

# Lecture two

## Objectives:

At the end of this lecture the student must know the following:

1-surface anatomy of the anterior chest wall and upper limbs.

2-anterior axioappendicular muscles.

3- posterior axioappendicular muscles.

4- Rotator cuff muscles.

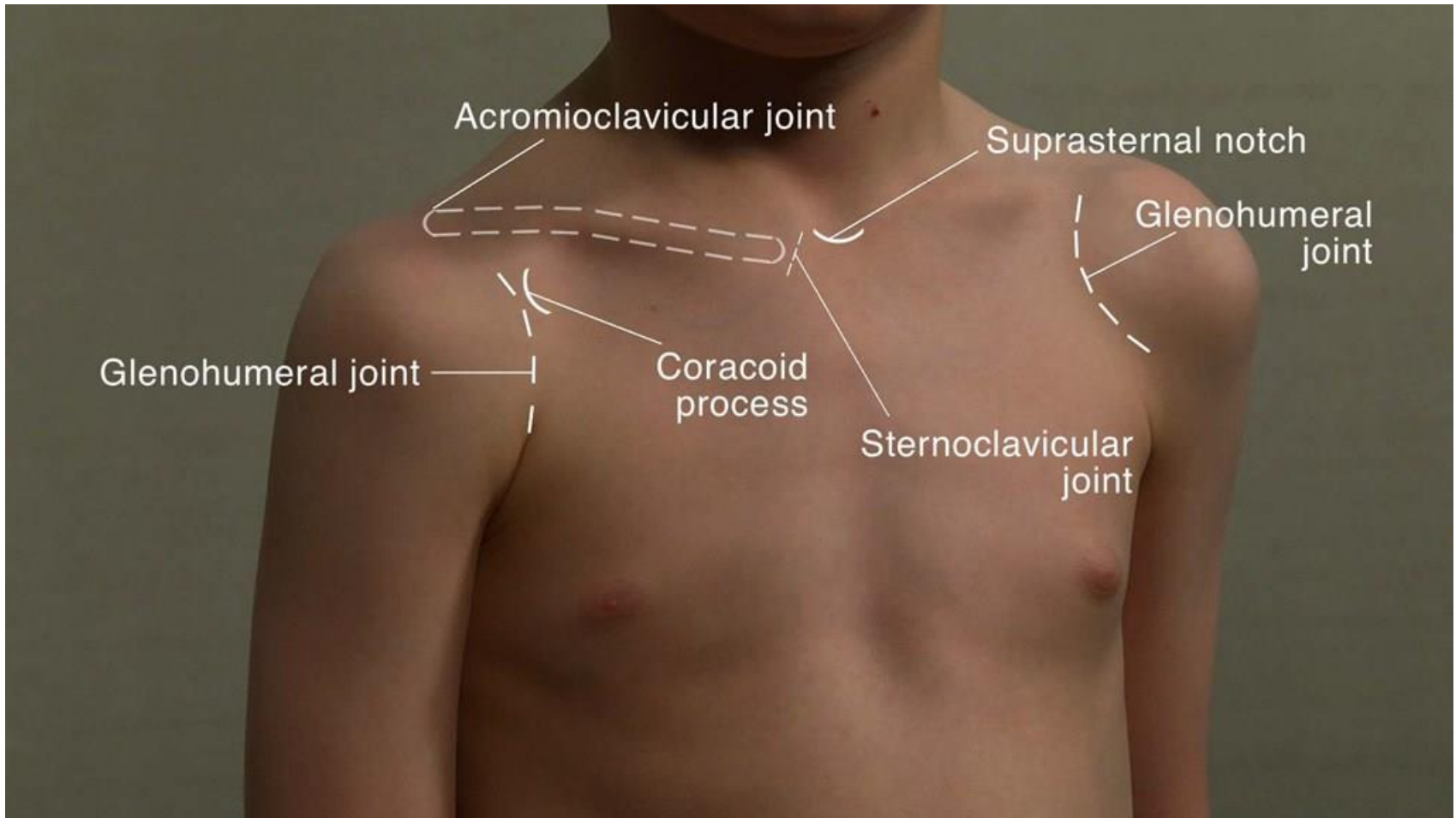
# **Upper limbs**

Surface anatomy of  
anterior chest wall

# **surface anatomy**

**Of the anterior chest wall  
(important anatomical landmarks)**

# Clavicle and sternum



# *Jugular fossa*

**(Suprasternal notch ) this is situated at the midline of the body superior to the manubrium of the sternum**

Supraorbital margin

Auricle

Mental protuberance

External jugular vein

Suprasternal notch

Supraclavicular fossa

Acromion

Clavicle

Sternum

Zygomatic bone

Mandible

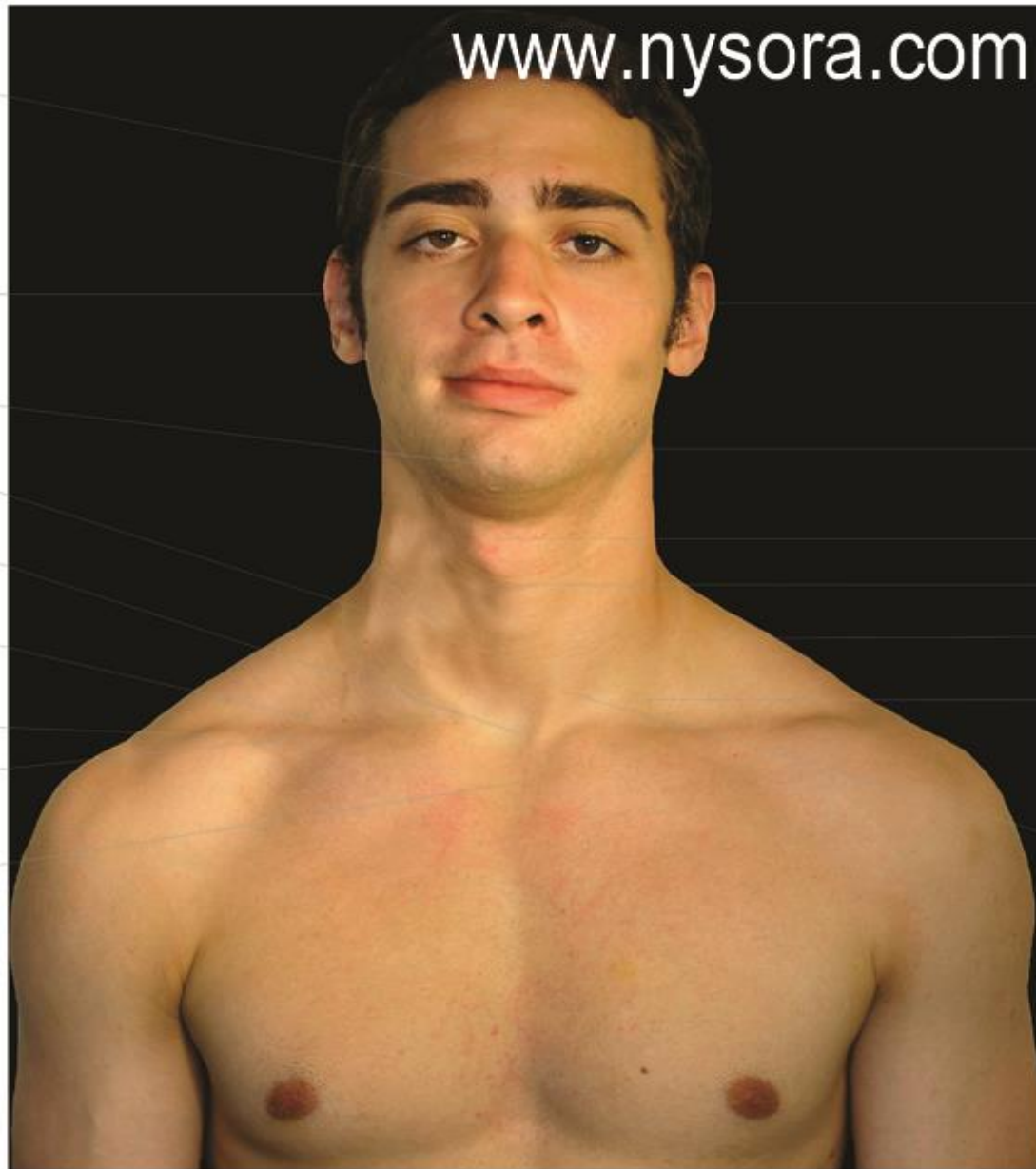
Thyroid cartilage

Cricoid cartilage

Trapezius muscle

Sternocleidomastoid muscle (clavicular head)

Sternocleidomastoid muscle (sternal head)







