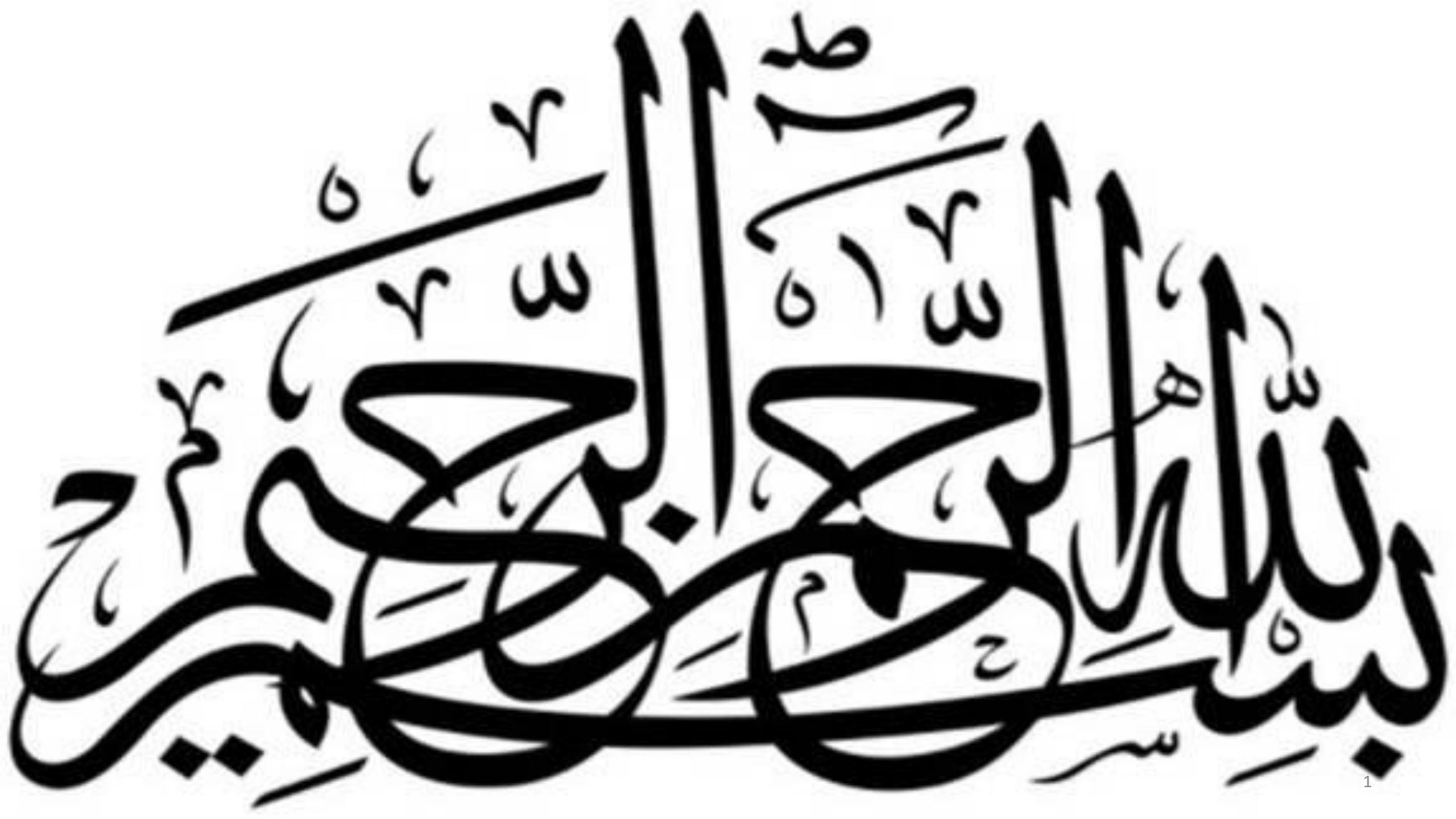
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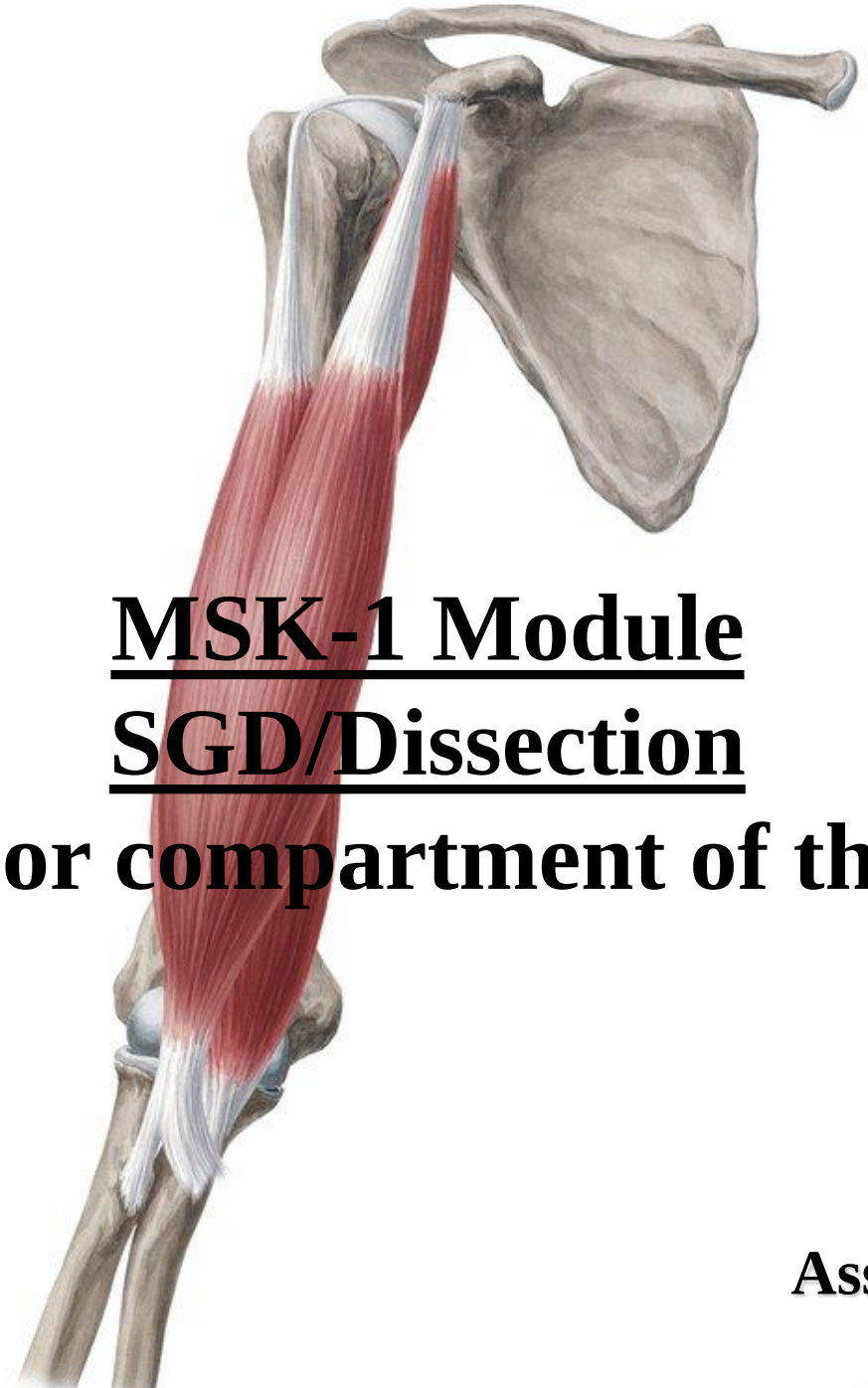
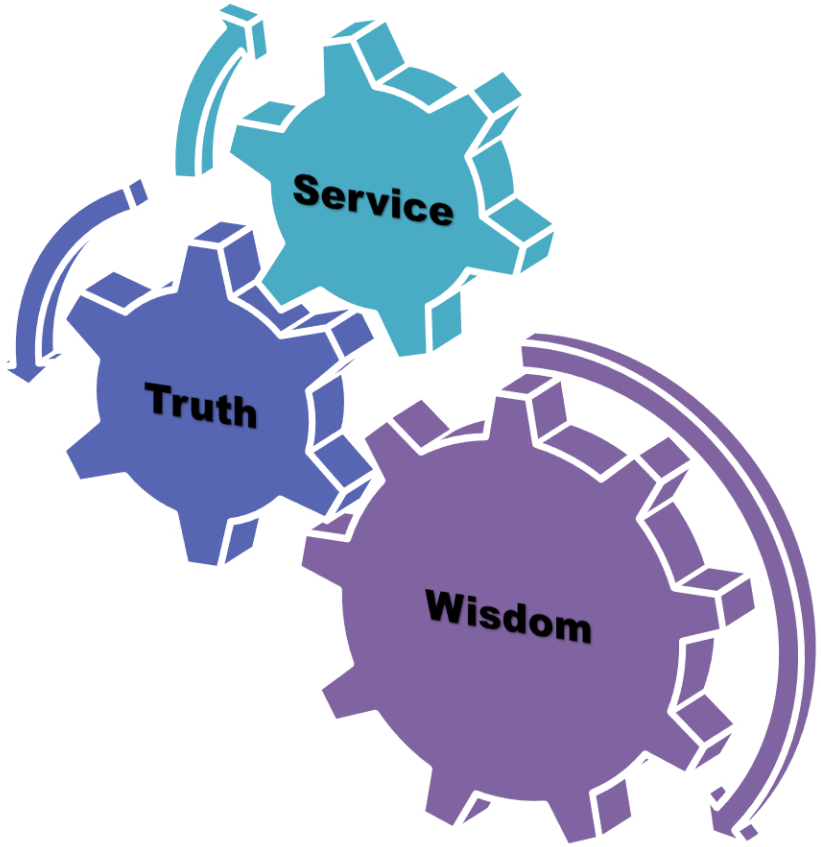


