Bilateral Type 1 Radial Head Fractures in a Volleyball Player

Author(s): Dr. Nasir Muzaffar, Dr. Aejaz Ahmad, Dr. Nawaz Ahmad, Dr. Naveed Bashir, Dr. Arifa Hafeez

Corresponding Author:
Dr. Nasir Muzaffar,
Registrar, Bone & Joint Surgery Hospital, 190005 - India

Submitting Author:
Dr. Nasir Muzaffar,
Registrar, Bone & Joint Surgery Hospital, 190005 - India

Article ID: WMC001812
Article Type: Case Report
Article URL: http://www.webmedcentral.com/article_view/1812
Subject Categories: ORTHOPAEDICS
Keywords: Radial Head, Bilateral, Fracture, Physiotherapy

How to cite the article: Muzaffar N, Ahmad A, Ahmad N, Bashir N, Hafeez A. Bilateral Type 1 Radial Head Fractures in a Volleyball Player. WebmedCentral ORTHOPAEDICS 2011;2(3):WMC001812
Bilateral Type 1 Radial Head Fractures in a Volleyball Player

Abstract

Radial head and neck fractures are common in young to middle age adults and are seen in nearly 20% of acute elbow injuries in this age group. Isolated radial head fractures are less common (nearly 2% of all elbow fractures). Bilateral radial head fractures are rare and are mostly seen in situations when the patient has a fall on outstretched, supinated hands. The treatment of these fractures maybe conservative or operative, depending upon the degree of head comminution, the percentage of articular surface involved, presence of loose intra-articular fragments and angulation between the radial neck and proximal shaft. We present a patient with bilateral type 1 radial head fractures managed with brief immobilization followed by active physiotherapy and full, uneventful recovery.

Introduction

The elbow joint is a complex joint. The superior radioulnar joint plays a vital role in the pronation and supination of the forearm. Due to the anatomy of this joint, fractures here are usually associated with fractures of both the radius and the ulna with or without dislocation. The mechanism of injury in most of these fractures is due to a fall on an outstretched hand. Isolated fractures are rare. Bilateral fractures usually need severe force in the form of a sports injury. Trivial trauma has rarely been recorded as a cause of bilateral fractures. Radial head and neck fractures are common in young to middle age adults and are seen in nearly 20% of acute elbow injuries in this age group. These are usually associated with high energy trauma like fall from height, road traffic accidents and sports injuries. Unilateral radial head fractures are relatively common and maybe associated with other concomitant injuries. Bilateral radial head fractures are rare and are mostly seen in situations when the patient has a fall on outstretched, supinated hands or direct fall on the elbow. These injuries can be easily missed by the attending physician, more so if the symptoms are more severe on one side, thus neglecting the other. Neglect or inability to diagnose and treat such a pathology early can lead to severe debility later. The treatment of these fractures maybe conservative or operative, depending upon the degree of head comminution, the percentage of articular surface involved, presence of loose intra-articular fragments and angulation between the radial neck and proximal shaft. The emphasis in these cases is on the fact that unless the history of the mode of trauma is highly suggestive, such injuries can be missed easily and cause long term problems for the patient.

Case Report(s)

A 29 year old male, volleyball player reported with pain in both the elbows after falling on both outstretched hands with both the elbows in extension while playing volleyball on grass. On examination, there was mild ecchymosis on the left elbow with tenderness over the radial heads on both sides. There was no restriction to the range of movements. There was no distal neurovascular deficit. AP and lateral radiographs of both the elbows revealed symmetrical undisplaced Mason type 1 radial head fractures (Fig.1). Patient was only given long arm POP slabs on both sides for 10 days and analgesics followed by slings for 10 days and advised active range of motion exercises. He was able to function with the slabs and slings due to family support for his daily activities. At 3 weeks, the slings were discarded and the patient was put on physical therapy and at three months, he was pain free and had no limitation of motion. He has again started playing volleyball, albeit with elbow guards!

