MEDICAL EDUCATION RESOURCE

Pectoral Region – Dissection

PECTORAL REGION — DISSECTION

MEDMENTOR EDU | UPPER LIMB ANATOMY | MBBS PRACTICAL • OSTEOLOGY • VIVA

1. Introduction

Dissection of the pectoral region demonstrates the arrangement of muscles, fasciae, blood vessels, nerves and the breast in the anterior thoracic wall.

Learning objectives

After completing the dissection, students should be able to:

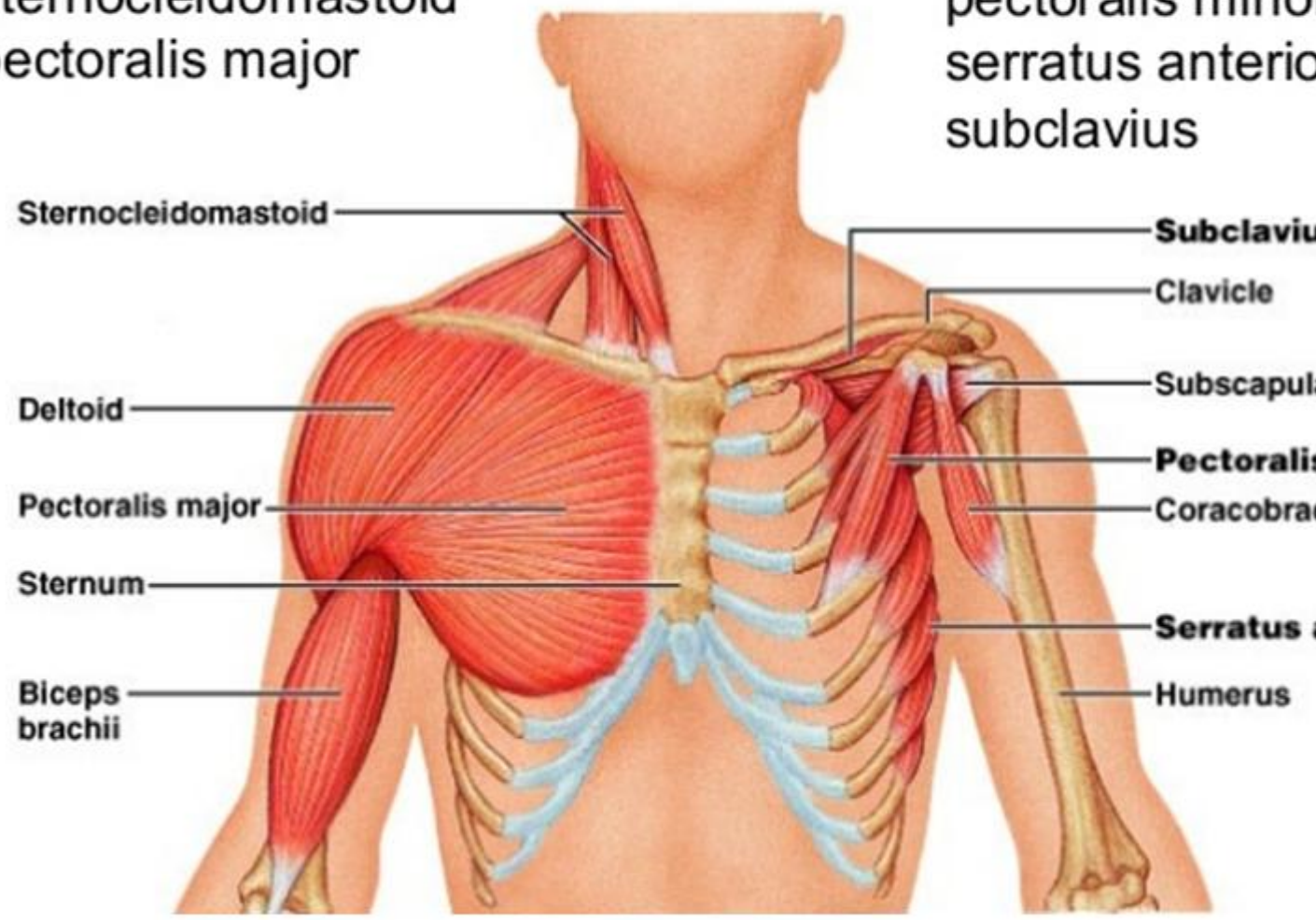
- Identify the superficial and deep fasciae of the pectoral region.
- Demonstrate pectoralis major, pectoralis minor and subclavius.
- Identify serratus anterior on the lateral thoracic wall.
- Trace the cephalic vein, thoracoacromial vessels and pectoral nerves.
- Demonstrate the clavipectoral fascia and structures passing through it.
- Explain the relationship of pectoralis minor to the three parts of the axillary artery.
- Correlate the dissected structures with important clinical and surgical procedures.

