

Bilateral Supracondylar Humerus Fracture in an Infant - A Rare Case Report and Review of Literature

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Abstract

Supracondylar humerus fractures are the most common elbow injuries seen in the pediatric population. Predominantly they are unilateral injuries, and bilateral injuries are exceedingly rare. Here we present a unique case of a bilateral atypical supracondylar humerus fracture seen in a 7-month-old boy after he suffered a fall from the bed. These injuries occur infrequently, and it requires keen clinical suspicion to identify them.

Keywords: Bilateral, supracondylar, humerus, atypical, remodeling.

Introduction

Supracondylar humerus fractures are the commonest elbow injuries seen in the pediatric population [1, 2, 3, 4, 5]. It is the second most common site of injury after distal radius in children [4]. The peak age range at which most supra-condylar fractures occur is 5–6 years [6]. Predominantly injuries are seen on the left side [4]. However, bilateral supracondylar humerus fractures are extremely rare and very few anecdotal case reports are published in the literature. In this report we discuss a rare clinical scenario wherein a 7-month-old infant, after suffering a fall from bed, sustained bilateral atypical supracondylar humerus fractures. Bilateral supracondylar humerus fractures are an uncommon finding and are usually seen in cases of child abuse and very rarely secondary to high-impact trauma. Here we discuss the mechanism of injury, presentation, and management of this rare fracture pattern.

Case Report

A 7-month-old infant was brought by his parents to the outpatient clinic with an alleged history of the child falling off the bed 10 days ago. Immediately after the fall, the child refused to move both his upper limbs and was crying incessantly due to pain. Over the next few hours, the child developed swelling around both elbows. The parents took the child to a local doctor who clinically examined the child and advised X-rays for both elbows. The X-rays were suggestive of bilateral supracondylar

humerus fracture. There was no neurovascular involvement. The child was advised conservative treatment and was immobilized with a slab. Over the next few days as the swelling persisted, the parents took the child to get a second opinion and were advised to come to our institute for further management. On examination, no bruising or wounds were present over the elbows or elsewhere over the body. The child did not have any tenderness over the elbows. There was no movement at the fracture site. The child only had swelling which was decreasing. The X-rays were indicative of bilateral atypical long spiral oblique supracondylar humerus fractures (Fig. 1). Considering the age, the chronicity of the fracture, and since the fracture ends had already become sticky, we continued conservative management. The parents were counseled about the expected remodeling and regarding the need for osteotomy if it is required.

The slab was removed, and the child was immobilized with a long arm cast bilaterally for 2 weeks. After 3 weeks, the cast was removed, and X-rays (Fig. 2) were done which showed a good amount of callous and union and hence mobilization was started. At 1 year follow-up, the child has full range, no varus deformity (Fig. 3), and no complaints.

Discussion

Unlike adults, in growing children, remodeling can restore the alignment of initially malunited fractures to a certain extent, making anatomic reduction less essential. Remodeling follows inflammatory and reparative phases of bone healing and is very pronounced in children. However, it is important to note that remodeling is not universally and consistently applicable [7]. It is known that varus-valgus malunion in supracondylar fractures has limited remodeling potential and hence orthopedic

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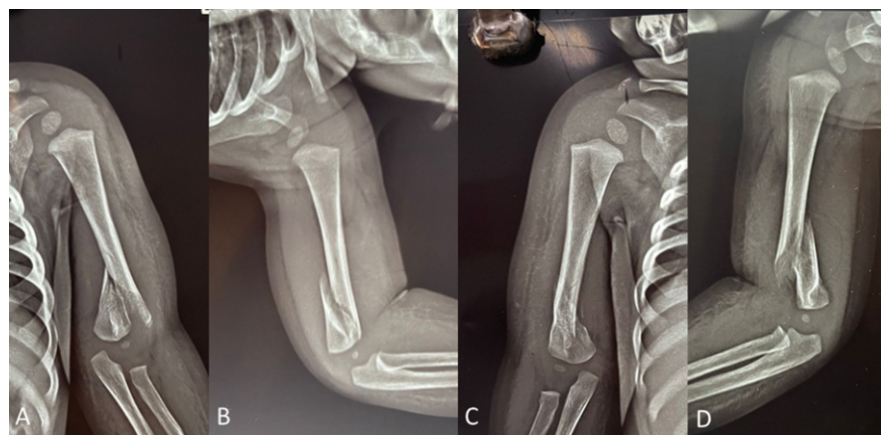


Figure 1: (a and b) Anteroposterior view and lateral view of left elbow radiograph showing 10 days old atypical spiral oblique supracondylar humerus fracture. (c and d) Anteroposterior view and lateral view of right elbow radiograph showing 10 days old atypical spiral oblique supracondylar humerus fracture.

