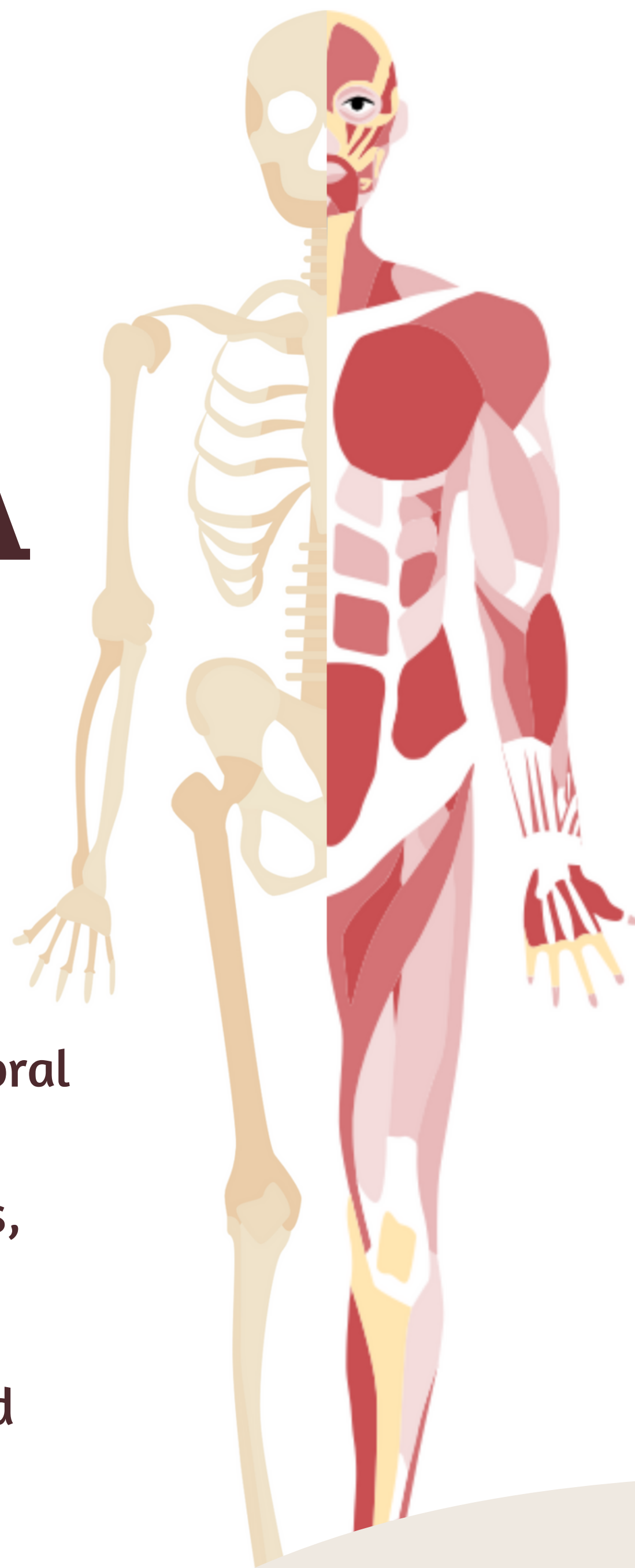


# Lecture 5

# PECTORAL REGION & AXILLA

## OBJECTIVES

- Identify and describe the muscles of the pectoral region:  
Pectoralis major, Pectoralis minor, Subclavius, Serratus anterior.
- Describe and demonstrate the boundaries and contents of the axilla.
- Describe the formation of the brachial plexus and its branches



