MEDICAL EDUCATION RESOURCE

Pectoral Region – Introduction

PECTORAL REGION — INTRODUCTION

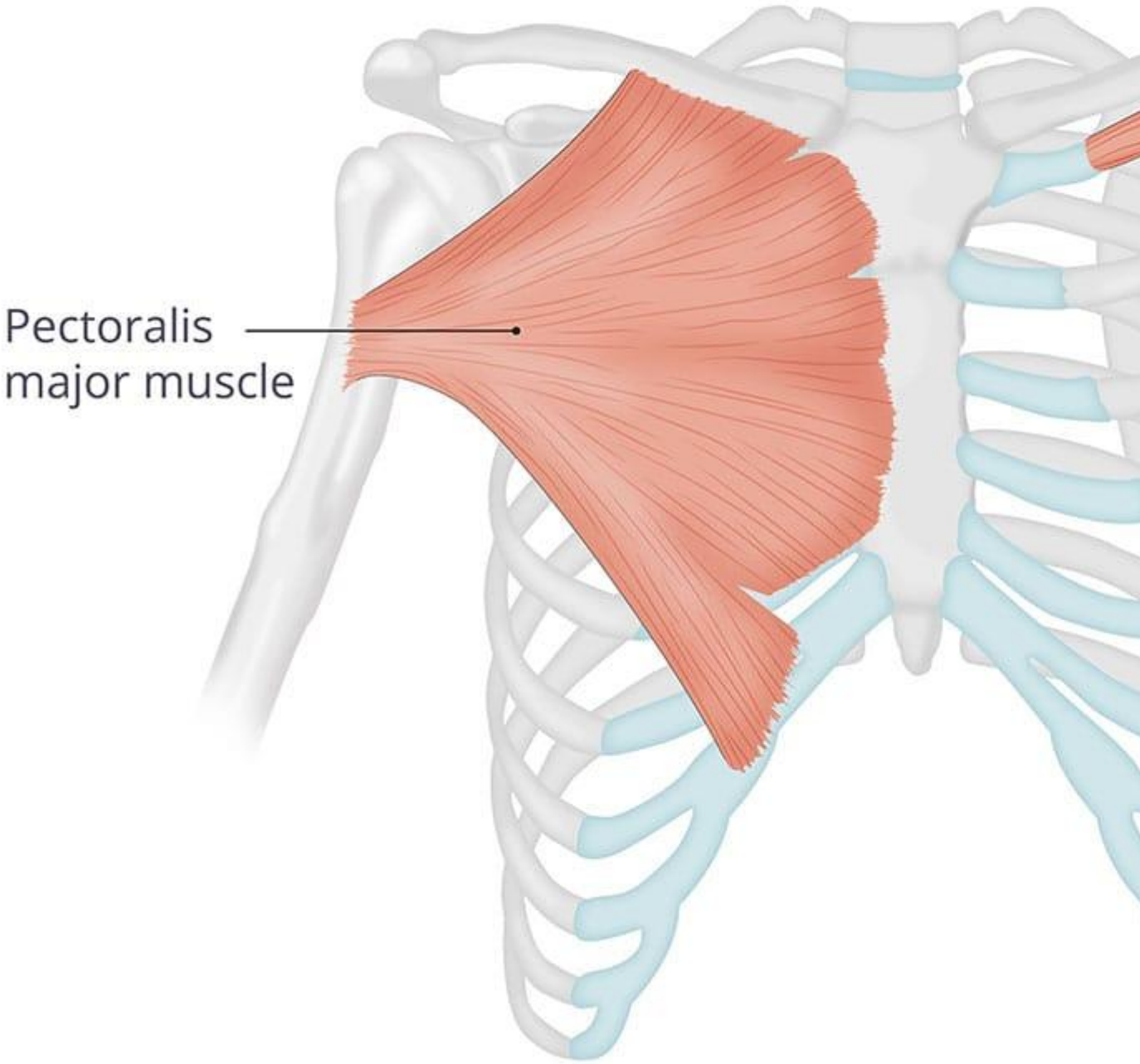
MEDMENTOR EDU | UPPER LIMB ANATOMY | MBBS • NEET PG • INI-CET

1. General Overview

- The pectoral region is the anterior part of the thoracic wall, forming the upper front of the chest.
- It connects the upper limb to the axial skeleton through muscles and associated fascial structures.
- Extends approximately from the clavicle superiorly to the lower part of the anterior thoracic wall inferiorly.
- Contains the pectoral muscles, fasciae, neurovascular structures, lymphatics and breast.
- The pectoralis major and pectoralis minor contribute to the anterior wall of the axilla.
- Plays an important role in shoulder movements, stabilisation of the scapula and movements of the upper limb.