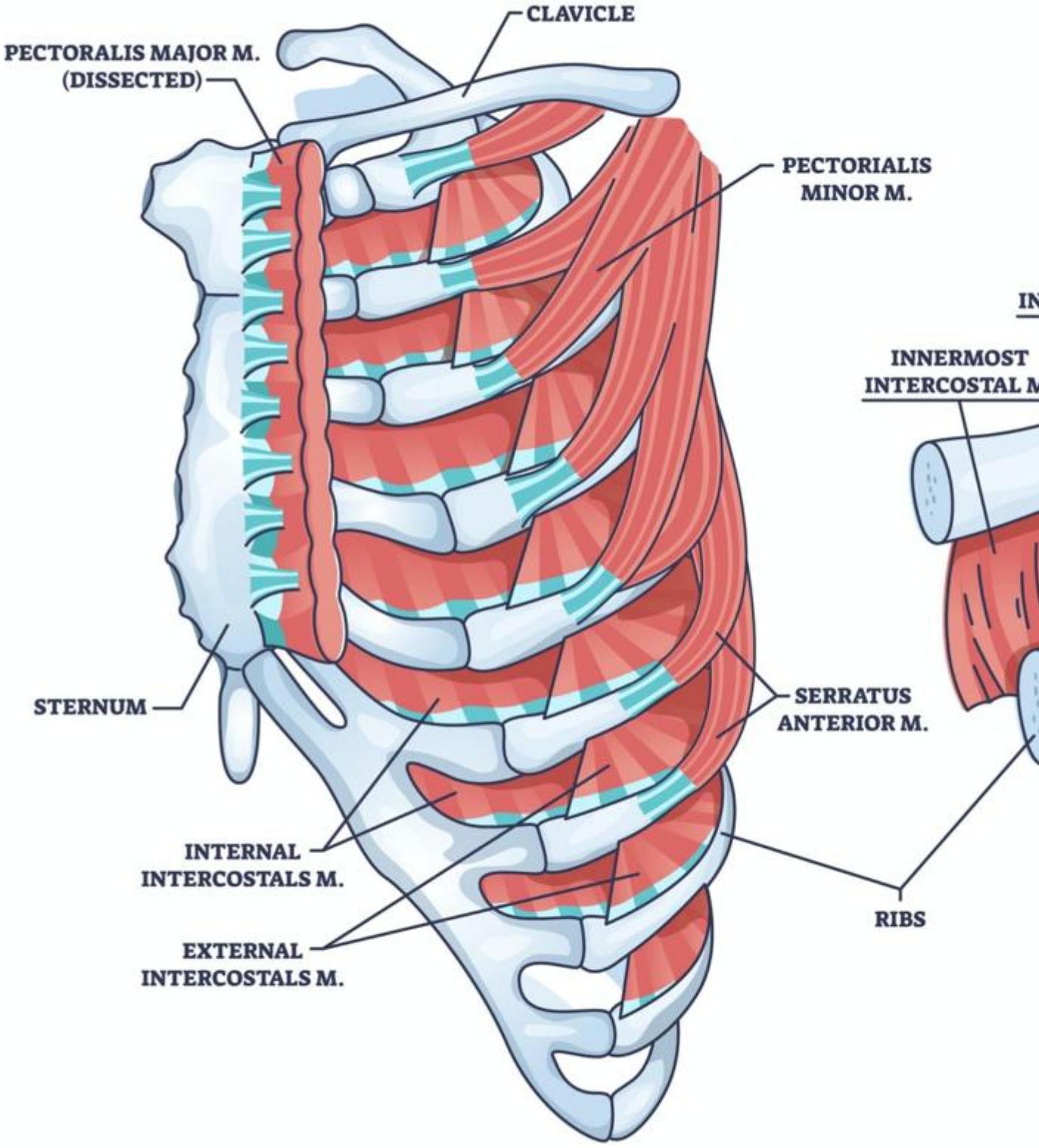
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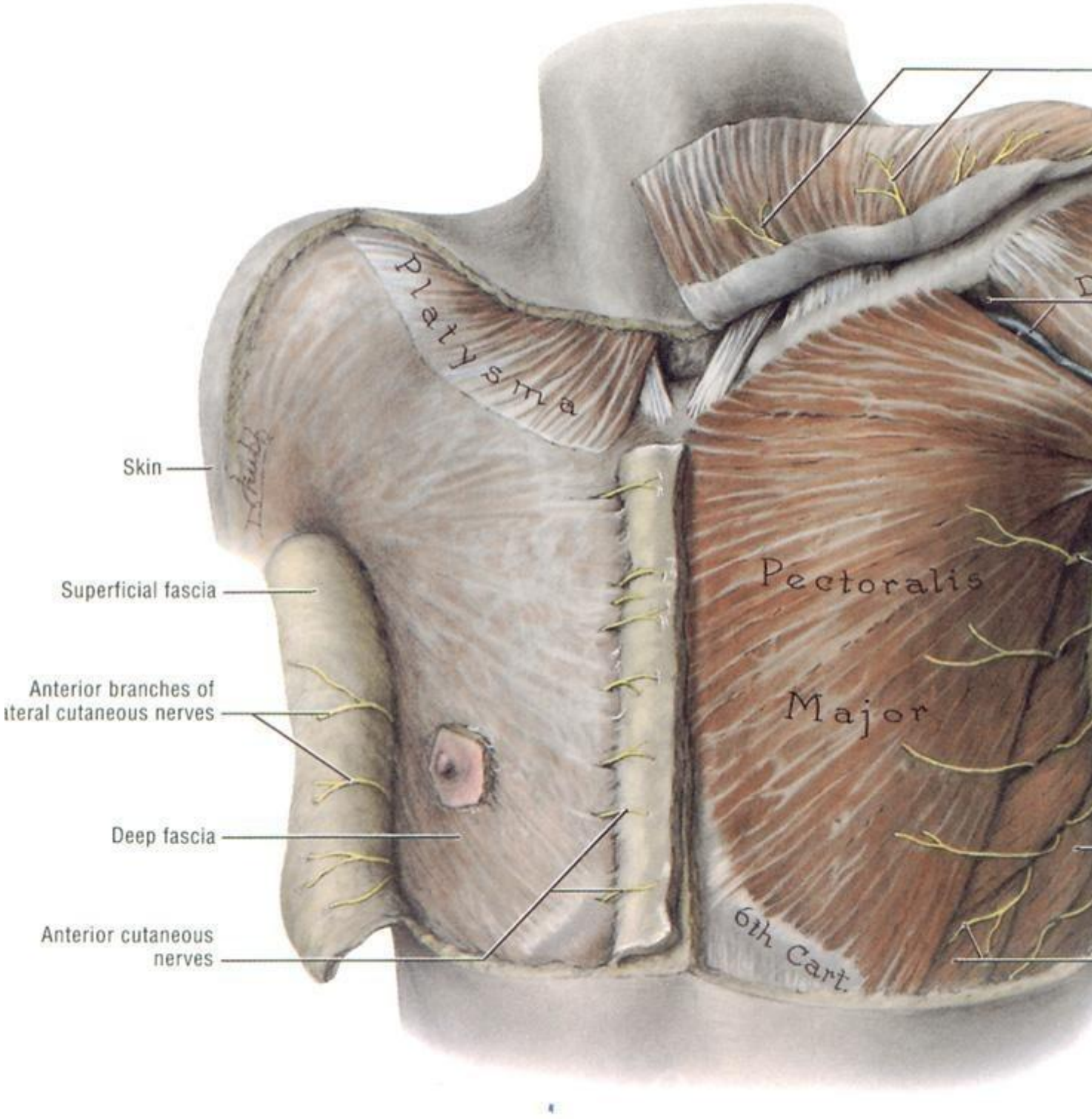
Anterior Chest Muscles

