

Medial Epicondyle Fracture with Ulnar Nerve Entrapment-A Case Report

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Abstract

Isolated medial epicondylar fractures in adults are extremely rare. Here, we are reporting an unusual case of medial epicondylar fracture in a 23-year-old healthy female identified in our emergency department after falling down with an axial load trauma. Radiographic imaging showed displaced avulsion fracture at the medial epicondyle of the right humerus. Open reduction and internal fixation were done using cannulated screws. To our knowledge, this is the first reported case of adult with an isolated medial epicondylar fracture with ulnar nerve entrapment.

Keywords: *Medial Epicondyle Fracture; Trauma; Ulnar Nerve Entrapment*

Introduction

Ulnar collateral ligament and flexor-pronator muscles originate from the medial epicondyle. The flexor-pronator muscles includes the pronator teres, flexor carpi radialis, palmaris longus, flexor digitorum superficialis and flexor carpi ulnaris.

Fractures pattern of the medial epicondyle varies from a fragment entrapped in the elbow joint, comminuted segments and simple fracture displacement [1]. In the pediatric age group, the last ossification center in distal humerus to fuse is the medial epicondyle hence the avulsion fractures to occur after closure of the epiphyseal line are unlikely to happen [2]. Medial epicondylar fracture compromise 12% of all pediatric elbow fracture, However, the commonest isolated fractures in this population are caused by direct trauma or evulsion fractures [3,4]. In the contrary, adults medial epicondylar fractures are usually part of high energy trauma and comminuted fractures of distal humors [5,6]. Isolated medial epicondylar fractures in adults are extremely rare. Here, we are reporting an unusual case of medial epicondylar fracture in a 23-year-old healthy female identified in our emergency department after falling down with an axial load trauma. Radiographic imaging showed displaced avulsion fracture at the medial epicondyle of the right humerus. Open reduction and internal fixation were done using cannulated screws. To our knowledge, this is the first reported case of adult with isolated medial epicondylar fracture with ulnar nerve entrapment.

Case Report

This is a 23-year-old right-handed healthy female was riding her bicycle when she lost her balance and fell on the ground on her elbow. she was brought by her family to our emergency department with a left elbow pain. Radiograph showed (Figure 1 and 2). Left humeral

medial epicondyle displaced fracture. The fragment was displaced posteriorly... Non enhanced computed tomography (Figure 3 and 4) of the right elbow showed in addition to the right medial epicondyle fracture another comminuted fracture seen at the tip of the olecranon process with mild joint effusion. Proximal ulna, radius and triceps tendons were intact. Ulnar nerve was intact. Open reduction and internal fixation of the medial epicondyle was performed. associated soft tissue injury? (was there any).

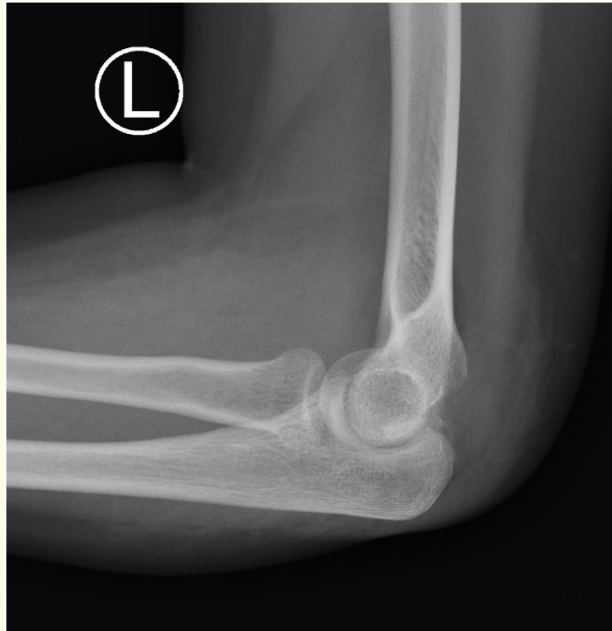


Figure 1: Anteroposterior view of the elbow.



Figure 2: Lateral view of the elbow.



Figure 3: Coronal elbow computed tomography.