### Color Index:

- Main text
- Boys' Slides
- Girls' Slides
- Important
- Dr's Notes
- Extra



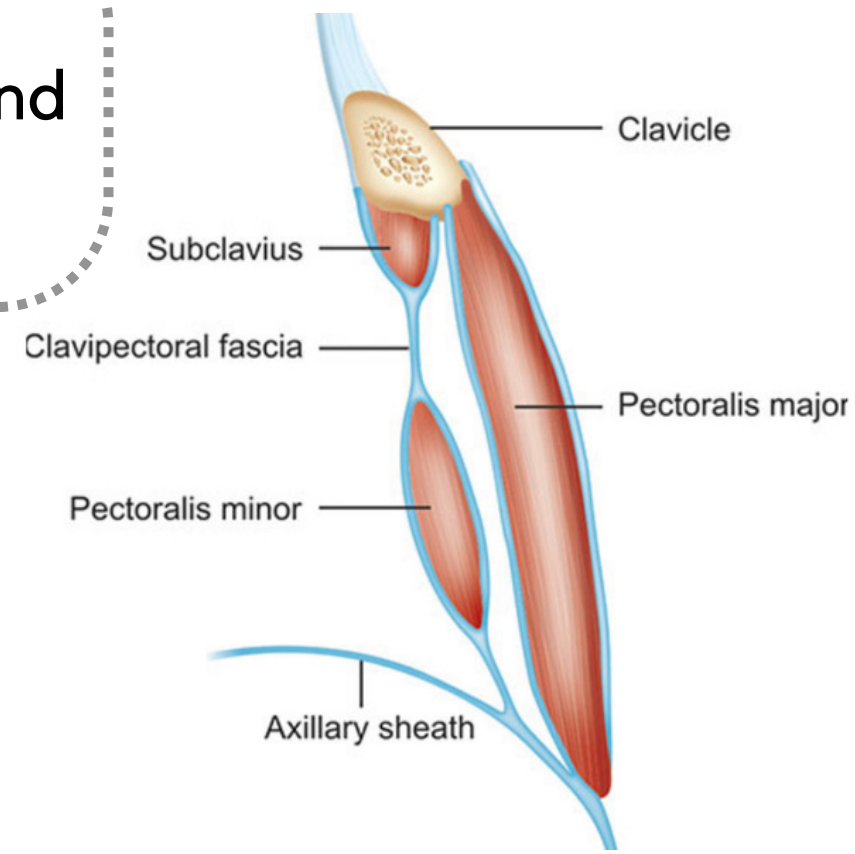
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	<b>Pectoralis Major</b>	<b>Pectoralis Minor</b>	<b>Subclavius</b>	<b>Serratus Anterior</b>
<b>Origin</b>	<b>2 heads:</b> Clavicular head: Medial ½ of the front of the clavicle. Sternocostal head: Sternum, Upper 6 costal cartilages & Aponeurosis of external oblique muscle.	From 3rd ,4th, & 5th ribs close to their costal cartilages.	From 1st rib at its costal cartilage. (the 1st costochondral junction).	Upper eight or nine ribs.
<b>Insertion</b>	Lateral lip of bicipital groove (Humerus).	Coracoid process (scapula).	Subclavian groove in the middle 1/3 of inferior surface of clavicle.	Anterior aspect of the medial border and inferior angle of scapula.
<b>Nerve Supply</b>	Medial (C8&T1)& lateral pectoral nerves (C5,6,7).	Medial pectoral nerve (C8,T1).	Nerve to subclavius (C5,6) from upper trunk of brachial plexus.	Long thoracic nerve (from roots of. brachial plexus,C5,6,7)
<b>Action</b>	-Adduction & medial rotation of the arm. -Clavicular head helps in flexion of arm (shoulder)	-Depression of the shoulder. -Draw the ribs upward and outwards during deep inspiration	Fixes the clavicle during movement of shoulder joint.	-Draws the scapula forward in boxing (protrusion or protraction) "boxer's muscle". -Rotates scapula outwards in raising the arm above 90 degree (Abduction above 90).
<b>Pictures</b>				



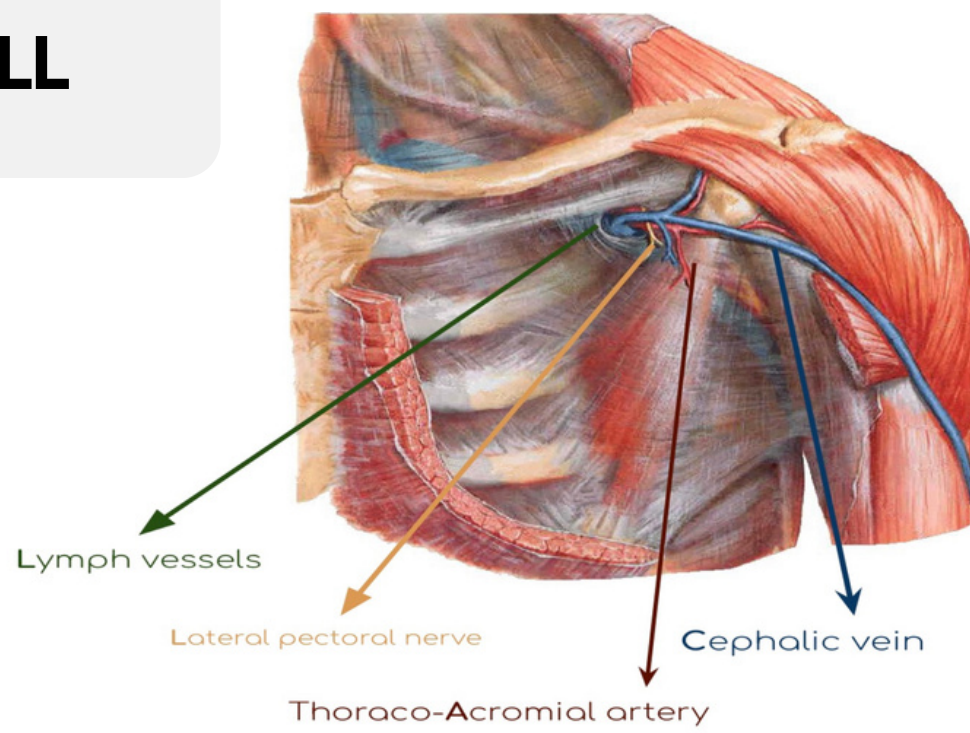
# Clavipectoral Fascia

It is a thickened membrane of deep fascia between the subclavius and pectoralis minor.



## It's pierced by: CALL

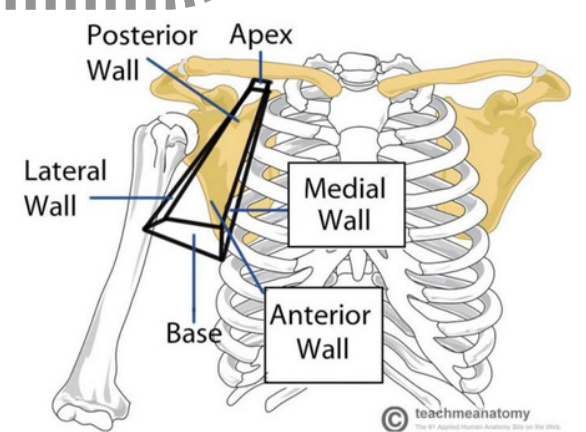
- Cephalic vein
- Thoraco-Acromial artery
- Lymph vessels
- Lateral pectoral nerve



# Axilla

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

Axilla has an apex, a base and four walls.



