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Case Report

Bilateral Radial Head and Neck Nondisplaced Fracture, a Challenge for Treatment: A Case Report

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Abstract

Background: Radial head and neck fractures are one of the common fractures of the elbow in adult patients. There are controversies in the treatment of nondisplaced head and neck fractures. However, nonoperative treatment remains a treatment choice for nondisplaced radial head fracture without motion block.
Case Report: We presented a 23-year-old patient who had a bilateral nondisplaced radial head fracture. The patient was managed with conservative treatment and early elbow range of motion (ROM). Finally, the patient had a full ROM without pain in both elbows.
Conclusion: Conservative management with early mobilization remains an effective approach for treating bilateral nondisplaced radial head fracture, yielding satisfactory outcomes.

Keywords: Head; Neck; Elbow Fractures; Conservative Treatment

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Background

Radial head and neck fractures make up about one-third of all adult elbow fractures (1), yet bilateral radial head fractures are infrequent occurrences (2). They generally arise following severe trauma, direct impact, or a fall on an outstretched hand with a partially bent elbow and forearm supination (3, 4). Typically, patients present with pain and painful rotation of the forearm, along with elbow swelling. Displaced fractures necessitate treatment based on the degree of displacement and fragment size, while non-displaced fractures are effectively managed conservatively using a sling and early mobilization (2). Based on the literature, bilateral fractures are a common surgical indication in orthopedic fractures. We presented a case of non-displaced bilateral radial neck fractures that were treated conservatively and with an early range of motion (ROM).

Case Report

A 23-year-old man presented to the emergency department after a motor vehicle accident with trauma to both elbows. His chief complaint was of limited elbow ROM and pain bilaterally, left greater than right. On examination, he had an almost full range of flexion in both elbows. However, supination and pronation movements produced significant pain and there was tenderness over the radial head region in both elbows. No neurovascular compromise was observed. No other injuries were noted.

Posteroanterior (PA) and lateral radiographs of both elbows were performed that showed bilateral non-displaced radial neck fractures (Mason Type 1) (Figures 1 and 2). Both elbows were aspirated under sedation and full aseptic precautions. A 10-12 ml volume of frank blood was aspirated from both elbows; a local anesthetic was injected.

Figure 1. Right elbow radial head and neck fracture (Mason Type 1)

Rehabilitation was begun as soon as the pain had settled.

Figure 2. Left elbow radial head and neck fracture (Mason Type 1)

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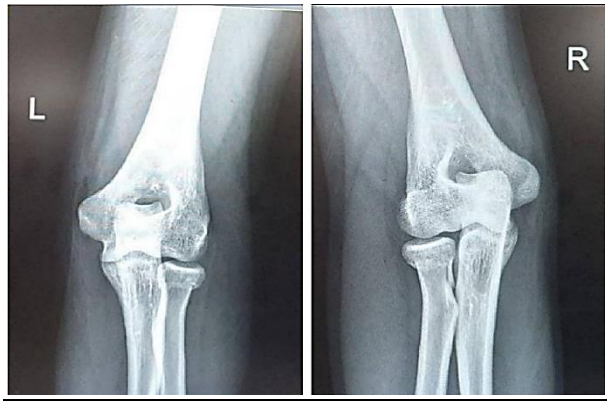

Figure 3. The last follow-up X-ray showing that the fractures healed without any displacement

At the three-month follow-up, the patient was asymptomatic with a full ROM at the elbow joints (Figures 3 and 4).

Figure 4. Full range of motion (ROM) of both elbows in the last visit

Discussion

Radial head fractures are relatively common, accounting for approximately 4% of all fractures. However, isolated radial head fractures are much rarer, comprising only around 2% of elbow fractures. Moreover, there have been only a few documented bilateral radial head fracture cases (5).

Falling onto an outstretched hand is the most common mechanism of radial head fractures. Fractures occur when the radial head impacts the capitellum, which may occur from axial, valgus, or posterolateral rotary forces. A thorough physical exam is essential to identify signs of an acute fracture, as well as elbow or forearm instability. The patient may present with pain and limited elbow or forearm ROM. The inspection often reveals ecchymosis and swelling along the forearm and medial and lateral elbow.

Palpation of the radial head, proximal ulna, distal humerus, medial collateral ligament, lateral collateral ligament, interosseous ligament, and distal radioulnar joint should be performed. Elbow ROM, including flexion, extension, supination, and pronation, must also be carefully evaluated. To determine whether any decreased ROM is due to mechanical block or pain, arthrocentesis can be performed through a direct lateral approach to remove the hemarthrosis and to inject lidocaine intra-articularly. Elbow stability must also be confirmed by testing varus-valgus laxity and performing a pivot-shift test to assess for posterolateral rotary instability. A careful vascular and neurologic exam (especially posterior interosseous nerve) must be completed (6,7).

Conventional radiography with anteroposterior (AP) and lateral views is usually adequate for detecting radial head fractures. Recent studies have shown that three-dimensional (3D) computed tomography (CT) imaging improves the characterization of the radial fracture but with less proposed variability in treatment (8).

Treatment options are based on the classification of Mason, who subdivided radial head fractures into three types. Type I is an undisplaced marginal fracture. Type II is a displaced marginal fracture and type III is a comminuted fracture (9).

In our case, the fracture was type I on both sides. Bilateral radial head fracture is uncommon and few case reports with bilateral radial head have been published.

By definition, type I is an undisplaced fracture that requires no reduction and does not exhibit any mechanical block to forearm rotation. Immediate pain relief should be achieved to allow initial physical examination and to start active forearm rotation as pain allows. Type I injuries should be treated conservatively as in this case. Joint aspiration of hemarthrosis and injection of an anesthetic into the joint may be performed to reduce pain. The landmarks for aspiration of the elbow joint are the radial head, lateral epicondyle, and tip of the olecranon. A needle inserted into the center of the triangle penetrates only the anconeus muscle and capsule before entering the joint. A sling for the first week of treatment is necessary to control the inflammatory phase. An early ROM is advocated, peaking one week after the fracture, to prevent long-term limitation of movement, particularly loss of full extension of the elbow (10-12).

Conclusion

We presented a rare case of non-displaced bilateral radial head fracture treated non-operatively with local anesthesia and immobilization with a sling. As soon as the pain subsided on the first day, the elbow movements started. After three months, the patient had a full elbow ROM without restriction and returned to normal life.

Conflict of Interest

The authors declare no conflict of interest in this study.

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