Discussion

Radial head fractures are amongst the most common fractures occurring around the elbow in adults, accounting for 1.5% to 4% of all fractures and approximately 33% of all elbow fractures[1]. Although radial head fractures can occur in isolation, associated fractures and ligament injuries are common. Assembling the clinical presentation, physical examination, and imaging into an effective treatment plan can be challenging. The characteristics of the
radial head fracture influence the technique used to optimize the outcome. Bilateral radial head fractures are uncommon[1]. The mechanism of injury in radial head and neck fractures is usually a fall onto an outstretched hand with a partly flexed elbow and pronated forearm causing longitudinal impact of the radius against the capitellum. The force of trauma is transmitted along the forearm producing a valgus stress at the elbow causing compression of the radial head against the capitellum which results in fractures due to shear between the vertically aligned trabeculae and may also injure the capitellum. Clinically, moderate to severe pain, local tenderness with swelling and a positive fat pad sign with a fracture line on radiography are diagnostic features. Conventional radiography with AP & Lateral views are usually adequate for detection of radial head and neck fractures. Internal and external oblique radiographs are required occasionally. CT with reconstruction images is of helpful in doubtful cases and aid in decision making. Support can be found for virtually every type of treatment, from prolonged immobilization to operative fixation and rapid functional loading. Mason's classification[1] (based on the severity of radial head and neck fracture) is used clinically to formulate the type and extent of treatment. Mason classified radial head fractures into three groups. Type I is an undisplaced marginal fracture. Type II is a displaced marginal fracture and type III is a comminuted fracture.A fourth group was subsequently added i.e. type IV which includes any radial head fracture with dislocation of the humeroulnar joint. Since type I fractures cause no mechanical block to elbow motion and require no reduction, they are treated conservatively. Joint aspiration of haemarthrosis and injection of an anaesthetic into the joint may be performed to reduce pain. The main problem after radial head fracture is failure to gain full extension, probably caused by damage sustained by the capitellum of the humerus at the time of injury[2] and more importantly, fibrosis of the anterior capsule of the joint after organisation of haemarthrosis[3]. Mason and Shutkin[4] suggested that early motion helps to shape and mould slight incongruities without substantial risk of displacement. Bakalim[5] showed that displacement of the fragment did not cause loss of function. Unsworth-White et al concluded that extension splintage was superior to immobilisation in flexion[6]. Aspiration of elbows championed by Postlethwait[7] was finally discredited by Gaston[8] who showed that although aspiration may ease initial pain, it does not affect the long term result. Injecting the joint with local anesthetic to determine if motion is blocked was first suggested by Quigley[9]. Holdsworth et al[10] conducted a prospective, controlled trial of 60 cases but failed to show any long-term advantage with this technique, intra-articular infection being a potential risk. Thus, its use can be supported mainly for diagnostic purposes and to provide acute pain relief. They concluded that functional recovery was best in younger patients and was closely related to the severity of the fracture. They stated that aspiration of the elbow is a quick, safe, and painless procedure, which greatly reduces discomfort to the patient and allows early return of movement of the elbow, but failed to show any difference in the functional outcome between the aspirated and nonaspirated group. Carley[11] suggested that aspiration may benefit patients with traumatic elbow effusions and that the evidence was insufficient to recommend it as a routine procedure. Deshmukh advocated early movement for prevention of elbow stiffness in a bilateral radial head fracture[12]. We present this case as a timely reminder for orthopedic surgeons who, when dealing with trivial injuries should examine patients with a high index of suspicion for bilateral injuries. No matter how trivial, the mechanism of injury maybe, the presence of one easily diagnosed injury should not rule out a thorough examination of the patient for other injuries. We conclude that type 1 radial head fractures are to be treated conservatively and early movement is advocated for prevention of elbow stiffness. In bilateral radial neck fractures, management with sling immobilisation makes day-to-day activities difficult if not impossible, therefore help with these activities is highly recommended. In the acute phase analgesia to control pain and ensure motion is of prime importance. Aspiration of haemarthrosis though gives pain relief initially does not seem to influence the long term results. Early mobilization should be considered for “stable” fractures that involve less than one third of the articular surface or for fractures in elderly, low-demand individuals. In active individuals, however, fractures involving more than a third of the articular surface should be treated with splint or sling support for 10 to 14 days, followed by protected functional activities for an additional 7 to 10 days. The prognosis for this group is generally good, although Mason reported that one third of the patients in a large series lost an average of 7° of extension; it is prudent to warn patients that this might occur. Though some patients lack terminal degrees extension it does not interfere with their functional activities.

References

1. Hodge JC. Bilateral Radial Head and Neck


Illustrations

Illustration 1

Fig 1 showing bilateral type 1 radial head fractures
Disclaimer

This article has been downloaded from WebmedCentral. With our unique author driven post publication peer review, contents posted on this web portal do not undergo any prepublication peer or editorial review. It is completely the responsibility of the authors to ensure not only scientific and ethical standards of the manuscript but also its grammatical accuracy. Authors must ensure that they obtain all the necessary permissions before submitting any information that requires obtaining a consent or approval from a third party. Authors should also ensure not to submit any information which they do not have the copyright of or of which they have transferred the copyrights to a third party.

Contents on WebmedCentral are purely for biomedical researchers and scientists. They are not meant to cater to the needs of an individual patient. The web portal or any content(s) therein is neither designed to support, nor replace, the relationship that exists between a patient/site visitor and his/her physician. Your use of the WebmedCentral site and its contents is entirely at your own risk. We do not take any responsibility for any harm that you may suffer or inflict on a third person by following the contents of this website.