

Chondral Lesion of the Capitellum Humeri Accompanying a Radial Head Fracture: A Case Report

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ABSTRACT

In this case report we present a case of a full thickness chondral lesion of the anterior-distal surface of the capitellum humeri, accompanying an intraarticular radial head fracture. The importance of this case is the resemblance of the chondral injury to a Lorenz-Kocher lesion of the humerus and atypical displacement of chondral fragments. A 32 year old male was admitted to the emergency room after a fall on his right upper extremity. X-ray and Computed Tomography (CT) scan of the elbow revealed a minimally displaced radial head fracture (Mason type 2), with a 4 mm step (depression) at the joint surface. During the operation, at the anterior surface of the distal humerus, a full thickness chondral lesion was encountered. After removal of chondral fragments from the fractured radial head surface, it was seen that these fragments were of capitellar origin. Following radial head fixation, early active assistive motion was started. At the 6 month visit, the patient was painfree with full participation in activities of daily living with a DASH score of 12.5. This injury is important due to demonstration of such an extensile injury in spite of benign looking radiology. Although radial head fractures were described, these type of occult injuries may be responsible for unexplainable and unfavorable outcomes following low energy radial head fractures treated conservatively.

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Keywords: Cartilage lesion, radial head fracture

Introduction

In this case report, we present a case of a full thickness chondral lesion of the anterior-distal surface of the capitellum humeri, accompanying an intraarticular radial head fracture. The importance of this case is the resemblance of the chondral injury to a Lorenz-Kocher lesion of the

humerus and the atypical displacement of chondral fragments. Since no abnormality regarding capitellum humeri was distinguished preoperatively, the chondral lesion was observed intraoperatively during surgical treatment of the displaced radial head fracture. A full-thickness

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sleeve type chondral defect of approximately 1.5x2.0 cm dimension was encountered on the anterior distal surface of the humerus, face-to-face with the radial head fracture fragment. On exploration, a detached chondral sleeve was found trapped between fracture fragments of the radial head fracture. Theoretically, at the time of injury, the fracture end of the radial head scraped the joint surface of the humerus and trapped the chondral fragment between fracture fragments, like a “carpenter's plane” □ Following reduction and internal fixation of the radial head fracture, the patient recovered with +5° to +135° of pain free ROM, with full participation in activities of daily living at 6 months post-operatively. The described mechanism of injury is a rare type with a unique pattern. Since the patient recovered with fixation of the radial head fracture alone, treatment options of such acute chondral injuries are still under debate.

Case Presentation

A 32 year old male was admitted to the emergency room after a fall on his right upper extremity. Initial examination revealed tenderness on the lateral aspect of the elbow, swelling without skin compromise, painful range-of-motion of the elbow as well as forearm supination-pronation without any sign of neurovascular deficit. X-ray of the elbow revealed a minimally displaced radial head fracture (Mason type 2) involving the articular surface (Figure 1). Since the fracture was intra-articular, a CT scan with multiplanar

reformations was done, revealing a 4 mm step (depression) at the joint surface with a 2 mm separation of the main fragment (Figure 2). Operative treatment was therefore decided upon. Under tourniquet with the patient positioned in the supine position, using a posterolateral approach (Kocher), the radial head was exposed. Upon inspection of the fracture line and chondral surfaces, at the anterior surface of the distal humerus a full thickness chondral lesion of 1.5x2.0 cm dimension was encountered with bleeding, non-sclerotic subchondral bone, as well as crushed and scratched periphery. On inspection of the fracture, two pieces of chondral tissue were found to be trapped between fracture fragments (Figure 3-4). After removal of the chondral fragments, it was obvious that these fragments were of capitellar origin. Theoretically, at the time of the initial trauma on the extended elbow, a split fracture of the radial head may have occurred by axial compression. As the elbow was flexed together with axial compression, the fracture end of the intact radial head scraped the capitellum humeri from distal to proximal, behaving just like a “carpenter's plane” □ and trapped the chondral tissue between the fracture ends. The fracture was reduced and fixed with three 15 mm screws, with the screw heads countersunk with the radial head (Figure 5-6). Early active assistive motion was started as swelling subsided, followed by full ROM exercises. At the end of the 6th week, the patient had regained 0-130° motion. At the 6 month visit, the patient was painfree with full participation in activities of daily living with a DASH score of 12.5.



Figure 1. X-Ray showing radial head fracture

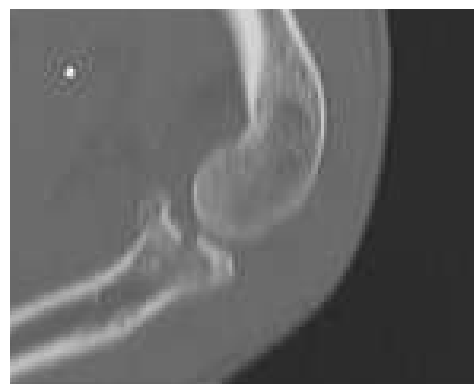


Figure 2. Sagittal CT image reveal a displaced radial head fracture

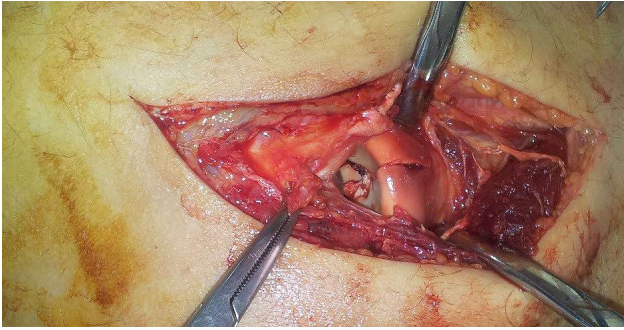


Figure 3. Intraoperative image showing chondral fragments



Figure 4. Entrapped chondral fragments

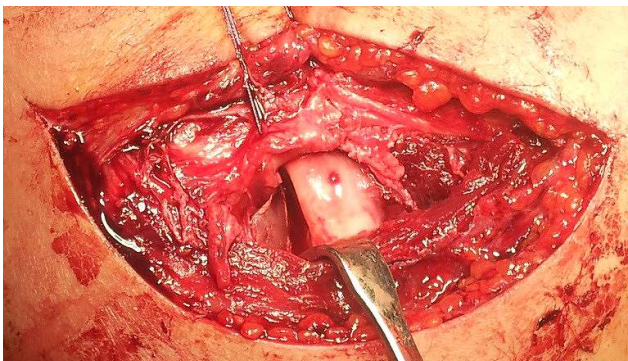


Figure 5. Intraoperative image of capitellum

Discussion

The Mason classification is widely used to describe radial head and neck fractures. Type II fractures have more than 2 mm of displacement, involving at least 30% of the radial head, type III fractures are significantly comminuted and a type IV fracture is a radial head or neck fracture associated with an elbow dislocation [1]. Capitellar fractures have been classified according to the size of the detached fragment as types I and II. Type I involves a large portion of the capitellum and may be associated with the olecranon, radial head, coronoid process and supracondylar fractures [2]. The Kocher-Lorenz, or type II fracture involves a superficial osteochondral fragment of the capitellum, such as the osteochondritis dissecans of the elbow [3, 4].

As in our observation, only a few cases of Kocher-Lorenz fractures of the capitellum are reported in the literature and also there is little data available regarding chondral lesions accompanying radial head fracture Mason type II [5, 6]. Also, there is no optimal treatment available regarding evidence based me.

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