

## Trauma Liaisons

Trey Eubanks -

Trauma Medical Director

Barry Gilmore -

ED Medical Director

Joel Saltzman -

Anesthesia Liaison

Jeff Sawyer -

Ortho Liaison

Stephanie Einhaus -

Neurosurgery Liaison

Ignacio Fernandez-Nievas -

PICU Liaison

## Educational Offerings

PALS/ACLS - Multiple offerings

Contact Alicia Stanback at [stanbaca@lebonheur.org](mailto:stanbaca@lebonheur.org)

## Contact Us

To transfer a patient with emergent needs, call Le Bonheur's Transfer Center at (901) 287-4408 or (888) 899-9355.

For appointments or non-critical referrals, call our Resource and Referral Center at (901) 287-7337.

## TRAUMA ADMISSION GUIDELINES

In order to be consistent with the American College of Surgeons guidelines in admitting injured children to surgical services, the Trauma service, Department of Emergency Medicine, specialty surgical and Critical Care medicine developed the following trauma admission guidelines for admission service:

- All Trauma patients admitted to PICU will be admitted to PICU service with co-management by the **Trauma Service**.
- Consultants such as Neurosurgery or Orthopedic surgery are expected to help with management as well.
- All patients that meet **Trauma Stat** criteria or with **multi-system injuries** admitted to the floor will be admitted to the **Trauma Service**.
- All other trauma patients (who don't meet Trauma Stat criteria) with an isolated injury involving the following systems/injuries will be admitted to the **Trauma Service**.

### Spine Injury

### Facial Fracture

### Vascular Injury

### Genitourinary injury

### Burn Injury

- Patients who have an isolated orthopedic injury, (who don't meet Trauma Stat criteria) and if >1yr of age, should be directly admitted to the Orthopedic Service. Those isolated orthopedic injury patients who are <1yr will be admitted to the Pediatrics service with Orthopedic surgery as consultant.
- All admitted trauma patients < 2 years of age should be considered for a consultation with the Pediatric Service for co-management of the patient.

### Non-Accidental Trauma

- Children with suspected non-accidental trauma who meet admission criteria will be admitted to the appropriate surgical service. If the patient is <1 year of age or has non-acute injuries, the patient will be admitted to the Pediatric Service with consultation from the appropriate surgical service.
- All patients with suspected non-accidental trauma should have a pediatric and social work consult on admission. Children with suspected non-accidental trauma who do not meet surgical admission guidelines and require admission for the sole purpose of completion of a Child Protective Services (CPS) work up will be admitted to Pediatrics.

### Neurosurgical Injuries

- Trauma patients presenting to the Emergency Department with an isolated head injury should be admitted to the Neurosurgery Service unless they are admitted to the PICU, in which case the

patient is admitted to the PICU team with Trauma Services and Neurosurgery co-managing.

- Children requiring continued admission for the sole purpose of completion of a CPS work up may be transferred to the Pediatrics or Hospitalist Service.

### Orthopedic Injuries

- Trauma Stat patients with isolated orthopedic injuries should be admitted to the Trauma Service for the first 24 hours.
- If after 24 hours the patient requires continued admission for the isolated orthopedic injury, the patient will be transferred to the Orthopedic Service.
- Children requiring continued admission for the sole purpose of completion of a CPS work up will be admitted to the Pediatrics or Hospitalist Service.

### Facial Injuries

- Trauma patients with isolated dental and facial injuries should be admitted to the Trauma Service for the first 24 hours.
- If after 24 hours the patient requires continued admission for the isolated facial injury, the patient will be transferred to the appropriate service.
- Children requiring continued admission for the sole purpose of completion of a CPS work up will be admitted to the Pediatrics or Hospitalist Service.

