

## Case Report

**Isolated Talonavicular joint dislocation: A rare form of mid tarsal dislocation- Case report****Authors:****<sup>1</sup>Dr. Aditya .S. Jagdale, <sup>2</sup>Dr. K.R. Patond, <sup>3</sup>Dr. Pramod Jain**<sup>1</sup>MS orthopaedics, senior resident, MGIMS sevagram, Maharashtra, India<sup>2</sup>MS orthopaedics, Director professor, MGIMS sevagram, Maharashtra, India<sup>3</sup>MS orthopaedics, professor, MGIMS sevagram, Maharashtra, India**Corresponding Author:**

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**ABSTRACT:**

**Aim:** To report a case of, 2 months old, Isolated medial talonavicular dislocation. **Background:** Isolated medial talonavicular dislocation is an uncommon injury occurring due to a medially directed force to the forefoot. The injury is usually associated with subtalar or calcaneo-cuboid dislocations and calcaneal or tarsal fractures. A swivel type mechanism is described for medial and lateral talonavicular dislocations. The treatment is largely case specific and there is no standard regimen described for the treatment of this injury. **Case description:** We had a 21 years old female patient with a 2 months old injury to the right ankle following a road traffic accident. The patient complained of swelling over the right ankle associated with inability to bear weight over the right foot. On examination the patient had diffuse swelling and tenderness over the midfoot region. X rays and CT scans of the affected foot showed an isolated medial talonavicular dislocation with an intact subtalar and calcaneocuboid joint. The patient underwent open reduction internal fixation with 2 K wires. At 12 months follow up, post k wire removal, the right ankle was painless and reduction of talonavicular joint was stable with no signs of complications. **Conclusion:** We conclude that if done meticulously open reduction and internal fixation of isolated talonavicular joint dislocation can have excellent outcomes with no post operative avascular necrosis or secondary osteoarthritis, even in old cases. **Clinical significance:** There are a small number of reported cases of isolated talonavicular dislocation. This case report will help in adding to the knowledge on appropriate management of such cases using open reduction and internal fixation.

**Key words:** *Isolated Talonavicular dislocation, Medial swivel dislocation, Mid-tarsal dislocation*

**INTRODUCTION:**

Isolated dislocation of the talonavicular joint is a rare entity. It is usually associated with a complex disruption of the ligamentous structures and fractures of the bones of the midfoot.<sup>1,2</sup> The prevalence of associated injuries (subtalar dislocation, Calcaneocuboid dislocation, fracture of tarsal bones) in a case of talonavicular dislocation ranges from 75 to 90%. Maine and Jowett classified injuries of the mid tarsal joint on the basis of direction of trauma. They described a specific type of dislocation called the swivel dislocation where in there occurs an isolated dislocation of the talonavicular joint without subtalar or calcaneocuboid dislocation and inversion or eversion of foot.<sup>3</sup> This classification assists the surgeon in identifying proper management for the patient.<sup>4</sup> Here in we present a case of isolated medial talonavicular joint dislocation and its subsequent management.

**CASE DESCRIPTION:**

A 21 years old female was brought to the outpatient department of our hospital with history of motor vehicular accident sustaining trauma to right ankle joint 2 months ago. The patient complained of pain, swelling and deformity over the right ankle. On physical examination there was diffuse swelling over the right ankle. There was an obvious deformity with medial displacement of forefoot and a prominent talar head on the lateral aspect of the foot. The skin overlying the talar head on the lateral aspect of the foot was stretched. There was prominence of the lateral malleolus as well with ulceration of the overlying skin. Anteroposterior and lateral radiographs of the ankle revealed medial dislocation of the talonavicular with calcaneum aligned in the vertical plane. (fig. 1).



**Fig 1: Plain radiograph of the RT ankle joint showing medial talonavicular joint dislocation**

CT scan confirmed the above findings.. The patient had undergone 2 attempts of closed reduction and immobilization with below knee plaster cast, before presenting to our hospital, but there was no relief in her symptoms. Open reduction and internal fixation with 2 K wires was performed for this patient using 1 incision over the dorsolateral aspect of the foot, overlying the prominent talar head and another over the medial aspect of the foot. The right ankle joint was immobilized for 8 weeks using a below knee slab (for 2 weeks) followed by a below knee cast. The reduction of the joint was relatively stable postoperatively as confirmed on radiographs of the ankle. we took a duly signed written informed consent from the patient (fig 2).



**Fig 2: Post reduction radiograph showing a reduced talonavicular joint with 2 k wires in situ**

Wound healing was uneventful with complete suture removal at postoperative day 14. K wire removal was done at 8 weeks. The radiographs of the right ankle at 12 months (fig 3) show a well reduced talonavicular joint with no signs of avascular necrosis of talus or arthritis of the talonavicular joint.



