

MUSCULOSKELETAL • TRAUMA & FRACTURES

Colles Fracture & Distal Radius Fracture

A high-yield review of the most common upper-extremity fracture in adults — featuring the classic "dinner fork" deformity, neurovascular priorities, and the compartment syndrome you cannot afford to miss.

NGN NCLEX 2026

MUSCULOSKELETAL

TRAUMA

PRIORITY SETTING

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Definition & Overview

What is it, and why does it matter on the NCLEX?

The Fracture

A **distal radius fracture** occurs within ~1 inch (2.5 cm) of the wrist joint. A **Colles fracture** is the most common type — with **dorsal displacement** of the distal fragment.

The Cause

Almost always from a **FOOSH** injury — a Fall On an Outstretched Hand. Axial force travels up the palm and snaps the distal radius.

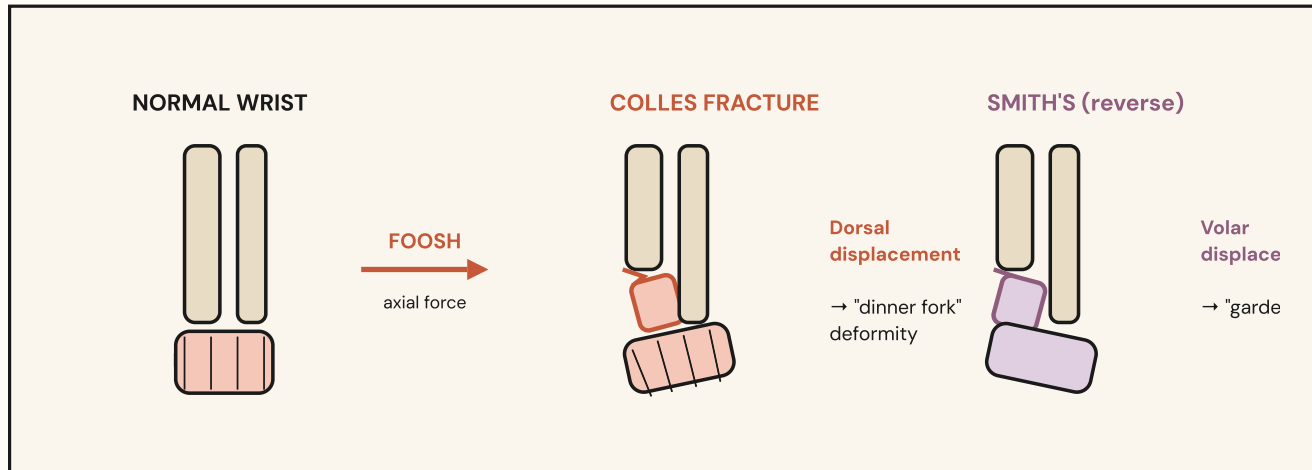
The Population

Most common fracture in adults >50, especially **postmenopausal women with osteoporosis**. Also common in young adults from sports/MVCs.

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Pathophysiology

From fall to "dinner fork" — visualized step-by-step.



1. Fall on outstretched hand, wrist extended
FOOSH

2. **Axial load** Force travels up palm into distal radius

3. Distal radius **Fracture** snaps; fragment displaces **dorsally**

4. **"Dinner fork" Deformity** shape; swelling, pain, ↓ ROM

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Signs & Symptoms

Local fracture findings vs. neurovascular red flags you must report.

Local Fracture Findings

- ♦ **"Dinner fork" deformity** at the wrist (classic Colles sign)
- ♦ Pain & tenderness over distal radius
- ♦ Swelling & ecchymosis (bruising)
- ♦ Decreased wrist range of motion
- ♦ Crepitus on palpation
- ♦ Inability to grip or bear weight on hand
- ♦ Shortening of the forearm (visible)

Red Flags — Notify HCP STAT

- ✚ **Pain unrelieved** by elevation/analgesics → compartment syndrome
- ✚ **Pain with passive stretch** of fingers (earliest sign!)
- ✚ **Pallor** or cyanosis distal to fracture
- ✚ **Pulselessness** (radial pulse) — late sign
- ✚ **Paresthesia** — numbness/tingling (median nerve injury)
- ✚ **Paralysis** — inability to move fingers
- ✚ **Poikilothermia / cold** extremity

Priority Nursing Interventions

ABCs first, then neurovascular status — every time, every shift.

