

Case Report

An isolated pisiform fracture: a case report

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ABSTRACT

With overall prevalence between 2% to 3%, carpal bone fractures are not encountered frequently in clinical practice. Amongst these, pisiform fractures have very low incidence of <0.2%, in which, more than half are associated with other carpal injuries, and sometimes ulnar styloid and ligamentous injuries. Thus, diagnosis of isolated pisiform fracture requires a very high index of suspicion. Hereby, authors report an isolated pisiform fracture in a 27 year old dentist who sustained an injury due to fall on outstretched hand. After radiographic confirmation in multiple views and CT scan, isolated-minimally displaced pisiform fracture was found. A below-elbow cast with slight palmar flexion was given for 4 weeks. He returned to normal pre-injury activities at 12 weeks.

Keywords: Carpal bone fractures, Wrist fractures, Pisiform, Hand injuries

INTRODUCTION

With overall prevalence between 2% to 3%, carpal bone fractures are not frequently encountered in clinical practice. Pisiform fractures have very low incidence, being <0.2% among all carpal bone fractures.¹ These are usually associated with other carpal injuries, and sometimes ulnar styloid and ligamentous injuries. Only half of these have been found to be isolated pisiform fractures. Evidently, its diagnosis requires high index of suspicion and good clinical/ radiological skills. We, therefore present a case report on Isolated Pisiform fracture in a young active male, a dental student, and discuss its epidemiology, pathoanatomy, diagnosis, and treatment with outcome.

CASE REPORT

A 27 year old young male, dentist by profession, came to orthopaedic emergency with presenting complains of

tenderness and swelling of hypothenar eminence on left hand after sustaining injury by impaction of side-rails on outstretched hand during playful activity. On examination, there was no crepitus, no restriction of wrist or other carpometacarpal movements. Routine AP and lateral roentgenograms of wrist with carpal bones was taken, which revealed isolated pisiform fracture. So, oblique and carpal tunnel views were taken. Also, comparative roentgenograms of opposite limb were taken to rule out presence of any anomalous bone, OS triangulare or separate ulnar styloid process. CT scan was done to rule out other carpal and distal radioulnar injuries. We applied immobilization by giving a short arm below elbow cast with slight palmar flexion for 4 weeks. After cast removal, controlled exercises were started. At 8 weeks, active exercises were started. At 12 weeks, weight loading was allowed. Patient had no tenderness/swelling at 12 weeks and gave good clinical response.

DISCUSSION

Epidemiology

Incidence of isolated pisiform fracture is very rare. Historically, first pisiform was identified during necropsy and described by Guibout in 1847 along with other carpal fractures.² Jaeger, in 1931, reported 11 cases, including one of his own.² Various others like Schneck, Blumer, Destot, Bunnell have done exhaustive studies, independently, on several thousand radiographs reporting very few isolated pisiform fracture.² Most published literature on pisiform fracture, is in form of single case reports only. Doubtlessly, isolated pisiform fracture are more likely to be missed by most clinicians as they are seldom looked for and also might be reasonable reluctance to report a single case, which is less important clinically.

Pathoanatomy

The pisiform is a small round, pea-shaped bone situated in palmar and ulnar aspect of wrist. Transverse carpal ligament and tendon of flexor carpi ulnaris have insertion on pisiform. FCU distally extends as pisohamate and pisometacarpal ligament. One theory considers pisiform as a sesamoid bone under FCU tendon.³

Mechanism of pisiform fracture is poorly understood. One mechanism, described by Jean and Soleard, widely accepted, is by direct trauma to hypothenar eminence in hyperextended wrist with forearm in pronation and adduction.⁴ Second is by avulsion of distal portion of pisiform by FCU resisting hyperextension of wrist during fall on outstretched hand (FOOSH). Third, described by Israeli, is observed in sports, particularly volleyball players. Here repetitive trauma causes vascular disruption leading to microfractures which go on to become complete fracture.⁵

In our case, mechanism was direct trauma to hypothenar eminence.



Figure 1: AP.



Figure 2: Lateral.

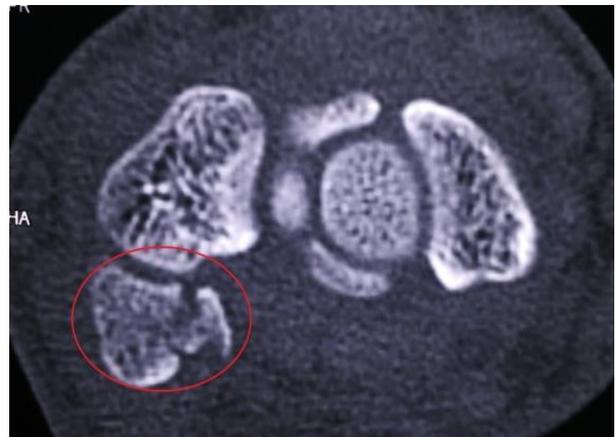


Figure 3: CT scan: transverse slide.

Pisiform fractures on radiographs should not be confused with other such findings as OS triangulare, separate ulnar styloid, or anomalous bony process.⁶

Diagnosis

Diagnosis is essentially radiological. Apart from routine true AP and lateral views, pronated and supinated oblique views are recommended. In doubt, CT scan is recommended to visualise profile of fracture line and rule out other carpal bone injuries or ligamentous disruptions. There are high chances to miss pisiform fracture due to superimposition by other carpal bones.

Treatment

Like most other carpal bone fractures, isolated pisiform fractures are managed conservatively. In our case, a short arm below elbow plaster cast was given with slight palmar flexion and ulnar deviation for 4 weeks. After 4-6 weeks of immobilization, plaster is cut and active exercises are started, with radiological follow-up at 6 weeks and then 12 weeks. Weight lifting by limb is discouraged until 12 weeks. Patient was lost to follow up after 4 months. A telephonic conversation stated that

patient did not had any pain, swelling and enjoyed full range of motion.

Missed diagnosis or delayed treatment of pisiform fracture may lead to malunion or non-union. This entities are not very well documented in literature but are thought to manifest in form of chronic pain, grip weakness or limited movements. Later on this can lead to pisotriquetral subluxation, chondromalacia or osteoarthritis.⁷

Treatment of chronic pisiform area pain, is excision of pisiform through volar approach. However, there are many complications of this surgery including hammer syndrome, loss of wrist function and ulnar nerve neuropathy.⁷

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