# *Nipple*

**This is located at 4<sup>th</sup>. Ics  
midclavicular line**

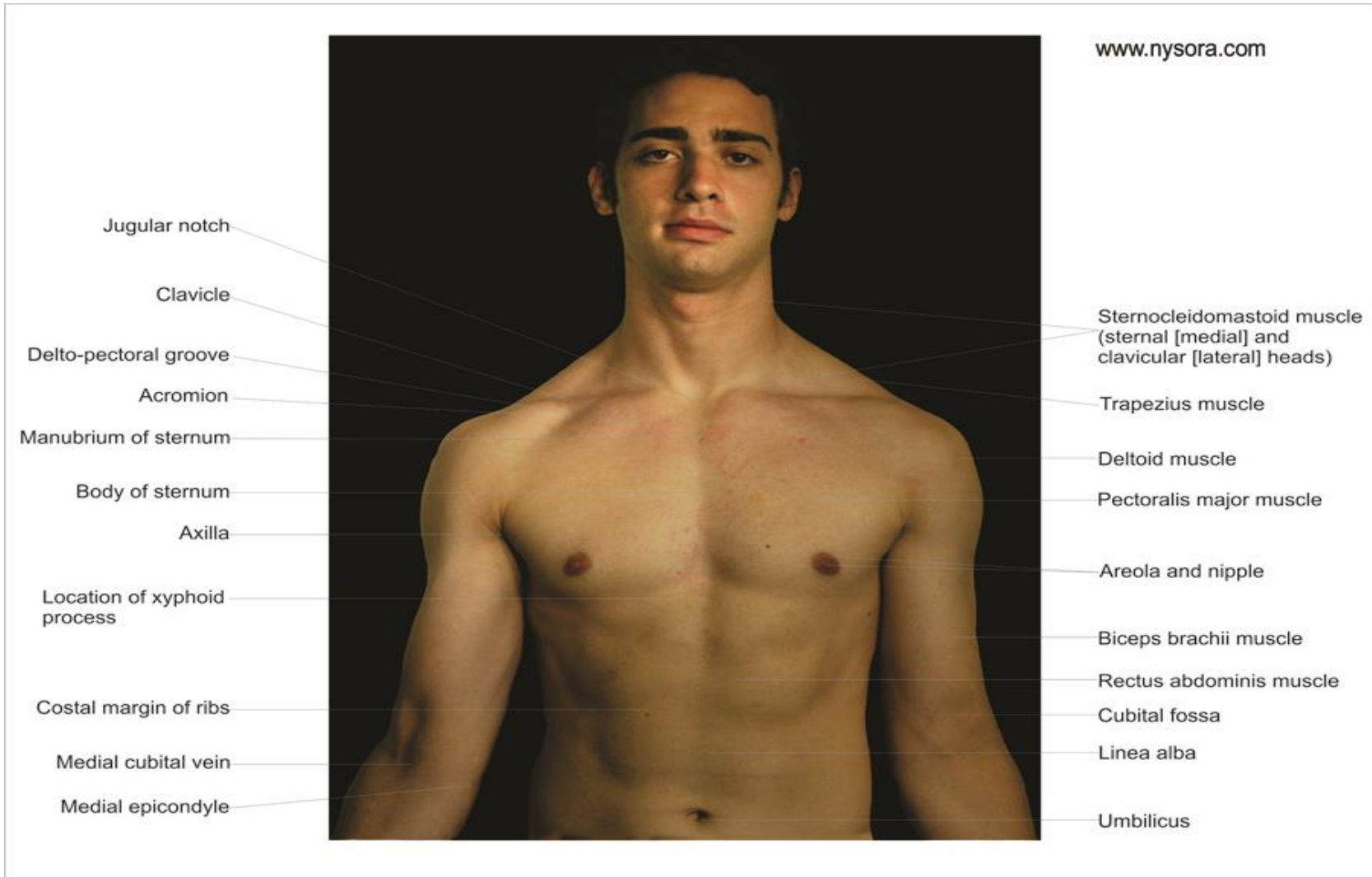
## *Infrasternal notch*

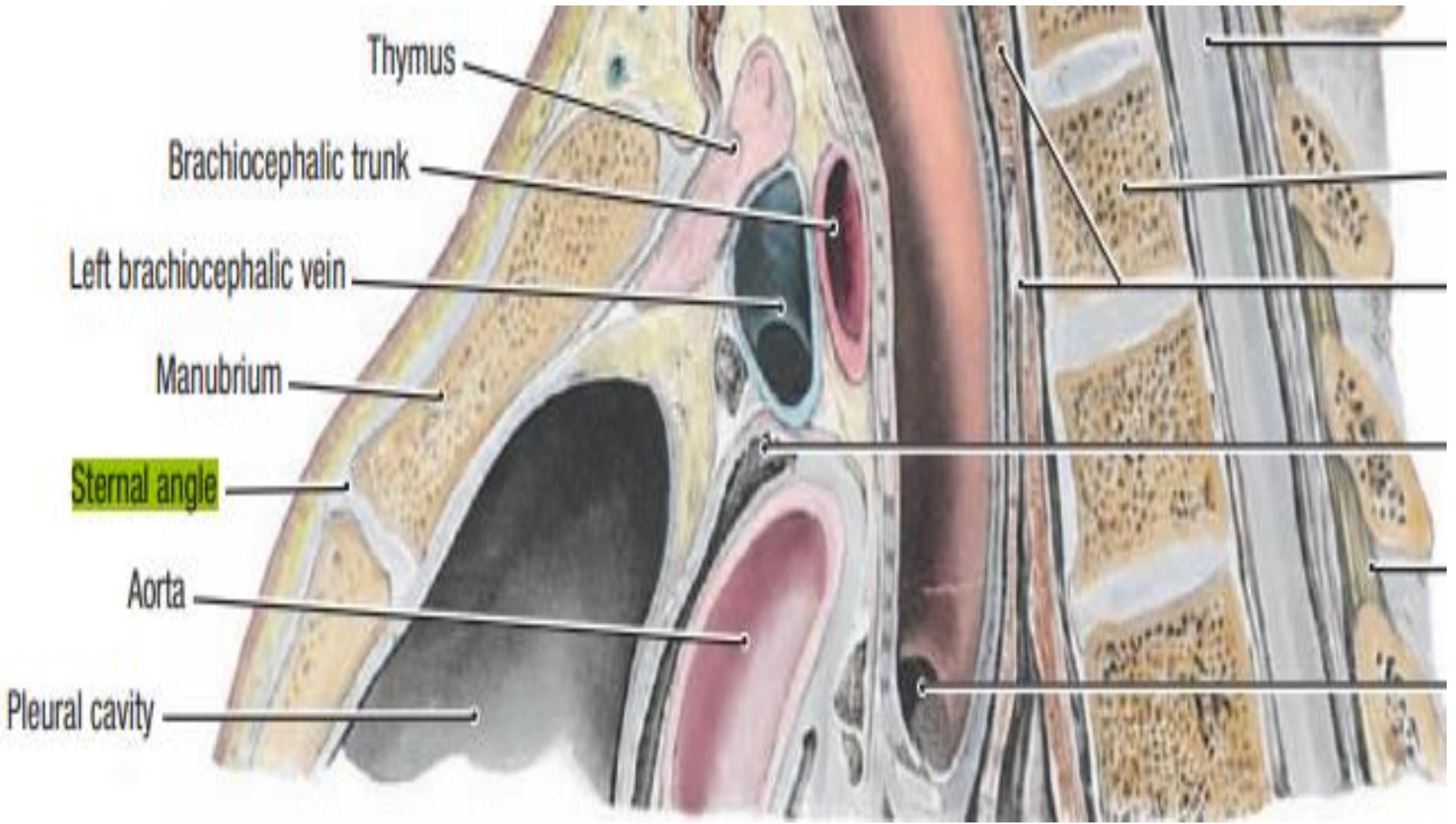
**Epigastric fossa situated at the  
midline below the lower end of  
the sternum**

# Infraclavicular fossa

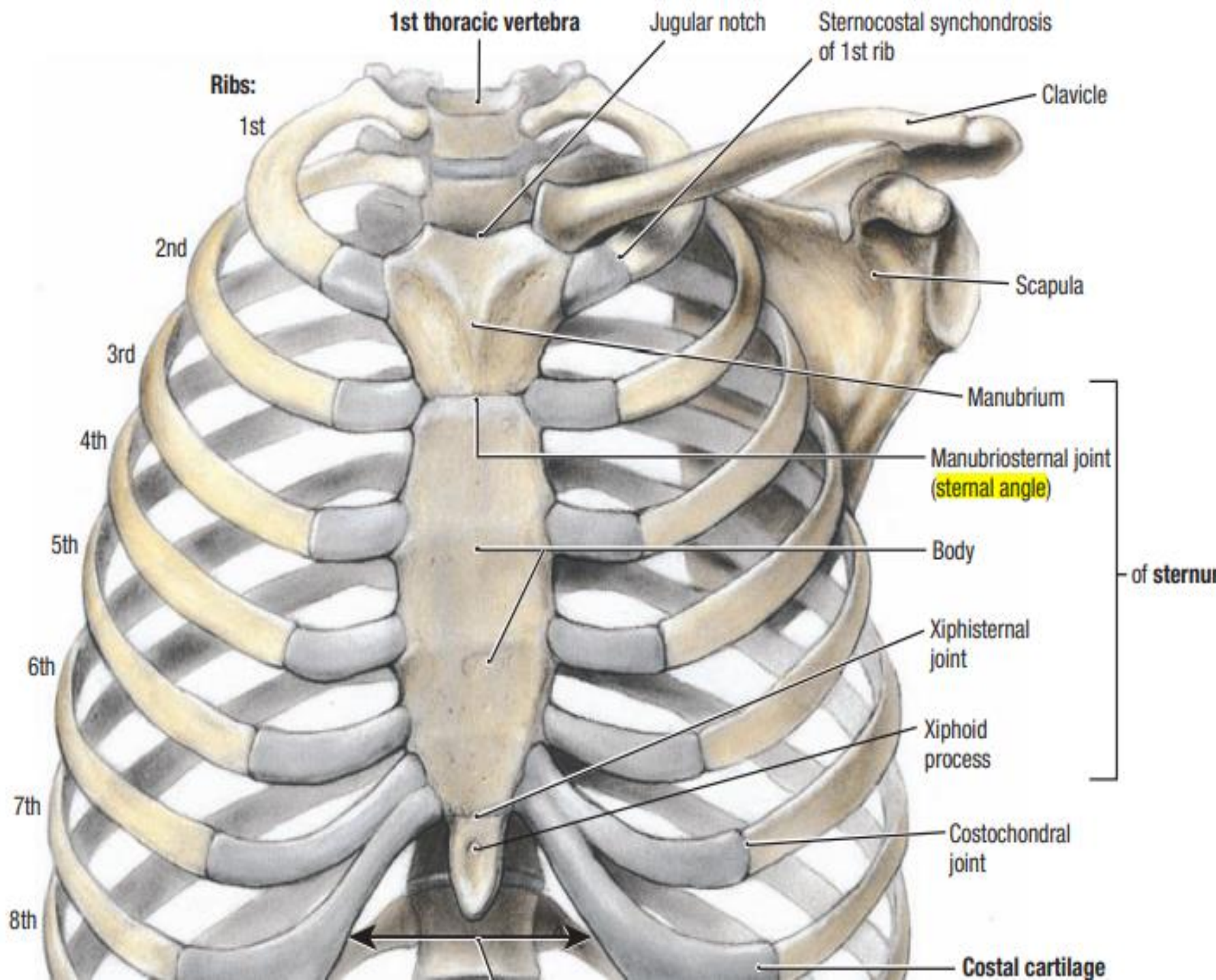
*Situated lateral to the superior chest below the clavicle at the junction of the lateral 1/3 with the middle third*

# Sternal angle of Louis









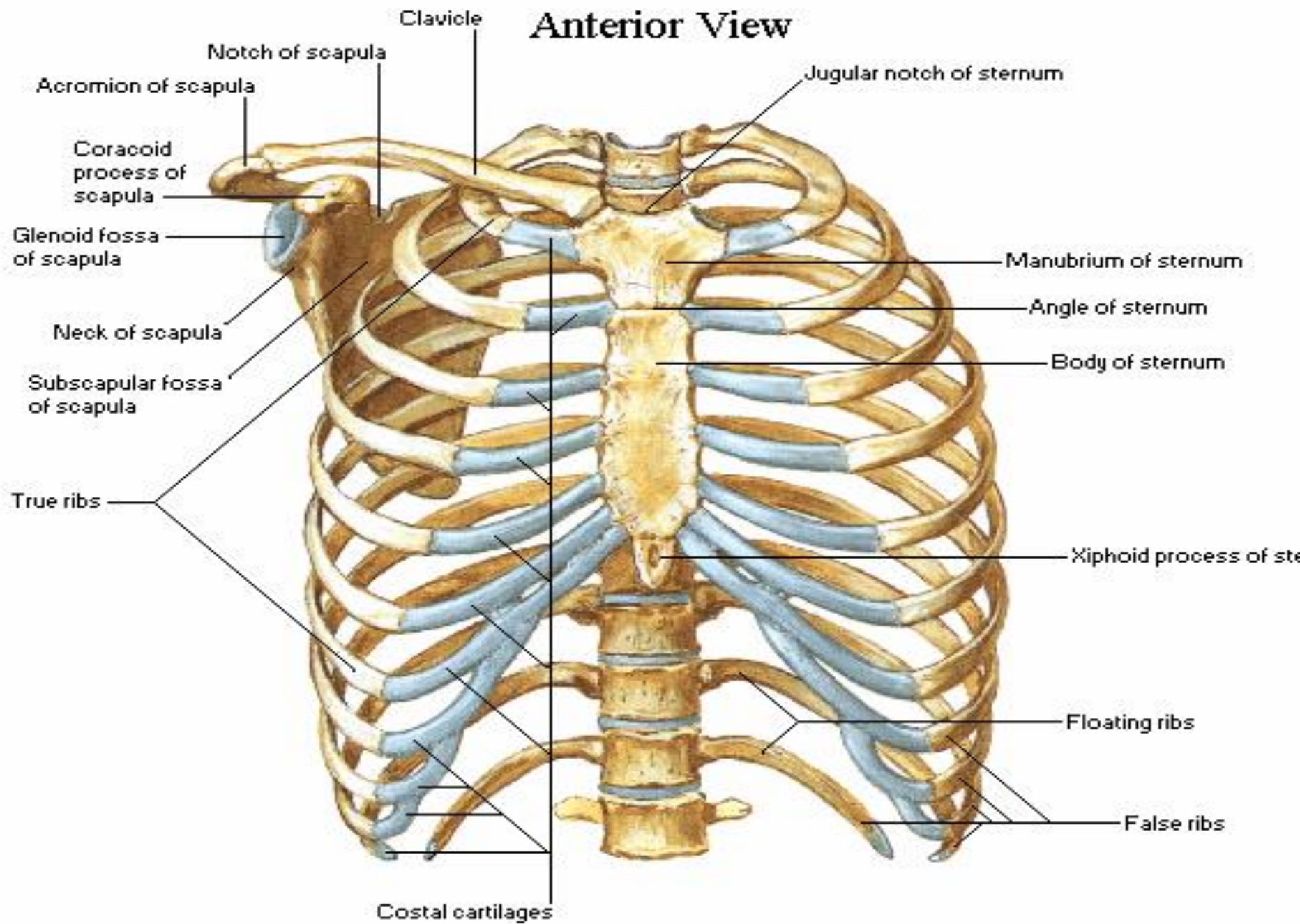
# Clinical Importance of the Sternum •

- The sternal angle is important clinically because the second rib is found lateral to it and can be used as a starting point for counting the other ribs. Counting ribs is important because they are landmarks used to locate structures in the thorax, such as areas of the

