

Bilateral Radial Head Fractures in a Young Patient: A Rare and Unique Presentation

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Learning Point of the Article:

Bilateral head radius fracture – diagnosis and management.

Abstract

Introduction: Bilateral radial head fractures are a unique and rare presentation. Few studies are available in the literature documenting these type of injuries. We present a rare case of bilateral radial head fractures (Mason type 1) and managed conservatively with full functional recovery.

Case Report: A 20-year-old male sustained bilateral radial head fractures (Mason type 1) following a roadside accident. The patient was managed conservatively with above elbow slab for 2 weeks followed by range of motion exercises. The patient had uneventful follow-up with full range of motion at elbow.

Conclusion: Bilateral radial head fractures in a patient are a discreet clinical entity. A high index of suspicion, meticulous history, clinical examination, and appropriate imaging is essential in patients with history of fall on outstretched hands to avoid missing diagnosis. Early diagnosis, proper management, and appropriate physical rehabilitation lead to complete functional recovery.

Keywords: Bilateral elbow joint, fracture dislocation, radial head fractures.

Introduction

The elbow joint is a complex joint, in which superior radioulnar joint plays a key role in the pronation and supination of the forearm. The radial head may be fractured when it collides with the capitulum. This can occur with a pure axial load (e.g., Essex-Lopresti injury), a valgus load, posterolateral rotatory type of load, or as the radial head dislocates posteriorly as part of a posterior Monteggia fracture or posterior olecranon fracture-dislocation [1]. It accounts for about 2% of all fractures around the elbow, but bilateral radial head fractures are very rare. Few studies are available in literature documenting these type of injuries. Hence, we are reporting this unique and rare presentation of bilateral radial head fracture in a patient which

was conservatively managed with full functional recovery.

Case Report

A 20-year-old male presented to the emergency department with complaints of pain and swelling in bilateral elbow joints following a roadside accident involving a bike skid. The patient had a fall backward with both arms in outstretched position. At the time of fall, there was extension at shoulder and elbow; supination at forearm; and dorsiflexion at wrist.

On clinical examination, swelling 2 × 1 cm was noted on posterolateral aspect of elbow over radial head. Deep tenderness over radial head was present bilaterally. Pronosupination and

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Author's Photo Gallery



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Figure 1: Mason type 1 fracture right elbow. Anterior posterior and lateral view.

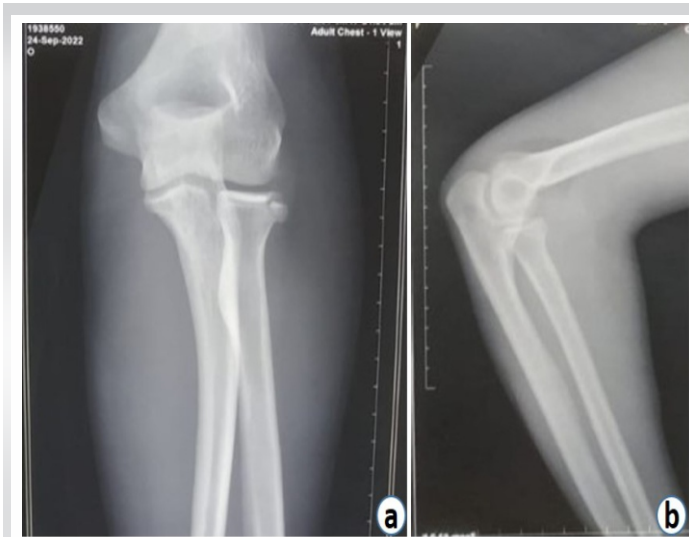


Figure 2: (a and b) Mason type 1 fracture left elbow. Anterior posterior and lateral view.

flexion-extension movements at elbow were painful and restricted. No varus or valgus instability was noted in both elbows. On radiography, type I radial head fracture (Mason's Classification) was noted bilaterally (Fig. 1 and 2). The patient was managed conservatively with above elbow slab \times 2 weeks and NSAIDs. Following slab removal after 2 weeks, physiotherapy both elbows was initiated. The patient had pain free and full range of motion at 6 weeks follow-up (Fig. 3, 4, 5).

Discussion

Mason classification is commonly used for classification of radial head fractures with Mason type 1: undisplaced marginal fractures; type 2: displaced marginal fractures; and type 3 as comminuted fractures [2]. Morrey has further refined this classification by adding variables of displacement, articular surface and fracture dislocation – (a) fractures of radial neck,

(b) including a quantitative definition of displacement (a fragment involving 30% or more of articular surface that is displaced more than 2 mm), and (c) incorporated fracture-dislocations of the elbow [3]. Mason type 1 is the injuries frequently reported, while some studies have reported, Mason type 2 and Mason type 3 injuries as a bilateral fracture head radius presentation [4, 5, 6, 7, 8] (Table 1).