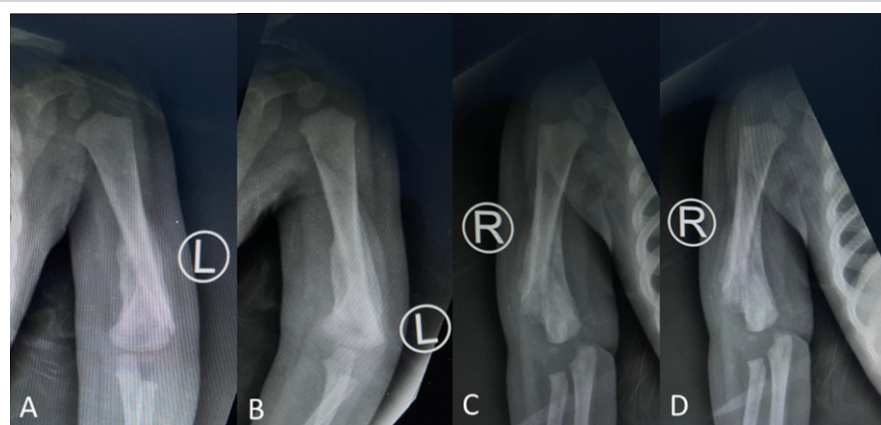


Figure 2: (a and b) Anteroposterior view and lateral view of left elbow showing 3 weeks post-trauma radiograph with abundant callous and good union. (c and d) Anteroposterior view and lateral view of right elbow showing 3 weeks post-trauma radiograph with abundant callous and good union.

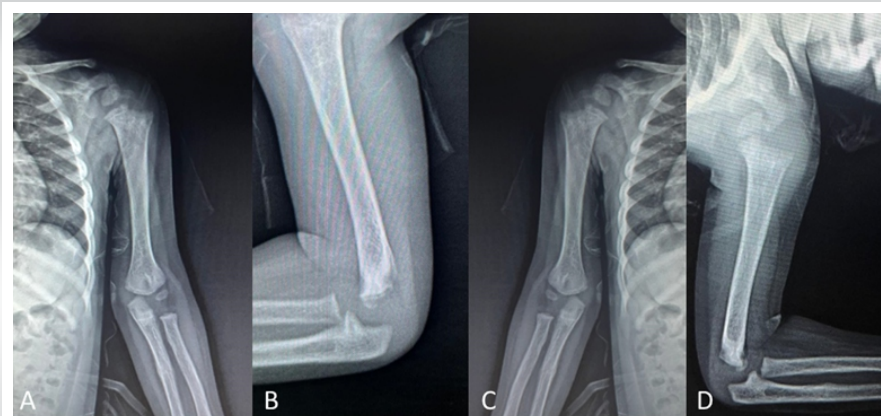


Figure 3: (a and b) Anteroposterior view and lateral view of left elbow showing 1-year post-trauma radiograph with excellent remodeling and good alignment. (c and d) Anteroposterior view and lateral view of right elbow showing 1-year post-trauma radiograph with excellent remodeling and good alignment.

surgeons aim for an anatomic or near-anatomic reduction in these fractures. Nikolic after assessing Baumann's angle in fifty-eight children found that adequate reduction is essential to avoid varus malunion. Nonetheless, Sagittal malunion is not uncommon [8]. Gamble [9] did a prospective study to evaluate the remodeling of sagittal plane malunion after pediatric supracondylar humerus fractures and found children younger than 5 years have 100% remodeling capacity.

Supracondylar humerus fractures are predominantly unilateral injuries. Bilateral supracondylar humerus fractures are exceedingly rare. We conducted a comprehensive review of the literature and found two similar cases of bilateral supracondylar humerus fractures in children (Table 1). In the first case, a 12-year-old boy with a significant past medical history of acute T-cell lymphoblastic leukemia, in remission, with chemotherapy-induced changes to the humerus presented to the emergency department for bilateral flexion type supracondylar humeral fractures 12 h after a fall while playing soccer [10]. In the second case report, a 7-year-old girl presented to the emergency room with a bilateral Gartland IV supracondylar humerus fracture 1 h after a fall from a swing on her outstretched hands [11]. In both these cases the children were treated surgically with closed reduction and percutaneous pinning. In the case of the 7-month-old baby boy, under acute circumstances, the treatment modality used would have been closed reduction with percutaneous pinning as well. However, as the child had presented to the hospital 10 days after the trauma, the process of fracture healing had already started. There was no pain or mobility at the fracture site. Hence, the child was treated conservatively with bilateral above-elbow casts and the parents were explained accordingly.

In other instances of delayed presentation of supracondylar humerus fractures, operative management has been done with good results. Guo et al. conducted a study in which patients with supracondylar humerus

Table 1: Comparison of demographic details, time of presentation, and treatment administered

	Age/Sex	Time of presentation	Treatment
Our Case	7 months/Male	10 days post-trauma	Conservative: B/L A/E Casts
Case 1	12 years/Male	12 h post-trauma	Operative: CRIF with K wire
Case 2	7 years/Female	1-h post-trauma	Operative: CRIF with K wire

fracture who had reported to the hospital more than 14 days after the trauma were treated with excision of the callus that was formed followed by fracture reduction and fixation with k wires. On long-term follow-up they concluded that the longer the duration between the trauma and the surgical treatment, the

poorer was the functional outcome [12]. Tiwari et al. concluded in their study of forty children with supracondylar humerus fractures who had presented late to the hospital that operative management in the form of closed or open reduction with k wire fixation gave good functional and cosmetic outcomes on long-term follow-up [13]. Considering the age of the child, delayed presentation, fracture type, and morbidity of the open reduction and k-wire fixation of both elbows, we planned for conservative management.

Conclusion

Bilateral supracondylar humerus fractures are an uncommon presentation. A high degree of clinical suspicion is required to diagnose bilateral fractures, especially in very young children.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the Journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Conflict of Interest: NIL; **Source of Support:** NIL

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