

Case Report

Type - III supracondylar fracture of humerus effectively managed by closed reduction and pop application: A Case Report

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Abstract

Supracondylar fracture of the humerus is a common entity in children occurring most often in the age between 5 to 7 years. These constitute around 60% of the elbow fractures. Displaced fractures may be associated with various complications like neurovascular compromise, compartment syndrome, skin problems, volkmann's ischaemia and cubitus varus. The treatment is technically challenging and controversial. Type II and III fractures are displaced and are ideally treated operatively by open reduction and internal fixation. Conservative treatment is usually not recommended for type III fractures. We report a case of a type III supracondylar fracture in a young girl managed effectively by closed reduction and plaster cast alone with good cosmetic and functional outcome without any complications. The purpose of this paper is to highlight the likelihood of effective treatment of type III supracondylar humeral fractures conservatively through proper alignment and more vigilant care, avoiding the need for the surgery.

Keywords: Supracondylar humeral fractures. Type III fracture. Closed reduction

1. Introduction

Supracondylar fracture of humerus is the most common fracture around the elbow in children and constitutes approximately 3% of all fractures in children¹. These fractures are often seen in children between 5 to 8 years¹. Type III fractures can be treated by closed reduction and percutaneous K-Wires fixation, but open reduction and fixation is done if an adequate reduction cannot be obtained by closed manipulation^{2,3}. Closed manipulations should be avoided in displaced type-III postero-lateral supracondylar fractures or with neurovascular deficit as the neurovascular bundle may be trapped in the fracture site^{1,4}. A Gartland type III fracture is a displaced supracondylar fracture with no meaningful cortical contact⁵. These are ideally treated by internal fixation by open methods. We report a case of type III supracondylar fracture in a young girl successfully treated by closed reduction and plaster cast alone.

2. Case Report

An 8 year old girl presented to the emergency department with complaints of severe pain, swelling and deformity of the right elbow following a history of fall from a height. She was unable to flex or extend the elbow joint. On examination there was tenderness associated with crepitus at the right elbow joint. Patient was hemodynamically stable. There was no associated neurovascular injury. Radiological imaging demonstrated a severely displaced Gartland type III supracondylar fracture of right humerus (Fig.1.). Patient was planned for surgical reduction however due to financial constraints, patient's attenders refused surgery. She was conservatively managed with a posterior slab application in view of gross swelling of the limb for three days. Thereafter the limb was maintained in an above elbow cast. Follow up x ray after 6 weeks showed progressive bone healing process with acceptable anatomical reduction. Range of motion was 30° to 130°. At 10 weeks of follow up, patient had complete union without any pain or cubitus varus deformity. She had full range of movements at her elbow.

Fig.1. Pre-operative X ray of right elbow shows type III supracondylar fracture of humerus



Fig.2. X ray right elbow at 3 weeks showing callus and healing**Fig.3. AP and lateral x ray of right elbow after 6 weeks**

3. Discussion

Supracondylar fractures are divided into two types; extension (98%) and flexion (2%) type. The extension type is further divided by Gartland into type I (without displacement), type II (with displacement but intact posterior cortex) and type III (with displacement and disruption of both cortices). Type III is a common cause of surgical treatment among children⁶.

The treatment option for type III supracondylar fractures of humerus is still debatable and often technically challenging. Some prefer closed reduction and pinning for all displaced supracondylar fractures, including Gartland type II and type III.^[4,7] while many agree with open reduction techniques and that type III fractures with a posterolateral displacement are less stable and should be treated by internal fixation⁸. Surgical indications are unsuccessful closed methods, severe displacement, severe ecchymosis in anterior part of elbow, vascular insufficiency and open fractures⁶. Complications are common. Cubitus varus is the most frequent problem with a mean incidence of 30%⁹. Our patient presented with type III displaced supracondylar fracture of humerus. Patient was not willing for the operative intervention due to cost restraints. Since the fracture was closed and there was no associated neurovascular deficit we gave a trial of closed reduction and plaster cast immobilization. There was complete union with good functional outcome. Complete range of movements at the elbow was noted in spite of initial displacement.

4. Conclusion

Treatment of type III Gartland fractures must be weighed carefully against the outcome achieved using less aggressive and less costly procedures. These fractures can be aptly managed by accurate reduction. There is a likelihood of effective healing of these fractures conservatively through proper alignment and more vigilant care, avoiding the need for the surgery especially in the patients from the weaker sections and the rural population.

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