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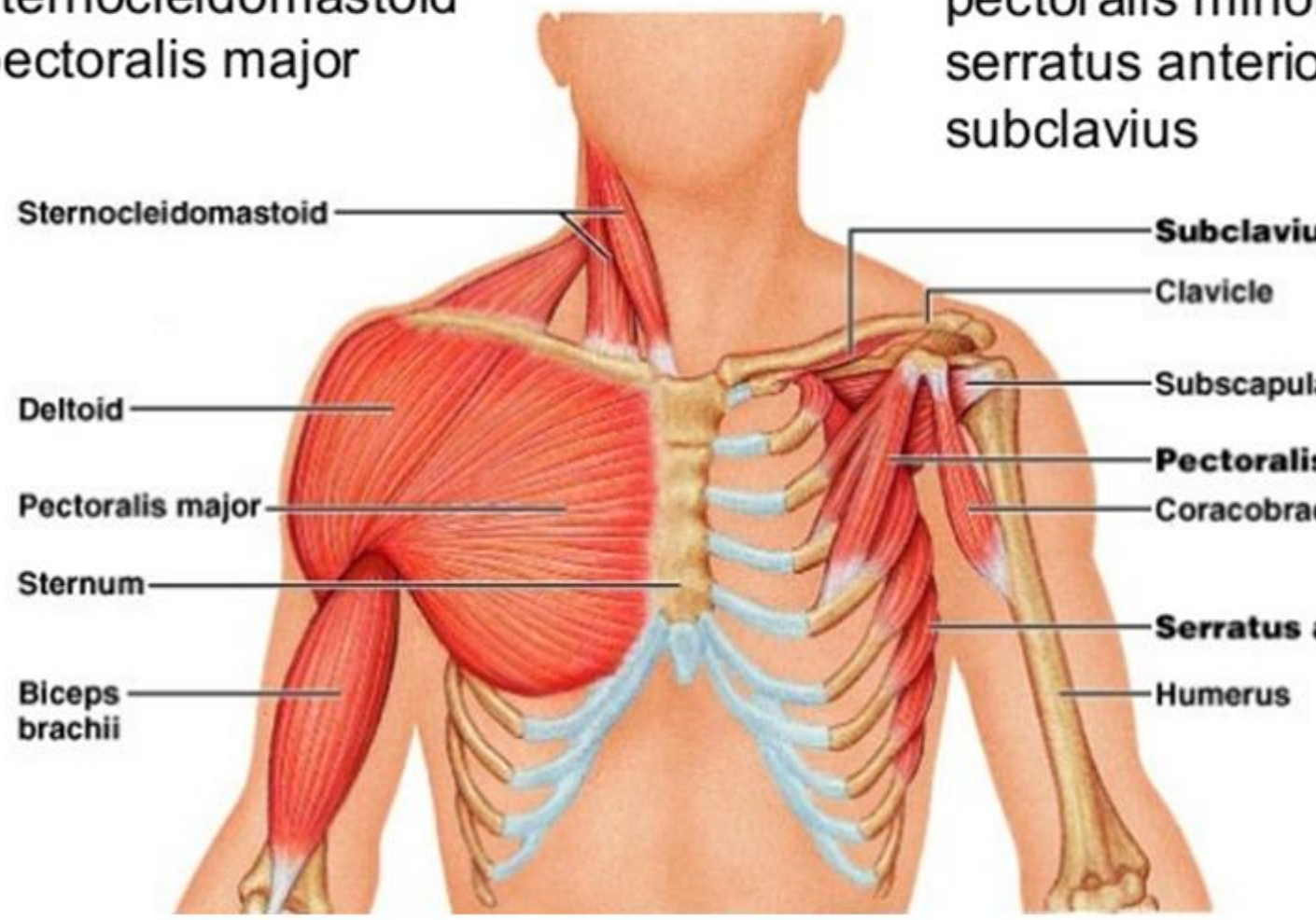
Muscles of the Pectora