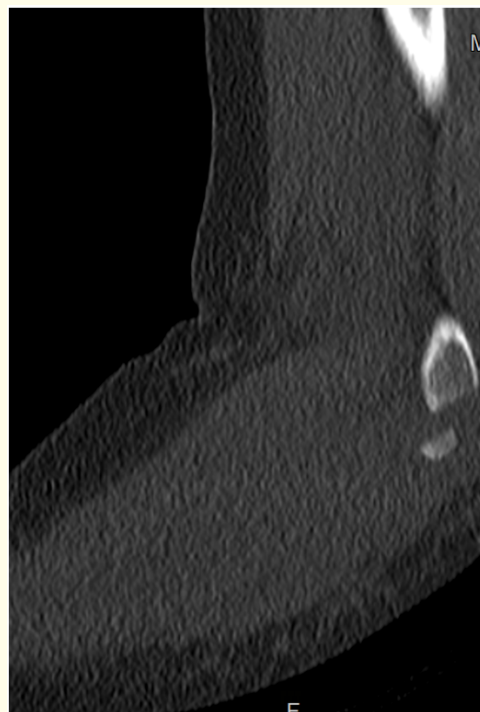


Figure 4: Sagittal elbow computed tomography.

After general anesthesia following medial approach, open reduction internal fixation of the left medial fracture was done using cannulated screws. Post-Operative radiographic image showing a stable elbow and satisfactory results (Figure 5 and 6). Patient was on a long arm cast in order to achieve a full immobilization of the elbow joint in the following 3 weeks and scheduled for physiotherapy afterward. Patient was initiated on a full range of movement exercises. Regular follow up was done three times after the operation to insure alignment, movement and the stability of the joint.



Figure 5: Post-operative anteroposterior elbow x-ray.



Figure 6: Post-operative lateral elbow x-ray.

Her recent visit showed healed surgical scar with full range of movement, her neurovascular exam was intact.

Discussion

During valgus stress, the ulnar collateral ligament which originates at the medial epicondylar ligament is the most important factor for elbow stability. Posteriorly at the groove of the medial epicondyle runs the ulnar nerve therefore the likelihood of nerve injury is much higher when medial epicondylar fractures occur. Final ossification center of the elbow joint is the medial epicondyle which ossifies at the age of 14 to 15 thus it is more susceptible to fractures in children and extremely rare in adults. Valgus stress on the elbow caused by throwing, wrestling or falling on an outstretched hand, results in an avulsion fracture of the medial epicondyle.

Which typically will be displaced anteriorly as a result of the pull of its attachment, the ulnar collateral ligament and flexor pronator muscles during valgus stress [1,2]. Non-operative and operative treatment were the mainstay of management, non-displaced and isolated fractures can be immobilized in a long arm cast in the first week with the flexed elbow to 90 degrees. Operative treatment is indicated when open fractures, incarcerated intra-articular fragments and valgus instability, open reduction and internal fixation with screw and washer construct, Kirschner wires, or sutures and tension band techniques are the suggested operative techniques [1].

Good long-term results in pediatric cases were observed in non-operative management and operative and resulted in bone union, anatomic reduction and valgus instability prevention [7,8]. In adults, management with open reduction and internal fixation as early as possible should

be done to achieve satisfactory results. In contrary to pediatric, poor prognosis was seen with non-operative measures [9]. This case was managed by open reduction and internal fixation shortly after the trauma happened which resulted in full range of movement and elbow stability with union of the fractures.

Isolated avulsion injury to the medial epicondyle with ulnar nerve entrapment is rarely seen in adults and not many case reports are found in the literature. However, Medial epicondyle fractures of the distal humerus in pediatric are more frequent and often associated with elbow dislocation, ulnar nerve injury, articular incarceration of the fracture fragment and other upper limb fractures. A case of epicondyle avulsion fracture with incarcerated fragment and posterolateral dislocation was seen by ostrander [13] in a 13 years old boy, in addition to the pain patient described paresthesia along the ulnar nerve distribution with a slight weakness to the intrinsic muscles of his hand. patient was managed by urgent reduction in the emergency department and then was taken to operation room for open reduction and internal fixation. congruent and stable elbow was seen post-operative.

In 2017, Takashi Oda [12] reported a case of 11 years old with medial epicondyle fractures as a result of direct blow trauma associated with soft tissue stripping. Full range of movement, strength and valgus stability were recorded 6 months after the operation. 143 cases of medial epicondyle fractures were seen by smith [11] with entrapped medial epicondyle fragment with a posterior dislocation of the elbow joint caused by direct trauma or falling on outstretched hand. Radial head fracture was reported in two cases.

We believed this type of isolated injury is never seen in adults and usually part of high energy trauma and comminuted fractures of distal humers. In addition to that, Entrapment of the ulnar nerve was observed intraoperatively, however, the patient didn't have any ulnar nerve injury, elbow dislocation, incarceration of the fracture fragments, or other hummers fractures which was recorded in many cases before in pediatric patients.

Conclusion

Epicondylar fractures are common in children and different combination of injury were seen. Epiphysis closed at the age of 11 - 14 hence its more unlikely to happen in adults. Early detection and attention to the fracture can guarantee full recovery and stability of the elbow joint. operative management is more preferable with excellent outcome followed by full arm casting and physiotherapy visits.

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