



# Pectoral Region and Axilla

## Musculoskeletal block- Anatomy-lecture 5

Editing file



# Objectives

- ✓ By the end of the lecture the students should be able to :
- ✓ Identify and describe the muscles of the pectoral region.
  - I. **Pectoralis major.**
  - II. **Pectoralis minor.**
  - III. **Subclavius.**
  - IV. **Serratus anterior.**
- ✓ Describe and demonstrate the boundaries and contents of the axilla.
- ✓ Describe the formation of the brachial plexus and its branches.

## Color guide :

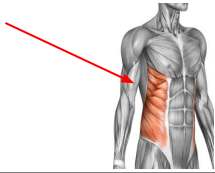

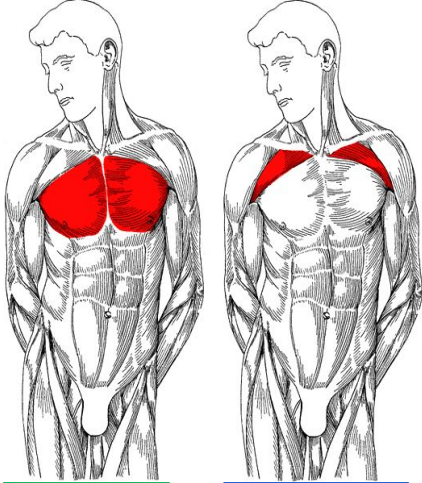
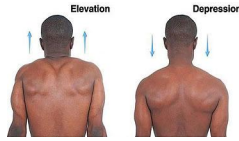
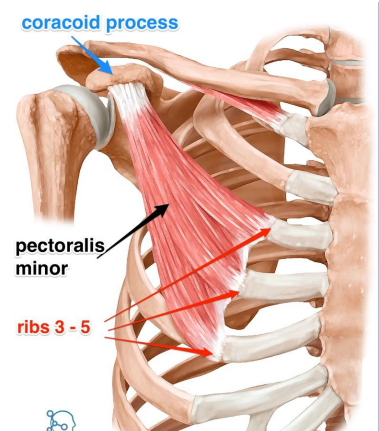
Only in boys slides in **Blue**

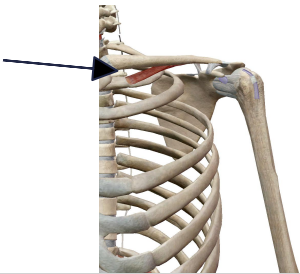
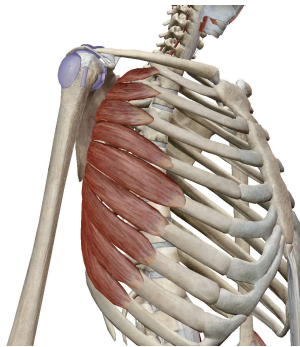
Only in girls slides in **Purple**

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Doctor note in **Green**

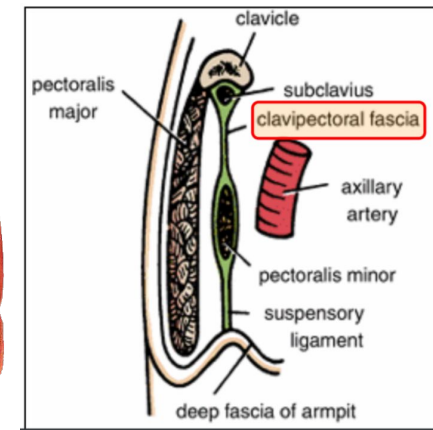
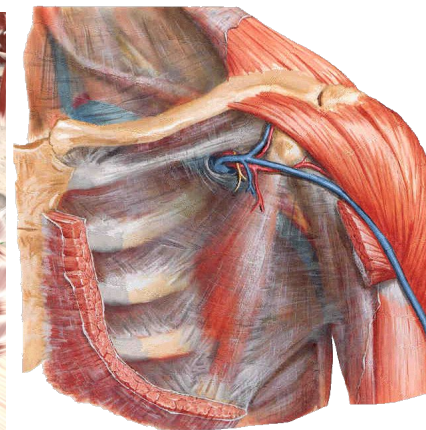
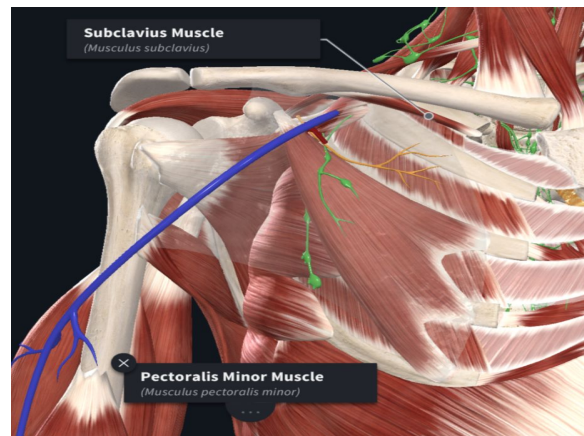
Extra information in **Grey**

Type of muscle	Origin	Insertion	Nerve Supply	Action	Picture
<p><b>Pectoralis Major</b></p>	<p>2 heads  <b>Clavicular head:</b> From Medial ½ of the front of the clavicle.  <b>Sternocostal head:</b> From; <b>Sternum Upper 6</b> costal cartilages.            Aponeurosis of the <b>external oblique muscle</b></p> 	<p>Lateral lip of bicipital groove (humerus)</p> 	<p>Medial &amp; lateral pectoral nerves.</p>	<p><b>-Adduction and medial rotation</b> of the arm.            -clavicular head helps in <b>flexion of arm (shoulder)</b>            -Also help in climbing</p>	 <p>Pectoralis major (Sternal head)      Pectoralis major (Clavicular head).</p>
<p><b>Pectoralis Minor</b>            Deep to pectoralis major</p>	<p>From 3<sup>rd</sup>, 4<sup>th</sup>, &amp; 5<sup>th</sup> <b>ribs</b> close to their costal cartilages</p>	<p><b>Coracoid</b> process (scapula)</p>	<p>Medial pectoral nerve.</p>	<p>-Depression of the <b>shoulder.</b>            -Draw the <b>ribs upward and outwards</b> during <b>deep inspiration.</b></p> 	 <p>coracoid process            pectoralis minor            ribs 3 - 5</p>

