

Closed Reduction and Manipulation for Pisiform Dislocation

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Abstract

Acute pisotriquetral dislocation is considered to be a rare wrist injury, which can easily be missed in the Emergency Department and can present as a simple wrist sprain. We present a unique case of a young male who sustained a hyperextension wrist injury with a dislocated pisiform that was successfully managed with closed reduction and immobilization after being missed at initial presentation.

Keywords: *Acute Pisotriquetral Dislocation; Hyperextension Wrist Injury; Immobilization*

Introduction

Acute wrist injuries, including contusions, ligamentous injuries and carpal fracture can be difficult to be initially diagnosed. Rare wrist injuries such as isolated pisiform dislocation are very challenging to diagnose. To date there is no general consensus for the best treatment. We present a case that has been treated non-surgically with closed reduction and a cast.

Case Report

A 25-year-old manual worker, right hand dominant, presented at the ED with the complaint of left wrist pain and swelling following a severe hyperextension injury after being hit by a car. On examination, there was tenderness over the ulnar side of the wrist along with difficulty moving the wrist. No neurovascular deficit was observed. After radiological assessment (Figure 1), He was diagnosed with left wrist sprain and managed accordingly. One week later, he attended the trauma clinic with no improvement in his condition and persistent wrist pain. On radiological review, a pisiform proximal dislocation was diagnosed. He underwent closed reduction and manipulation with pressure directed from ulno-proximal to distal-radial side. The wrist was held in volar and ulnar deviation, and a below elbow cast was then applied. A CT scan was done after reduction that revealed a well reduced pisotriquetral articulation (Figure 2).



Figure 1: Initial radiograph of the right wrist (missed at ED presentation).



Figure 2A



Figure 2B

Figure 2A and 2B: CT scan after reduction revealed a well reduced pisotriquetral articulation.

Two weeks later the patient refused to continue on the cast, the cast was removed and a wrist support was applied. A follow-up x-ray at four weeks showed loss of reduction with subluxation of the pisiform (Figure 3). Clinically there was improvement in his condition with regards to his grip strength, range of motion, pain score and functional level.



Figure 3: AP radiograph shows loss of reduction with subluxation of the pisiform.

An MRI scan was requested to evaluate the soft tissue condition, which revealed abnormal signal intensity in the pisotriquetral ligament and FCU tendon along with non-anatomical reduction of the pisiform (Figure 4). Although, the patient reported restoration of full range of motion and normal hand function with no pain.

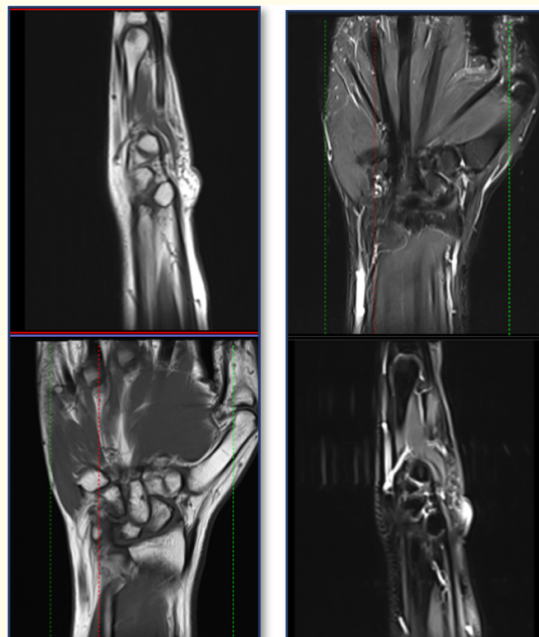


Figure 4: An MRI scan revealed abnormal signal intensity in the pisotriquetral ligament and non-anatomical reduction of the pisiform.

A review visits for re-evaluation six weeks later showed that the patient had regained normal full activities (Figure 5).



Figure 5: The patient regained full ranges of motion and full grip strength.

Discussion

The pisiform is one of the carpus bones. However, it is considered to be a sesamoid bone located on the ulnar side of the wrist joint, which carries several soft tissue attachments, including the flexor carpi ulnaris and abductor digit quinti in addition to pisometcarpal, pisohamate, pisotriquetral, transvers carpal ligament and ulno carpal meniscal homologue [1,2].

On literature review, it was shown that there are two mechanisms of pisiform dislocation. The first one is direct mechanism and the second one is indirect due to hyperextension of the wrist with concomitant forceful contraction of the FCU which lead to proximal migration [1,3,4]. In our case the patient sustained a hyper-extension mode of injury which led to pain and swelling in the ulnar side of the wrist.

The initial diagnosis was difficult to be picked-up in the Emergency Department. Due to the suspicion of pisiform dislocation, further radiological studies, including CT and MRI were requested which confirmed the diagnosis.

There is no classification system that can describe or expect the outcome of pisiform dislocation found in literature [5]; as a result we recommend to have more studies upon the classification however we have categorized the pisiform dislocation into two main types, the most common one is proximal migration due to forceful contraction of the FCU and the other less common type is the distal dislocation. This classification system could be based on the torn ligaments which will dictate the direction of migration.

There is no general agreement on the best treatment method for pisiform dislocation. However, surgical treatment is preferred in cases with delayed diagnosis or failed closed reduction [3,4,6]. In some acute cases closed reduction and manipulation can be successful [7,8]. In our case we used a specific maneuver of reduction; this was achieved by elbow flexion, wrist palmer flexion and ulnar deviation. While maintaining the position, a force was directly applied over the pisiform bone at the proximal ulna aspect using the thumb. The force was directed towards the base of the index finger. A below elbow cast was applied and the wrist was held in flexion, ulnar deviation and pronation.

The hand function can be fully restored even if anatomical pisotriquetral reduction had not been completely achieved.

Conclusion

In regard to restoration of normal hand function and return to full activities, closed reduction and manipulation for proximal dislocation of the pisiform is a valid and reliable method of treatment, even if complete anatomical reduction is not achieved.

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