Radiography (AP and Lateral View) elbow is an important tool, being essential for diagnosis of radial head fractures. Inclusion of a joint above and below elbow is essential to avoid missing fracture combinations like Essex-Lopresti fractures [9]. Some additional views, for example, Green Span view may be required for better visualization of radial head fracture. MRI is helpful in 76–90% of patients with radial head fractures for detection of soft tissue and cartilaginous injuries [10]. Clinically, relevant



Figure 3: (a and b) Follow-up X-ray right elbow anterior posterior and lateral view.



Figure 4: (a and b) Follow-up X-ray left elbow anterior posterior and lateral view.



Figure 5: (a-d) Follow-up of patients - clinical pics

associated injuries, for example, coronoid fractures and elbow dislocations were found in 39% of patients with radial head fractures in some studies with likelihood of associated injury strongly correlated to the severity of the radial head fracture [11].

Treatment of radial head fractures ranges from conservative

management in Mason type 1 fractures, for example, immobilization to operative modalities such as ORIF with Herbert Screws/1.5–2 mm cancellous screws, arthroscopic excision, and radial head arthroplasty in Mason type 2 and 3 fractures [1].

Conservative treatment, for example, above elbow slab/pressure bandage or cuff and collar sling for support followed by active mobilization as early as possible is the method of choice for Mason type I fractures [8]. The shortest the period of immobilization, the best are patient-reported outcome measure scores (PROMs) at follow-up [12]. These fracture types are prone to overtreatment in the form of radiographic follow-up without modifying treatment, leading to unnecessary patient visits, radiation exposure, and increased costs [13].

Introduction of new techniques and implants for the fixation of small articular fracture fragments in type 2 fractures has improved their surgical outcome [14]. In some studies with comparative evaluation of surgical and conservative modalities of treatment in Mason type 2 fractures, no clear cut advantage of one technique over the other has been reported [10].

Isolated comminuted radial head fractures, without associated instability of the elbow, are managed by resection of the radial head with satisfactory outcome [15]. Replacement of comminuted radial head by silicone implants restores elbow stability, but several implant-related problems and complications have been reported [16]. On the other hand, ORIF is another option for Mason type III fractures, but ORIF

Table 1: Relevant Literature

Author	Title	Mechanism	Type	Associated injuries	Management
Pathak [5]	Bilateral radial head fractures secondary to weighted pushups: case report and review of literature of a rare injury. The Journal of Emergency Medicine, 2005;7(3):8	weighted pushups in full forearm pronation.	Mason type 1 (R), 2 in (L), respectively.	Nil	Above elbow slab for 1 week right side and for 2 weeks left side, then started on active rom at both elbows.
Kutsch-Lissberg [6]	Incidence and analysis of simultaneous bilateral radial head and neck fractures at a level 1 trauma centre. The Journal of trauma 2010;69(4):907-912	Falls from bicycle, fall from height, fall from a motor vehicle and fall as a pedestrian.	Mason type 1, 2a, 2b, 3.	Nil	Mason type 1 and 2a treated with immobilization of both elbows and Mason type 2b and higher are treated by surgery.
Rawal [7]	Simultaneous bilateral Radial Head fractures in a young female: was an increased carrying angle the cause. The Journal of Orthopedics and allied sciences 2015;3(2):76-78	History of fall on outstretched hand, whole weight on bilateral palms	Mason type 2	Nil	Above elbow slab x1 week bilaterally followed by active rom exercises at bilateral elbows.
Kokly [8]	Bilateral radial head fractures in a female with simple falling down: a case report The Journal of Gorgan University of Medical sciences 2018;20(3):110-114	Fall on level ground with outstretched hands	Mason type 3 (R) and type 1 (L)	Nil	ORIF with plating for right side and above elbow slab for 1 week for left elbow. Slab removed after 1 week and active ROM started.
Berrada [9]	Isolated bilateral fractures of two radial heads - a case report. World Journal of pharmaceutical and medical research 2021,7(13),22-23	Fall from height landing on two upper limbs with elbows extended and pronated.	Mason type 1	Nil	Above elbow slab x4 weeks followed by active physiotherapy of bilateral elbows.

Table 1: Relevant Literature

in more than 3 fracture fragments has resulted in unsatisfactory outcome due to difficult reduction, hardware failure, and non-union [17]. Only one randomized study comparing ORIF versus radial head arthroplasty for comminuted unstable radial head fractures has reported significantly better PROMs in arthroplasty group [18]. However, it is currently unknown whether one fixation technique has superior outcomes over the others. The present patient was having bilateral radial head fractures (Mason Type 1) and, hence, was managed by bilateral above elbow immobilization for 10 days followed by active elbow exercises, following which he had full range of motion.

Conclusion

Bilateral radial head fractures in a patient are a discreet clinical

entity. A high index of suspicion, meticulous history, clinical examination, and appropriate imaging is essential in patients with history of falls on outstretched hands to avoid missing diagnosis. Early diagnosis, proper management, and appropriate physical rehabilitation lead to complete functional recovery.

Clinical Message

Bilateral radial head fractures are an injury pattern, both rare and unique. Meticulous history, clinical examination, and radiography help identifying fracture geometry and providing appropriate treatment to the patient, leading thereby to improved functional outcome.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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