MSK-1 Module
SGD/Dissection
Extensor compartment of the Arm

Dr. Tayyaba Qureshi
Assistant Professor of Anatomy

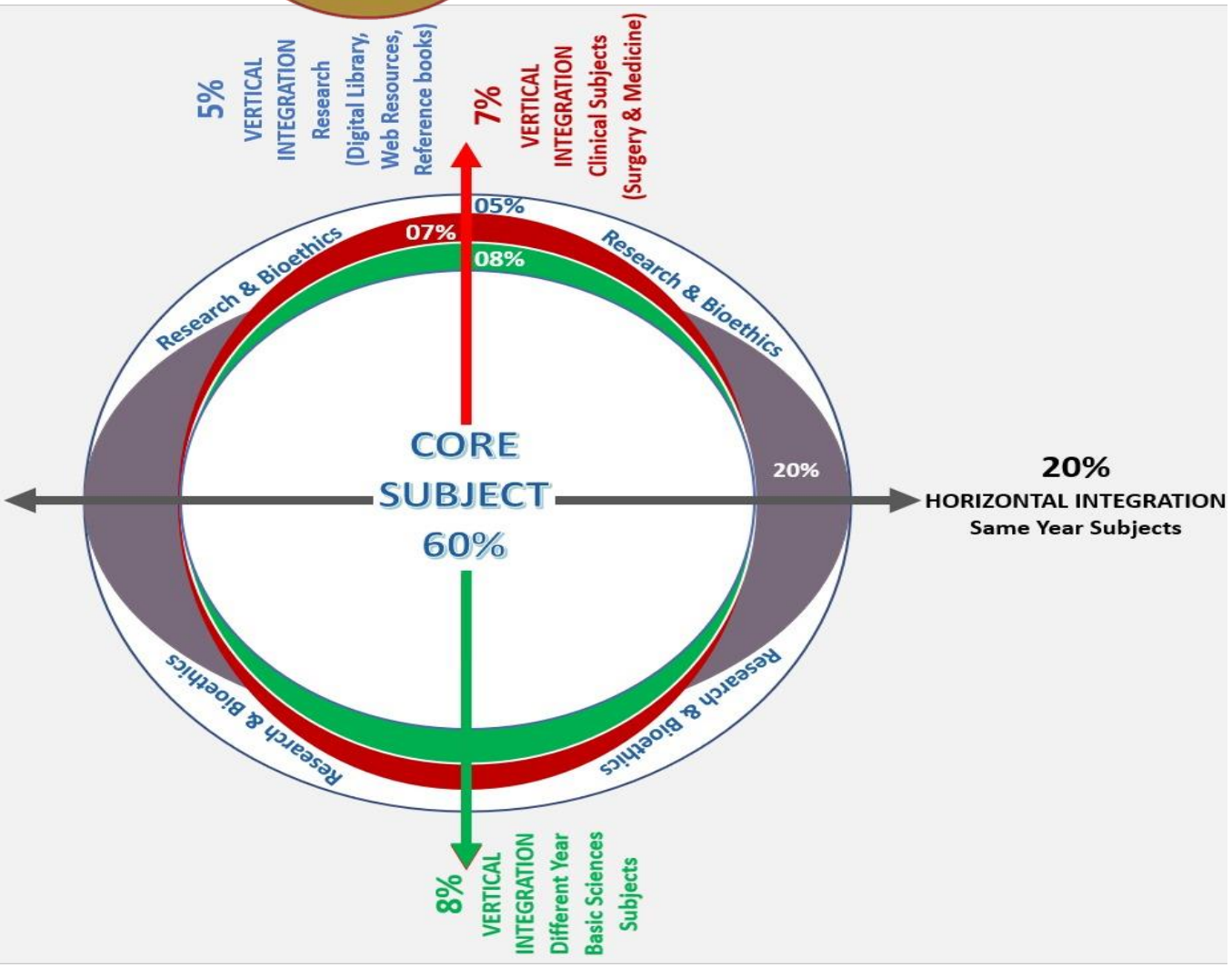
Date: 16/04/25

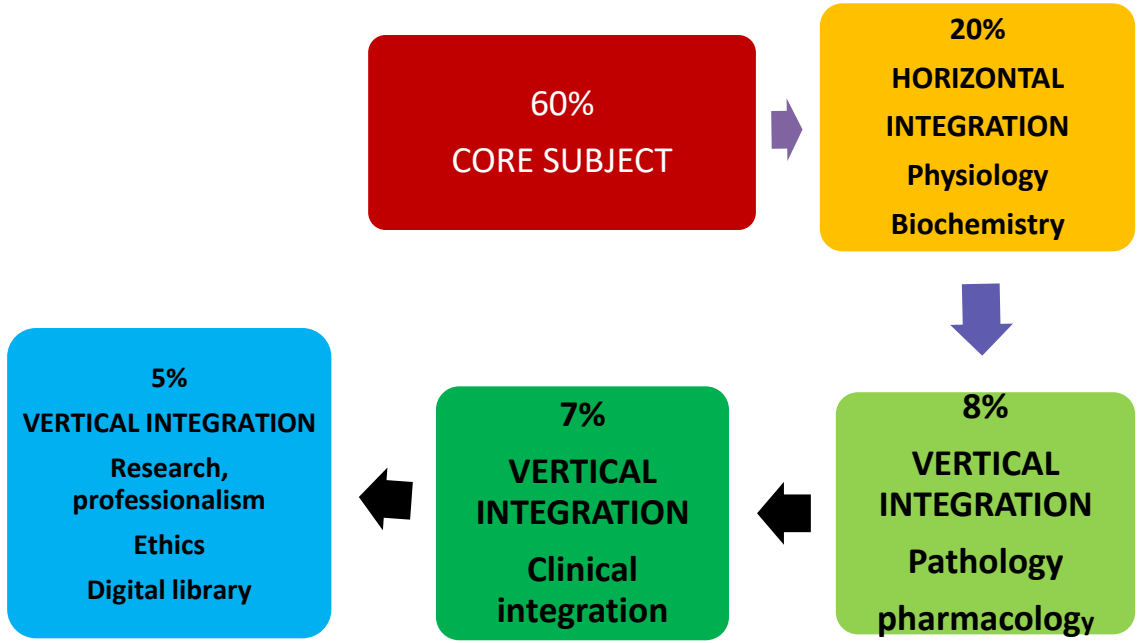
Mission- Vision- Values



- To impart evidence-based research oriented medical education
- To provide best possible patient care
- To inculcate the values of mutual respect and ethical practice of medicine

Professor Umar Model of Integrated Lecture





4

Learning Objectives

At the end of the Demonstration Student should be able to

- Tabulate **Muscles** of extensor compartment of arm with origin, insertion, nerve supply and actions
- Describe the **neurovascular organization**
- Discuss consequences of **injury to radial nerve** (wrist drop), venipuncture in cubital fossa)
- Understand the **curative** and **preventive health care** measures.
- Practice principles of **bioethics**
- Apply strategic use of **artificial intelligence** in healthcare
- Read a relevant **research article**

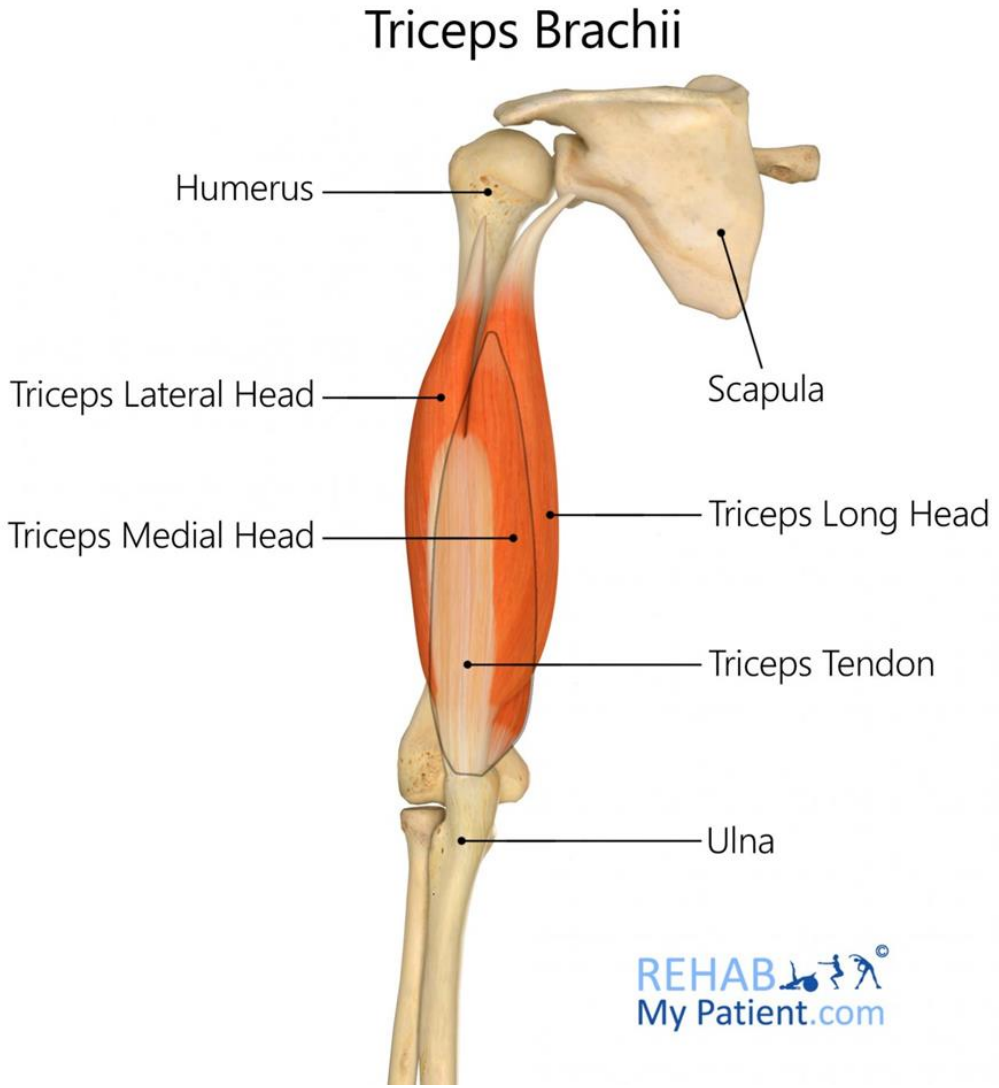
Case Study

A 65-year old woman presented to you in emergency department with the history of falling onto her left side and direct blow to the left pectoral region . She complains of severe pain in her left shoulder and inability to move her left arm. On Examination she has left shoulder joint swelling and shoulder contour deformity with pain on movement and weakness in extending forearm , wrist and fingers. There was diffuse paresthesia over the dorsum of hand .

What injury is causing this deformity ?

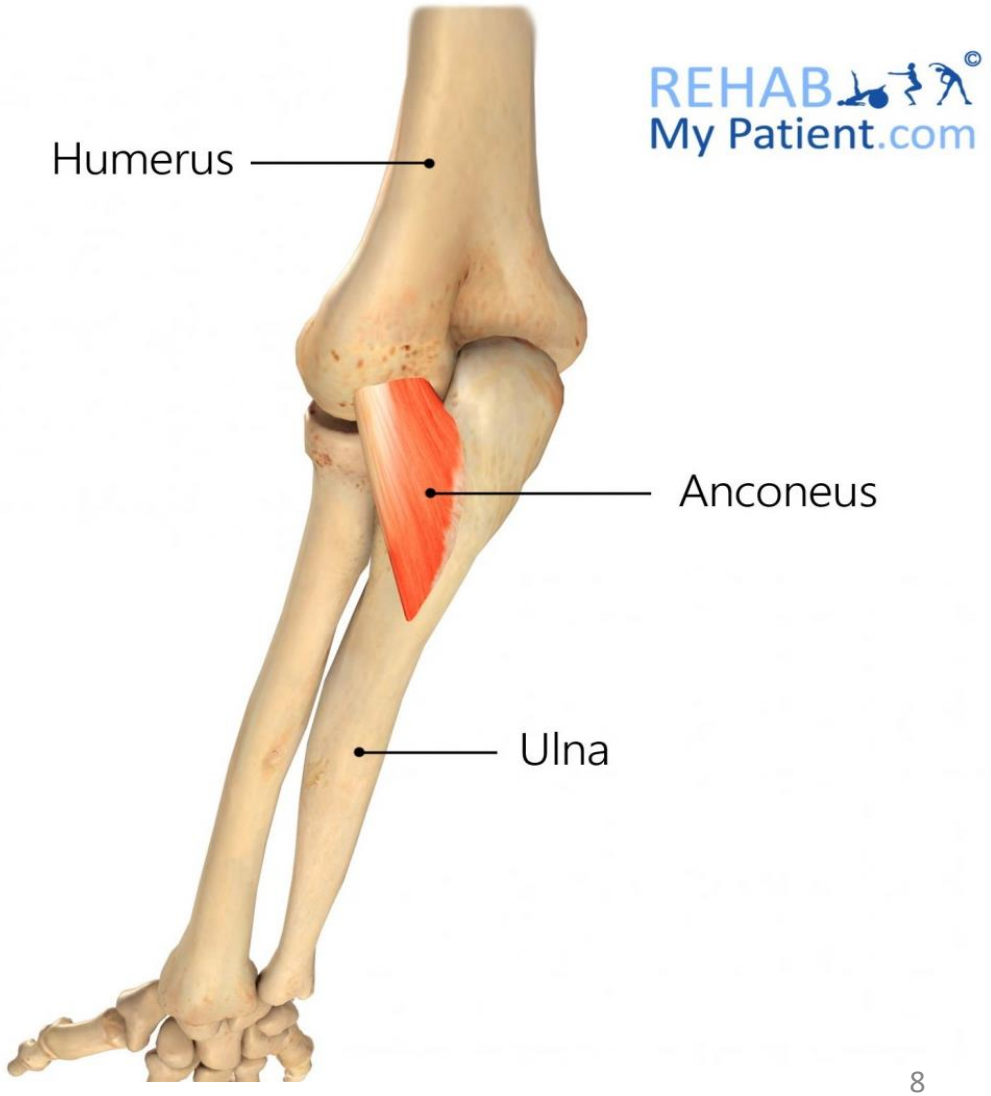
Triceps Brachii

- Large fusiform muscle
- **Long Head** helps stabilize the adducted glenohumeral joint by serving as a **shunt muscle**
- **Medial head** is the workhorse of forearm extension
- **Lateral head** is strongest but is recruited into activity primarily against resistance



Anconeus

- The anconeus is a small, triangula muscle on the posterolateral aspec of the elbow.
- Partially blended with the triceps

