



International Journal of Orthopaedics Sciences

E-ISSN: 2395-1958
P-ISSN: 2706-6630
IJOS 2021; 7(3): 600-602
© 2021 IJOS
www.orthopaper.com
Received: 18-05-2021
Accepted: 21-06-2021

Dr. Rajpal Beniwal
Sr. Resident, Department of
Orthopaedics, Pt. B.D. Sharma
PGIMS, Rohtak, Haryana, India

Dr. Sachin Kumar Sachdeva
Jr. Resident, Department of
Orthopaedics, Pt. B.D. Sharma
PGIMS, Rohtak, Haryana, India

Dr. Aditya Seth
Jr. Resident, Department of
Orthopaedics, Pt. B.D. Sharma
PGIMS, Rohtak, Haryana, India

Dr. Ipanshu Malik
Jr. Resident, Department of
Orthopaedics, Pt. B.D. Sharma
PGIMS, Rohtak, Haryana, India

Dr. Ankush Kundu
Jr. Resident, Department of
Orthopaedics, Pt. B.D. Sharma
PGIMS, Rohtak, Haryana, India

Dr. Ravi Sihag
Jr. Resident, Department of
Orthopaedics, Pt. B.D. Sharma
PGIMS, Rohtak, Haryana, India

Dr. Himanshu Bansal
Jr. Resident, Department of
Orthopaedics, Pt. B.D. Sharma
PGIMS, Rohtak, Haryana, India

Dr. Kunal Arora
Jr. Resident, Department of
Orthopaedics, Pt. B.D. Sharma
PGIMS, Rohtak, Haryana, India

Dr. Mehak Gaba
House Surgeon, Department of
Orthopaedics, Pt. B.D. Sharma
PGIMS, Rohtak, Haryana, India

Dr. Amandeep Mittal
Jr. Resident, Department of
Orthopaedics, Pt. B.D. Sharma
PGIMS, Rohtak, Haryana, India

Corresponding Author:
Dr. Ipanshu Malik
Jr. Resident, Department of
Orthopaedics, Pt. B.D. Sharma
PGIMS, Rohtak, Haryana, India

Isolated lateral swivel dislocation of talonavicular joint: A rare case report

Dr. Rajpal Beniwal, Dr. Sachin Kumar Sachdeva, Dr. Aditya Seth, Dr. Ipanshu Malik, Dr. Ankush Kundu, Dr. Ravi Sihag, Dr. Himanshu Bansal, Dr. Kunal Arora, Dr. Mehak Gaba and Dr. Amandeep Mittal

DOI: <https://doi.org/10.22271/ortho.2021.v7.i3i.2809>

Abstract

The authors present a rare case report of a 30 year old male presented with a history of road traffic accident with complain of severe pain and swelling in right ankle and foot. On examination, tenderness and swelling was reported on right foot. Neurovascular examination of right foot was normal. Closed reduction manipulation under sedation was not successful in the emergency room. Open reduction under spinal anaesthesia was performed 12 hours after injury in the operating room. A 4cm longitudinal incision over the talonavicular joint was used for reduction. The talonavicular joint was stabilized with two Kirschner wires placed from the navicular bone to the talus. The Kirschner wires were removed at six weeks immediately after the K-wire removal, the joint was stressed under fluoroscopy and deemed stable. Two weeks after the K-wire removal, the joint remained stable and the cast were removed 6 weeks after surgery. The patient was allowed to bear weight, with a gradual increase of load. At 6-month follow-up, his foot was painless and stable. He returned to work in the third month after trauma.

Keywords: Isolated, lateral swivel dislocation, talonavicular joint

Introduction

Midtarsal dislocations of the foot are rare injuries, in particular, talonavicular dislocations occurring without an associated fracture of this joint. Themidtarsal joint is formed by the talonavicular and calcaneo-cuboid joints and transects the longitudinal axis of the medial and lateral foot. Midtarsal joint injuries are rare, easily-missed injuries. Main and Jowett classifymidtarsal injuries into five groups as medial, lateral, longitudinal compression, plantar, and crush according to the acting force and direction of the deformity^[1]. The types of medial and lateralmidtarsal injuries are related to the severity of the acting force and ligamentous strain, fracture, fracture dislocation and swivel dislocation could occur^[1].

