Cincinnati Children's Hospital Medical Center

# Guideline Highlights

# Femoral Shaft Fractures

**Include:** Age 0 through 17 years of age who present with a closed femoral shaft fracture as their primary injury

**Exclude:**
- Co-existing abdominal and neurological injuries that require formal surgical intervention
- Open femoral fractures
- Fractures involving the head and neck of the femur
- A history of comorbidities including: immunodeficiencies, metabolic bone disease, neuromuscular disease, chronic serious blood dyscrasias, current treatment of cancer.

**Goal:** Timely, successful reduction of the fracture and management of pain.

## Recommendations

### Assessment

1. A trauma services consult is recommended for children at risk for multi-system injury.
2. If at risk for child abuse, include a standard radiological skeletal survey and a social service consult for children under age 2 and for selected children age 2 to 5 years.
3. Anterior/posterior and lateral view x-rays of the femur including the joints above and below the suspected fracture. In addition, AP pelvis x-ray for children age 6 to 18.
4. Assess the cervical spine and assess for multi-system injury prior to fracture reduction.
5. Routine laboratory testing and crossmatch are **not recommended.**
6. Quality of life assessment at presentation using PODCI instrument, for baseline.

### Treatment

7. Place two large-bore PIVs and hydrate well for trauma patients. Otherwise place one large-bore PIV.
8. Operative/procedural selection is age and growth dependent:
   - age < 6 years, and < 18 kg: immediate immobilization with spica cast or similar immobilizer.
   - age 6 to 12 years, and 18 to 45.4 kg: flexible intramedullary nails.
   - age 13 to 18 years and > 45.5 kg: antegrade locked intramedullary nails. Selective use of flexible intramedullary nailing in this age group, based upon patient's weight and bone maturity (as demonstrated by AP pelvis x-ray).
9. Conscious sedation is recommended for children undergoing reduction via spica casting.
10. Both pre- and post-operative/procedure, assess and manage pain routinely using age-appropriate assessment tools.

### Operative Management

11. Surgical correction within 24 hours of the injury, to reduce risk of complications.
12. Administer surgical site prophylaxis with cefazolin (see guideline for dosing), 0 to 60 minutes prior to incision (if penicillin allergy, use clindamycin); second dose after three hours operating time prior to wound closure.
13. Infiltrate the incision with a local anesthetic at the conclusion of the procedure to decrease post-operative pain; consider femoral nerve block if mid-shaft fracture.

### Post-operative Management

14. Pain management: use around-the-clock analgesia. Diazepam as needed for muscle spasms.
15. Physical therapy, focused on mobility and transfers, may begin once the child has fully recovered from anesthesia.
16. Patients with locked intramedullary nails on toe touch weight-bearing (TTWB) status post-op, advancing to full weightbearing over 2-3 weeks.
    Patients with flexible intramedullary nails are non-weightbearing transfers-only status for two to three weeks.
17. Elevate leg and apply ice for surgery patients. Petal the edges of spica cast, reposition patient, and elevate upper body of cast patients.
18. Septic workups are not recommended for temperatures < 38.2°C.
19. If the diagnosis of compartment syndrome is suspected, begin appropriate intracompartmental pressure monitoring.
20. Education of the patient/family is comprehensive and fully addresses all aspects of mobility, safety, transportation, skin care, and options for schooling.

## Discharge Criteria

- Adequate pain management
- Family/caregivers demonstrate ability and willingness to care for the child at home
- Necessary home equipment delivered
- Absence/resolution of post-operative complications
- Social Services notified for safe discharge for suspected child abuse cases.

See complete Guideline for details and supporting evidence. Original Publication Date: 11/02; revised 7/06; affirmed 12/06