest wall

References

- Grant's Dissector, Tank PW
- Grant's Dissection Videos, Detton AJ
- Gray's Anatomy for students, Drake RL, Vogl W, Mitchell AWM

Instruction pages based on Grant's Dissector 16th ed

Question of the Day: Why Dissect?

- **Respecting Life**
- Learning anatomical structures in **REAL**
- Learning anatomical structures **hands-on**
- Appreciating anatomical structure in 3D
- Observing, palpating and feeling the human body
- Developing an understanding of topographic relationships of anatomical structures to each other
- Experience the first encounter with the “Great Body Teachers” (cadaver)

Bottom Line: **REALITY IS THE BEST TEACHER!**

Lab Work Ethics/ Decorum

- Laboratory partners = work as a team
- Meet with your “Great Body Teacher” = “Silent Mentor” = the cadaver. Be Prepared
- Care of cadaver = respect her/him and Keep her/him tidy and clean after dissection
- No unauthorized photo taking!

Lab Work Ethics/ Decorum

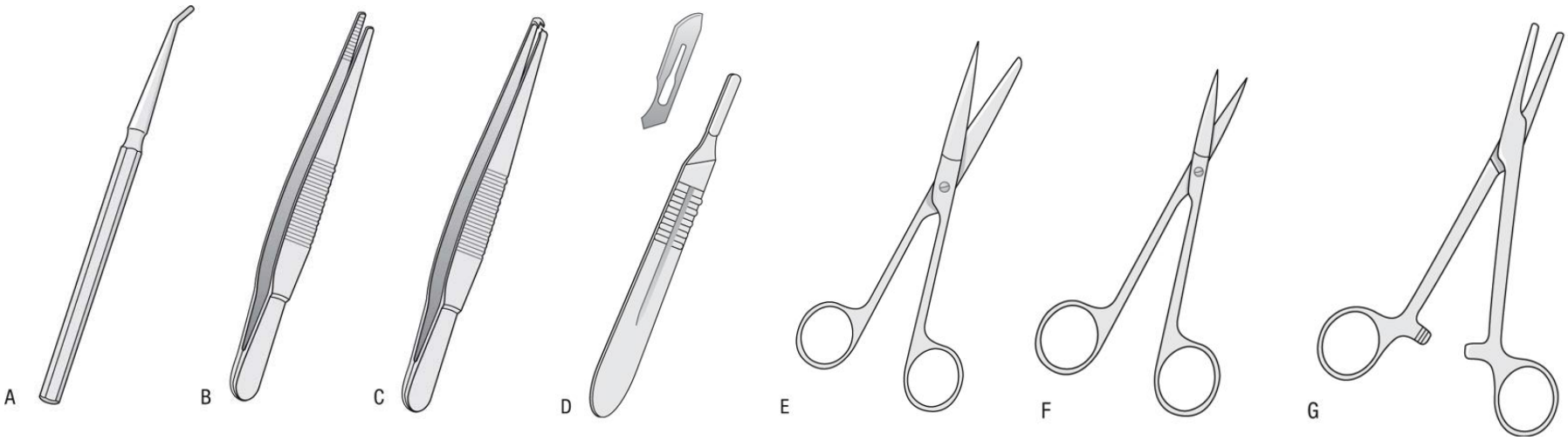
- Wear proper clothing and gears, tie your hair up if needed, and protect yourself
- Dispose human remains to the proper bin
- Dispose sharp objects to the yellow box
- Proper use and care of instruments

Lab Work Ethics/ Decorum

- Read the instructions from Grant's Dissector
- Follow the instruction carefully(remember the origami you did in the MMI? Time to put those skills in action)

Respect for Cadaver: They were once living persons who donated their bodies for medical studies in good faith. They are **YOUR FIRST PATIENT**

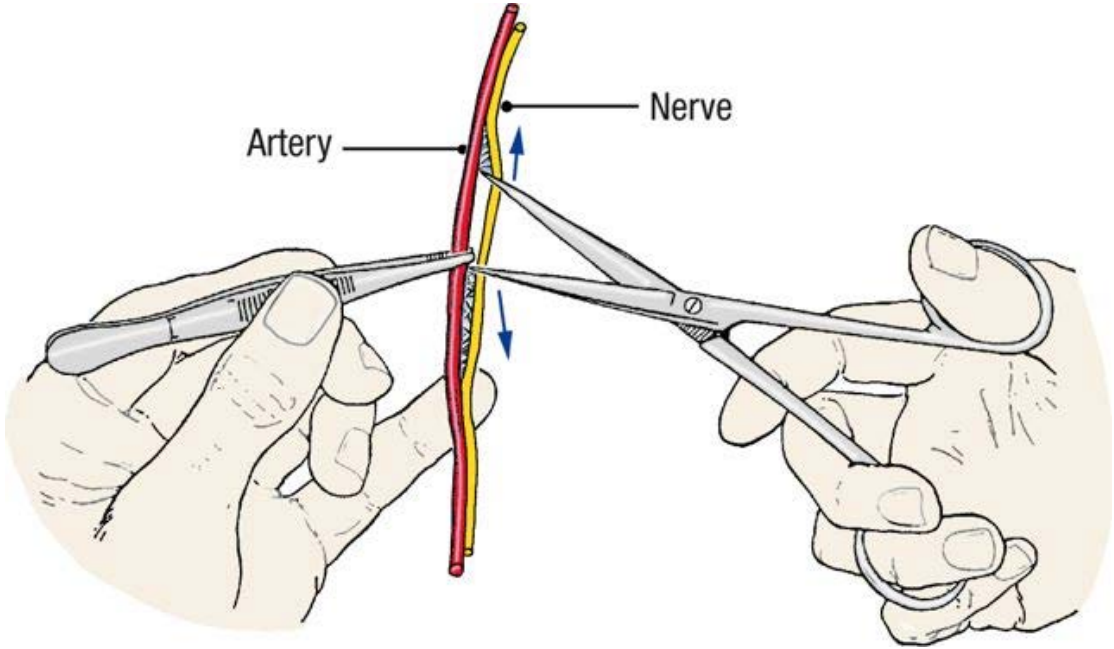
Basic Dissection Instruments



Personal dissection instruments. **A**. Probe. **B**. Forceps. **C**. Tissue (rat-toothed) forceps. **D**. Scalpel and removable blade. **E**. Large scissors. **F**. Small scissors. **G**. Hemostat.