Type of muscles	Origin	Insertion	Nerve Supply	Action	Picture
<b>Subclavius</b>	From 1 <sup>st</sup> rib and its costal cartilage( the 1 <sup>st</sup> costochondral junction)	Subclavian groove in the <b>middle 1/3</b> of the inferior surface of <b>clavicle</b> .	<b>Nerve to subclavius</b> from <b>upper trunk</b> of brachial plexus	<b>Fixes</b> the <b>clavicle</b> during movement of shoulder joint.	
<b>Serratus anterior</b>	Upper <b>eight ribs</b> .	anterior aspect of the <b>medial border</b> and <b>inferior angle</b> of <b>scapula</b>	<b>Long thoracic nerve</b> (nerve to serratus anterior).	-Draws the scapula forward in boxing, (protrusion or protraction). " <b>boxer's muscle</b> "  -Rotates scapula <b>outwards</b> in <b>raising the arm</b> above 90 degree ( <b>Abduction above 90</b> ) with trapezius.	

## Clavipectoral Fascia

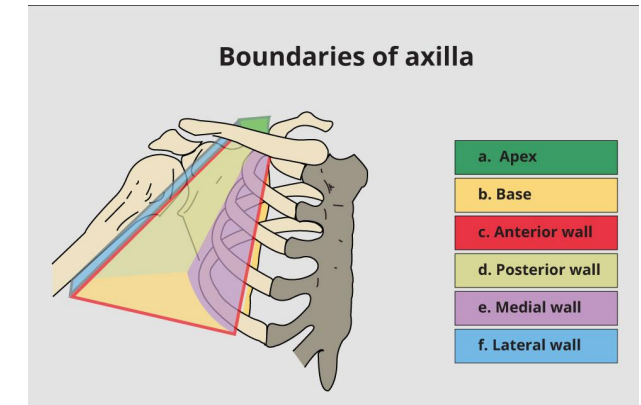
- It is **thickened** membrane of **deep fascia** between **subclavius** and **pectoralis minor** below).
- It is pierced by :
  - 1- Lateral pectoral **nerve**.
  - 2- Thoracoacromial **artery**.
  - 3- Cephalic **vein**.
  - 4- **lymph vessels**.



# Axilla

A **4** sided pyramid-shaped space between the upper part of the arm and the side of the chest  
It's the space through which major neurovascular structures pass between neck & thorax and upper limbs.

The Axilla has: 1.-Apex 2-Base 3- Four Walls: **Anterior**, **Posterior**, **Medial**, **Lateral** walls



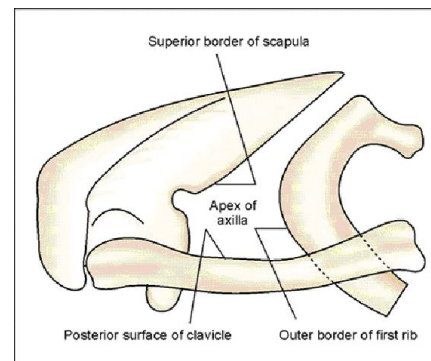
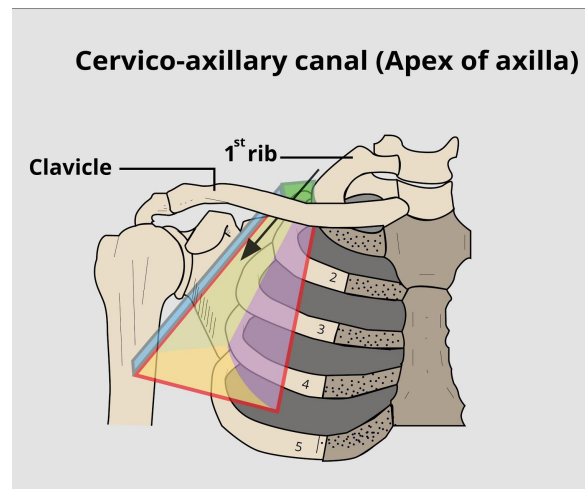
## Apex

It's called **Cervicoaxillary canal**

It is directed upwards and medially into the root of the neck.

The Apex is bounded **by 3 bones:**

- 1- **Clavicle anteriorly.**
- 2- **Upper border of the scapula posteriorly**
- 3- **Outer border of the first rib medially.**



## Base (floor)

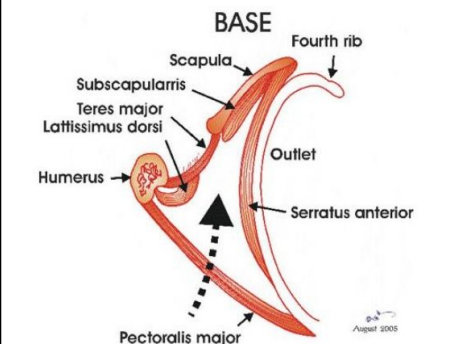
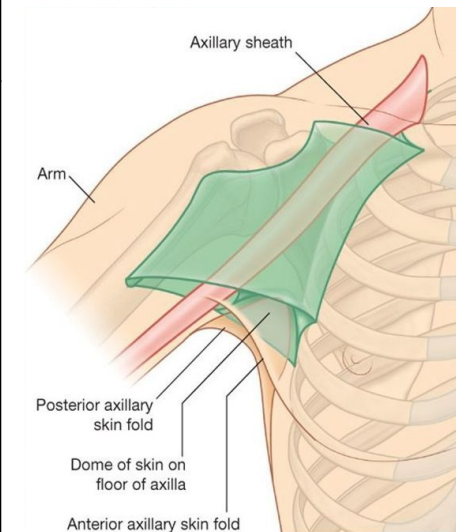
formed by skin stretching between the anterior and posterior walls.