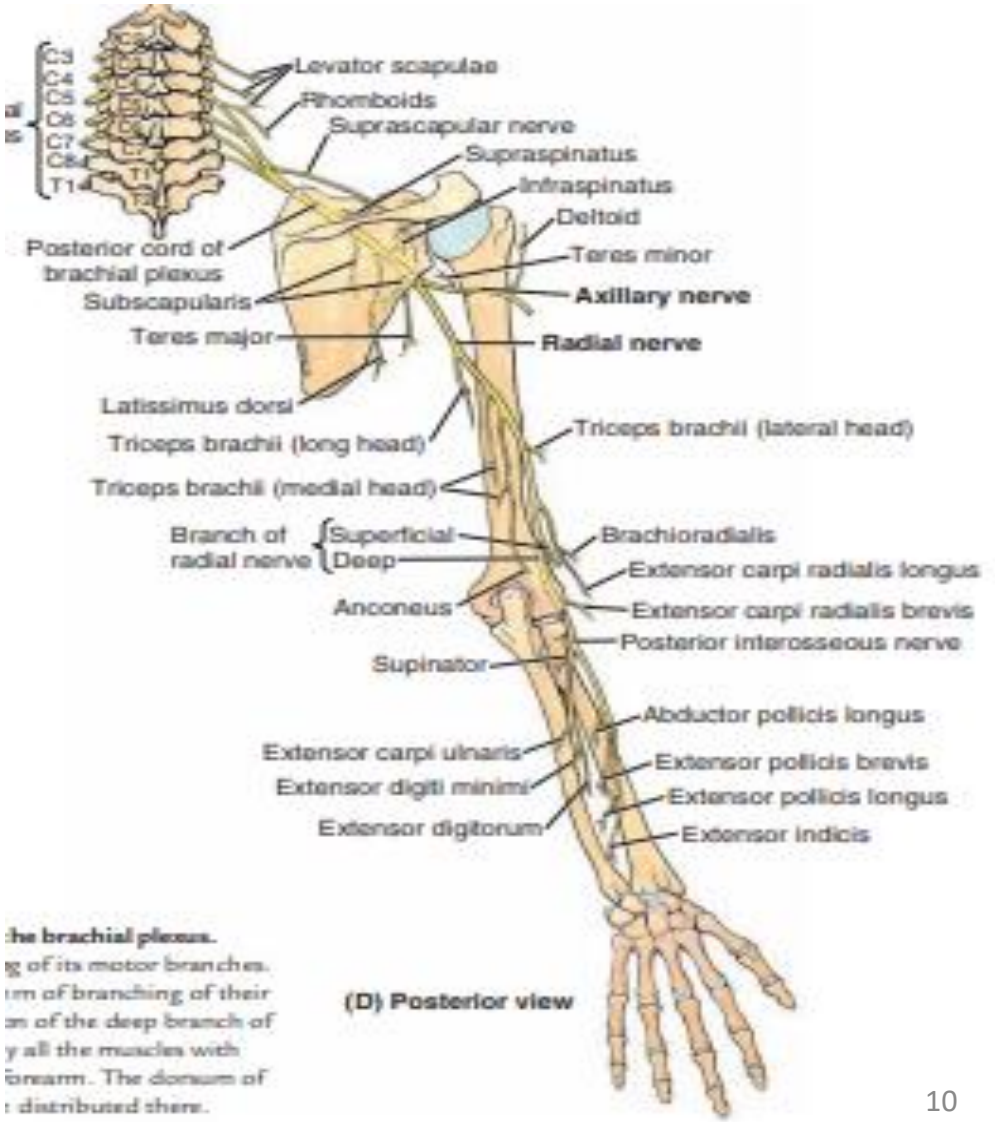


Muscles of Extensor compartment of Arm

Muscle	Proximal Attachment	Distal Attachment	Nerve Supply	Action
Triceps	**Long head**: infraglenoid tubercle of scapula **Lateral head**: posterior surface of humerus, superior to radial groove **Medial head**: posterior surface of humerus, inferior to radial groove	Proximal end of olecranon of ulna and fascia of forearm	Radial Nerve	Chief extensor of forearm; long head resists dislocation of humerus;
Anconeus	Lateral epicondyle of humerus	Lateral surface of olecranon and superior part of posterior surface of ulna	Radial Nerve	Assists triceps in extending forearm; stabilizes elbow joint; may abduct ulna during pronation

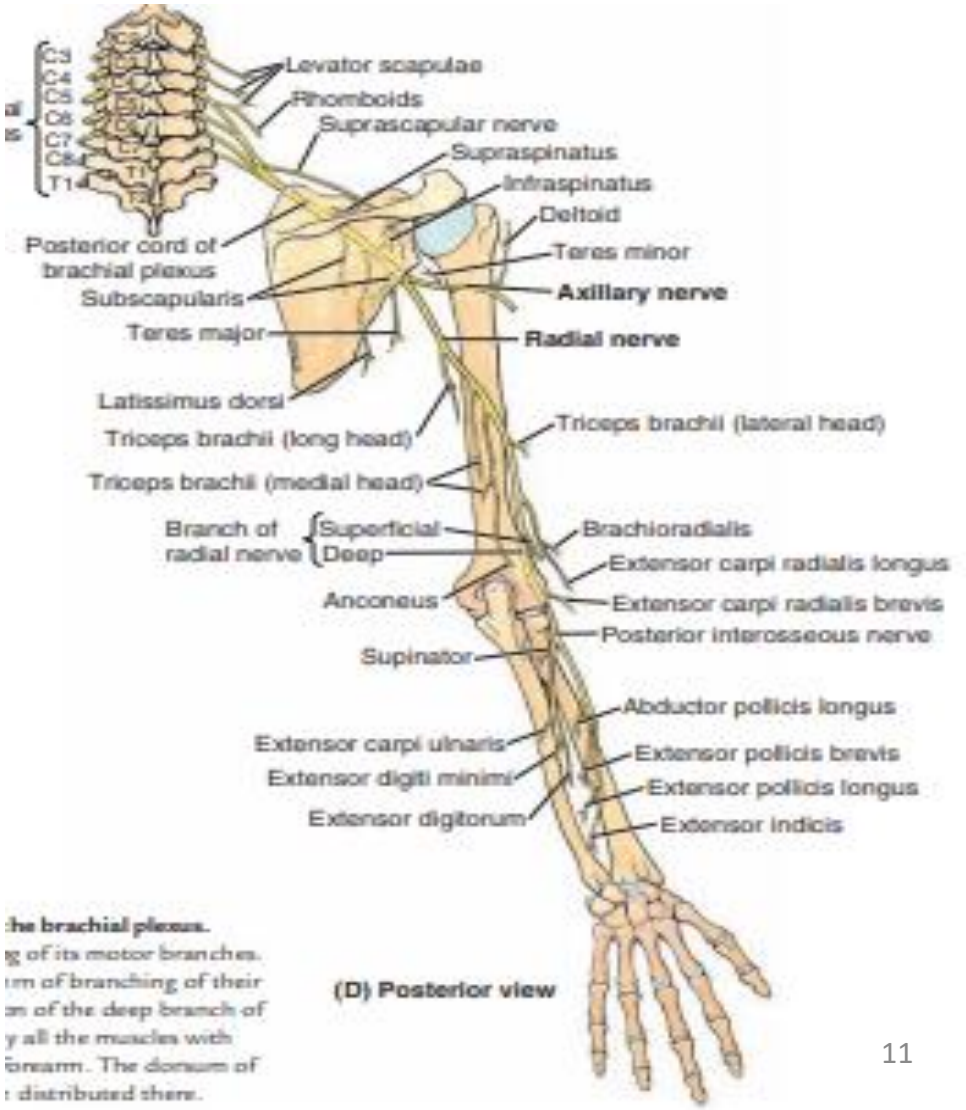
Radial Nerve

- Innervates the muscles in the posterior compartment of the arm (and forearm)
- Larger terminal branch of **posterior cord** (C5-T1)
- The radial nerve enters the arm posterior to the brachial artery, medial to the humerus, and anterior to the long head of the triceps, where it gives branches to the long and medial heads of the triceps.



Radial Nerve

- Passes around the humeral shaft in the radial groove
- At lateral border of the humerus, pierces the lateral intermuscular septum, runs inferiorly in the anterior compartment of the arm to the level of the **lateral epicondyle of the humerus.**
- Anterior to the lateral epicondyle, the radial nerve then divides into **Deep and Superficial branches.**



Core knowledge

Blood Supply of Extensor Compartment

- **Profunda Brachii artery**

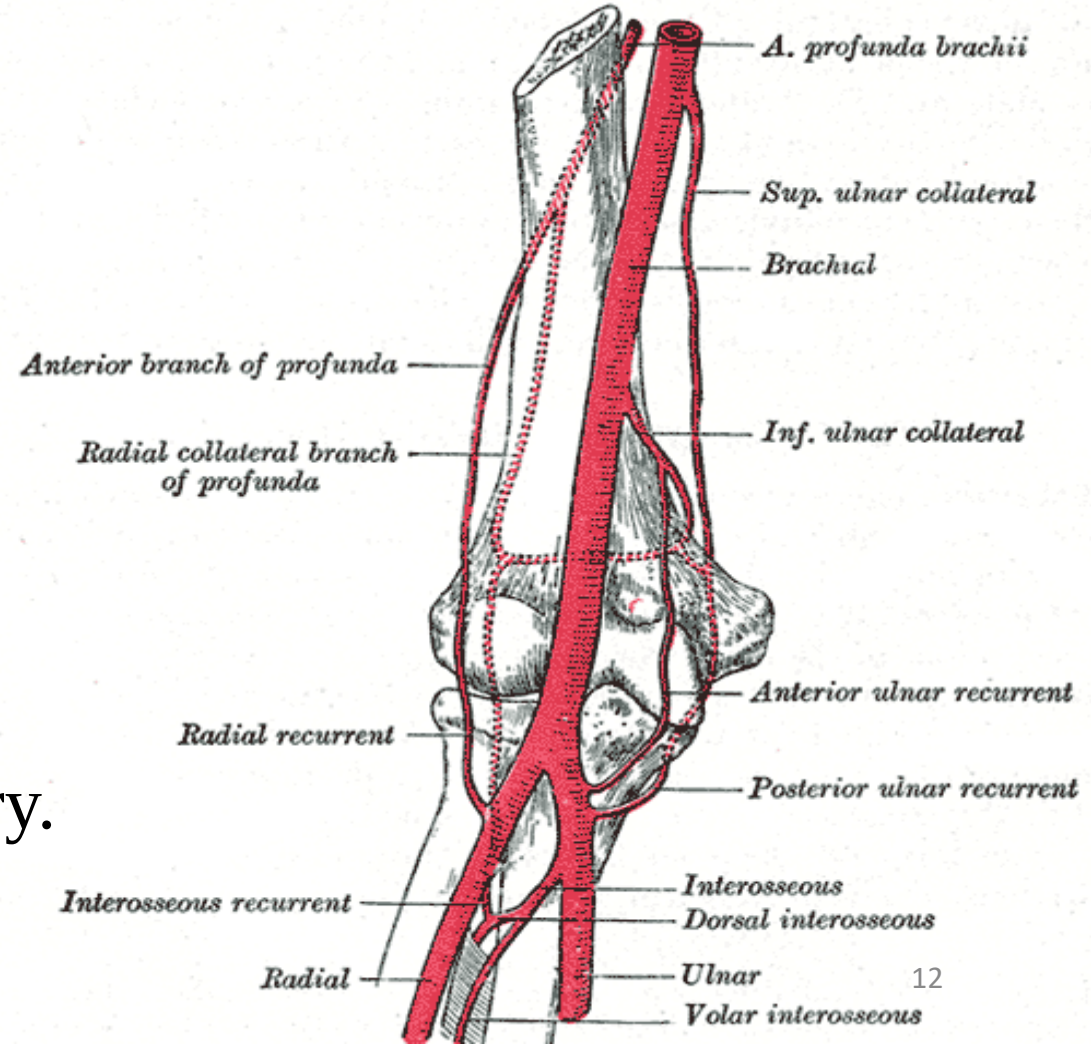
The deep artery terminates by dividing into middle and radial collateral arteries, which participate in the periarticular arterial anastomoses around the elbow