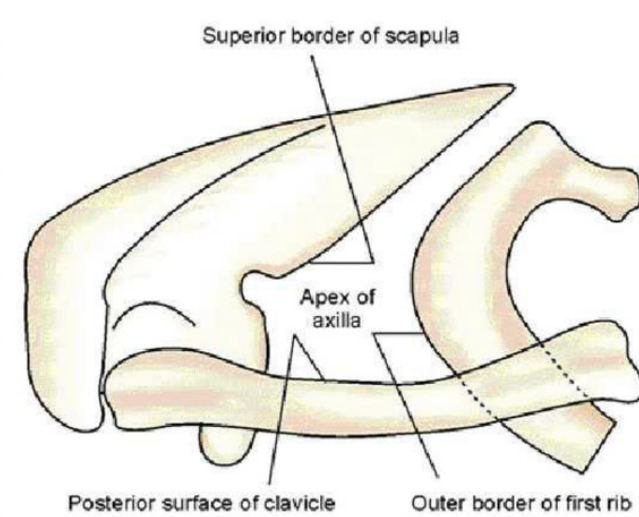
# Boundaries of Axilla:

Also called **Cervicoaxillary Canal**

Directed upwards & medially to the root of the neck

## Apex

Bounded by 3 bones:  
 Anteriorly: clavicle.  
 Posteriorly: upper border of scapula.  
 Medially: outer border of first rib.



# Boundaries of Axilla:

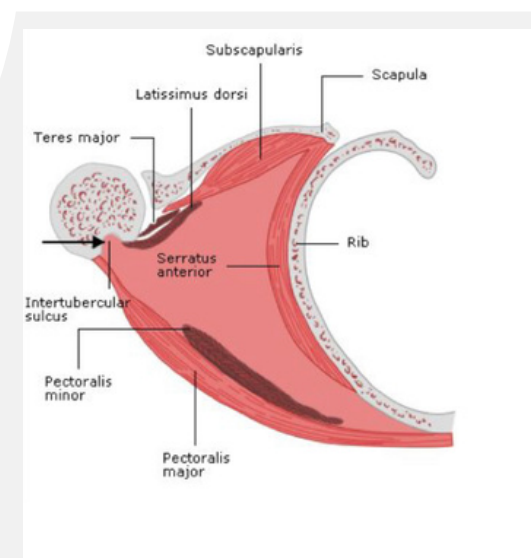
Bounded by:

- Front: Anterior Axillary Fold (Formed by lower border of the Pectoralis Major).
- Medially: upper 4 or 5 ribs & chest wall.

Formed by skin stretching between the anterior & posterior walls.

**Base (Floor)**

- Behind: Posterior Axillary Fold (formed by tendons of Latissimus Dorsi & Teres Major).



# Walls of Axilla:

Anterior	Posterior	Medial (Wide)	Lateral (Narrow)
<ul style="list-style-type: none"> <li>- Pectoralis major.</li> <li>- Pectoralis minor.</li> <li>- Subclavius.</li> <li>- Clavipectoral fascia.</li> </ul>	<ul style="list-style-type: none"> <li>- Subscapularis.</li> <li>- Latissimus dorsi.</li> <li>- Teres major muscles.</li> </ul>	<ul style="list-style-type: none"> <li>- Serratus anterior.</li> <li>- Upper 4-5 ribs &amp; Intercostal muscles</li> </ul>	<ul style="list-style-type: none"> <li>- Coracobrachialis</li> <li>- Biceps brachii.</li> <li>- Bicipital groove of the humerus.</li> </ul>



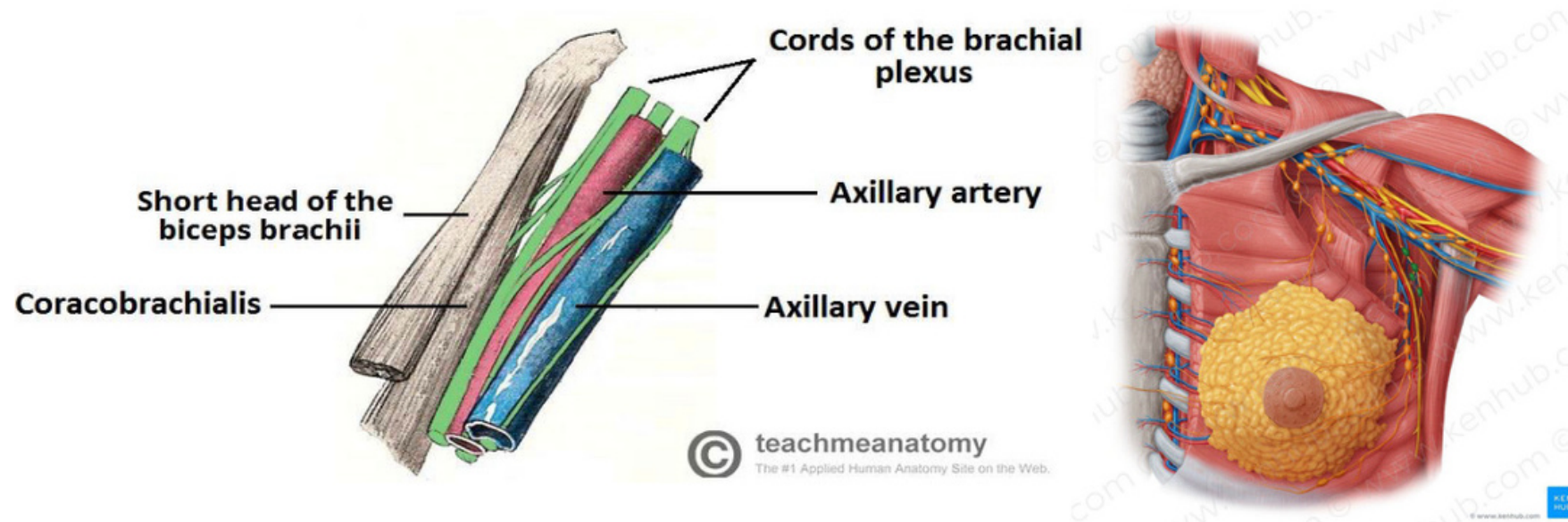
Note: colors referred to the right image