Superficial:
sternocleidomastoid
pectoralis major

Deeper:
pectoralis mino
serratus anterio
subclavius




CLAVICLE
PECTORALIS MAJOR M.
(DISSECTED)
PECTORIALIS
MINOR M.
IN
INNERMOST
INTERCOSTAL M
STERNUM
SERRATUS
ANTERIOR M.
INTERNAL
INTERCOSTALS M.
RIBS
EXTERNAL
INTERCOSTALS M.



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2. Steps of Dissection

Step 1 — Skin incisions and reflection

Procedure

1. Place the cadaver in the supine position, with the upper limb appropriately abducted.
2. Identify the suprasternal notch, clavicle, sternum, xiphoid process and anterior axillary fold.
3. Following the prescribed dissection manual, make a longitudinal midline incision from the suprasternal notch to the xiphoid process.
4. Make transverse incisions along the clavicular region and inferiorly towards the costal margin.
5. Reflect the skin laterally towards the axilla, carefully separating it from the underlying superficial fascia.

Structures to identify

- Skin and subcutaneous tissue.
- Superficial fascia.
- Superficial veins.
- Cutaneous nerves.
- Breast tissue, where present.

Dissection precaution: Preserve superficial neurovascular structures during reflection. The exact incision pattern should follow the institution's cadaveric dissection protocol.

Step 2 — Examination of superficial fascia

The superficial fascia lies immediately beneath the skin and contains fat, superficial blood vessels, cutaneous nerves and the breast.

STRUCTURE	DISSECTION OBSERVATION
Breast	Located within the superficial fascial tissue of the pectoral region
Supraclavicular nerves	Descend across the clavicle to supply skin of the upper chest
Anterior cutaneous branches of intercostal nerves	Emerge near the sternum
Lateral cutaneous branches of intercostal nerves	Appear along the lateral thoracic wall
Superficial veins	Small superficial tributaries, including connections with the thoracoepigastric venous system

Procedure

- Remove superficial fat gradually while preserving identifiable nerves and vessels.
- Observe the superficial fascial attachments of the breast.
- Identify any visible superficial veins and cutaneous nerve branches.

Must know: The breast is situated in the superficial fascia, not inside the pectoralis major muscle.

Step 3 — Exposure of pectoral fascia

The pectoral fascia is the deep fascia covering pectoralis major.

