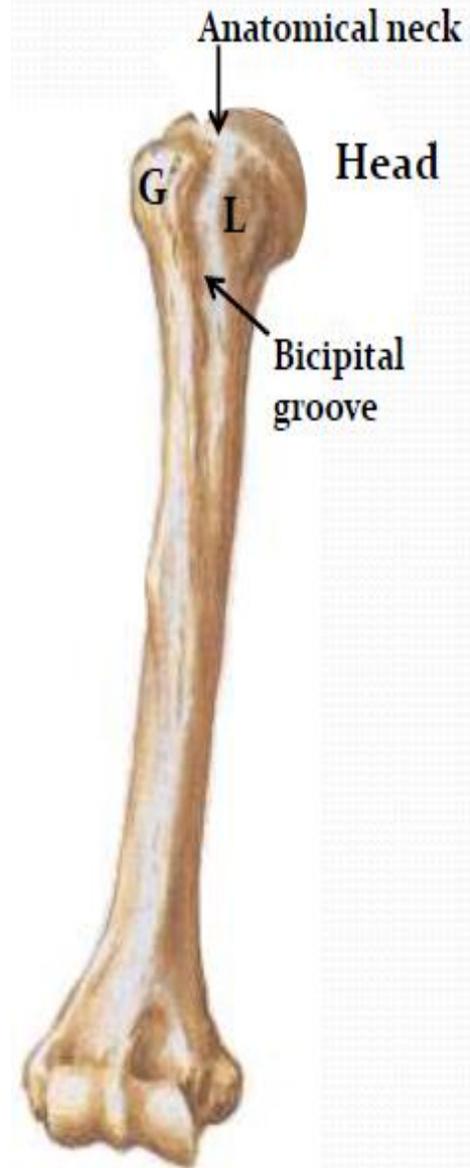
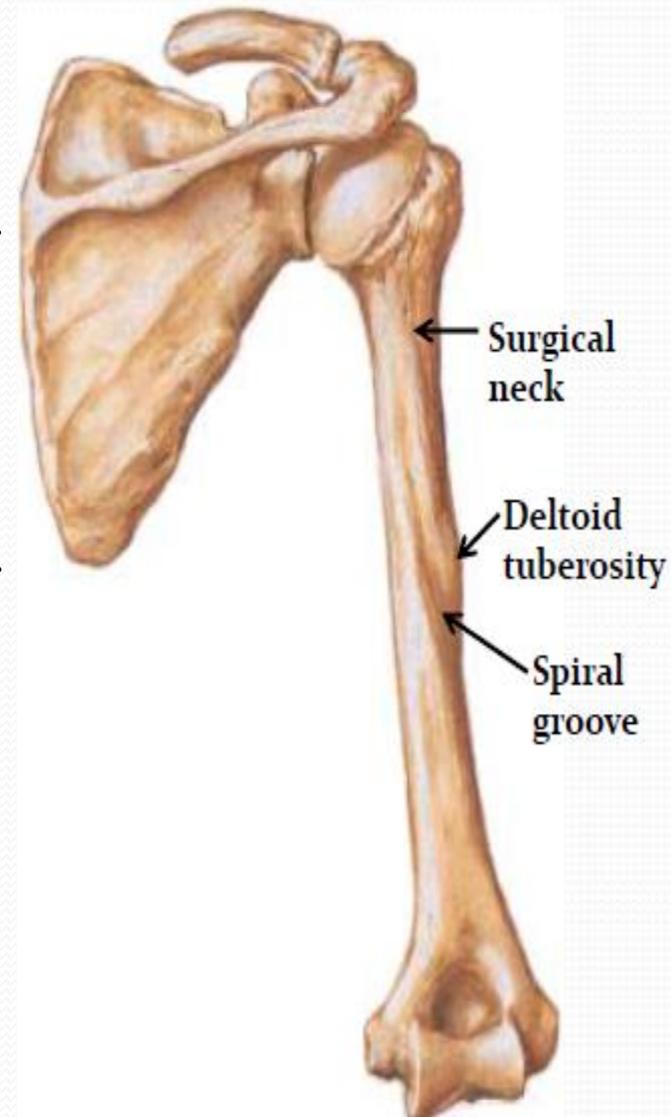


Humerus articulates with scapula at shoulder joint & with radius & ulna at elbow joint.

- Upper end of humerus has a head, which forms about 1/3rd of a sphere & articulates with the glenoid cavity of the scapula. Its head is directed upwards, backwards and medially & 3-4 times bigger than the glenoid cavity.
- Immediately below head is the **anatomic neck**.
- Below the neck are the **greater & lesser tuberosities** which are separated from each other by the **bicipital groove**.



- Where the upper end of humerus joins the shaft is a narrow **surgical neck**.
- The shaft is cylindrical in the upper half and triangular in the lower half
- Has 3 borders (anterior, medial & lateral) & 3 surfaces (Anterolateral, mediolateral & posterior) surfaces
- About halfway down lateral aspect of the shaft is a roughened elevation called **deltoid tuberosity**.
- Behind & below the tuberosity lies the **spiral groove** of the humerus, which accommodates the radial nerve