## Contents of Axilla

- Cords and braches of the 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 connective tissue sheath, called 'axillary sheath'



## Brachial Plexus



### Definition

network of nerves that is formed at the root of the neck to enter the upper limb.

### Location & formation

Location: Posterior triangle of the neck and axilla.

Formation: union of anterior rami of C5, C6, C7, C8 AND T1 spinal nerves.

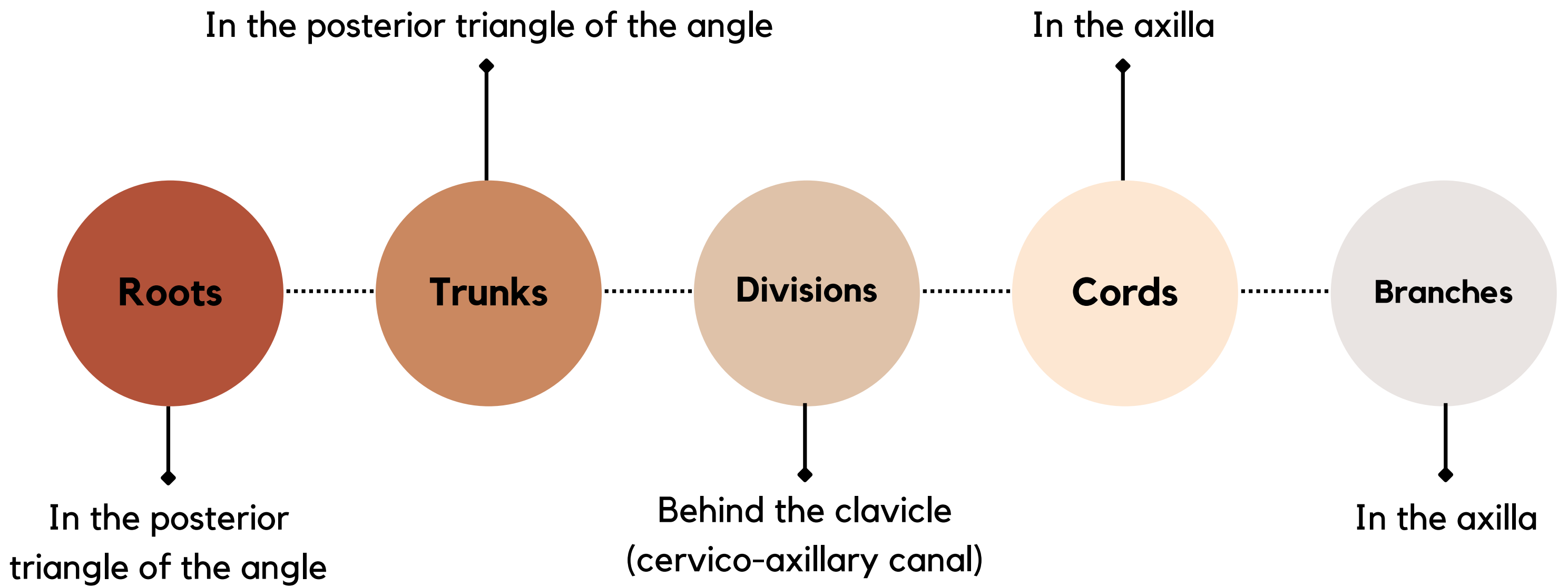
At each vertebral level, paired spinal nerves arise.

