

Fracture of the Olecranon Epiphysis in a Thirteen Months Old Baby (A Case Report)

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- ✓ Olecranon epiphysis fractures are relatively uncommon in childhood, and most are undisplaced or minimally displaced fractures that can be treated by conservative methods. Closed reduction is the treatment of choice but if this fails, operative treatment should follow without delay. In this article, the case of a patient who had surgical treatment of this unusual childhood fracture is presented.

Key words: Olecranon, epiphysis fracture

- ✓ **Onüç Aylık Bir Bebekte Olecranon Epifiz Kırığı (Olgu Sunumu)**

Olecranon epifiz kırıkları çocukluk yaş grubunda ender görülen kırıklardır. Sıklıkla minimal ayrılmış veya ayrılmamış oldukları için kapalı metodlarla tedavi edilebilirler. Kapalı redüksiyon denenip başarı sağlanamazsa, gecikmeden cerrahi tedavi yapılmalıdır. Bu yazıda, çocukluk çağında ender görülen ve cerrahi olarak tedavi edilen bir olgu sunuldu.

Anahtar kelimeler: Olecranon, epifiz kırığı

INTRODUCTION

Olecranon fractures in children, with or without associated injuries are uncommon, composing 4-7% of fractures about the elbow^(1,2). Previous reports indicated that these displaced fractures occur in older children and rarely in children younger than 10 years^(1,3-5). Those olecranon fractures sufficiently displaced to require surgical intervention are even more uncommon, and reports in the literature are scarce^(1,6).

Fractures through the epiphysis and the growth plate are much less common and probably arise from similar mechanism^(2,7). In many cases, the complex structure of the secondary ossification center of proximal ulna may cause misdiagnosis⁽⁷⁻⁹⁾. Grantham and Kiernan⁽⁴⁾, and Wilkins⁽⁷⁾ described two

epiphyseal fracture types for the proximal ulna. The first type is the pure epiphyseal fracture. The second one is the epiphyseal fracture that is observed in old children and that is together with a big metaphyseal part⁽¹⁾ (Fig. 1). In this study, a 13 months old case is presented, who applied with the above mentioned rarely seen fracture type of childhood period and was treated surgically.

CASE REPORT

A 13 months old baby was seen in the emergency outpatient clinic in Ondokuz Mayıs University Faculty of Medicine 2 hours after. He fell on his left elbow, which was in flexion position to 90°, from a balcony 2 meters high. On first physical examination in the emergency room, the left elbow was

severely edematous. The elbow joint movements were restricted because of pain. On the olecranon, there was crepitation, abnormal movement and defect felt (gap) by palpation. No instability was determined on the elbow joint. The neurovascular examination of the upper left extremity was normal. No additional pathology was determined in the systematic examination. In the antero-posterior (A-P) and lateral radiograph of the left elbow, Grantham Type II olecranon epiphysis fracture including a large from metaphysis and with complete displacement was seen (Fig. 2). For comparison, A-P and lateral radiograph of the right elbow was taken and congenital proximal radioulnar synostosis is diagnosed incidentally (Fig. 3). Closed reduction was

attempted twice and, long arm splint was applied to full elbow extension position for immobilization. As in the control radiograph it was seen that anatomic reduction could not be obtained, open reduction and internal fixation were decided on. Under general anesthesia and after use of the tourniquet, the skin and subcutaneous tissue was passed with posterior longitudinal incision from one finger proximal of the tip of the olecranon to one finger distal of the fracture line and passing through the olecranon medially. The fracture line appeared, and haematoma and necrotic tissues were cleaned up. To protect growth plate, a metal implant was not preferred. Suture was applied from the proximal of the fracture line to the distal with the 00 prolene suture, and with u type suture from the medial, lateral and middle line. The fractured fragment was held in reduced position with a towel clamp while these three sutures were strongly knotted when the elbow was in 90° flexion position (Fig. 4), while passive movements were being done in the elbow joint, the stability of the fragment was checked, when stability of the fixation was ensured, the tourniquet was released and homeostasis was provided and the tissues were closed in usual manner. Long arm splint was applied in elbow joint at 90° flexion end the forearm at neutral rotation. After the operation, the sutures were taken off on the 12th day and long arm cast was applied the same day. At the end of the third week following the operation, the cast was removed. On physical examination of the case after eighteen months, it was seen that the elbow joint movements were freed to each direction; and in the radiographs, it was seen that the trabeculation of the bone was complete without deformity and growth disturbance of the olecranon (Fig. 5).