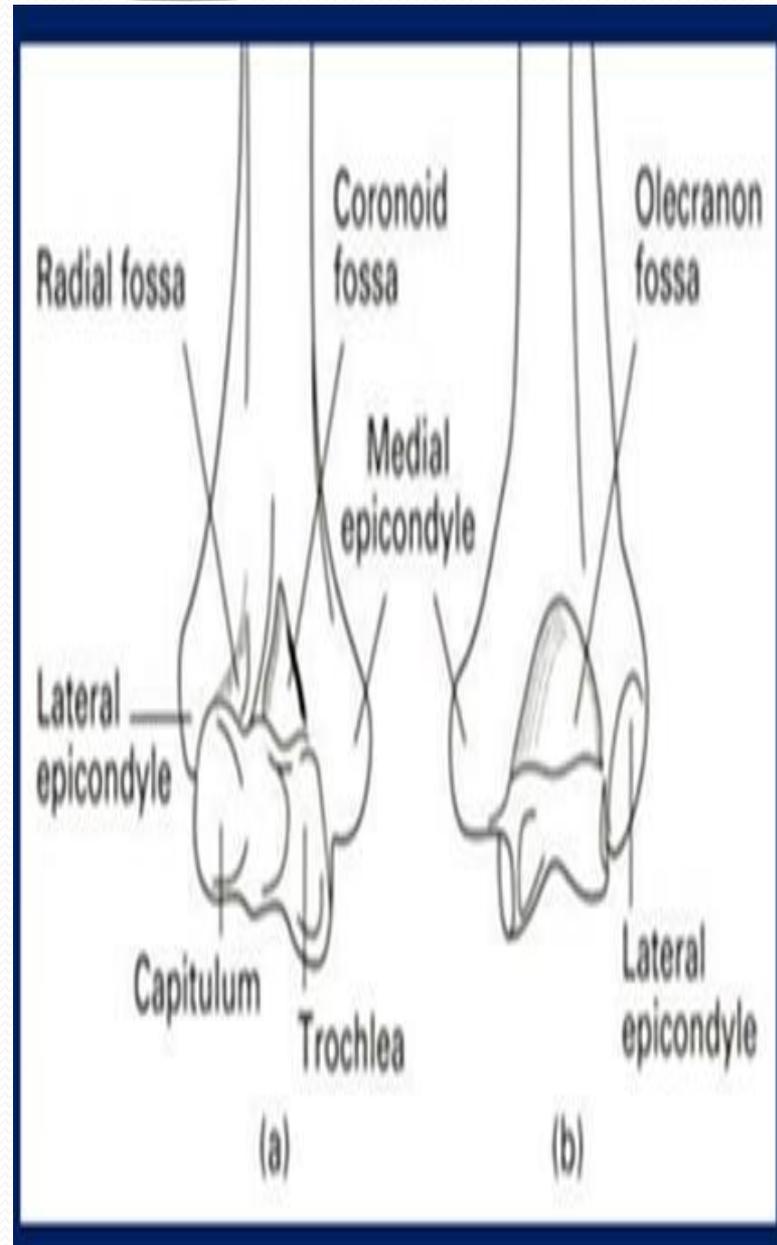


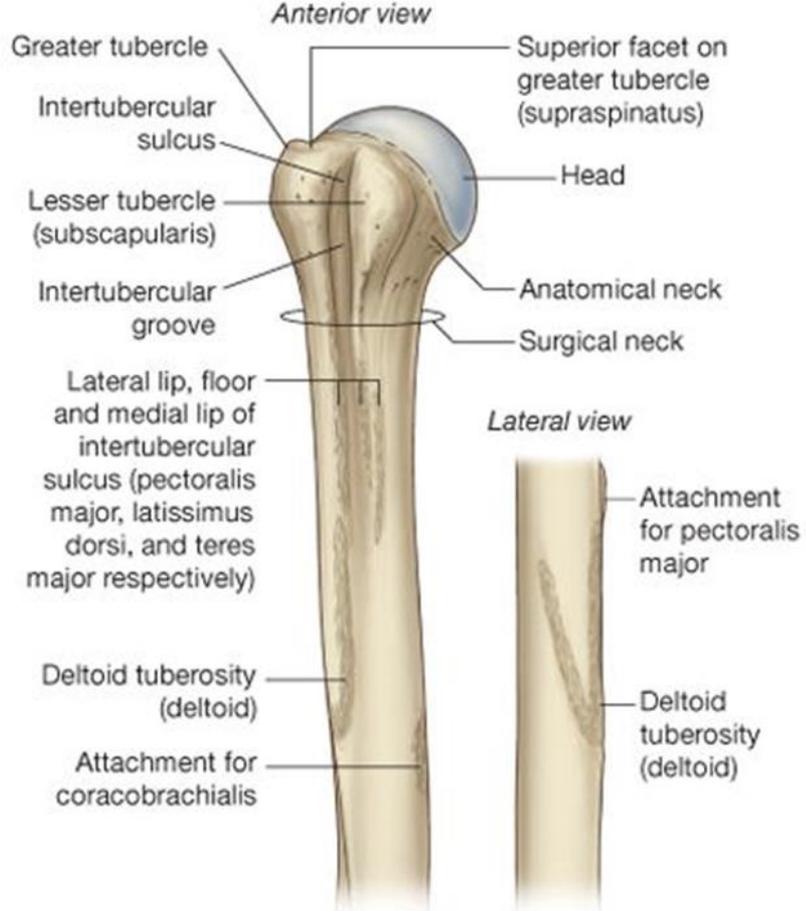
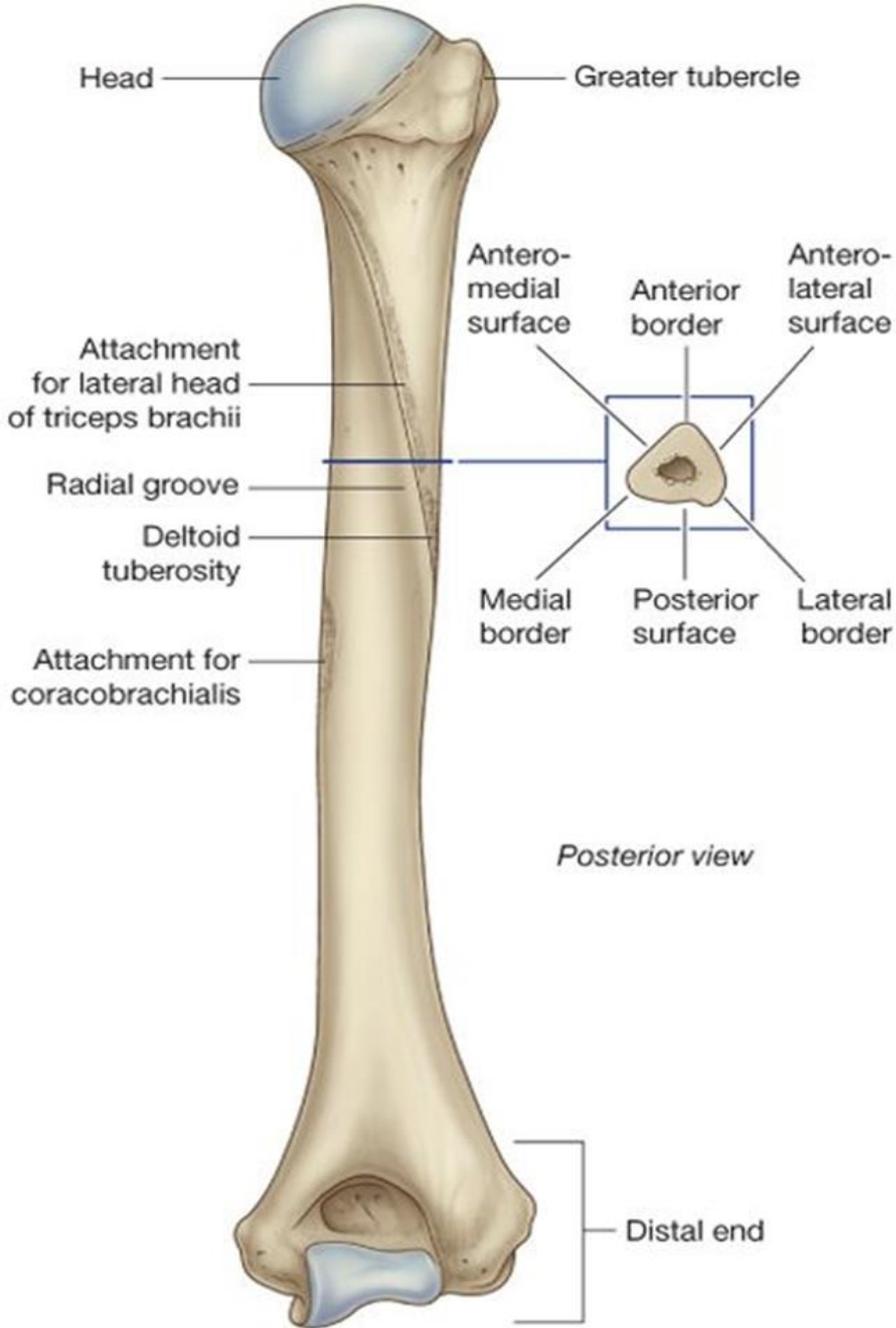
- The lower end of the humerus possesses **medial & lateral epicondyles** for attachment of muscles and ligaments, the rounded **capitulum** for articulation with the head of radius, and the pulley-shaped **trochlea** for articulation with the trochlear notch of ulna.

- Above capitulum anteriorly is the **radial fossa**, which receives the head of the radius when the elbow is flexed.

- Above the trochlea anteriorly is the **coronoid fossa**, which during the same movement receives the coronoid process of the ulna.

- Above the trochlea posteriorly is the **olecranon fossa**, which receives the olecranon process of the ulna when the elbow joint is extended.