Roots of C5 & C6 unite to form ----> Upper trunk

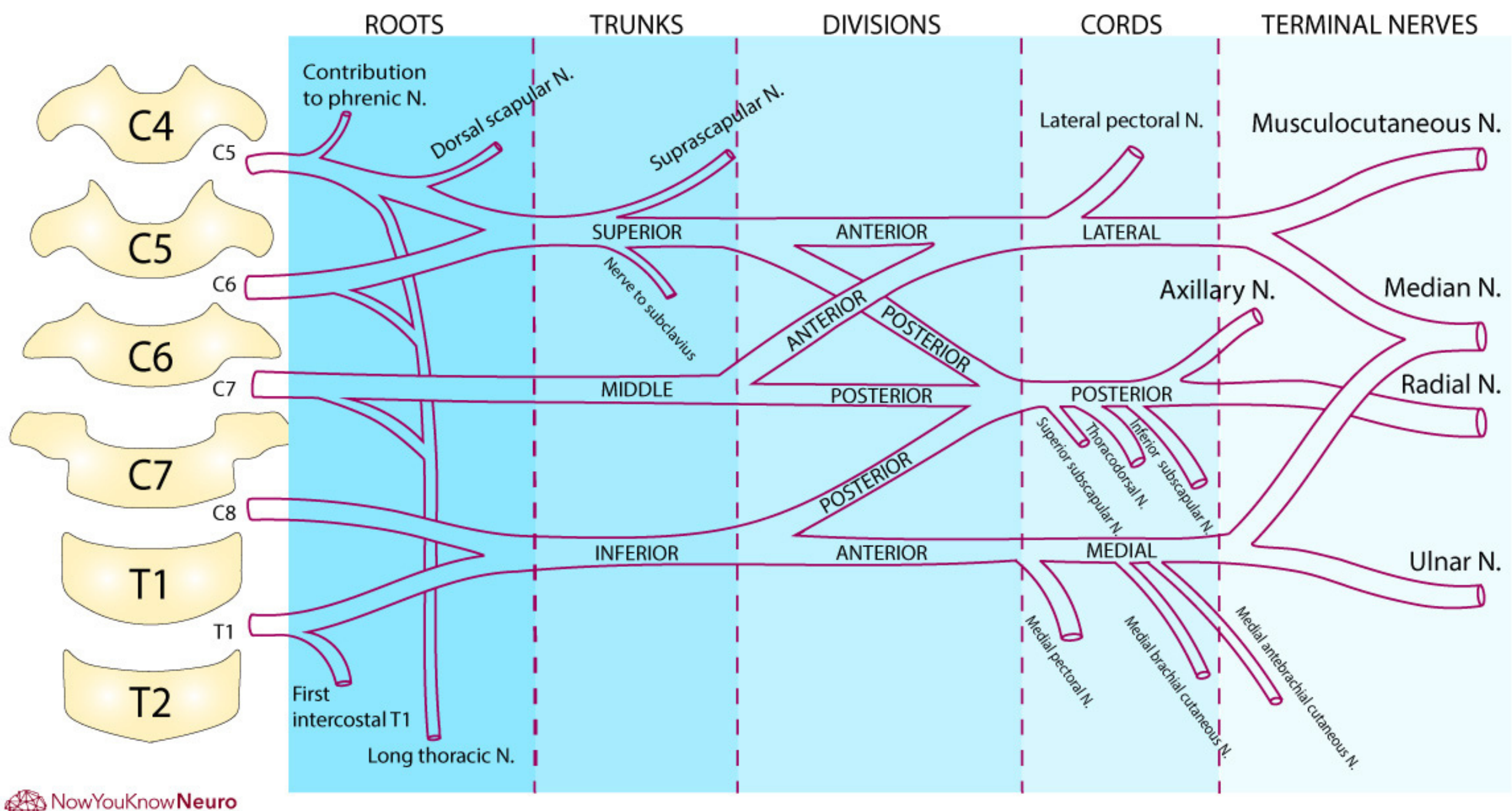
Root of C7 continuous as the ----> Middle trunk

Roots of C8 & T1 unite to form ----> Lower trunk.

