



A RARE CASE OF SUPRACONDYLAR FRACTURE HUMERUS ASSOCIATED WITH IPSILATERAL DISTAL RADIUS EPIPHYSEAL INJURY- CASE REPORT

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ABSTRACT Supracondylar fractures associated with ipsilateral distal radius epiphyseal injuries are a rare entity that is usually missed during preliminary clinical examination and can lead to severe complications if prompt management is not undertaken. We report a similar case which was a result of a fall on an outstretched hand and excessive energy being dissipated across both elbow and wrist which resulted in extension type of supracondylar fracture of the humerus (Gartland type-III) and ipsilateral distal radius epiphyseal injury (Salter-Harris type-II). The patient was managed with closed reduction and internal fixation with k-wire pinning of both the injuries and stabilization in a posterior slab for 3 weeks. The patient had a good functional and radiological outcome following this prompt management. We recommend screening radiographs of the distal radius in cases of supracondylar fracture to exclude any epiphyseal injury or fracture for its appropriate management.

KEYWORDS : Rare, Supracondylar Fracture, Ipsilateral, Distal Radius Epiphyseal injury

INTRODUCTION-

Isolated injuries of supracondylar fracture and distal radius fractures in children are quite common but combined fracture pathology in ipsilateral upper limb remains a rare entity to be encountered. Though the mechanism of injury may be the same that is hyperextension type of injury of the upper limb. There have been very few articles describing this kind of injury.^{1,2,3} These kinds of fractures were treated by k-wire fixation for both distal radius fractures and supracondylar fractures if found displaced.^{4, 5, 6, 7} We are describing a rare case of supracondylar fracture associated with the distal radius epiphyseal injuries that were managed with k-wire pinning for both the entities.

CASE PRESENTATION-

A 5-year-old girl presented to the trauma center with complaints of pain and swelling over the right elbow and right wrist following a fall over an outstretched hand while playing in the verandah. On examination, there was swelling, deformity, and tenderness present over both the right elbow and right wrist.

There was evidence of impending compartment syndrome indicated by feeble radial artery pulsations, numbness over fingers, pain out of proportion. The radiograph of the right elbow and right wrist was taken in both Antero-Posterior and lateral views. The radiograph showed Gartland type- III Supracondylar fracture of right humerus with Posteromedial displacement and Salter-Harris type- II epiphyseal injury of the distal radius of the right side. (Figure-1)

The supracondylar fracture was reduced by closed manipulation and was fixed with three 1.8 mm K-wires. Distal radius epiphyseal injury was also reduced by closed manipulation and was kept in place with two 1.8 mm k-wires. The procedure was uneventful.

Following the surgery, the patient was given above elbow posterior slab for 3 weeks and k-wires were removed after adequate soft callus formation. The patient was started with passive range of motion for 3 weeks and then was started on active range of motion around the elbow and wrist subsequently till the bearable limit of patient's pain threshold. The patient attained the preinjury level of functional range of motion at 6 weeks of postoperative care.