### PICU Admissions

- Trauma patients admitted to PICU should be admitted to the PICU service with the Trauma Service co-managing.
- Care of these patients will be performed collaboratively between the Attending Surgeon and the Attending Critical Care Physician and their respective teams.
- Trauma Service physicians writing orders on trauma patients in the PICU should document communication with the PICU medical staff. PICU medical staff writing orders on a trauma patient should also document communication with the Trauma Service physicians.
- The Surgical and Critical Care teams will continue to review and document patient plans and progress at morning and late afternoon rounds and throughout the day and night as needed.
- The Trauma Service will help facilitate service assignment when the trauma patient is ready to be transferred out of the PICU.
- Children requiring continued admission for the sole purpose of completion of a CPS work up will be admitted to the Pediatrics or Hospitalist Service.

## National Trauma Registry American College of Surgeons (NTRACS)

One of the guidelines set forth by the American College of Surgeons Committee on Trauma states a verified trauma center must have an effective performance improvement program for care of the injured patient. A key element of the performance improvement process is having accurate data portraying trauma patient injury severity, process of care, outcome measures, type of trauma, cause of injury, etc. The trauma registry functions as the information resource driving this process. The database also provides sorting of the data for analysis and reporting for both individual and aggregate purposes.

The Trauma Registry collects data on admitted pediatric trauma patients who receive care for certain types of injuries. This data is primarily designed to ensure quality trauma care and outcomes in individual institutions and trauma systems, but has the secondary purpose of providing useful data for the surveillance of injury morbidity and mortality and research.

Le Bonheur currently has 10 years of data available with the last year abstracted by our Certified Specialist in Trauma Registry (CSTR), Kathryn Stewart. You can contact Kathryn at [stewkat@lebonheur.org](mailto:stewkat@lebonheur.org) or 901-287-6035.

# Closed Reduction of Distal Forearm Fracture by Pediatric Emergency Physicians

Shehma Khan, MD, Jeffrey Sawyer, MD, and Jay Pershad, MD

**D**istal forearm fractures are among the most frequently encountered orthopedic injuries in the pediatric emergency department (ED). Immediate closed reduction and cast immobilization with procedural sedation is the mainstay of management for displaced or angulated fractures. Several long-term follow-up studies have shown that most such fractures are treated with closed reduction and heal without complications or long-term problems.

Much of the recent literature on distal forearm fractures has focused on outcomes, comparing types of immobilization (removable splints or plaster immobilization for compression fractures) and different cast lengths for reduced fractures (below-elbow or above-elbow). Although focused training in fracture-dislocation reduction techniques is part of the core curriculum of emergency medicine training programs, there are limited data assessing outcomes of pediatric forearm fractures treated with closed reduction and casting by pediatric emergency physicians (EPs).

## Population

Consecutive patients with isolated, closed angulated or displaced fractures meeting standardized criteria for manipulation were considered for inclusion in the study. Patients with open fractures, polytrauma, neurovascular compromise, or a previous reduction attempt were excluded. Enrollment of study patients was dependent on availability of one of the two pediatric EP investigators. The investigator on call was contacted by the treating physician when an eligible patient arrived at the ED. After informed consent was obtained, patients were randomized to one of two groups.

## Study Protocol

Prior to study initiation, the two investigators (a pediatric emergency medicine fellow and a pediatric emergency medicine attending) received focused instruction in fracture manipulation by a pediatric orthopedist. This included a review of accurate radiographic measurement of fracture displacement and angulation and didactic material on the management of closed distal radial and/or ulnar fractures, focused specifically on techniques of closed fracture reduction. The pediatric EPs also performed five reductions supervised by the pediatric orthopedist. All patients had their fractures manipulated with the aid of portable fluoroscopy, in accordance with our usual ED protocol. Patients randomized to the EP group had closed manipulation and cast immobilization done by the principal investigator or co-investigator,

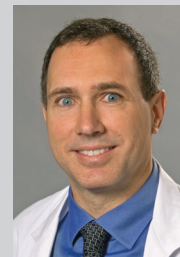
without orthopedic consultation. Sedation and/or analgesia was provided by the treating EP assigned to the patient. In our department, this could be another pediatric EP, fellow, or a general pediatrician with sedation privileges. Patients randomized to the orthopedic group had fracture reduction done by the orthopedist on call. The orthopedists were unsupervised senior orthopedic residents (postgraduate year 3 or 4 of training) for most encounters.