**Heart. Because the xiphoid process •  
of the sternum is attached only at •  
its superior end, it may be broken  
during cardiopulmonary •  
resuscitation (CPR) and then may  
lacerate  
the underlying liver. •**



# Anterior View



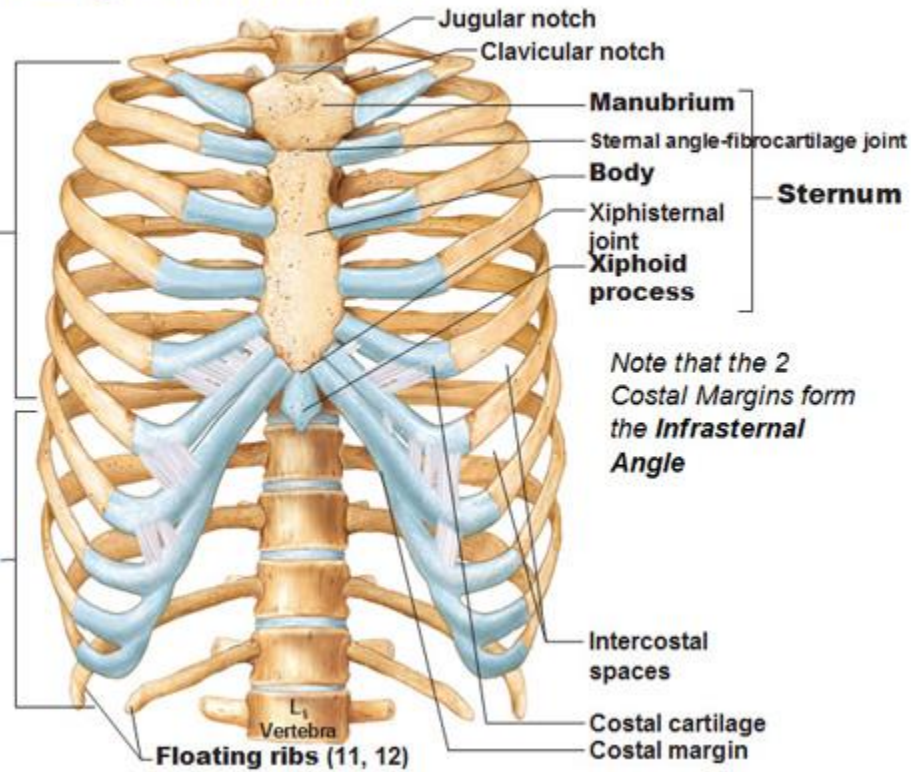
## The Thoracic Cage: Anterior view



**True ribs (1-7)**

*Note that ribs run anteroinferiorly*  
*Note how Rib 1 is flattened.*

**False ribs (8-12)**



# *Regions of the upper limb*

## **Includes:**

**\*shoulder region**

**\*upper arm**

**\*forearm**

**\*hand**

**\*shoulder region include**

**++scapular region**

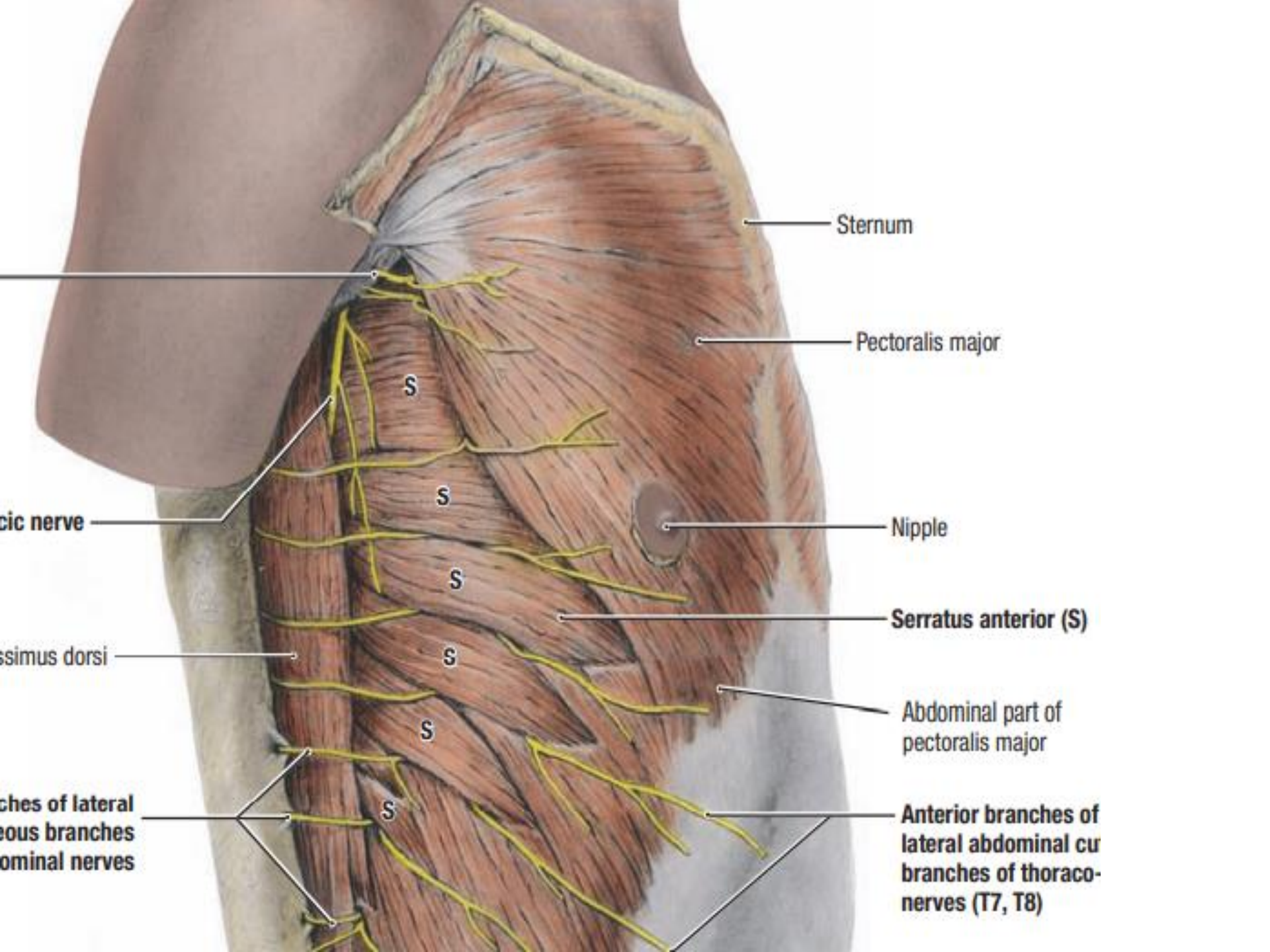
**++pectoral region**

**++axilla**

# Muscles of the pectoral region

جداول عضلات أطلس التثريح





Sternum

Pectoralis major

Nipple

Serratus anterior (S)

Abdominal part of pectoralis major

Anterior branches of lateral abdominal cutaneous nerves (T7, T8)

axillary nerve

axillary artery

Thoracoacromial artery

S

S

S

S

S

S

# Pectoral region

6.18

PECTORALIS MAJOR AND MINOR AND SERRATUS ANTERIOR

**A.** Pectoralis major. **B.** Pectoralis minor. **C.** Subclavius. **D. and E.** Serratus anterior and its scapular attachment.

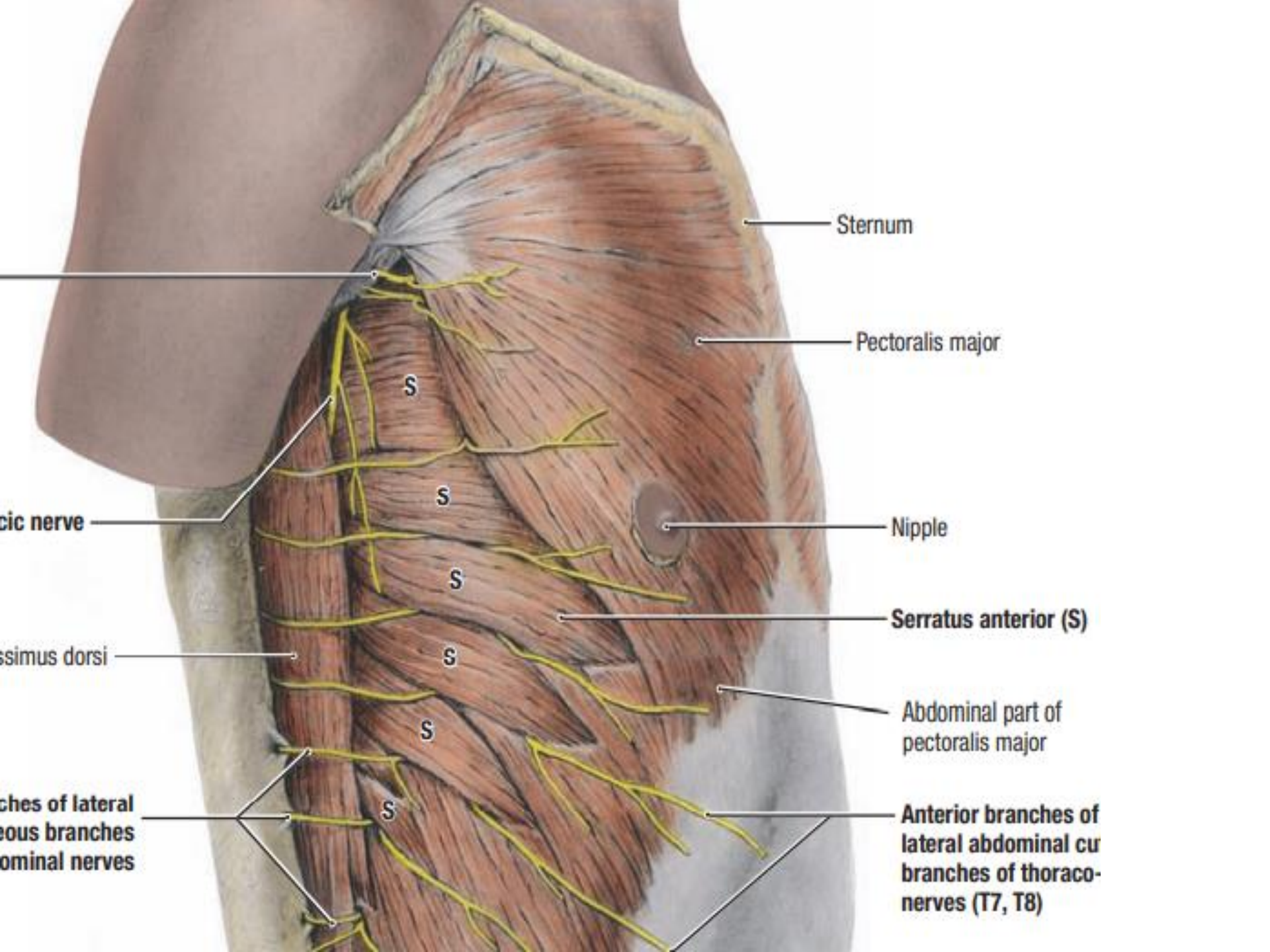
# Pectoral region

6.18

PECTORALIS MAJOR AND MINOR AND SERRATUS ANTERIOR

**A.** Pectoralis major. **B.** Pectoralis minor. **C.** Subclavius. **D. and E.** Serratus anterior and its scapular attachment.