- **Blood supply of Anconeus**

➢ Recurrent posterior interosseus artery

➢ Medial collateral artery

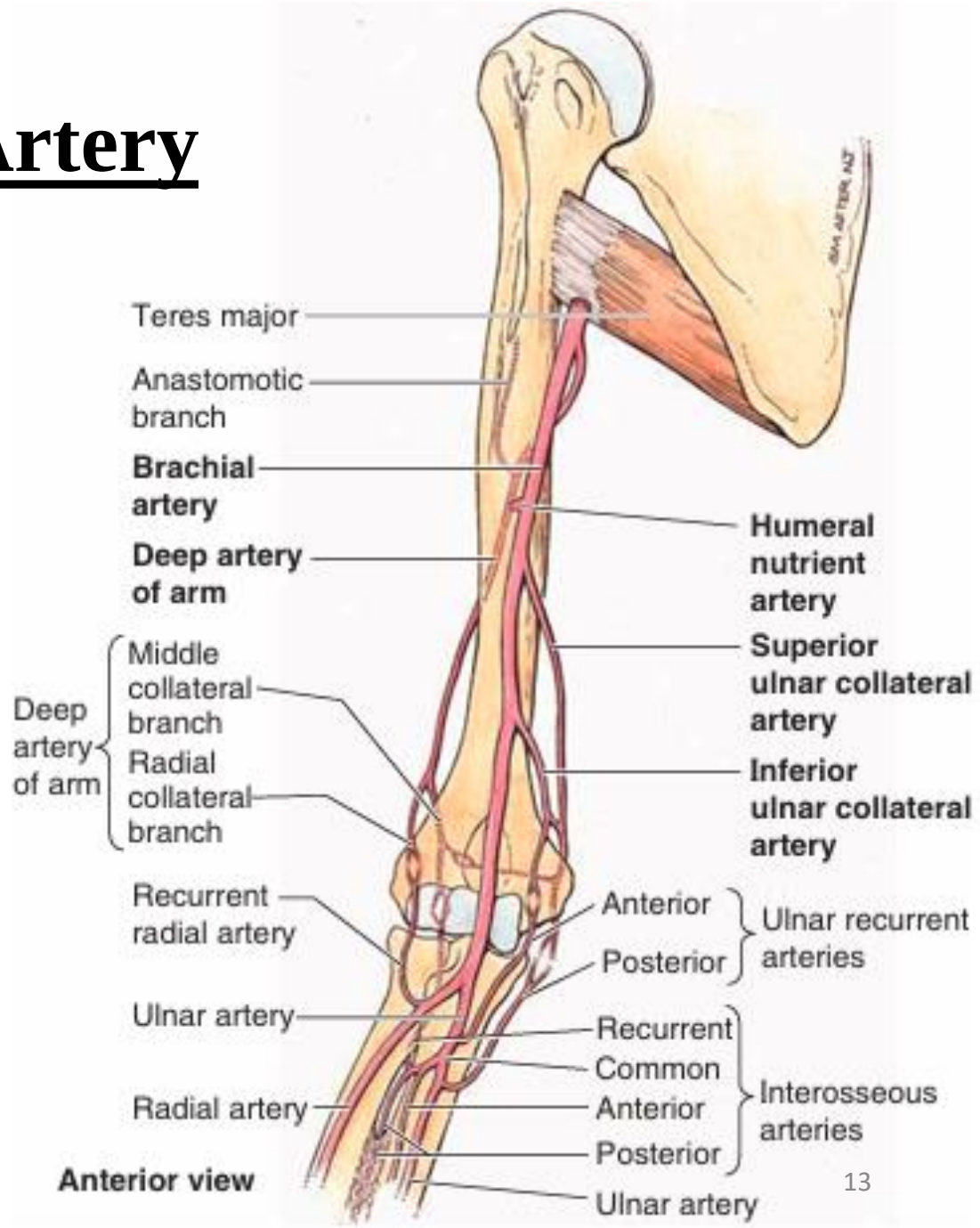
➢ Posterior branch of the radial collateral artery.



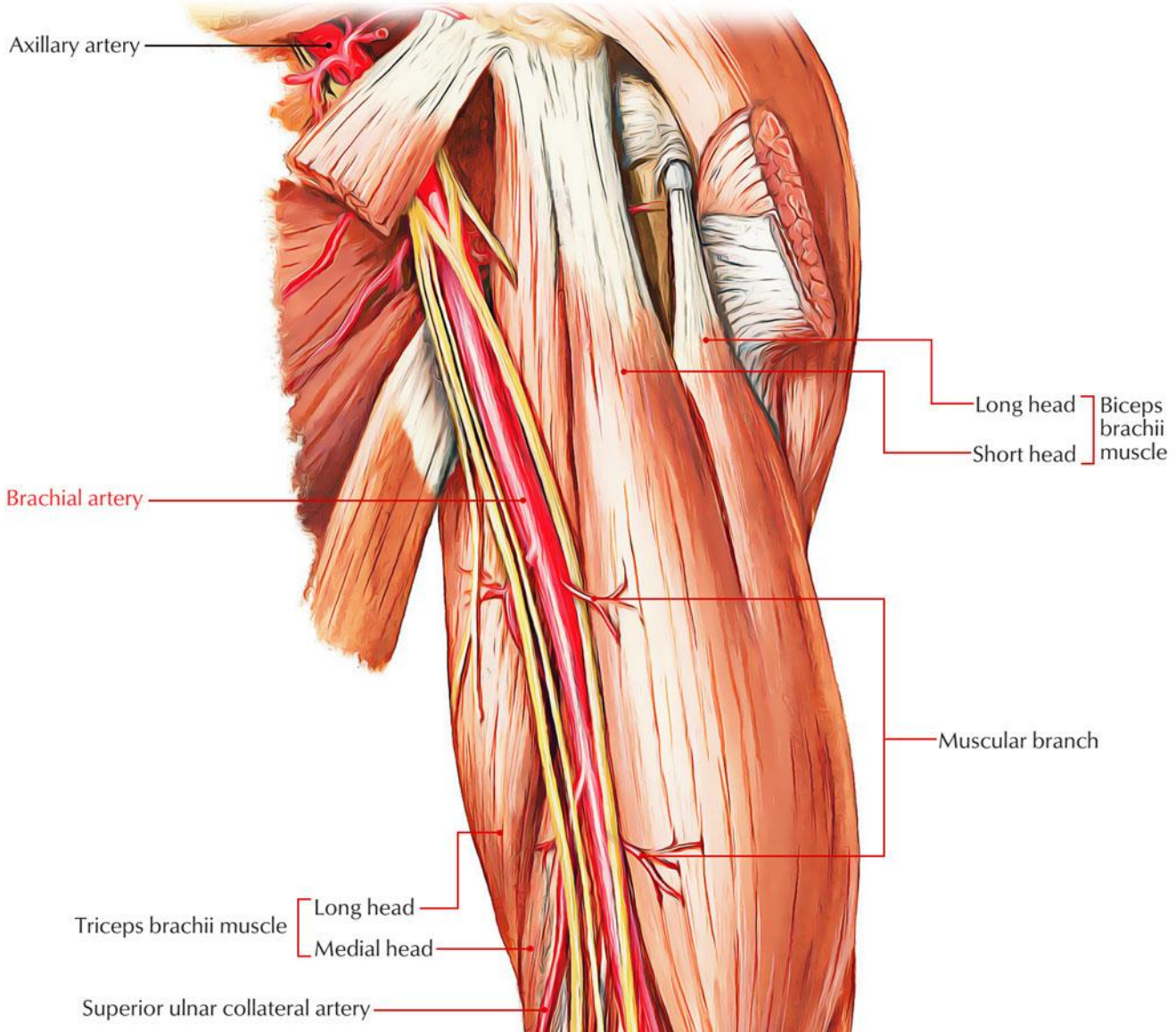
Brachial Artery

Begins at the inferior border of the teres major and ends in the cubital fossa

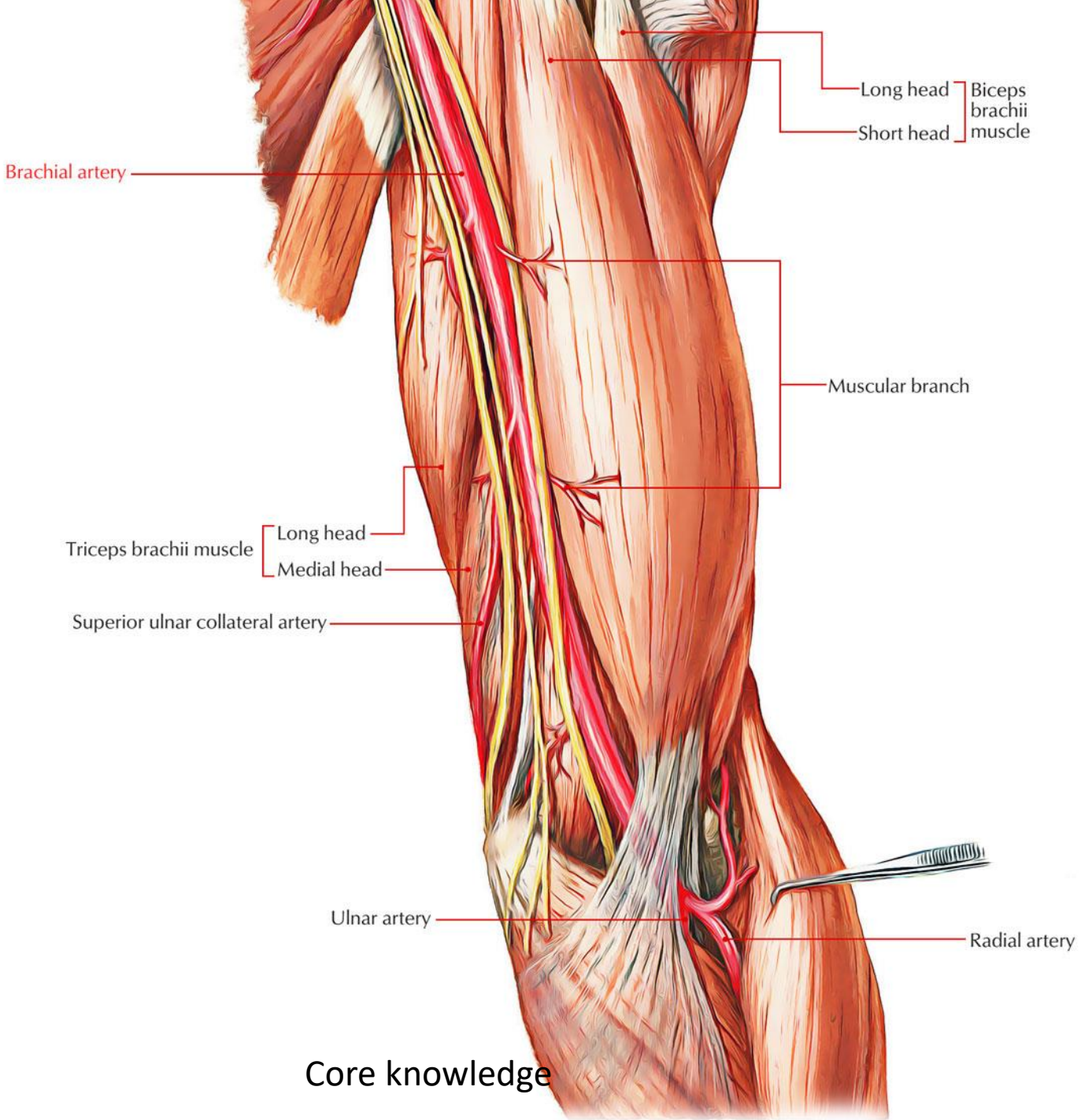
- Profunda Brachii Artery
- Superior Ulnar Collateral Artery
- Inferior Ulnar Collateral Artery
- Ulnar Artery
- Radial Artery



