

BUCKLE FRACTURE

Algorithm

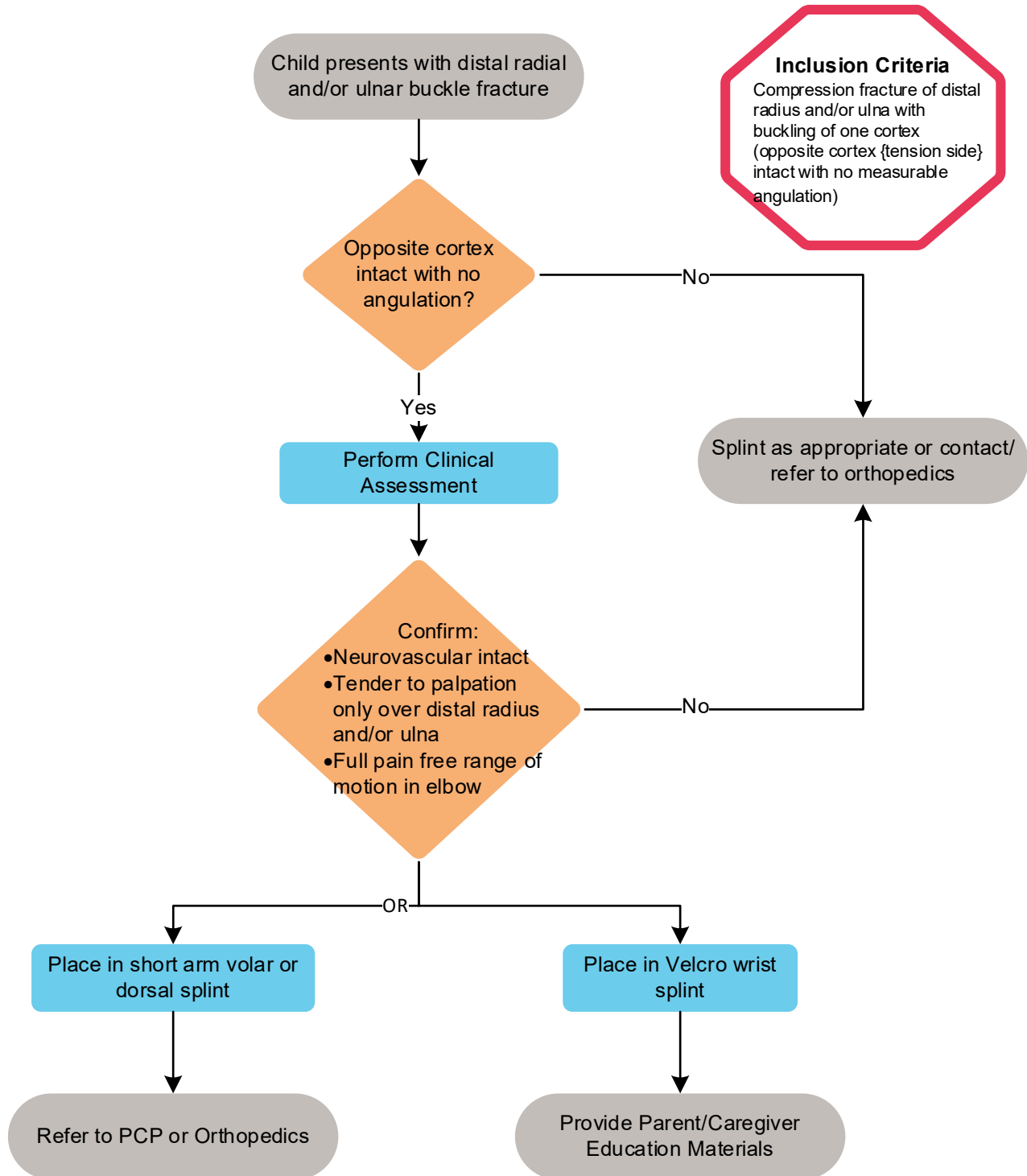


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TARGET POPULATION

Inclusion Criteria

- Patients with a compression fracture of the distal radius and/or ulna with buckling of one cortex (opposite cortex {tension side} intact with no measurable angulation)

