

## Humeral Fractures

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*This guideline is for proximal and midshaft fractures of the humerus. Please refer to the current **Elbow guideline** for assessment and management of fractures involving the distal humerus.*

### Background

Proximal and humeral shaft fractures represent < 5% of all paediatric fractures and <10% of all humeral fractures in children. The most commonly affected groups are neonates (birth trauma), and adolescents.

#### Humeral Shaft Fracture:



#### Proximal Humeral Fracture:



**CAUTION – Humeral shaft fracture in children aged < 4 years, particularly spiral type fracture, has a strong link with non-accidental injury. Take a careful history and always discuss with a senior paediatric colleague.**



Spiral fracture of the humerus

### Assessment

**Any child with upper limb injury demonstrating neurovascular compromise must be referred immediately to the CED Consultant +/- Orthopaedic Registrar on Bleep 8629.**

Assessment should include clavicle to fingertip examination using a LOOK, FEEL, MOVE technique.

**LOOK** - Observe for deformity, bruising, swelling or wounds.

**FEEL** - Palpate the clavicle, scapula, humerus looking for points of bony tenderness

**MOVE** - It is not necessary to test range of movement if the upper arm is deformed

**NEUROVASCULAR** - check motor and sensory function of the radial nerve: active and against resistance, wrist and digit extension; sensation in the 1<sup>st</sup> webspace dorsally. Check pulses.

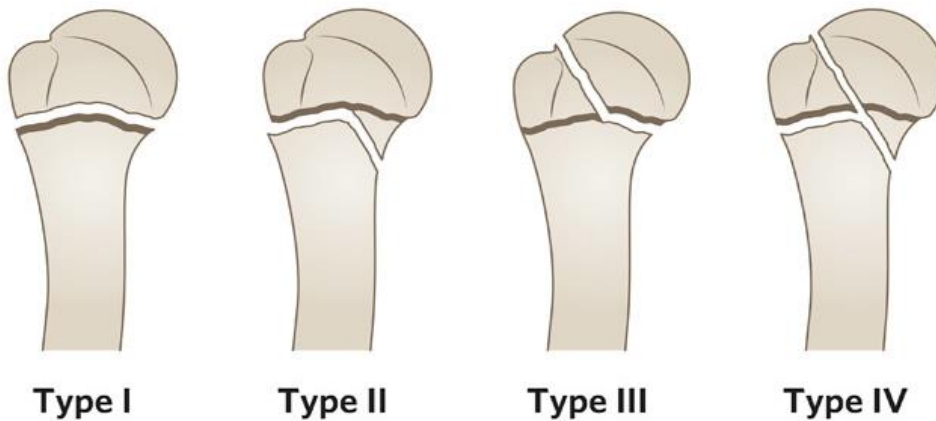
Injury to the radial nerve occurs in approximately 5% of humeral shaft fractures but is rare in proximal fractures.

### Imaging

Request AP and lateral humerus x-rays.

### PROXIMAL HUMERAL FRACTURES:

Salter Harris I & II fractures are most common. Metaphyseal fractures mostly occur >12yrs



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### Management:

Approximately 80% of humeral growth is generated proximally. It is this factor which allows for huge remodelling potential. It is therefore **rare for proximal humeral fractures to require operative intervention**, especially in the younger age group.

### Refer to orthopaedics if:

- Aged 5 -12 yrs > 60 degrees angulation and / or > 50% displacement
- > 12 yrs > 30 degrees angulation and / or > 30% displacement
- Greater tuberosity fractures in adolescents with any displacement.
- Any open fracture
- Any neurovascular compromise.
- Associated with other fractures
- Pathological fracture.

Children and adolescents without these features: put into a **collar and cuff** with **virtual fracture clinic review** (refer via PANDA).

**MIDSHAFT HUMERAL FRACTURE:**

**CAUTION – Humeral shaft fracture in children aged < 4 years, particularly spiral type fracture, has a strong link with non-accidental injury. Take a careful history and always discuss with a senior paediatric colleague.**

Humeral shaft fractures can be classified using the Neer-Horowitz Classification:

Neer-Horowitz Classification	
Type	• Minimally displaced (<5m)
Type	• Displaced < 1/3 of shaft width
Type	• Displaced greater than 1/3 and less than 2/3 of shaft width
Type	• Displaced greater than 2/3 of shaft width

**Management**

Operative reduction is rarely required with mid shaft humeral fractures as most will reduce effectively with conservative management.

Options include:

- Collar and cuff – allowing the weight of the child’s arm to naturally apply traction.
- Soft humeral shaft braces (see picture below) – available in CED for older children that require support for pain management.

If any form of splint or cast is used it should be applied by a clinician with the appropriate experience. There is risk of radial nerve compression and the child must be reassessed carefully post application before discharge. If unsure then discuss with Orthopaedics Registrar.

Follow up in virtual fracture clinic. Advise to return to CED if any neurovascular symptoms develop.

Humeral Brace with collar & cuff

