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Dear Sir,

This report aims to bring to the reader's attention a rare and difficult to diagnose carpal injury associated with high-energy distal radius fractures. Over a 2-year period (2008–2010), five patients were identified at a level one trauma centre with concomitant acute base fracture of the hamate hook and high-energy distal radius fracture. In each case, conventional radiographs failed to identify the hook of hamate fracture. All patients underwent computed tomography (CT) for further assessment and operative planning of the articular radius fracture and were incidentally found to have an acute base of the hook of hamate fracture on axial imaging. While scaphoid waist fractures with distal radius fractures are well documented in the literature, concomitant occurrence of high-energy distal radius fracture and hook of hamate fracture has not been previously described (Rutgers et al., 2008).

Hook of hamate fractures are exceedingly difficult to identify on plain radiographs. Using plain radiographs, the hook of hamate is best evaluated using a carpal tunnel view, which can be very painful in the acute setting. Using CT as a gold standard, acute hook of hamate fractures are identified as little as 40% of the time using conventional radiography (Welling et al., 2008).

A comprehensive review of a prospectively collected trauma database was performed at our institution to identify and describe all occurrences of this unusual injury pattern. In total, 660 distal radius fractures in patients 18 years of age and older were evaluated and treated over the 2 year period. Of these patients, 185 (28%) underwent CT evaluation of the wrist in the peri-injury period and 349 (53%) were treated operatively. Five patients with distal radius fractures and associated base of the hook of hamate fractures were identified, representing 0.7% of all

distal radius fractures treated operatively and an incidence of 2.7% (5/185) in those who had a CT scan. A high-energy mechanism of injury was documented in each case: motorcycle collisions (3), bicyclist struck by motor vehicle (1), and fall from a height (1).

All injuries included a complex articular Association for Osteosynthesis/Orthopaedic Trauma Association (AO/OTA) type B or C distal radius fracture (Marsh et al., 2007). All hamate injuries were acute. Four of the five base of hook of hamate fractures were displaced >1 mm on both axial and sagittal CT imaging, and each patient underwent prophylactic carpal tunnel release and excision of the hamate hook at the time of fixation of the radius. A fifth patient with a minimally displaced distal radius fracture and non-displaced hamate base fracture was treated non-operatively. Union of both fractures was confirmed by CT scan at 3 months. A goal in all operatively treated distal radius fractures was stable fixation of the distal radius and early mobilization (range 1–5 weeks). All patients subsequently began a graduated rehabilitation program. Mean follow-up was 7 months (range 3–13). All patients had returned to pre-injury level of activity and occupation at latest follow-up.

In each case presented above, treatment was based on the discretion of the treating surgeon. Displaced fractures of the distal radius were treated with operative fixation. Displaced hamate base fractures were treated by excision at the time of radius fixation, and it seemed logical to release the carpal tunnel at the same time through the very same incision, to minimize the chances of a postoperative compressive median neuropathy. This did not create additional morbidity.

The role of prophylactic carpal tunnel release with distal radius fractures remains controversial. Some authors advocate for prophylactic carpal tunnel release at the time of radius fixation, as swelling and haematoma may lead to a delayed presentation of median nerve compression (Itsubo et al., 2010).

Although no patient in our series presented with an acute compressive median neuropathy, a carpal tunnel release was considered prudent given the high-energy mechanism and "bipolar" nature of the injury on either side of the radiocarpal joint.

Certainly, it is reasonable to attempt conservative management of the hook of hamate fracture if non-displaced, there is no evidence of carpal tunnel syndrome, and non-operative management is chosen for the associated radius fracture. If a symptomatic non-union develops, the hook of hamate can be excised at a later date. These patients must be closely monitored for delayed onset of median nerve compression. Furthermore, most high-energy distal radius fractures are displaced, requiring reduction and operative stabilization, and in these patients, immobilization of the hamate fracture precludes early rehabilitation and motion at the wrist, which is a major goal in our operatively treated patients.

This rare injury pattern precluded prospective analysis with a large series. Concomitant acute hook of hamate fracture with high-energy distal radius is a rare but easily overlooked injury. Failure to recognize and adequately treat these combined injuries may lead to sequelae of hamate non-union, including flexor tenosynovitis, flexor tendon ruptures, and/or ulnar nerve symptoms (Scheufler et al., 2005). Our series identified an incidence of 2.7% of acute hook of hamate fracture in association with high-energy distal fractures in patients undergoing CT evaluation of the wrist. At our institution, only 28% (185) of distal radius fractures underwent CT evaluation. The remaining 475 distal radius

fractures were evaluated using conventional radiographs and clinical exam alone. Therefore, the true incidence of this combined injury in non-displaced or simple distal radius fractures is unknown and may be underestimated.

Conflict of interests

None declared.

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