

# Open pisiform fracture: excision or internal fixation?

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## SUMMARY

A 53-year-old man presented with an open fracture of the pisiform after a fall on his left wrist. Treatment of the patient presented a dilemma between excision of the proximal fragment and internal fixation. The patient underwent internal fixation with a 2.5 cortical screw. At 6 months follow-up the fracture appeared fully consolidated with full functional recovery of the wrist.

## BACKGROUND

The pisiform is a sesamoid bone enclosed in the flexor carpi ulnaris tendon sheath. Pisiform fractures are rare accounting for 2% of all carpal bone fractures.<sup>1–3</sup> They are also easily missed and oblique views are necessary for diagnosis.<sup>4</sup> Some authors even recommend the systematic use of CT.<sup>5</sup> To the best of our knowledge an open fracture of the pisiform has never been reported before. According to classic orthopaedic textbooks operative treatment is rarely needed since splinting of the wrist is enough for the fracture to consolidate. In the presence of fracture displacement excision of the pisiform is recommended. Although some grip strength is lost this does not affect hand functionality. However, it leaves the ulnar nerve and artery exposed to direct trauma that might favour Hammer syndrome or neuropathy.

## CASE PRESENTATION

A 53-year-old man presented to the A&E department with a 5 cm laceration on the ulnar side of the wrist after a fall on broken glass. Routine anteroposterior and lateral radiographs were unremarkable (figure 1). On examination he had some numbness of the little finger but the motor function of the ulnar nerve was intact. Initially, laceration of the flexor carpi ulnaris tendon was suspected. After infiltration of the area with local anaesthetic we explored the trauma for the presence of foreign bodies and some hard rough edges were palpated. A second look at the radiographs raised the suspicion of a fracture in the area and oblique views were ordered which revealed a displaced pisiform fracture (figure 2).

## DIFFERENTIAL DIAGNOSIS

It was decided that the patient needed formal exploration of the wound under regional anaesthesia and tourniquet. Damage to the ulnar nerve and artery had to be excluded and an effort for internal fixation of the fracture was performed. The patient was informed that in case the bone fragments were too small to fix, the proximal pole of the pisiform would be excised and the flexor carpi ulnaris fixed on the distal pole.



**Figure 1** Anteroposterior (AP) radiograph of the wrist. The pisiform fracture can be easily missed in routine AP and lateral views.

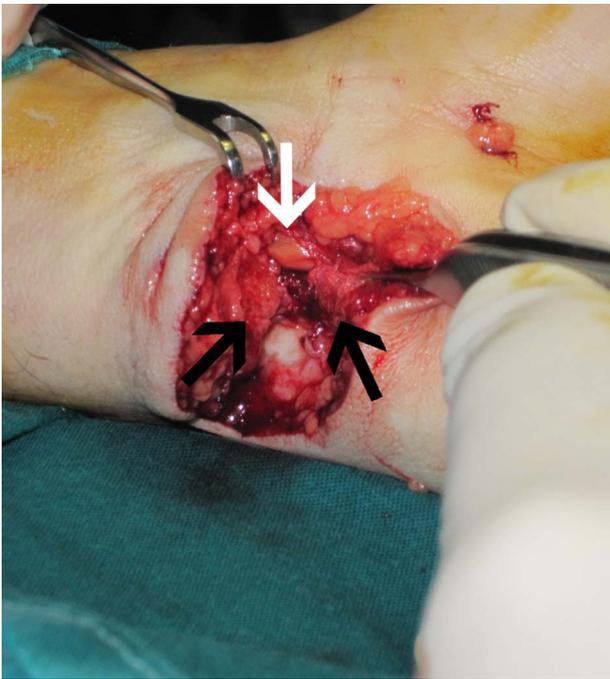
## TREATMENT

Following informed consent and marking of the affected side the patient was brought to the operating theatre. Exploration of the wound revealed isolated fracture of the pisiform and some bruising of the ulnar nerve apparently from the impact of the fractured bone on the nerve (figure 3). The ulnar artery and other carpal bones were also intact. Internal fixation was performed with a 2.5 cortical screw from a mini set for distal radius fractures. The fixation was enforced by cerclage of the bone with a No 5 ethibond suture to simulate the tension band principle. After washout the wound was closed in a standard manner and the wrist splinted



**Figure 2** Oblique radiograph of the wrist which clearly reveals the fracture.

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**Figure 3** Intraoperative picture showing the ulnar nerve (white arrow) and the two fragments of the pisiform (black arrows).

in a flexed and ulnar-deviated position. The patient received 48 h of intravenous antibiotics and was discharged with an oral course of antibiotics for 10 days.

#### OUTCOME AND FOLLOW-UP

The sutures were removed at 2 weeks and the wrist splinted in flexion and ulnar deviation for 4 weeks and in neutral position for another four. He had routine follow-up every 2 weeks for the first 2 months and anteroposterior, lateral and oblique views of the wrist at 14 weeks (figures 4 and 5) showed complete fracture union. A course of physiotherapy was advised in order to regain wrist and hand strength. At final follow-up 6 months



**Figure 4** Anteroposterior and oblique radiographs of the wrist at 14 weeks postoperatively showing fracture union.



**Figure 5** Anteroposterior and oblique radiographs of the wrist at 14 weeks postoperatively showing fracture union.

postoperatively, painless motion of the wrist and an acceptable degree of hand function was achieved.

#### DISCUSSION

Classic orthopaedic textbooks describe pisiform fractures as rare and difficult to diagnose. Routine oblique radiographs and possibly CT should be used in the presence of unexplained pain following trauma. A few cases of isolated fractures of the pisiform have been published which were treated with splinting or excision. Though excision does not affect wrist function significantly, it has the disadvantage of leaving the ulnar nerve and artery exposed to trauma.

Our case is the first open pisiform fracture reported in the literature. Furthermore, instead of excision, open reduction and internal fixation was performed which led to fracture union.

**Competing interests** None.

**Patient consent** Obtained.

**Provenance and peer review** Not commissioned; externally peer reviewed.

#### Learning points

- ▶ Pisiform fractures are rare fractures of the wrist that are easily missed.
- ▶ Oblique radiographs are necessary in unexplained pain following injury of the wrist.
- ▶ Splinting is adequate for undisplaced fractures.
- ▶ For displaced fractures open reduction and internal fixation can be the first line of operative treatment with partial or complete excision as the second choice.

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