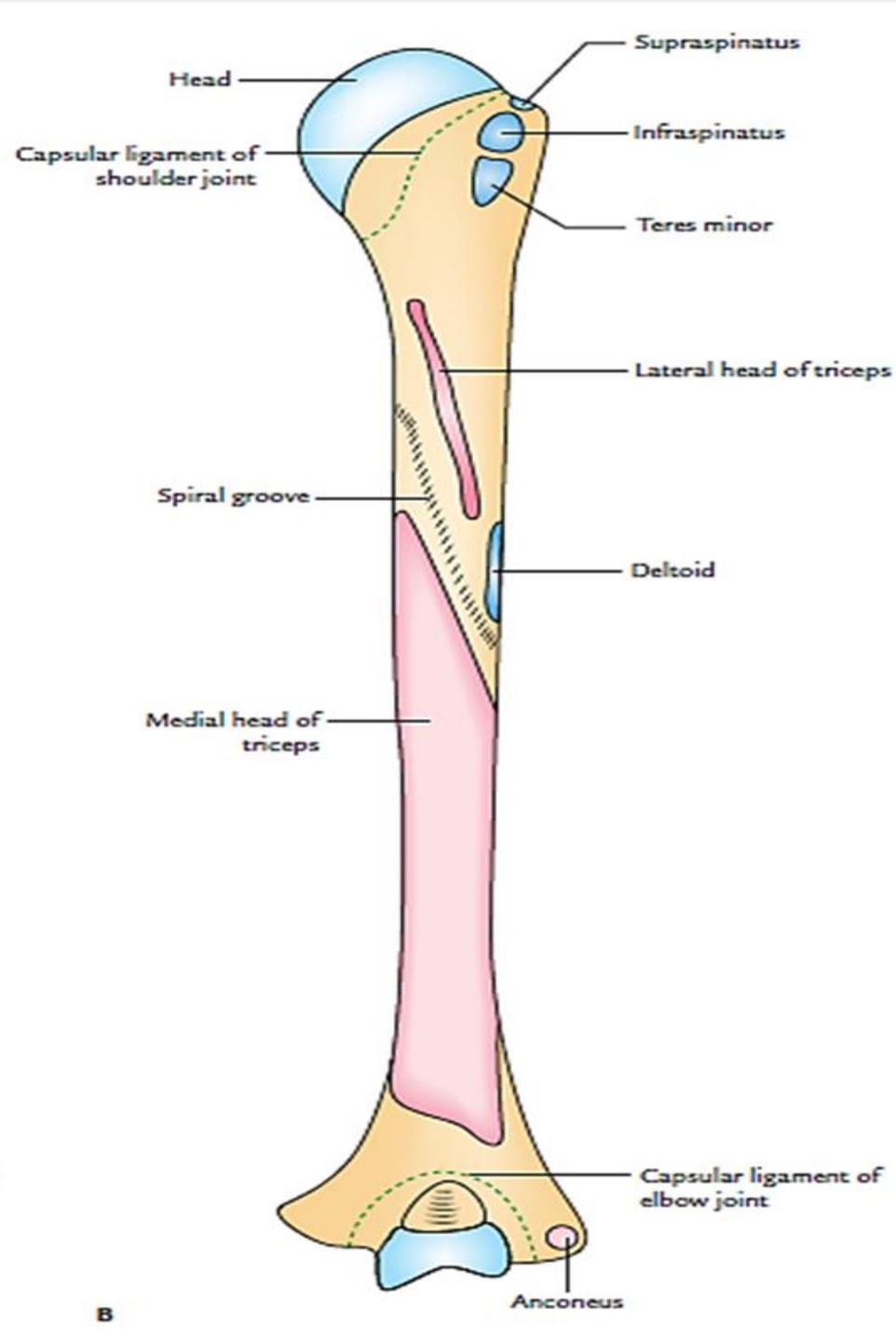
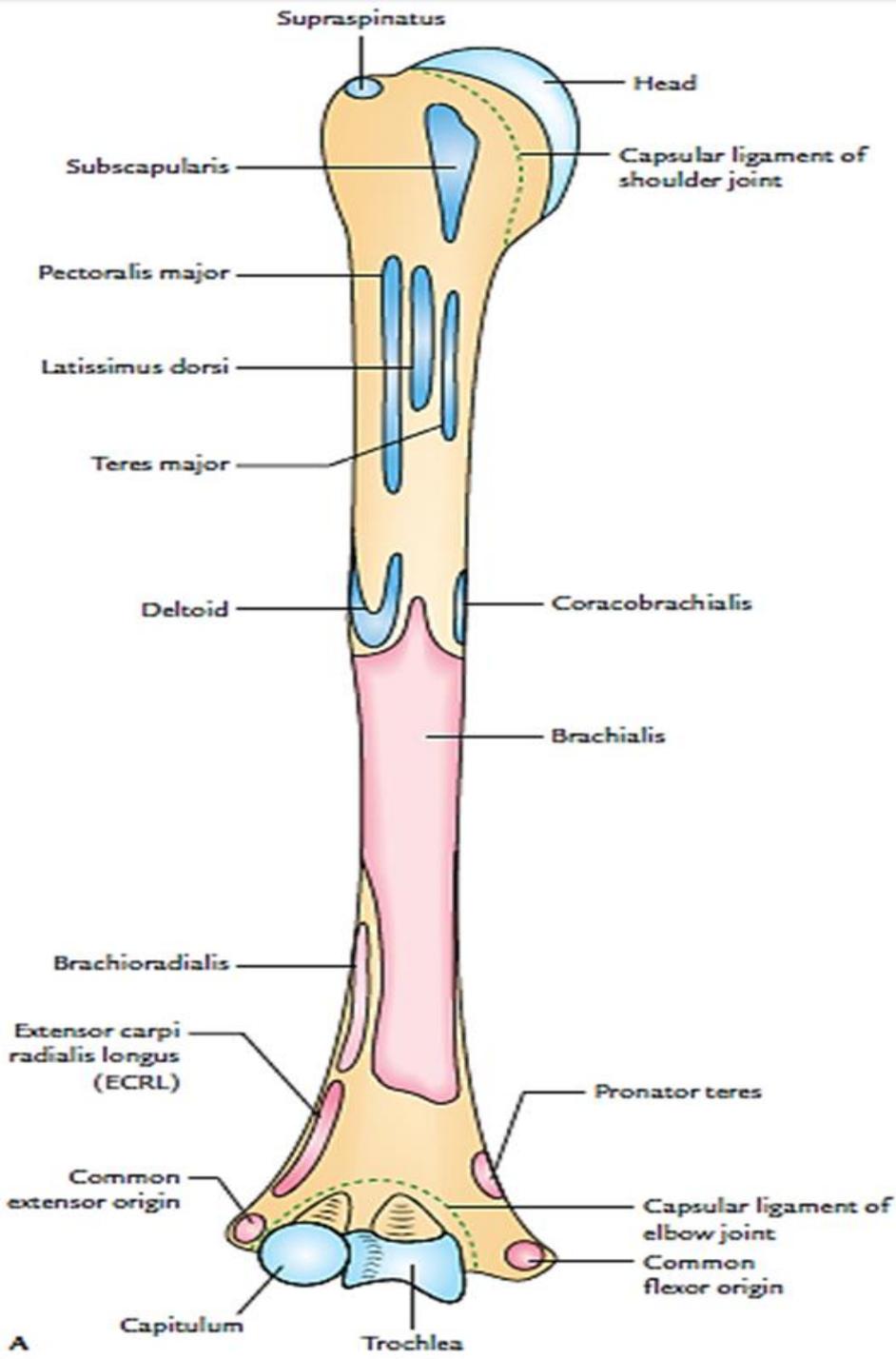
Muscular attachments

➤ Muscles inserted into the humerus are attached to its proximal half and include;

- ↪ Supraspinatus.
- ↪ Infraspinatus.
- ↪ Teres minor.
- ↪ Subscapularis.
- ↪ Pectoralis major.
- ↪ Teres major.
- ↪ Latissimus dorsi.
- ↪ Coracobrachialis.
- ↪ Deltoid.

➤ Muscles which take origin from the humerus do so from its distal half;

- ↪ Brachialis.
- ↪ Lateral head of triceps.
- ↪ Medial head of triceps.
- ↪ Pronator teres.
- ↪ Brachioradialis.
- ↪ Extensor carpi radialis longus.
- ↪ Anconeus.
- ↪ The common flexor tendon.
- ↪ The common extensor ten.



Muscles Connecting the Upper Limb to the Thoracic Wall

Muscle	Origin	Insertion	Nerve Supply	Nerve Roots	Action
Pectoralis major	Clavicle, sternum, and upper six costal cartilages	Lateral lip of bicipital groove of humerus	Medial and lateral pectoral nerves from brachial plexus	C5, 6, 7, 8 ; T1	Adducts arm and rotates it medially; clavicular fibers also flex arm
Pectoralis minor	Third, fourth, and fifth ribs	Coracoid process of scapula	Medial pectoral nerve from brachial plexus	C5, 7, 8	Depresses point of shoulder; if the scapula is fixed, it elevates the ribs of origin
Subclavius	First costal cartilage	Clavicle	Nerve to subclavius from upper trunk of brachial plexus	C5, 6	Depresses the clavicle and steadies this bone during movements of the shoulder girdle
Serratus anterior	Upper eight ribs	Medial border and inferior angle of scapula	Long thoracic nerve	C5, 6, 7	Draws the scapula forward around the thoracic wall; rotates scapula

* The predominant nerve root supply is indicated by boldface type.

Pectoralis major

■ Origin:

- ◆ Clavicle, sternum and upper six costal cartilages

■ Insertion:

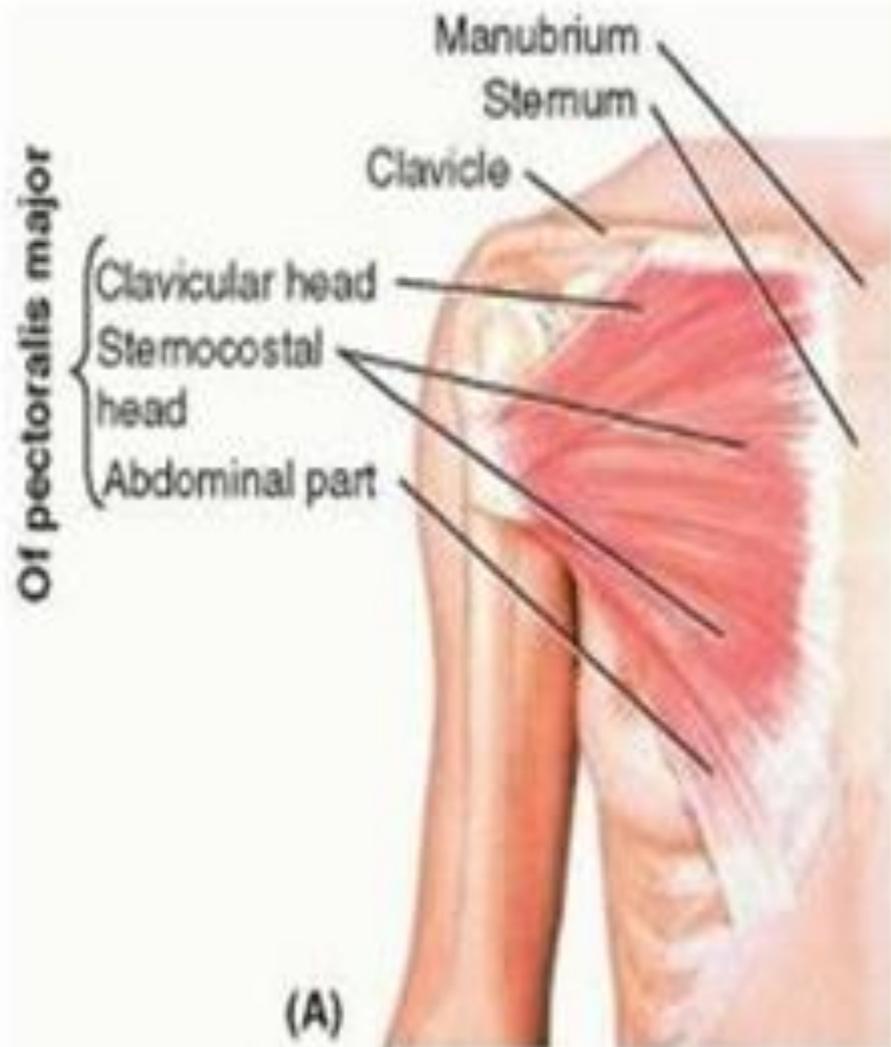
- ◆ Lateral lip of bicipital groove of humerus

■ Nerve supply:

- ◆ Medial and lateral pectoral nerves from brachial plexus
- ◆ C5, 6, 7, 8; T1

■ Actions:

- ◆ Adducts arm and rotates it medially; clavicular fibers also flex arm



■ Absent Pectoralis Major

Occasionally, parts of the pectoralis major muscle may be absent. The sternocostal origin is the most commonly missing part, and this causes weakness in adduction and medial rotation of the shoulder joint.

Pectoralis minor

■ Origin:

- ◆ 3rd, 4th, and 5th ribs

■ Insertion:

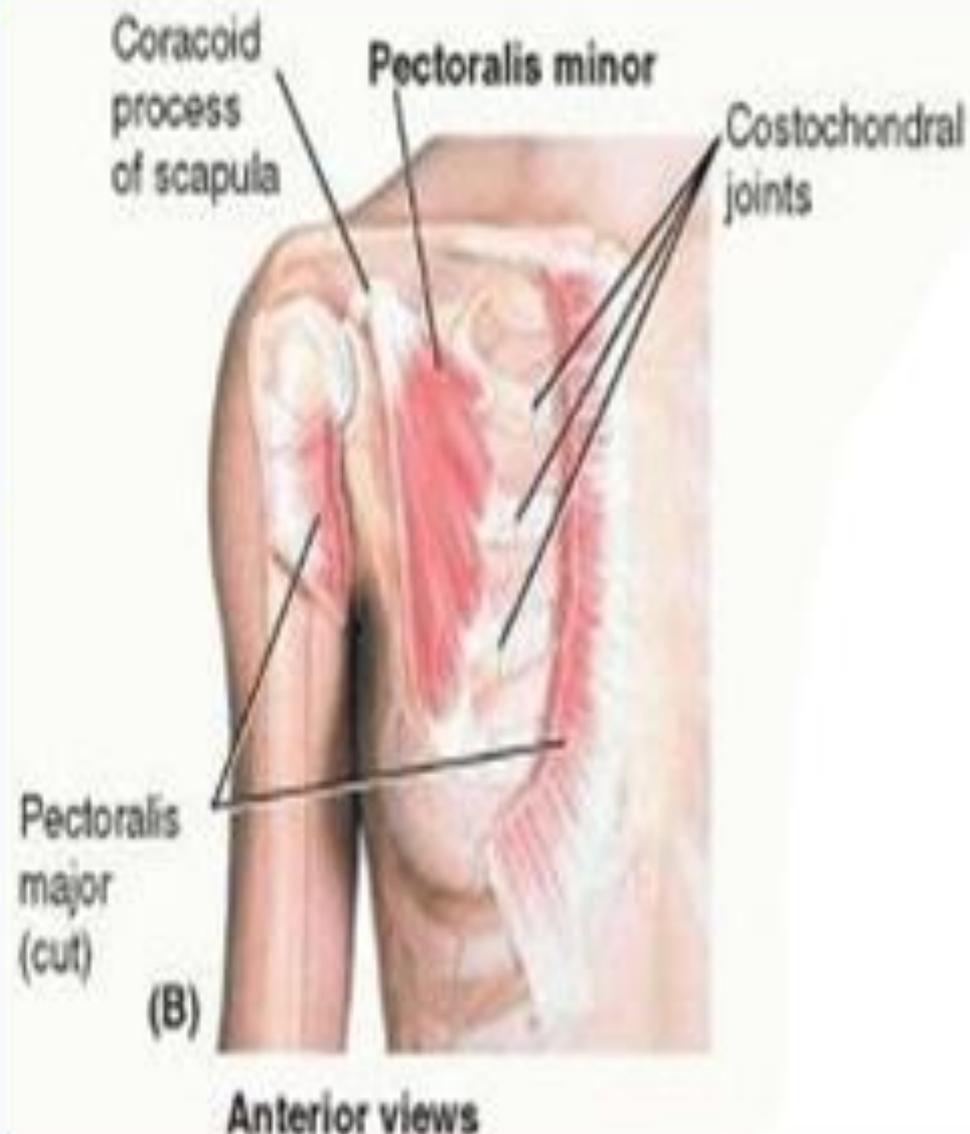
- ◆ Coracoid process of scapula

■ Nerve supply:

- ◆ Medial pectoral nerve from brachial plexus
- ◆ C6, 7, 8

■ Actions:

- ◆ Depresses point of shoulder; if the scapula is fixed, it elevates the ribs of origin



Subclavius

■ Origin:

- ◆ 1st costal cartilage

■ Insertion:

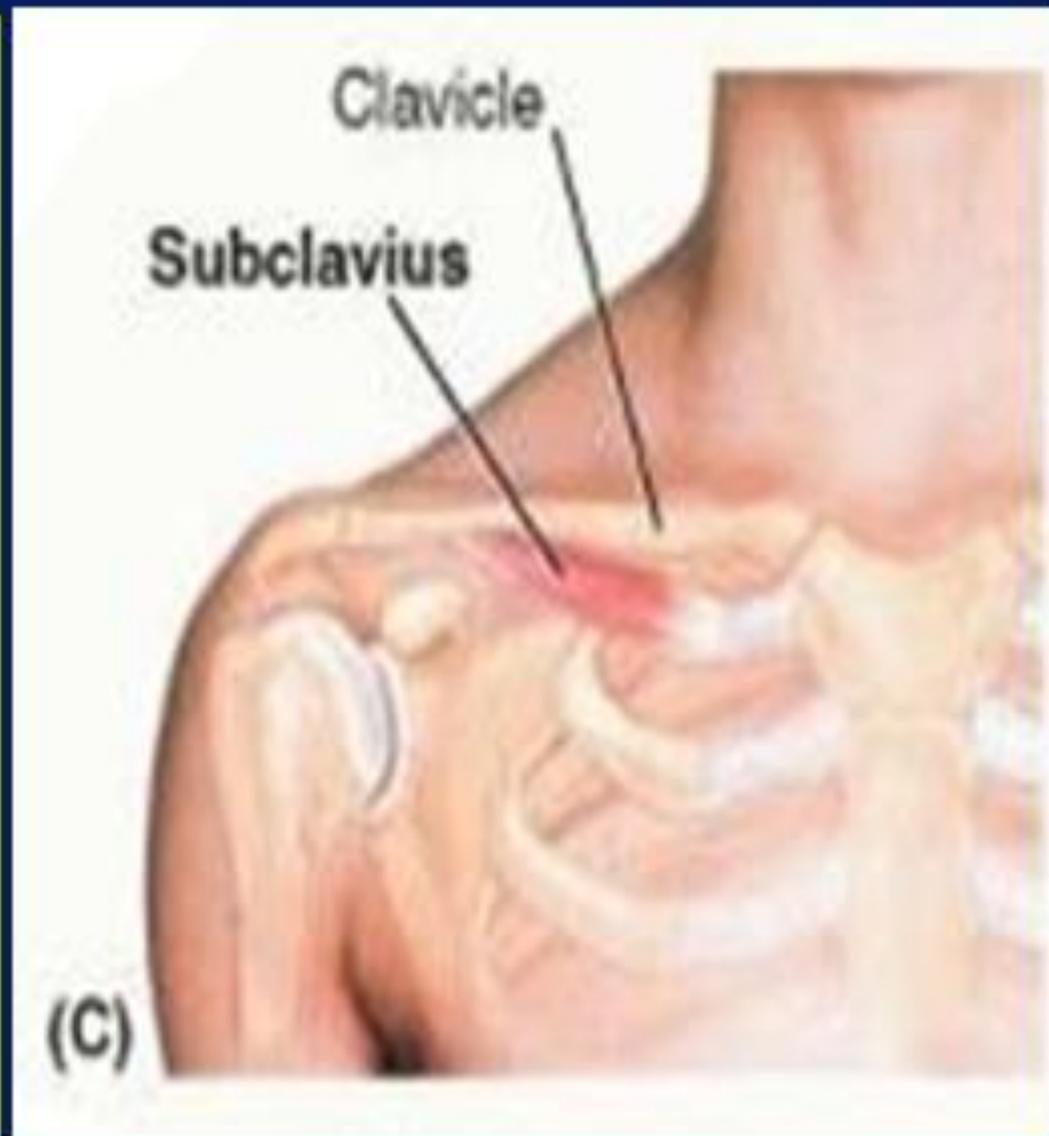
- ◆ Clavicle

■ Nerve supply:

- ◆ Nerve to subclavius from upper trunk of brachial plexus
- ◆ C5, 6

■ Actions:

- ◆ Depresses the clavicle and steadies this bone during movements of the shoulder girdle



Serratus anterior

■ Origin:

- ◆ Upper eight ribs

■ Insertion:

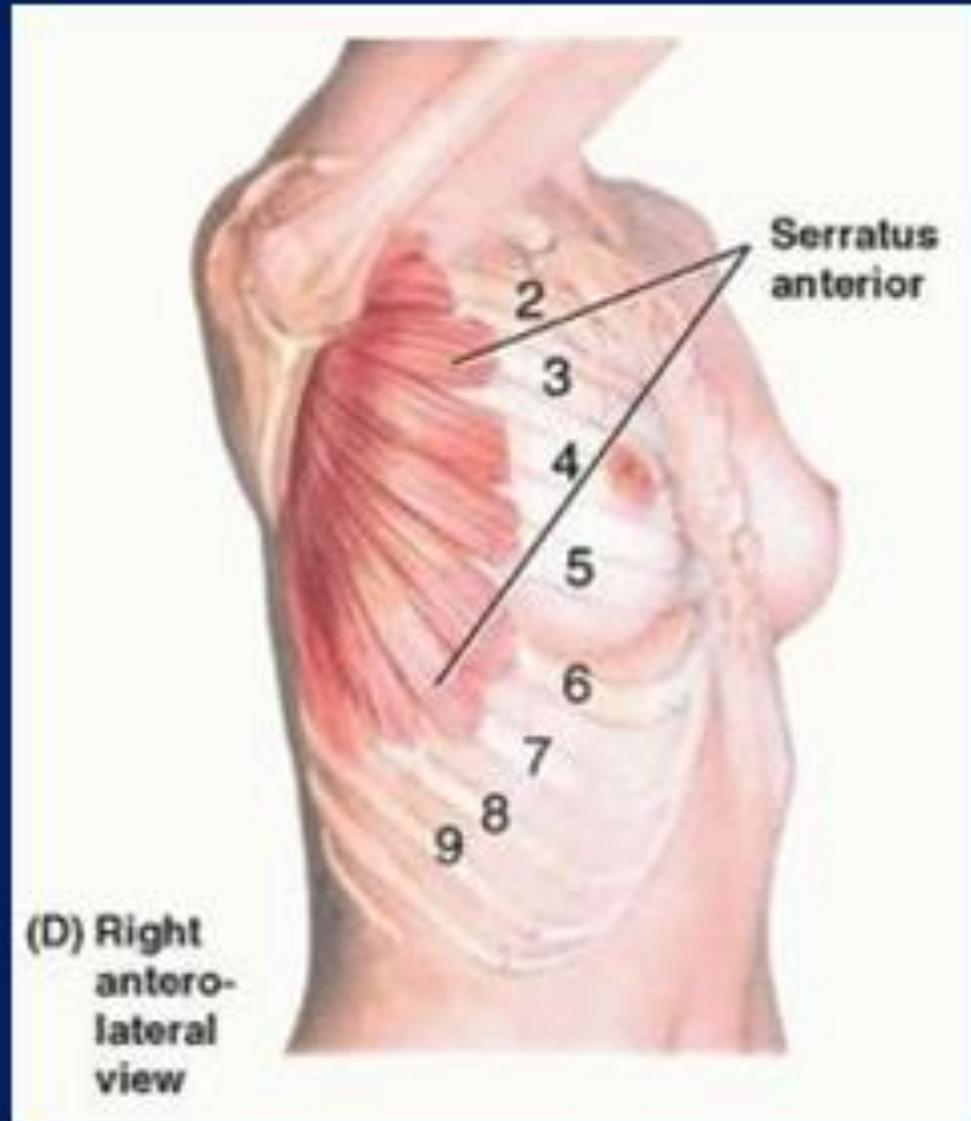
- ◆ Medial border and inferior angle of scapula

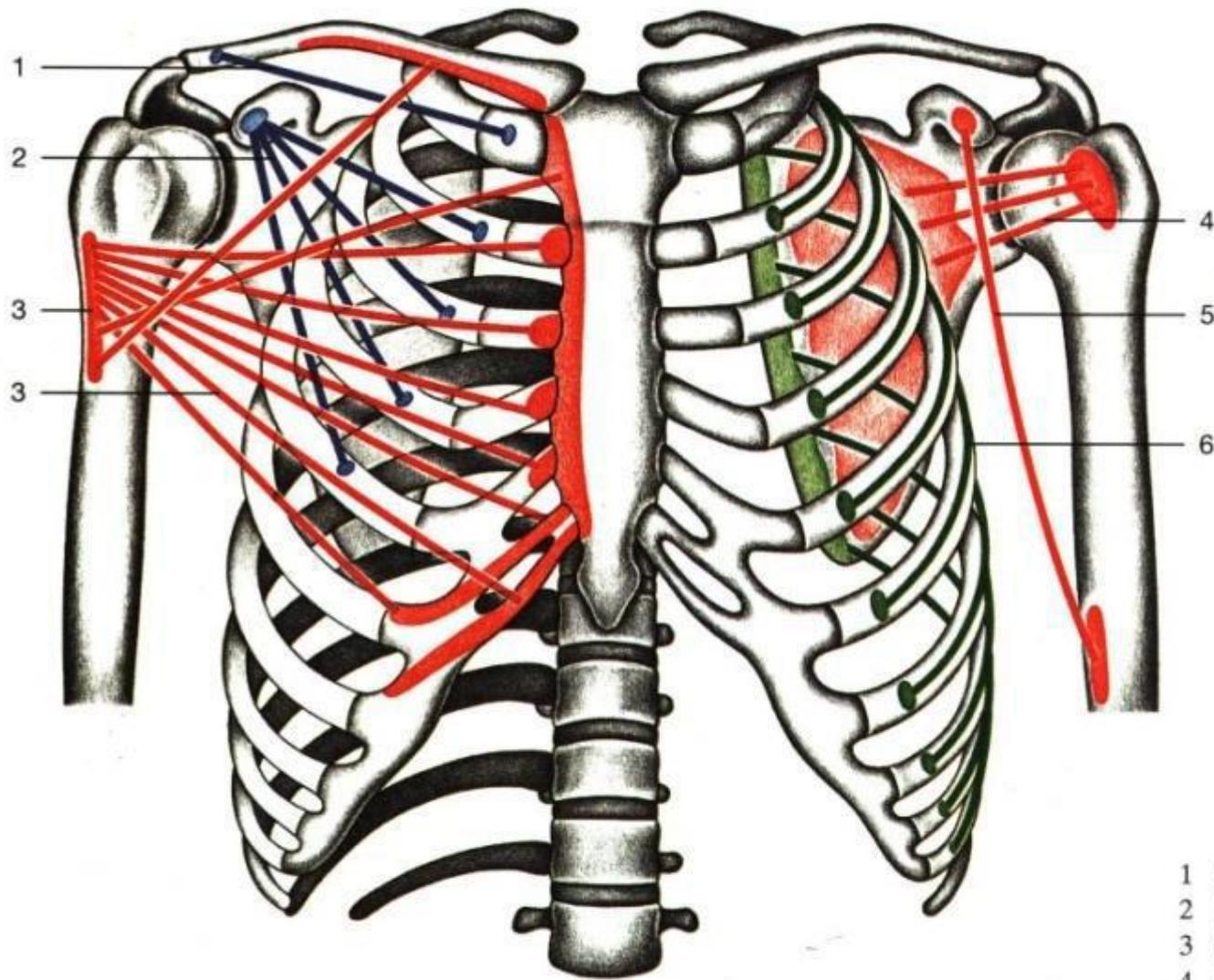
■ Nerve supply:

- ◆ Long thoracic nerve
- ◆ C5, 6, 7

■ Actions:

- ◆ Draw the scapula forward around the thoracic wall, rotate scapula





Arrangement of pectoral and shoulder muscles (ventral aspect).
 (Schematic drawing.)