Procedure

1. Remove the superficial fascia carefully.

2. Identify the thin fascial layer covering pectoralis major.
3. Trace its attachments and continuities.
4. Incise and reflect the fascia to expose the muscle fibres.

Important features

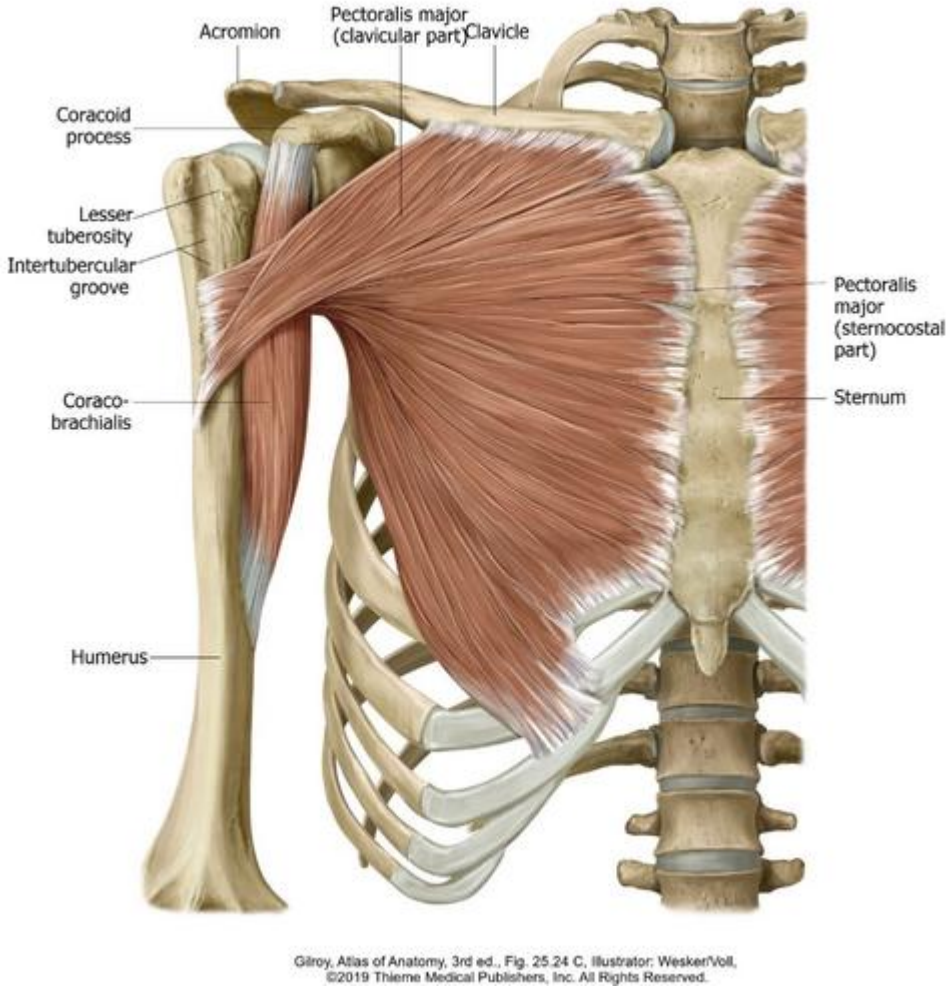
- Attached superiorly to the clavicle.
- Attached medially to the sternum.
- Continuous laterally with the deltoid fascia.
- Continues inferiorly with the fascia of the anterior axillary region.

Clinical relevance: Fascial planes are important in surgical approaches to the chest wall and axilla.

3. Dissection of Pectoralis Major

Step 4 — Identification and reflection

Pectoralis major is a large, fan-shaped muscle forming the superficial muscular layer of the anterior pectoral region.



Gilroy, Atlas of Anatomy, 3rd ed., Fig. 25.24 C, Illustrator: Wesker/Voll,
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Attachments

FEATURE	ANATOMICAL DESCRIPTION
Clavicular head	Anterior surface of medial half of clavicle
Sternocostal head	Anterior sternum and upper six costal cartilages, with contribution from the external oblique aponeurosis
Insertion	Lateral lip of intertubercular sulcus of humerus

Nerve supply	Lateral and medial pectoral nerves (C5–T1)
Actions	Adduction and medial rotation of arm; clavicular head assists flexion

Dissection procedure

1. Identify the clavicular and sternocostal parts of pectoralis major.
2. Observe the direction of the muscle fibres towards the humerus.
3. Locate the deltopectoral groove between pectoralis major and deltoid.
4. Identify and preserve the cephalic vein in the groove.
5. Carefully separate the deep surface of pectoralis major from underlying structures.
6. Following the prescribed dissection procedure, divide its medial attachments and reflect the muscle laterally.
7. Preserve the neurovascular structures entering its deep surface as far as possible.