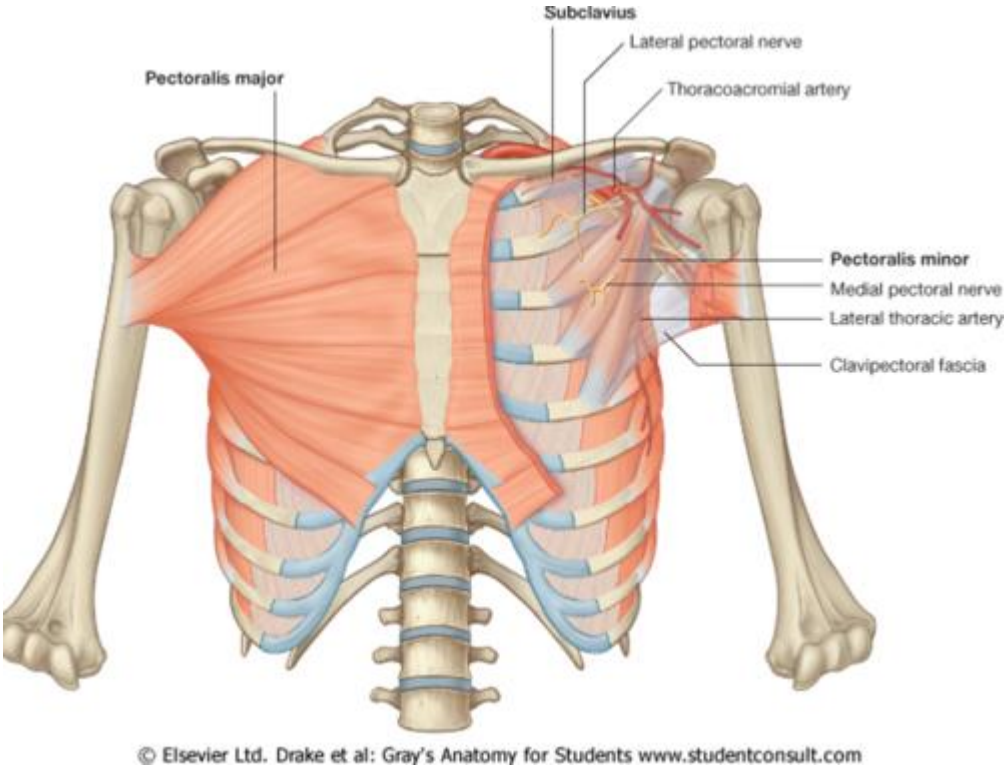


Anterior Chest Muscles

Superficial:
sternocleidomastoid
pectoralis major

Deeper:
pectoralis mino
serratus anterio
subclavius





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2. Boundaries of Pectoral Region

The pectoral region is defined approximately by the following surface landmarks.

BOUNDARY	ANATOMICAL LANDMARK
Superior	Clavicle
Inferior	Approximately the sixth rib and costal margin
Medial	Sternum and adjacent parasternal region
Lateral	Anterior axillary region, with the anterior axillary fold formed mainly by pectoralis major

Important anatomical relationship

- The pectoral region overlies the anterior thoracic cage.
- The anterior wall of the axilla is formed by pectoralis major, pectoralis minor, subclavius and associated fascia.
- The anterior axillary fold is formed primarily by the inferolateral border of pectoralis major.

Must know: Pectoralis major forms the anterior axillary fold, while pectoralis minor is an important landmark within the anterior wall of the axilla.

3. Structures Present in the Pectoral Region

The structures can be divided into four principal groups.

GROUP	IMPORTANT STRUCTURES
Muscles	Pectoralis major, pectoralis minor, subclavius; serratus anterior in the adjacent lateral thoracic wall
Fasciae	Superficial fascia, pectoral fascia and clavipectoral fascia
Neurovascular structures	Thoracoacromial vessels, lateral thoracic vessels, cephalic vein, pectoral nerves and cutaneous branches of intercostal nerves
Other structures	Breast, lymphatic vessels and associated lymph nodes

4. Muscles of the Pectoral Region

Overview of the principal muscles

MUSCLE	MAIN ATTACHMENT / LOCATION	NERVE SUPPLY	PRINCIPAL ACTION
Pectoralis major	Anterior chest wall to humerus	Lateral and medial pectoral nerves (C5–T1)	Adduction and medial rotation of arm; assists flexion
Pectoralis minor	Ribs 3–5 to coracoid process	Medial pectoral nerve (C8–T1)	Stabilises and draws scapula anteriorly and inferiorly
Subclavius	First rib and costal cartilage to clavicle	Nerve to subclavius (C5–C6)	Stabilises and depresses clavicle
Serratus anterior	Upper eight or nine ribs to medial border of scapula	Long thoracic nerve (C5–C7)	Protraction and upward rotation of scapula