Sternum

Pectoralis major

Nipple

Serratus anterior (S)

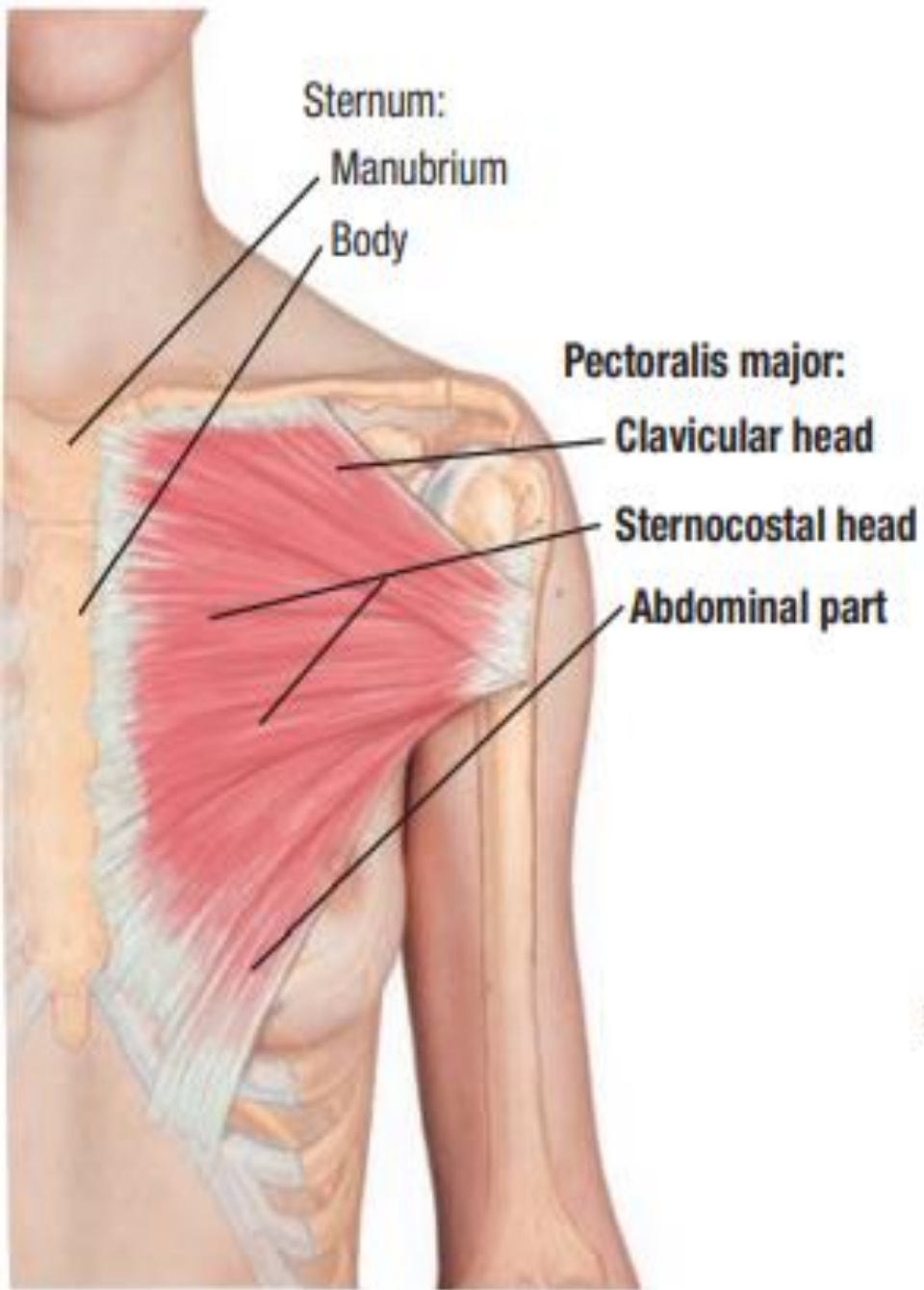
Abdominal part of pectoralis major

Anterior branches of lateral abdominal cutaneous nerves (T7, T8)

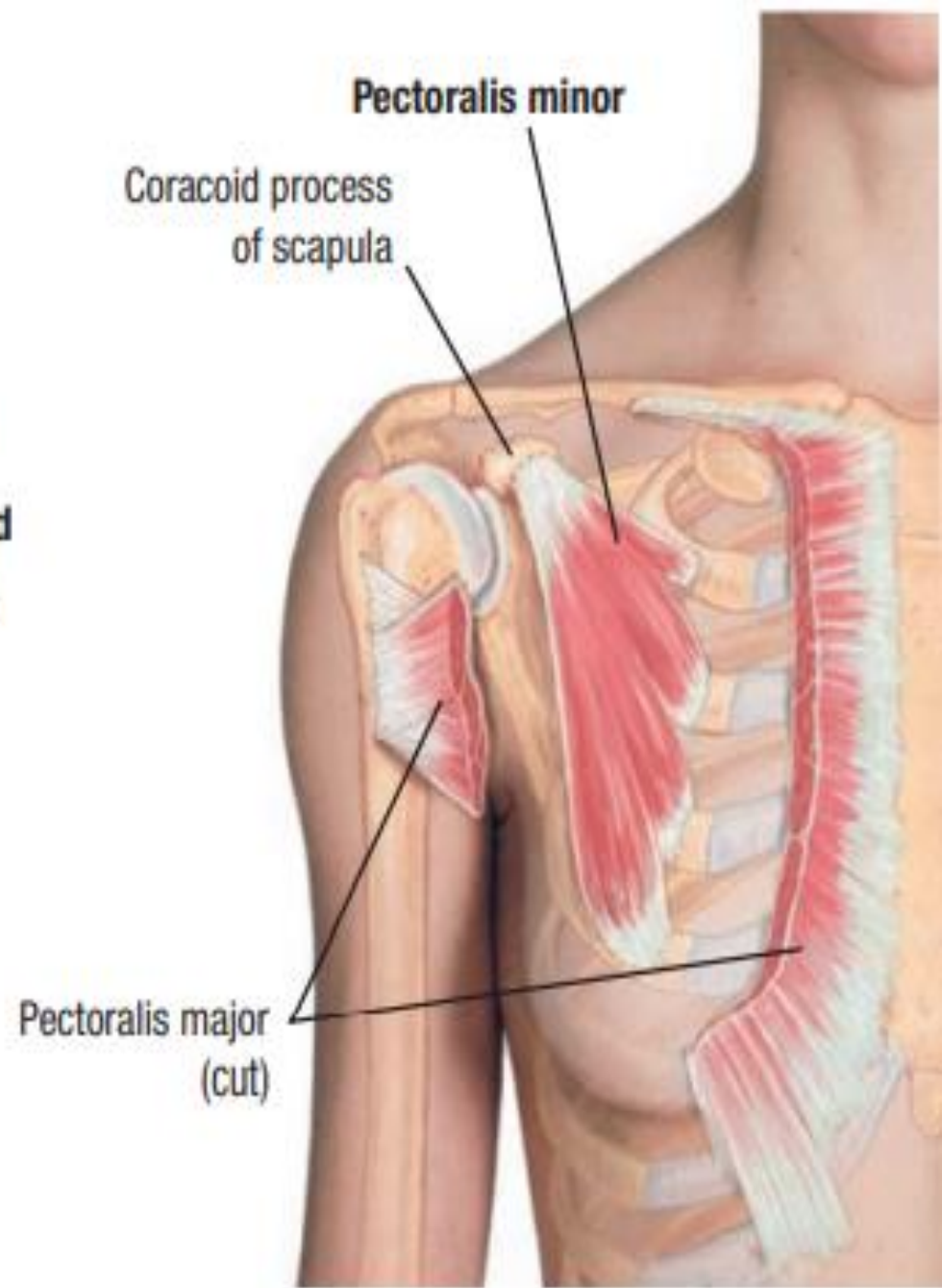
axillary nerve

Serratus dorsi

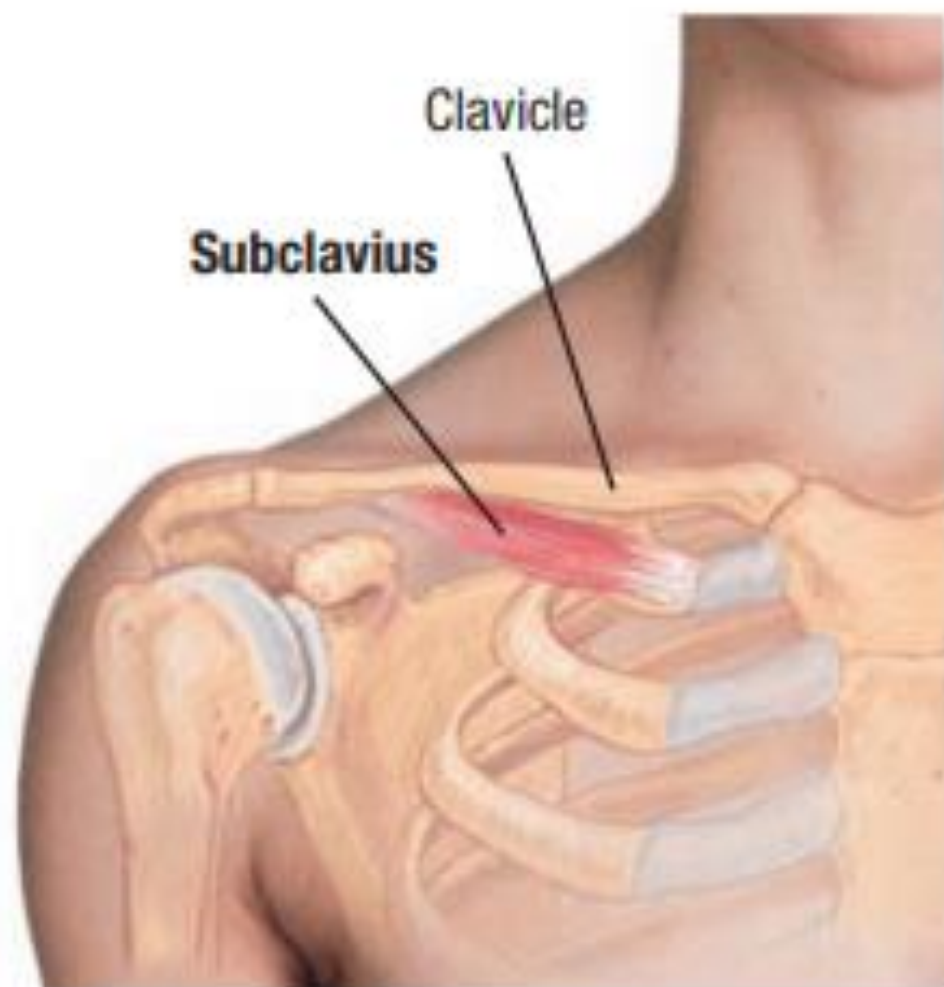
Anterior branches of lateral abdominal cutaneous nerves