- 1 Subclavius muscle (blue)
- 2 Pectoralis minor muscle (blue)
- 3 Pectoralis major muscle (red)
- 4 Subscapularis muscle (red)
- 5 Coracobrachialis muscle (red)
- 6 Serratus anterior muscle (green)

Clavipectoral Fascia

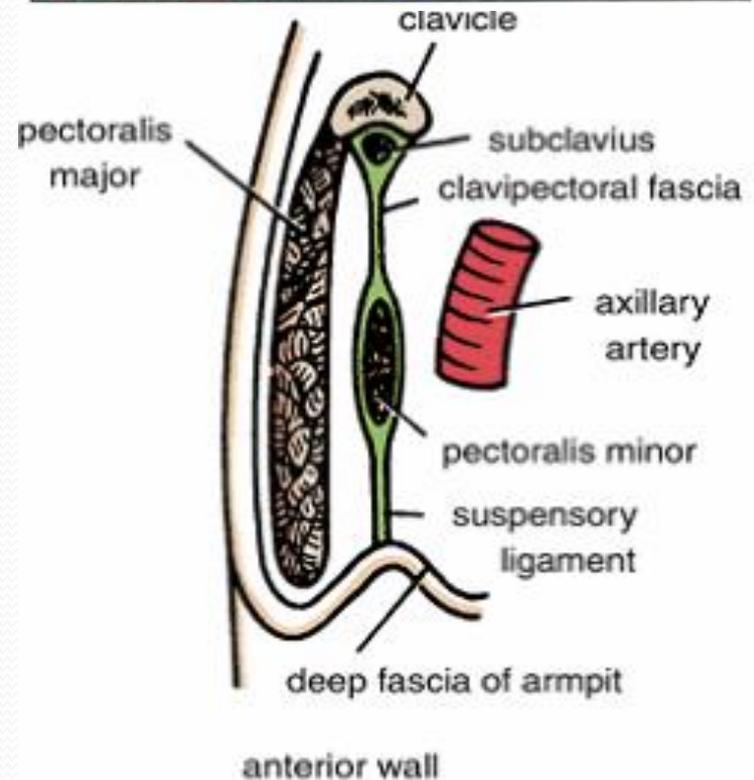
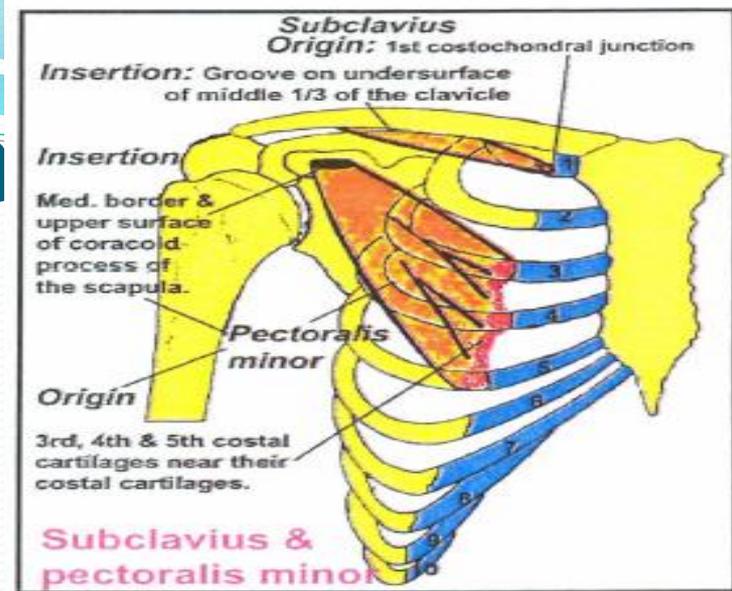
- It is a strong fibrous sheet occupies the interval between pectoralis minor and subclavius

Attachments:

- Above: it splits to enclose subclavius & becomes attached to margins of subclavian groove.
- Below: it splits to enclose the pectoralis minor. From the lower border of the muscle it continuous downward as suspensory ligament of axillary fascia
- Medially: To 1st & 2nd costal cartilage
- Laterally: To the coracoid process

Structures piercing it:

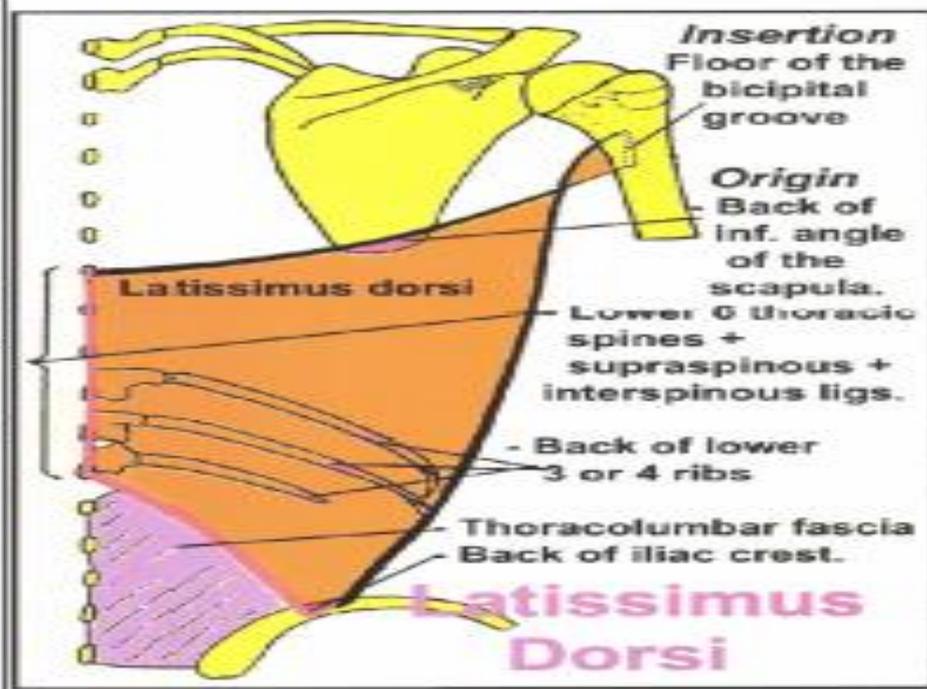
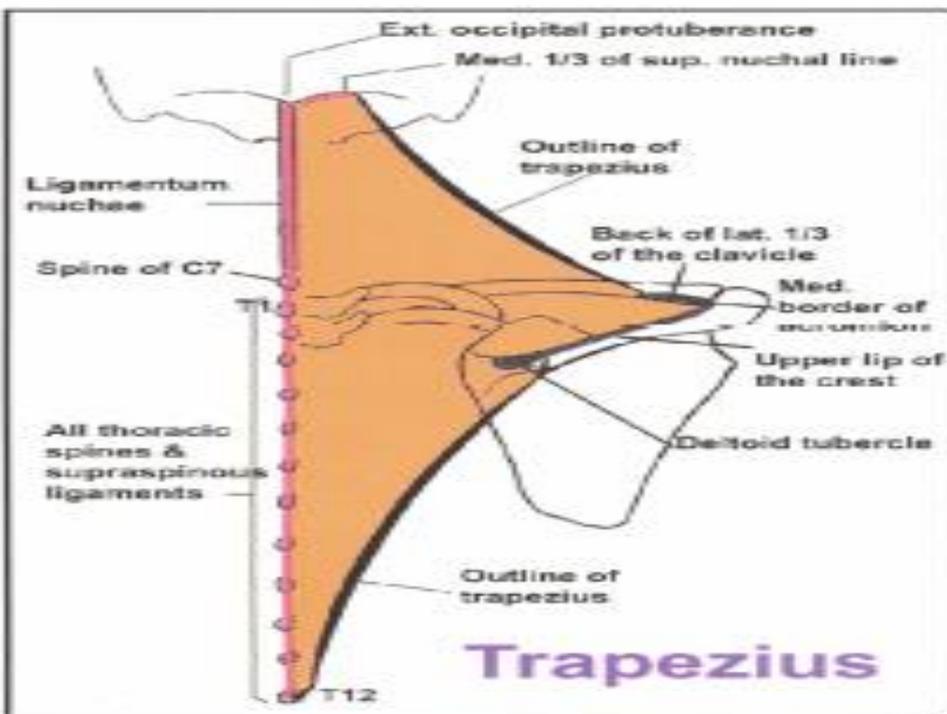
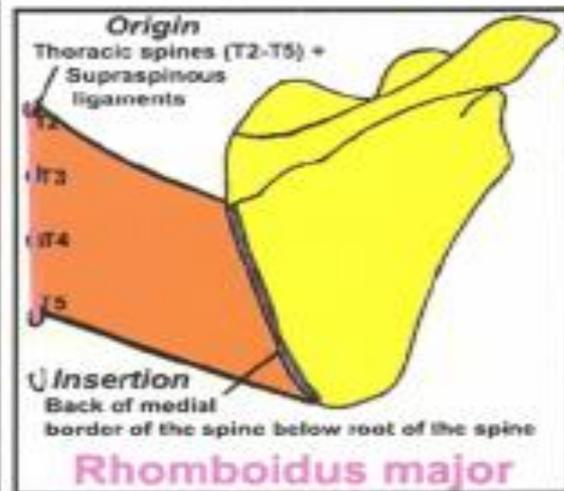
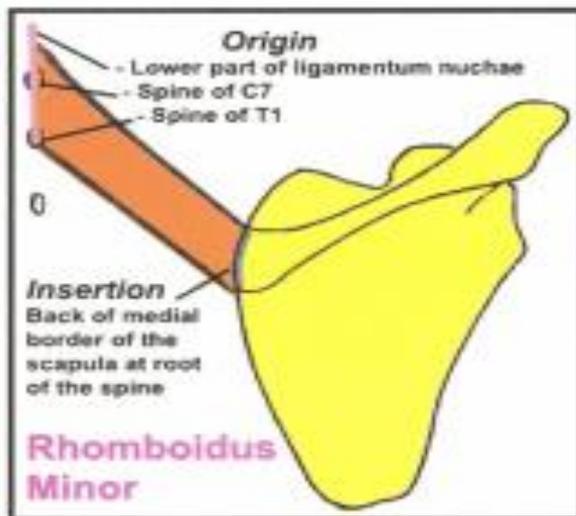
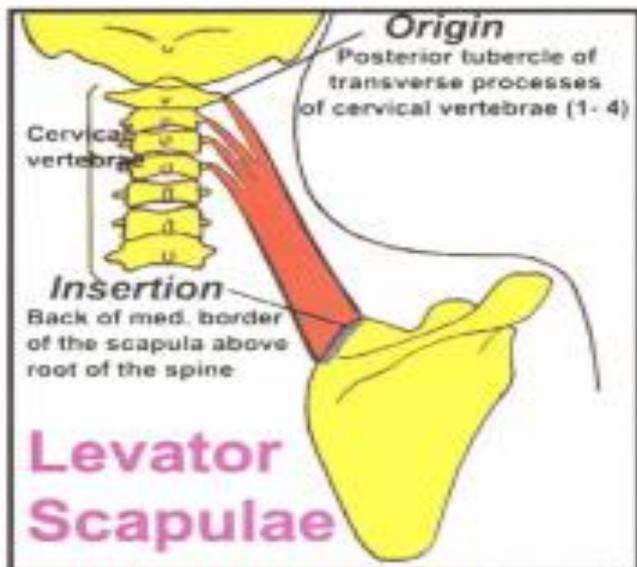
- 1-Cephalic vein
- 2-Lateral pectoral nerve.
- 3-Thoraco-acromial artery of its branches
- 4-Lymph vessels



