BUCKLE FRACTURE

SUMMARY

CLINICAL MANAGEMENT

Prevention of swelling and pain

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

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) intact
  - No measurable angulation present

IMMOBILIZATION

- Placement of short 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
- Placement of removable Velcro® splint, if available, may be definitive treatment. Splint should be worn during the daytime for 3 to 4 weeks. May wean out of splint at night as tolerated.
- A short-arm cast with semi-rigid casting tape for younger children (with whom compliance in a splint 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
- If the patient is minimally tender, there is evidence supporting treatment in a soft bandage only
- For questions regarding the best course of treatment, please call Orthopedics (Anschutz campus specific) at 720-777-3153

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

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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

- No compression fracture of the distal radius and/or ulna with buckling of one cortex

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) intact[1]
  - No measurable angulation present

THERAPEUTICS

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

IMMOBILIZATION[3-5]

- Placement of short 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
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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

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.

3. Plint AC, Perry JJ, Correll R, Gaboury I, Lawton L. A randomized, controlled trial of removable splinting versus casting for wrist buckle fractures in children. Pediatrics 2006;117:691-7.

4. West S, Andrews J, Bebbington A, Ennis O, Alderman P. Buckle fractures of the distal radius are safely treated in a soft bandage: a randomized prospective trial of bandage versus plaster cast. J Pediatr Orthop 2005;25:322-5.

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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.

CLINICAL IMPROVEMENT TEAM MEMBERS

Mark Erickson, MD | Orthopedics
Brian Kohuth, PA | Orthopedics
Susan Graham, PA | Orthopedics
Denise Pickard, RN, MSN | Clinical Care Guideline Coordinator

APPROVED BY

Clinical Care Guideline and Measures Review Committee – Not formulated at time of approval
Medication Safety Committee – Not applicable
Antimicrobial Stewardship Committee – Not applicable
Pharmacy & Therapeutics Committee – Not applicable

MANUAL/DEPARTMENT	Clinical Pathways/Quality
ORIGINATION DATE	January 5, 2015
LAST DATE OF REVIEW OR REVISION	March 15, 2019 (Colorado Springs alignment)
COLORADO SPRINGS REVIEW BY	 Michael DiStefano, MD Chief Medical Officer, Colorado Springs
APPROVED BY	 Daniel Hyman, MD, MMM, Chief Quality Officer, Children's Hospital Colorado

REVIEW/REVISION SCHEDULE

Scheduled for full review on February 8, 2020

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