

FAQs, MCQs, Spots

Frequently Asked Questions — Appendix 2 (Intercostal Nerves, Arteries of Thorax, and Clinical Terms)

1. What is a typical intercostal nerve?

A typical intercostal nerve is the anterior ramus of the 3rd to 6th thoracic spinal nerves that remain confined to the intercostal spaces and supply the muscles, pleura, and overlying skin.

2. Which thoracic nerves are considered atypical and why?

The **1st, 2nd, and 7th–12th** thoracic nerves are atypical because they either supply structures beyond the thoracic wall (upper limb, abdominal wall) or have a modified course.

3. What are the branches of a typical intercostal nerve?

- Communicating branch to sympathetic ganglion
 - Collateral branch
 - Lateral cutaneous branch
 - Muscular branches
 - Anterior cutaneous branch
-

4. What is the order of structures in the intercostal space?

From above downwards: **Vein – Artery – Nerve (VAN)**.

5. Which intercostal nerve gives rise to the intercostobrachial nerve?

The **2nd intercostal nerve**. Its lateral cutaneous branch forms the **intercostobrachial nerve**,

which supplies the skin of the axilla and medial arm.

6. What is the subcostal nerve?

The **12th thoracic nerve**, which lies below the 12th rib and supplies the **anterolateral abdominal wall** and **buttock skin**.

7. What is the chief artery of the anterior thoracic wall?

The **internal thoracic artery**, a branch of the **subclavian artery**, which supplies the anterior intercostal spaces, diaphragm, and anterior abdominal wall.

8. What are the terminal branches of the internal thoracic artery?

- **Superior epigastric artery**
 - **Musculophrenic artery**
-

9. Which arteries supply the posterior intercostal spaces?

- **1st and 2nd spaces:** Superior intercostal artery (branch of costocervical trunk).
 - **3rd–11th spaces:** Posterior intercostal arteries from the **thoracic aorta**.
-

10. What are the main branches of the internal thoracic artery?

Pericardiophrenic, mediastinal, anterior intercostal, and terminal branches (superior epigastric and musculophrenic).

11. What is the site of pericardial tapping and why is it chosen?

In the **left 4th or 5th intercostal space just lateral to the sternum**. The pleura is displaced laterally here, allowing direct access to pericardium without puncturing the lung.

12. What is the clinical importance of the internal thoracic artery?

It is often used as a **graft in coronary artery bypass surgery (CABG)** because of its durable patency and proximity to the heart.

13. Why are foreign bodies more often found in the right bronchus?

Because the **right bronchus** is **wider, shorter, and more vertical**, making it a direct continuation of the trachea.

14. What is the preferred site for bone marrow puncture in adults?

The **manubrium sterni**, as it contains active marrow and is easily accessible.

15. What is the function of the collateral branch of an intercostal nerve?

It supplies the **intercostal muscles, costal pleura, and periosteum** of the rib below.

16. What is the sensory area supplied by the typical intercostal nerves?

The skin and muscles of the **thoracic wall**, and the **costal pleura**.

17. How do the intercostal nerves communicate with the sympathetic system?

Through **white and gray rami communicantes** connecting each intercostal nerve to its corresponding sympathetic ganglion.

18. What are the effects of sympathetic fibers carried by intercostal nerves?

They are **vasomotor, sudomotor** (to sweat glands), and **pilomotor** (to arrector pili muscles).

19. Which structure is at risk during pericardiocentesis?

The **internal thoracic artery**, lying about 1 cm lateral to the sternum.

20. Which intercostal nerve supplies the parietal peritoneum?

The **lower intercostal nerves (7th–11th)** supply the parietal peritoneum through their continuation into the abdominal wall.

1. The 3rd to 6th intercostal nerves are called:

- A. Atypical
- B. Typical
- C. Subcostal
- D. Collateral

?

Answer:

B.

2. The first intercostal nerve contributes mainly to:

- A. Brachial plexus
- B. Axillary nerve
- C. Intercostobrachial nerve
- D. Musculocutaneous nerve

? **Answer:** A. Brachial plexus

3. The intercostobrachial nerve is derived from:

- A. 1st intercostal nerve
- B. 2nd intercostal nerve
- C. 3rd intercostal nerve
- D. 4th intercostal nerve

? **Answer:** B. 2nd intercostal nerve

4. The 12th thoracic nerve is also known as:

- A. Supracostal nerve
- B. Subcostal nerve
- C. Accessory intercostal nerve
- D. Thoracodorsal nerve

? **Answer:** B. Subcostal nerve

5. The order of structures in the costal groove from above downward is:

- A. Artery–Vein–Nerve
- B. Vein–Nerve–Artery
- C. Vein–Artery–Nerve
- D. Nerve–Artery–Vein

? **Answer:** C. Vein–Artery–Nerve

6. The internal thoracic artery arises from the:

- A. Axillary artery
- B. 1st part of subclavian artery
- C. 2nd part of subclavian artery

D. Aortic arch

? **Answer:** B. 1st part of subclavian artery

7. The internal thoracic artery terminates in the 6th intercostal space as:

A. Superior intercostal and pericardiophrenic arteries

B. Musculophrenic and superior epigastric arteries

C. Costocervical and subscapular arteries

D. Lateral thoracic and descending thoracic arteries

? **Answer:** B. Musculophrenic and superior epigastric arteries

8. The posterior intercostal arteries for the 3rd–11th spaces arise from:

A. Internal thoracic artery

B. Descending thoracic aorta

C. Superior intercostal artery

D. Axillary artery

? **Answer:** B. Descending thoracic aorta

9. The 1st and 2nd posterior intercostal arteries arise from:

A. Descending aorta

B. Superior intercostal artery

C. Axillary artery

D. Internal thoracic artery

? **Answer:** B. Superior intercostal artery

10. The pericardiophrenic artery accompanies which nerve?

A. Vagus nerve

B. Phrenic nerve

C. Intercostal nerve

D. Sympathetic trunk

? **Answer:** B. Phrenic nerve

11. Which artery supplies the anterior intercostal spaces?

A. Internal thoracic artery

B. Posterior intercostal artery

- C. Subcostal artery
- D. Costocervical trunk

? **Answer:** A. Internal thoracic artery

12. The preferred site for pericardiocentesis is:

- A. Left 5th intercostal space near sternum
- B. Right 4th intercostal space
- C. Left midclavicular line
- D. 2nd intercostal space lateral to sternum

? **Answer:** A. Left 5th intercostal space near sternum

13. The internal thoracic artery is commonly used in:

- A. Coarctation repair
- B. Lung resection
- C. Coronary artery bypass grafting
- D. Rib fracture repair

? **Answer:** C. Coronary artery bypass grafting

14. The 7th–11th intercostal nerves supply:

- A. Diaphragm
- B. Abdominal wall
- C. Upper limb
- D. Mediastinum

? **Answer:** B. Abdominal wall

15. The subcostal nerve runs:

- A. Above the 12th rib
- B. Below the 12th rib
- C. Between 10th and 11th ribs
- D. Along the sternal margin

? **Answer:** B. Below the 12th rib

16. The internal thoracic artery gives branches to:

- A. Pericardium

- B. Thymus
 - C. Diaphragm
 - D. All of the above
- ? **Answer:** D. All of the above
-

17. The white and gray rami communicantes connect intercostal nerves with:

- A. Dorsal root ganglion
 - B. Sympathetic ganglia
 - C. Parasympathetic ganglia
 - D. Brachial plexus
- ? **Answer:** B. Sympathetic ganglia
-

18. The collateral branch of intercostal nerve supplies:

- A. Parietal pleura and intercostal muscles
 - B. Only pleura
 - C. Skin over sternum
 - D. Diaphragm
- ? **Answer:** A. Parietal pleura and intercostal muscles
-

19. Which structure is at risk during pericardial tapping?

- A. Internal thoracic artery
 - B. Superior vena cava
 - C. Phrenic nerve
 - D. Brachiocephalic vein
- ? **Answer:** A. Internal thoracic artery
-

20. Bone marrow aspiration from sternum is best done at:

- A. Body of sternum
 - B. Manubrium sterni
 - C. Xiphoid process
 - D. Xiphisternal joint
- ? **Answer:** B. Manubrium sterni
-

Spots on Thorax

These “spots” refer to **surface anatomical points** that help identify the positions of key thoracic structures — arteries, veins, nerves, and viscera — during **clinical examination, palpation, auscultation, and surgical procedures**.