The base is bounded:

1- **In front** by the anterior axillary fold (**formed by the lower border of the Pectoralis major**).

2- **Behind** by the posterior axillary fold (**formed by the tendons of latissimus dorsi and teres major muscles**).

3- **Medially** by upper **4 or 5 ribs and the chest wall**.





# Boundaries of axilla

## Four wall

### Anterior

### Posterior

### Medial

### Lateral

it is formed by:

- 1) Pectoralis major
- 2) Pectoralis minor
- 3) Subclavius
- 4) Clavipectoral fascia

It is formed by:

- 1) Subscapularis
- 2) Latissimus dorsi
- 3) Teres major muscles

It is formed by:

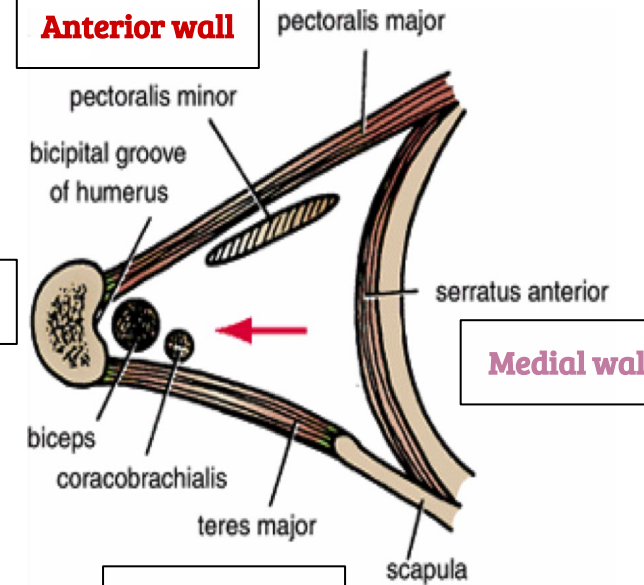
- 1) Serratus anterior
- 2) Upper 4-5 ribs and intercostal muscle

It is formed by:

- 1) Coracobrachialis
- 2) Biceps brachii
- 3) Intertubercular groove of the humerus

