CASE REPORT

FENTON SYNDROME IN AN ADOLESCENT

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ABSTRACT

Scapho-capitate fracture (Fenton syndrome) is a rare lesion and is even less well-documented in adolescents. The most frequent mechanism is possible forced extension and hyperextension of the wrist. We report a case of 15 years old boy with hyperextension injury to the wrist. The true diagnosis was made 2 weeks later. Treatment involved open reduction and internal fixation with K-wires and Herbert screws. It went on to heal well and at 6 months follow-up, there was no infection or avascular necrosis and wrist function was good.

KEY WORDS: *Fenton syndrome. Adolescent. Internal fixation. Scapho-capitate fracture. Hyperextension injury.*

INTRODUCTION

Scapho-capitate syndrome is associated fractures of the scaphoid and capitate with 90-180 degrees rotation of the head of the capitate.[1]

The cases in children and adolescents are rare and not frequently reported.[2] Fenton coined the term naviculo-capitate fracture syndrome in 1956 and later the term was updated to scapho-capitate fracture by Monahan and Galasko.[3]

We report a 15 years old boy with scapho-capitate syndrome and describe the mechanism of injury, the late diagnosis, the treatment, mishap during fixation and follow-up of over 6 months.

CASE REPORT

A 15 years old right handed boy presented to the emergency department with injury to his right wrist after a fall from motor bike. He sustained a hyperextension injury to his right wrist. A diagnosis of minimally displaced fracture of scaphoid was made on the X-rays (Figure 1a). He was put in a scaphoid cast.

After 2 weeks, the X-rays were reviewed by the senior consultant, who asked for magnified views (Figure 1b), and the penny dropped. The capitate fracture with 180 degrees of rotation was diagnosed. He was admitted and operated the following day.

At operation, the proximal fragment was manoeuvred with Macdonald forceps. It fell down on the floor, washed first with saline and then with chlorhexidene, put back, anatomically reduced and held with 2 K-wires.

Then the scaphoid fracture was reduced and stabilised with Herbert screw. The hand was put in scaphoid cast for 6 weeks. The check X-rays were satisfactory.

The K-wires were removed at 6 weeks. The X-rays 2 months later showed union of capitate and scaphoid. There was no early evidence of avascular necrosis or infection while the functional assessment showed good pain-free movements.

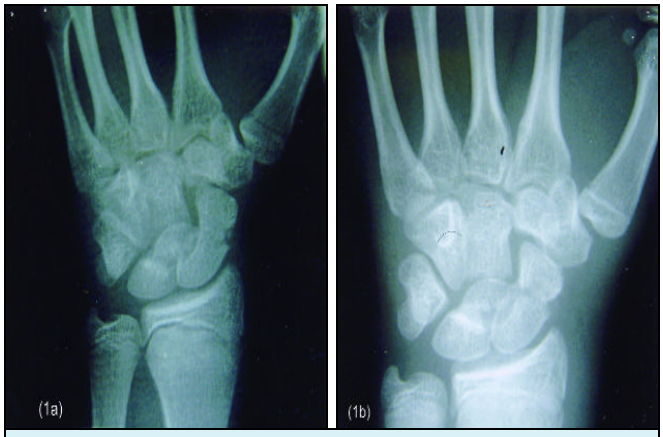

Figure 1: (a) Displaced fractures of scaphoid and capitate early. **(b)** late appearanes.

DISCUSSION

Scapho-capitate fracture syndrome is a rare injury and is easily missed. Patients with scaphoid fractures, particularly young men with history of fall from heights or vehicular accidents, must be scrutinised for other carpal injuries.

The treatment of capitate fractures remains controversial.[3] Good results have been reported with cast treatment with un-reduced capitate fractures.[4] Andresion et al. recommends surgical treatment.[5] Fenton recommended excision of proximal fragment of capitate because of risk of avascular necrosis (AVN) and treated all scaphoid fractures in a cast.[6]

The incidence of AVN is high in more proximal fractures of the scaphoid as both dorsal and volar blood vessels enter the scaphoid through distal half of the body.[7] Non-anatomic reduction of scaphoid can be seen in as many as 75% cases of AVN and non-union following the hyperextension injury.[8] Like scaphoid, the capitate also has a retrograde blood supply and in the event of fracture this leaves the proximal fragment at a high risk of AVN. Hence, anatomic reduction and stable fixation is necessary for sustaining blood supply and function.

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Dorsal approach for reduction is recommended as was used in this case since most of the blood supply is from palmar vessels.

The literature supports the approach with open reduction and normal alignment of capitate coupled with stabilisation with K-wires. The displaced scaphoid fracture should be stabilised with screw and bone graft, if needed.[9]

In a study of 25 cases reported since 1937[9], there was associated perilunar dislocation in 13 cases, which was dorsal in 11 cases.

In 33%, there was delay of 15 days from injury to the final management as in this case. We also used dorsal approach and fixed the capitate anatomically and held with 2 K-wires leaving the skin outside and removed in 6 weeks. The scaphoid fracture was reduced and held with Herbert screw.

Good functional results were observed at 6 months. Despite the accidental dropping of the fracture bone piece, the prompt sterilisation of the above fragments with saline and chlorhexidine prevented any untoward complication. Infection was the most feared ethical responsibility that was fortunately avoided. However, utmost care should be exercised to prevent such mishaps during surgery.

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