

# An Isolated Acute Pisiform Fracture

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## Abstract

The incidence of pisiform fracture is very low, and generally it is associated with other carpal or distal radial injuries. Fractures of the pisiform are often missed due to a tendency to focus on other, more obvious injuries. A high index of clinical suspicion and appropriate radiographic examination will establish the correct diagnosis. A case of isolated pisiform fracture is presented in this case report.

## INTRODUCTION

Fractures of the carpals and metacarpals account for 6% of all fractures. Most fractured carpal bones are the scaphoid (70-80%) and the triquetrum (7-20%), followed in frequency by the trapezium (5%). Fracture of the pisiform is extremely rare and frequently associated with other carpal or distal radial injuries. The average incidence of pisiform fractures is 0.2% of all carpal fractures and approximately half of them are isolated fractures.

Fracture of the pisiform may not be recognized on standard radiographs because of the orientation of the fracture, improper wrist positioning, superimposition of adjacent bones, or an inadequate number of projections. Furthermore, pisiform fractures may be missed because of the presence of more obvious carpal or distal radial injuries.

At times diagnosis may require special radiographic views or other imaging techniques such as computed tomography or scintigraphy. Magnetic resonance imaging (MRI) has a high clinical impact in the early diagnosis of acute wrist trauma.

Many pisiform fractures have not been reported, and many others have gone undetected. Due to the rarity of this fracture, this particular case is presented. We report the case of an isolated acute pisiform fracture which was diagnosed on clinical suspicion and plain film.

## CASE REPORT

A 32-year-old right-handed male slipped at home and fell on his outstretched right hand. He complained of pain over right wrist. Physical examination revealed restricted active and passive range of motion of the wrist joint and tenderness and swelling in the ulna side of wrist. Posteroanterior (PA), and

pronated oblique views were obtained for the radiographic examination of the wrist. Fracture line was seen within the pisiform bone on the PA (Fig 1) and pronated oblique views (Fig 2). It was an undisplaced fracture. Other carpal bones and distal radius appeared intact.

We applied immobilization in a short arm POP cast for four weeks. At 4 weeks the cast was removed and he was started on physiotherapy. On follow up at 3 months, there was no limitation of wrist joint range of motion and no palpable tenderness over the fracture side on physical examination. Radiographic examination showed signs of union (Fig 3) and patient was ready to go back to work.

## DISCUSSION

The pisiform is a small and round carpal bone situated in the palmar and ulnar aspect of the wrist. The transverse carpal ligament and the tendon of flexor carpi ulnaris insert into the pisiform. The flexor carpi ulnaris forms the pisohamate and pisometacarpal ligaments distally and all of them stabilize the pisiform. Fractures of the pisiform are often due to direct trauma to the hypothenar region or avulsion fracture of the distal portion of the pisiform when the flexor carpi ulnaris resists forcible hyperextension of the wrist. Another mechanism is repetitive trauma causing vascular disruption, microfractures, and then a complete fracture. In our case, fracture of the pisiform occurred because of direct trauma.

The signs and symptoms of pisiform fracture may be comparatively minor when associated with other carpal or distal forearm fractures. In isolated fractures, immediate pain, swelling and tenderness localized to the proximal hypothenar eminence occurs. Our patient had symptoms and signs suggesting pisiform fracture.

**Figure 1**

Figure 1



**Figure 2**

Figure 2



**Figure 3**

Figure 3



Since radiographs are easily available and inexpensive, it is advisable to use these as the first step in detecting possible pisiform fracture. If routine plain films (PA, lateral, pronated oblique) fail to demonstrate the fracture, special views such as carpal tunnel, scaphoid or supinated oblique views are

indicated. In our case the fracture was detected on plain AP and pronated oblique view. Further special views were not done, and other imaging such as MRI was not done. However it would have been good if further imaging was done to see the fracture in a clearer picture and to exclude any ligament, or associated injuries. As was described by M. Tayfun Altinok, in his paper *An Isolated Acute Pisiform Fracture: Usefulness Of MR Imaging*. MRI can be considered as a second-step imaging method in patients whose radiographs are negative or indistinct. MRI may be helpful to exclude additional carpal fractures and soft tissue injuries. The importance of MRI should be kept in mind especially in cases where diagnosis is in doubt or suspicion of associated injuries.

Early diagnosis of pisiform fracture is important, because missed diagnosis or delayed treatment may result in malunion or nonunion. This may manifest as chronic pain, grip weakness or limitation of movement. Later sequelae are pisotriquetral chondromalacia, subluxation and osteoarthritis if the articular surface is poorly aligned. However, the experience with the acute treatment of pisiform fracture is

much more limited due to the rarity of the acutely diagnosed fracture. Immobilization in a cast for a period of four-six weeks is advised during acute period. In our case, immobilization in a short arm cast for a four weeks followed by physiotherapy produced good clinical response.

In summary, isolated pisiform fractures are rare and easily missed. Pisiform fractures should be kept in mind when patient presents with acute wrist pain especially ulna wrist pain post trauma. Proper radiographic examination or if necessary special imaging should be done in cases where pisiform fracture is suspected. This early diagnosis and proper treatment will prevent unwanted further complications or disabling sequela.

### **References**

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