


HUMERUS

◆ Overview

- Longest bone of the arm (upper limb) 
 - A long bone with:
 - Upper end
 - Shaft
 - Lower end
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◆ Side Determination

To identify right vs left humerus:

1. Head → Rounded and directed:
 - Medially

- Upwards
- Backwards
- 2. Lesser tubercle → Faces anteriorly
- 3. Lower end → Expanded side-to-side

👉 Mnemonic 💡 :

“Head looks MEDIAL-BACK-UP”

● UPPER END OF HUMERUS

◆ Head

- Rounded (1/3 of a sphere) ●
- Directed:
 - Medially
 - Backwards
 - Upwards

- Articulation:
 - With glenoid cavity of scapula → forms shoulder joint

Clinical Insight:

- Large head → allows wide range of movement
- But shallow socket → joint is unstable → prone to dislocation

◆ Anatomical Neck

- Narrow groove surrounding head
- Marks attachment of joint capsule

◆ Greater Tubercle

- Located laterally
 - Provides attachment to rotator cuff muscles
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◆ Lesser Tubercle

- Located anteriorly
 - Muscle attachment site
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◆ Intertubercular Sulcus (Bicipital Groove)

- Lies between greater & lesser tubercles

 Attachments (VERY IMPORTANT TABLE):

Structure	Attachment
Lateral lip	Pectoralis major
Floor	Latissimus dorsi

Medial lip	Teres major
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👉 Mnemonic 💡 :

“Lady Between Two Majors”

(Latissimus = floor, Between = groove, Teres major & Pectoralis major)

◆ Surgical Neck

- Narrow region below tubercles
- Common fracture site ⚠️

👩 Clinical Correlation:

- Injury may damage:
 - Axillary nerve
 - → Deltoid paralysis → loss of shoulder abduction

● SHAFT OF HUMERUS

◆ Shape

- Upper half → Rounded
- Lower half → Triangular

◆ Borders (3)

1. Anterior Border

- Upper 1/3 → Lateral lip of intertubercular sulcus
- Middle 1/3 → Anterior margin of deltoid tuberosity
- Lower 1/3 → Smooth & rounded

2. Medial Border

- Upper → Medial lip of intertubercular sulcus
 - Middle → Rough strip
 - Lower → Medial supracondylar ridge
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3. Lateral Border

- Upper → Posterior surface of greater tubercle
 - Middle → Interrupted by radial (spiral) groove
 - Lower → Lateral supracondylar ridge
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◆ Surfaces (3)

Surface	Key Feature
Anterolateral	Deltoid tuberosity
Anteromedial	Smooth surface
Posterior	Radial groove

◆ Important Landmarks

◆ Deltoid Tuberosity

- Rough elevation on lateral side
- Insertion of deltoid muscle

◆ Radial (Spiral) Groove

- Oblique groove on posterior surface

Contents:

- Radial nerve
- Profunda brachii artery

Clinical Correlation:

- Fracture → radial nerve injury

- Wrist drop !
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● LOWER END OF HUMERUS

◆ General Feature

- Expanded → forms condyles
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◆ Articulating Parts

1. Capitulum

- Lateral part
 - Articulates with head of radius
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2. Trochlea

- Medial part
- Pulley-shaped
- Articulates with ulna



Carrying Angle:

- Due to trochlea → forearm deviates laterally
- More prominent in females

◆ Non-Articulating Parts

Structure	Function
Medial epicondyle	Flexor muscle origin
Lateral epicondyle	Extensor muscle origin
Medial supracondylar ridge	Muscle attachment
Lateral supracondylar ridge	Muscle attachment
Coronoid fossa	Receives coronoid process (flexion)

Radial fossa	Receives head of radius
Olecranon fossa	Receives olecranon (extension)

Flowchart: Elbow Movement Mechanics

Flexion →

- ➔ Coronoid process fits into Coronoid fossa
- ➔ Radial head fits into Radial fossa

Extension →

- ➔ Olecranon fits into Olecranon fossa
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Clinical Correlation:

- Medial epicondyle fracture → may injure ulnar nerve
 - causes:
 - Claw hand

- Sensory loss in medial hand
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● OSSIFICATION OF HUMERUS

◆ Centers

Primary Center:

- Diaphysis
 - Appears at 8th week (intrauterine) 🧒
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Secondary Centers:

Location	Number
Upper end	3
Lower end	4

- Fusion completed around 20 years

● ATTACHMENTS OF HUMERUS

◆ Classification

Attachments are best understood in 3 groups:

1. Anterior aspect
2. Posterior aspect
3. Capsular attachments

◆ ANTERIOR ASPECT ATTACHMENTS

◆ Key Muscle Attachments (Anterior Surface)

Structure	Muscle Attachment	Explanation
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Lesser tubercle	Subscapularis	Part of rotator cuff → medial rotation of arm
Lateral lip of intertubercular sulcus	Pectoralis major	Powerful adductor & medial rotator 💪
Medial lip of intertubercular sulcus	Teres major	Assists adduction & medial rotation
Floor of intertubercular sulcus	Latissimus dorsi	Extends, adducts, medially rotates
Deltoid tuberosity	Deltoid	Main abductor of arm (15°-40°)
Middle medial border	Coracobrachialis	Flexes & adducts arm
Lower half (anteromedial + anterolateral)	Brachialis	Main elbow flexor 🌟

Lateral supracondylar ridge	Brachioradialis	Flexes elbow in mid-pronation
Lateral epicondyle	Common extensor origin	Wrist & finger extensors
Medial epicondyle	Common flexor origin	Wrist & finger flexors
Medial supracondylar ridge (anterior)	Pronator teres	Pronates forearm

◆ Concept (Understanding Attachments)

👉 Proximal humerus → Shoulder muscles

👉 Shaft → Arm muscles

👉 Distal humerus → Forearm muscles

- ◆ Mnemonic for Intertubercular Sulcus 

“Lady Between Two Majors”

- Lateral lip → Pectoralis major
 - Floor → Latissimus dorsi
 - Medial lip → Teres major
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◆ POSTERIOR ASPECT ATTACHMENTS

- ◆ Key Muscles

Structure	Muscle	Notes
Above radial groove	Triceps (Lateral head)	Extends elbow

Below radial groove	Triceps (Medial head)	Deep powerful extensor
Lateral epicondyle (posterior)	Anconeus	Assists extension, stabilizes elbow

◆ Important Concept 


- Radial (spiral) groove divides triceps heads
 - Above → Lateral head
 - Below → Medial head

◆ CAPSULAR ATTACHMENTS

◆ Shoulder Joint Capsule

- Attached to anatomical neck

- Exceptions:

- Dips ~2 cm inferiorly on medial side 
- Interrupted at intertubercular sulcus

 Clinical Insight:

- Inferior laxity → allows greater mobility
 - Also → common site of dislocation (anteroinferior)
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- ◆ Elbow Joint Capsule

 Attachments:

- Anteriorly:

- Above radial fossa
- Above coronoid fossa

- Posteriorly:

- Above olecranon fossa

👉 Important Point 💡 :

- These fossae lie within joint cavity → accommodate bones during movement
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● CONTENTS OF INTERTUBERCULAR SULCUS

◆ Structures Inside Groove

Structure	Function
Tendon of long head of biceps	Stabilizes shoulder joint
Synovial sheath	Reduces friction
Ascending branch of anterior circumflex humeral artery	Blood supply

Clinical Correlation:

- Inflammation → bicipital tendinitis
 - Pain in anterior shoulder !
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NERVES RELATED TO HUMERUS

Region	Nerve	Clinical Injury
Surgical neck	Axillary nerve	Deltoid paralysis
Radial groove	Radial nerve	Wrist drop
Medial epicondyle	Ulnar nerve	Claw hand

IMPORTANT CLINICAL CONDITIONS

◆ 1. Supracondylar Fracture of Humerus ⚠️

- Common in children

Complications:

- Injury to:
 - Median nerve
 - Brachial artery → ischemia

👉 Can lead to:

- Volkmann's ischemic contracture 🩸
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◆ 2. Anteroinferior Dislocation of Shoulder

- Most common shoulder dislocation

Why?

- Weak capsule inferiorly

- Head slips anteroinferiorly
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◆ 3. Equilateral Triangle of Elbow ▲

Formed by:

- Medial epicondyle
- Lateral epicondyle
- Olecranon

💡 Importance:

- Maintained in flexion → helps detect elbow dislocation
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-> The End <-