Pectoral Region & Breast

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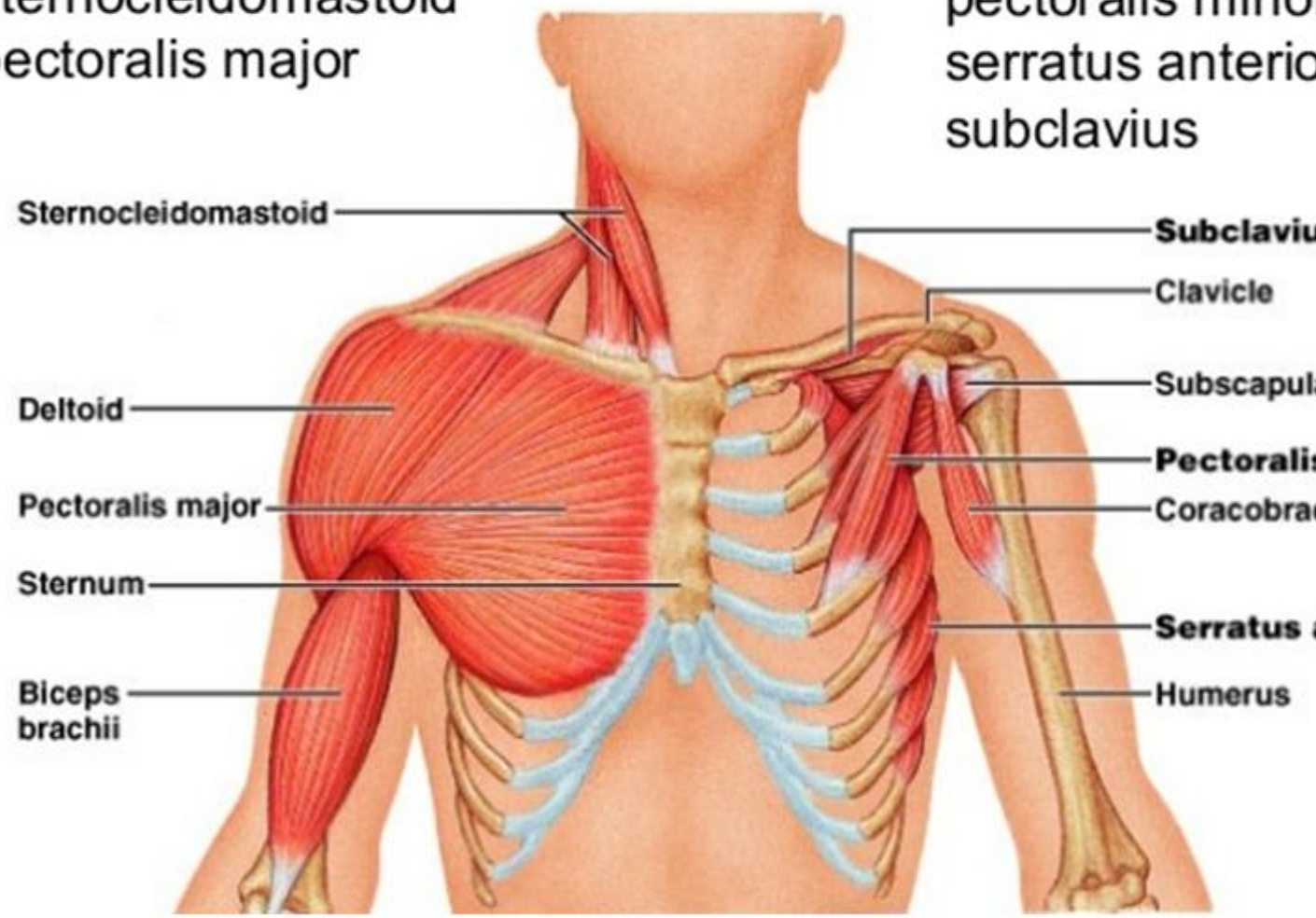
Important muscular relationships