**A. Anterior View**

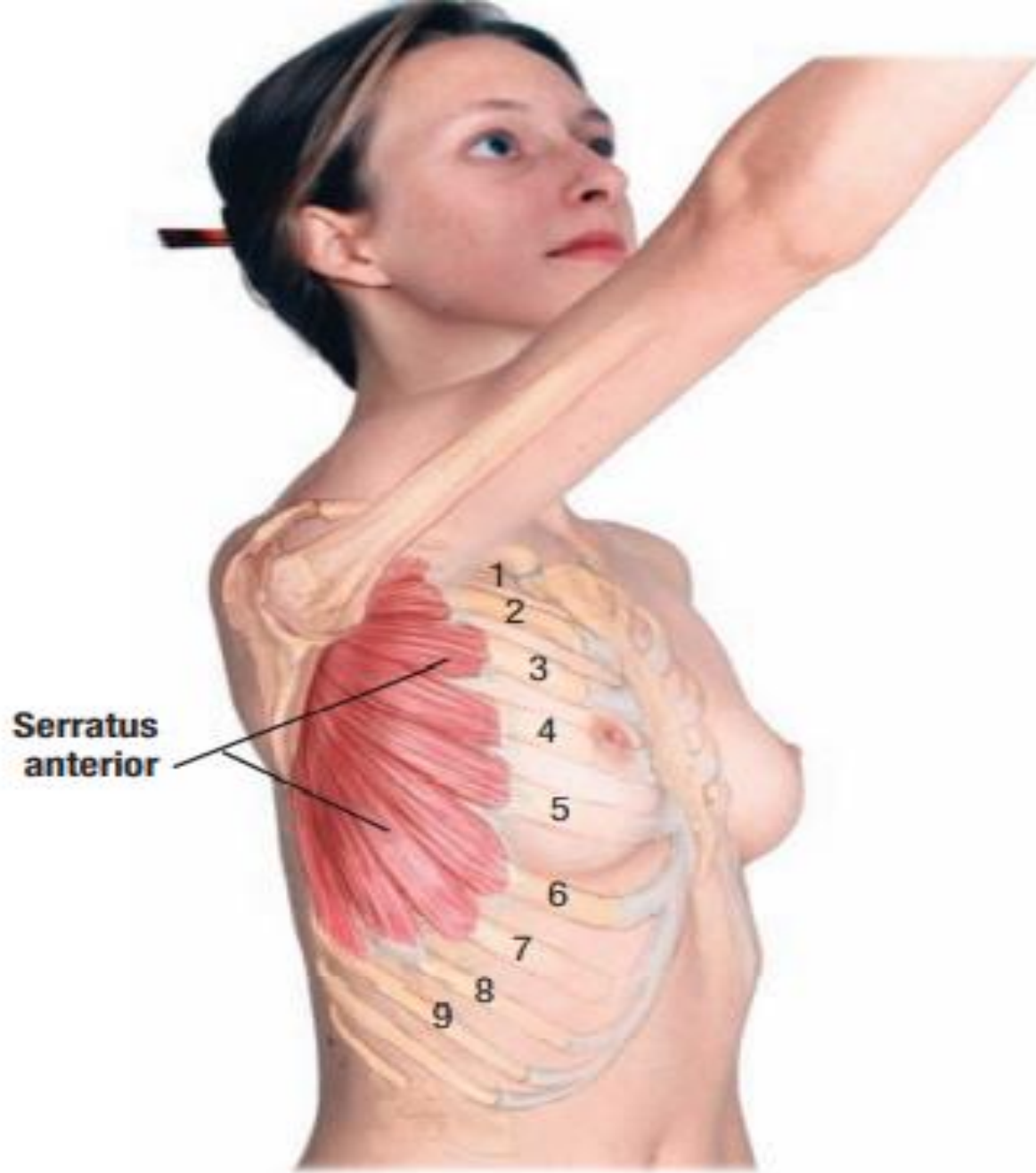


**B. Anterior View**



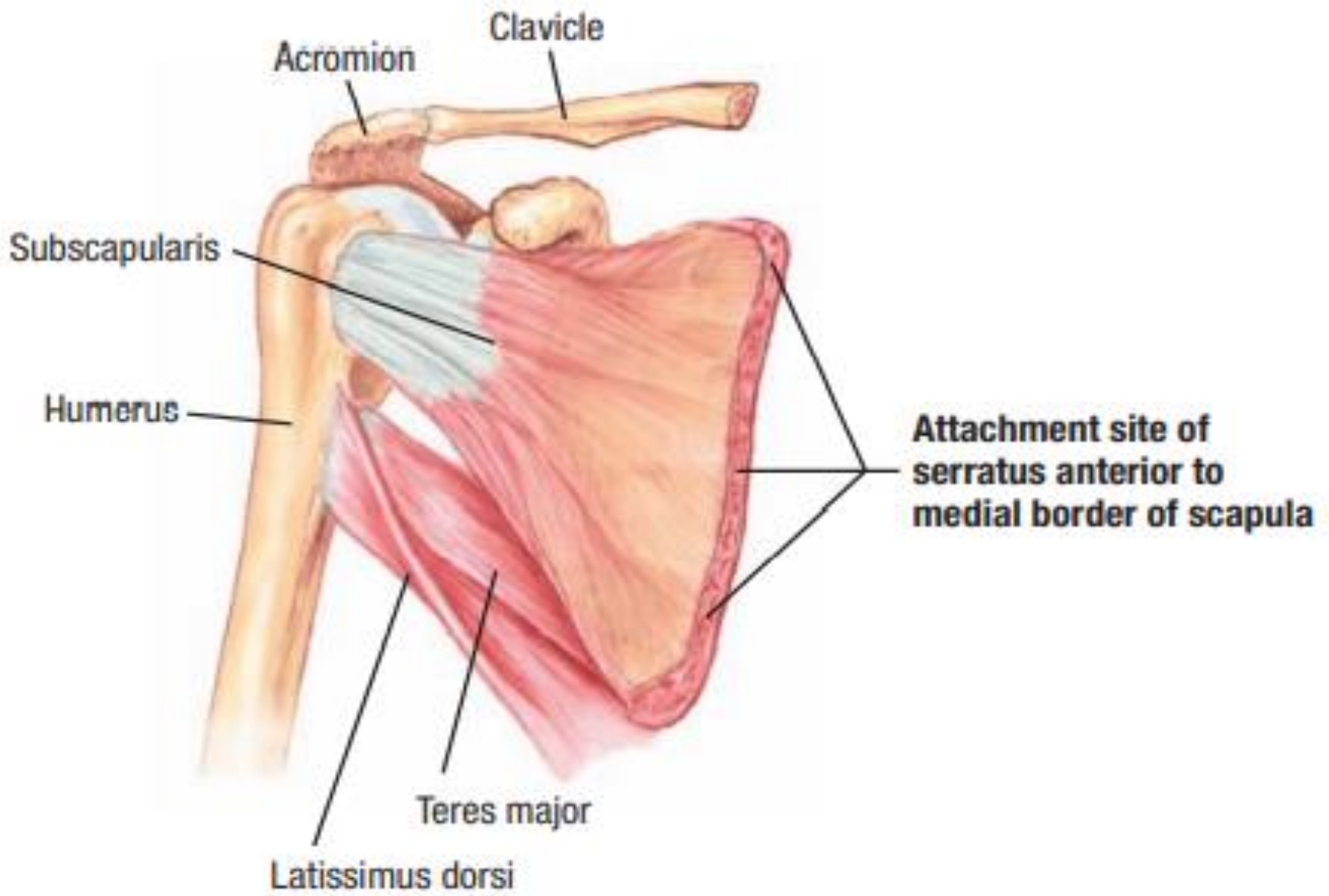
**C. Anterior View**



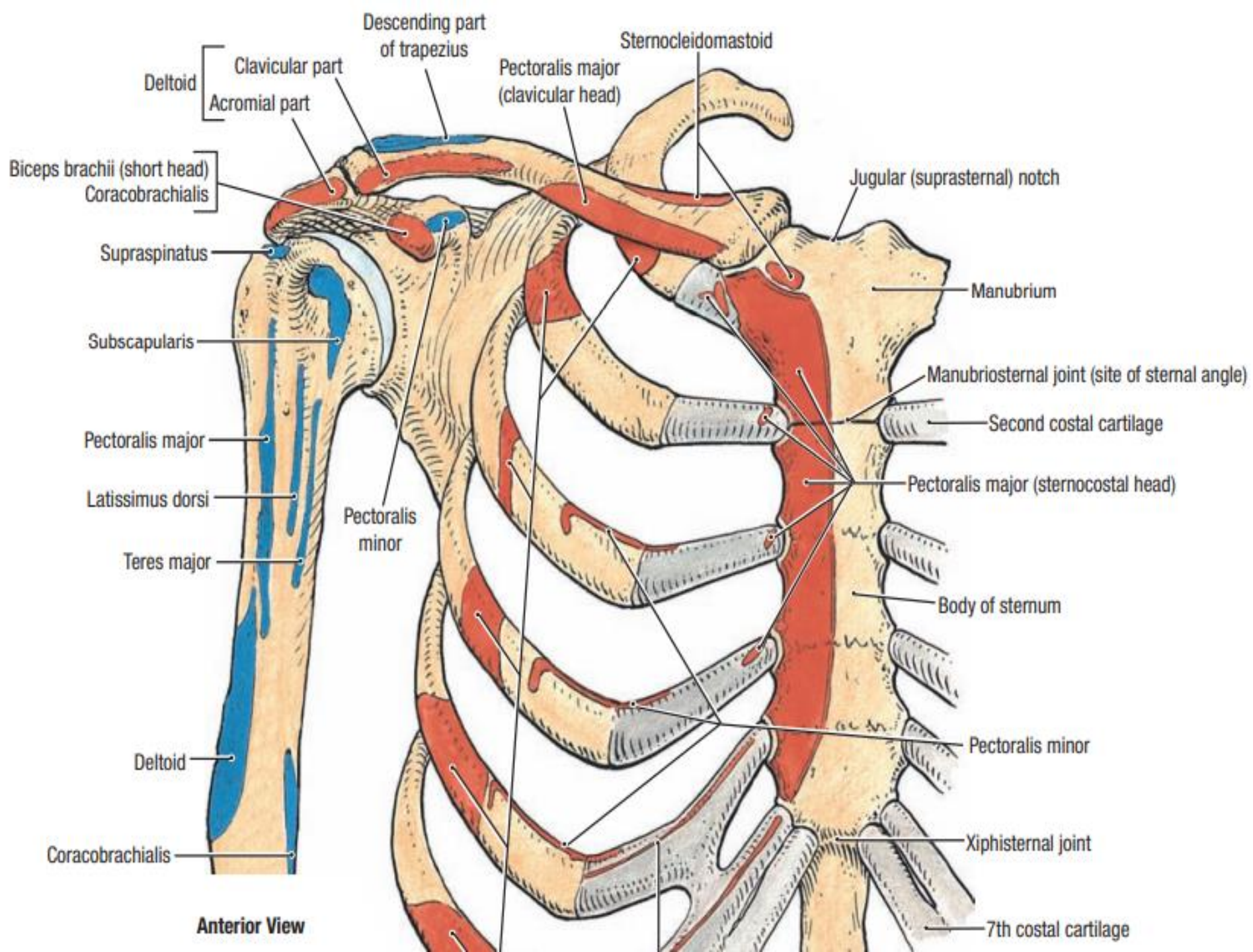


**Serratus anterior**

**D. Lateral View**



**E. Anterior View**



**Anterior View**

**TABLE 6.4 ANTERIOR AXIO-APPENDICULAR MUSCLES**

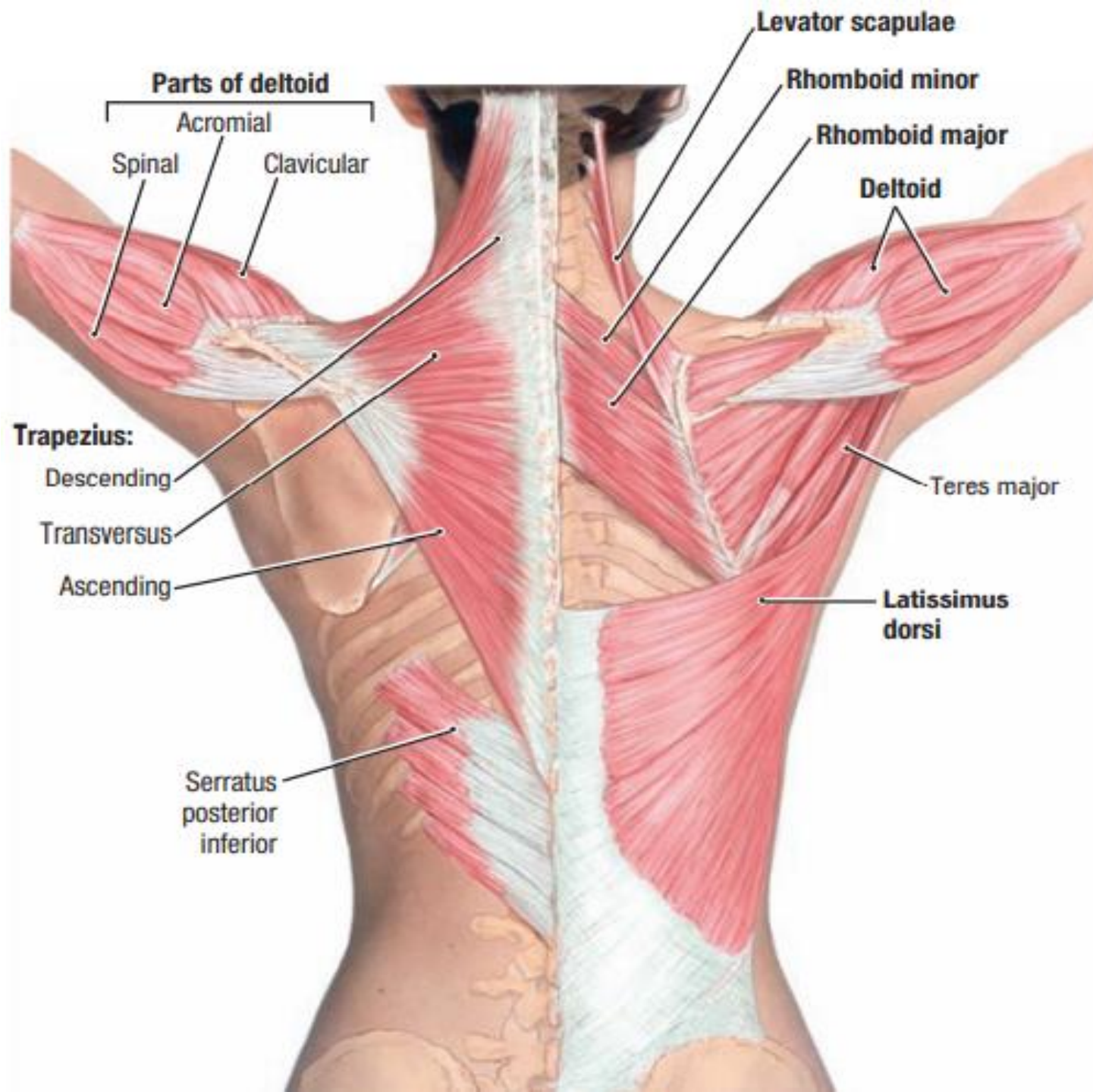
| <b>Muscle</b>            | <b>Proximal Attachment (<i>red</i>)</b>   | <b>Distal Attachment (<i>blue</i>)</b>  |
|--------------------------|---|---|
| <b>Pectoralis major</b>  | <i>Clavicular head:</i> anterior surface of medial half of clavicle<br><i>Sternocostal head:</i> anterior surface of sternum, superior six costal cartilages<br><i>Abdominal part:</i> aponeurosis of external oblique muscle | Crest of greater tubercle of intertubercular sulcus (lateral lip of bicipital groove) |
| <b>Pectoralis minor</b>  | 3rd to 5th ribs near their costal cartilages  | Medial border and superior surface of coracoid process of scapula                     |
| <b>Subclavius</b>        | Junction of 1st rib and its costal cartilage  | Inferior surface of middle third of clavicle  |
| <b>Serratus anterior</b> | External surfaces of lateral parts of 1st to 8th–9th ribs   | Anterior surface of medial border of scapula (see Fig. 6.18E.)                        |

| Innervation <sup>a</sup>   | Main Actions  |
|--|---|
| Lateral and medial pectoral nerves; clavicular head ( <b>C5</b> and <b>C6</b> ), sternocostal head ( <b>C7</b> , <b>C8</b> , and T1) | Adducts and medially rotates humerus at shoulder joint; draws scapula anteriorly and inferiorly<br>Acting alone: clavicular head flexes shoulder joint, and sternocostal head extends it from the flexed position |
| Medial pectoral nerve (C8 and T1)  | Stabilizes scapula by drawing it inferiorly and anteriorly against thoracic wall  |
| Nerve to subclavius ( <b>C5</b> and C6)  | Anchors and depresses clavicle at sternoclavicular joint  |
| Long thoracic nerve (C5, <b>C6</b> , and <b>C7</b> )   | Protracts scapula and holds it against thoracic wall; rotates scapula   |



<https://youtu.be/2QVPLLtaPkA>

- <https://youtu.be/II DAC0wsAtY>



**Parts of deltoid**

- Spinal
- Acromial
- Clavicular

Levator scapulae

Rhomboid minor

Rhomboid major

Deltoid

**Trapezius:**

Descending

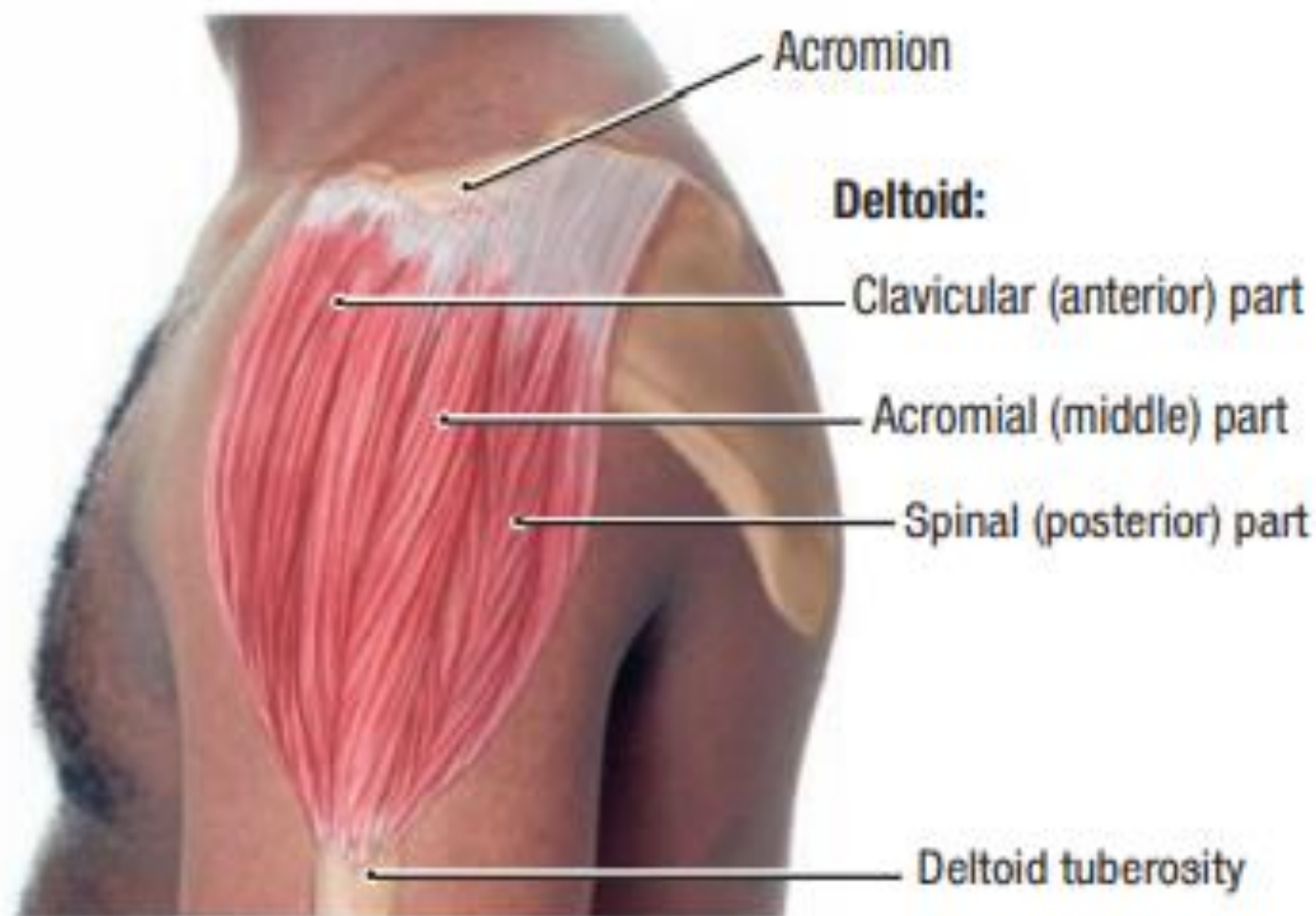
Transversus

Ascending

Teres major

Latissimus dorsi

Serratus posterior inferior