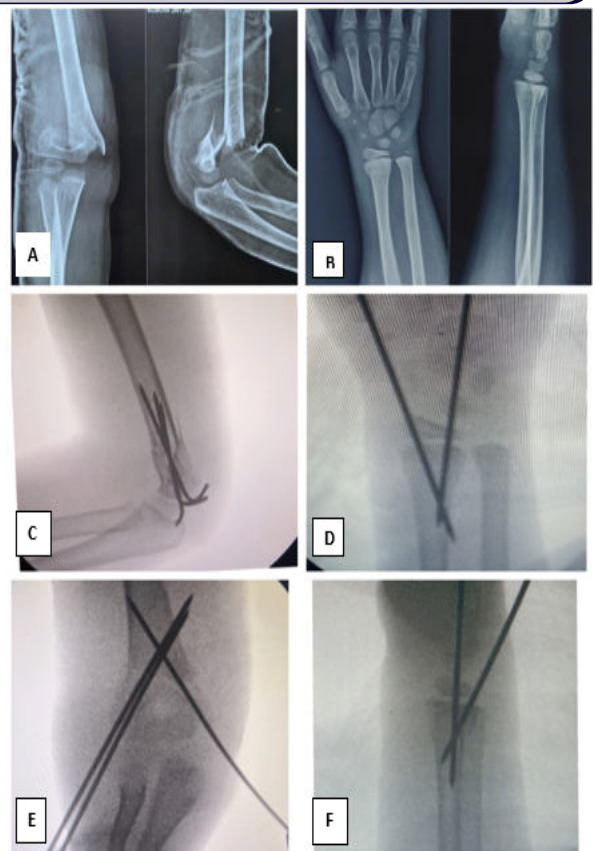


Figure-1- (A and B) - Depicts preoperative radiograph of right elbow and right wrist, **(C and E)** - Depicts Intraoperative fluoroscopic radiographs of right elbow and **(D and F)** - Depicts fluoroscopic intraoperative radiographs of right wrist.



Figure-2- (A And B)- Depicts the 3-weeks follow-up radiograph of the supracondylar fracture fixed with k-wire pinning and distal radius epiphyseal injury fixed with pinning.



Figure-3 (A, B, C And D) - Depicts the 6 weeks follow-up assessment of the range of motion- (A and B) - flexion- 30-130 degrees, (C and D) - full pronation and full supination.



Figure-4(A) - Depicts the 6 weeks follow-up radiograph of the supracondylar fracture of the humerus with callus formation in all 4 cortices. **4 (B) -** Depicts the 6 weeks follow-up of distal radius epiphyseal injury.

DISCUSSION-

Supracondylar fractures associated with forearm fractures have a reported incidence of 2-13 % with less inclusion of distal radius and ulna fractures.^{1,2,3} Combination of supracondylar fracture with distal radius epiphyseal injury makes it a rare case and severe injury in children that has to be dealt with utmost care. There have been very few documented studies regarding the occurrence of the distal radius epiphyseal injury associated with supracondylar fracture.¹⁰ Mechanism of injury in our case was fall on an outstretched hand with the elbow at extended position and wrist at the dorsiflexed position with so much force that a single fracture could not dissipate all the energy which is in conjuncture to previous studies.³ The supracondylar fracture in our case was of extension type which had the posteromedial direction of force resulting in Gartland type-III injury and improper force got transmitted over distal radius which led to epiphyseal injury Salter-Harris type-II.

The patient initially presented with clinical findings of impending compartment syndrome which is in conjuncture with Blakemore et al's study that had documented an incidence of 33% of developing compartment syndrome in cases of ipsilateral displaced supracondylar humeral and forearm fractures.⁹ The treatment of ipsilateral forearm fracture with supracondylar fracture has a controversial treatment wherein the majority of the isolated displaced supracondylar fractures of the humerus are managed with closed reduction and percutaneous fixation.¹⁰ Although good results have been reported after conservative treatment, most of the surgeons prefer k-wire pinning of the supracondylar fractures as the best choice of treatment.¹⁰ In our case, we first attempted closed manipulation and reduction followed by pinning of the supracondylar fracture with lateral k-wire placement and cross-wiring for better mechanical stability. After the stabilization of the supracondylar element, distal radius epiphyseal injury was reduced by closed manipulation and k-wire pinning was done to stabilize the epiphyseal plate. Reed et al had recommended the use of posterior plaster slab for both supracondylar fracture and distal radius fracture following fracture reduction and its fixation which was also done in our case.¹⁰ We had no complications of neurovascular injury, loss of reduction, and cubitus varus deformity. This kind of injury is quite rare and needs apt management so that the chances of having cubitus varus deformity and Madelung deformity are reduced in the future. Our case report recommends the screening radiograph of the distal radius in case of suspected supracondylar fracture to rule out any fractures or epiphyseal injuries for better management in this mode of injury. We also recommend k-wire fixation in both the injuries to have good functional and radiological results.

CONCLUSION-

Supracondylar fractures associated with ipsilateral distal radius epiphyseal injury are rare kind of injuries that should be managed with utmost care. We recommend the use of the screening radiograph of the distal radius in cases of supracondylar fractures to rule out any epiphyseal injury or fracture and also recommend closed reduction & fixation with k-wire pinning of both the injuries to have good functional and radiological outcomes.

Author's Note-

The present case report has not been published before nor has been

submitted in any other journal.

Ethical concern and conflicts of interest-

Proper ethical consent was taken into consideration and the principle of anonymity was followed. No conflict of interest was reported related to this article.

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