Structures exposed after reflection

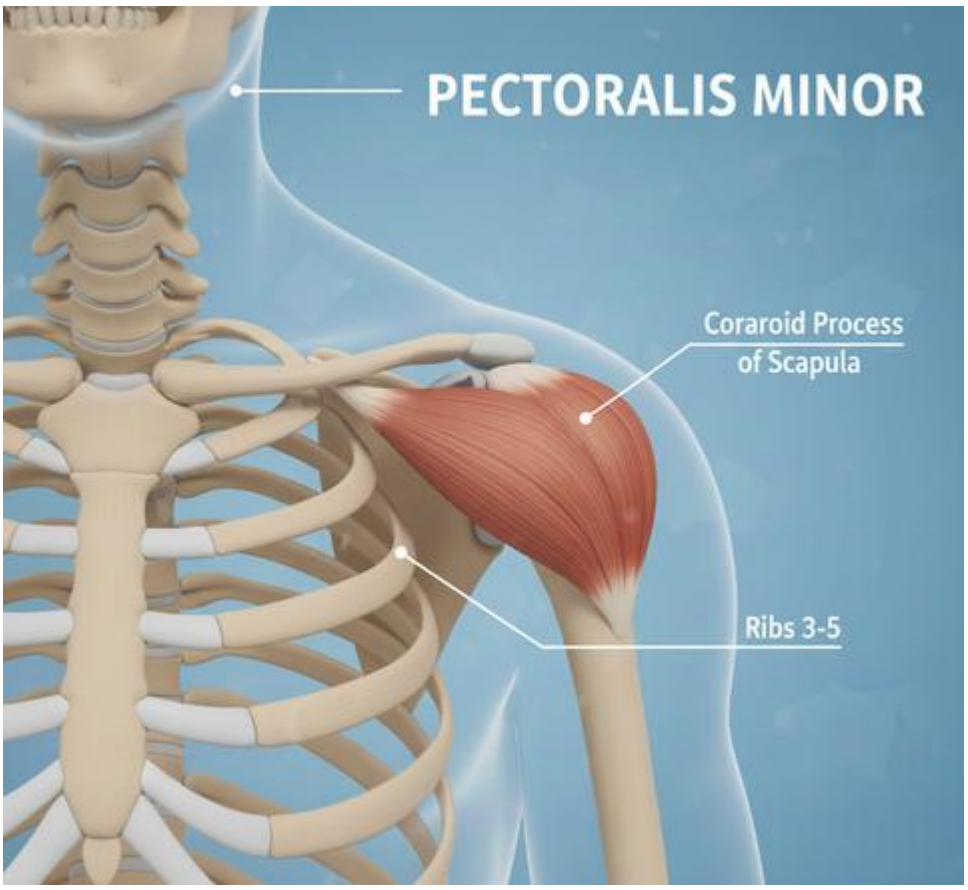
- Pectoralis minor.
- Clavipectoral fascia.
- Lateral and medial pectoral nerves.
- Pectoral branches of thoracoacromial vessels.

Important: The pectoral nerves and vessels enter the deep surface of pectoralis major. They may be damaged during careless reflection.

4. Dissection of Pectoralis Minor

Step 5 — Identification and cleaning

- A thin, triangular muscle located deep to pectoralis major.
- Extends from the anterior thoracic wall to the coracoid process of the scapula.



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Attachments and nerve supply

FEATURE	DESCRIPTION
Origin	External surfaces of ribs 3–5 near their costal cartilages

Insertion	Medial border and superior surface of coracoid process
Nerve supply	Medial pectoral nerve (C8–T1)
Action	Stabilises scapula against chest wall; draws scapula anteriorly and inferiorly

Dissection procedure

1. Identify pectoralis minor beneath the reflected pectoralis major.
2. Clean the muscle fibres extending from the ribs to the coracoid process.
3. Identify the medial pectoral nerve, which frequently pierces or passes around pectoralis minor.
4. Observe the clavipectoral fascia surrounding the muscle.
5. Identify the axillary vessels deep to the muscle where accessible.

Important relationship — Axillary artery

Pectoralis minor divides the axillary artery into three parts.

Relationship of pectoralis minor to the axillary artery

1st part

Medial / proximal to muscle

2nd part

Posterior to muscle

3rd part

Lateral / distal to muscle

Viva pearl: The second part of the axillary artery lies posterior to pectoralis minor.

5. Dissection of Subclavius

Step 6 — Identification

- A small, elongated muscle located immediately inferior to the clavicle.
- Enclosed within the upper part of the clavipectoral fascia.

Attachments

FEATURE	DESCRIPTION
Origin	Junction of first rib and its costal cartilage
Insertion	Subclavian groove on inferior surface of middle third of clavicle
Nerve supply	Nerve to subclavius (C5–C6)
Action	Anchors and depresses clavicle; stabilises sternoclavicular joint

Dissection procedure

1. Identify the clavicle and the deep fascia immediately inferior to it.
2. Carefully open the fascial sheath covering subclavius.