**B. Lateral View**

**TABLE 6.7 SUPERFICIAL BACK (POSTERIOR AXIO-APPENDICULAR) AND DELTOID MUSCLES**

| Muscle                          | Proximal Attachment   | Distal Attachment  | Innervation  |
|---------------------------------|---|--|--|
| <b>Trapezius</b>                | Medial third of superior nuchal line; external occipital protuberance, nuchal ligament, and spinous processes of C7–T12 vertebrae                 | Lateral third of clavicle, acromion, and spine of scapula      | Spinal accessory nerve (CN XI—motor) and cervical nerves (C3–C4—sensory) |
| <b>Latissimus dorsi</b>         | Spinous processes of inferior six thoracic vertebrae, thoracolumbar fascia, iliac crest, and inferior three or four ribs                          | Intertubercular sulcus (bicipital groove) of humerus           | Thoracodorsal nerve (C6, C7, C8)   |
| <b>Levator scapulae</b>         | Posterior tubercles of transverse processes of C1–C4 vertebrae  | Superior part of medial border of scapula                      | Dorsal scapular (C5) and cervical (C3–C4) nerves                         |
| <b>Rhomboid minor and major</b> | <i>Minor:</i> Inferior part of nuchal ligament and spinous processes of C7 and T1 vertebrae<br><i>Major:</i> spinous processes of T2–T5 vertebrae | Medial border of scapula from level of spine to inferior angle | Dorsal scapular nerve (C4–C5)  |
| <b>Deltoid</b>                  | Lateral third of clavicle ( <i>clavicular part</i> ), acromion ( <i>acromial part</i> ), and spine ( <i>spinal part</i> ) of scapula              | Deltoid tuberosity of humerus                                  | Axillary nerve (C5–C6)   |

<https://youtu.be/ZcBpdsO0EEU>

<https://youtu.be/GmBPlqdyhTs>

## Main Actions

Elevates, retracts, and rotates scapula; *descending part* elevates, *transverse part* retracts, and *ascending part* depresses scapula; descending and ascending part act together in superior rotation of scapula

Extends, adducts, and medially rotates shoulder joint; elevates body toward arms during climbing

Elevates scapula and tilts its glenoid cavity inferiorly by rotating scapula

Retract scapula and rotate it to depress glenoid cavity; fix scapula to thoracic wall

*Clavicular (anterior) part*: flexes and medially rotates shoulder joint; *acromial (middle) part*: abducts shoulder joint; *spinal (posterior) part*: extends and laterally rotates shoulder joint

<https://youtu.be/FTfZeO4eN1E>

<https://youtu.be/an2OexipnQ4>



Occipital lymph node

3rd occipital nerve (posterior ramus of C3)

Descending (superior) part of trapezius

Lesser occipital nerve (anterior ramus of C2)