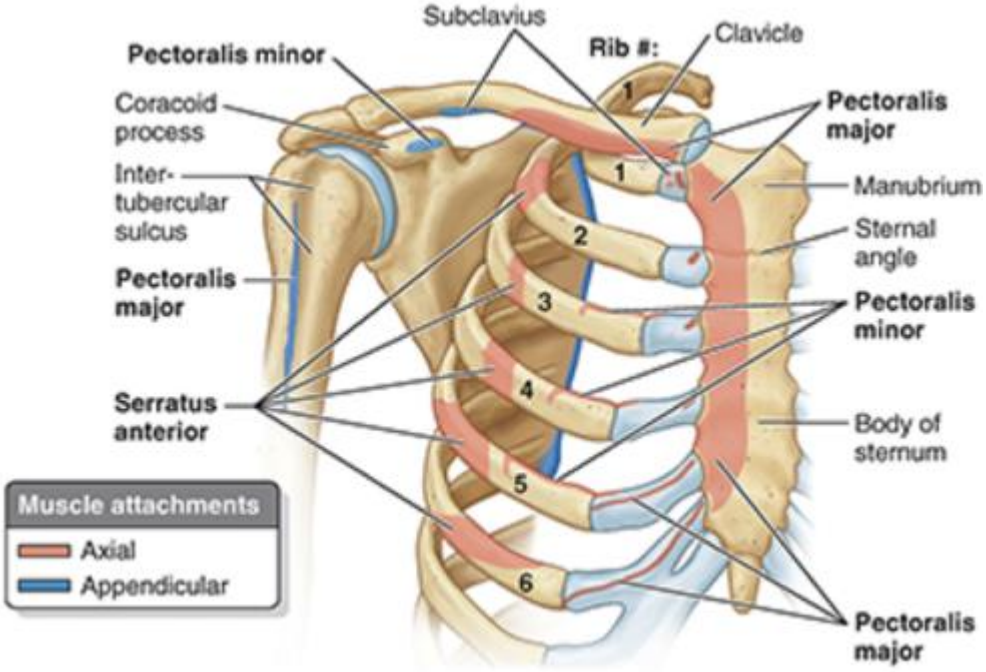
- Pectoralis major: Most superficial of the major pectoral muscles.
- Pectoralis minor: Lies deep to pectoralis major.
- Subclavius: Small muscle situated immediately inferior to the clavicle.
- Serratus anterior: Lies along the lateral thoracic wall and contributes to the medial wall of the axilla.

Anterior Chest Muscles

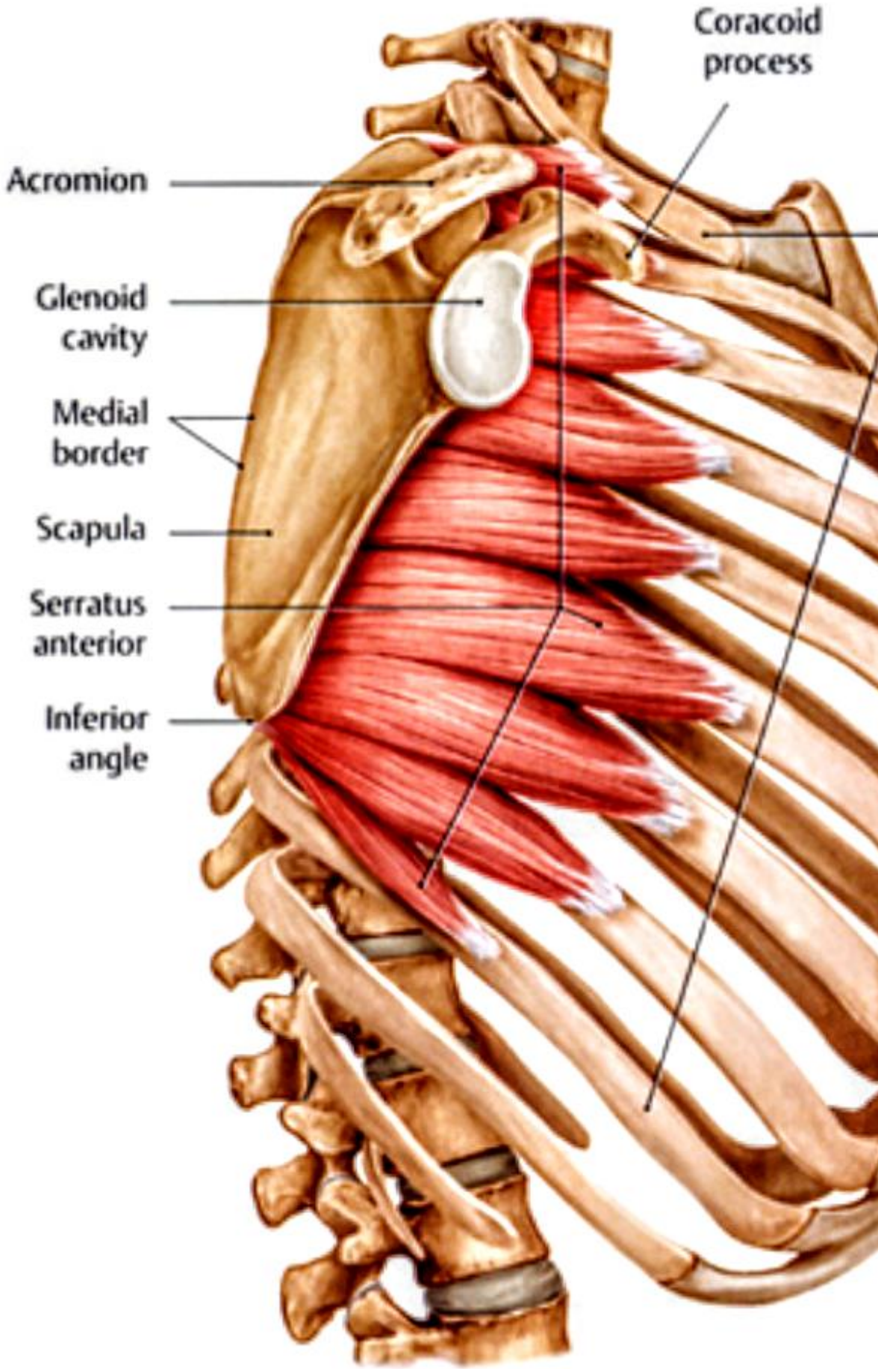
Superficial:
sternocleidomastoid
pectoralis major