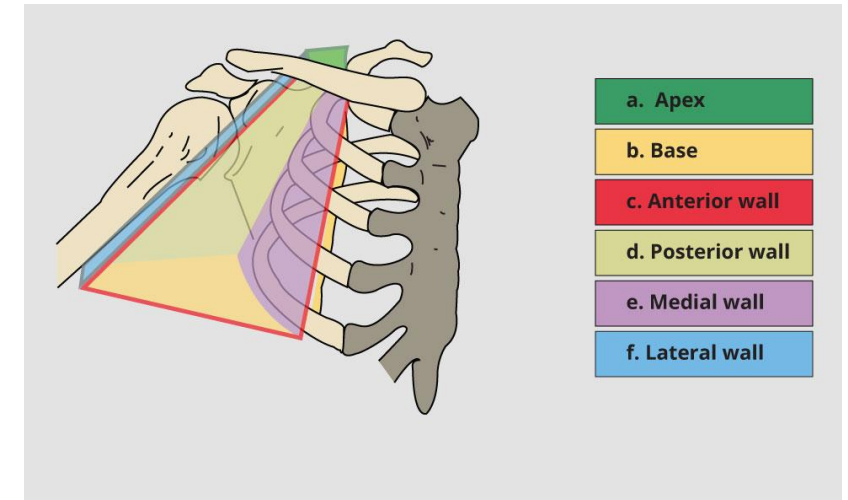
Lateral wall

Anterior wall



Medial wall

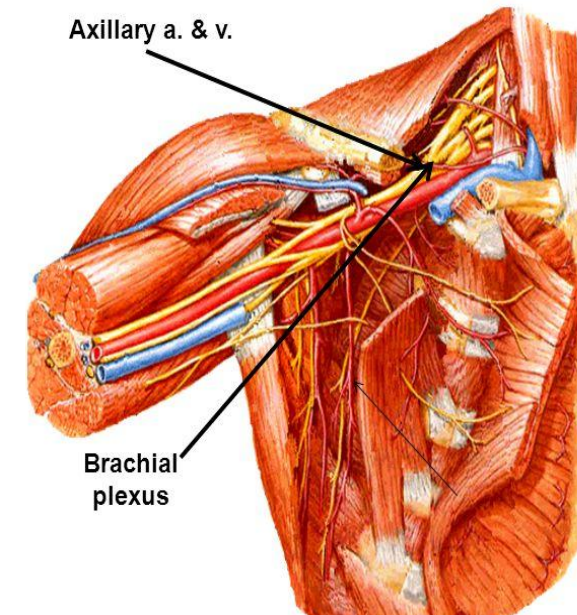
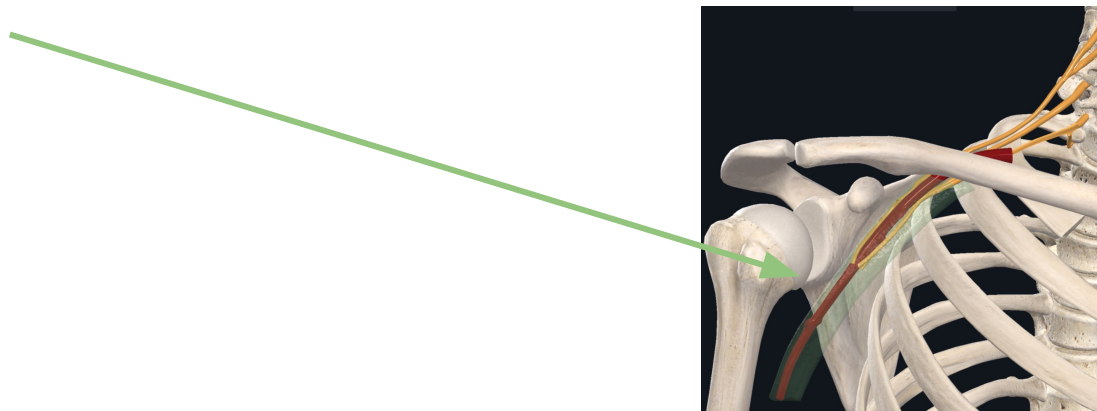
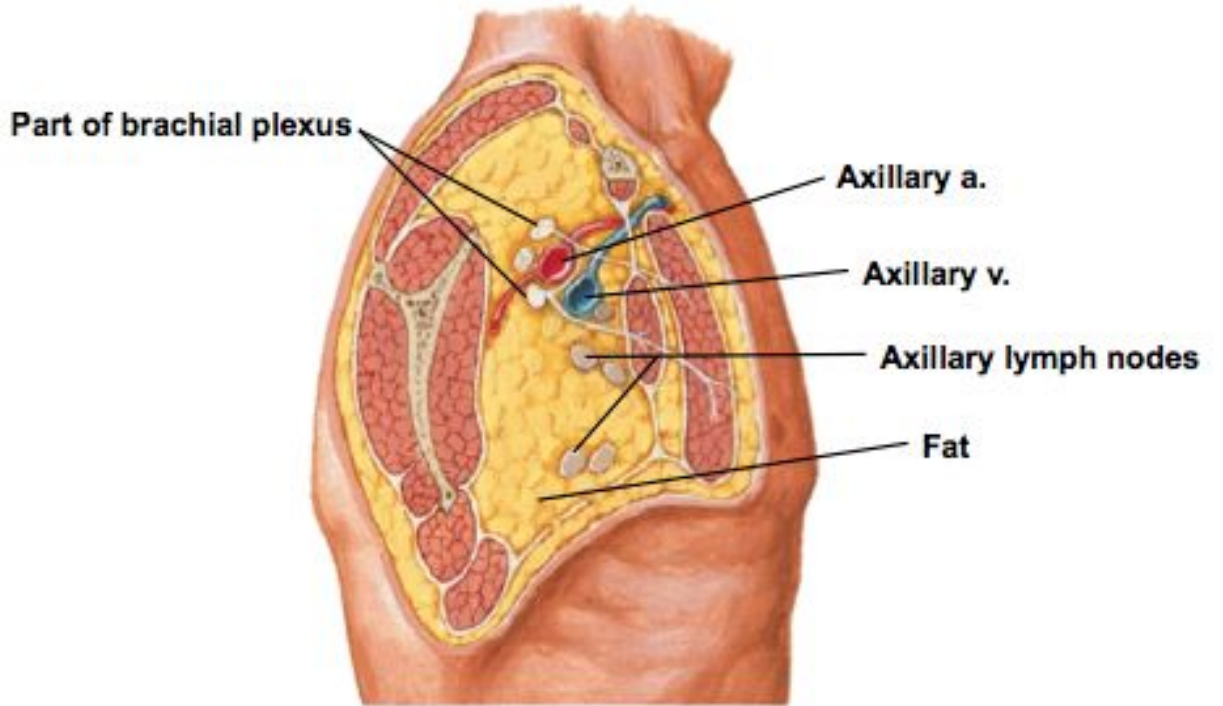
Posterior wall