Brachial Artery

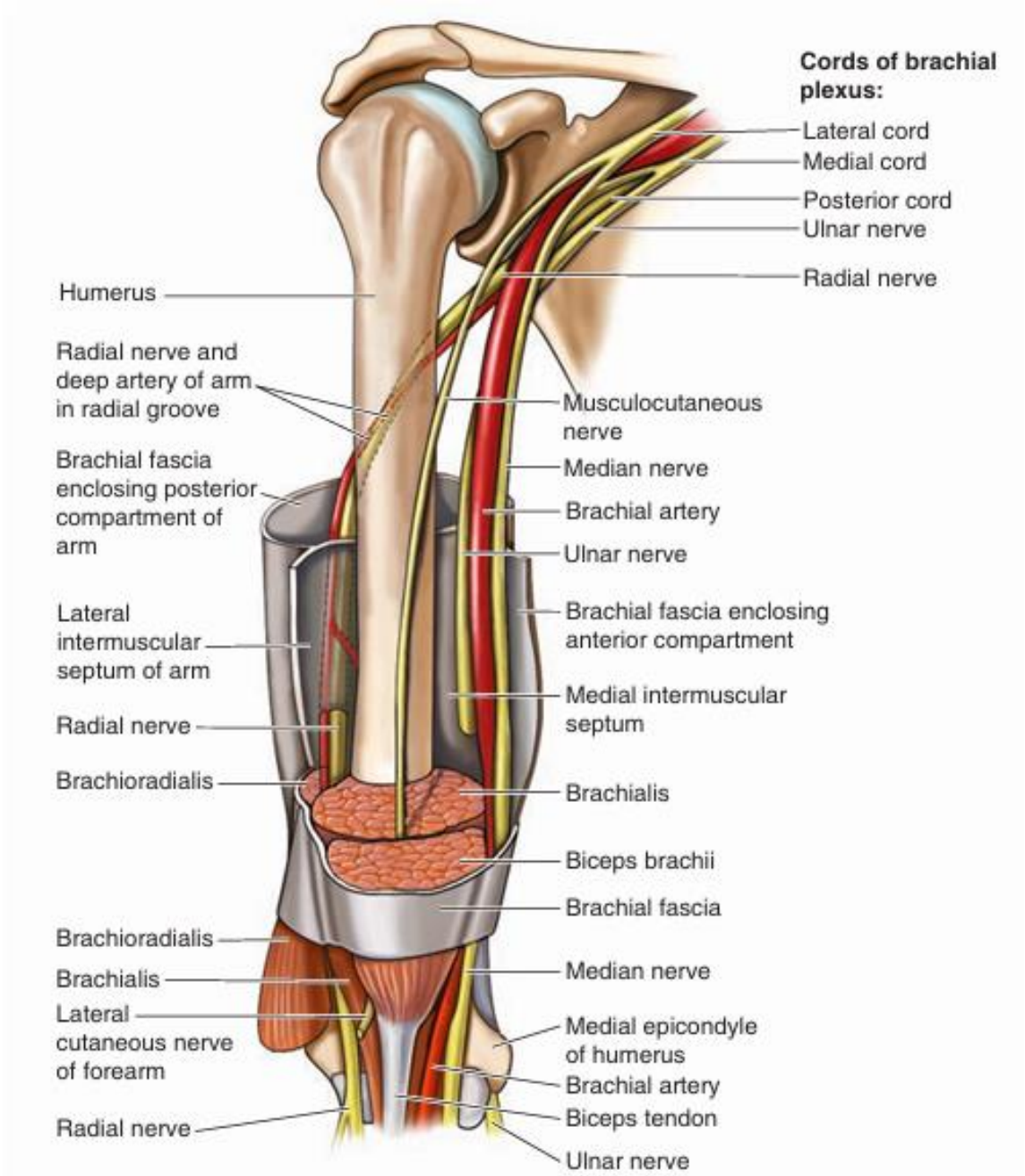


Core knowledge



Core knowledge

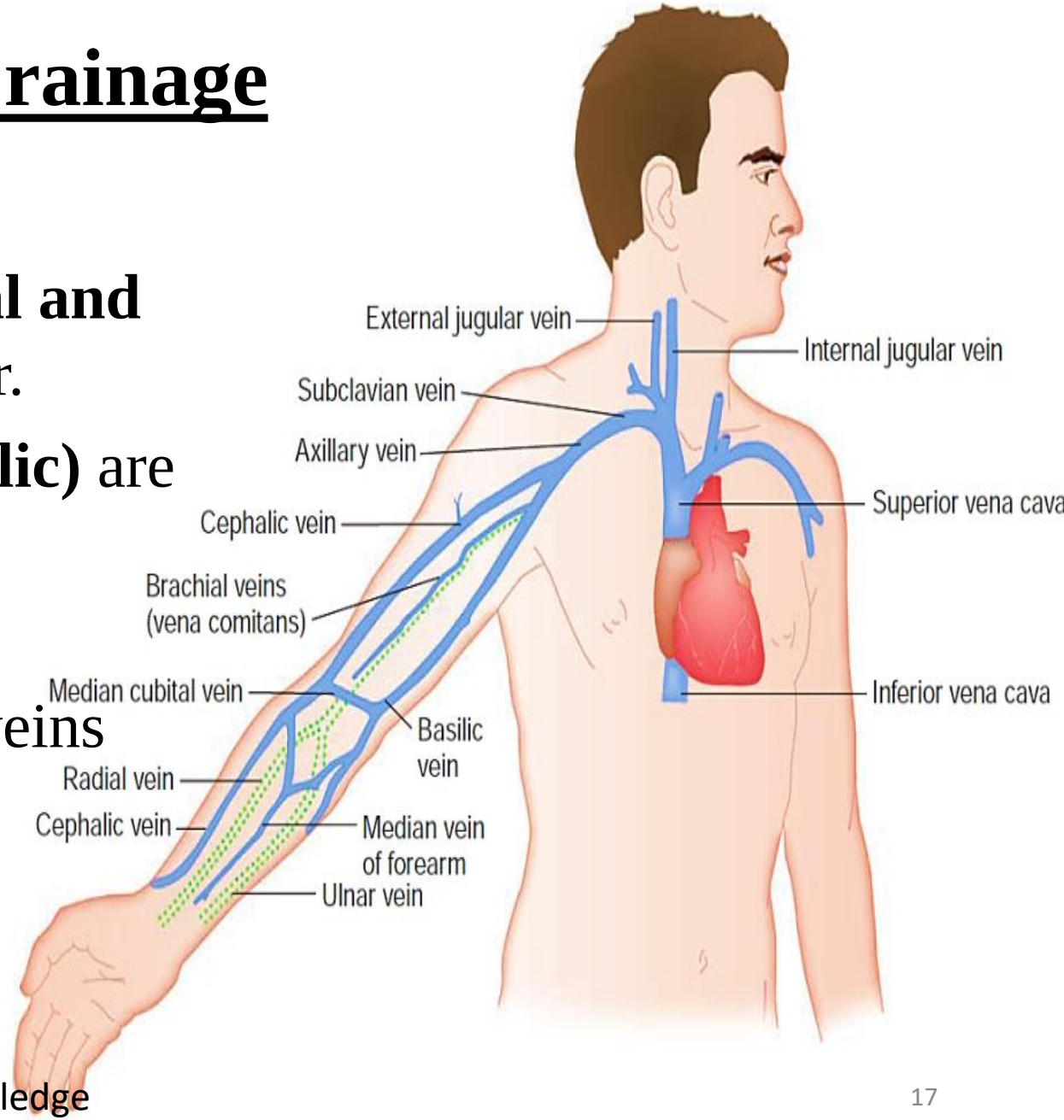
Relations



Core knowledge

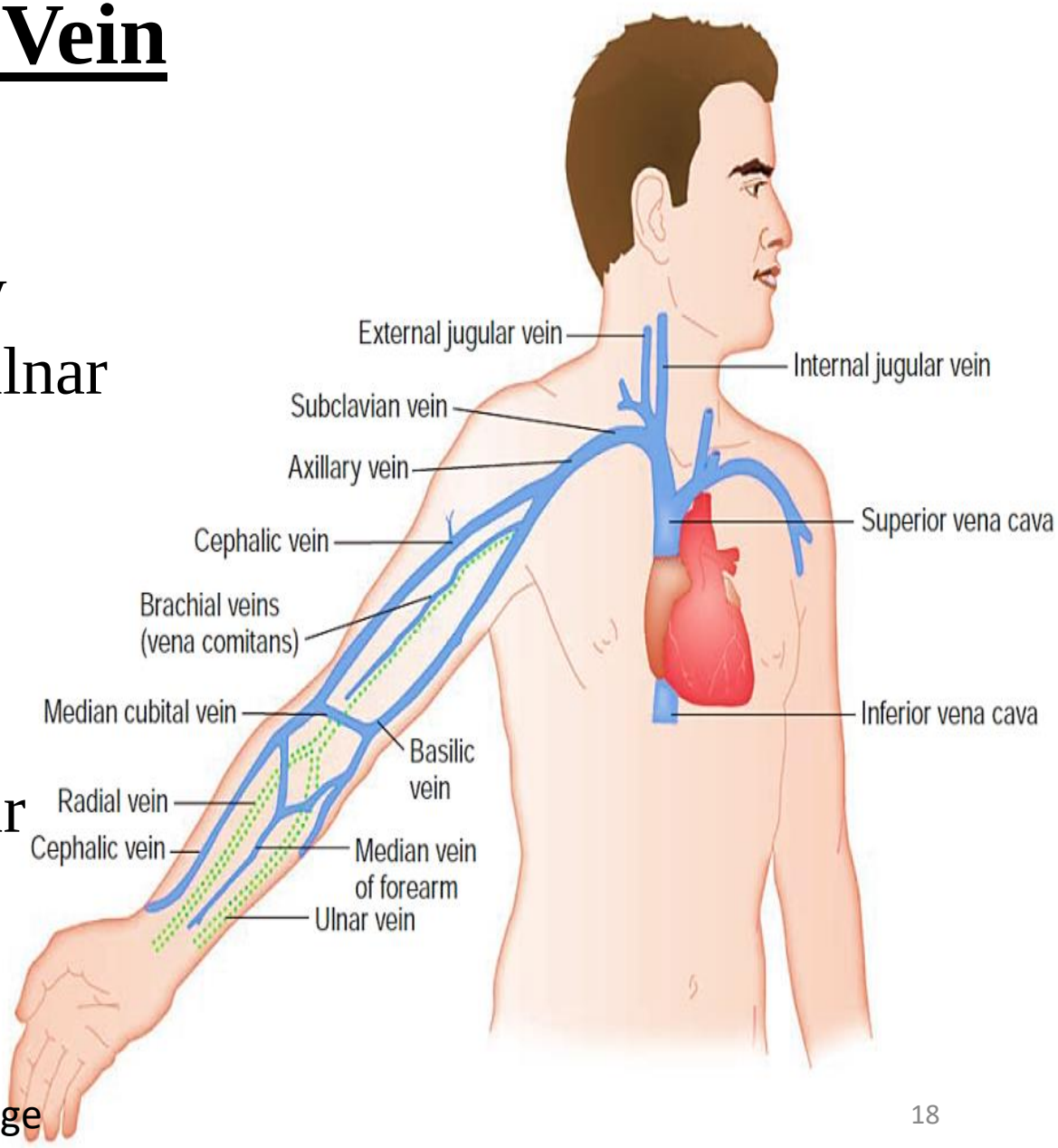
Venous Drainage

- Two sets of veins of the arm, **superficial and deep,** anastomose freely with each other.
- The superficial veins **(Cephalic & Basilic)** are in the subcutaneous tissue.
- The deep veins accompany the arteries.
- Valves are more numerous in the deep veins than in the superficial veins.