Deeper:
pectoralis mino
serratus anterio
subclavius





(D) Anterior view


Coracoid process
Acromion
Glenoid cavity
Medial border
Scapula
Serratus anterior
Inferior angle

5. Fasciae of the Pectoral Region

The fasciae are arranged into superficial fascia and deep fascia.

A. Superficial fascia

- Lies immediately beneath the skin.
- Contains variable amounts of subcutaneous fat, superficial vessels and cutaneous nerves.
- Encloses the mammary gland (breast) within its superficial fascial tissue.
- Cooper's suspensory ligaments extend through the breast connective tissue and help support the gland.

B. Pectoral fascia

- A layer of deep fascia covering pectoralis major.
- Attached superiorly to the clavicle and medially to the sternum.
- Continuous laterally with the deltoid fascia.
- Continues inferiorly towards the axillary fascia.
- Provides an investing fascial covering to pectoralis major.

C. Clavipectoral fascia

- Strong sheet of deep fascia located deep to pectoralis major.
- Extends from the clavicle towards the axillary fascia.
- Splits to enclose subclavius and pectoralis minor.

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- The thickened portion between subclavius and pectoralis minor is the costocoracoid membrane.
- Below pectoralis minor, it continues as the suspensory ligament of the axilla, contributing to the axillary floor.



Complete Anatomy

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Structures piercing the clavipectoral fascia