Exclusion Criteria

- Other fracture of the distal radius and/or ulna (more than buckling of one cortex)
- Non ambulatory children under the age of 18 months

CLINICAL MANAGEMENT

Prevention of swelling and pain

- Ice
- Elevation
- Oral over-the-counter (OTC) pain medication
- Monitor effectiveness of pain control measures

TELEPHONE TRIAGE

- Fractures of the distal radius and/or ulna should be seen by the PCP or Orthopedic Clinic within 5 to 7 days to confirm fracture type and provide appropriate management
- Advise parent or caregiver to continue with ice, elevation and oral pain medications
- Provide parent or caregiver education regarding reasons to seek ED treatments, including neurovascular compromise and pain control

CLINICAL ASSESSMENT

- Assess for vascular injury and neurological deficit

- Assessment of pain using strategies appropriate to the age/development level of the patient
- Obtain true anterior/posterior (A/P) and lateral wrist or forearm radiographs, if not already available
- Assessment for other injuries

IMAGING

- Anterior/posterior (A/P) and lateral wrist or forearm radiographs, if not already available
- Evaluate for true buckle versus incomplete fracture
 - Buckling of one cortex with opposite cortex (tension side) intact¹
 - No measurable angulation present

THERAPEUTICS

- Pain control
 - Use OTC pain medications (ibuprofen or acetaminophen) as recommended by manufacturer's labeling.

IMMOBILIZATION³⁻⁵

- Placement of short plaster or fiberglass volar or dorsal splint depending on location of fracture buckling for support and protection or placement of sugar tong splint if patient is in significant pain. This splint is not considered definitive treatment and should be replaced by PCP or orthopedics in the first week after fracture with a soft cast or Velcro brace.
- Placement of removable Velcro® brace with metal support, if available, may be definitive treatment. Velcro brace should be worn during the daytime for 3 to 4 weeks. May wean out of brace at night as tolerated.
- Brace may be removed for supervised bath.
- Brace should be worn for 3-4 weeks, if there is tenderness to palpation over the fracture site at 3-4 weeks post injury, continue brace wear an additional two weeks. If tenderness persists, continue brace wear and see PCP or orthopedics for follow up x-rays.
- A short-arm cast with semi-rigid casting tape for younger children (with whom compliance in a brace is questionable) is appropriate and avoids use of a cast saw for removal
- Patients experiencing significant pain may be treated in a short arm cast for 3 to 4 weeks
- For questions regarding the best course of treatment, please call Orthopedics (Anschutz campus specific) at 720-777-3153

PATIENT | CAREGIVER EDUCATION

The Patient/caregiver should be given instruction regarding:

- How to evaluate neurovascular status
- Appropriate pain control measures
- Return precautions
- Splint/cast care

Patient | Caregiver Education Materials

- Buckle Fracture - [English](#) | [Spanish](#)

FOLLOW-UP

- If patient was not casted and is pain-free with full range of motion after 4 to 5 weeks, the patient should follow-up on an as-needed basis
- If a cast has been placed, the patient should return to the provider that placed the cast in the timeframe recommended by the provider

REFERENCES

1. Randsborg PH, Sivertsen EA. Classification of distal radius fractures in children: good inter- and intraobserver reliability, which improves with clinical experience. *BMC Musculoskelet Disord* 2012;13:6.
2. Kennedy SA, Slobogean GP, Mulpuri K. Does degree of immobilization influence refracture rate in the forearm buckle fracture? *J Pediatr Orthop B* 2010;19:77-81.
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6. Randsborg PH, Sivertsen EA. Distal radius fractures in children: substantial difference in stability between buckle and greenstick fractures. *Acta Orthop* 2009;80:585-9.

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Clinical Pathways and Measures Review Committee – March 24, 2025
 Pharmacy and Therapeutics Committee- not applicable

MANUAL/DEPARTMENT	Clinical Pathways/Quality
ORIGINATION DATE	January 5, 2015
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COLORADO SPRINGS REVIEW BY	 Michael DiStefano, MD Chief Medical Officer, Colorado Springs
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REVIEW/REVISION SCHEDULE

Scheduled for full review on March 25, 2028

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