# Plexus divide to 5 stages:

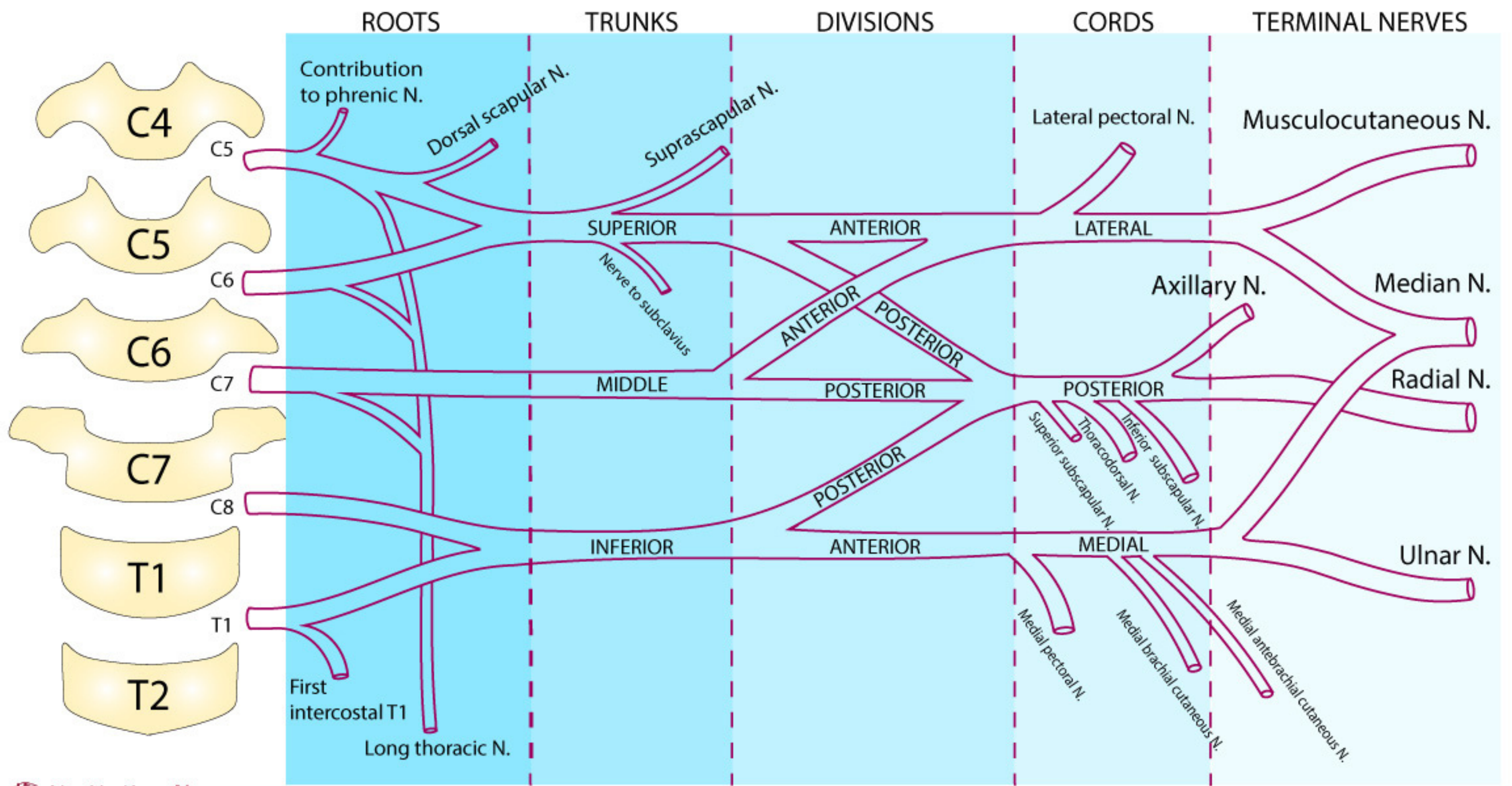


- The first 2 stages lie in the posterior triangle, while the last 2 stages lie in the axilla.



- The **anterior** divisions of the **upper** and **middle** trunks unite to form the **Lateral cord**.
- The **anterior** division of the **lower** trunk continues as the **Medial cord**.
- **All the posterior** divisions of three trunks join to form the **Posterior cord**.





## Branches:

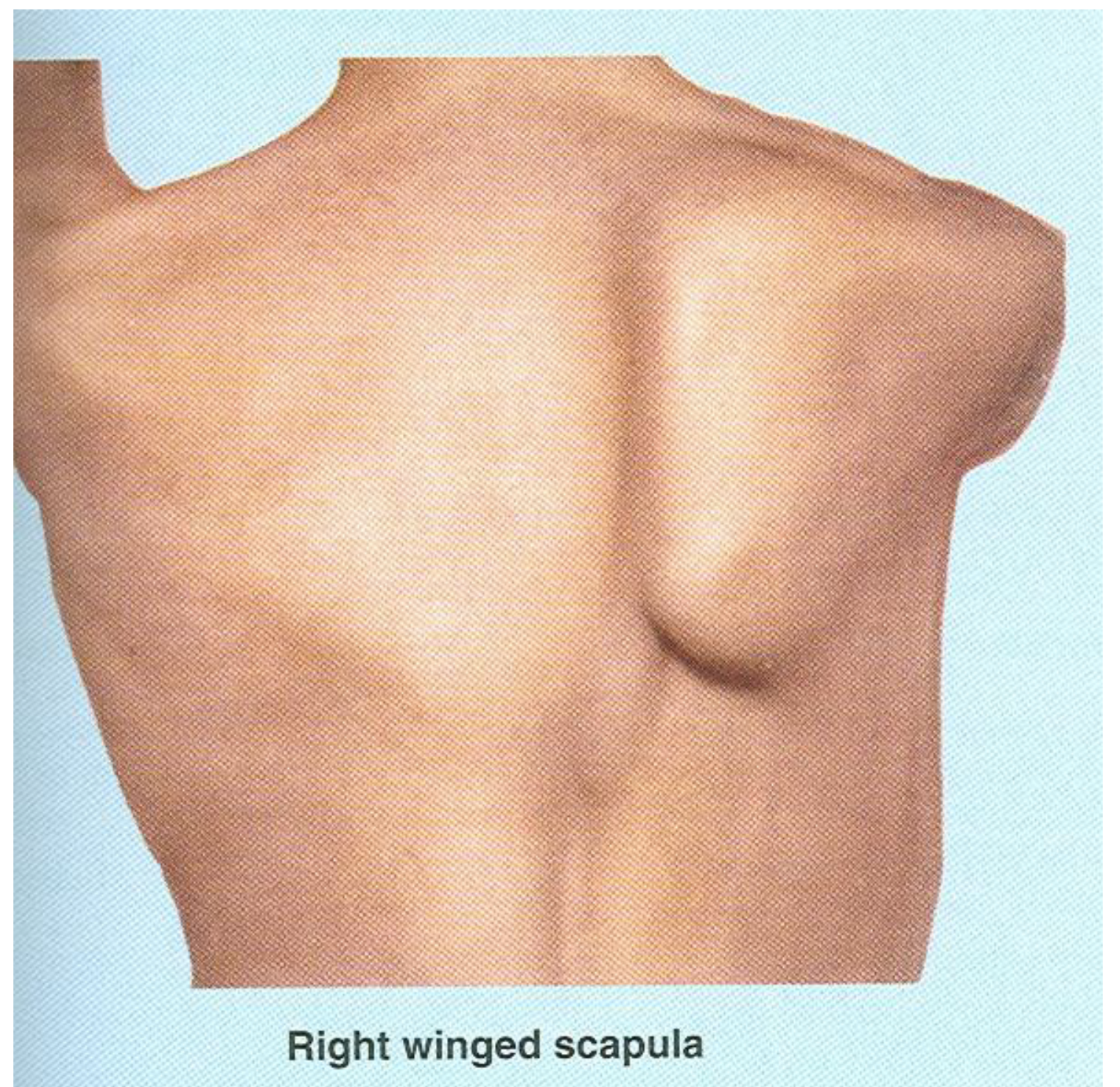
Lateral cords	<b>Musculocutaneous nerve</b>	Lateral pectoral nerve	Median nerve (lateral root)	
Medial cords	<b>Ulnar nerve</b>	<b>Median nerve</b>	Medial pectoral nerve	Medial cutaneous nerve of arm & forearm
Posterior cords	<b>Axillary nerve</b>	<b>Radial nerve</b>	Upper & lower subscapular nerve	Thoracodorsal (N. to latissimus dorsi).



