


# Radius — Bony Features

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## Overview

- Radius = lateral bone of forearm (thumb side ) in standard anatomical position (SAP)
- Participates in:
  - Elbow joint
  - Radioulnar joints
  - Wrist joint

## Exam Pearl:

“Radius rotates, ulna stays relatively fixed” during pronation-supination

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## Side Determination of Radius

 Use these 4 key features together:

Head (disc-shaped) → always proximal

Styloid process → lateral (thumb side)

Radial tuberosity → medial & anterior

Dorsal tubercle (Lister's) → posterior

Correct anatomical orientation achieved 

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 Quick Memory Trick

"Tuberosity = medial, Styloid = lateral, Lister = posterior"

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## Parts of Radius

1. Proximal end

2. Shaft (body)

3. Distal end

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## Proximal End Features

1. Head of Radius

- Disc-shaped
- Superior surface → articulates with capitulum of humerus
- Circumference → articulates with radial notch of ulna

👉 Enables rotation in pivot joint

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2. Neck

- Constricted region below head
  - Common site for fractures (especially in children) ⚠️
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### 3. Radial Tuberosity

- Located medially
- Roughened area

Insertion: Biceps brachii 💪

★ Exam Pearl:

Biceps contraction → supination + flexion of forearm

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🦴 Shaft (Body of Radius)

📐 Borders

Border	Feature
Anterior	Oblique line present
Posterior	Smooth
Medial (interosseous border)	Sharp !

👉 Interosseous border gives attachment to interosseous membrane

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## Surfaces

Surface	Description
Anterior	Smooth, concave

Posterior	Rough (muscle attachments)
Lateral	Convex

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### Important Features

- Nutrient foramen → directed upwards (towards elbow)
  - Helps in side determination
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### Distal End Features

#### 1. Styloid Process

- Projects laterally
- Larger than ulnar styloid

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## 2. Ulnar Notch

- Medial side
- Articulates with head of ulna

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## 3. Carpal Articular Surface

- Articulates with:
  - Scaphoid
  - Lunate

👉 Forms wrist joint

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## 4. Dorsal Tubercle (Lister's Tubercle)

- Located posteriorly

👉 Acts as pulley for extensor pollicis longus

★ Clinical Note:

Important landmark in wrist surgeries

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🧠 Flowchart: Radius Function in Movement

Radius → Rotates around ulna → Proximal rotation at superior radioulnar joint → Distal movement at inferior radioulnar joint → Hand follows radius → Pronation & Supination achieved

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🔗 Attachments on Radius

💪 Muscles

Structure	Attachment
Radial tuberosity	Biceps brachii
Lateral surface	Supinator
Distal anterior surface	Pronator quadratus
Midshaft	Pronator teres

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## Ligaments

- Annular ligament
- Quadrate ligament
- Oblique cord
- Interosseous membrane
- Capsule of wrist joint

- Extensor retinaculum
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## Clinical Correlations

### Colles Fracture

- Fracture of distal radius
  - "Dinner fork deformity" 
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### Smith Fracture

- Reverse of Colles
  - Anterior displacement
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### Radial Head Fracture


- Common in falls on outstretched hand (FOOSH)

- May affect supination
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## ★ Summary

- Radius = lateral forearm bone
  - Key identifiers:
    - Head (proximal)
    - Tuberosity (medial)
    - Styloid (lateral)
    - Lister's tubercle (posterior)
  - Distal radius forms wrist joint
  - Central role in forearm rotation
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## 🔍 Dorsal Grooves of Radius (Lister's Tubercle as Key Landmark)

The posterior surface of distal radius has grooves for extensor tendons, divided by the dorsal tubercle (Lister's tubercle) 

★ Exam Pearl:

Lister's tubercle acts as a pulley for EPL tendon

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 Arrangement of Grooves (Lateral → Medial)

Starting at lateral side

Groove 1 (near styloid)

→ Abductor pollicis longus (APL)

→ Extensor pollicis brevis (EPB)

Groove 2

→ Extensor carpi radialis longus (ECRL)

→ Extensor carpi radialis brevis (ECRB)

Groove 3 (over Lister's tubercle)

→ Extensor pollicis longus (EPL)

Groove 4

→ Extensor digitorum (ED)

→ Extensor indicis (EI)

→ Posterior interosseous nerve (PIN)

→ Anterior interosseous artery (AIA)

Groove 5

→ Extensor digiti minimi (EDM)

Groove 6 (most medial)

→ Extensor carpi ulnaris (ECU)

Ending at medial side

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Compartment	Structures
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1	APL, EPB
2	ECRL, ECRB
3	EPL
4	ED, EI
5	EDM
6	ECU

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### Extensor Retinaculum

- Fibrous band over posterior wrist
  - Converts grooves into osteofibrous compartments
- 👉 Prevents bowstringing of tendons during extension

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## Clinical Correlations

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### Fractures of Head & Neck of Radius

#### Age Distribution

Fracture	Common in
Radial head	Adults
Radial neck	Children

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#### Mechanism

Fall on outstretched hand (FOOSH) → Force transmitted up radius → Radial head impacts on the capitellum → Injury to head/neck

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## Colles Fracture

### Definition

- Fracture of distal radius (~2.5 cm above wrist)
  - With dislocation of inferior radioulnar joint
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### Mechanism

Fall on extended wrist → Distal fragment displaced posteriorly (dorsally)

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 Deformity: Dinner fork deformity

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## Smith's Fracture (Reverse Colles)

### Definition

- Fracture of distal radius
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### Mechanism

Fall on flexed wrist → Distal fragment displaced anteriorly (volarly)

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### Flowchart: Colles vs Smith

Fall on extended wrist → Posterior displacement → Colles fracture

Fall on flexed wrist → Anterior displacement → Smith fracture

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## Radial Head Dislocation (Pulled Elbow)

### Mechanism

Sudden pull on forearm (child) → Radial head slips from annular ligament → Subluxation → Child refuses to move limb

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### Summary

- 6 extensor compartments on dorsal radius
- Lister's tubercle = key landmark
- FOOSH → radial head/neck fractures
- Colles = posterior displacement

- Smith = anterior displacement
  - Extensor retinaculum prevents tendon displacement
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-> The End <-