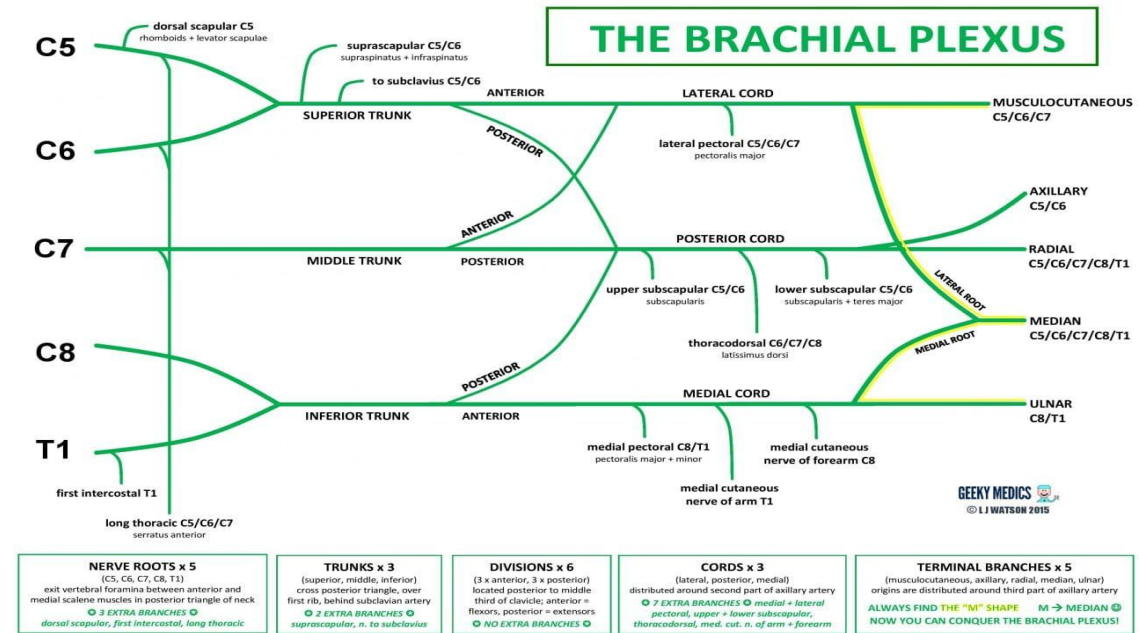
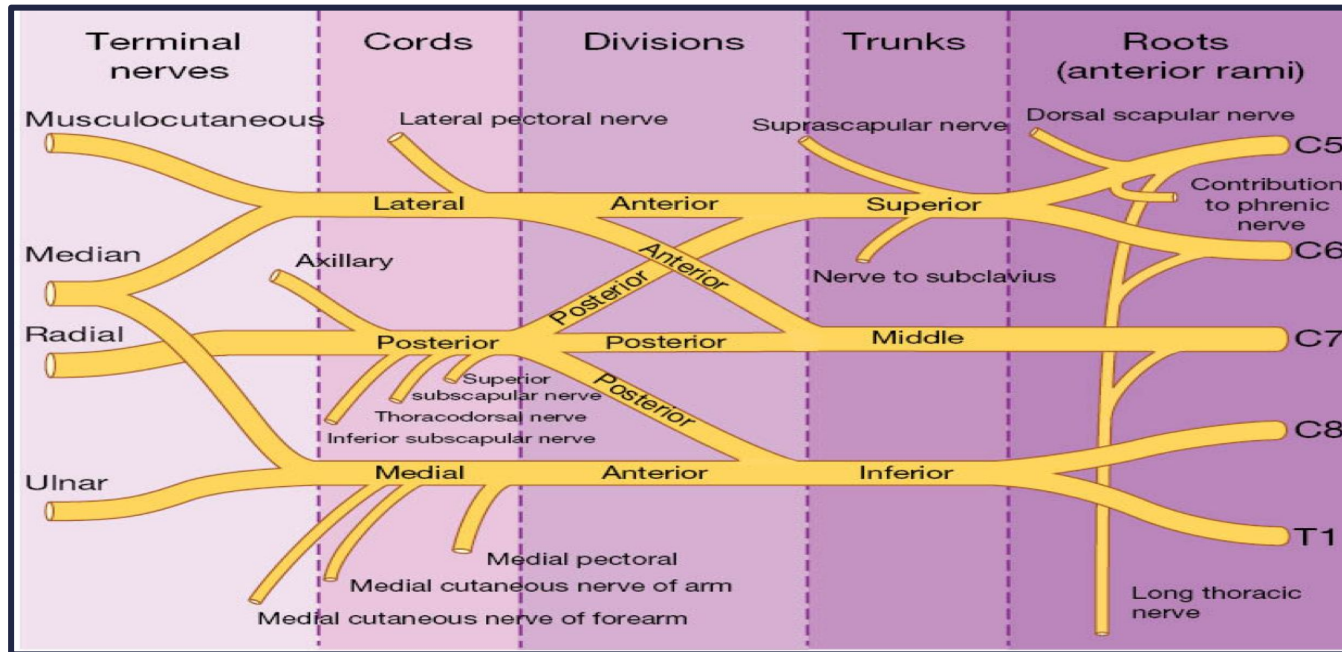
# Contents of The Axilla

- ❖ Cords and branches of brachial plexus
- ❖ Axillary artery and its branches
- ❖ Axillary vein and its tributaries
- ❖ Axillary lymph nodes
- ❖ Axillary fat
- ❖ Loose connective tissue

➤ The neurovascular bundle is enclosed in loose connective tissue sheath, called axillary sheath



# Brachial Plexus



**NERVE ROOTS x 5**  
(C5, C6, C7, C8, T1)  
exit vertebral foramina between anterior and medial scalene muscles in posterior triangle of neck  
● 3 EXTRA BRANCHES ●  
dorsal scapular, first intercostal, long thoracic

**TRUNKS x 3**  
(superior, middle, inferior)  
cross posterior triangle, over first rib, behind subclavian artery  
● 2 EXTRA BRANCHES ●  
suprascapular, n. to subclavius

**DIVISIONS x 6**  
(3 x anterior, 3 x posterior)  
located posterior to middle third of clavicle; anterior = flexors, posterior = extensors  
● NO EXTRA BRANCHES ●

**CORDS x 3**  
(lateral, posterior, medial)  
distributed around second part of axillary artery  
● 7 EXTRA BRANCHES ● medial + lateral pectoral, upper + lower subscapular, thoracodorsal, med. cut. n. of arm + forearm

**TERMINAL BRANCHES x 5**  
(musculocutaneous, axillary, radial, median, ulnar)  
origins are distributed around third part of axillary artery  
ALWAYS FIND THE "M" SHAPE M → MEDIAN ●  
NOW YOU CAN CONQUER THE BRACHIAL PLEXUS!