Levator scapulae

Rhomboid minor

Cutaneous branches of posterior rami

Rhomboid major

Transverse (middle) part of trapezius

Deltoid

Ascending (inferior) part of trapezius

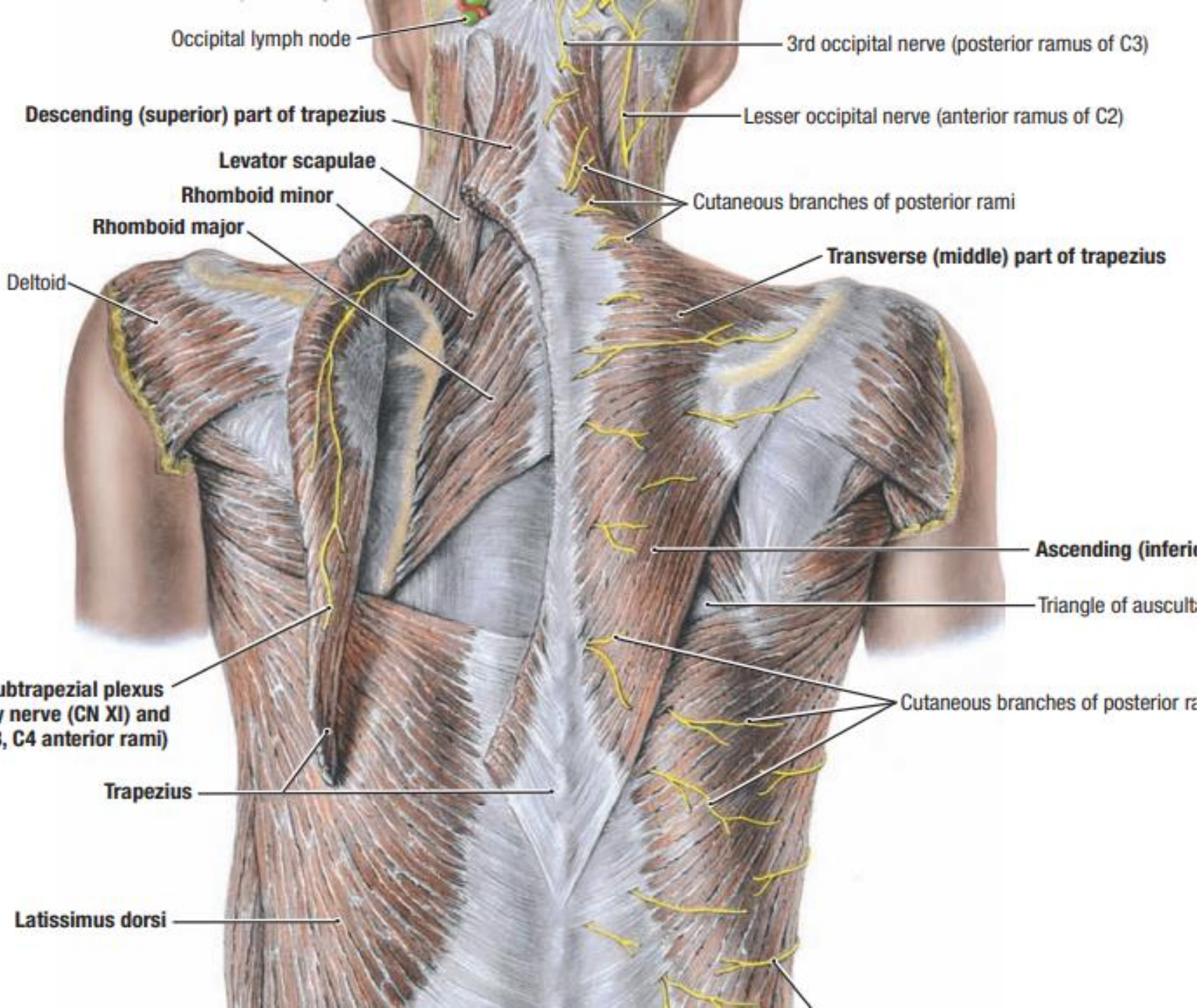
Triangle of auscultation

Subtrapezial plexus  
of sensory nerve (CN XI) and  
C3, C4 anterior rami

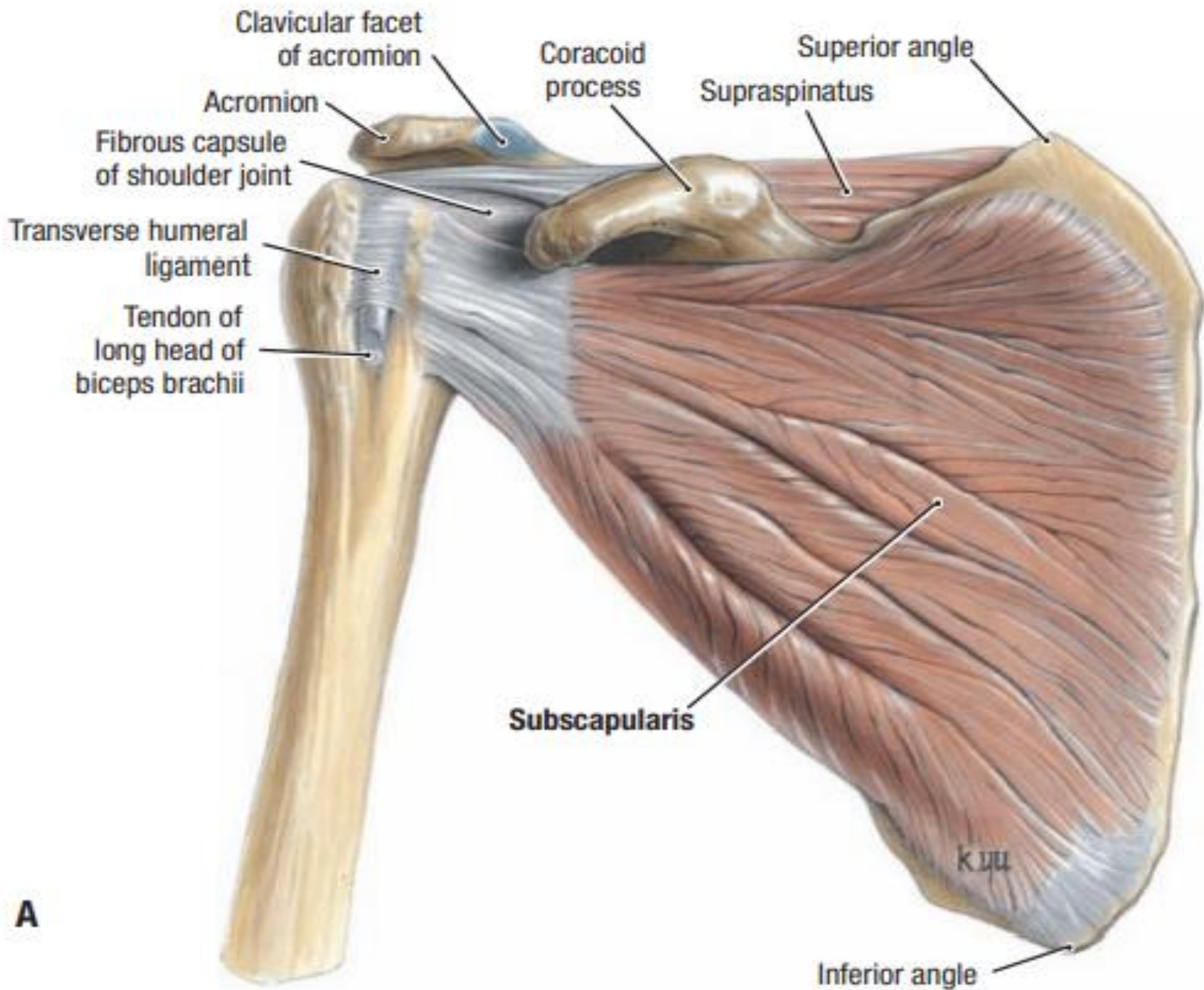
Cutaneous branches of posterior rami

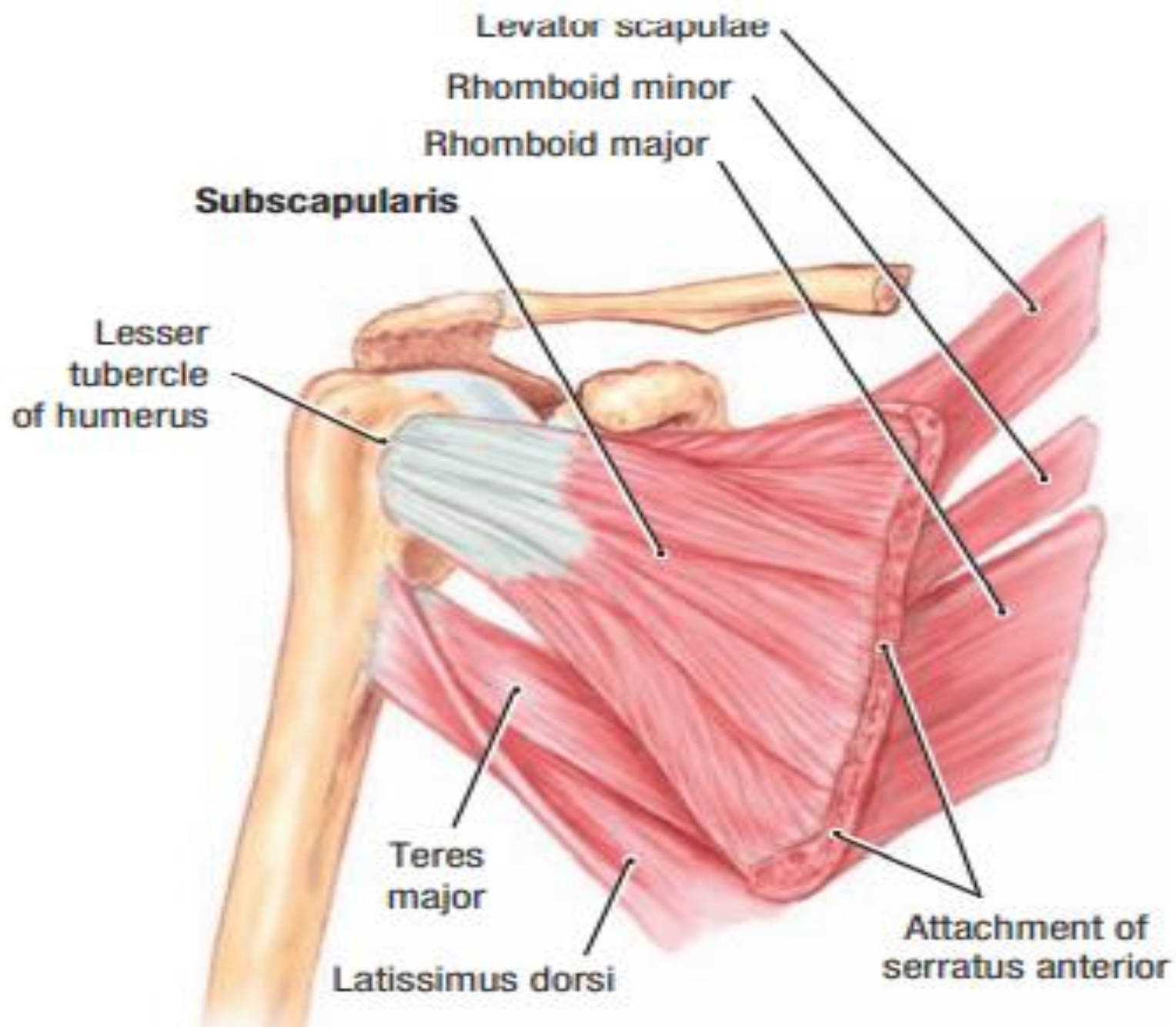
Trapezius

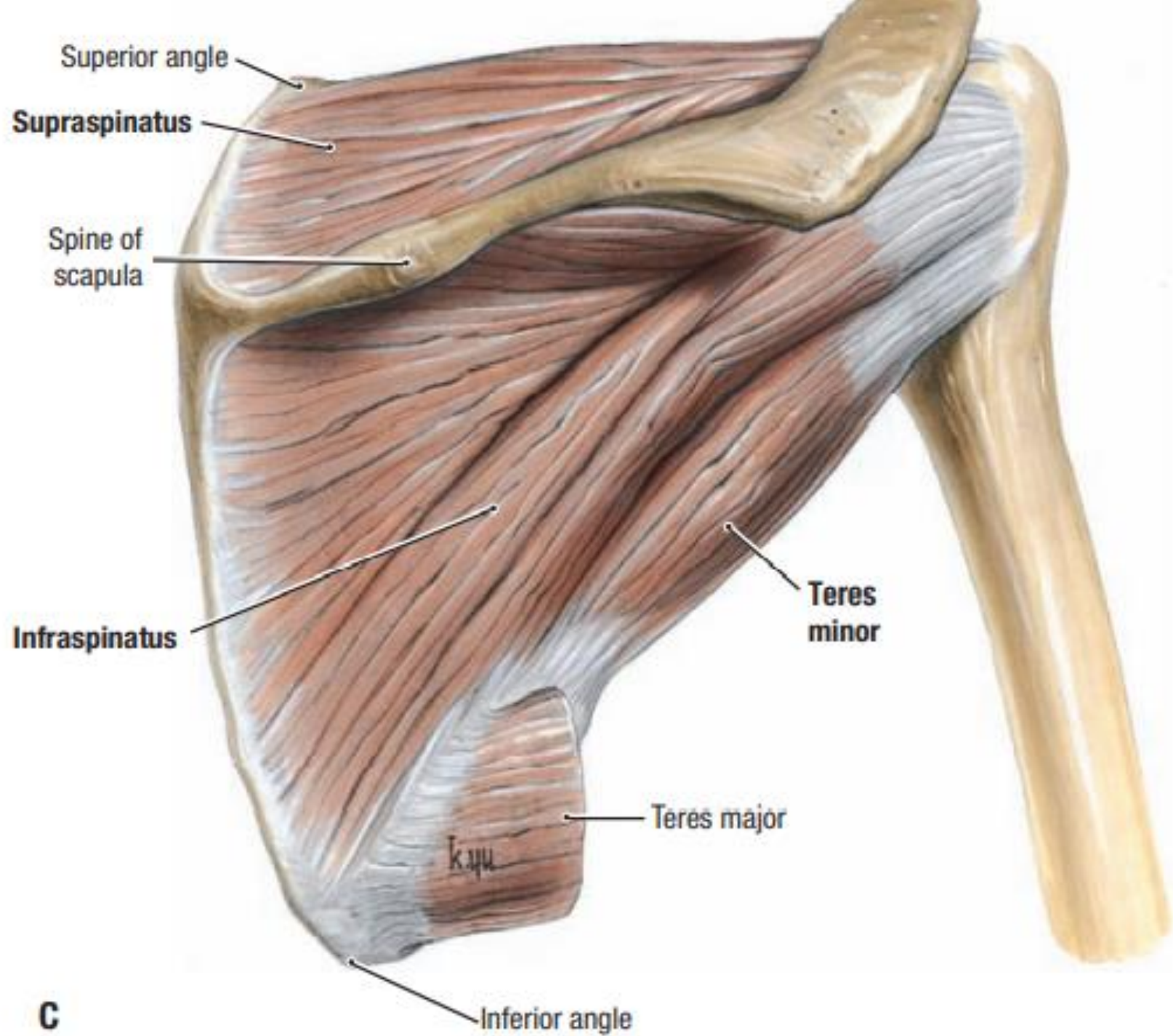
Latissimus dorsi





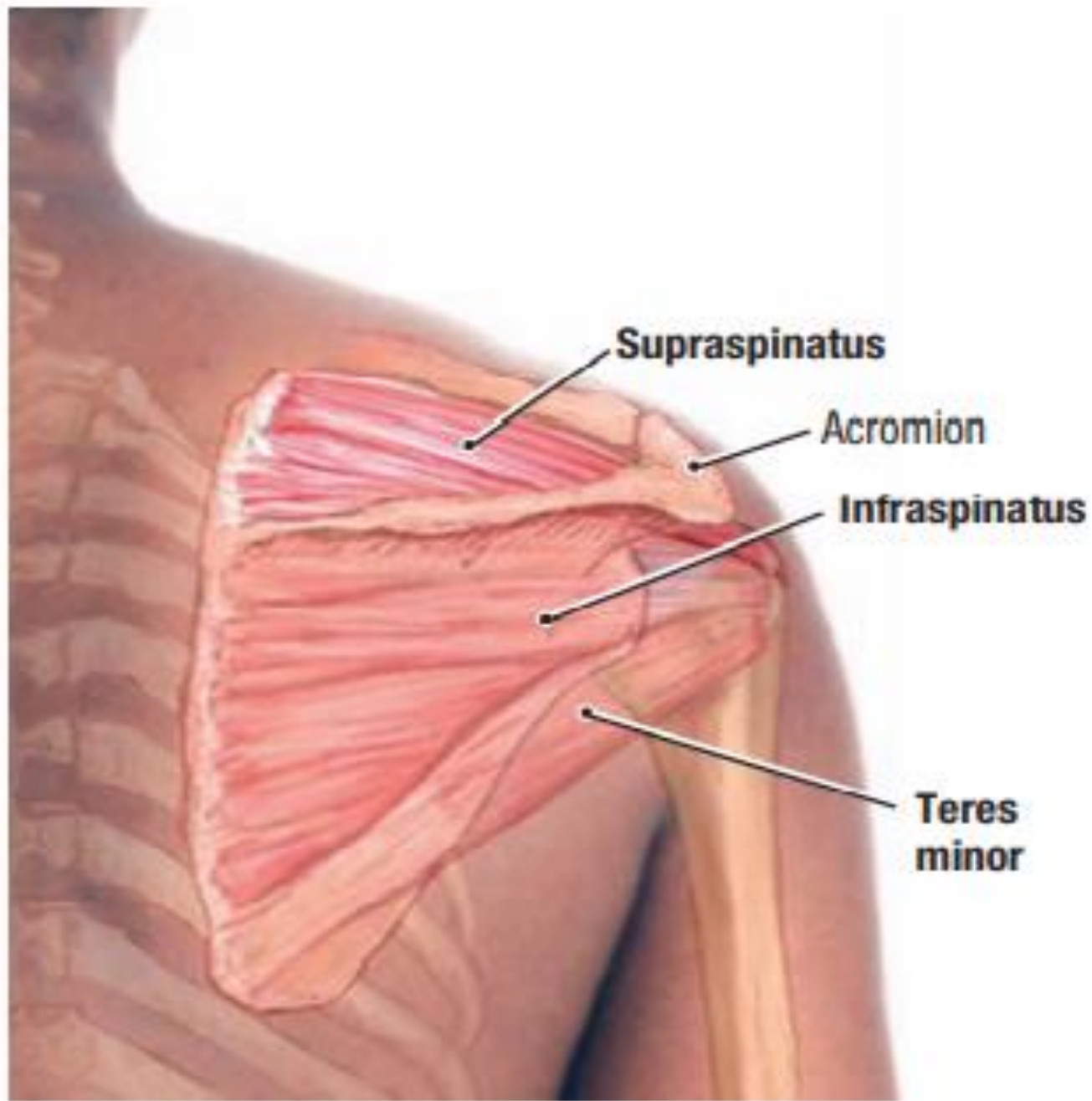






**C**





**D**

## 6.33

### ROTATOR CUFF

**A. and B.** Subscapularis. **C. and D.** Supraspinatus, infraspinatus, and teres minor.

Four of the scapulohumeral muscles—supraspinatus, infraspinatus, teres minor, and subscapularis—are called rotator cuff muscles because they form a musculotendinous rotator cuff around the glenohumeral joint. All except the supraspinatus are rotators of the humerus.

## 6.33

### ROTATOR CUFF (*CONTINUED*)

#### E. Supraspinatus.

The supraspinatus, also part of the rotator cuff, initiates and assists the deltoid in abducting the shoulder joint. The tendons of the rotator cuff muscles blend with and reinforce the joint capsule of the glenohumeral joint, protecting the joint and giving it stability.

**Injury or disease may damage the rotator cuff, producing instability of the glenohumeral joint. Rupture or tear of the supraspinatus tendon is the most common injury of the rotator cuff. Degenerative tendinitis of the rotator cuff is common, especially in older people.**



**TABLE 6.9 SCAPULOHUMERAL MUSCLES**

| <b>Muscle</b>                  | <b>Proximal Attachment</b>                     | <b>Distal Attachment</b>   |