## Measurements

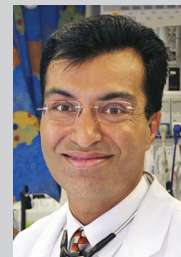
All patients were discharged with orthopedic follow-up arranged within 5 to 7 days of injury. One of three board-certified pediatric orthopedic surgeons assessed patients at follow-up. To ensure blinding, no reference was made to the study in the electronic patient record. Apart from the collaborating pediatric orthopedic investigator, none of the other orthopedic attending and resident physicians assigned to the fracture clinic were aware of study initiation and closure. Hence, the orthopedic surgeon treating the patient at follow-up was unaware of the group to which the subject had been assigned. Adequacy of alignment need for re-intervention, and frequency of subsequent follow-up were at the discretion of the attending orthopedist staffing the clinic and included at least one 6- to 8-week follow-up for all patients. This simulated the current standard of care for follow-up of all children with forearm fractures at our institution.

## Results

Over a period of 13 months (June 2008–July 2009), 103 patients were randomized to the two groups: 51 to the pediatric group and 52 to the orthopedic group. Patients in the two groups were similar in age, involvement of the physes, degree of angulation, percentage of displacement, and need for procedural sedation. All patients reached or exceeded the threshold for manipulation and had adequate alignment of fracture immediately post reduction and prior to discharge. None of the patients in the pediatric EP group required back-up orthopedic consultation. Emergency department LOS in the pediatric EP group was 4.5 hours vs. 5.0 hours in the orthopedic resident group. Three patients in the pediatric EP group (6%) and five (10%) in the orthopedic resident group were lost to all, or partial, follow-up. Re-manipulation was required in 4 of 48 (8.3%) in the pediatric EP group versus 6 of 48 (12.5%) in the orthopedic resident group. Fracture alignment and healing at the initial (5- to 7-day) follow-up visit in the pediatric EP group



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was deemed acceptable in 48 of 49 (98%) patients versus 44 of 47 (94%) patients in the orthopedic resident group. Rates of acceptable alignment at final (6- to 8-week) follow-up in the pediatric EP group were 45 of 48 (94%) patients versus 41 of 48 (85%) patients in the orthopedic resident group. Unscheduled ED visits for cast-related problems (tight cast or wet cast) occurred in 6 of 51 (11.8%) in the pediatric EP group and 4 of 52 (7.7%) in the orthopedic resident group. None of these patients developed compartment syndrome or required admission.

## Conclusion

Our results demonstrated no significant differences in outcomes between the pediatric EP and orthopedic resident groups. We are not aware of any prior data from prospective studies that measured outcomes following manipulation of forearm fractures by pediatric EPs.

Management of uncomplicated fractures and dislocations is within the scope of practice of pediatric EPs and general EPs. The Residency Review Committee's requirements for residency training in general emergency medicine (EM) and subspecialty training in pediatric EM state that residents and fellows are provided didactic training and clinical exposure to attain competency in techniques of closed fracture reduction. Moreover, the nature of the practice of EM is such that advancing the frontiers of clinical practice frequently results in an overlap of skill sets with other specialties. Assuming no significant differences in outcomes, there are potential advantages of having pediatric EPs and general EPs provide restorative fracture care at the initial visit. This practice would permit judicious orthopedic consultation at a time when several EDs are facing an "on-call" specialist coverage crisis, and there exists a nationwide shortage of fellowship-trained pediatric orthopedic specialists, in addition to ACGME mandated duty-hour restrictions for orthopedic residents.