Treating greenstick fractures

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Between 1-2 percent of all children will sustain a fracture in any given year, and greenstick fractures are one of the most common types experienced in this population. These occur when a bone is bent beyond its limit, causing one side of the cortex to be ruptured while the other side remains intact. The radius, ulna, tibia, fibula and humerus are the bones most commonly affected. Greenstick fractures may require open or closed reduction with or without hardware. Decision for surgery depends on the age of the child, degree of angulation and the amount of visual deformity present in the limb.

Greenstick fractures

Presentation:
- The two most common mechanisms of injury are falls and direct blows.
- Deformity may occur depending on the degree of angulation, amount of force and the patient's age.
- Swelling and discoloration may vary, but most are painful upon palpation.

Work up:
- History and physical exam may indicate pain in the affected limb, decreased and/or painful range of motion of the joints above or below, and may include obvious deformity in the affected limb.
- X-ray is usually sufficient to identify greenstick fractures.
- CT scan and MRI are rarely needed to evaluate these types of fractures.

Treatment:
- Simple cast application.
- Closed reduction with cast.
- Open reduction with percutaneous pinning.
- Time in the cast varies 3-8 weeks with fracture type.

Indications for referral:
- Angulation causing obvious physical deformity.
- Any associated injuries to surrounding tissues including joints and adjacent bones.
- Clinical suspicion by treating physician with or without X-ray confirmation of a fracture.

When to refer:
- Patient should be splinted for immobilization in the treating physician's office or referred to UCC/ED for immobilization upon identification or suspicion of a fracture.
- Patient should be seen by an orthopedic provider 3-5 days post-injury for cast application.

Options for surgery:
- Manipulation of fracture with closed reduction and cast application under sedation.
- Open repair with/without percutaneous pinning:
  - Supracondylar type 2 fractures.
  - Proximal or distal tibia fractures with significant angulation.
- Open reduction with instrumentation for older children and adolescents.

References:
Rang's Children's Fractures, 3rd edition.
Wenger and Rang, The Art and Practice of Children's Orthopaedics.

www.cookchildrens.org
For referrals and consultations:
Cook Children’s Orthopedic Services
682-885-4405 phone

Office locations

**Dodson Specialty Clinics**
1500 Cooper Street
Fort Worth, TX 76104

**Southwest Multi Specialty**
6210 John Ryan Dr., Ste. 107
Fort Worth, TX 76132

**Hurst Multi Specialty**
750 Mid Cities Blvd., Ste. 100
Hurst, TX 76054

**Cook Children’s Urgent Care and Pediatric Specialties**
2727 E. Southlake Blvd.
Southlake, TX 76092

Surgery locations

**Cook Children’s Medical Center**
801 Seventh Ave.
Fort Worth, TX 76104

**Dodson Surgery Center**
1500 Cooper St.
Fort Worth, TX 76104

**Cook Children’s Northeast Hospital**
6316 Precinct Line Rd.
Hurst, TX 76054