|--------------------------------|--|--|
| <b>Supraspinatus (S)</b>       | Supraspinous fossa of scapula                  | Superior facet on greater tubercle of humerus                        |
| <b>Infraspinatus (I)</b>       | Infraspinous fossa of scapula                  | Middle facet on greater tubercle of humerus                          |
| <b>Teres minor (T)</b>         | Superior part of lateral border of scapula     | Inferior facet on greater tubercle of humerus                        |
| <b>Subscapularis(S)</b>        | Subscapular fossa                              | Lesser tubercle of humerus   |
| <b>Teres major<sup>b</sup></b> | Posterior surface of inferior angle of scapula | Crest of lesser tubercle (medial lip of bicipital groove) of humerus |

## Innervation

Suprascapular nerve (C4, **C5**, and C6)

Suprascapular nerve (**C5** and C6)

Axillary nerve (**C5** and C6)

Upper and lower subscapular nerves (C5, **C6**, and C7)

Lower subscapular nerve (**C6** and C7)

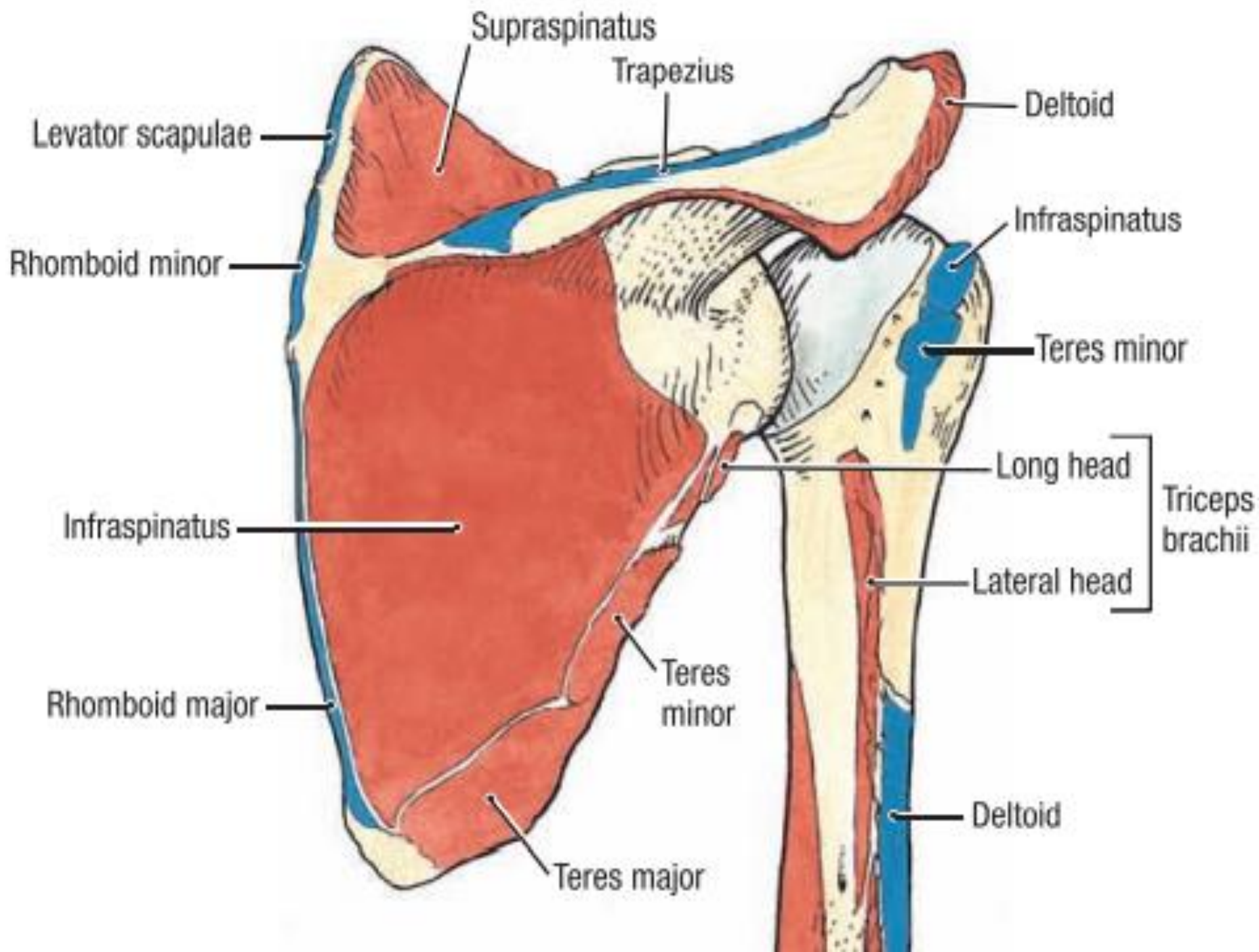
## Main Actions

Initiates abduction at shoulder joint and acts with rotator cuff muscles<sup>a</sup>

Laterally rotates shoulder joint; helps to hold humeral head in glenoid cavity of scapula

Medially rotates shoulder joint and adducts it; helps to hold humeral head in glenoid cavity

Adducts and medially rotates shoulder joint



<https://youtu.be/IG0SPxfHph0>

**The end**