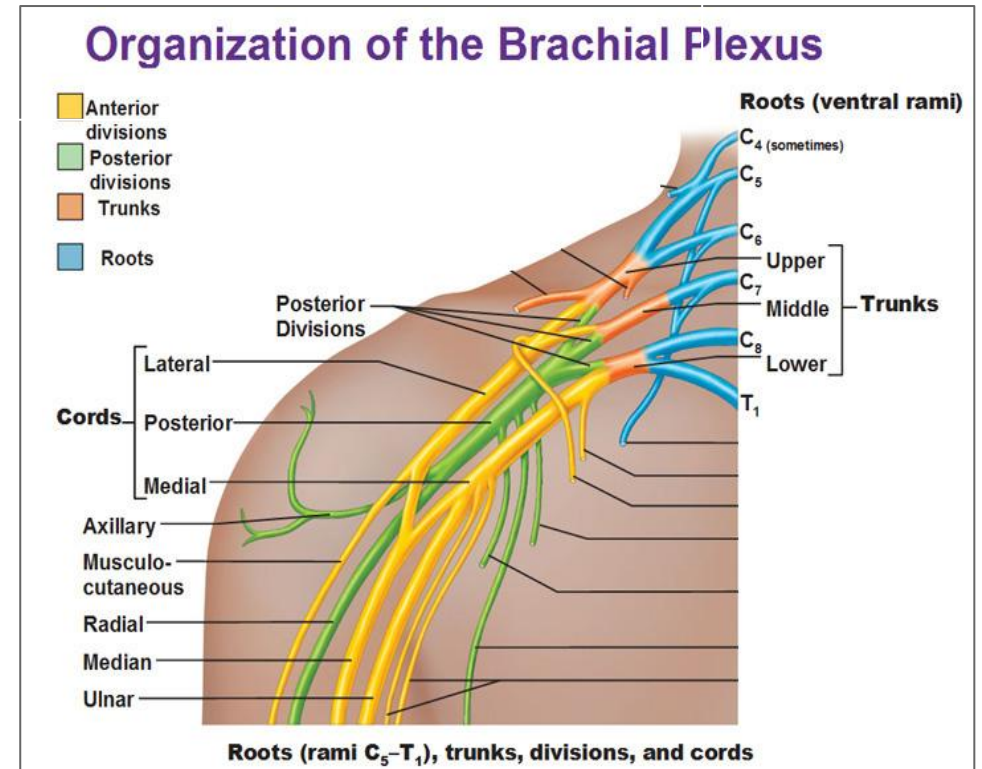
# Brachial Plexus

is a **network of nerves** that present at the root of the **neck** to enter the upper limb.

## Location & Formation:

It is present in the posterior triangle of the neck & axilla.

It is formed by the union of the anterior Rami of the **C 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, T 1<sup>st</sup> spinal nerve**.

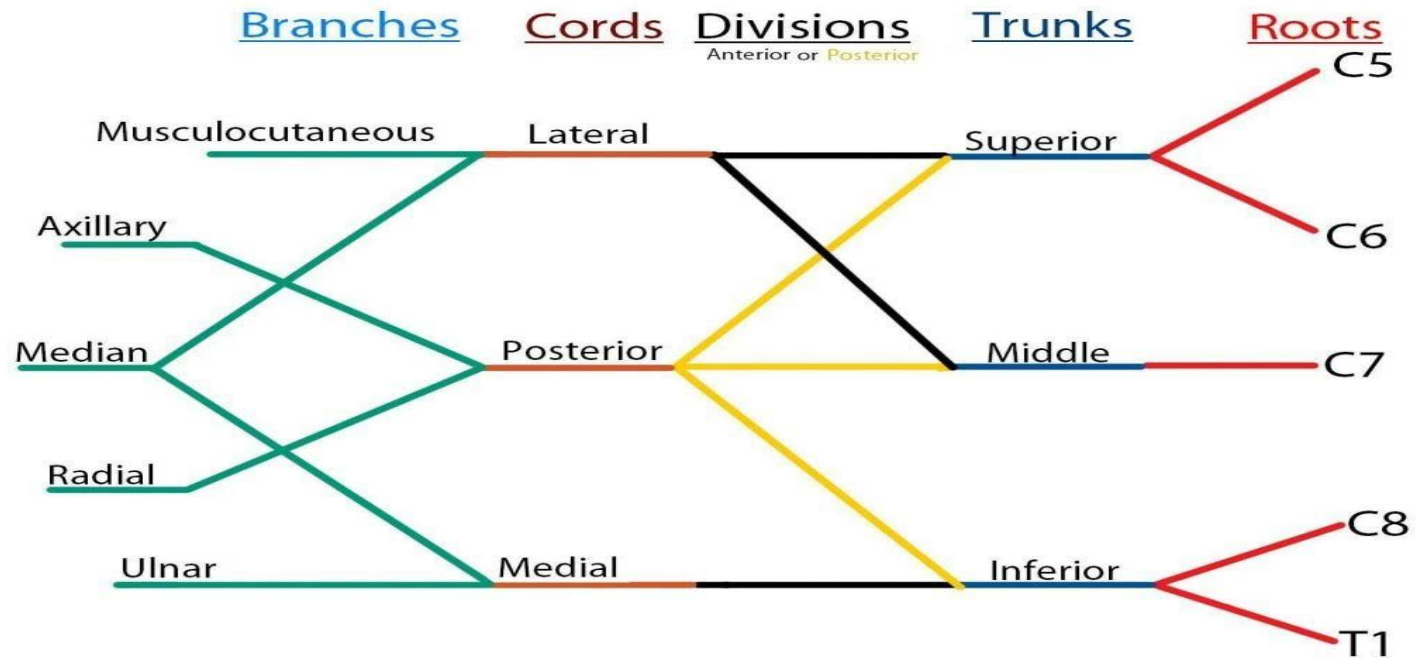


- The first 2 stages lie in the posterior triangle, while the last 2 stages lie in the axilla.

Remember in the spine we only have 7 cervical vertebra **BUT** there are 8 cervical spinal nerves.

# Brachial Plexus

Roots and trunk	Division and cords
<p><b>Roots</b> of <b>C5</b> &amp; <b>C6</b> unite to form → <b>Superior trunk</b></p>	<p>The <b>anterior divisions</b> of the <b>upper and middle trunks</b> unite to form the <b>Lateral cord</b>.</p>
<p><b>Roots</b> of <b>C7</b> continues as the → <b>Middle trunk</b></p>	<p>-The <b>anterior division</b> of the <b>lower trunk</b> continues as the <b>Medial cord</b>.</p>
<p><b>Roots</b> of <b>C8</b> &amp; <b>T1</b> unite to form → <b>Inferior trunk</b></p>	<p>-All the <b>posterior divisions</b> of <b>three trunks</b> join to form the <b>Posterior cord</b>.</p>
<p>Each <b>trunk</b> will branch into anterior and posterior <b>division</b></p>	<p><b>Cords</b> are named according to their relation to the 2<sup>nd</sup> part of the axillary artery.</p>



