

Concomitant ipsilateral metaphyseal fracture of olecranon and lateral condyle in a child – A rare case report and literature review

Ganesh Singh Dharmshaktu, Shailendra Singh Bhandari

Department of Orthopaedics
Government Medical College,
Haldwani, Uttarakhand, India.

Address for correspondence:
Ganesh Singh Dharmshaktu,
Department of Orthopaedics
Government Medical College,
Haldwani, Uttarakhand, India.
PIN – 263139.
drganeshortho@gmail.com

Received: November 23, 2015

Accepted: December 30, 2015

Published: March 10, 2016

ABSTRACT

Elbow injuries make a sizeable burden of cases in the clinical scenario and require highly specialized care for good functional outcome. The associated injuries increase the complexities in the clinical presentation and their diagnosis. Concomitant injuries call for the appropriate management of each element separately for holistic care. The early mobilization is the aim for early and uncomplicated return to pre-injury level of activities. There are various associated injuries with olecranon metaphysis fractures but the concomitant lateral condyle fracture has been a rare reporting.

KEY WORDS: Elbow; Injury; Fracture; Lateral condyle; Ulna; Internal fixation.; Management; Child.

INTRODUCTION

Fracture of olecranon metaphysis is a rare injury and more so in isolation. The incidence reported in various studies averages 4-6% of all elbow fractures [1,2]. Approximately 48 to 77% of these have associated fracture or dislocation around elbow with highest incidence for those of proximal radius [2,3]. Fracture of the lateral condyle has been reported as a rare associated injury with olecranon metaphysis fracture [4]. The metaphyseal fractures, on the basis of mechanism of injuries, have been divided in three groups as Flexion injuries, Extension injuries with subgroup of valgus and varus pattern, and lastly Shear injuries [5]. The varus pattern of extension injuries resulting in fracture of lateral condyle is an uncommon event associated with these injuries.

CASE REPORT

An eight year old male child was presented to us chief complaints of fall from height of four feet while playing in the park and injury to his left elbow region. There was swelling and deformity since the injury and painful limitation of use of affected extremity. There was no other injury except few abrasions over arm and forearm region. The elbow was flexed and held by the child in a make-do sling with scarf. The clinical assessment was limited by pain and swelling and distal neurovascular status was intact. The radiographs of elbow in two planes were advised and

evaluated. The radiograph showed fracture of olecranon as longitudinal split at metaphysis level while the lateral condyle was also fractured. The associated pattern is highly unusual as ipsilateral injuries. The initial dressing of abrasions was followed by a plaster back slab for support and pain relief while the case was planned for operative fixation. The informed consent was taken from parents regarding procedure and future publication. The lateral approach was used to access lateral condyle and was fixed with two lateral Kirschner wires and a tension band wiring was done for olecranon fracture through posterior approach using two Kirschner wires and a loop of stainless steel wire in figure of eight fashion. Bending of wires before cutting was done followed by wound closure in layers. A protective plaster splint was given for support and protection. Active and passive finger and shoulder joint was encouraged throughout the post treatment therapy. Uneventful removal of stitches was done on tenth day and plaster removed after four weeks for gentle supervised physiotherapy.

RESULT

The fracture united uneventfully on follow up review 12 weeks. The hardware was removed after five months of radiological union. The range of motion was excellent and painless involvement in the activities of daily living was present. There was no remote complication noted after 14 months of follow up.



Figure 1. Radiograph showing AP (a) and lateral (b) view of the concomitant fractures of olecranon and lateral condyle.



Figure 2. Post operative radiograph showing operative fixation of fractures.

DISCUSSION

Extension type of injury is common following pediatric fall on outstretched hand. This is a common mechanism for commoner injuries associated with it like supracondylar fracture of humerus. But, if the direction of the force is in varus or valgus stress might concentrate over olecranon leading to its failure. Most common pattern resulting from that is a longitudinal greenstick fracture of ulna metaphysis with or without other associated injuries depending of the varus or valgus element. The valgus force, which is commoner of the two, is associated chiefly with fracture of proximal

radius or avulsion of medial epicondylar apophysis [5]. Our case had no recollection of actual mechanism of injury as he fell from height to the ground. But we postulate that it would have been a fall on outstretched hand with varus element leading to longitudinal fracture, extra-articular, linear fracture of olecranon and forces acting on lateral condyle. The adduction of supinated forearm in extended elbow has produced fracture of lateral condyle in cadaveric studies and can be understood by “pull-off” theory as many support [6,7].

The treatment of olecranon fracture range from internal fixation with screw alone, tension banding, figure of eight wiring alone, or combination of cancellous screw and tension band. Out of these aforementioned modalities screw plus figure of eight and tension band wiring had been reported with good resistance to failure [8]. To the best of our knowledge, we could identify only one similar case report describing a multi-fragmentary fracture of olecranon along with lateral condyle mass fracture in a young female child. The case was managed with K wire fixation of lateral condyle fracture and tension band wiring for olecranon fracture [9]. Another very similar case report has also been reported in the same age group [10]. One recent report about an 8 year old boy with hyperflexion injury with similar injury combination has been published [11]. Lastly a recent study of 2502 cases of elbow and distal humeral injury were analysed and eight cases had olecranon fracture in combination to lateral condylar mass fracture [12]. Overall the above combination of injury is very rare and careful management leads to good functional outcome.

REFERENCE

1. Maylahn DJ, Fahey JJ. Fractures of the elbow in children. *JAMA*. 1958;166:220-228.
2. Papavasiliou VA, Beslikas TA, Nenopoulos S. Isolated fractures of the olecranon in children. *Injury*. 1987;18:100-102.
3. Graves SC, Canale ST. Fractures of the olecranon in children: Long-term follow-up. *J Pediatr Orthop*. 1993;13:239-241.
4. Bracq H. Fractures De l'olecrane. *Rev Chir Orthop*. 1987;73:469-471.
5. Erickson M, Garg S. Radial neck and olecranon fractures. In: Flynn JM, Skaggs DL, Waters PM, editors. *Rockwood and Wilkins' Fractures in Children*. 8th ed. Philadelphia. Wolter Kluwer Health; 2015.
6. Stimson LA. *A practical treatise on fractures and dislocations*. Philadelphia, PA: Lea Brothers & Co.; 1900.
7. Jakob R, Fowles JV, Rang M, et al. Observations concerning fractures of the lateral humeral condyles in children. *J Bone Joint Surg Br*. 1975;57(4):430-436.
8. Murphy DF, Greene WB, Dameron TB. Displaced olecranon fractures in adults. *Clin Orthop Relat Res*. 1987;24:215-223.
9. Pace A, Gibson A, Al-Mousawi A, Matthews SJ. Distal humerus lateral condyle mass fracture and olecranon fracture in a 4-year-old female-review of literature. *Injury extra*. 2005;36:368-372.
10. Sharma H, Sibinski M. Distal humerus lateral condyle mass fracture and olecranon fracture in a 4-year-old female-review of literature. *Injury* 2006;37(7):675.
11. Cattle K, Hammadi S. Case report of combined olecranon fracture and lateral condyle fracture. *Am J Emerg Med*. 2006;24(3):367-8.
12. Sharma H, Sibinski M, Sherlock DA. Outcome of lateral humeral condylar mass fractures in children associated with elbow dislocation or olecranon fractures. *Int Orthop*. 2009;33(2):509-14.

© SAGEYA. This is an open access article licensed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted, noncommercial use, distribution and reproduction in any medium, provided the work is properly cited.
Source of Support: Nil, Conflict of Interest: None declared