


Ulna — Bony Features


Overview

- Ulna = medial bone of forearm (little finger side )
- Forms structural backbone (axis) of forearm
- Key roles:
 - Stabilizes elbow joint
 - Provides base for rotation of radius
 - Major site for muscle attachment

★ Exam Pearl: Ulna = stability | Radius = mobility

Side Determination

Flowchart

- Hook-shaped proximal end
 - Trochlear notch faces anteriorly
 - Interosseous border faces laterally
 - Distal styloid → posteromedial
 - Side confirmed 
-



Proximal End

▲ Olecranon Process

- Subcutaneous → most exposed part of elbow
- Insertion: Triceps

Clinical Importance:

- Olecranon bursitis ("Student's elbow") → Repeated friction/pressure → Swelling over posterior elbow

- Fracture → Triceps pulls fragment proximally → Patient cannot extend elbow !
-

▲ Coronoid Process

- Prevents posterior displacement of ulna

Clinical Importance:

- Fracture → elbow instability
 - Often part of "Terrible triad of elbow":
 - Radial head fracture
 - Coronoid fracture
 - Posterior elbow dislocation
-

▼ Trochlear Notch

 Provides hinge mechanism of elbow

 Clinical:

- Damage → affects flexion-extension mechanics
-

▼ Radial Notch


 Articulates with radial head

 Clinical:

- Involved in Monteggia injuries
 - Annular ligament attaches here → key in pulled elbow
-

 Shaft of Ulna

▲ Posterior Border

- Subcutaneous → easily palpable 

Clinical:

- Landmark for:
 - Surgical approaches
 - Fracture alignment
-

▲ Interosseous Border

- Attachment of interosseous membrane


Clinical:

- Transmits forces from hand → ulna → humerus
 - Injury disrupts load transfer
-

Nutrient Foramen

- Directed proximally

 Clinical:

 "Towards the elbow I go, from the knee I flee"

- Helps identify bone side in exams
-

Distal End

◆ Head of Ulna

- Involved in distal radioulnar joint (DRUJ)
-

◆ Styloid Process

 Clinical:

- Fracture often associated with:
 - TFCC injury
 - Wrist instability

! Articular Disc (TFCC)

👉 Separates ulna from carpal bones

👩 Clinical:

- Injury leads to: Ulnar-sided wrist pain → Weak grip
→ Clicking sensation

🧠 Functional Integration

🔄 Flowchart

Force on hand → Transmitted to radius → Via interosseous membrane → Transferred to ulna → Then to humerus

👉 Ulna = shock stabilizer

Muscle Attachments

Functional Flow

- Triceps contracts → Pulls olecranon → Elbow extension
 - Brachialis contracts → Pulls coronoid → Elbow flexion
 - FDP contracts → Flexes distal phalanges
 - Pronator quadratus → Rotates radius over ulna
-

Ligaments

Ligament	Function	Clinical
----------	----------	----------

Annular ligament	Holds radial head	Pulled elbow
Interosseous membrane	Force transmission	Injury → instability
Ulnar collateral ligament	Medial stability	Valgus stress injury

CLINICAL CORRELATIONS

1. Olecranon Fracture

Mechanism:

Fall on elbow / direct blow

Effects Triceps pulls fragment upward → Loss of extension !

Signs:

- Swelling posterior elbow
 - Inability to straighten arm
-

2. Nightstick Fracture

Mechanism:

Defensive injury (blocking blow)

Features: Isolated ulna fracture → Minimal displacement

Clinical Tip:

 Seen in assault cases

3. Monteggia Fracture


Definition:

Ulna fracture + radial head dislocation

Flowchart

Direct trauma → Ulna shaft breaks → Radius loses alignment → Radial head dislocates

Clinical Features:

- Pain + deformity
 - Loss of supination
 - Possible radial nerve injury 
-

4. Galeazzi Fracture

Definition:

Radius fracture + distal radioulnar joint disruption

Flowchart

Fall on hand → Radius fractures → DRUJ unstable →
Wrist dysfunction

Clinical Features:

- Wrist pain
 - Prominent ulnar head
 - Weak grip
-

S. Elbow Dislocation


Mechanism:

Fall on outstretched hand

 Flowchart

Fall → Force transmitted to elbow → Posterior displacement of ulna → Elbow dislocation

Complications:

- Ulnar nerve injury 
 - Vascular compromise
-

 6. TFCC Injury

Function:

Stabilizes distal radioulnar joint

Clinical:

- Pain on ulnar side of wrist
 - Clicking sound
 - Weak grip
-

7. Madelung's Deformity

Cause:

Growth disturbance of distal radius


Effects: Radius shortened → Ulna appears long/prominent → Wrist deformity

8. "Terrible Triad of Elbow"

Components:

- Radial head fracture
 - Coronoid fracture
 - Posterior elbow dislocation
-

Significance:

 Severe instability → surgical emergency

 Summary

- Ulna = medial stabilizer of forearm
- Key landmarks:
 - Olecranon (posterior)
 - Coronoid (anterior)

- Trochlear notch
 - No direct wrist articulation
 - Major injuries:
 - Monteggia → ulna + radial head
 - Galeazzi → radius + DRUJ
 - Olecranon fracture → loss of extension
 - Clinical key: Ulna transmits and stabilizes forces
-

-> The End <-