1

Neurovascular checks (CMS)

Circulation, Movement, Sensation distal to fracture/cast. Every 1–2 hr for first 24 hr, then q4h. Compare to opposite hand.

2

Elevate above heart

Reduces swelling & pain. Use pillows/sling. Continue for first 24–48 hr.

3

Apply ice intermittently

20 min on / 20 min off for first 24–48 hr. Place over (not under) cast/splint.

4

Immobilize the joint

Splint, cast, or sling per HCP order. Maintain proper alignment until reduction.

5

Manage pain

Administer prescribed analgesics; reassess in 30–60 min. **Pain unrelieved by meds = red flag.**

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Assess for compartment syndrome

The 6 P's: Pain (out of proportion), Pallor, Pulselessness, Paresthesia, Paralysis, Poikilothermia. **Emergency = call HCP STAT.**

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Cast care

Allow 24–72 hr to dry (plaster). Handle with palms, not fingertips. Keep dry. Petal rough edges. Check for hot spots/odor.

8

Encourage finger ROM

Wiggle fingers to prevent stiffness, promote circulation, and reduce swelling. Avoid shoulder stiffness — move shoulder/elbow.

9

Fall prevention

Especially in elderly: bone density screening, vit D/calcium, environmental hazards, balance training.

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Monitor for complications

Compartment syndrome, median nerve injury (carpal tunnel), malunion, complex regional pain syndrome (CRPS), infection.

5

Pharmacology

Pain control, bone health, and a few cautions for the elderly.

Drug / Class	Mechanism	Key Side Effects	Nursing Considerations
Acetaminophen (Tylenol) <i>Analgesic</i>	Central COX inhibition; raises pain threshold	Hepatotoxicity (>4 g/day)	First-line for mild–moderate pain. Caution in liver disease & ETOH use.
NSAIDs Ibuprofen, naproxen, ketorolac <i>Analgesic / anti-inflammatory</i>	Block COX-1 & COX-2 → ↓ prostaglandins	GI bleed, renal toxicity, ↑ BP, platelet inhibition	Take with food. Avoid in renal disease, PUD, anticoagulants. Caution in elderly. Ketorolac IV/IM ≤5 days.
Opioids Oxycodone, hydrocodone, morphine <i>Analgesic</i>	μ-receptor agonism in CNS	Constipation, sedation, respiratory depression, N/V	Short-term only. Monitor RR (hold if <12). Bowel regimen. Fall risk in elderly.
Calcium + Vit D <i>Bone health</i>	Supports osteoblast activity & bone mineralization	Constipation, kidney stones (rare)	Take with meals. Adequate hydration. Vit D required for Ca absorption.
Bisphosphonates Alendronate (Fosamax) <i>Antiresorptive</i>	Inhibit osteoclasts → ↓ bone breakdown	Esophagitis, jaw osteonecrosis, atypical femur fx	Take AM, empty stomach, full glass water, upright × 30 min . Hold food/other meds 30–60 min.
Muscle relaxants Cyclobenzaprine <i>Adjunct</i>	Centrally acting; ↓ muscle spasm	Drowsiness, dry mouth, dizziness	Caution in elderly (fall risk). Avoid driving. Short-term use.
Tetanus prophylaxis Td / Tdap booster <i>Vaccine</i>	Active immunization vs <i>C. tetani</i>	Local soreness, low-grade fever	Indicated if open fracture or last dose >5–10 yr ago.

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NCLEX Test Traps

Wrong-vs-right: the answers students get tricked on.