3. Trace the muscle towards the first rib and subclavian groove.

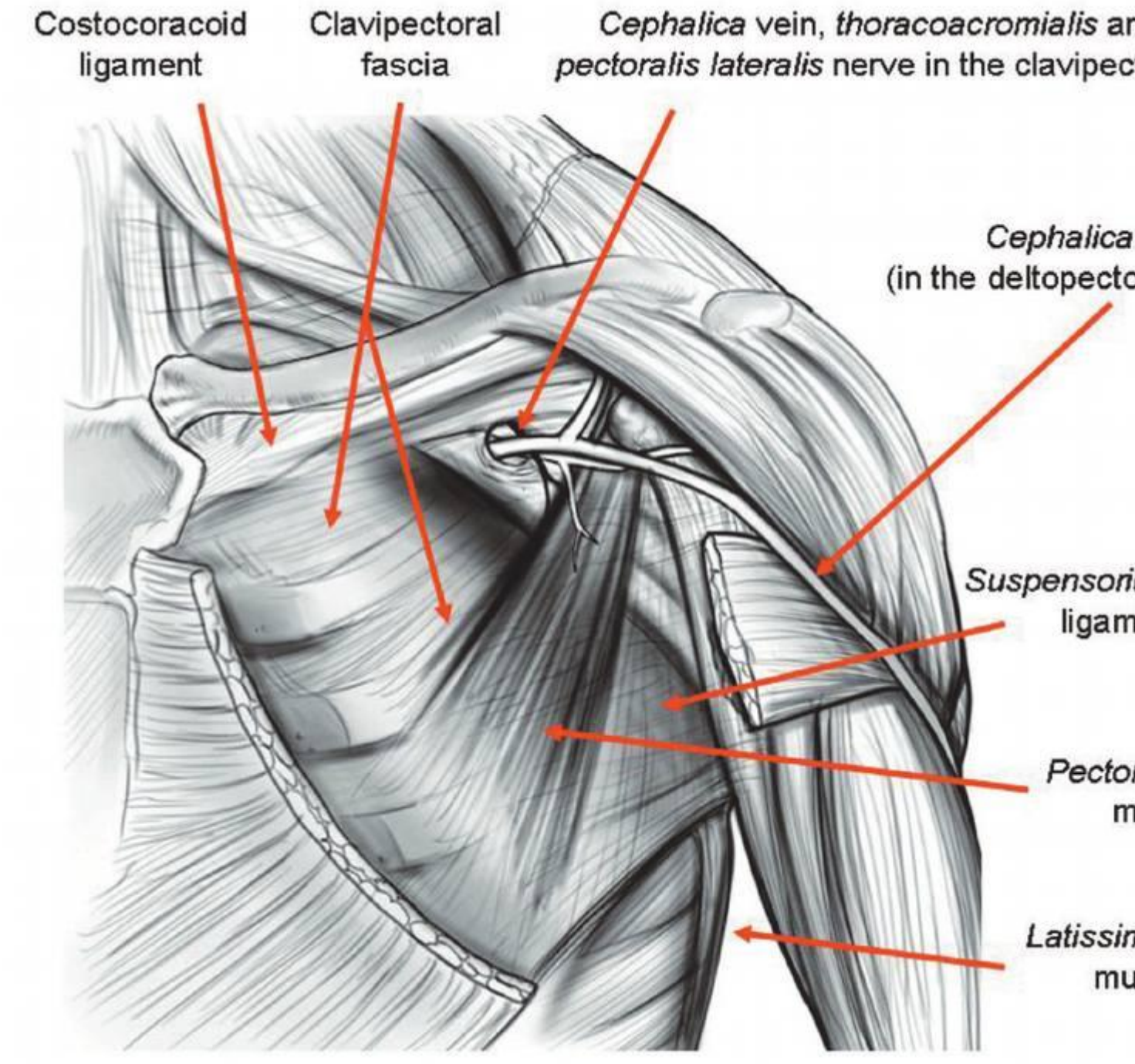
4. Observe its relationship to deeper neurovascular structures.

Clinical importance: Subclavius lies between the clavicle and deeper structures and may offer some protection to the subclavian vessels and brachial plexus during clavicular injury.

6. Dissection of Clavipectoral Fascia

Step 7 — Identification and examination

The clavipectoral fascia is a strong sheet of deep fascia located posterior to pectoralis major.



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Important features

- Attached superiorly to the clavicle.
- Splits to enclose subclavius.

- Between subclavius and pectoralis minor, forms the costocoracoid membrane.
- Splits again to enclose pectoralis minor.
- Below pectoralis minor, continues as the suspensory ligament of the axilla.
- Blends inferiorly with the axillary fascia.

Structures piercing clavipectoral fascia

STRUCTURE	IDENTIFICATION
Cephalic vein	Passes deep to join the axillary vein
Thoracoacromial artery and accompanying veins	Pass forwards towards the pectoral region
Lateral pectoral nerve	Passes towards pectoralis major
Lymphatic vessels	Pass towards axillary lymph nodes, including the apical group



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Dissection procedure

1. Identify the fascia between subclavius and pectoralis minor.
2. Clean its anterior surface without damaging the structures passing through it.