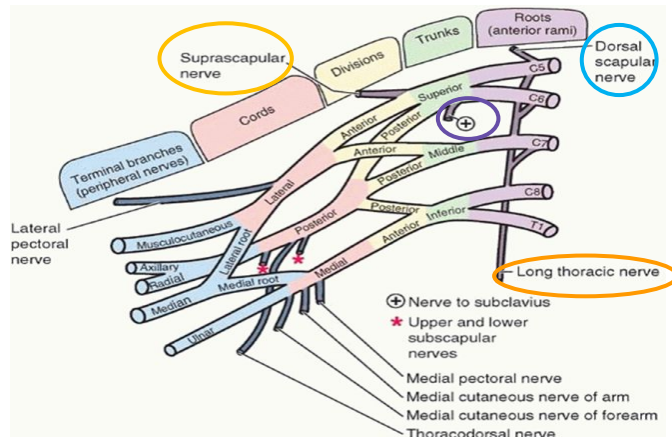
# Brachial Plexus

## Summary from our reference

TABLE 9.4 Summary of the Branches of the Brachial Plexus and their Distribution

Branches	Distribution
<b>Roots</b>	
Dorsal scapular nerve (C5)	Rhomboid minor, rhomboid major, levator scapulae muscles
Long thoracic nerve (C5, 6, 7)	Serratus anterior muscle
<b>Upper Trunk</b>	
Suprascapular nerve (C5, 6)	Supraspinatus and infraspinatus muscles
Nerve to subclavius (C5, 6)	Subclavius
<b>Lateral Cord</b>	
Lateral pectoral nerve (C5, 6, 7)	Pectoralis major muscle
Musculocutaneous nerve (C5, 6, 7)	Coracobrachialis, biceps brachii, brachialis muscles; supplies skin along lateral border of forearm when it becomes the lateral cutaneous nerve of forearm
Lateral root of median nerve (C5, 6, 7)	See medial root of median nerve
<b>Posterior Cord</b>	
Upper subscapular nerve (C5, 6)	Subscapularis muscle
Thoracodorsal nerve (C6, 7, 8)	Latissimus dorsi muscle
Lower subscapular nerve (C5, 6)	Subscapularis and teres major muscles
Axillary nerve (C5, 6)	Deltoid and teres minor muscles; upper lateral cutaneous nerve of arm supplies skin over lower half of deltoid muscle
Radial nerve (C5, 6, 7, 8; T1)	Triceps, anconeus, part of brachialis, extensor carpi radialis longus; via deep radial nerve branch supplies extensor muscles of forearm: supinator, extensor carpi radialis brevis, extensor carpi ulnaris, extensor digitorum, extensor digiti minimi, extensor indicis, abductor pollicis longus, extensor pollicis longus, extensor pollicis brevis; skin, lower lateral cutaneous nerve of arm, posterior cutaneous nerve of arm, and posterior cutaneous nerve of forearm; skin on lateral side of dorsum of hand and dorsal surface of lateral three and a half fingers; articular branches to elbow, wrist, and hand
<b>Medial Cord</b>	
Medial pectoral nerve (C8; T1)	Pectoralis major and minor muscles
Medial cutaneous nerve of arm joined by intercostal brachial nerve from second intercostal nerve (C8; T1, 2)	Skin of medial side of arm
Medial cutaneous nerve of forearm (C8; T1)	Skin of medial side of forearm
Ulnar nerve (C8; T1)	Flexor carpi ulnaris and medial half of flexor digitorum profundus, flexor digiti minimi, opponens digiti minimi, abductor digiti minimi, adductor pollicis, third and fourth lumbricals, interossei, palmaris brevis, skin of medial half of dorsum of hand and palm, skin of palmar and dorsal surfaces of medial one and a half fingers
Medial root of median nerve (with lateral root) forms median nerve (C5, 6, 7, 8; T1)	Pronator teres, flexor carpi radialis, palmaris longus, flexor digitorum superficialis, abductor pollicis brevis, flexor pollicis brevis, opponens pollicis, first two lumbricals (by way of anterior interosseous branch), flexor pollicis longus, flexor digitorum profundus (lateral half), pronator quadratus; palmar cutaneous branch to lateral half of palm and digital branches to palmar surface of lateral three and a half fingers; articular branches to elbow, wrist, and carpal joints

Branches				
From Roots	From Trunks	From Cords		
		Lateral cord (3)	Medial Cord (5)	Posterior Cord (5)
Dorsal scapular nerve (C5) Long thoracic nerve (C5,6,7)	Suprascapular nerve (C5,C6) Nerve to subclavius muscle (C5,C6)	1-Lateral pectoral nerve 2-Musculocutaneous nerve 3-Median nerve (lateral root).	1-Medial pectoral nerve 2-Ulnar nerve 3-Median nerve (medial root) 4-Medial cutaneous nerve of arm 5-Medial cutaneous nerve of arm forearm	1-Axillary nerve. 2-Radial nerve 3-Upper subscapular nerve 4-lower-subscapular nerves 5-Thoracodorsal or N. to latissimus dorsi



Mnemonic (Team 433)

- **Lateral Cord Branches: LLM "Lucy Loves Me"**

Lateral pectoral, Lateral root of the median nerve, Musculocutaneous.

□ - **Medial Cord Branches: MMUM "Most Men Use Morphine"**

Medial pectoral, Medial cutaneous nerve of arm and forearm, Ulnar, Medial root of the median nerve.

