

Unusual posterior elbow dislocation associated with radial head fracture managed non- operatively in Low and Middle Income countries.

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April 03, 2024

Introduction

The elbow is a complex joint consisting of ulnohumeral, proximal radioulnar, and radiocapitellar articulation. The elbow joint is the second most commonly dislocated joint in adults after dislocation of the shoulder. The annual incidence of simple and complex elbow dislocations is 6.1 per 100,000 (1) and they are classified as pure or complex as they are associated with fracture.

Diverse mechanisms are reported as causes of elbow dislocation such as hyperextension, direct impact, axial varus-supination-compression, and axial valgus-supination-Compression. (2). Radial head fractures are the most frequent ones in the elbow (3). They are caused by axial mechanisms with the upper limb in extension and the forearm in pronation (posture in which pressure is more strongly transmitted through the radius). In divergent dislocations, the proximal radius and ulna are wedged apart by the humerus.

The severity of radial head fractures is the presence of associated injuries. Most common injuries associated with radial head fractures into 5 patterns: a) fracture of the radial head and rupture of the interosseous ligament of the forearm (Essex-Lopresti) (4); b) Fracture of the radial head and rupture of the medial collateral ligament (MCL) or capitellar fracture; c) Fracture of the radial head and posterior dislocation of the elbow; d) Terrible triad injuries (posterior dislocation of the elbow with fractures of the radial head and coronoid process); and e) posterior olecranon fracture dislocations (posterior Monteggia pattern injuries) (5).

Mason's classification divides radial head fractures into: type I: non-displaced or <2mm-displaced fractures; type II: displaced fractures; type III: comminute fractures; and type IV: fractures associated with dislocation (6).

We present a patient who suffered an elbow dislocation associated with fracture of the radial head

Case report

We present a 44-year-old male patient, right-handed, manservant, who slipped and fell from his own height, on his right hand with elbow extended while bathing. He was brought to our hospital for pain and relative functional disability of his right upper limb, 30 minutes after the trauma. On physical examination in the Emergency Room (ER), the patient was painful in a Dessault's attitude. The elbow was swollen with intact overlying skin, tender, with varus deformity and restricted range of motion, with normal pulse and distal neurological examination.

A CT scan of the elbow was not financially accessible to the patient, so he had an X-ray showing a complex lateral dislocation in her right elbow associated with radial head fracture (Figure 1). She was subjected to closed reduction under general anesthesia and immobilization with a long arm casting flexion position and reduction was confirmed on a control X-ray (Figure 2).

The patient fared well and was initiated on physiotherapy one week after reduction. She was then followed up at 2, 6, 9 and 12 weeks after. At nine weeks follow up, the patient had a stable elbow with 120°-flexion and -20°-extension, and 80°-supination. At twelve weeks follow up, she resumed elbow activities without any functional limitations.

Discussion

We report an unusual case of elbow fracture dislocation contrary to what is reported in literature (2, 3). It represents a rare subgroup; posterior dislocation of the elbow associated with radial head fracture. This case was not associated with olecranon fracture and medial collateral ligament disruption nor was it a terrible-triad of posterior dislocation of the elbow with fracture of the radial head and coronoid process.

We carried out a bibliographic research at databases MEDLINE, LILACS and Embase using the following key words: dislocation, elbow, radial head and fracture, We found few publications about elbow dislocations associated radial head fractures in adults, although there are diverse publications about radial head fractures associated to olecranon, coronoid process fracture with elbow dislocation in adult (7, 8).

The percentage of radial head fractures with associated injuries is documented as being 30% in the literature (9); reconstructing the radial head and repairing injured ligaments, allows for early mobilization, and is important for clinical outcome. The elbow dislocation was reduced, and a long arm cast was applied in flexion position and early mobilization was initiated. This treatment allowed the patient to resume function with no limitations.

Open Reduction and Internal Fixation (ORIF) or prosthetic replacement of the radial head fracture is generally recommended when facing a displaced fracture or in the presence of associated injuries. Radial head reconstruction adds to the elbow stability (10). Antuña et al. reported an isolated comminuted radial head fractures, without associated instability of the elbow, resection of the radial head which lead to satisfactory results (11). While surgical management is recommended in displaced radial head fractures; *Kodde et al.* reported conservative treatment of Mason type II fractures also report favorable outcome (12, 13). Lindenhovius et al. (14) reported on the long-term outcome of ORIF for stable displaced partial articular fractures of the radial head with an average 22 years follow-up. Although the results were good, complications were seen in 44% of patients. Furthermore, they compared their results with the 19 years follow-up of the same type of fractures that were treated conservatively by Akesson et al. (12) and concluded that ORIF is not superior to conservative approach in the long-term.

These results are in accordance to a recent retrospective comparative study by Yoon et al. (15), in which non operative management was compared to ORIF. They found no clinically significant difference in Passive Range Of Motions (PROMs), Range Of Motion and strength between the groups (14). However, more complications [failure of hardware and heterotopic ossifications (HO)] were seen following ORIF, and younger patients scored worse on PROMs."

Conclusion

The management of posterior elbow dislocation has to take into consideration the clinical assessment of the elbow stability after reduction and potential associated lesions and to define treatment strategies. Limited access to CT-scan in our settings, let the final decision rely only on the clinical assessment and standard X-ray. The non-operatively management of elbow dislocation associated with radial head fracture in resource constrained settings can be a treatment option with favourable outcome.

List of figures

Figure 1. X-ray of a dislocated right elbow

Figure 2. Control X-ray after closed reduction.

Authors ‘contributions

JMT and GBM have designed, conceptualized the study, and written the first draft under the supervision of PDM, AKM, GBM, AAB, WM, GTK and OC who contributed to the edition and revision of the paper. All authors have reviewed and approved the final manuscript.

Conflicts of interest

Authors declare to have no known conflict of interests.

Ethical statement

This case report received ethical clearance from the Ethical Committee of the Catholic University of Bukavu.

Consent

Written informed consent was signed by the patient prior to the publication of this paper.

Acknowledgments

GBM is thankful to the Excellence Scholarship Program “**Bourse d’Excellence Bringmann aux Universités Congolaises, BEBUC** and its partner Else-Kröner-Fresenius-Stiftung .

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