

Case Report

Fracture dislocation of the lateral condyle and medial epicondyle of the humerus associated with complete radial nerve transection

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Abstract

The combination of lateral condyle and medial epicondyle fractures of the humerus and a radial nerve transection is extremely rare. We could not find a similar case in the literature. Hereby we report such a case. An eight-year old female fell down while playing. She had wrist, thumb and fingers drop associated with hypoaesthesia over the first web space indicating radial nerve palsy. Plain X-ray of the left elbow showed fracture of the lateral condyle and avulsed fracture of the medial epicondyle. The Lateral condyle fracture was fixed with 2 screws and the medial epicondyle fracture was fixed with 2 K wires. The radial nerve was completely transected which was repaired primarily through a lateral approach. Six months later, the patient had full recovery of the wrist and elbow functions without any deformity.

Keywords: Radial nerve transection, Fractures lateral condyle, Humerus.

Introduction

Humeral shaft fractures are associated with around 10% incidence of radial nerve injury^{1,2} while paediatric supracondylar fractures are associated with 6% incidence of radial nerve injury.³ In general, neurological injuries may reach up to 20% in displaced paediatric supracondylar fractures, 20-30 % of these were radial nerve injury.^{4,5}

We have recently treated a child having a combination of lateral condyle and medial epicondyle fractures of the humerus and a radial nerve transection. This combination is extremely rare. We could not find a similar case in the literature. Hereby we report the case which was treated with early surgical exploration having a successful outcome.

Case Report

An eight-year old female fell down while playing. She was complaining of pain and swelling of the left elbow. She had diffuse swelling of the left elbow without any external wound. The radial pulse was well palpated. There was wrist, thumb and fingers drop associated with hypoaesthesia over the first web space indicating radial nerve palsy.

Plain X-ray of the left elbow showed fracture of the

lateral condyle (type II Milch) and avulsed fracture of the medial epicondyle (Figure-1A). The patient was admitted for open reduction and internal fixation and nerve exploration. The Lateral condyle fracture was fixed with 2 screws and the medial epicondyle fracture was fixed with 2 K wires (Figure-1B). The radial nerve was completely transected which was repaired primarily with epineural stitches using prolene 6/0 through a lateral approach (Figure-2). Six months later, the

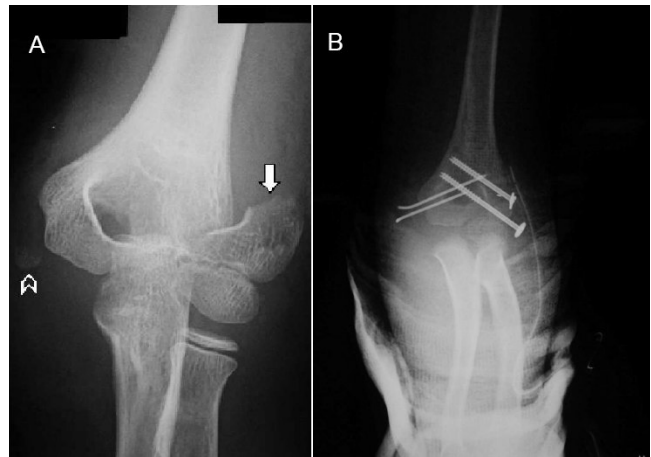


Figure-1: AP view X-ray of the left elbow showing a displaced fracture of the lateral humeral condyle (arrow) and avulsed fracture of the medial humeral epicondyle (arrow head).



Figure-2: The Lateral condyle fracture was fixed with 2 screws and medial epicondyle fracture was fixed with 2 K wires.

patient had full recovery of the dorsiflexion of the wrist and normal function of the elbow without any deformity.

Discussion

Understanding the mechanism and management options of nerve injuries associated with paediatric supracondylar fractures will optimize their clinical outcome.⁶ This nerve injury occurs mainly due to contusion, tenting, stretching, or entrapment of the nerve on a sharp humeral fragment.^{4,5} In our patient, this injury occurred due to the lateral protrusion of a bony spike leading to complete transection of the radial nerve. We could not find a similar case in the literature having a combination of lateral condyle and medial epicondyle fractures of the humerus and a radial nerve transection.

All three nerves; the radial, median and ulnar nerves should be properly tested for both motor and sensory functions in cases of paediatric supracondylar fractures of the humerus.⁶ Around 40 % of these neurological injuries are diagnosed at the time of presentation while the rest is diagnosed after reduction fixation.⁵ Inability to extend the wrist and fingers associated with loss of function of the brachioradialis and extensor carpi radialis longus and brevis indicates radial nerve injury.⁷ Whether the injury was primary or was caused as an outcome of the treatment has medicolegal implications. In our patient, the injury was detected early leading to successful early exploration.

The management of radial nerve injury is controversial as some will advocate a conservative approach because majority will resolve spontaneously.^{2,4,8} This will avoid associated risks such as anaesthesia, infection, and iatrogenic nerve injury.⁷ Others will advocate exploring the nerve when there is an indication for open reduction and internal fixation. In a systematic review of the literature, Shao et al have found that there was no significant difference in the final outcome between those initially managed expectantly compared with those who had early exploration.⁸ This indicated that the initial expectant treatment will not adversely affect the extent of nerve recovery.

Our patient needed open reduction and internal

fixation because the lateral condyle was severely displaced which may lead to severe impairment of the elbow function if left without intervention. Furthermore, it would have been difficult to reduce the fractures by the closed method because they occurred at two different anatomical sites. We were satisfied with the cosmetic and functional outcome for both the elbow and hand in our patient. Our patient would have needed surgery any way because the nerve was completely transected. Only 4% of patients with radial nerve injury have complete division of the nerve.² Primary repair should be done without tension similar to our patient otherwise a sural nerve graft should be done.⁷ This is different from nerve contusions in which majority would have recovered spontaneously.

In summary, motor and sensory neurological examination of the upper limb is essential in all cases of paediatric condylar or supracondylar fractures of the humerus. In case radial nerve injury was clinically detected and the fracture needed open reduction and internal fixation, then the radial nerve should be explored. Early repair of a transected radial nerve was easier than delayed exploration and had a successful outcome.

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