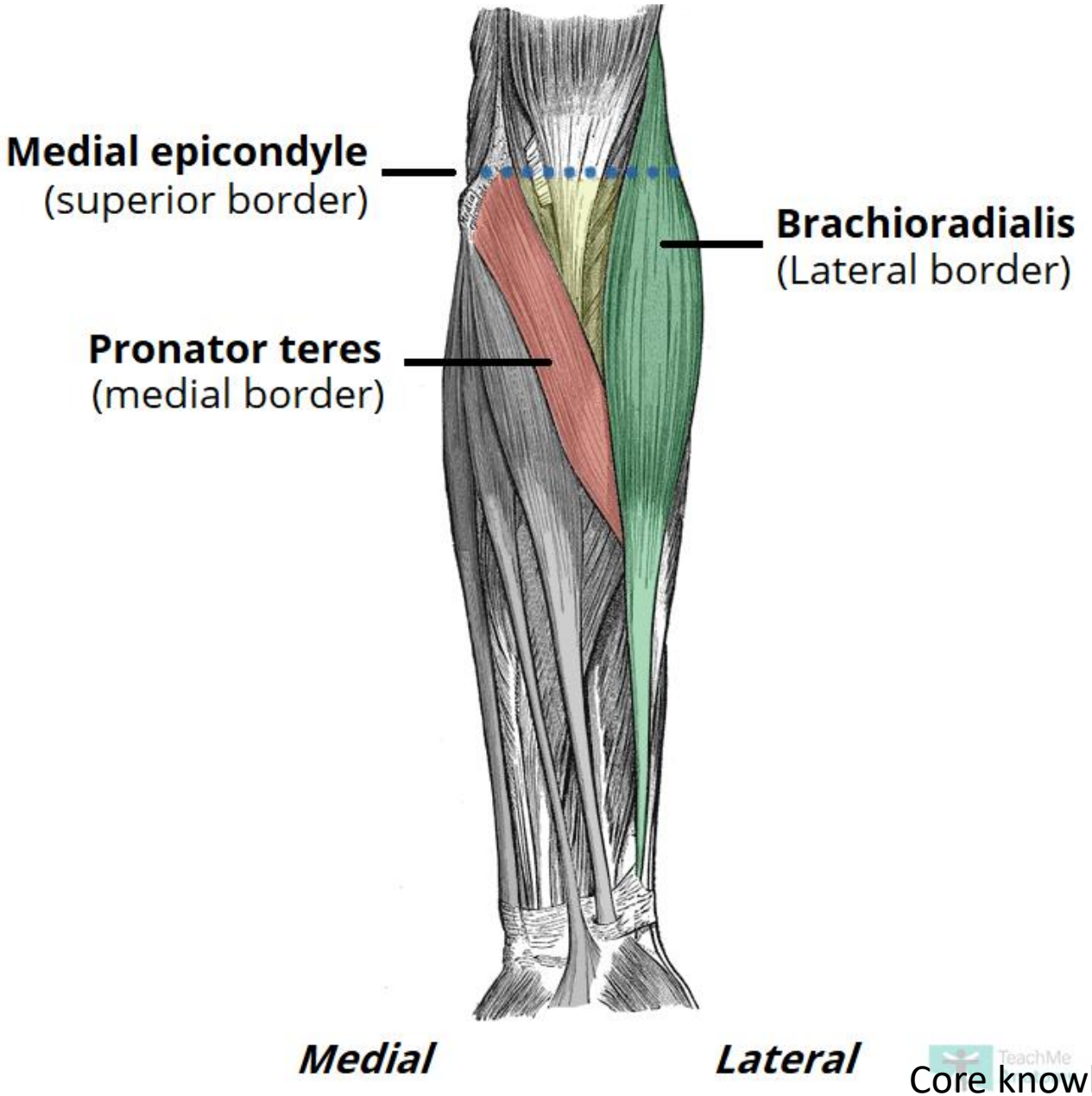


Brachial Vein

- The **brachial vein** begins at the elbow by union of the accompanying veins of the ulnar and radial arteries
- Ends by merging with the basilic vein to form the **axillary vein**
- Not uncommonly, the deep veins join to form one brachial vein during part of their course.

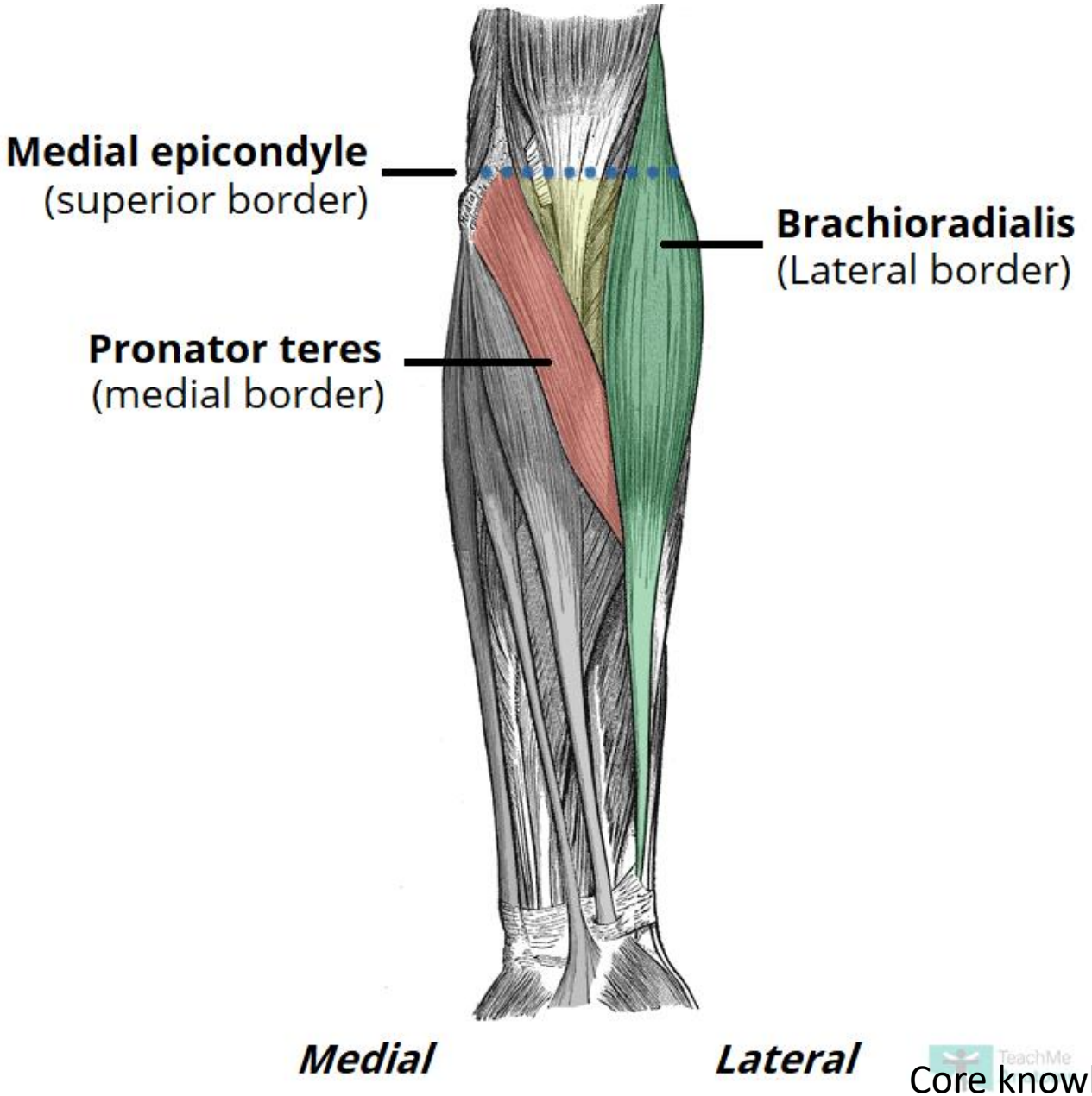


Cubital Fossa

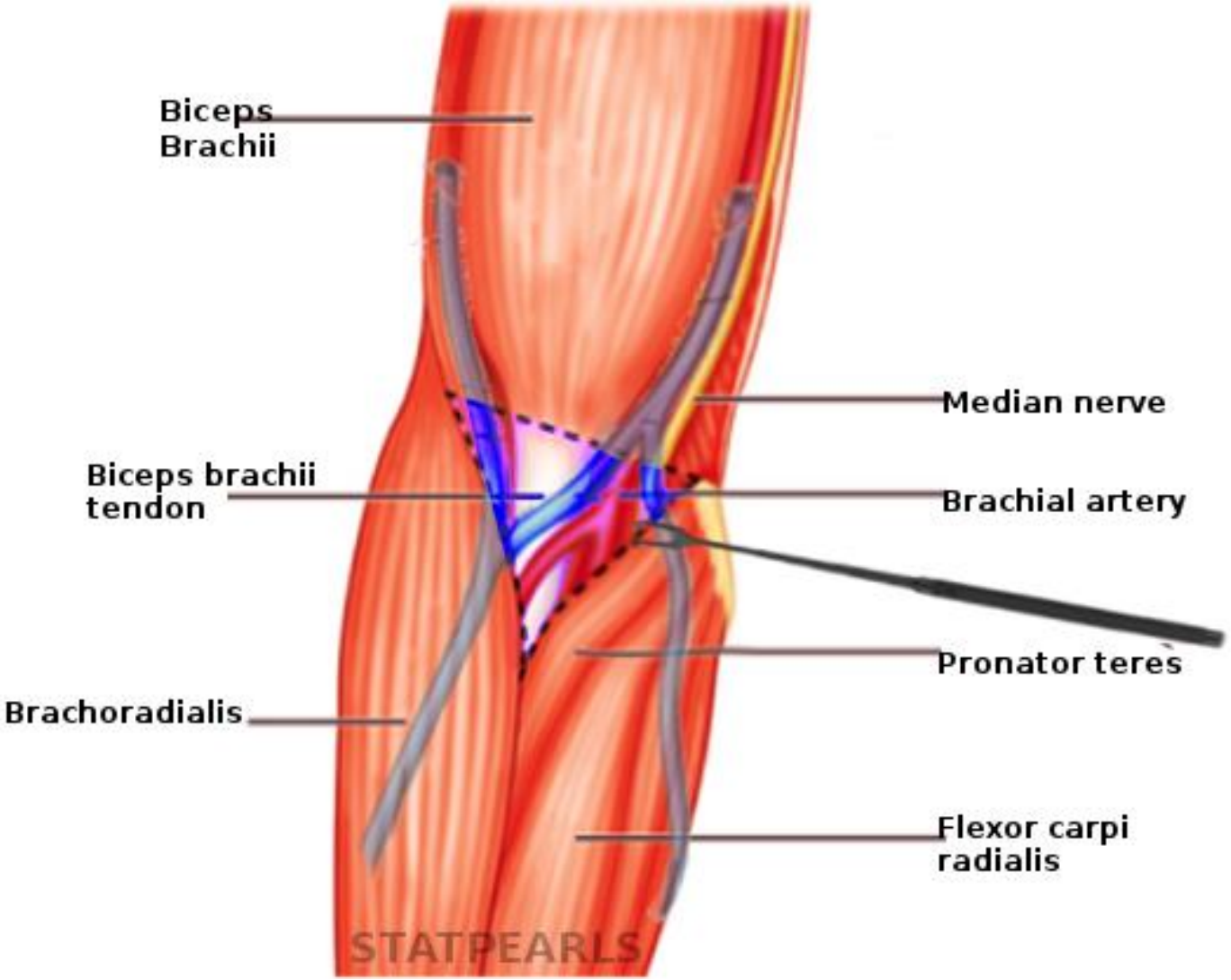


- The triangular cubital fossa is bound by a line connecting the medial and lateral epicondyles of the humerus , **pronator teres** and **brachioradialis** muscles arising, respectively, from the epicondyles.
- Floor- **brachialis and supinator**
- Roof- brachial and antebrachial (deep) fascia reinforced by the bicipital aponeurosis

Boundaries



- **Superiorly-** an imaginary line connecting the medial and lateral epicondyles.
- **Medially-** common flexor muscles on the medial epicondyle, the pronator teres.
- **Laterally-** the mass of extensor muscles of the forearm arising from the lateral epicondyle and supraepicondylar ridge, the brachioradialis.



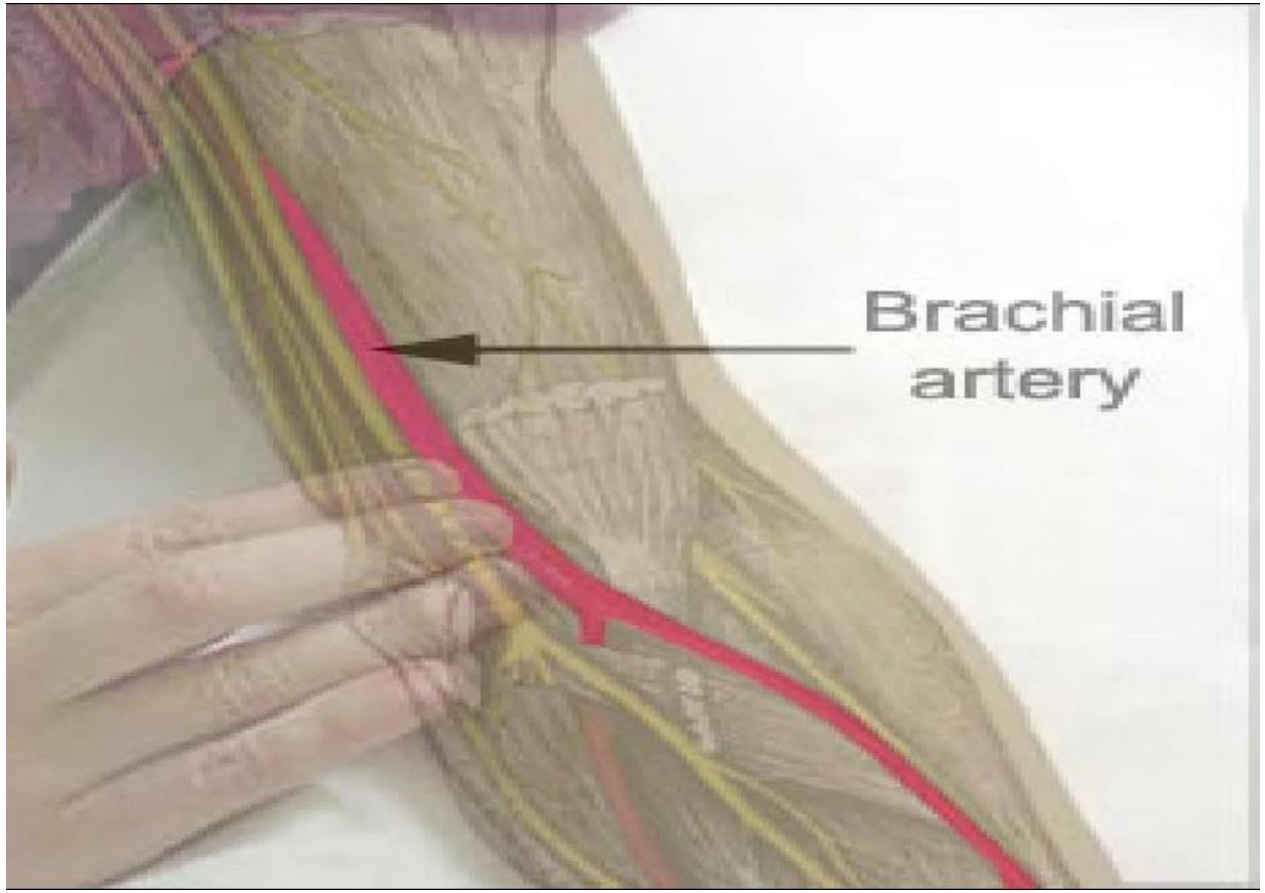
Contents

- Terminal part of the brachial artery and its terminal branches, the radial and ulnar arteries. The brachial artery lies between the biceps tendon and the median nerve.
- (Deep) accompanying veins of the arteries
- Biceps brachii tendon
- Median nerve
- Radial nerve

Core knowledge

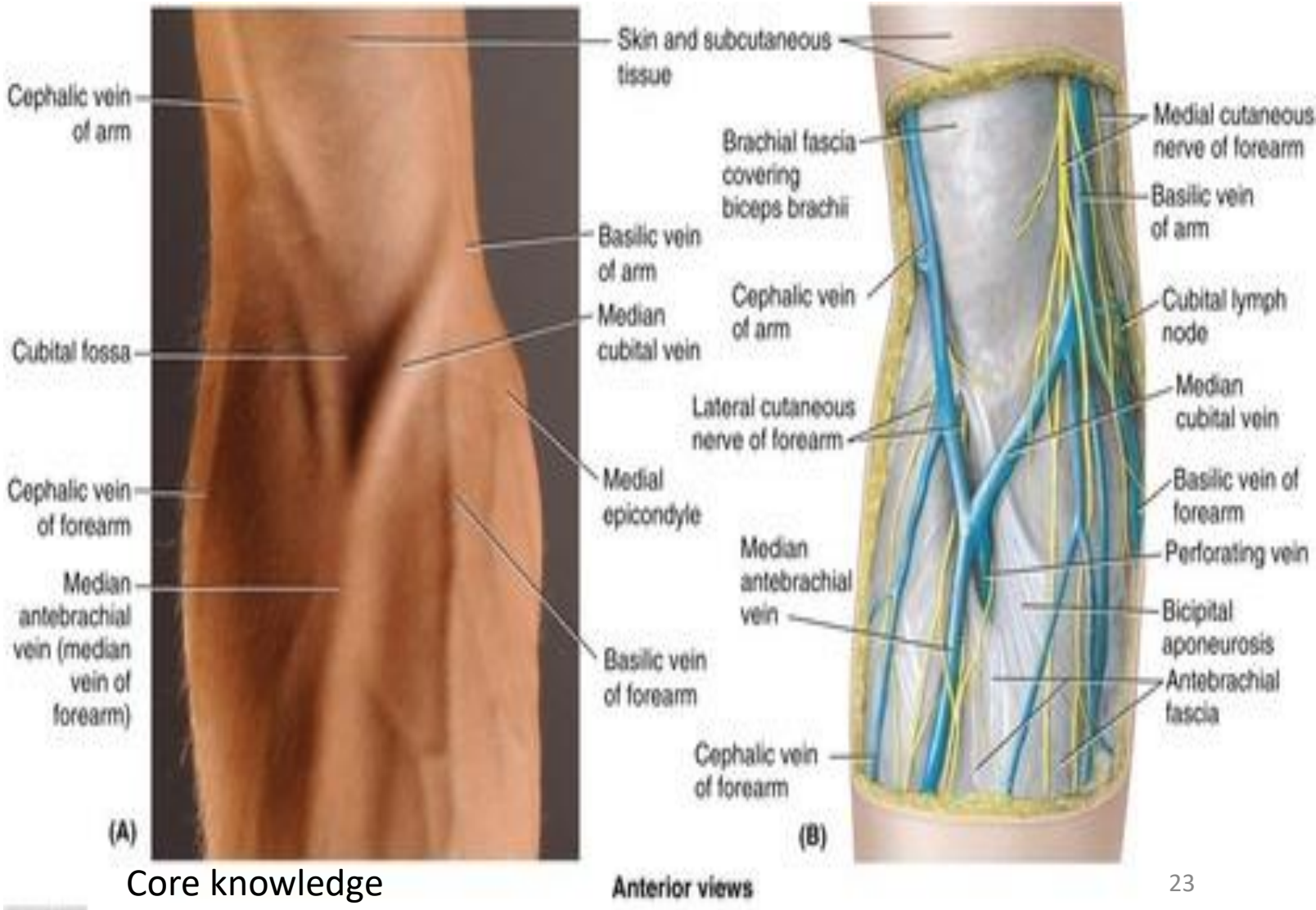
Surface Anatomy

- **The brachial artery** can be felt in front of the elbow joint just medial to the tendon of the biceps brachii. Brachial pulsations are used for recording the blood pressure
- The tendon of the biceps can be felt in front of the elbow. The tendon is a guide to the brachial artery which lies on its medial side.



Surface Anatomy

- **The superficial cubital veins** can be made more prominent by applying tight pressure round the arm and then contracting the forearm muscles by clenching and releasing the fist a few times.



Core knowledge

Vertical Integration

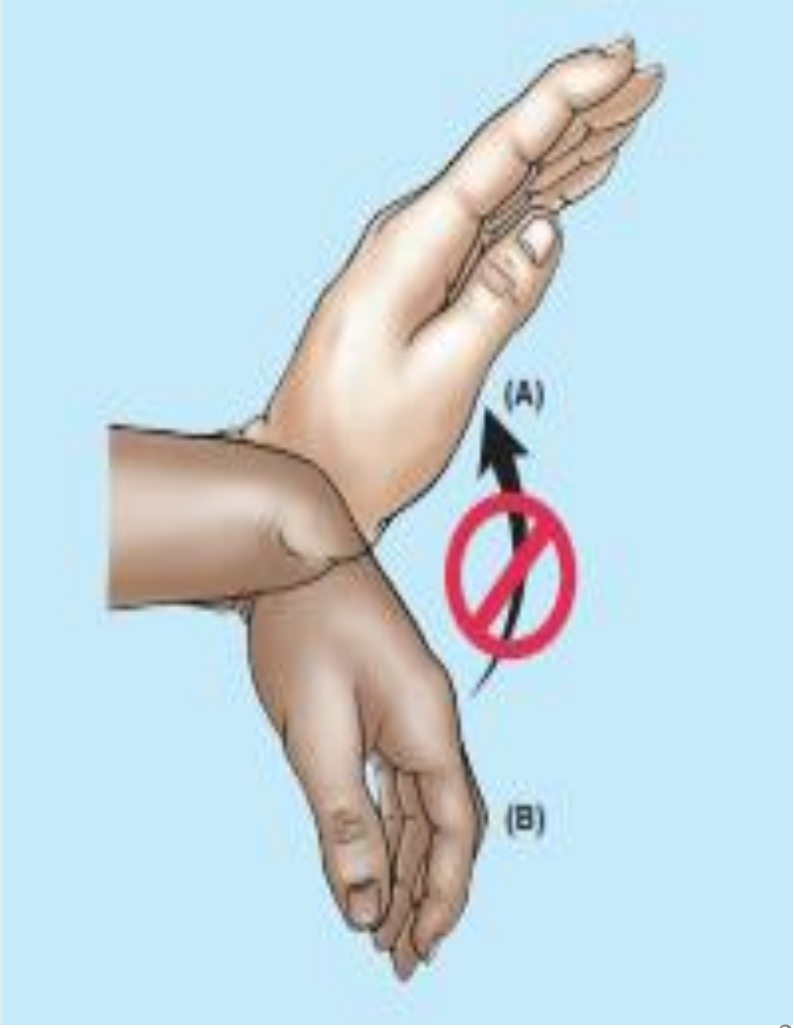
Case study

65 year old woman presented to you in emergency department with the history of falling onto her left side and direct blow to the left pectoral region . She complains of severe pain in her left shoulder and inability to move her left arm. On Examination she has left shoulder joint swelling and shoulder contour deformity with pain on movement and weakness in extending forearm , wrist and fingers. There was diffuse paresthesia over the dorsum of hand .

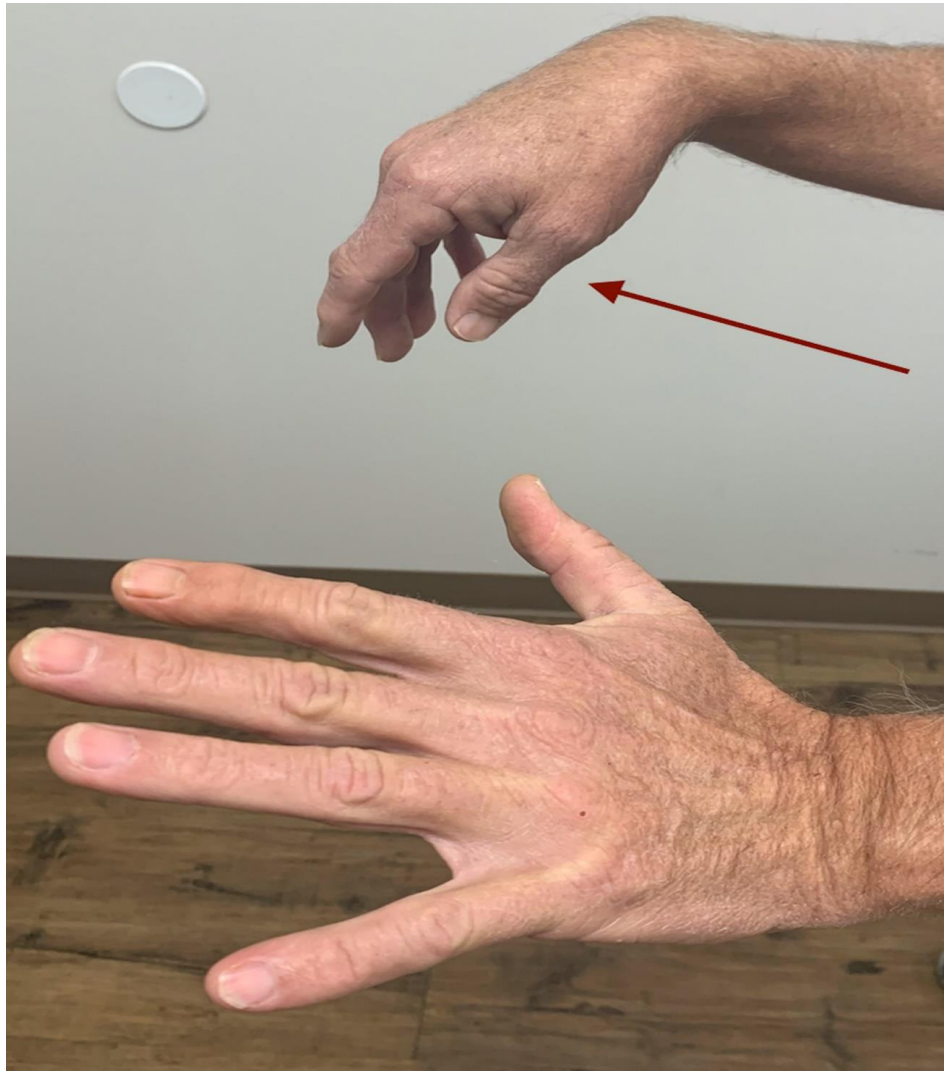
What injury is causing this deformity ?

Injury to the Radial Nerve (KLM page no. 213)

- Injury to the radial nerve superior to the origin of its branches to the triceps brachii results in paralysis of the triceps, brachioradialis, supinator, and extensor muscles of the wrist and fingers. Loss of sensation in areas of skin supplied by this nerve also occurs
- The characteristic clinical sign of radial nerve injury is **wrist-drop**—inability to extend the wrist and the fingers at the metacarpophalangeal joints



Injury to the Radial Nerve



Vertical Integration

Venipuncture in Cubital Fossa
KLM page# 214

- The cubital fossa is the common site for sampling and transfusion of blood and intravenous injections because of easy accessibility
- When the most common pattern of superficial veins is present, the median cubital vein is selected

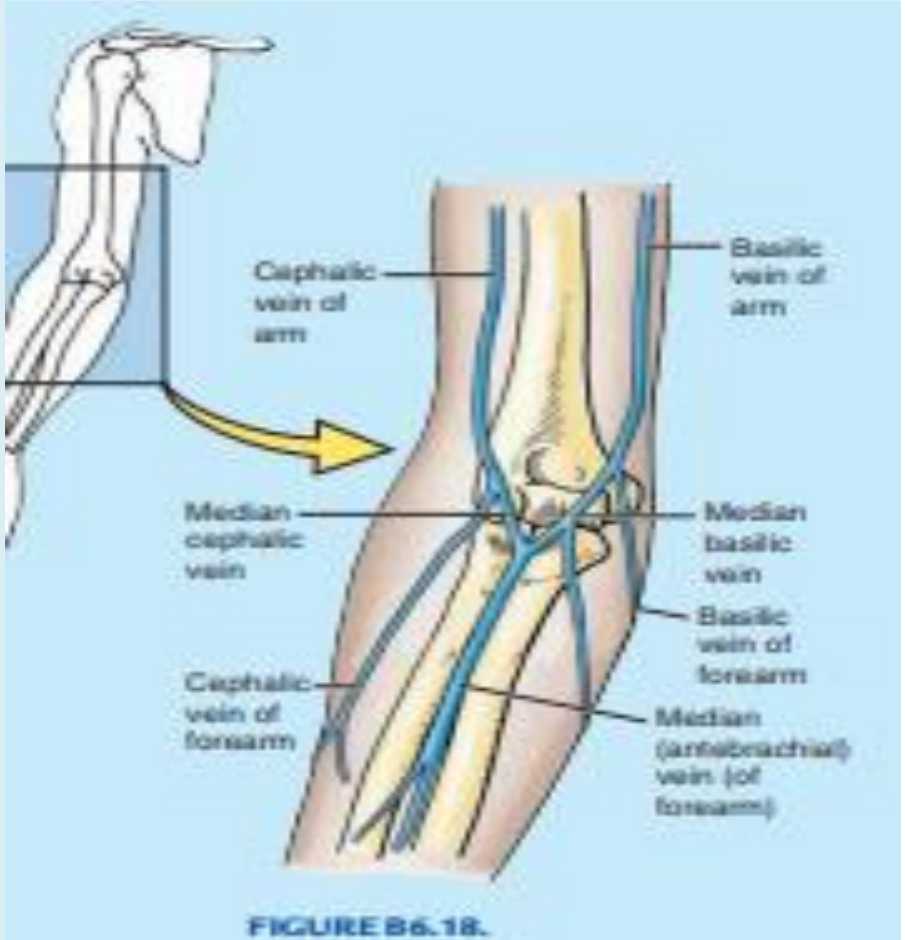
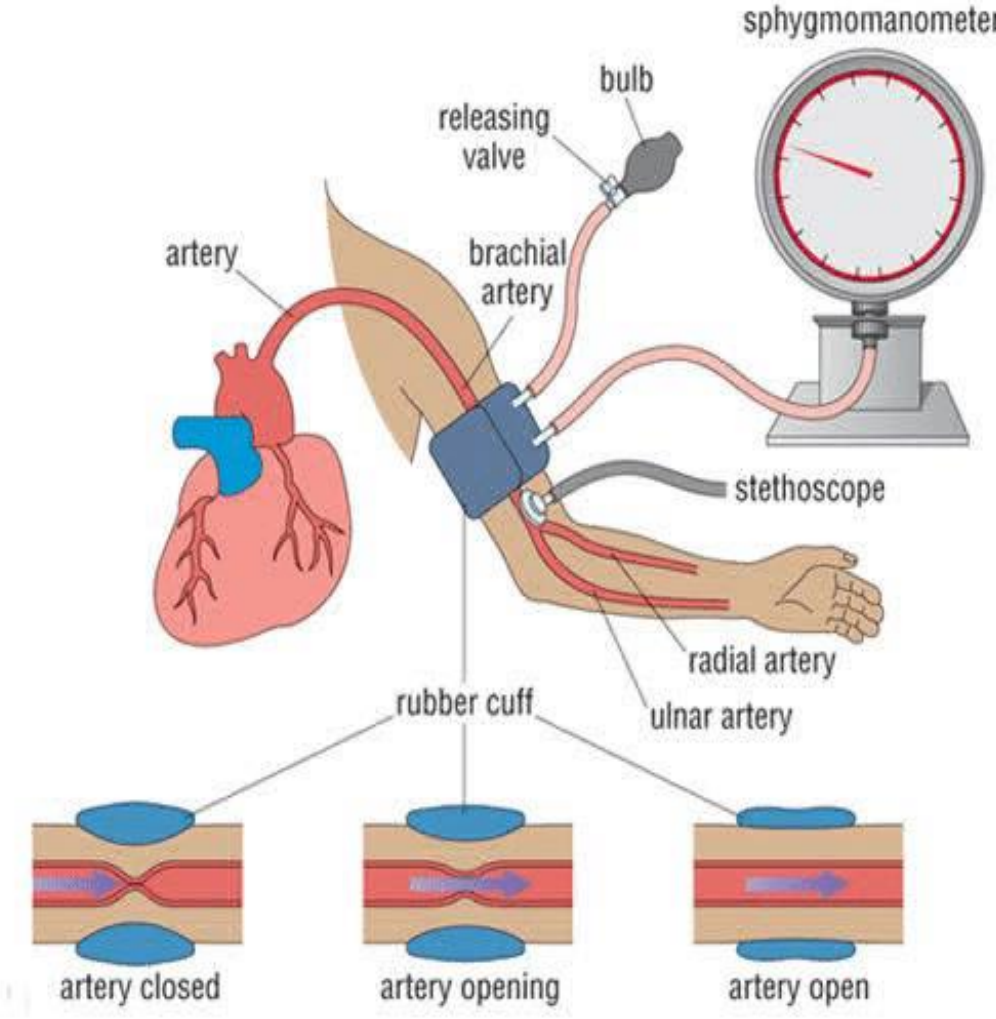


FIGURE B6.18.

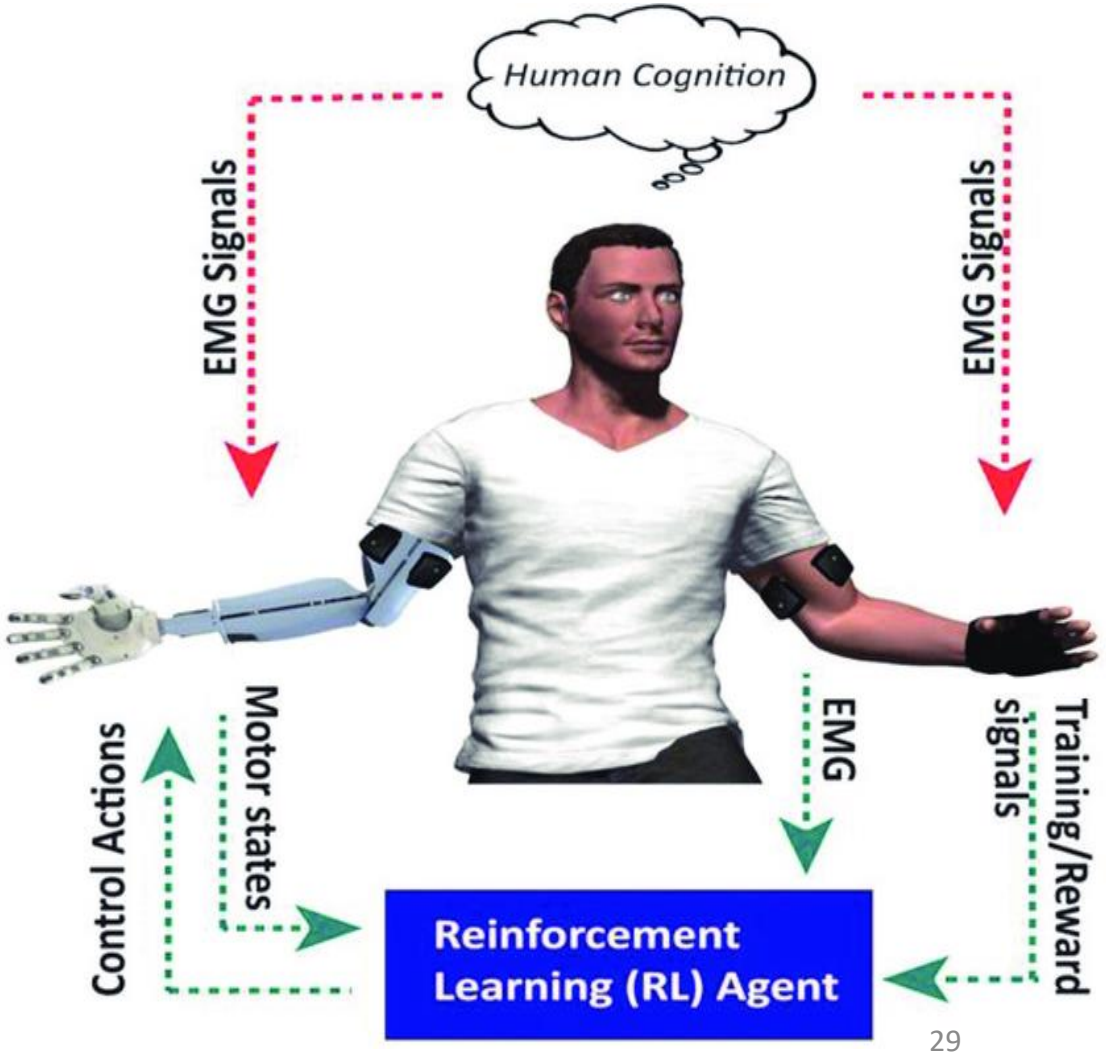
Family Medicine
Blood Pressure measurement
Avoiding injury to Radial Nerve in Spiral groove
(Spiral Integration)

- A general physician checks blood pressure of every patient aged =/>40 to rule out Hypertension.
- Brachial artery is cuffed and korotkoff sounds are auscultated by placing stethoscope over cubital fossa.
- Care should be taken while administering intramuscular injection in upper limb to avoid injury to radial nerve in spiral groove.



Artificial Intelligence
Concept of Neural Network
(Spiral Integration)

- The concept of neural network has been used by the leading manufacturers of rehabilitation aids for simulating various anatomical and biomechanical functions of the lost parts of the human body



Spiral Integration

Biomedical Ethics

How to Prevent Wrist Drop?

Beneficence

It is the obligation of physician to act for the benefit of the patient and supports a number of moral rules to protect and defend the right of others, **prevent harm, remove conditions that will cause harm, help persons with disabilities**, and rescue persons in danger.

Research Article

https://synapse.koreamed.org/articles/1161422

- **Clinical Features of Wrist Drop Caused by Compressive Radial Neuropathy and Its Anatomical Considerations**

  Posture-induced radial neuropathy, known as Saturday night palsy, occurs because of compression of the radial nerve. The clinical symptoms of radial neuropathy are similar to stroke or a herniated cervical disk, which makes it difficult to diagnose and sometimes leads to inappropriate evaluations. The purpose of our study was to establish the clinical characteristics and diagnostic assessment of compressive radial neuropathy

Learning Resources

- Clinically Oriented Anatomy 8th Edition Region Upper Limb chapter 3 page no. 205 -214

- www.google.com