- **Posterior cord branches STAR**

Subscapular (upper and lower), Thoracodorsal, Axillary, Radial

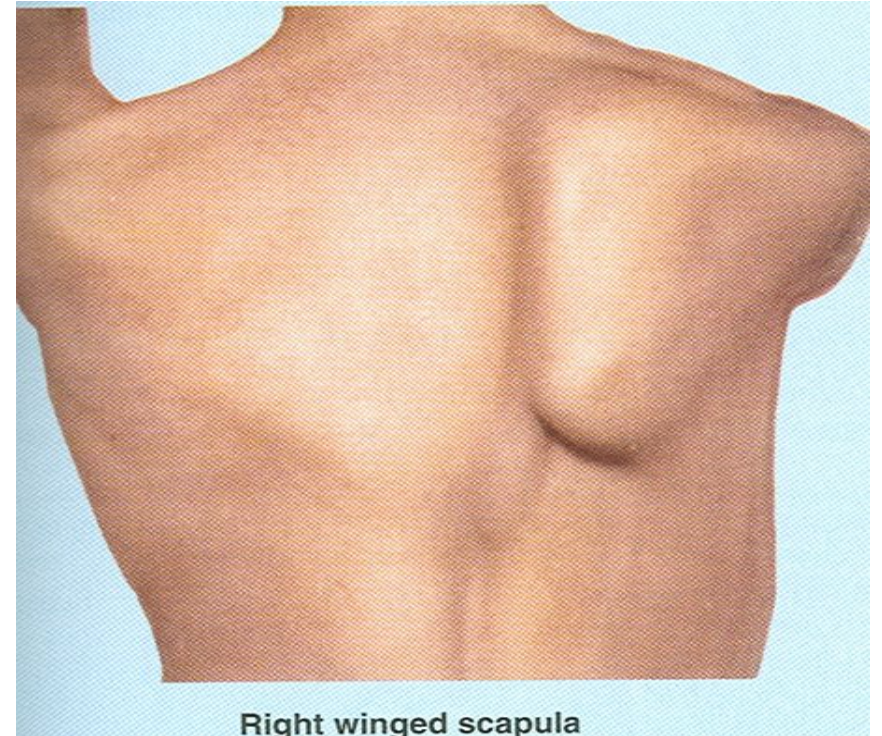


# Applied Anatomy

- Lesion of long thoracic nerve (C5,6,7) causes backward projection of medial border of scapula This deformity is called **Winging of Scapula**.
- Caused Paralysis in **Serratus anterior** muscle



**Fig. 22.15** Multidirectional voluntary dislocation of the shoulder. This 9-year-old boy can voluntarily dislocate his shoulder posteriorly.





# MCQs

**Question 1:** Which of the following statements is NOT correct:

- A- The base of axilla is bounded posteriorly by the pectoralis major.
- B- The base of axilla is bounded medially by the 4 or 5th rib.
- C- The apex of the axilla is bounded by 3 bones (clavicle, scapula and the 1st rib).
- D- The apex is called cervicoaxillary canal

**Question 2:** The lateral wall of the axilla does not contain:

- A- biceps brachii
- B- upper 4-5 ribs and intercostal muscles
- C- bicipital groove of the humerus
- D- coracobrachialis

**Question 3:** Which of the following is located between subclavius and pectoralis minor?

- A- Serratus anterior
- B- Axilla
- C- Clavipectoral Fascia
- D- Brachial Plexus

**Question 4:** What is the nerve supply of Serratus anterior?

- A- Lateral pectoral nerve.
- B- Long thoracic nerve.
- C- Musculocutaneous nerve.
- D- Ulnar nerve.

**Question 5:** Which wall is formed (partly) by the clavipectoral fascia?

- A- Anterior
- B- Posterior
- C- Medial
- D- Lateral

**Question 6:** In the brachial plexus all the posterior divisions of the three trunks join to form \_\_\_\_\_.

- A- Lateral cord
- B- Posterior cord
- C- Lateral root
- D- Posterior root

**Question 7:** Which cord gives rise to the musculocutaneous nerve?

- A- Anterior cord
- B- Posterior cord
- C- Medial cord
- D- Lateral cord

**Question 8:** A patient presents to the ER with inability to depress his shoulders. The physician suspects nerve involvement, which nerve is most likely damaged?

- A- Medial pectoral nerve
- B- Lateral pectoral nerve
- C- Anterior pectoral nerve
- D- Posterior pectoral nerve

# Team members

## Boys team:

- Khalid AL-Dossari
- Naif Al-Dossari
- ★ Faisal Alqifari
- Salman Alagla
- Ziyad Al-jofan
- Suhail Basuhail
- Ali Aldawood
- Khalid Nagshabandi
- Mohammed Al-huqbani
- Jehad Alorainy
- Khalid AlKhani
- Omar Alammari

## Team leaders

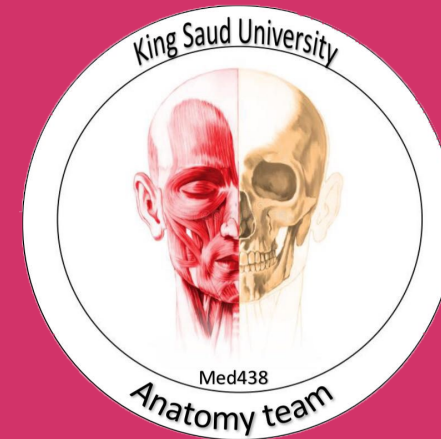
- ★ Abdulrahman Shadid
- Ateen Almutairi

★ =This lecture done by

## Girls team :

- Ajeed Al Rashoud
- Taif Alotaibi
- Noura Al Turki
- Amirah Al-Zahrani
- Alhanouf Al-haluli
- Sara Al-Abdulkarem
- Rawan Al Zayed
- Reema Al Masoud
- Renad Al Haqbani
- Nouf Al Humaidhi
- Fay Al Buqami
- Jude Al Khalifah
- Nouf Al Hussaini
- Alwateen Al Balawi
- Rahaf Al Shabri
- Danah Al Halees
- Haifa Al Waily
- Rema Al Mutawa
- Amirah Al Dakhilallah
- Maha Al Nahdi
- Renad Al Mutawa
- Ghaida Al Braithen
- Reham Yousef

Special thank for  
Anatomy team 436



Good luck

Give us your feedback:

