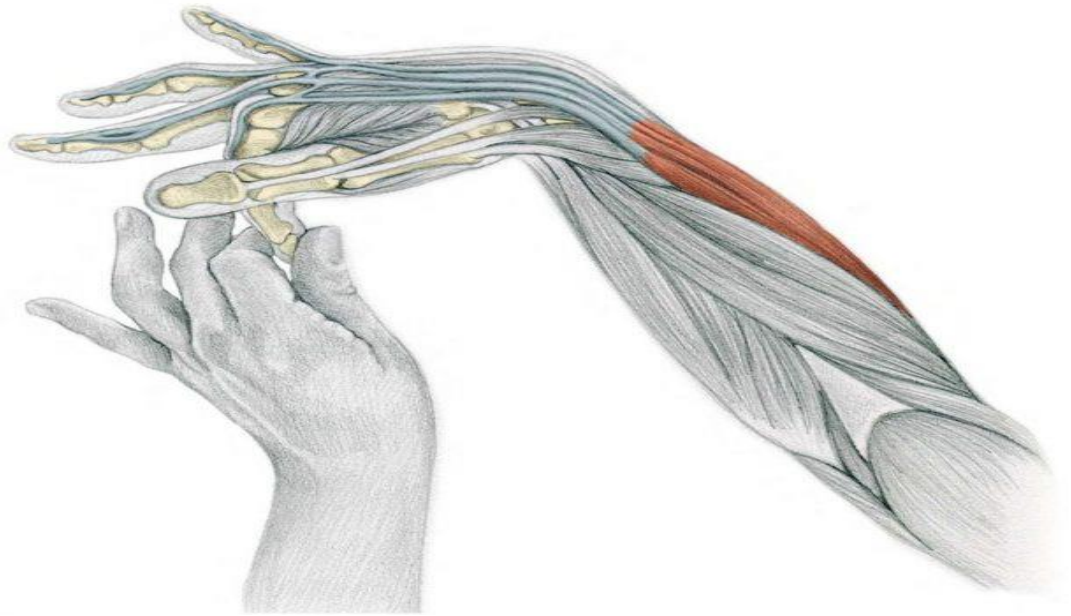
Department of Human Anatomy **College of Medicine**



Human Anatomy Practical Lectures(Upper limb) (Part 2)

BY

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For

First stage students in college of medicine

Elbow Joint

The elbow is the synovial hinge joint between the humerus in the upper arm and the radius and ulna in the forearm. The elbow consists of 3 joints, which form a functional unit enclosed within a single articular capsule. The elbow is the link between the powerful motions of the shoulder and the intricate fine-motor function of the hand. To provide that link, the motions of the elbow include extension and flexion as well as pronation and supination of the forearm.

Parts of the Elbow Joint

The elbow joint consists of 3 separate articulations enclosed in a single capsule:

Joint	Articular surfaces	Type	Function
Humeroulnar joint	• Trochlear notch of ulna • Trochlea of the humerus	Simple hinge-joint	• Flexion-extension • Circumduction
Humeroradial joint	• Head of the radius • Capitulum of the humerus	Limited ball-and-socket joint	Limited pronation-supination in semiflexion
Proximal radioulnar joint	• Head of the radius • Radial notch of the ulna	Pivot joint	Pronation-supination in any degree of flexion-extension

Ligaments of the Elbow Joint

The elbow capsule is supported by the ligaments of the elbow, especially the radial (lateral) and ulnar (medial) collateral ligaments.

Ligament	Attachments	Function
Radial collateral ligament	• Lateral epicondyle of the humerus • Annular ligament of the radius	Stabilizes the elbow joint against varus stress
Ulnar collateral ligament	• Medial epicondyle of the humerus • Coronoid process and olecranon of the ulna	Stabilizes the humeroulnar joint against valgus stress
Annular ligament of the radius	Anterior-posterior margins of the radial notch	Surrounds and anchors the radial head to the radial notch of the ulna
Interosseous membrane	Interosseous margins of the radius and the ulna	• Divides forearm into anterior/posterior compartments • Stabilizes pronation-supination

Muscles of the Elbow Joint

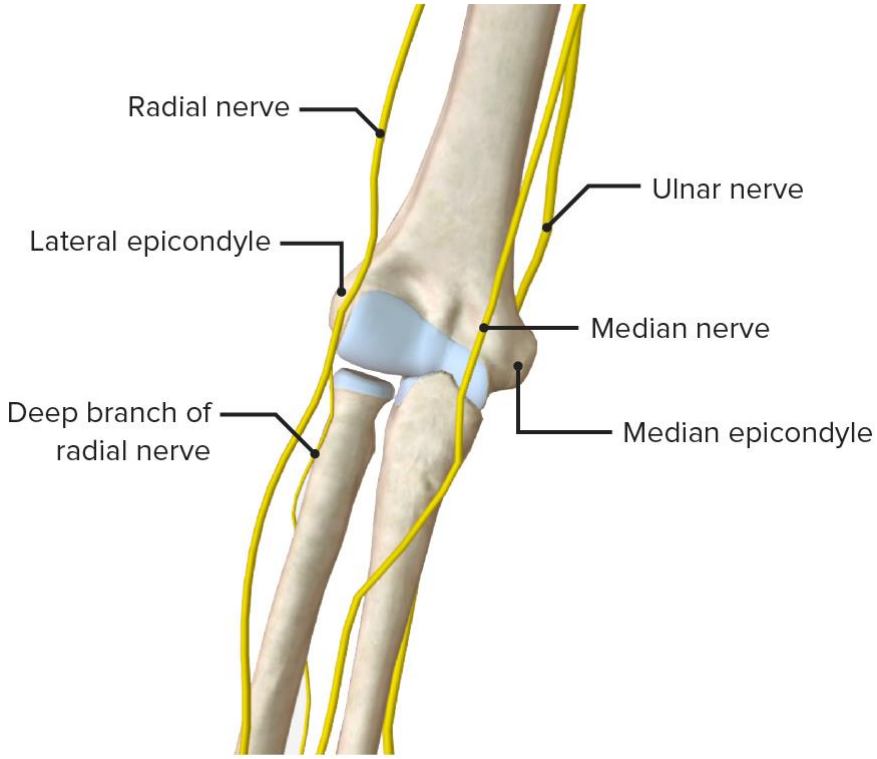
The muscles of the elbow originate in the upper arm and insert into the forearm, producing flexion-extension of the elbow as well as supination-pronation of the forearm. The muscles also provide dynamic stabilization to the elbow joint.

Muscle	Origin	Insertion	Nerve supply	Function
Brachialis muscle	Anterior aspect of the humerus lateral to the deltoid tuberosity	Ulnar tuberosity	Musculocutaneous nerve (C5–C7)	Flexes the elbow and assists with supination
Brachioradialis muscle	Proximal 2 thirds of lateral supracondylar ridge	Lateral surface of distal radius and pre-styloid process	Radial nerve (C6)	Weak flexor of the elbow, strong flexor when forearm mid-pronated
Biceps brachii muscle	Short head: coracoid process; long head: supraglenoid tubercle	Tuberosity of the radius	Musculocutaneous nerve (C5–C6)	Supinates the forearm and assists with elbow flexion
Triceps brachii	Long head: infraglenoid tubercle; lateral and medial heads: posterior humerus	Olecranon	Radial nerve (C6–C8)	Extends the elbow
Anconeus	Inserts on the posterior aspect of lateral epicondyle	Lateral surface of the olecranon	Radial nerve (C7, C8)	Assists in extension of the elbow and stabilizes the joint

Neurovascular and Lymphatic Supply of the Elbow

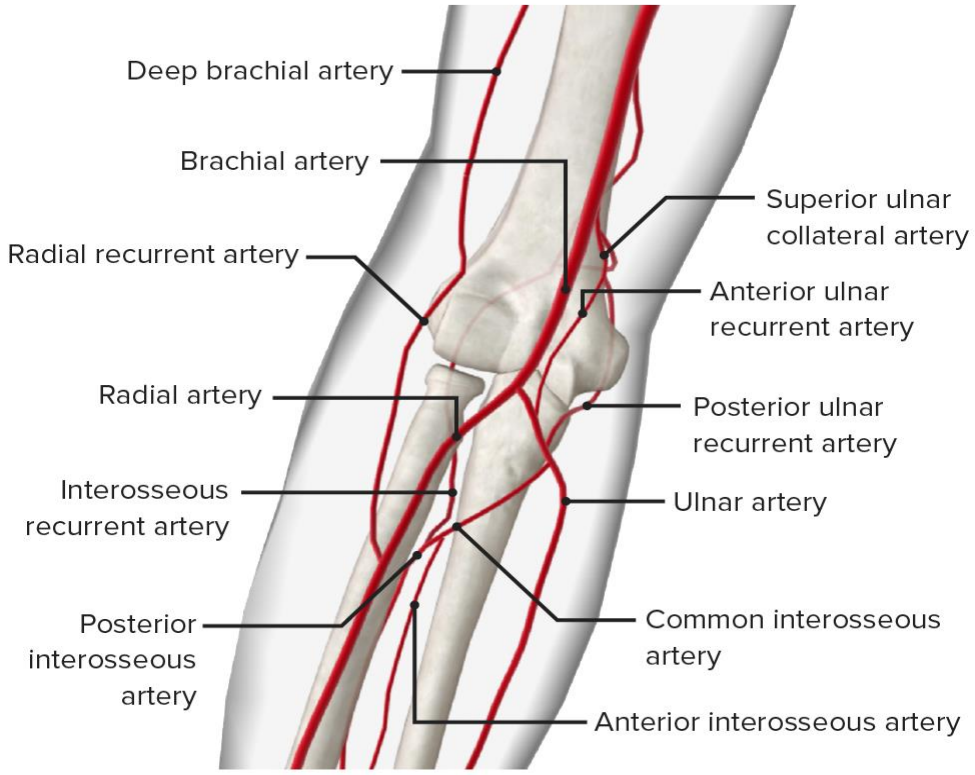
Innervation

- **Anteriorly:** The musculocutaneous, median, and radial nerves pass anterior to the elbow and innervate the anterior capsule.
- **Posteriorly:** The ulnar nerve passes posteriorly and medially at the elbow and innervates the posterior capsule.



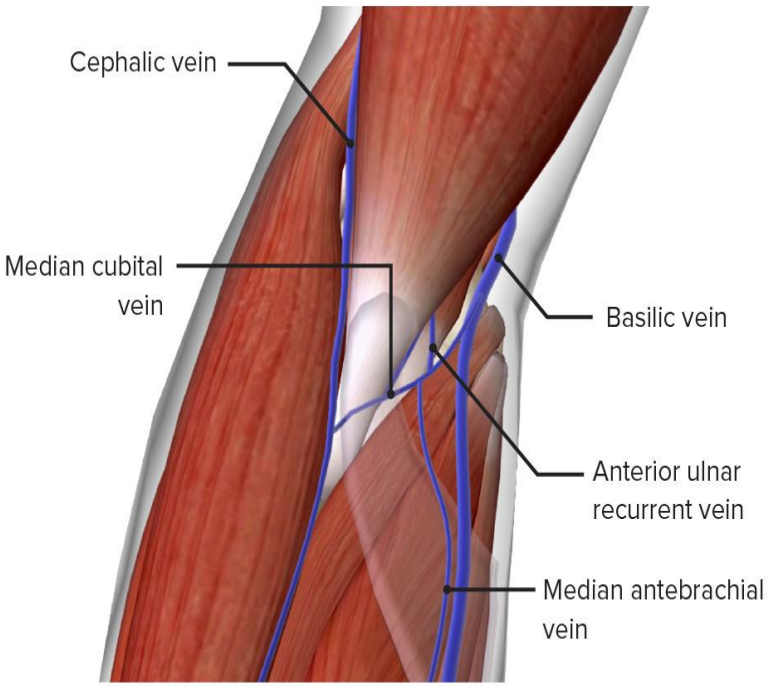
Arterial supply

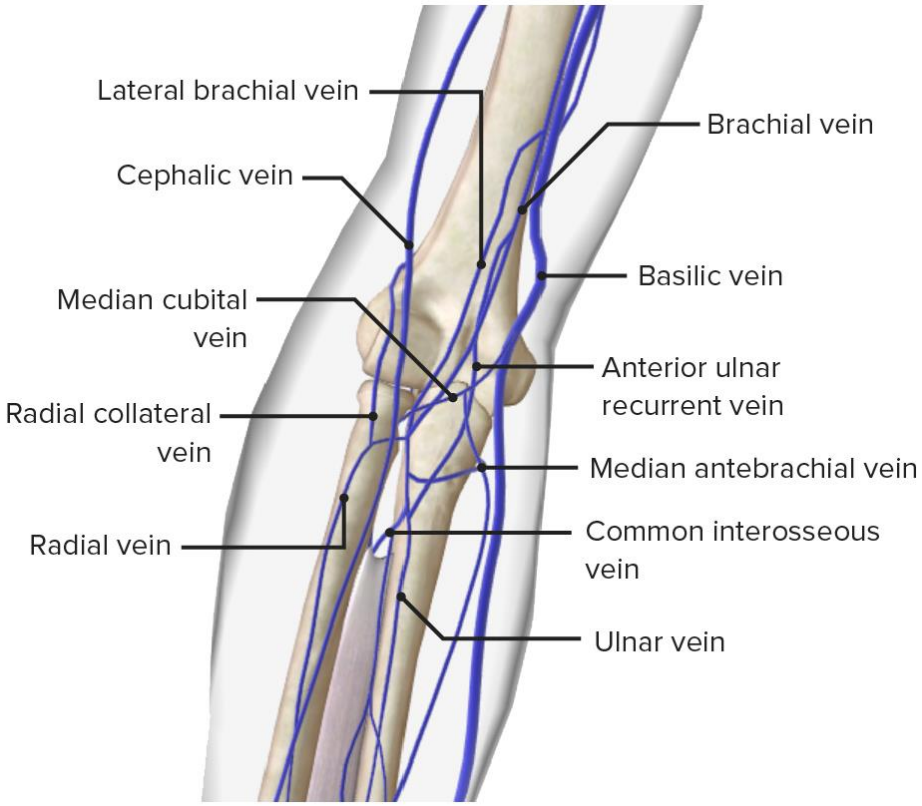
- Brachial artery
  - Courses down the anterior surface of the arm into the cubital fossa
  - Bifurcates into the radial and ulnar artery in the proximal forearm
- The cubital anastomosis is an extensive circulatory system surrounding the elbow, formed from branches of the brachial, radial, and ulnar arteries.

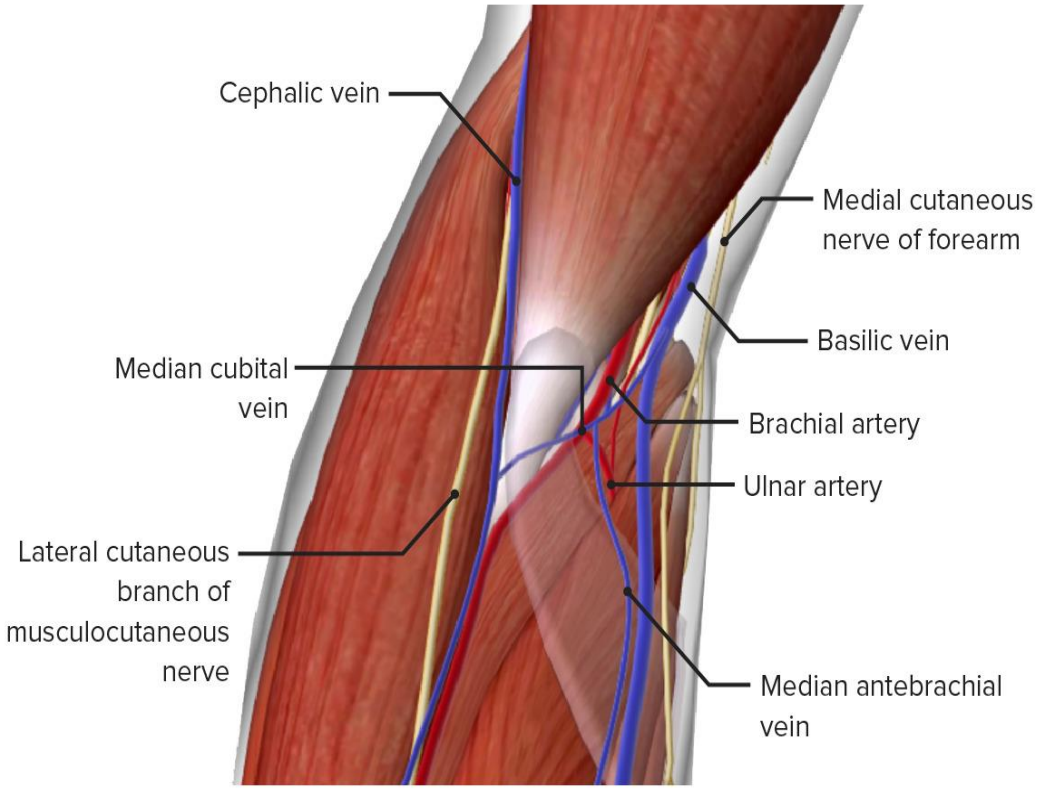


Venous drainage

- Basilic and cephalic vein: the primary superficial veins of the upper arm
- Connected at the elbow anteriorly by the median cubital vein




Lateral brachial vein
Brachial vein
Cephalic vein
Basilic vein
Median cubital vein
Anterior ulnar recurrent vein
Radial collateral vein
Median antebrachial vein
Radial vein
Common interosseous vein
Ulnar vein


Cephalic vein
Medial cutaneous nerve of forearm
Basilic vein
Median cubital vein
Brachial artery
Ulnar artery
Lateral cutaneous branch of musculocutaneous nerve
Median antebrachial vein

The Cubital Fossa

The cubital fossa is a triangular depression that lies in front of the elbow (Figs. 9.47 and 9.48).

Boundaries

■ **Laterally:** The brachioradialis muscle

■ **Medially:** The pronator teres muscle

The **base** of the triangle is formed by an imaginary line drawn between the two epicondyles of the humerus.

The **floor** of the fossa is formed by the supinator muscle. Laterally and the brachialis muscle medially. The **roof** is formed by skin and fascia and is reinforced by the bicipital aponeurosis.

Contents:

The cubital fossa (Fig. 9.47) contains the following structures, enumerated from the medial to the lateral side: the median nerve, the bifurcation of the brachial artery into the ulnar and radial arteries, the tendon of the biceps muscle, and the radial nerve and its deep branch. The **supratrochlear lymph node** lies in the superficial fascia over the upper part of the fossa, above the trochlea. It receives afferent lymph vessels from the third, fourth, and fifth fingers; the medial part of the hand; and the medial side of the forearm. The efferent lymph vessels pass up to the axilla and enter the lateral axillary group .