Muscles Connecting the Upper Limb to the Vertebral Column

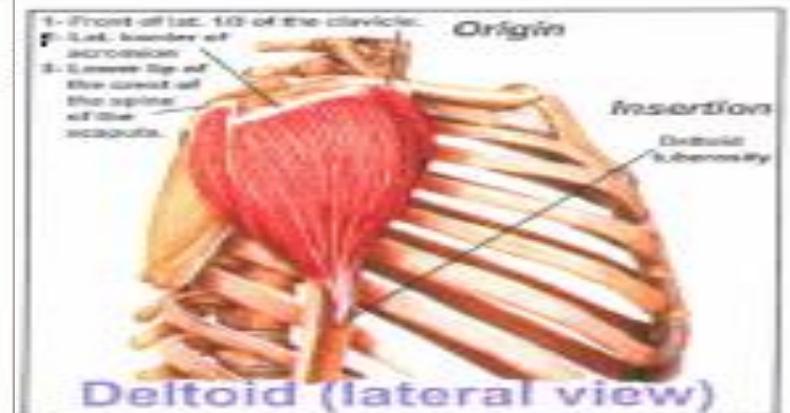
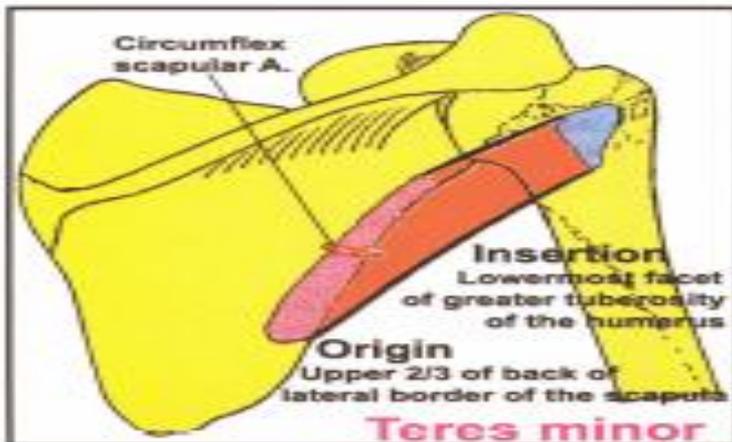
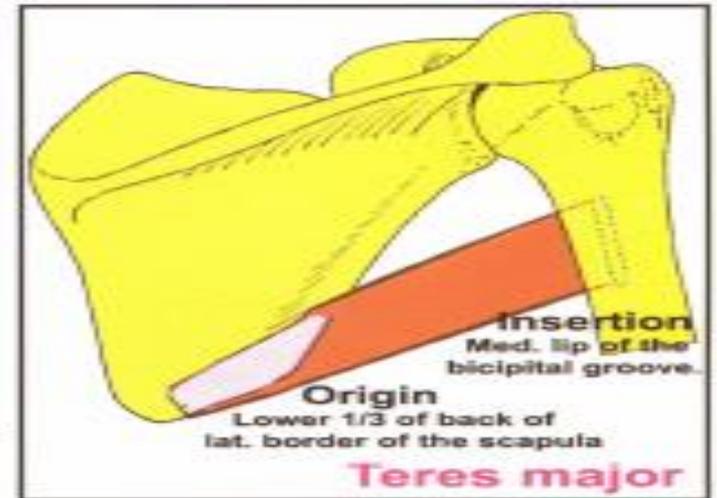
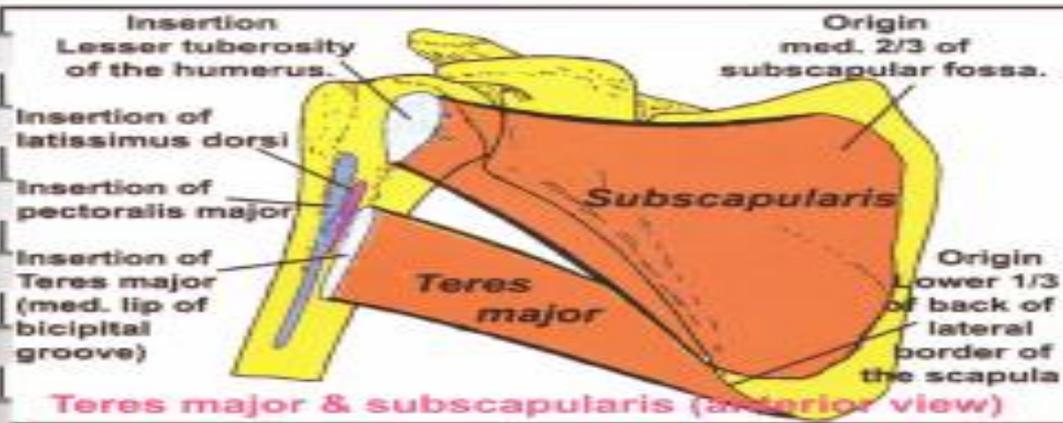
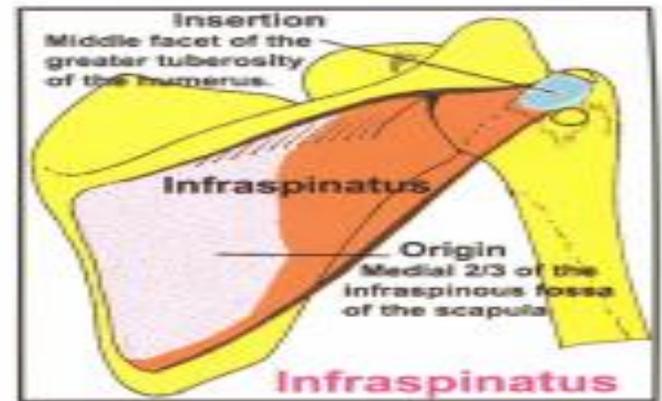
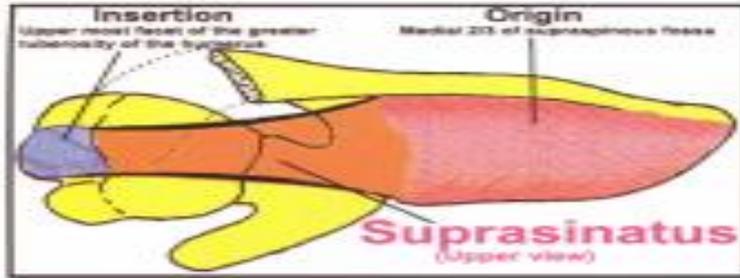
Muscle	Origin	Insertion	Nerve Supply	Nerve Roots	Action
Trapezius	Occipital bone, ligamentum nuchae, spine of seventh cervical vertebra, spines of all thoracic vertebrae	Upper fibers into lateral third of clavicle; (motor) and middle and lower fibers into acromion and spine of scapula	Spinal part of accessory nerve and C3 and 4 (sensory)	XI cranial nerve (spinal part)	Upper fibers elevate the scapula; middle fibers pull scapula medially; lower fibers pull medial border of scapula downward
Latissimus dorsi	Iliac crest, lumbar fascia, spines of lower six thoracic vertebrae, lower three or four ribs, and inferior angle of scapula	Floor of bicipital groove of humerus	Thoracodorsal nerve	C6, 7, 8,	Extends, adducts, and medially rotates the arm
Levator scapulae	Transverse processes of first four cervical vertebrae	Medial border of scapula	C3 and 4 and dorsal scapular nerve	C3, 4, 5	Raises medial border of scapula
Rhomboid minor	Ligamentum nuchae and spines of seventh cervical and first thoracic vertebrae	Medial border of scapula	Dorsal scapular nerve	C4, 5	Raises medial border of scapula upward and medially
Rhomboid major	Second to fifth thoracic spines	Medial border of scapula	Dorsal scapular nerve	C4, 5	Raises medial border of scapula upward and medially