✗ WRONG ANSWER

"Medicate first, then check the cast."

Giving pain meds before assessing neurovascular status masks compartment syndrome.

✓ RIGHT ANSWER

"Assess CMS first, then medicate."

Always assess circulation, movement, and sensation distal to the fracture **before** giving analgesics — pain unrelieved by meds is the cardinal sign of compartment syndrome.

✗ WRONG ANSWER

"Elevate above the heart" (in compartment syndrome).

Once compartment syndrome is suspected, elevation can **worsen** ischemia.

✓ RIGHT ANSWER

"Keep at heart level — not above."

For routine fracture care: elevate above heart to reduce swelling. For **suspected compartment syndrome**: keep at heart level so perfusion isn't compromised. Notify HCP STAT.

✗ WRONG ANSWER

"Colles = volar displacement."

Confusing Colles with Smith's is the #1 mnemonic trap.

✓ RIGHT ANSWER

"Colles = DORSAL (dinner fork). Smith's = VOLAR (garden spade)."

Colles displaces the hand **backward/up** (dinner fork shape). Smith's is the reverse — hand goes **forward/down**.

✗ WRONG ANSWER

"Use fingertips to lift the wet cast."

Fingertip pressure causes indentations → pressure ulcers under the cast.

✓ RIGHT ANSWER

"Handle wet plaster with palms only."

Use the palms of both hands. Support on a pillow (not plastic-covered). Allow 24–72 hr to dry. Don't cover until dry.

✗ WRONG ANSWER

"Loss of radial pulse is the first sign of compartment syndrome."

Pulselessness is a **late** sign — by then, tissue may already be ischemic.

✓ RIGHT ANSWER

"Pain out of proportion + pain on passive stretch is the earliest sign."

Wait for pulselessness and you've waited too long. Disproportionate pain & paresthesia come first.

✗ WRONG ANSWER

"Apply heat to reduce swelling."

Heat is contraindicated acutely — it ↑ blood flow and ↑ swelling.

✓ RIGHT ANSWER

"Apply ice for the first 24–48 hours."

Cold causes vasoconstriction → ↓ edema and ↓ pain. Heat may be appropriate later, after acute swelling

resolves.

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Patient & Family Education

What every patient — and every caregiver — must know before discharge.



Keep the cast clean & dry.

Cover with plastic when bathing. Never submerge. Use a hair dryer on cool setting if damp.



Never insert objects inside the cast.

No coat hangers, pencils, knitting needles — risk of skin breakdown & infection.



Elevate the arm & apply ice.

Above heart level for the first 24–48 hr. Ice 20 min on, 20 min off.



Wiggle your fingers often.

Prevents stiffness, promotes circulation, and helps reduce swelling.



Call HCP if you notice:

Severe pain not relieved by meds, fingers cold/blue/pale, numbness or tingling, foul odor from cast, fever, or visible cast damage.



Move your shoulder & elbow daily.

Prevents frozen shoulder & stiffness from immobility.



Eat for bone healing.

Calcium-rich foods (dairy, leafy greens), vitamin D, adequate protein. Limit caffeine & alcohol.



Prevent the next fall.

Remove throw rugs, install grab bars, use night lights, get vision checked, review meds (especially sedatives) with HCP.



Bone density screening (DEXA).

Recommended for postmenopausal women & men >70, or any low-trauma fracture in adults.



Attend follow-up appointments.

Cast typically worn 4–6 weeks. Repeat X-rays check alignment. PT often needed after cast removal.

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Memory Boosters & Mnemonics

Pattern recognition tools to lock this content in for exam day.

"Dinner Fork"

Picture a dinner fork lying on the table — handle straight, tines curving up. That's a Colles fracture: forearm straight, hand displaced dorsally.

The 6 P's of Compartment Syndrome

Pain (out of proportion) — EARLIEST

Pallor (pale, mottled)

Paresthesia (numbness/tingling)

Paralysis (can't move fingers)

Poikilothermia (cold)

Pulselessness — LATE sign

FOOSH

Fall On OutStretched Hand — the universal mechanism. If the question says FOOSH + elderly + wrist deformity, your answer is almost always Colles.

