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## Pediatrics Humours Fracture Treatment and Diagnosis by Physical Therapy and Radiographic

**Abeer A. Soliman**

Assistant Lecture, Faculty of Medical Technology, University of Tobruk, Libya

**Sana I. Souliman**

Assistant Lecture, Faculty of Medical Technology, University of Tobruk, Libya  
sanaabdurhim@yahoo.com

**Afaf A. Soliman**

Assistant Lecture, Faculty of Medical Technology, University of Tobruk, Libya

### Abstract

The study was conducted for a complicated lower humours fracture. This type of fracture is considered the most complex and difficult to heal, as it requires surgical intervention.

This study investigates a child 4 years old with lower humours fracture into three pieces that was diagnosed by radiographic, she had surgery to fix by plates with the use of a casting and brace. After two months the plate and casting were removed, and then she started rehabilitating by physical therapy.

Physiotherapy continued for three weeks, after which the patient regained full movement and practised his daily activities normally, and this confirms the importance and role of physiotherapy in such cases. Further studies are required to confirm these findings.

**Keywords:** Pediatrics Humorous Fracture, Physical Therapy, Radiographic, Tobruk, Libya.

## 1. Introduction

A humerus fracture is a break in the long bone of the upper arm known as the humerus. The humerus is an important bone as it connects the shoulder blade to the elbow joint, and it plays a crucial role in the movement and stability of the shoulder and elbow joints.

Humerus fractures can occur in different parts of the bone, ranging in severity from mild to severe. The most common types of humerus fractures in children are supracondylar fractures, which occur just above the elbow joint, and midshaft fractures, which occur in the middle of the bone.

Fractures of the elbow constitute about 7% of adult fractures; distal humerus fractures account for less than half of all elbow fractures (Kumar, V., & Singh, A. 2016).

Humeral medial epicondyle fractures in the pediatric population account for up to 20% of elbow fractures, 60% of which are associated with elbow dislocation. Isolated injuries can occur from either direct trauma or avulsion. Medial epicondyle fractures also occur in combination with elbow dislocations. Traditional management by cast immobilization increasingly is being replaced with early fixation and mobilization. Relative indications for surgical fixation include ulnar nerve entrapment, gross elbow instability, and fractures in athletic or other patients who require high-demand upper extremity function. Absolute indications for surgical intervention are an incarcerated fragment in the joint or open fractures. Radiographic assessment of these injuries and their true degree of displacement remain controversial (Gottschalk, H. P., et al. 2012).

The humerus is a common elbow injury in children. Two thirds of all hospitalizations for elbow injuries in children Supracondylar fractures are most common in children aged less than 10 (Otsuka, N. Y., & Kasser, J. R. 1997).

Supracondylar fractures of the humerus are the most frequent fractures of the paediatric elbow, with a peak incidence at the ages of five to eight years.

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Extension-type fractures represent 97% to 99% of cases. Posteromedial displacement of the distal fragment is the most frequent;

Concomitant upper-limb fractures should always be excluded. To manage the vascular status, distal pulse and hand perfusion should be monitored. Compartment syndrome should always be borne in mind, especially when skin puckering, severe ecchymosis/swelling, vascular alterations or concomitant forearm fractures are present.

Symptoms of a humerus fracture in children may include: Pain and tenderness in the upper arm, Swelling and bruising, Difficulty moving the arm, Deformity or abnormal alignment of the arm, Numbness or tingling in the arm or hand (Olsson, C., Nordquist, A., & Petersson, C. J. 2005).

Diagnosis of fracture by radiography X-rays: The simplest way to see, X-rays provide the easiest, quickest, and cheapest option. The X-ray is at least going to be a direct Souliman, S. I., et al. 2022)

Gartland's classification shows high intra- and inter-observer reliability. Type I is treated with casting. Surgical treatment is the standard for almost all displaced fractures. Type IV fractures can only be diagnosed intra-operatively.

Closed reduction and percutaneous pinning is the gold standard surgical treatment. Open reduction via the anterior approach is indicated for open fractures, absence of the distal vascular flow for > 10 to 15 minutes after closed reduction, and failed closed reduction.

Lateral entry pins provide stable fixation, avoiding the risk of iatrogenic ulnar nerve injury (Vaquero-Picado, A., et al. 2018).

Treatment for a humerus fracture in children depends on the severity of the fracture. Mild fractures may be treated with immobilization, such as a cast or brace, while more severe fractures may require surgery to realign and stabilize the bone. Rehabilitation exercises and physical therapy may also be necessary to restore range of motion and strength in the affected arm.

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Overall, humerus fractures in children can be a painful and inconvenient injury, but with proper treatment and care, most children can make a full recovery and return to their normal activities.

Post operative Physical therapy is a part of any treatment approach to proximal humeral fractures with few guidelines available as to staging of interventions to maximize range of motion, strength, and optimize activities of daily living. As pain is often the best indicator of healing (Singleton, E., et al. 2014)

Children older than 8 years of age have a higher rate of open supracondylar humerus fractures, although nerve injury rates are similar. Surgeons placed more pins for the fixation of fractures in older patients and elbow stiffness requiring physical therapy occurred more commonly after surgical intervention (Fletcher, N. D., et al. 2012).

PT programs could help patients regain function and HRQOL Quality of Life of Postoperative Home-Based Physical Therapy for Patients earlier (Tsauo, J. Y., et al. 2005).

Grip strength and hand function did not significantly differ between the two groups. Flexion and extension of the wrist were the only movements to improve with physiotherapy at six months Predictors of poor functional outcome were malunion and impaired function before the fracture. These patients presented with pain, decreased rotation of the forearm and low functional scores at six weeks (Wakefield, A. E., & McQueen, M. M. 2000).