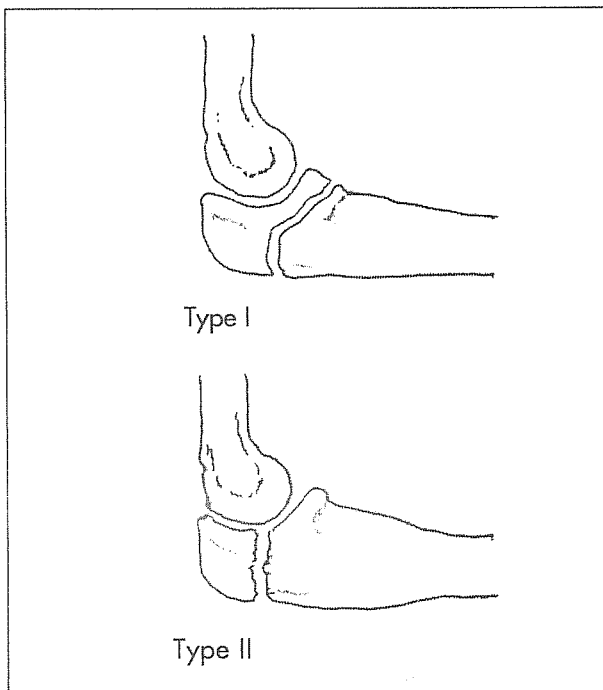
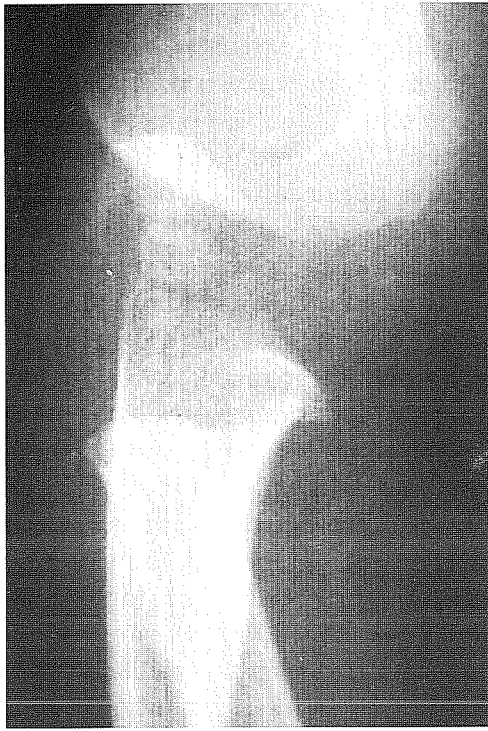


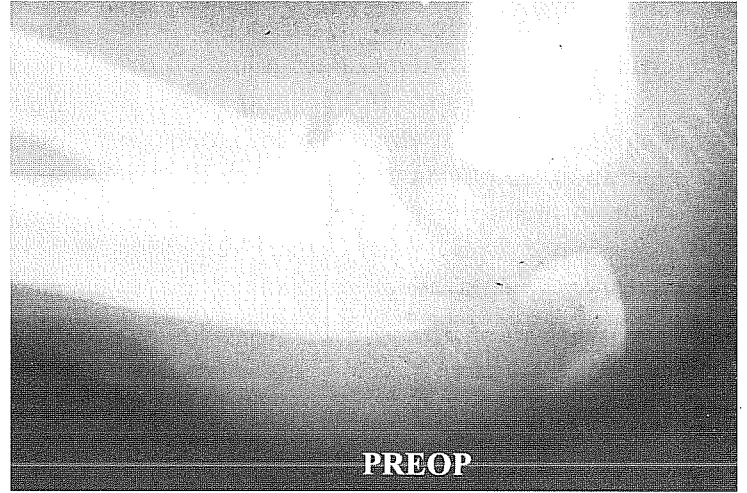
Figure 1. Olecranon epiphysal fractures.

Type I: Pure fracture along the physeal-metaphyseal border.

Type II: Fracture pattern with a large metaphyseal fragment included with the epiphysal fragment.



