

Exercise walk-through

3.4

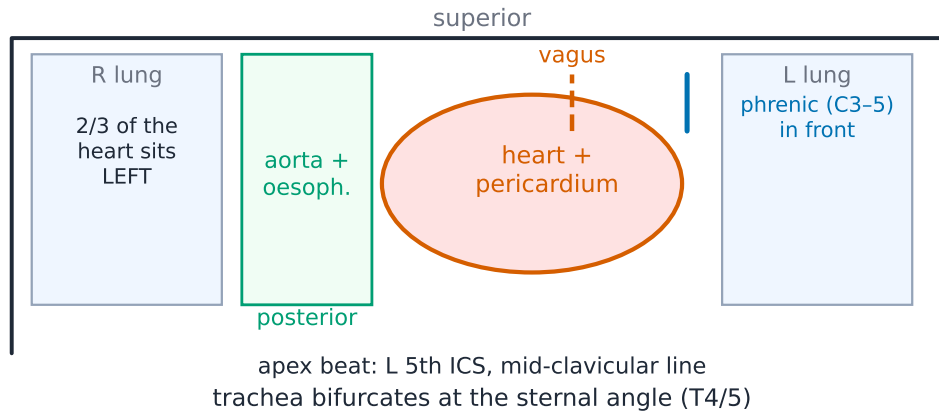
Thorax

University Medicine

Thorax - the mediastinum

- 1 **Divisions** Middle = heart + **pericardium** (two-thirds LEFT); posterior = descending aorta + oesophagus; superior above.
- 2 **Nerves** Phrenic (C3-5) ANTERIOR to the lung root; vagus posterior - development fixed the routes.
- 3 **Anchors** Bifurcation at the sternal angle (T4/5); arch branches brachiocephalic, L carotid, L subclavian; apex at L5 ICS MCL.

Thorax - the engine room in one view



Heart centre, aorta and oesophagus behind, phrenic in front.

Exercises 2.1-2.3

2.1 Which nerve supplies motor power to the diaphragm, and from which roots? [3]

2.2 Where does the trachea bifurcate? [3]

2.3 Why is pericardial tamponade lethal at 100–200 mL? [3]

Exercises 2.1-2.3

2.1 Which nerve supplies motor power to the diaphragm, and from which roots? [3]

2.1

- Phrenic nerve, C3–5 (“C3, 4, 5 keeps the diaphragm alive”).

2.2 Where does the trachea bifurcate? [3]

2.2

- At the sternal angle, T4/5 disc level ✓.

2.3 Why is pericardial tamponade lethal at 100–200 mL? [3]

2.3

- The fibrous bag cannot stretch: small volumes stop diastolic filling.

Exercise 3.1

3.1 A mass at the left lung root: hoarseness plus left shoulder tip pain.

Explain both symptoms from the two nerve routes. Predict the order of signs if the mass grows anteriorly vs posteriorly. State the examination for each. [8]

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3.1

- Vagus posterior: left recurrent laryngeal under the arch → hoarseness; phrenic anterior: C4 referral to shoulder tip.
- Growing anteriorly irritates phrenic first (shoulder pain, then exam: palpate/tap the diaphragm); posteriorly, vagal/recurrent first (hoarseness, then exam: voice + laryngoscopy).

Exercise 3.2

3.2 A stabbing chest injury: hypotension, engorged neck veins, muffled sounds.

Name the anatomy (pericardium as a closed bag) and the mechanism (diastolic filling collapse). Explain why the pulse may fall on inspiration. State the intervention's anatomical route and target.

[7]

Exercise 3.2

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3.2

- Pericardium: closed, fibrous, no slack. Blood inside compresses the thin-walled right heart during diastole → falling output.
- Inspiration lowers intrathoracic pressure, pooling venous blood in the lungs; with the pericardium full, the septum shifts and the pulse volume drops (pulsus paradoxus).
- Needle below the xiphoid, aimed at the left shoulder – the route avoids the pleura and reaches the pericardial sac.