Physiotherapy played an important role for patients to recover and return to normal life in the least time, physiotherapists followed patients until full recovery by providing them with advice and following up on the rehabilitation program (Souliman, S. I., et al. 2022).

The study aims to investigate pediatric humerus fracture and diagnoses by radiographic and treatment by physical therapy postoperative.

## 2. Material and Method

This study investigates in child 4 years old with a lower humerus complex fracture in Medipol Hospital in Turkey that was diagnosed by radiographic as shown in fig 1.



Fig (1): X. Ray Humours Fracture

### Causes

Causes of fracture falling down from a short distance and child has a decrease in vitamin D and doesn't take any supplements.

### Symptoms

Numbness, swelling, pain, cannot use her hand.

she has surgery to fix by plates, these Implants therefore have a potential for achieving better results in treating complex fractures and cast and brace long arm splint as shown in fig 2, 3



Fig (2): X. Ray Post Operation



Fig (3): Casting Postoperative

### 3. Physical Therapy

After 2 months remove the plate and splint in medical Tobruk Centre as in Fig 4. The elbow joint was stiff and the muscles weakness. For this reason, she started a rehabilitation program in Tobruk Libya directly as the following:

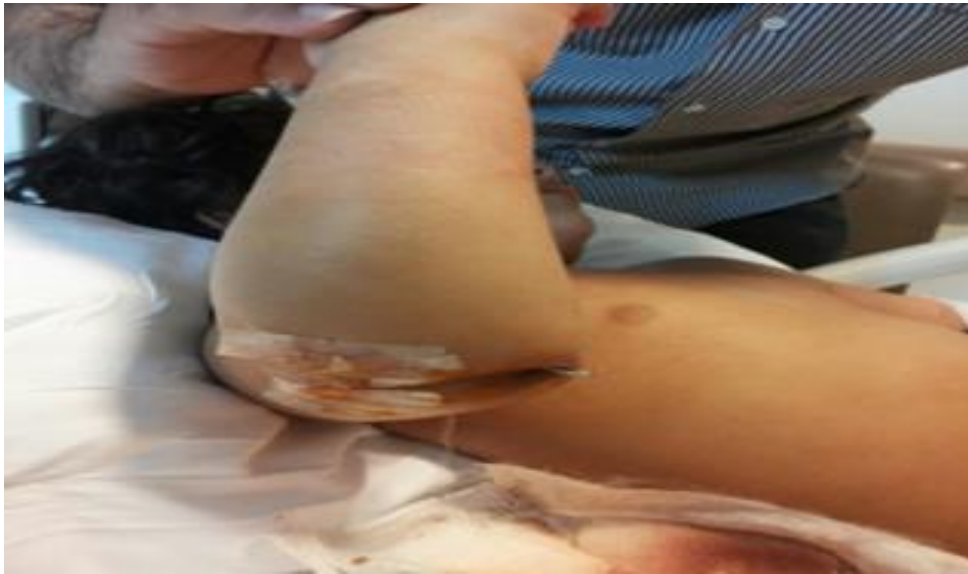


Fig (4): Remove Casting After 2 Months

- Massage using olive oil and coconut oil to moisturize and stimulate the heat of the muscles and hand.
- Passive exercise to increase the range of motion for the elbow joint.
- By flexion and extension for the elbow, wrist joint and shoulder to strengthen the whole muscles of the arm and forearm.
- Active exercise by making the patient do a daily activity like using hand to eat or drink.
- Strength muscles by weight bearing and resistance.

#### 4. Results and Discussion

This study investigates in child 4 years old with lower humours complex fracture in Medipol Hospital in Turkey that was diagnosed by radiographic, whereas had surgery to be fixed by plates, these Implants therefore have a potential for achieving better results in treating complex fractures and cast and brace long arm splint.

The fracture was diagnosed by radiography, which had a major role in the initial diagnosis and follow-up of the situation during the postoperative period.

Whereas in this case had fractures into 3 pieces in the distal right humour, after 2 months remove casting and plate them prepare the patient to physical therapy.

Physical therapy plays important role to rehabilitate the patient physically and psychologically, in addition to help the patient to return and recovery in less time. In this case, the patient returns to completely daily activities in two weeks. However, the traces of the operation and the shape of the hand remained with a slight twist, and this is considered among the complications after fractures in general.

Souliman, S. I., et al. (2022) Physiotherapy played an important role for patients to recover and return to normal life in the least time (Souliman, S. I., et al. 2022). That agreement with this study.

Fletcher, N. D., et al. (2012) Surgeons placed more pins for the fixation of fractures in older patients and elbow stiffness requiring physical therapy occurred more commonly after surgical intervention (Fletcher, N. D., et al. 2012). This is similar to our case, where it had to be done for bone fixation.

Souliman, S. I., et al. (2022) Diagnosis of fracture by radiography X-rays: The simplest way to see, X-rays provide the easiest, quickest, and cheapest option. The X-ray is at least going to be a direct (Souliman, S. I., et al. 2022) that agree with this study.



Olsson, C., Nordquist, A., & Petersson, C. J. (2005) Symptoms of a humerus fracture in children may include: Pain and tenderness in the upper arm, Swelling and bruising, Difficulty moving the arm, Deformity, Numbness or tingling in the arm or hand (Olsson, C., Nordquist, A., & Petersson, C. J. 2005). Agreement with this study.

## 5. Conclusion

The aim of study investigated in fracture of humerus in children where it was noted that most of the injuries were a result of trauma, falls, or low density of bone

Through this study, we recommend maintaining proper nutrition, exercising and avoiding all wrong practices that may lead to fall or overthrow. Physiotherapy played an important role in recovering patients

Radiographic is important and Easier and cheaper to diagnosis fracture

Further studies are required to confirm these findings.

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