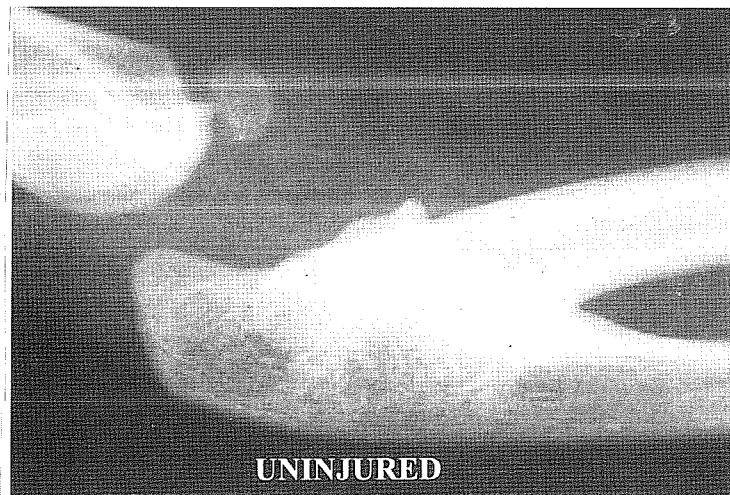
A



PREOP

B

Figure 2. A and B: Type II olecranon fracture with complete displacement.



UNINJURED

Figure 3. The uninjured elbow is shown for comparison. Congenital proximal radioulnar synostosis is noted in radiographies.

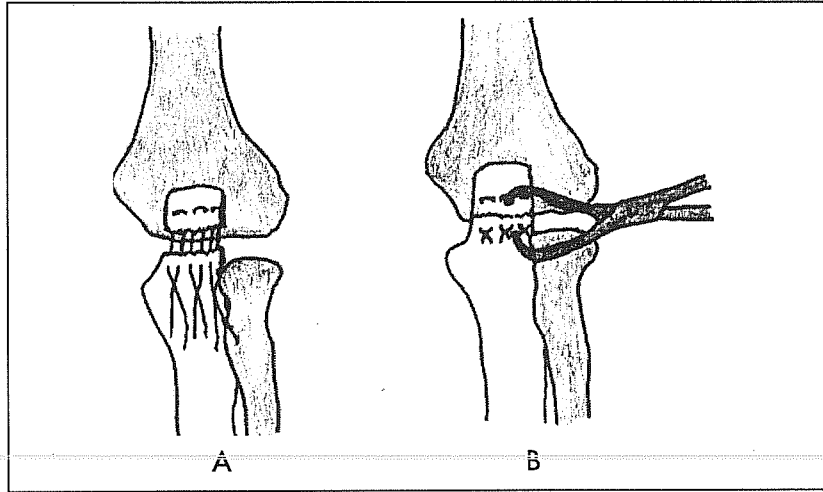


Figure 4. A) Schematic view of the fracture line before reduction. Three U type sutures (to medial, lateral and middle) are passed to distally from proximally of the fracture line. B) The three U type sutures knotted firmly while fragments held reducing to its normal anatomical position by a towel clamp.

