

Nonoperative Treatment of Talonavicular Joint Dislocation Associated with Jones Fracture

M. Vijaya Shankar, Arun Kumar Chandhuru, Prem Kumar Kothimbakkam

Department of Orthopaedics, Chettinad Hospital and Research Institute, Chennai, Tamil Nadu, India

ORCID:

M. Vijaya Shankar: <https://orcid.org/0000-0002-8744-4610>

Arun Kumar Chandhuru: <https://orcid.org/0000-0002-5316-2906>

Prem Kumar Kothimbakkam: <https://orcid.org/0000-0002-4087-2052>

Abstract

Chopart luxation or talonavicular dislocations are rare injuries seen in clinical practice which constitute only 3.6:1 lakh per year. A proper evaluation involving both plain roentgenogram and computed tomography is necessary for preoperative planning for the management of dislocation. The two common varieties of Chopart luxations are medial and lateral types. In this case report, we discuss about a closed medial type of talonavicular dislocation associated with an undisplaced fracture fifth metatarsal base (Jones fracture) which was managed effectively with closed reduction and Plaster of paris (POP) immobilization. The patient was regularly followed up till 12 weeks post reduction. He was allowed to weight bear at the end of 9 weeks, and the range of movements was assessed at the end of 12 weeks which was found satisfactory. In our case, there is talonavicular medial dislocation with fifth metatarsal base fracture, without any associated ligamentous compromise, which leads us to propose a hypothesis that the fracture of the fifth metatarsal base along with talonavicular disruption may alleviate the other ligamentous injuries. Further studies should be conducted to find out the association between talonavicular dislocations with other metatarsal fractures, which might influence the ligamentous compromise at initial presentation.

Keywords: Chopart luxation, closed reduction, Jones fracture, medial dislocation

INTRODUCTION

The talonavicular joint is a complex triplanar joint producing simultaneous movement across longitudinal, horizontal, and vertical axis which includes supination, pronation, inversion, and eversion. The talonavicular articulation is formed by the anterior portion of the head of the talus proximally and by the concave posterior navicular distally.

Talonavicular dislocations (or “Chopart luxations”) are unlikely injuries. Incidence is predicted to be 3.6:1,00,000 per year which comprise 1%–2% of all Chopart luxations. Around 80% of the Chopart luxations are medial, and only 17% are lateral variant. Isolated talonavicular joint dislocation, without associated soft tissue or ligamentous injuries are rare. The main deforming force causing Chopart luxations are severe abduction or adduction force applied to the forefoot. The terminology of swivel injury was coined by Main and Jowett to describe types of subtalar disengagement.^[1]

CASE REPORT

A 40-year-old man presented with a history of fall of heavy object on his right foot, following which the patient had discomfort, pain, and swelling and difficulty in weight-bearing over his right foot. The skin over the talonavicular joint and the adjoining area appears normal. There is significant tenderness predominantly in the medial portion of the right foot over the talonavicular joint. Deformity was noted at the medial border of the foot due to the prominence of the navicular tuberosity. Range of movement – inversion and eversion was restricted

Address for correspondence: Dr. Arun Kumar Chandhuru,
Department of Orthopaedics, Chettinad Hospital and Research Institute,
Chennai, Tamil Nadu, India.
E-mail: drarunc16@gmail.com

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How to cite this article: Shankar MV, Chandhuru AK, Kothimbakkam PK. Nonoperative treatment of talonavicular joint dislocation associated with Jones fracture. Arch Trauma Res 2023;12:55-7.

Received: 13-08-2022,

Revised: 15-09-2022,

Accepted: 10-01-2023,

Published: 29-04-2023.

Access this article online

Quick Response Code:



Website:
www.archtrauma.com

DOI:
[10.4103/atr.atr_49_22](https://doi.org/10.4103/atr.atr_49_22)

in the right foot. Neurovascular status was found to be intact. No other associated injuries were noted.

Radiographs were taken, which showed [Figure 1] medial dislocation of the talonavicular joint along with evidence of undisplaced base of fifth metatarsal fracture (Jones fracture).