**Fig 3: 12 months post op radiograph AP and lateral views showing well maintained reduction with no signs of avascular necrosis**

### **DISCUSSION:**

The midfoot is an anatomic unit composed of the navicular, cuboid, medial, middle and lateral cuneiforms. The joints of the midfoot include the talonavicular and calcaneocuboid joints. These joints are functionally related to the subtalar and lisfranc's joints<sup>1</sup>. Isolated injuries of the of the talonavicular joint are a rare entity. This is because there are strong ligaments providing support in the plantar aspect of the foot. The usual mechanism of injury for talonavicular dislocation comprises of plantar flexion of ankle and adduction of forefoot. Very often there is rupture of spring ligament and plantar calcaneonavicular ligament.<sup>5</sup> Most of these injuries are secondary to high energy trauma like road traffic accidents (72.2%).<sup>6</sup> Maine and Jowett<sup>3</sup> classified injuries of the midtarsal joint into 5 groups based on the direction of the deforming force and the resulting displacement. The groups were as follows: 1. Longitudinal force 2. Medial force 3. Lateral force 4. Plantar force and 5. Crush injury. The swivel dislocation is an isolated dislocation of the talonavicular joint with an intact subtalar and calcaneocuboid joint, caused due to a medial or lateral force. Medial swivel dislocations are much more common than the lateral type.<sup>3</sup> Medial swivel dislocation is caused due to a medially directed force that dislocated the talonavicular joint medially and medially rotates the foot. The calcaneocuboid joint is not affected in this type of injury. Lateral swivel dislocation on the other hand causes lateral talonavicular dislocation due to lateral deforming force. This is usually associated with impacted fracture of calcaneocuboid joint (nut cracker fracture).<sup>7</sup> Swivel injuries differ from subtalar injuries as the force is directed more anteriorly in these cases and the talocalcaneal interosseous ligament is intact. This talocalcaneal ligament is the structure around which the calcaneum along with the remaining foot rotates medially or laterally depending on the direction of the deforming force.<sup>2</sup> The presence of concomitant injuries is an important determinant of the treatment outcome. Therefore the initial radiographs of the ankle need to be evaluated carefully and a CT or MRI of the ankle should be done to rule out suspected damage to the

surrounding osseoligamentous structures.<sup>7</sup> On the basis of CT and X ray findings our case can be classified as an isolated medial swivel dislocation. Various methods have been described for treating talonavicular dislocations, including closed reduction and open reduction with or without internal or external fixation.<sup>8,9</sup> In 1975 Main and Jowett treated 7 cases of medial swivel dislocation. 4 of these were treated using closed reduction and immobilization; the outcome was poor in 3 of these cases and good in 1. 3 patients were treated using open reduction and immobilization; 2 of the had good results and 1 had fair result.<sup>3</sup> Richter et al in 2004, studied 110 cases of isolated Chopart dislocation, fracture dislocation and combined Chopart and Lisfranc fracture dislocation. They classified the injuries based on the mode of treatment. They discovered that an early anatomical reduction was essential to get a good outcome. They also concluded that an initial open reduction yields better result than closed reduction.<sup>6</sup> Pehlivan<sup>10</sup> and Jung<sup>2</sup> in two different case reports described open reduction and percutaneous fixation of a talonavicular dislocation in a case where closed reduction was not possible due to an interposed talonavicular ligaments. In both the cases patients had a good functional outcome. Datt et al in 2009 presented a case of an isolated medial talonavicular dislocation where closed reduction was not possible due to late presentation (6 weeks old). They treated the dislocation with open reduction and internal fixation with K wire. Patient had an excellent functional and radiological outcome at 36 months of follow up.<sup>7</sup> Mathesul et al in 2021 published a case of isolated fracture dislocation of the talonavicular joint treated using closed reduction and external fixator application. They concluded that closed reduction could be achieved by ligamentotaxis using external fixator. This method involves minimum exposure of the joint and low rates of wound complication. They applied the fixator by inserting pins in the calcaneum and metatarsals.<sup>11</sup> In the case presented here the patient presented 2 months after the injury hence closed reduction of dislocation was not possible. We performed an open reduction and internal fixation of the talonavicular joint using 2 stainless steel k wires. The joint was exposed using an anteromedial approach. An incision was given over the lateral part of the dorsum of the foot, over lying the prominent talus. The joint was reduced using traction and lateral rotation of the forefoot followed by fixation using 2 k wires (one medial and one lateral) inserted from the dorsal aspect. A below knee slab was applied till suture removal (postoperative day 14) after which the patient was given a below knee cast for 6 weeks. K wires were removed at 8 weeks and at 12 months follow-up patient had a well reduced talonavicular joint with no signs of avascular necrosis of talus. This case is being presented because of the rarity of an isolated

talonavicular dislocation and the excellent outcome of open reduction and internal fixation.

### **Clinical significance:**

There are a small number of reported cases of isolated talonavicular dislocation. This case report will help in adding to the knowledge on appropriate management of such cases using open reduction and internal fixation of talonavicular dislocation using K wire. The absence of secondary osteoarthritis and avascular necrosis of the talus are points in support of this modality of treatment but to say anything with certainty, larger follow-up studies are required.

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