CASE REPORT

Perilunate dislocation in an asymptomatic SNAC wrist: an uncommon presentation requiring a scaphoidectomy and four corner fusion

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SUMMARY

This report describes a 53-year-old man who presented, following a motocross injury, with a Mayfield stage 1 perilunate dislocation through a pre-existing asymptomatic scaphoid non-union with a degenerative midcarpal joint. A salvage reconstruction with scaphoid excision and four corner midcarpal arthrodesis resulted in a satisfactory outcome. Follow-up at 6 years demonstrated no instability and no further progression of the osteoarthritis.

BACKGROUND

Acute trans-scaphoid perilunate dislocation may occur following high-energy hyperextension injury of the wrist. Stability is achieved by internal fixation of the scaphoid with a headless compression screw and repair of associated ligament injuries. This case is unusual due to an acute perilunate dislocation in the setting of a pre-existing, chronic, asymptomatic non-union of the scaphoid and highlights the paradigm shift needed in the management of this condition in such a situation.

CASE PRESENTATION

A 53-year-old man sustained an injury to his left wrist during motorcross participation when he fell from a height during a jump. He reported a previous injury to the same wrist sustained many years previously and treated with temporary plaster cast immobilisation. He had no residual symptoms from that injury and it did not cause any functional limitation.

Following the new injury he had pain, swelling and deformity in the left wrist with symptoms consistent with an acute median nerve injury. Radiographs suggested a scaphoid fracture with perilunate dislocation (figures 1 and 2). The patient underwent emergency carpal tunnel decompression and was referred to an orthopaedic hand surgeon for an opinion on the dislocation. The plain radiographic findings of sclerosis in the scaphoid and a subchondral cyst suggestive of pre-existing degenerative change prompted further investigation. A CT scan was arranged to delineate the pathoanatomy in more detail.

INVESTIGATIONS

The CT scan demonstrated degenerative changes in a scaphoid non-union with sclerosis and cyst formation (figures 3 and 4). There was an acute fracture of the scaphoid fossa of the distal radius

Figure 1 Preoperative X-ray 1.

and degenerative change in the midcarpal joint consistent with a SNAC wrist (scaphoid non-union with advanced collapse). In addition there was a persistent perilunate dislocation.

TREATMENT

At surgery the patient was found to have a large rent in the dorsal capsular ligament with an

Figure 2 Preoperative X-ray 2.

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Figure 3 Preoperative CT scan 1.

avulsion fracture of the dorsal aspect of the distal radius overlying the scaphoid fossa. There was an atrophic non-union of the scaphoid with a sclerotic proximal pole. There was degeneration at the midcarpal joint with a chondral ulcer on the capitate head and dorsal rim osteophytes consistent with a SNAC stage 2

Figure 4 Preoperative CT scan 2.**Figure 5** Postoperative follow-up X-ray showing fusion.

wrist. There was disruption of the volar radioscaphocapitate ligament (RSC).

An intraoperative decision was made to excise the scaphoid and undertake a midcarpal fusion as the lunate fossa was intact, but there was pre-existing degeneration of the capitate head precluding a proximal row carpectomy. The RSC ligament was injured, which would normally be a contraindication to motion preserving wrist arthrodesis due to the risk of ulnar translocation of the carpus. The ligament was repaired and protected with temporary Kirschner wire fixation to the radial styloid. The arthrodesis was completed with crossed Kirschner wires and bone graft from the distal radius as the scaphoid was too sclerotic. The dorsal capsule was repaired with bone anchors.

OUTCOME AND FOLLOW-UP

The arthrodesis was protected for 6 weeks in a cast, after which the radiocarpal Kirschner wires were removed and radiographs confirmed no ulnar subluxation of the carpus. A range of motion exercises were started; strengthening exercises were started after radiographic confirmation of midcarpal arthrodesis

at 3 months (figure 5). The patient returned to his previous occupation without any restrictions. At 6 years following reconstruction there was no progression of the degenerative change and he retained function at his preinjury level.

DISCUSSION

Acute trans-scaphoid perilunate carpal dislocations are potentially devastating injuries to the wrist, often resulting in substantial functional impairment. The primary management has by and large revolved around open reduction and internal fixation of the scaphoid,^{1–3} reduction of the lunate dislocation, and repair of the associated intrinsic and extrinsic carpal ligaments when required. Historically, midcarpal fusion has been used as a salvage procedure in the management of perilunate dislocations.^{4 5} We report this unusual combination of injuries to demonstrate the substantial impact it has on the primary management

of the case, warranting the use of scaphoidectomy and four corner fusion of the carpus as the primary treatment modalities resulting in a rewarding and satisfying functional outcome for the patient. We put forward this line of treatment as a viable and efficient option for the management of trans-scaphoid perilunate dislocations in the instance where there is a pre-existing non-union of the scaphoid with SNAC changes already set in. To the best of our knowledge, one other case with the same combination of injuries has been reported, where the patient was treated with formal fixation of the scaphoid, reduction of the lunate and carpal tunnel decompression. However, the outcome follow-up was not possible.⁶

Contributors DP performed the surgery and proposed writing up the case. DS collected and collated the data, reviewed the literature and wrote up the report. The report was reviewed by DP, who approved it for submission and will act as guarantor.

Competing interests None.

Patient consent Obtained.

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Learning points

- In the presence of a history of wrist injury and plaster application in patients with perilunate dislocation, the index of suspicion for a previous scaphoid fracture should be high and specifically looked for in the imaging.
- Scaphoid non-union with established degenerative change may be asymptomatic.
- CT is a useful investigation to assess fractures within the carpus and to identify features consistent with degeneration.
- Motion preserving limited wrist arthrodesis is possible when the lunate fossa chondral surfaces are intact.
- Satisfactory long-term outcomes can be achieved following wrist arthrodesis without further progression of the degeneration.

REFERENCES

- 1 *Green's text book of operative hand surgery*. Wolfe SW, Hotchkiss RN, Pederson WC, Kozin SH. 6th edn. 2011. Churchill Livingstone, Elsevier.
- 2 Knoll VD, Allan C, Trumble TE. Trans-scaphoid perilunate fracture dislocations: results of screw fixation of the scaphoid and lunotriquetral repair with dorsal approach. *J Hand Surg [Am]* 2005;30:1145–52.
- 3 Apergis E, Maris J, Theodoratos G, et al. Perilunate dislocations and fracture-dislocations. Closed and early open reductions compared in 28 cases. *Acta Orthop Scand Suppl* 1997;275:55–9.
- 4 Souer JS, Rutgers M, Andermahr J. Perilunate fracture-dislocations of the wrist: comparison of temporary screw versus k-wire fixation. *J Hand Surg [Am]* 2007;32:318–25.
- 5 Hildebrand KA, Ross DC, Patterson SD, et al. Dorsal perilunate dislocations and fracture dislocations: questionnaire, clinical and radiographic evaluation. *J Hand Surg [Am]* 2000;25:1069–79.
- 6 Lam P, Baddeley S. Dorsal transscaphoid perilunate dislocation through an isolated scaphoid non-union. *ANZ J Surg* 1995;65:60–2.

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