Fractures of the scaphoid, capitate and triquetrum in a child: a case report

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ABSTRACT

Carpal fractures in children are rare, especially with a combination of scaphoid, capitate, and triquetrum fractures. We report one such case in a 10-year-old boy who was successfully treated with Kirschner wires.

Key words: bone wires; carpal bones; fracture fixation; pediatrics

INTRODUCTION

Carpal fractures in children are rare, especially with a combination of scaphoid, capitate, and triquetrum fractures.

CASE REPORT

In November 2009, a 10-year-old boy presented with pain and minor swelling of the right wrist after falling from a bicycle; the dorsal aspect of his hand collided with a brick wall. His injury was closed and there was no neurovascular compromise or deformity. Radiographs and computed tomography showed an undisplaced distal scaphoid fracture, a displaced proximal capitate fracture, and a triquetrum fracture of uncertain displacement. (Fig. a).

The patient underwent surgical exploration through a dorsal approach. Intra-operatively, the proximal fragment of the capitate was rotated 90º, the triquetrum fracture was minimally displaced, and the distal scaphoid fracture was undisplaced. The capitate and triquetrum were reduced and stabilised with Kirschner wires, and the distal scaphoid was left without fixation (Fig. b). Thus, anatomic reduction and stabilisation of the carpal bones and their articulations was achieved.

Postoperatively, the hand was immobilised in a cast for 8 weeks. The Kirschner wires were removed after radiographic bone union. At the one-year follow-up, the child had achieved excellent range of wrist movement (extension 65º, flexion 68º, and 10º of radial and ulna deviation), with no neurovascular deficit, weakness or pain.
DISCUSSION

Carpal fractures in children are rare; the scaphoid is most frequently affected, whereas the triquetrum is least affected in isolation. Combined fractures of the scaphoid, capitate, and triquetrum are extremely rare. There may be ‘weak zones’ in capito-hamate and piso-triquetral joints in adults. In paediatric peri-articular injuries, the bones are often the failure points rather than soft tissues as in adults. Rotational displacement of the capitate is rare in children when associated with scaphoid fractures. In our patient, the mechanism of injury was unusual, as most displaced carpal fractures are associated with a fall onto a dorsiflexed wrist.

The decision to proceed with operative treatment was made after consideration of conservative management. Had our patient been treated conservatively, the full extent of capitate displacement would not have appreciated on the preoperative images and the outcome would have been inferior. Nonetheless, in a study, an 11-year-old with multiple undisplaced carpal fractures was treated conservatively and achieved adequate fracture healing. Further magnetic resonance imaging may aid diagnosis and reveal displacement of carpal fractures in children, as radiographs fail to reveal fractures in 37% of children with hand or wrist injuries. A high level of suspicion is therefore important in children with hand or wrist injuries.

REFERENCES