3. Locate the cephalic vein near the deltopectoral triangle.

4. Trace the thoracoacromial vessels and lateral pectoral nerve.

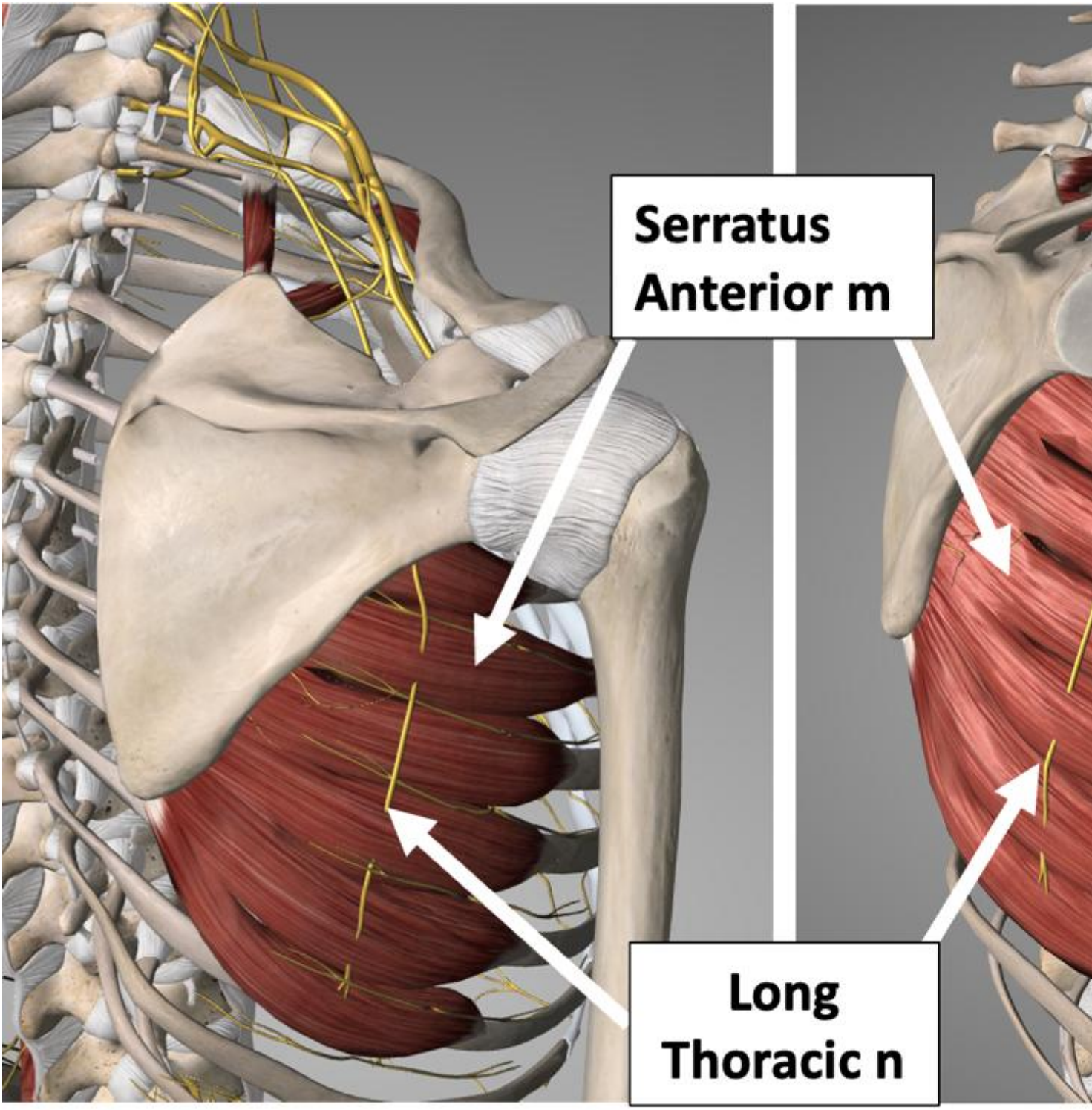
5. Demonstrate the continuation of the fascia below pectoralis minor.

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

7. Dissection of Serratus Anterior

Step 8 — Exposure of the lateral thoracic wall

Serratus anterior is a broad, flat muscle located along the lateral thoracic wall.



Long Thoracic nerve passing from the b
the Serratus Anterior m

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Attachments and nerve supply

FEATURE	DESCRIPTION
Origin	Outer surfaces of upper 8–9 ribs
Insertion	Costal surface of medial border of scapula
Nerve supply	Long thoracic nerve (C5–C7)
Actions	Protraction and upward rotation of scapula; holds scapula against thoracic wall

Dissection procedure

1. Identify the serrated muscular digitations on the lateral chest wall.
2. Trace the digitations towards the upper ribs.
3. Observe their direction towards the medial border of the scapula.
4. Identify the long thoracic nerve descending on the superficial surface of serratus anterior, usually in the midaxillary region.
5. Preserve the nerve during cleaning.