Navicular forms an integral part of medial longitudinal arch. The motion in medial column of foot primarily takes place at talonavicular joint as it transmits movements to the midfoot and is also the site of midfoot inversion and eversion^[1].

Rotational forces along the longitudinal axis of the foot while the talo-calcaneal ligaments are intact cause disruption of the talonavicular stabilizers, and this results in medial or lateral talonavicular dislocation^[1]. In lateral swivel dislocation, the laterally directed deforming force causes lateral dislocation of the talonavicular joint with lateral rotation of the forefoot. In medial swivel dislocation, a medially directed deforming force causes medial dislocation of the talonavicular joint with medial rotation of the forefoot. The spring ligament complex is the most important static stabilizer of the talonavicular joint and acts as a sling for the talar head. Rupture of the spring ligament complex results with plantar and lateral rotation of the talar head^[2].

Isolated dislocation of the talo-navicular joint without associated sub-talar dislocation or a tarsal fracture is rare. Such injuries are usually caused by a severe abduction or adduction force exerted to the forefoot. Ever since, Ross and Mitchell described a case of talo-navicular dislocation associated with a talar head fracture, there have been other reports of the same associated with fractures of the talus (medial column disruption of the foot) and fractures of

the calcaneus (transcalcaneal talo-navicular dislocation) [3-7]. There are few studies that discuss this type of injury pattern. The following is a description of a patient who sustained an isolated talonavicular joint dislocation and subsequent treatment a case of lateral swivel dislocation of the talonavicular joint treated by open reduction and percutaneous K wire fixation is presented.

Case report

A 30 year old male presented to our department with a history of road traffic accident with complain of severe pain and swelling in right ankle and foot. He was unable to bear weight. On examination, tenderness and swelling was reported on right foot. Neurovascular examination of right foot was normal. Antero-posterior, oblique and lateral radiographs of the foot and ankle were obtained. Isolated dislocation of talonavicular joint was noted (Figure 1 to 3).

Closed reduction manipulation under sedation was not successful in the emergency room. Open reduction under spinal anaesthesia was performed 12 hours after injury in the operating room. A 4-cm longitudinal incision over the talonavicular joint was used for reduction (Figure 4). The extensor hallucis longus tendon and dorsalis pedis artery were retracted laterally to reach the talonavicular joint. Reduction was performed with traction, external rotation, and abduction of the forefoot. Post-reduction examination under fluoroscopic vision revealed instability of the talonavicular joint. The talonavicular joint was stabilized with two Kirschner wires placed from the navicular bone to the talus (Figure 5). A short leg cast was applied.

The Kirschner wires were removed at six weeks immediately after the K-wire removal, the joint was stressed under fluoroscan and deemed stable. He remained weight-bearing in a Controlled Ankle Motion Boot. Two weeks after the K-wire removal, the joint remained stable and the cast were removed 6 weeks after surgery. The patient was allowed to bear weight, with a gradual increase of load. At 6-month follow-up, his foot was painless and stable. He returned to work in the third month after trauma. Subtalar and ankle movements were normal (Figure 6).

At his last follow-up, at 18 months, his foot was stable and he was complaining of only mild pain on the medial side of his midfoot after long walks. The talonavicular joint was noted to be normal on radiographs obtained 18 months postoperatively.



Fig 1: Anteroposterior view of left foot with dislocation of talonavicular joint



Fig 2: Oblique view of left foot with dislocation of talonavicular joint



Fig 3: Lateral view of left ankle with dislocation of talonavicular joint



Fig 4: Intraoperative clinical image of open reduction with K-wire fixation



Fig 5: Intraoperative fluoroscopic image demonstrating reduction with K-wire



Fig 6: Follow up after six months

Discussion

The midtarsal joints comprising the talo-navicular and calcaneo-cuboid joints is a synovial plane lying transversely across the medial and lateral longitudinal arches of the foot. Main and Jowett classified midtarsal injuries according to the direction of the deforming force and the resultant displacement into five groups (medial, longitudinal compression, lateral, plantar and crush) [1]. Medial and lateral injuries were further divided into fracture sprain fracture-subluxations or dislocations and swivel dislocations. In the swivel injury, the deforming force applied to the forefoot disrupts the talo-navicular joint, rotating the foot causing a rotary subluxation of the subtalar joint. The axis of rotation being the interosseous talocalcaneal ligament which remains intact. The foot thus does not evert or invert.

In a medial swivel injury, the force is directed medially and the talo-navicular joint dislocates medially rotating the foot medially. Here, the calcaneo-cuboid joint is left intact [6, 7]. In a lateral swivel injury, as in the case presented, the force is directed laterally dislocating the talo-navicular joint laterally and rotating the foot laterally. They are usually associated with an impaction fracture of the calcaneocuboid joint (nutcracker fracture) [8].

In a swivel injury, anteroposterior views of the foot will show dislocation of the talo-navicular joint and rotation of the calcaneus beneath the talus and lateral views rotational subluxation but not dislocation of the subtalar joint. Anteroposterior view of the ankle will show a normal or near normal vertical alignment of the calcaneus, in contrast to a similar view in a subtalar dislocation where the calcaneum everts/inverts in the vertical plane [1]. Early anatomical reduction and stable fixation improve the clinical results in talonavicular dislocations. Delay in treatment will cause an increased risk of avascular necrosis and osteoarthritis. In the literature, Pes equinovarus deformity development was mentioned in a missed and untreated case [9].

Closed reduction is the first step in the treatment; however, reduction in a closed manner is not always possible [1]. Postreduction stability should be evaluated carefully for successful results. Damage to the spring ligament complex and joint capsule as well as impaction of the talar head could cause instability of the joint. In case of instability of the joint, smooth Kirschner wires are used for temporary fixation of the joint. In this case, we preferred Kirschner wires for temporary fixation, as the joint was observed to be unstable after reduction because of the young age of the patient and because the articular surface was intact.

Conclusion

We report this case because of the rarity of isolated lateral swivel dislocations.

Furthermore, excellent outcome with early appropriate treatment is emphasized in this article.

Financial disclosure: None reported.

Conflict of interest: None reported.

References

1. Main BJ, Jowett RL. Injuries of the midtarsal joint. *J Bone Joint Surg* 1975;57:89.
2. Kavanagh EC, Koulouris G, Gopez A. MRI of rupture of the spring ligament complex with talo-cuboid impaction. *Skeletal Radiol* 2007;36:555.
3. Ross PM, Mitchell DC. Dislocation of the talo-navicular joint: case report. *J Trauma* 1976;16(5):669-71.
4. Samoladas E, Fotiades H, Christoforides J, Pournara J. Talonavicular dislocation and non-displaced fracture of the navicular. *Arch Orthop Trauma Surg* 2005;125(1):59-61.
5. Meister K, Demos HA. Fracture dislocation of the tarsal navicular with medial column disruption of the foot. *Foot Ankle Surg* 1994;33(2):135-7.
6. Hafez MA, Bawarish MA. Guvvala closed talar body fracture with talonavicular dislocation; case report. *Foot Ankle Int* 2000;21(7):599-601.
7. Ricci WM, Bellabarba C, Sanders R. Transcalcaneal talonavicular dislocation. *J Bone Joint Surg* 2002;84A(4):557-61.
8. Hermel MB, Gershon CJ. The Nutcracker fracture of the cuboid by indirect violence. *Radiology* 1953;60:850-4.
9. Hafez MA, Bawarish MA, Guvvala R. Closed talar 1 body fracture with talonavicular dislocation: a case report. *Foot Ankle Int* 2000; 21:599.