Management

Disengagement of talonavicular joint was reduced by manipulation, and the patient was immobilized with below-knee POP, post manipulation radiography was found to be satisfactory with near normal reduction and articular congruity maintained. Computed tomography (CT) three-dimensional reconstruction [Figure 2] was taken to rule out other articular or bony injuries.

Follow-up

Post reduction, magnetic resonance imaging scan was taken after 3 weeks to rule out any associated ligamentous injuries which did not reveal any significant involvement of ligaments. Post reduction, the patient was kept on nonweight-bearing for 6 weeks and partial weight-bearing was started from the 7th week with heel touch walking until the end of 9 weeks and eventually full weight-bearing walking was started after 9 weeks. The patient had 75% of Range of movement (ROM) at the time of 12 weeks [Figure 3 shows inversion, eversion, dorsiflexion, and plantar flexion].

DISCUSSION

The midtarsal joint includes calcaneocuboid and talonavicular joints.^[1] Subtalar dislocations arise from both the talocalcaneal and talonavicular joints.^[2] Talonavicular dislocations are uncommon and occur due to severe inversion or eversion of the foot that disrupts the ligamentous structures supporting the joint.^[2] The significant blood supply to the talus is from the dorsalis pedis artery, and therefore, talonavicular disengagement with subtalar separation leads to osteonecrosis in 40% of cases.^[3] Appropriate analysis of talonavicular dislocations requires acquiring anteroposterior (AP), lateral,

and mortise views of the ankle and foot.^[4] The utility of CT in diagnosis has likewise been discussed. Koulouris and Morrison reported that 44% of patients who received CT for subtalar dislocation had a treatment plan differing from that based on plain X-ray findings.^[5] Most dislocations are amenable to closed reduction as first-line treatment. Closed reduction is performed by applying traction at the heel with countertraction at the thigh while the knee is flexed to 90° to relax the gastrocnemius muscle, followed by distraction and hindfoot inversion or eversion depending on the direction of dislocation.^[6] Although the prognosis is usually good, it requires long-term follow-up to combat the presentation of subtalar arthrosis. The patient was regularly followed up on 3, 6, 9, and 12 weeks, the range of movement was improving on every visit, and at the end of the 12th week, the patient was able to achieve 75% of the ROM compared to the time of injury. The patient achieved an inversion of 25° and eversion of 20° and 15° of dorsiflexion and 40° of plantar flexion [Figure 3].

CONCLUSION

Isolated talonavicular dislocation is not a frequent injury. It represents complex plantar ligamentous structures injury and instability;^[7] this further leads to early arthritis of the foot due to loss of articular congruity. It is most important to diagnose this ligamentous injury as early as possible to avoid early arthritis of talonavicular and talocalcaneal joints.^[7] Early diagnosis and treatment are the prerequisite for the best functional outcome. Ninety percent of talonavicular dislocation will be associated with ligamentous injury, and they should be repaired (surgical repair of the short plantar ligament, ligamentae bifurcate, and plantar calcaneonavicular or spring ligament) to avoid any further recurrence and early articular disruption.^[8] In some cases, closed reduction may be difficult in certain cases because of soft tissue interposition such as flexor digitorum longus tendons, extensor digitorum brevis muscle, dorsal pedis artery, and fibular nerve or by



Figure 1: Xray ankle showing medial talonavicular dislocation



Figure 2: Post manipulation 3D- CT to find out other articular or bony injuries



Figure 3: Clinical picture of patients foot at Twelfth-week follow-up showing 75% improvement of the range of movements compared to the time of injury. The patient achieved inversion of 25° and eversion of 20° and dorsiflexion of 15° and plantar flexion of 40°

coexisting fractures.^[9] In our case, there is talonavicular medial dislocation with fifth metatarsal base fracture, without any associated ligamentous compromise, which leads us to propose a hypothesis that the fracture of the fifth metatarsal base along with talonavicular disruption may alleviate the other ligamentous injuries. Further studies should be conducted to find out the association between talonavicular dislocations with other metatarsal fractures, which might influence the ligamentous compromise at initial presentation.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have

given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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