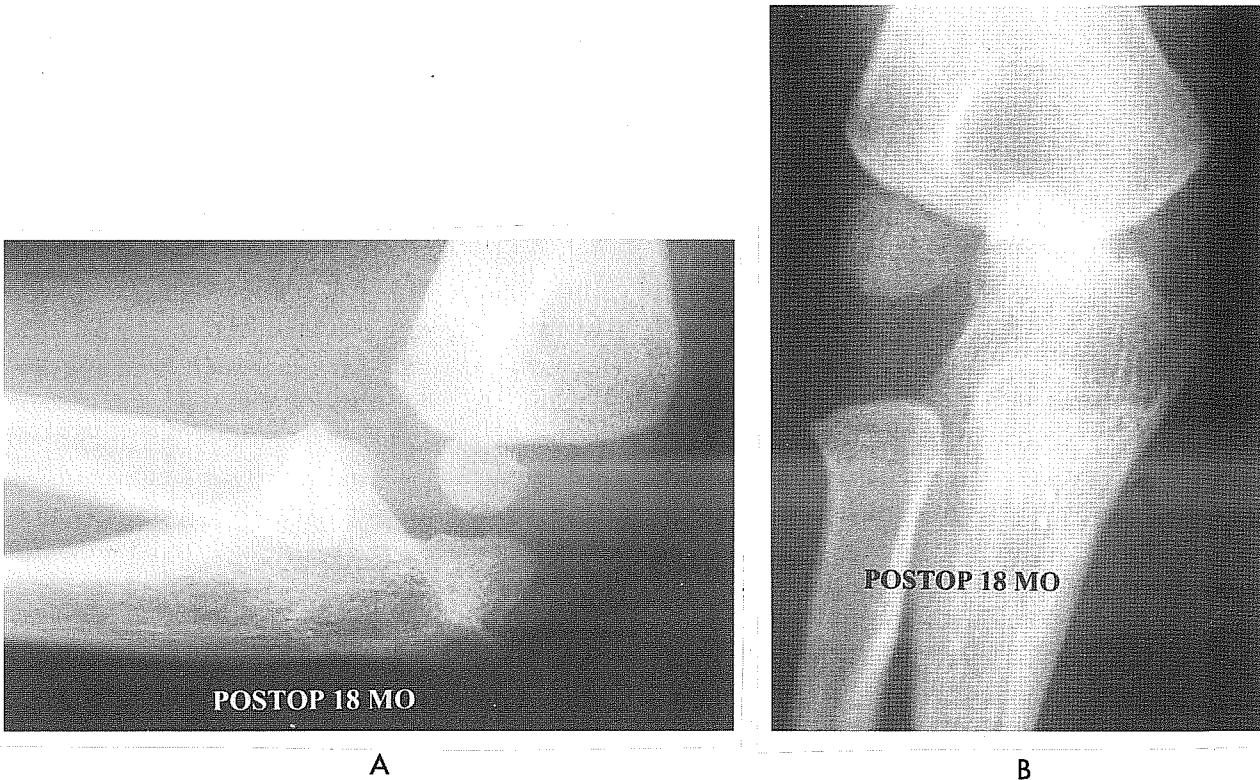


Figure 5. A and B. Eighteen months after injury, the radiographs showed complete union of the olecranon and no deformity of the elbow joint.

DISCUSSION

The pure olecranon epiphysis fractures are rarely seen among the childhood age group. When the publications concerning the subject are reviewed, it is seen that 182 children have been reported with olecranon fractures.^(7,10-12) Moreover, these cases were not limited to the olecranon epiphyseal fractures but they also included the proximal ulna fractures. In the English literature, only 16 epiphyseal olecranon fracture cases have been reported so far⁽⁷⁾. In the French literature, Bracy⁽¹¹⁾ has reported 10 epiphyseal olecranon fractures. No publication concerning the matter has been reported in the references available in Turkey. The publications show that the average age of the children with olecranon fractures is 9^(6,7). While Bount is emphasizing that displaced olecranon fractures are observed only among children aged between 10-16⁽⁷⁾, Grantham and Kiernan⁽⁴⁾ emphasized that only one child among those with displaced olecranon fracture is younger than 10. Graves and Canale⁽⁵⁾ also emphasized that the average age of the children with displaced olecranon fracture is 12 while the youngest one is 8 years old.

Our case is just 13 months old. No olecranon epiphysis fracture case with that age has been reported so far. The youngest case with olecranon epiphysis fracture reported in the literature is a 2,5 years old case within the series of Theodorou et al⁽¹³⁾. Ten percent of the olecranon fractures is accompanied with additional pathology^(3,10). In our case, there were no additional pathology.

Though the olecranon fractures are rarely seen events, approximately 80 % of these are undisplaced or minimally displaced and can be managed by immobilization, rarely requiring hospital admission^(2,7). Children with displaced avulsion fractures, the elbow

taken to extension and immobilised at this position reduces the fracture. On the other hand, the displaced olecranon fractures of old children often require open reduction and internal fixation. Generally "the tension band wiring technique" of the AO group is used as the internal fixation method^(7,9). Recently biodegradable materials have been used to replace either the tension band wiring or the longitudinal Kirschner wires or both in an effort to reduce complications^(2,7).

When open reduction was decided on, we faced the problem including "Which method to be used for the internal fixation?". We did not think of using metal implant since we were worrying whether it might damage the epiphysis and the growth plate. Since the case was very young, we decided that the bone union would be rapid, therefore, a minimal traumatic device would be the most suitable, which would hold the fragment at the reduced position till the union of the fracture is provided.

In summary, in this case, who was at a considerably young age for the displaced olecranon fracture which didn't respond to the conservative treatment, the fracture was undisplaced with the non-absorbable u type sutures following the open reduction and the elbow was immobilized for three weeks at 90° flexion. At the end of the treatment, the improvement was determined both clinical and radiological means. Our technique is associated with no hardware problems and epiphyseal plate damage. A tension band wiring technique always requires a general anesthetic and extensive dissection for removal. In addition, there are risks of infection and hypertrophic scarring. We think that the approaches during the diagnosis and treatment phases might assist the colleagues who face such a considerably rarely seen cases of this kind.

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