# 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**.

Paralysis of Serratus anterior muscle... Winging of scapula

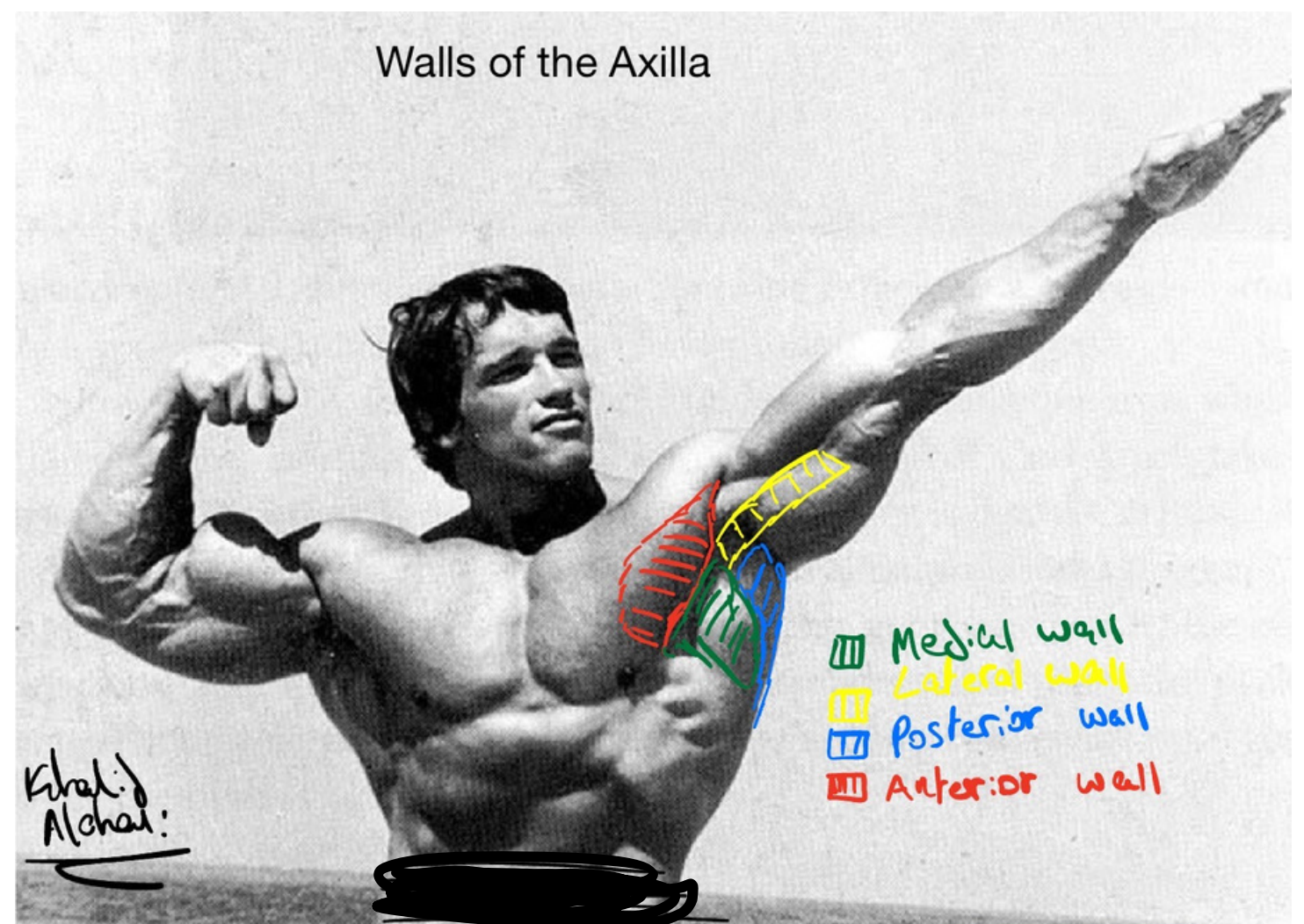
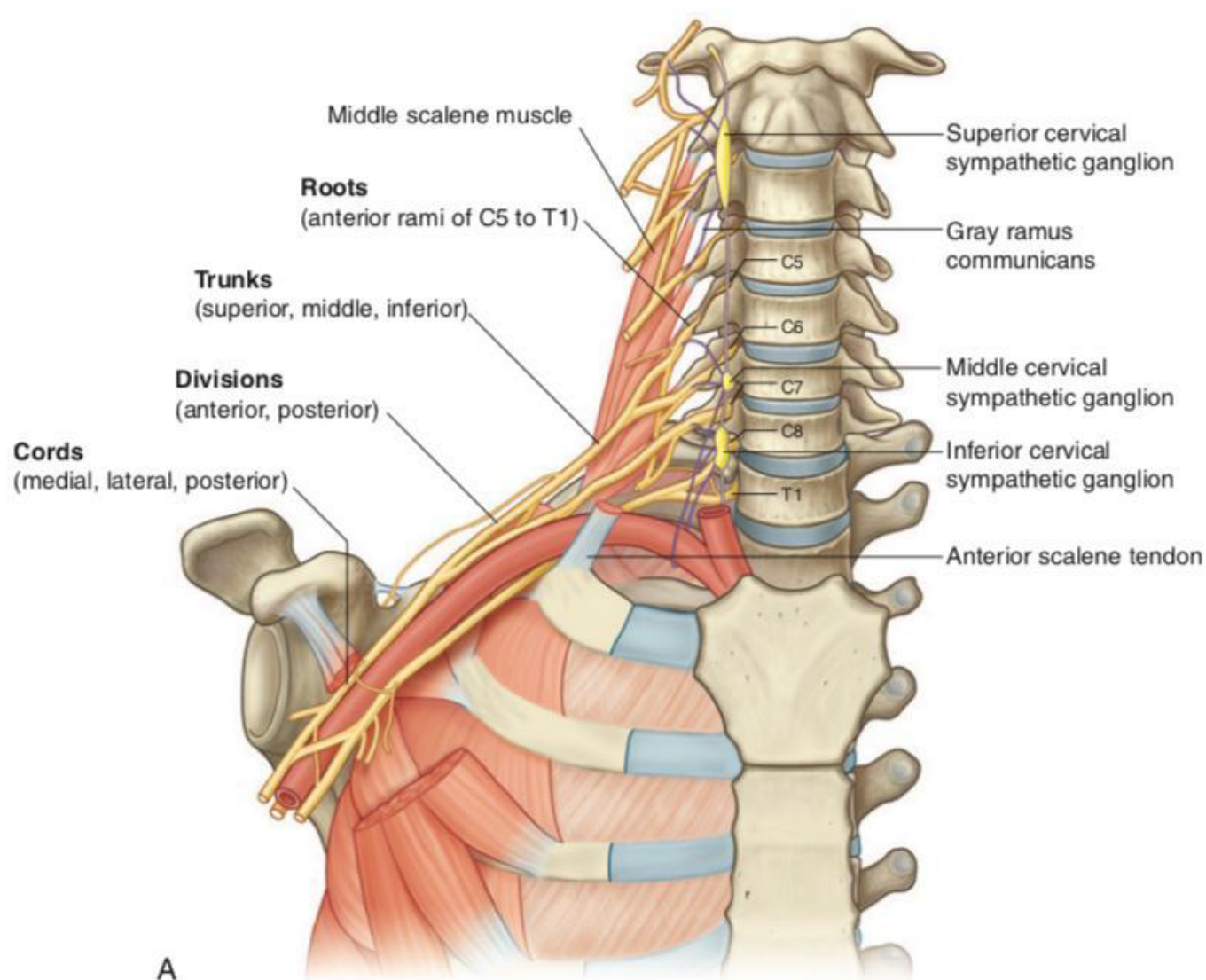