They serve as **guide points** for accurate diagnosis and safe intervention.

1. Apex Beat (Cardiac Impulse)

- **Location:** 5th left intercostal space, **1 cm medial to the midclavicular line**.
 - **Clinical Use:** Palpated to assess the position and force of the left ventricle; displacement may indicate **cardiomegaly** or **pleural effusion**.
-

2. Aortic Area

- **Location:** 2nd right intercostal space close to the sternum.
 - **Clinical Use:** Site for auscultation of the **aortic valve**; murmurs heard here indicate **aortic stenosis or regurgitation**.
-

3. Pulmonary Area

- **Location:** 2nd left intercostal space close to the sternum.
 - **Clinical Use:** Auscultation point for **pulmonary valve** sounds and **pulmonary hypertension murmurs**.
-

4. Tricuspid Area

- **Location:** Lower end of the body of sternum near the **right 6th costal cartilage**.
 - **Clinical Use:** Auscultation of **tricuspid valve**; abnormalities include **tricuspid regurgitation** or **right-sided heart failure**.
-

5. Mitral Area

- **Location:** At the **apex beat** — 5th left intercostal space, 1 cm medial to the midclavicular line.
 - **Clinical Use:** Auscultation site for **mitral valve**; used to detect **mitral stenosis** or **regurgitation**.
-

6. Surface Marking of Superior Vena Cava

- **Location:** Begins behind the **1st right costal cartilage** and descends to end behind the **3rd right costal cartilage**.
 - **Clinical Use:** Important for **central venous catheterization** and diagnosis of **SVC obstruction**.
-

7. Surface Marking of Aortic Arch

- **Location:** Extends from the **2nd right sternocostal junction** to the **left 2nd sternocostal junction**, reaching as high as the **midpoint of the manubrium**.
 - **Clinical Use:** Important during **aortic aneurysm detection** or **surgical approach**.
-

8. Internal Thoracic Artery

- **Location:** Descends vertically **1 cm lateral to the sternum**, behind the first six costal cartilages.
 - **Clinical Use:** Must be avoided during **pericardiocentesis** or **sternal puncture**; used as **graft in CABG**.
-

9. Pleural Reflection Line

- **Location:** On the right — from sternoclavicular joint to 6th costal cartilage;
On the left — deviates at 4th costal cartilage due to **cardiac notch**.
 - **Clinical Use:** Landmark for **pleural tapping** (done above the 8th rib in the posterior axillary line).
-

10. Lung Borders

- **Anterior Border:** Coincides with pleura until 4th costal cartilage (left side deviates for cardiac notch).
 - **Inferior Border:**
 - 6th rib in midclavicular line
 - 8th rib in midaxillary line
 - 10th rib near vertebral border.
 - **Clinical Use:** Guides **auscultation zones** for lung pathology.
-

11. Trachea

- **Location:** Begins opposite **C6 vertebra**, bifurcates at the level of **sternal angle (T4/T5)**.
 - **Clinical Use:** Site of **tracheostomy** and reference for **foreign body impaction**.
-

12. Thoracic Duct

- **Location:** Ascends on the **right side** of the midline up to **T5**, then crosses to the **left**, and ends at the junction of **left subclavian and internal jugular veins**.
 - **Clinical Use:** Injury during thoracic surgery can cause **chylothorax**.
-

13. Intercostal Space for Thoracentesis

- **Location:** 8th or 9th intercostal space in **posterior axillary line**, needle inserted **just above the upper border of rib** to avoid the intercostal nerve and vessels.
 - **Clinical Use:** Aspiration of **pleural fluid or air**.
-

14. Diaphragm Dome Level

- **Right dome:** Level of **5th rib**,
Left dome: Level of **5th intercostal space**.
 - **Clinical Use:** Important for **radiological identification** and **subphrenic abscess diagnosis**.
-

15. Sternal Angle (Angle of Louis)

- **Location:** Junction of **manubrium and body of sternum** at level of **2nd costal cartilage opposite T4/T5 vertebra**.
-

- **Clinical Use:** Used to count ribs, mark **aortic arch**, and locate **tracheal bifurcation**