Four Important Structures

1

Cephalic vein

2

Thoracoacromial vessels

3

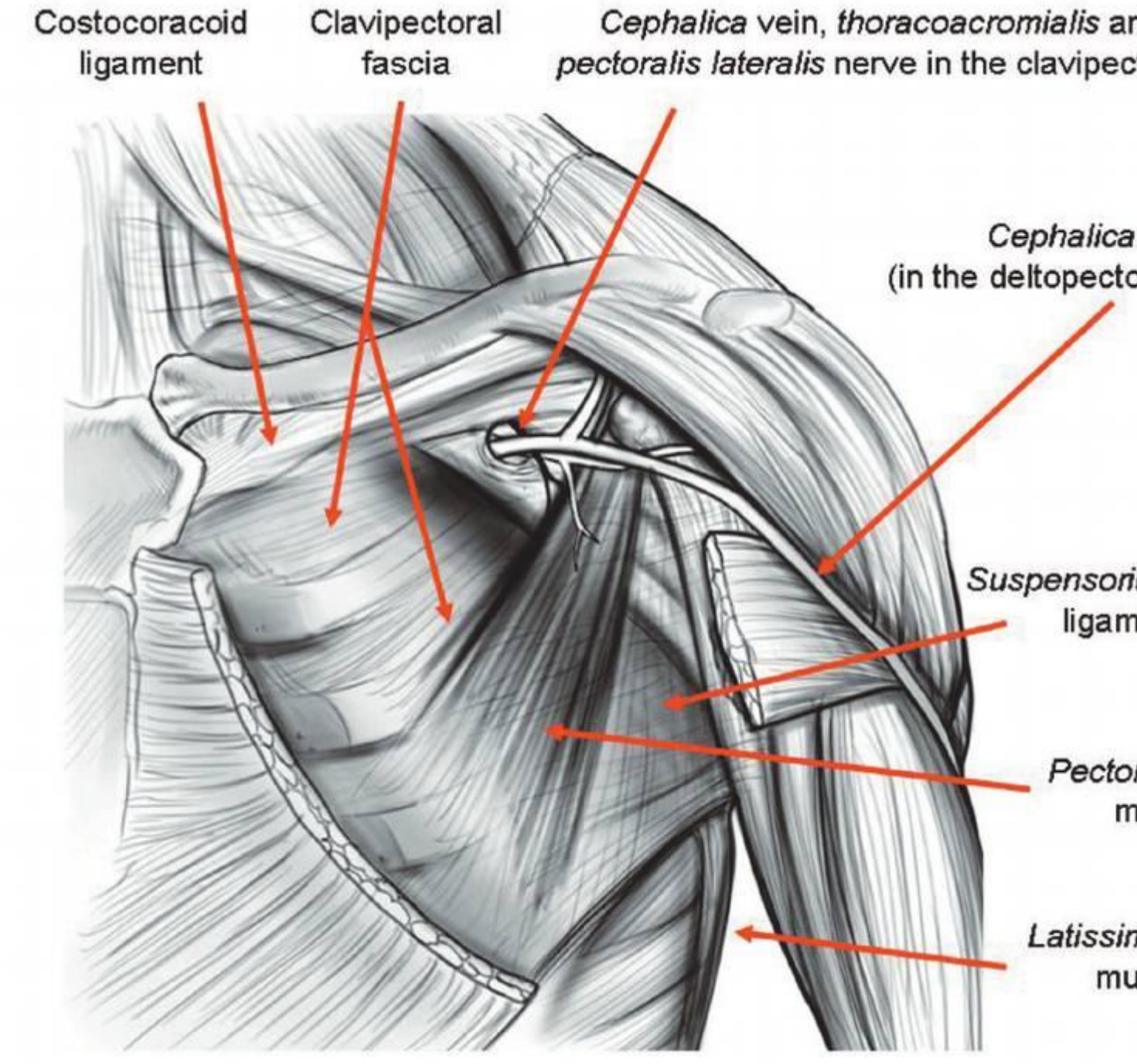
Lateral pectoral nerve

4

Lymphatic vessels

These structures pierce the costocoracoid portion of the clavipectoral fascia or pass through the fascia in this region.

Mnemonic — CLTL: Cephalic vein, Lateral pectoral nerve, Thoracoacromial vessels, Lymphatics.



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6. Important Neurovascular Structures

A. Arterial supply

The principal arteries supplying the pectoral region include:

- Thoracoacromial artery: Branch of the second part of the axillary artery; its pectoral branch supplies the pectoral muscles.
- Lateral thoracic artery: Usually arises from the second part of the axillary artery; supplies the lateral thoracic wall and contributes to breast vascularisation.
- Internal thoracic artery perforators: Contribute to the blood supply of the medial pectoral region and breast.
- Posterior intercostal arteries: Contribute to the vascular supply of the thoracic wall.

B. Venous drainage

- Cephalic vein: Ascends through the deltopectoral groove, pierces the clavipectoral fascia and drains into the axillary vein.
- Other veins accompany the arteries and drain mainly towards axillary, internal thoracic and intercostal venous systems.

C. Nerve supply

- Lateral pectoral nerve (C5–C7): Primarily supplies pectoralis major.
- Medial pectoral nerve (C8–T1): Supplies pectoralis minor and pectoralis major.
- Nerve to subclavius (C5–C6): Supplies subclavius.
- Intercostal nerves: Provide cutaneous sensation to much of the overlying chest wall.

Important distinction: Despite their names, both the medial and lateral pectoral nerves contribute to the innervation of pectoralis major.

7. Breast and Lymphatic Drainage

- The breast is a modified sweat gland situated predominantly within the superficial fascia of the pectoral region.
- Usually extends approximately from the second to sixth ribs, and from the lateral border of the sternum towards the midaxillary line, with anatomical variation.

- Lies mainly over pectoralis major, with part extending over serratus anterior.
- Its axillary extension is known as the axillary tail of Spence.

Lymphatic drainage

- Most breast lymph drains towards the axillary lymph nodes, particularly the anterior (pectoral) group.
- Medial portions also drain towards the parasternal (internal mammary) lymph nodes.
- Additional pathways may involve intercostal and opposite-side lymphatic communications.

Clinical pearl: Axillary lymph nodes are an important site of regional spread in breast carcinoma.