Clinical correlation — Winged scapula

- Injury to the long thoracic nerve causes paralysis of serratus anterior.
- The medial border of the scapula becomes prominent posteriorly.

- Winging becomes more obvious when the patient pushes against a wall.
- Upward rotation of the scapula is impaired, making overhead arm elevation difficult.

8. Key Structures to Identify in the Dissection

CATEGORY	STRUCTURES
Muscles	Pectoralis major, pectoralis minor, subclavius, serratus anterior
Fasciae	Superficial fascia, pectoral fascia, clavipectoral fascia, axillary fascia
Arteries	Thoracoacromial artery and its branches, lateral thoracic artery
Veins	Cephalic vein, associated pectoral veins
Nerves	Medial and lateral pectoral nerves, nerve to subclavius, long thoracic nerve, cutaneous branches
Other structures	Breast, lymphatic vessels and regional lymph nodes

Practical identification checklist

Structures identified

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Pectoralis major

Pectoralis minor

Subclavius

Serratus anterior

Pectoral fascia

Clavipectoral fascia

Cephalic vein

Thoracoacromial vessels

Medial and lateral pectoral nerves

Long thoracic nerve

Reset checklist

9. Clinical Importance of Pectoral Region Dissection

A. Breast and axillary surgery

- Demonstrates the relationship between breast tissue, pectoral fascia and underlying muscles.
- Helps identify lymphatic drainage pathways towards the axilla.
- Provides anatomical orientation for axillary lymph node dissection and breast surgery.

- Knowledge of the pectoral nerves helps avoid unnecessary denervation of pectoralis major and minor.

B. Deltopectoral surgical approach

- The deltopectoral interval lies between deltoid and pectoralis major.
- The cephalic vein is an important landmark in this interval.
- Used in surgical approaches to the proximal humerus and shoulder.

C. Venous access

- The cephalic vein may be used for venous cutdown and insertion of certain cardiac device leads.
- Its course through the deltopectoral groove and clavipectoral fascia is surgically important.

D. Pectoral nerve injury

- Injury to pectoral nerves can cause weakness and atrophy of pectoralis major.
- May impair forceful adduction and medial rotation of the arm.
- Preservation of these nerves is important during appropriate axillary and pectoral surgical procedures.

E. Long thoracic nerve injury

- May occur during axillary surgery or trauma.
- Causes serratus anterior paralysis and medial scapular winging.
- The superficial course of the nerve on serratus anterior makes it vulnerable during dissection.

10. High-Yield Quick Revision

STRUCTURE	IMPORTANT DISSECTION POINT
Pectoralis major	Superficial large pectoral muscle
Pectoralis minor	Deep to pectoralis major
Subclavius	Immediately inferior to clavicle
Serratus anterior	Lateral thoracic wall
Pectoral fascia	Covers pectoralis major
Clavipectoral fascia	Encloses subclavius and pectoralis minor
Costocoracoid membrane	Between subclavius and pectoralis minor
Suspensory ligament of axilla	Inferior continuation of clavipectoral fascia
Cephalic vein	Deltopectoral groove
Lateral pectoral nerve	Pierces clavipectoral fascia
Axillary artery division	Related to pectoralis minor

Long thoracic nerve	Descends on serratus anterior
Winged scapula	Serratus anterior paralysis

11. Exam Focus

University practical questions

1. Demonstrate the superficial and deep fasciae of the pectoral region.
2. Identify pectoralis major and describe its attachments and nerve supply.
3. Demonstrate pectoralis minor and explain its relationship to the axillary artery.
4. Identify the structures piercing the clavipectoral fascia.
5. Demonstrate serratus anterior and trace its nerve supply.

Viva questions

1. Which muscle is reflected first to expose pectoralis minor? — Pectoralis major.
2. Which fascia covers pectoralis major? — Pectoral fascia.
3. Which fascia encloses pectoralis minor? — Clavipectoral fascia.
4. Which vein is identified in the deltopectoral groove? — Cephalic vein.
5. Which nerve supplies pectoralis minor? — Medial pectoral nerve.
6. Which muscle divides the axillary artery into three parts? — Pectoralis minor.
7. Which nerve supplies serratus anterior? — Long thoracic nerve.

8. Which portion of the clavipectoral fascia lies between subclavius and pectoralis minor? — Costocoracoid membrane.

NEET PG / INI-CET Pearls

- Structures piercing clavipectoral fascia ? Cephalic vein, thoracoacromial vessels, lateral pectoral nerve and lymphatics.
- Nerve commonly passing through pectoralis minor ? Medial pectoral nerve.
- Second part of axillary artery ? Posterior to pectoralis minor.
- Nerve injured during lateral axillary wall dissection ? Long thoracic nerve.
- Loss of normal anterior axillary fold ? Consider pectoralis major injury.
- Cephalic vein entering axillary vein ? Pierces the clavipectoral fascia.
- Suspensory ligament of axilla ? Inferior continuation of clavipectoral fascia.