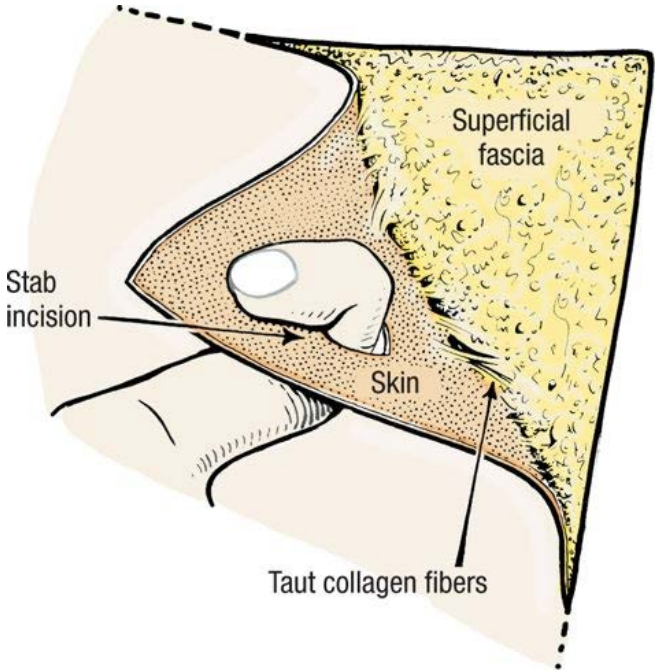
Basic Dissection Techniques

- You shall handle the instrument like a **PRO** from today onwards
- Use blunt dissection 90% of the time

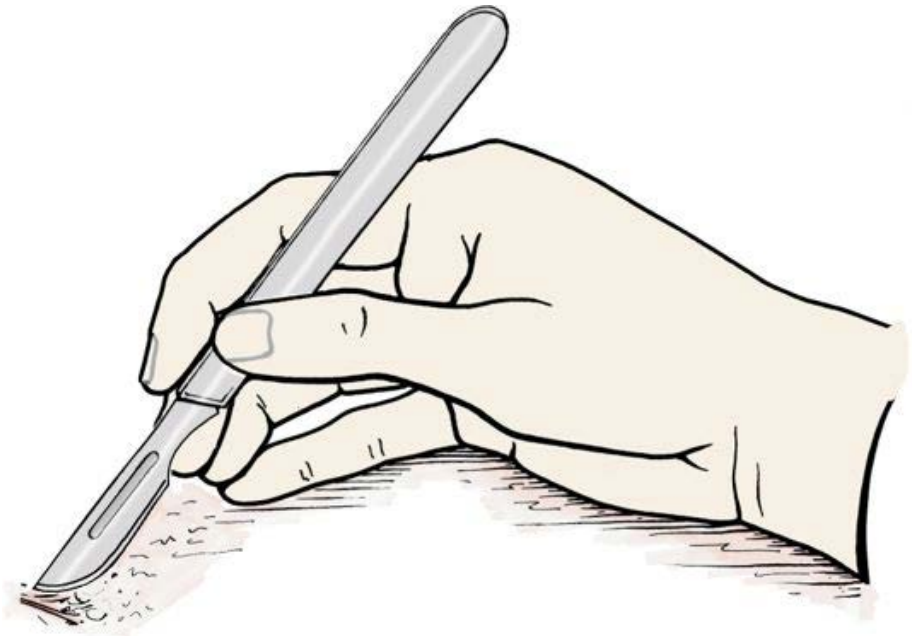


Scissors technique for separating structures. Closed scissors are inserted between structures into the connective tissue and then opened to gently spread the tissue.

Basic Dissection Techniques

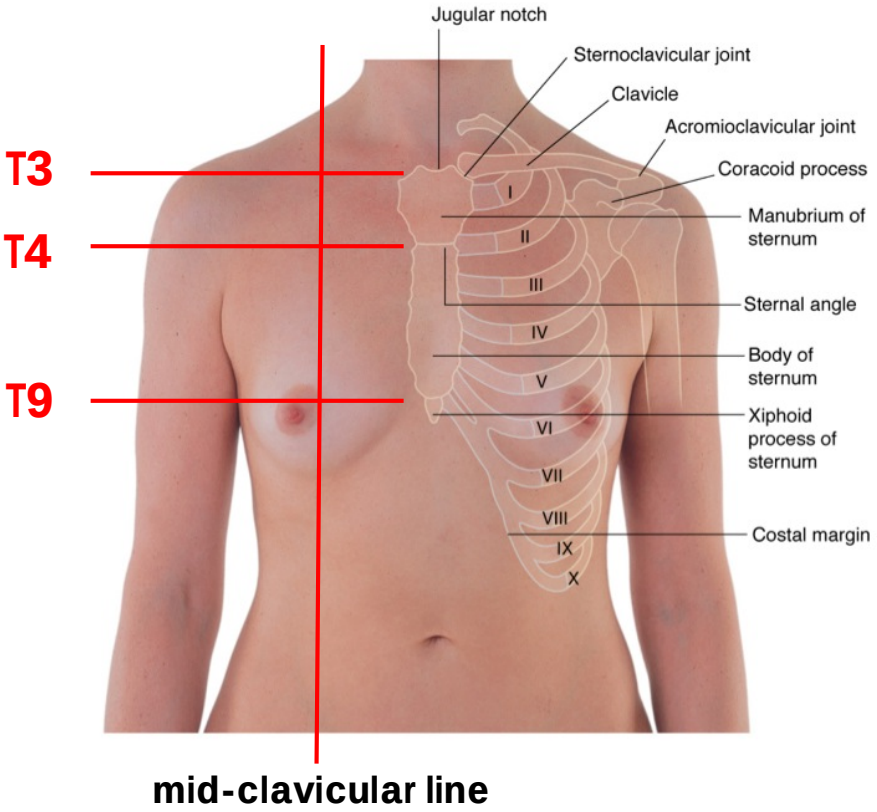


Buttonhole technique. Make a stab incision in a flap of skin. Pull on the skin as hard as you can. Use the scalpel blade to cut along where the fibers are taut.