8. Deltopectoral Groove and Triangle

Deltopectoral groove

- Located between deltoid laterally and pectoralis major medially.
- Contains the cephalic vein.
- Superiorly widens to form the deltopectoral (infraclavicular) triangle.

Deltopectoral triangle

BOUNDARY	STRUCTURE
Superior	Clavicle
Medial	Pectoralis major

Lateral	Deltoid

Clinical importance: The deltopectoral interval is used in surgical approaches to the shoulder, and the cephalic vein serves as an important landmark.

9. Clinical Anatomy

A. Breast carcinoma

- Breast carcinoma may spread through the lymphatic drainage pathways of the pectoral region.
- Axillary lymph node examination and sentinel lymph node assessment have important clinical roles.
- Infiltration of Cooper's ligaments may produce skin dimpling.
- Involvement of dermal lymphatics can cause peau d'orange.
- Deep tumour involvement may reduce mobility of the breast relative to the underlying chest wall.

B. Pectoralis major injury

- May occur during forceful resisted adduction or heavy weightlifting.
- Often involves the tendon near its humeral insertion.
- Can cause weakness of adduction and medial rotation of the arm.
- May produce bruising, pain and loss of the normal anterior axillary fold contour.

C. Pectoralis minor as a surgical landmark

- The axillary artery is divided into three parts according to its relationship with pectoralis minor.

PART OF AXILLARY ARTERY	RELATIONSHIP TO PECTORALIS MINOR
First part	Medial (proximal) to the muscle
Second part	Posterior (deep) to the muscle
Third part	Lateral (distal) to the muscle

D. Subclavius and clavicular injuries

- Subclavius stabilises the clavicle at the sternoclavicular joint.
- It lies between the clavicle and deeper neurovascular structures.
- It may provide a degree of protection to the subclavian vessels and brachial plexus during clavicular trauma.
- However, vascular and neural injury can still occur, especially in displaced clavicular fractures.

E. Thoracic outlet and pectoralis minor compression

- Neurovascular structures may be compressed beneath pectoralis minor in some patients.
- Symptoms may include upper-limb pain, paraesthesia or vascular complaints depending on the structures involved.
- This condition is sometimes termed pectoralis minor syndrome.

10. High-Yield Quick Revision

EXAMINATION POINT	ANSWER

Main superficial pectoral muscle	Pectoralis major
Muscle deep to pectoralis major	Pectoralis minor
Anterior axillary fold	Pectoralis major
Pectoralis major nerve supply	Medial and lateral pectoral nerves
Pectoralis minor nerve supply	Medial pectoral nerve
Subclavius nerve supply	Nerve to subclavius
Fascia covering pectoralis major	Pectoral fascia
Fascia enclosing pectoralis minor and subclavius	Clavipectoral fascia
Vein in deltopectoral groove	Cephalic vein
Important landmark dividing axillary artery	Pectoralis minor
Main breast lymphatic drainage	Axillary lymph nodes
Axillary extension of breast	Axillary tail of Spence
Breast skin dimpling	Involvement of suspensory ligaments

Peau d'orange	Dermal lymphatic obstruction

11. Exam Focus

University short-note questions

1. Describe the boundaries and contents of the pectoral region.
2. Write a short note on clavipectoral fascia and structures piercing it.
3. Explain the importance of pectoralis minor as an anatomical landmark.
4. Describe the deltopectoral groove and its contents.
5. Mention the important lymphatic drainage pathways of the breast.

Viva questions

1. Which muscle forms the anterior axillary fold? — Pectoralis major.
2. Which fascia encloses pectoralis minor? — Clavipectoral fascia.
3. Which vein passes through the deltopectoral groove? — Cephalic vein.
4. What divides the axillary artery into three parts? — Pectoralis minor.
5. Which nerve supplies subclavius? — Nerve to subclavius.
6. Where does most breast lymph drain? — Axillary lymph nodes.

NEET PG / INI-CET Pearls

- Cephalic vein in deltopectoral groove ? Pierces clavipectoral fascia to join the axillary vein.

- Muscle dividing axillary artery into three parts ? Pectoralis minor.
- Clavipectoral fascia ? Related to subclavius, pectoralis minor, thoracoacromial vessels, lateral pectoral nerve and cephalic vein.
- Loss of anterior axillary fold after bench-press injury ? Suspect pectoralis major rupture.
- Breast skin dimpling ? Involvement of Cooper's suspensory ligaments.
- Peau d'orange in breast carcinoma ? Dermal lymphatic obstruction.
- Main axillary lymph nodes receiving breast lymph ? Anterior (pectoral) group.