Colles vs Smith's

Colles = Coming up = Dorsal = dinner fork

Smith's = Sinking down = Volar = garden spade

Both are distal radius fractures. Direction of displacement = the difference.

CMS Every Time

Circulation — color, warmth, cap refill, pulse

Movement — wiggle fingers

Sensation — light touch, paresthesia

If the question asks "what does the nurse assess first?" after a fracture or cast application → CMS.

RICE for Acute Care

Rest — immobilize

Ice — 20 min on/off x24–48 hr

Compression — splint/cast

Elevation — above heart (unless compartment syndrome suspected)

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NCJMM Clinical Judgment Scenario

Apply the Six-Step Next Generation Clinical Judgment Measurement Model.

Scenario: A 72-year-old woman is brought to the ED after slipping on ice and falling onto her outstretched right hand. She reports 8/10 sharp wrist pain. On exam, the nurse notes obvious wrist deformity resembling a dinner fork, swelling, ecchymosis, and the patient is guarding the arm. Vital signs: BP 148/86, HR 92, RR 18, SpO₂ 97%, T 98.4°F. The patient has a history of osteoporosis and takes alendronate weekly. Right radial pulse +2, capillary refill 2 seconds, fingers warm. She can wiggle her fingers but reports "tingling" in her thumb and index finger.

Step 1 Recognize Cues

What information is relevant?

Relevant: FOOSH mechanism, age 72, osteoporosis history, dinner fork deformity, 8/10 pain, swelling, ecchymosis, paresthesia in thumb/index (median nerve distribution).

Less relevant right now: Mildly elevated BP (likely pain-related), normal SpO₂, alendronate use (relevant later for long-term care, not acute management).

Step 2 Analyze Cues

What do the cues mean?

The classic dinner fork deformity + FOOSH + osteoporosis → almost certainly a Colles (distal radius) fracture. Paresthesia in the thumb & index finger suggests **median nerve involvement** — a known complication and a red-flag finding. Pulse and cap refill are still adequate → no acute vascular compromise yet, but neurovascular status must be monitored closely.

Step 3 Prioritize Hypotheses

What is most likely & most urgent?

#1 (most urgent): Risk for compartment syndrome & median nerve injury — neurovascular compromise.

#2: Acute pain.

#3: Risk for falls / future fractures (osteoporosis).

#4: Long-term bone health management.

Step 4 Generate Solutions

What actions should be planned?

- Perform & document baseline CMS check.
- Immobilize/splint until reduction.
- Elevate above heart, apply ice.
- Administer prescribed analgesic; reassess pain.
- Prepare for X-ray & closed reduction.
- Monitor for the 6 P's q1–2h.
- Plan tetanus status review & discharge teaching.

Step 5 Take Actions

Implement the priority interventions.

1. Assess CMS bilaterally and document; mark pulse with X.
2. Splint/immobilize the wrist in current position.
3. Elevate the arm above heart on pillow; apply ice over splint (20 min).
4. Administer acetaminophen + prescribed opioid; reassess pain in 30 min.
5. Notify HCP of paresthesia; prepare patient for X-ray and reduction.
6. Reassess CMS q1h initially.

Step 6
Evaluate
Outcomes

Did interventions work?

Expected outcomes: Pain ↓ to $\leq 4/10$ within 1 hr • Paresthesia resolves or stabilizes after reduction • CMS remains intact post-cast • No signs of compartment syndrome • Patient verbalizes cast care & warning signs before discharge • Referral made for DEXA + osteoporosis follow-up.

If outcomes not met: Pain worsening, new pallor or coldness, increased paresthesia → escalate immediately — compartment syndrome must be ruled out.

NGN NCLEX 2026 Visual Study Library

Colles Fracture & Distal Radius Fracture • Musculoskeletal • Designed for high-yield exam review