



International Journal of Orthopaedics Sciences

ISSN: 2395-1958
IJOS 2019; 5(2): 116-118
© 2019 IJOS
www.orthopaper.com
Received: 01-02-2019
Accepted: 03-03-2019

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High T intercondylar fracture of the distal humerus in a 5 year old child: Case report

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DOI: <https://doi.org/10.22271/ortho.2019.v5.i2c.21>

Abstract

Introduction: Intercondylar fracture of distal humerus is a rare paediatric orthopaedic entity. Only 55 cases of such fracture pattern have been reported. The aim is to add data to the scarce pre-existing literature and to discuss management guidelines.

Case summary: We hereby present a case report of a 5 year old child who sustained a road traffic accident, injuring his right elbow. The X-ray revealed intercondylar fracture of distal humerus (High T type) with comminution of the olecranon fossa, the fractured medial and the lateral columns were rotated. Open reduction and internal fixation was performed using posterior approach. The medial and the lateral columns were reduced to the shaft and fixed with K-wires. The condyles were then fixed to each other using a transversely placed threaded K-wire. Above elbow slab was given to the patient for 4 weeks. The slab was then removed and elbow range of motion exercise started.

Results: After one year of follow up, the Range of motion of elbow was 10 degrees to 130 degrees and no deficit in supination or pronation as compared to the contralateral side.

Conclusion: Intercondylar fracture humerus is a rare injury in children. Proper radiograph including oblique views should be taken to prevent misdiagnosis. These fractured are to be managed by open reduction and internal fixation using K-wires for better results.

Keywords: Child, Distal Humerus, intercondylar fracture

Introduction

Intercondylar fracture of distal humerus is a rare paediatric orthopaedic entity [1-15]. This injury usually affects the adolescent or older children and constitutes only 2% of all the elbow injuries in paediatric age group [6]. Only 55 cases of such fracture pattern have been reported [16]. Owing to the scarcity of the literature on such a rare fracture type in children, a well established management guideline is yet to laid down. After the review of existing literature it is found that such fracture type are to be openly reduced and fixed internally. Conservative management of displaced fracture have lead to malunion, growth arrest, necrosis, stiffness of elbow [1].

We hereby present a case report of a 5 year old child who sustained intercondylar of distal fracture humerus, high T type. The purpose is to add data to the scarce pre-existing literature and to discuss management guidelines.

Case presentation

A 5 year old boy sustained a road traffic accident, injuring his right elbow. He was brought to our centre two days later with complaint of swelling, pain, abrasion and deformity of right elbow. On examination the patient had blisters over the lateral aspect of elbow. There was no neurovascular deficit. The limb was splinted and elevated. Analgesics and antibiotics were given for 5 days. The X-ray revealed intercondylar fracture of distal humerus with comminution of the olecranon fossa, the fractured medial and the lateral columns were rotated.

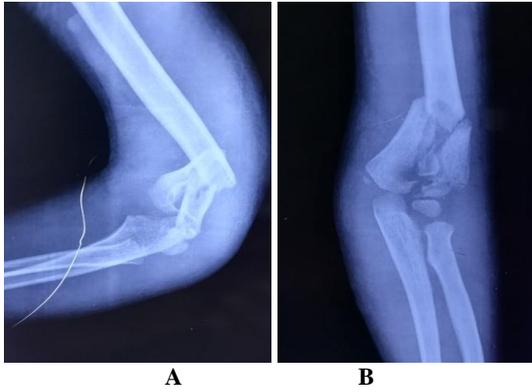


Fig 1: (A, B) Lateral and anteroposterior radiograph of distal humerus showing intercondylar fracture

The patient was planned for open reduction and internal fixation after taking written informed consent from the parents.

ORIF was performed using posterior approach, the ulnar nerve was dissected and the triceps was split. The medial and the lateral columns were reduced to the shaft and fixed with K-wires. The condyles were then fixed to each other using a transversely placed threaded K-wire.

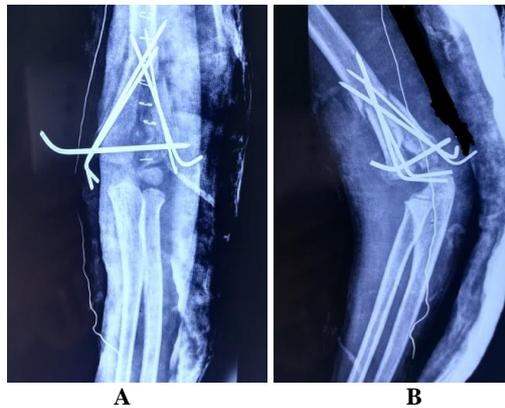


Fig 2: (A, B) Post operative antero-posterior and lateral radiograph of intercondylar fracture distal humerus fixed with K-wires.

Above elbow slab was given to the patient for 4 weeks. The slab was then removed and elbow range of motion exercise started. After one year of follow up the ROM of elbow was 10 degrees to 130 degrees and no deficit in supination or pronation as compared to the contralateral side.



Fig 3: (A, B) Antero-posterior and lateral radiograph 9 months after surgery

Discussion

Intercondylar fracture is an uncommon injury in skeletally immature children. It is caused by heavy impact to the elbow flexed to an angle more than 90 degrees. As a result the wedge shaped olecranon is forced against the condyles of distal humerus, prying them apart and this gives the vertical and horizontal fracture lines^[2, 3]. This flexion mechanism of injury add to the rarity of intercondylar humerus fracture in paediatric age group as elbow injury in children is commonly hyperextension type.

Beghin *et al.*^[3] suggested that such injuries might be missed because the distal humerus is not ossified in skeletally immature children. Moulton and Carmichael^[17] suggests an oblique radiograph for better visualization of such injury. Regarding the surgical approach, Tomori *et al.*^[16] in their review of literature found out that of the of the 37 cases operated, posterior approach was used in 32 cases. It has the advantage of better visualization of intraarticular extension of fracture line and bone fragment, and also aids in achieving adequate reduction. The disadvantage of this approach is restricted elbow extension^[5], elbow contracture^[18], aseptic necrosis of capitellum and lateral aspect of trochlea due to possible vascular damage^[19] and growth disturbance of distal humerus. The fixation is done using K-wires, however Kanellopoulos *et al.* and Karmani *et al.*^[12] used titanium nails and partially threaded screws.

Conclusion

Intercondylar fracture humerus is a rare injury in children. Proper radiograph including oblique views should be taken to prevent misdiagnosis. These fractured are to be managed by open reduction and internal fixation using K-wires for better results. However a significant amount of data and long term follow up is still needed to evaluate the efficacy of ORIF using posterior approach and clinical outcome of such injuries.

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