FAQs,MCQs,Spots

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

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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.

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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.

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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

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

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

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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.

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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**.

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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.

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

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

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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**.

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

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

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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.

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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.

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

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

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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.

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

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

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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.

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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).

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19. Which structure is at risk during pericardiocentesis?

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

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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.

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2. The first intercostal nerve contributes mainly to:

A. Brachial plexus

B. Axillary nerve

C. Intercostobrachial nerve

D. Musculocutaneous nerve

? **Answer:** A. Brachial plexus

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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

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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

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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

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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

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

A. Superior intercostal and pericardiacophrenic 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

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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

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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

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10. The pericardiacophrenic artery accompanies which nerve?

A. Vagus nerve

B. Phrenic nerve

C. Intercostal nerve

D. Sympathetic trunk

? **Answer:** B. Phrenic nerve

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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

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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

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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

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

A. Diaphragm

B. Abdominal wall

C. Upper limb

D. Mediastinum

? **Answer:** B. Abdominal wall

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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

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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

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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

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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

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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

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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.

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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**.

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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**.

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3. Pulmonary Area

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

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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**.

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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**.

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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**.

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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**.

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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**.

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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).

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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.

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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**.

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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**.

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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**.

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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**.

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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**