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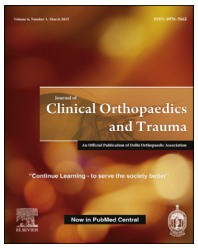

Case Report

An isolated dorso-medial dislocation of navicular bone: A case report

Varun Kumar Singh MS Orthopaedics[a,*], *Abhishek Kashyap MS Orthopaedics*[b], *Gauresh Vargaonkar MS Orthopaedics*[a], *Ramesh Kumar MS Orthopaedics*[c]

[a] *Senior Resident, Central Institute of Orthopedics, VMMC and Safdarjung Hospital, New Delhi 110029, India*
[b] *Assistant Professor, Central Institute of Orthopedics, VMMC and Safdarjung Hospital, New Delhi 110029, India*
[c] *Professor, Central Institute of Orthopedics, VMMC and Safdarjung Hospital, New Delhi 110029, India*

ARTICLE INFO

Article history:
Received 15 August 2014
Accepted 24 November 2014
Available online 22 December 2014

Keywords:
Isolated navicular dislocation
Fixation
Reduction

ABSTRACT

An isolated dislocation of tarsal navicular is extremely rare injury. Usually it is associated with fracture of navicular itself or other tarsal bones of foot along with disruption of medial or lateral column of foot. Mechanism of injury is complex but usually a severe abduction force is required to produce such injury in a planter flexed foot. A 30 year old male presented with isolated navicular dislocation. Management required open reduction and fixation with k-wires. These injuries have specific complications including avascular necrosis of navicular and post-traumatic arthritis.

1. Introduction

Navicular bone is a tarsal bone, maintaining the medial column of foot between talus and medial cuneiform.[1] Isolated dislocation of this bone is a very rare incidence.[2–9] Usually it is associated with fracture of navicular[10,11] itself or along with others bones of foot.[12–14] Mechanism of injury is believed to be the result of a severe abduction force with the foot in plantar flexion, rather than the previously described medial swivel dislocation, which typically involves the subtalar joint.[15,16]

2. Case report

A 30 year old male presented in our emergency with 9 days old injury of left foot. Mode of injury was fall from motorcycle. Patient developed severe pain and swelling of left foot and was unable to put weight on that limb. Patient was managed at some local hospital with below knee POP slab. At our centre, clinical examination of patient was done. It showed a bony prominence on dorso-medial aspect of the left foot along with tenderness. There was no tenderness elsewhere on the foot. There was no neurovascular deficit distally. X-rays of left foot

* *Corresponding author*. Tel.: +91 9278232568(mobile).
E-mail address: drvarunksingh@outlook.com (V.K. Singh).
http://dx.doi.org/10.1016/j.jcot.2014.11.003

done for antero-posterior and oblique view which showed an isolated dorso-medial displacement of navicular bone. Patient had other associated systemic injuries including anterior wedge compression fracture of L1 vertebral body and fracture of left distal end of radius. There was no neurological deficit or bladder or bowel involvement. Patient was taken into operation theatre and spinal anaesthesia given. Under tourniquet, closed reduction tried but failed. An antero-medial incision given over foot and open reduction, using mini-external fixator on medial side of foot, to distract the space, navicular was put back at its normal place. Confirmation was done under image intensifier. Fixation was done using two 2.0 mm K-wires, engaging from medial cunieform-navicular-talus and navicular to cuboid bone. External fixator was then removed. Post operatively patient was kept in below knee cast and no weight bearing was allowed for 6 weeks. K-wires were removed at 6 weeks and gradual physiotherapy of ankle, subtalar as well as mid-tarsal joints started. Gradual weight bearing was started. Eight months have been passed and patient is under our regular follow-up and check x-rays and till date no complications have been noticed (see Figs. 1–4).

3. Discussion

Isolated dislocation of navicular bone is a very rare incidence.[2–9] This is due to very rigid bony and ligamentous structures surrounding navicular bone.[1] This makes it very rare to have pure dislocation rather than fracture-dislocation.[10,11] Till now, only 16 published case reports have been mentioned in literature and earliest published case was reported in 1924.[9] According to Dhillon et al.,[2,5] a navicular dislocation can not occur without bony or ligamentous damage to longitudinal columns of foot. It is usually associated with fracture-dislocations of navicular itself or associated with fractures, subluxation or fracture dislocations of talus, cuneiforms, cuboid and other tarsal bones.[12–14] These injuries are due to complex multidirectional forces.[15,16] Usually there is severe abduction force in a planter flexed foot, leading to dislocation of navicular bone. We present this case with isolated dorsomedial dislocation of navicular bone in a young 30 year old male. Since the patient presented to us after 9 days, we did not find any tenderness on lateral column or anywhere

Fig. 1 – Pre-operative clinical photograph showing swelling in dorso-medial region of foot.

Fig. 2 – pre-operative X-ray showing navicular dislocation.

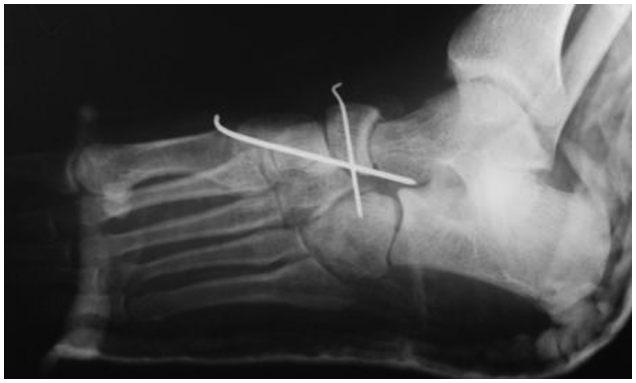

Fig. 3 – Post-operative X-ray showing reduction and K-wire fixation.

Fig. 4 – Clinical photograph after K-wire removal at 6 weeks.

else on the foot except navicular. Management includes close reduction or open reduction along with fixation (either internal or external).[17] At times, a mini external fixator is used to reduce as well as maintain the medial column of foot, along with internal fixation. We managed this case with open reduction and a distractor on medial side to reduce the dislocation intraoperatively and then it was fixed with k-wires and immobilization in a posterior ankle splint. These patients require a careful and supervised physiotherapy of ankle and foot after k-wire removal. These patients are at increased risk for avascular necrosis of navicular.[2,5,8] Navicular bone has a precious blood supply and after dislocation only blood supply left is through posterior tibial tendon attachment.[1] Other complications include secondary arthritis around navicular, residual subluxation of navicular, flat foot deformity and stiffness of foot.[2,5,9–11]

So we conclude that fracture-dislocations of navicular itself are rare injuries and isolated navicular dislocations are even rarer. Exact mechanisms of such injuries are complex and more studies are required for exact patho-mechanics. Management includes accurate reduction and fixation along with regular physiotherapy. They are at increased risk of specific set of complication.

Conflicts of interest

All authors have none to declare.

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