* The predominant nerve root supply is indicated by boldface type.

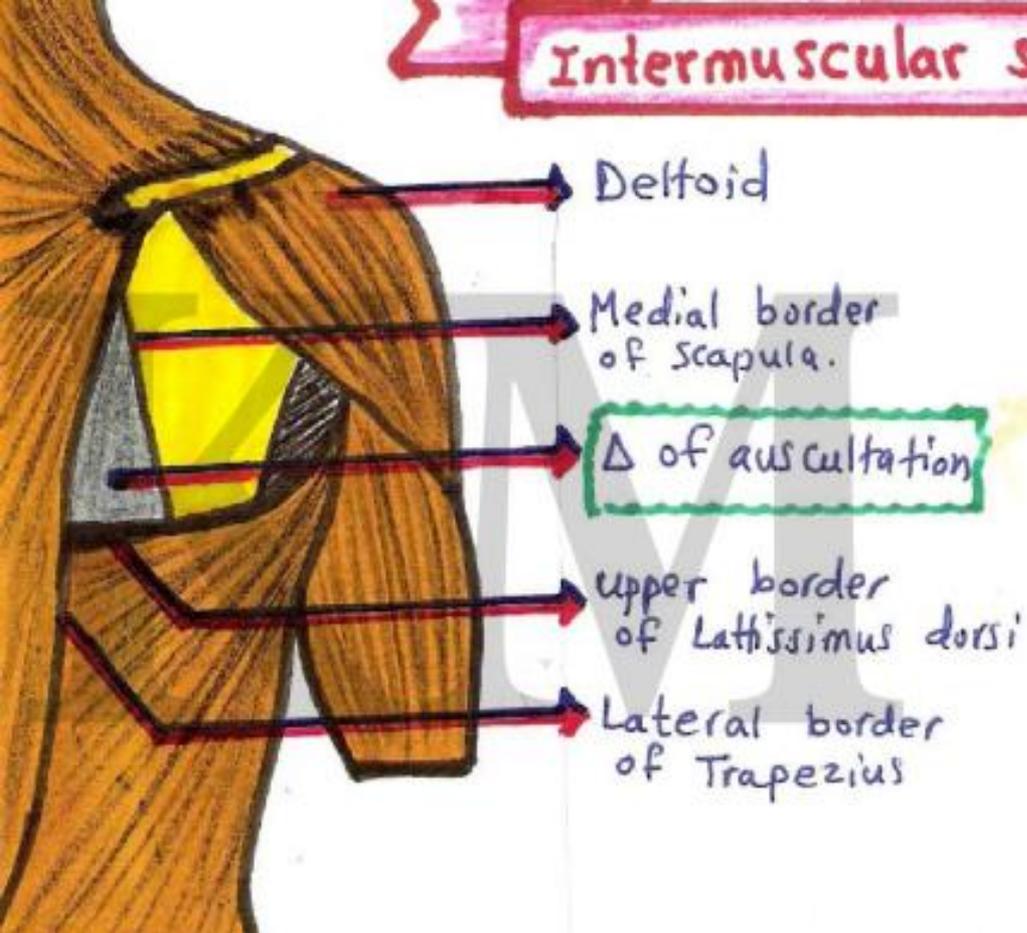


Muscles Connecting the Scapula to the Humerus

Muscle	Origin	Insertion	Nerve Supply	Nerve Roots	Action
Deltoid	Lateral third of clavicle, acromion, spine of scapula	Middle of lateral surface of shaft of humerus	Axillary nerve	C5, 6	Abducts arm; anterior fibers flex and medially rotate arm; posterior fibers extend and laterally rotate arm
Supraspinatus	Supraspinous fossa of scapula	Greater tuberosity of humerus; capsule of shoulder joint	Suprascapular nerve	C4, 5, 6	Abducts arm and stabilizes shoulder joint
Infraspinatus	Infraspinous fossa of scapula	Greater tuberosity of humerus; capsule of shoulder joint	Suprascapular nerve	(C4), 5, 6	Laterally rotates arm and stabilizes shoulder joint
Teres major	Lower third of lateral border of scapula	Medial lip of bicipital groove of humerus	Lower subscapular nerve	C6, 7	Medially rotates and adducts arm and stabilizes shoulder joint
Teres minor	Upper two thirds of lateral border of scapula	Greater tuberosity of humerus; capsule of shoulder joint	Axillary nerve	(C4), C5, 6	Laterally rotates arm and stabilizes shoulder joint
Subscapularis	Subscapular fossa	Lesser tuberosity of humerus	Upper and lower subscapular nerves	C5, 6, 7	Medially rotates arm and stabilizes shoulder joint



Intermuscular Spaces



Triangle of auscultation

- Above & medial:
 - Lateral border of Trapezius.
- below :-
 - upper border of Latissimus dorsi
- Lateral:-
 - medial border of scapula
- Floor :-
 - Rhomboid major, 6th & 7th ribs with intercostal space.

Significance: Here we can hear air sounds in the principal bronchi during respiration

I- QUADRANGULAR SPACE

- * **Boundaries** :-
- Above: Teres minor, subscapularis & shoulder joint capsule.
 - below: Teres major.
 - Medial: Long head of triceps.
 - Lateral: Surgical neck of humerus.
- * **Contents** :- axillary nerve & posterior circumflex humeral vessels.

II- TRIANGULAR SPACE "UPPER"

- * **Boundaries** :-
- Above: Teres minor & subscapularis.
 - below: Teres major.
 - Lateral: Long head of triceps.
- * **Contents** :- circumflex scapular vessels.

III- LOWER TRIANGULAR SPACE

- * **Boundaries** :-
- Above: Teres major.
 - lateral: shaft of humerus.
 - Medial: Long head of triceps.
- * **Contents** :- Radial: nerve & profunda brachii vessels.