# Summary

## Brachial plexus injury

Muscle	Origin	Insertion	Innervation	Function
Pectoralis major	Clavicular head—anterior surface of medial half of clavicle; sternocostal head—anterior surface of sternum; first seven costal cartilages; sternal end of sixth rib; aponeurosis of external oblique	Lateral lip of intertubercular sulcus of humerus	Medial and lateral pectoral nerves; clavicular head (C5, C6); sternocostal head (C6, C7, C8, T1)	Flexion, adduction, and medial rotation of arm at glenohumeral joint; clavicular head—flexion of extended arm; sternocostal head—extension of flexed arm
Subclavius	First rib at junction between rib and costal cartilage	Groove on inferior surface of middle one-third of clavicle	Nerve to subclavius (C5, C6)	Pulls tip of shoulder down; pulls clavicle medially to stabilize sternoclavicular joint
Pectoralis minor	Anterior surfaces and superior borders of ribs III to V; and from deep fascia overlying the related intercostal spaces	Coracoid process of scapula (medial border and upper surface)	Medial pectoral nerve (C5, C6, C7, C8, T1)	Pulls tip of shoulder down; protracts scapula
Serratus anterior	Lateral surfaces of upper 8–9 ribs and deep fascia overlying the related intercostal spaces	Costal surface of medial border of scapula	Long thoracic nerve (C5, C6, C7)	Protraction and rotation of the scapula; keeps medial border and inferior angle of scapula opposed to thoracic wall



Useful summary for the whole lecture



# MCQs

## 1

Which of the following structures make up the anterior wall of the axilla?

A-Subclavius	B-Latissimus dorsi	C-Biceps brachii	D-Subscapularis
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## 2

The brachial plexus is formed by:

A-C5-T1 spinal n.	B-C5-T1 dorsal rami	C-C5-T1 ventral rami	D-C5-T1 ventral roots
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## 3

in Brachial plexus roots of C5 & C6 unite to form?

A-Middle trunk	B-Upper trunk	C-Lower trunk	D-B&C
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## 4

The medial cord has five branches, and four of the five branches have the word "medial" in their names. Which branch of the medial cord does not have the word "medial" in its name?

A-lower subscapular n.	B-musculocutaneous n.	C-ulnar n.	D-Radial n.
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## 5

Apex of axilla is bounded by?

A-4 bones	B-3 bones	C-2 bones	D-5 bones
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1-A 2-C 3-B 4-C 5-B



# SAQs

1

A 34-year-old patient who has a knife fight and has a wound under his right axilla. He seems unable to fully abduct his arm above horizontal. When you ask him to press the wall you notice that he has a "winged scapula". Which muscle likely paralyzed?

 Serratus anterior

2

The posterior cord of the brachial plexus is formed by?

 union of posterior divisions.

3

What are the 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



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