Just like holding a pen. When dissecting, rest the hand to reduce unsteady movements.

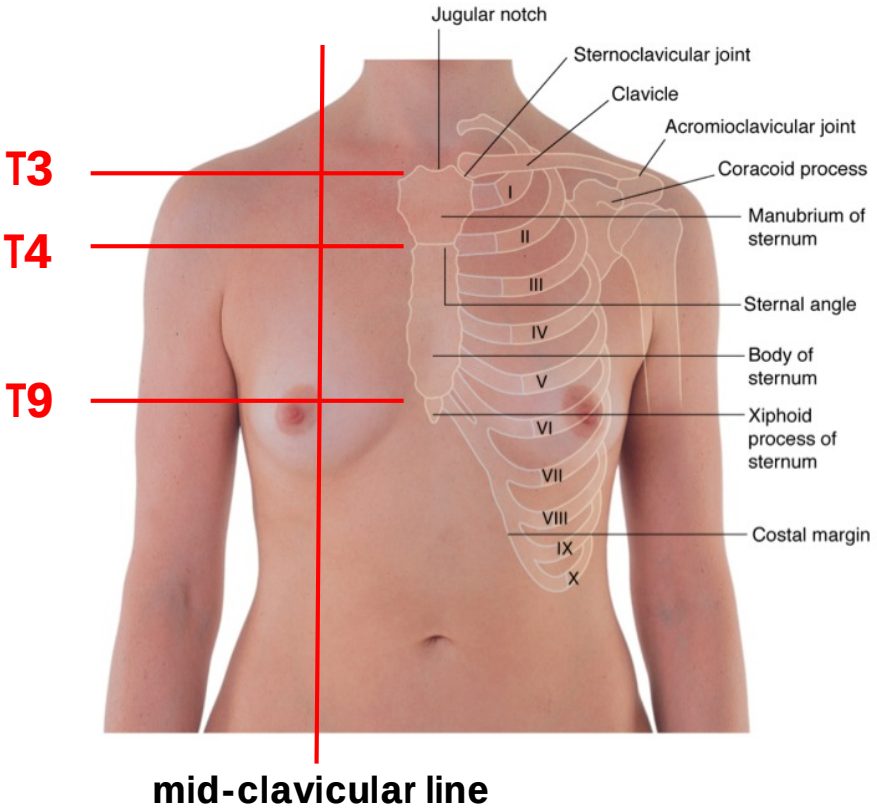
Surface anatomy of Thorax



Rib levels is different than vertebral levels

Anteriorly, the rib level is usually lower than the corresponding thoracic vertebral level

Surface anatomy of Thorax

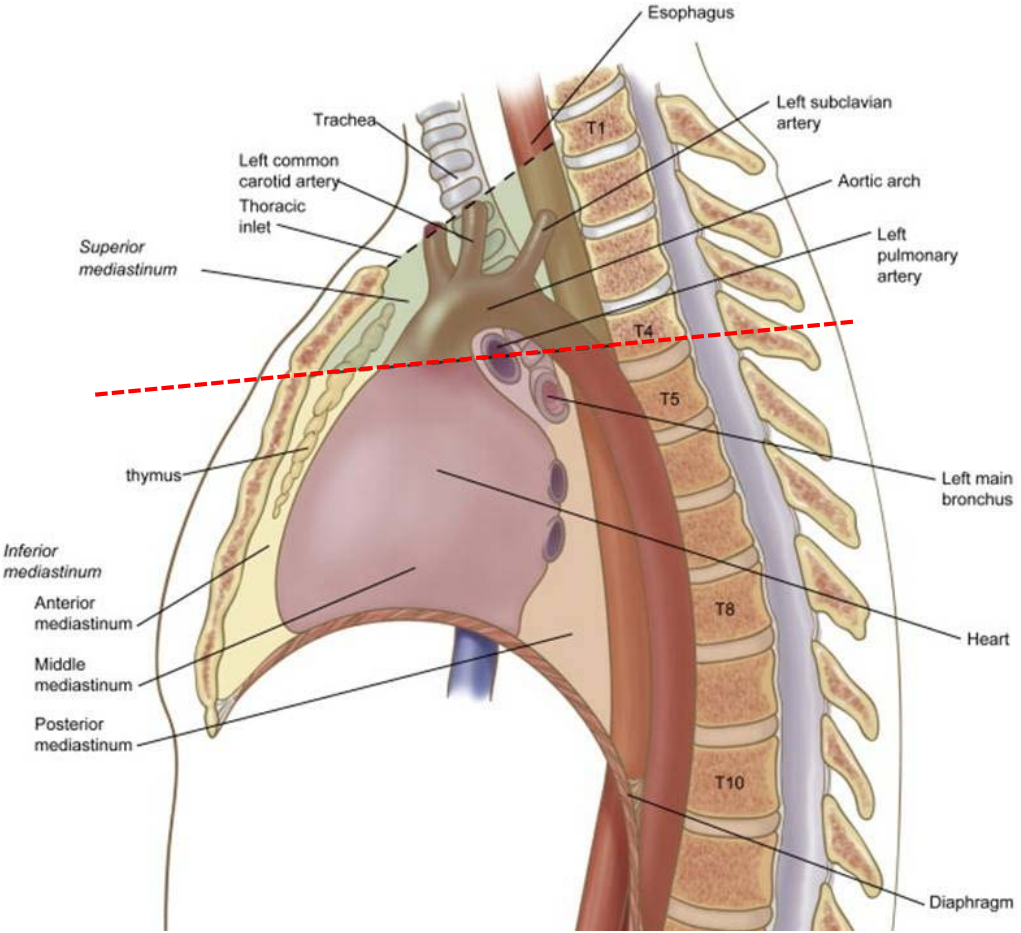


Vertebral level correspondence

Suprasternal notch (jugular notch)– **T3**

Angle of Louis (sternal angle)– **T4**

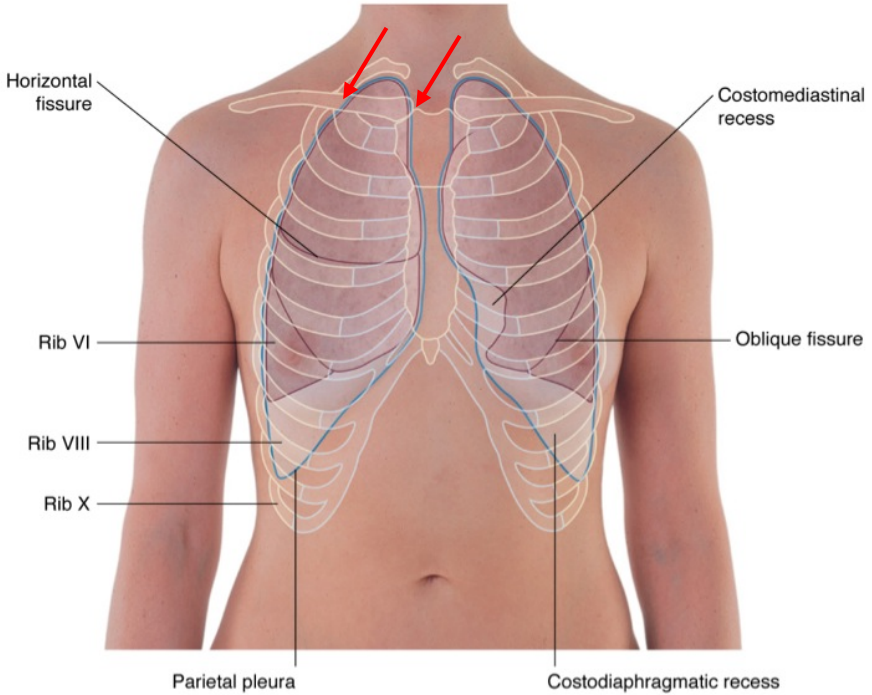
Xiphisternal joint – **T9**



Angle of Louis (sternal angle)– **T4**

- Boundary between the superior and inferior mediastinum
- Tracheal Bifurcation
- End of the azygos system into SVC
- Ligamentum arteriosum
- Loop of left recurrent laryngeal nerve around aortic arch
- Aortic arch starts and ends

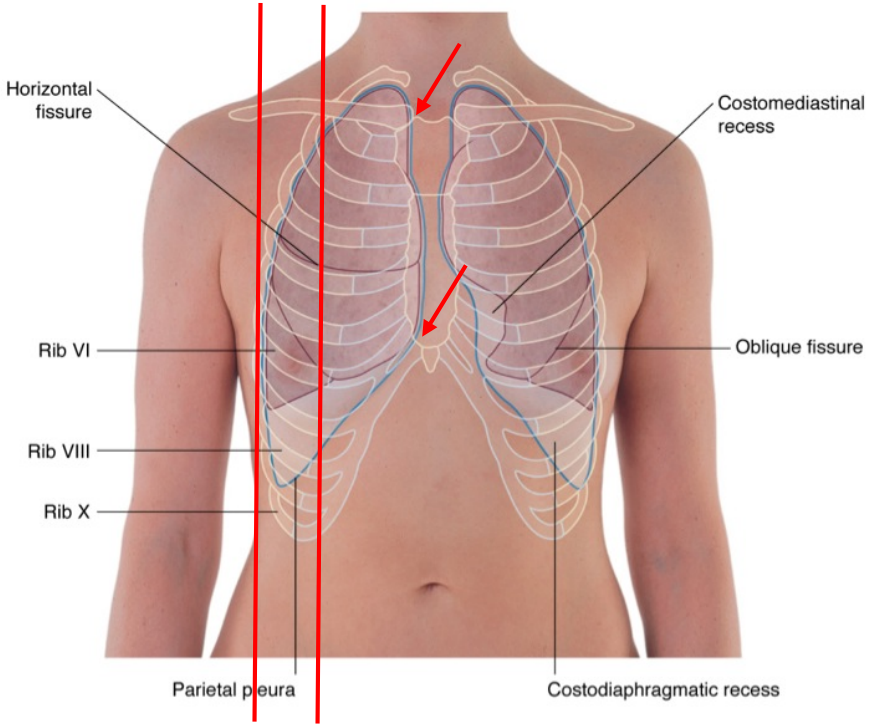
Surface anatomy of Thorax



Surface marks of the right pleura and the right lung

pleura: at the apex it is a curved line drawn from the sterno-clavicular joint to the junction between the medial and middle third of the clavicle; the highest point should be about 1 inch from the clavicle

Surface anatomy of Thorax

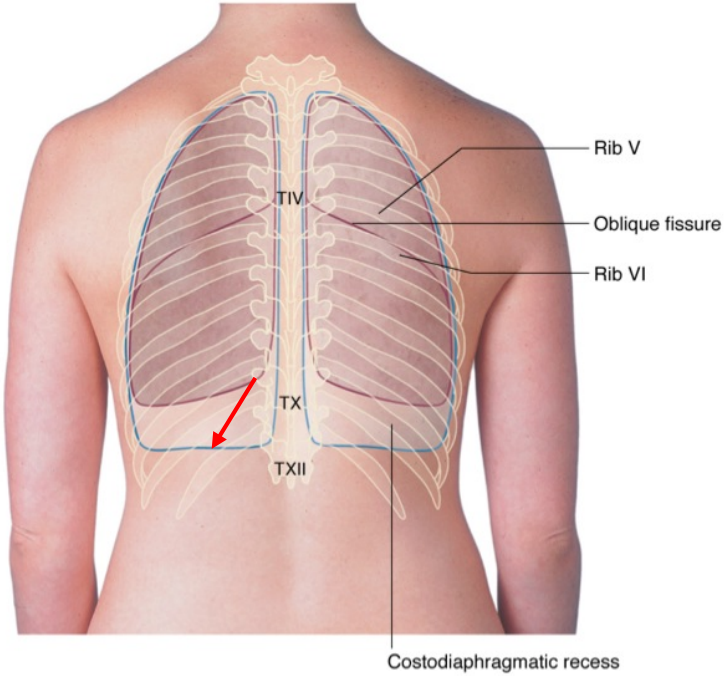


pleura: the medial border is a line drawn from the sternoclavicular joint to the midline of the sternum down to the 6th costal cartilage

From there draw a line joining three points to complete the curve:

1. 8th rib at the mid clavicular line
2. 10th rib at the midaxillary line
3. 12th rib at the lateral border of the erector spinae muscle

Surface anatomy of Thorax



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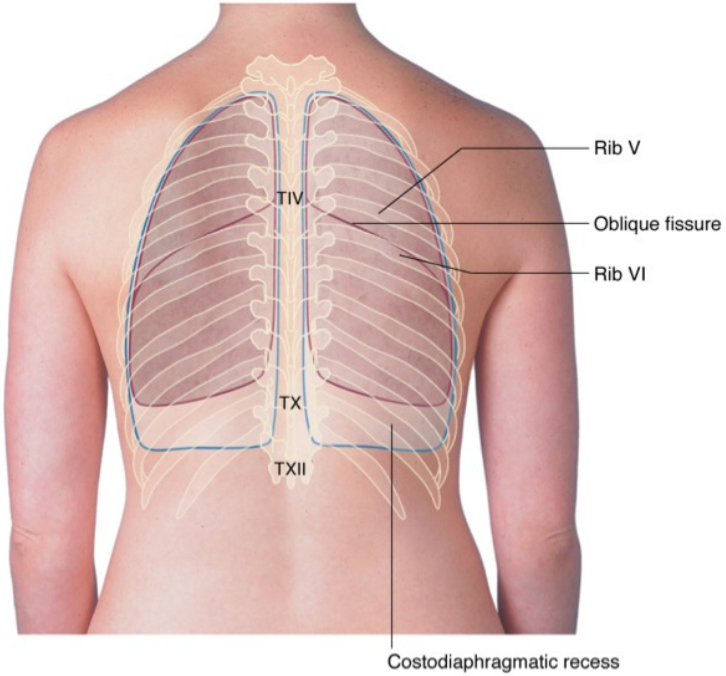
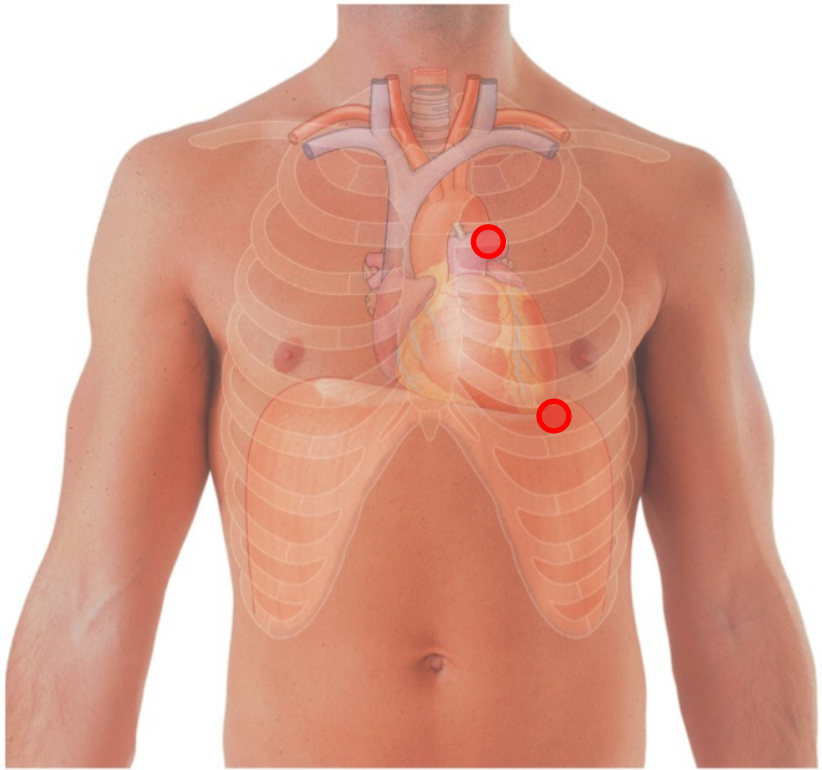


the lung: the apex, medial surface and costal surface follow closely the surface mark of the pleura but the diaphragmatic surface is about 2 inches (two ribs space) above the surface mark of the pleura in its neutral position

Surface anatomy of Thorax



Surface marks of the heart

(Important for auscultation and surgical procedure of the hear)

left border: a line between

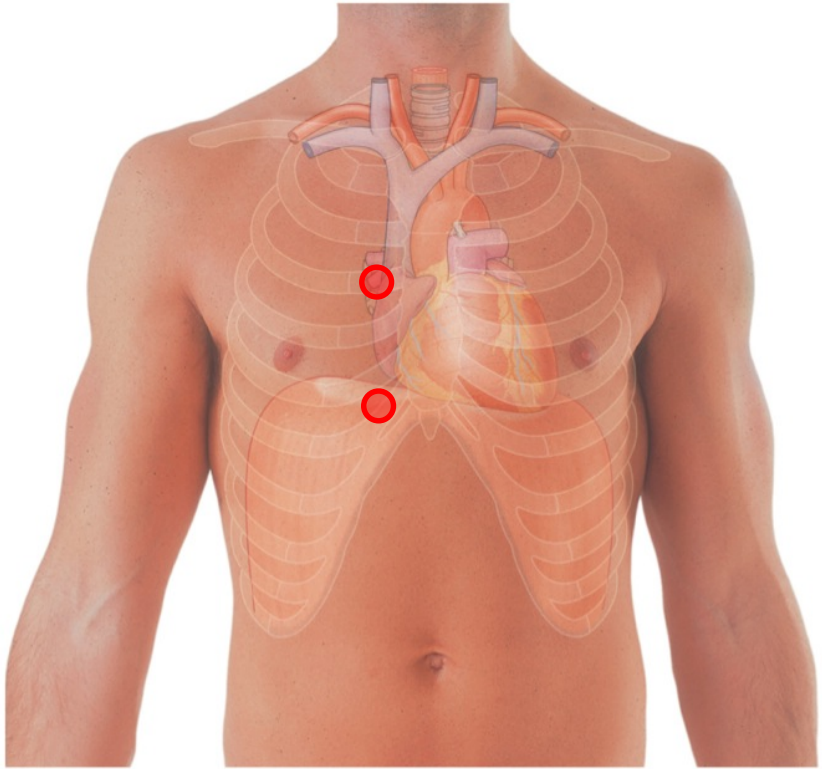
1cm from the left edge of the sternum, 2nd left costal cartilage

&

Mid-clavicular line, left 5th intercostal space (apex beat)

On left ventricle

Surface anatomy of Thorax



Surface marks of the heart

right border: a line between

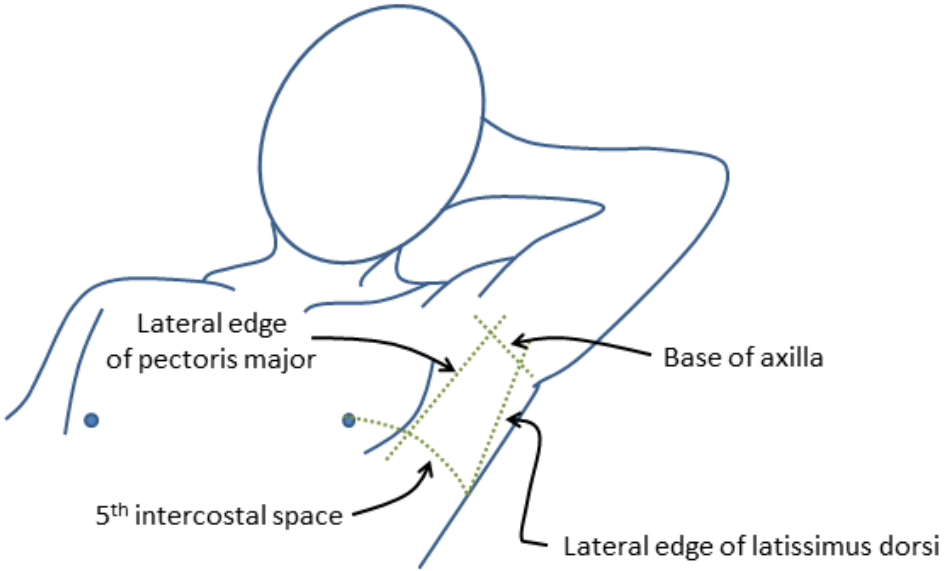
1cm from the right edge of the sternum, 3rd right costal cartilage

&

1cm from the right edge of the sternum, 6th right costal cartilage

On right atrium

Triangle of Safety



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For the safe position for intercostal catheter (ICC) placement.

- The apex is the axilla, and the triangle is formed by the:
- Lateral border of the pectoralis major anteriorly
- Lateral border of the latissimus dorsi posteriorly
- Inferiorly, by a horizontal line from the nipple (commonly the 5th intercostal space)

Dissection of Chest Wall

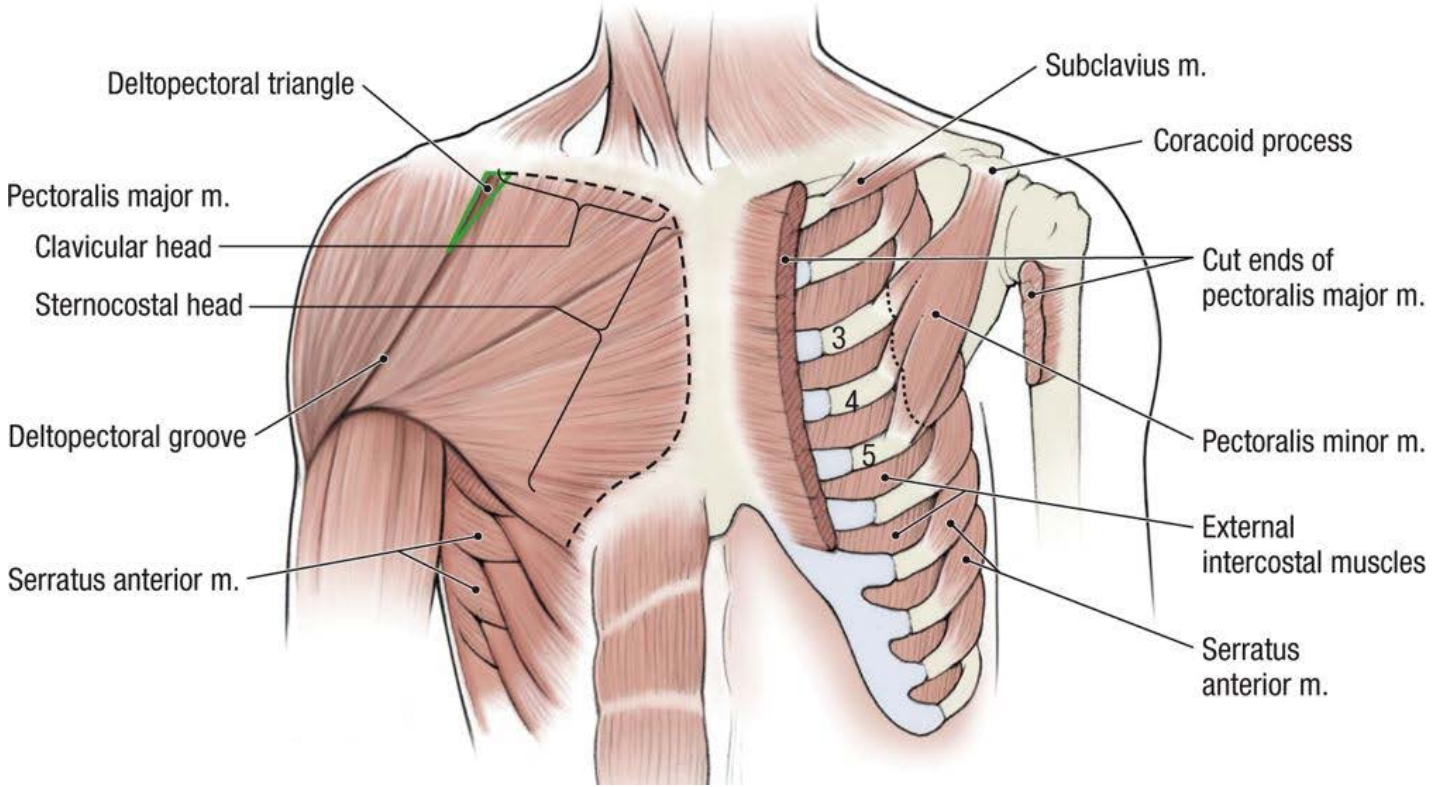
Pectoral region: follow the instruction P32-34

Structures to be identified

- Pectoralis major and minor
- Serratus anterior muscle
- Medial and lateral pectoral nerves

Note: **do not disturb the deltoid triangle and the cephalic vein!**

Dissection of Chest Wall



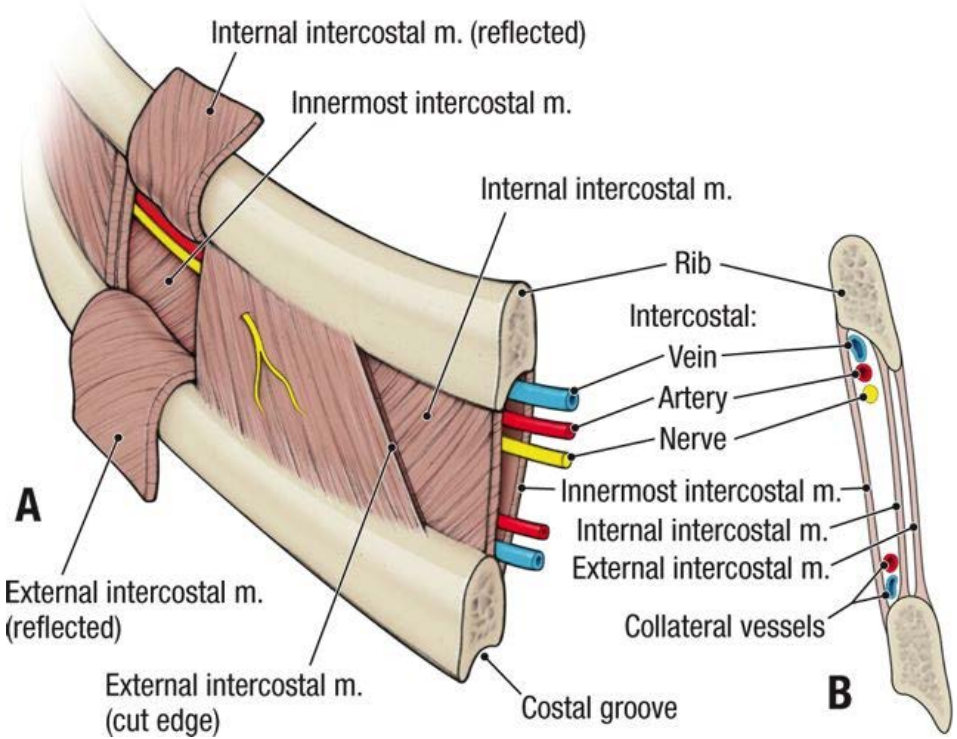
Dissection of Chest Wall

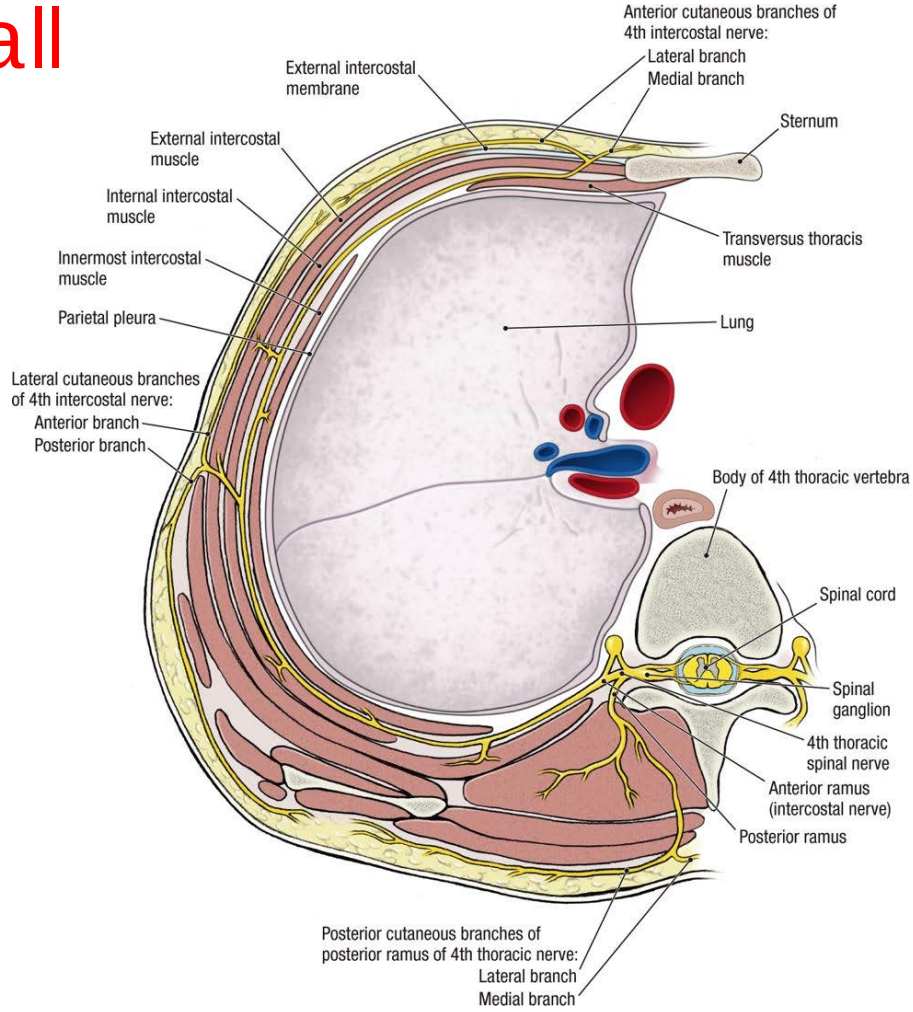
Chest wall: follow the instruction P75-76

Structures to be identified

- Intercostal vein, artery and nerve
- Intercostal muscles: External; internal and innermost

Dissection of Chest Wall





Dissection of Chest Wall

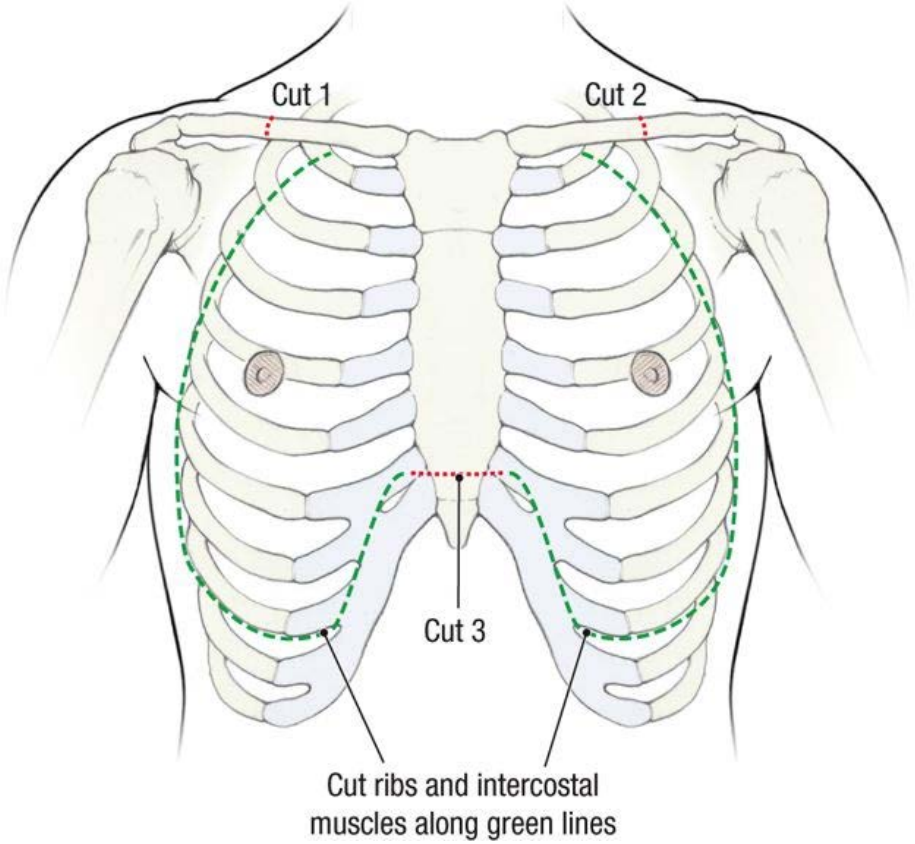
Removal of chest wall: follow the instruction P77-78

Structures to be identified

- Intercostal vein, artery and nerve
- Transversus thoracis muscle
- Internal thoracic artery and vein
- Superior epigastric and musculophrenic arteries

Note: **be very careful and preserve subclavian structures!**

Dissection of Chest Wall



Check List

- Pectoralis major and minor
- Serratus anterior muscle
- Medial and lateral pectoral nerves
- Intercostal vein, artery and nerve
- Intercostal muscles: External; internal and innermost
- Transversus thoracis muscle
- Internal thoracic artery and vein
- Superior epigastric and musculophrenic arteries

VR Anatomy and Chest Ultrasound Demonstration

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