
Closed Reduction of an Isolated Medial Talonavicular Swivel Dislocation Under Procedural Analgesia: A Case Report

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Abstract

Isolated medial talonavicular “swivel” dislocation is an exceptionally rare midtarsal injury. Most reported cases are reduced in theatre under spinal or general anaesthesia, and there is little practical guidance on managing these injuries in the emergency department (ED) using procedural analgesia alone.

We describe a 60-year-old woman who presented with painful deformity of the right midfoot after a low-energy injury stepping off a curb. Radiographs showed an isolated medial talonavicular dislocation with preserved subtalar and calcaneocuboid alignment. Closed reduction was performed in the ED after titrated intravenous morphine to a total of 10 mg and self-administered nitrous oxide/oxygen (Entonox). With the knee flexed to 90° and the hindfoot stabilised by an assistant, the operator applied longitudinal traction through the first ray, gently accentuated the deformity, then reversed it with controlled midfoot supination while guiding the talar head using a pincer grip. A single manoeuvre achieved reduction. Post-reduction CT confirmed an anatomically congruent talonavicular joint and a minimally displaced comminuted fracture of the lateral navicular rim. The joint was clinically stable and was treated non-operatively in a below-knee cast followed by supervised rehabilitation. At 3 months, the patient had returned to full activities without restriction, with near-symmetric range of motion and no clinical evidence of midfoot instability.

This case illustrates that isolated medial talonavicular swivel dislocation can be safely and definitively managed in the ED under procedural analgesia, provided that reduction mechanics are respected, stability is formally assessed and post-reduction cross-sectional imaging confirms congruity.

Keywords: Talonavicular dislocation; Medial swivel dislocation; Chopart injury; Emergency department reduction; Closed reduction; Midfoot trauma

Introduction

Chopart (midtarsal) dislocations are rare and typically result from high-energy trauma involving both the talonavicular and calcaneocuboid joints, often with associated fractures [1]. Pure isolated talonavicular dislocation is far less common. Within this group, the medial “swivel” subtype—where the navicular pivots medially around an intact calcaneocuboid joint while the talus remains seated in the ankle mortise—is particularly uncommon [2-4]. Differentiating this injury from subtalar or broader peritalar dislocations is important because management priorities and prognosis differ [1,2,7].

Existing case reports and a recent systematic review emphasise three consistent principles: early anatomical reduction, cross-sectional imaging to define associated osteochondral injuries, and a low threshold for open reduction or temporary K-wire fixation when closed reduction fails or instability is demonstrated [1-4,7,8]. However, most successful reductions have been performed in the operating room (OR) under spinal or general anaesthesia, and detailed ED-level technical descriptions are scarce [3,5,6]. We report an isolated medial talonavicular swivel dislocation in an older adult, successfully reduced in the ED under intravenous morphine and Entonox. The focus is on a reproducible reduction manoeuvre, CT-defined fracture pattern and short-term outcome, placed in the context of the existing literature.

Case Presentation

History and examination

A 60-year-old female business executive with a history of hypertension presented to the ED of Hawke’s Bay Hospital, New Zealand, with acute right midfoot pain and deformity. Her regular medications were amlodipine and hydrochlorothiazide. She had no known drug allergies and no prior foot pathology. She reported missing the edge of a curb and landing on an inverted, plantarflexed and adducted right foot, sustaining a low-energy axial load injury. She experienced immediate pain, visible deformity and inability to bear weight. Time from injury to ED presentation was approximately 3 hours.

On inspection, there was obvious medial midfoot deformity with a prominent bony swelling at the talonavicular region, apparent shortening of the lateral border and diffuse swelling. The foot was held in a plantarflexed, adducted and pronated attitude. The skin was intact with no blisters or open wounds. Palpation elicited marked tenderness over the talonavicular joint. Dorsalis pedis and posterior tibial pulses were palpable with brisk capillary refill. Sensation in the deep peroneal, superficial peroneal and tibial nerve distributions was intact. Active toe movement was present but limited by pain. A systematic secondary survey revealed no other injuries.

Pre-reduction imaging and diagnosis

Plain radiographs of the right foot and ankle (anteroposterior, lateral and oblique views) demonstrated medial displacement of the navicular relative to the talar head, with preserved subtalar and calcaneocuboid joint congruity. There was an impacted fracture of the lateral rim of the navicular abutting the inferomedial border of the talus. These findings were consistent with an isolated medial talonavicular swivel dislocation (Figure 1 and 2) [2-4]. No pre-reduction CT scan was obtained. In view of the deformity and soft-tissue tension, urgent closed reduction was planned in the ED under procedural analgesia, with a contingency to proceed to the OR for open reduction and stabilisation if reduction failed or instability was identified [1-4,7,8].



Figure 1: Plain Radiographs acquired prior to reduction demonstrating an isolated medial talo-navicular dislocation with impaction fracture of lateral rim of navicular.

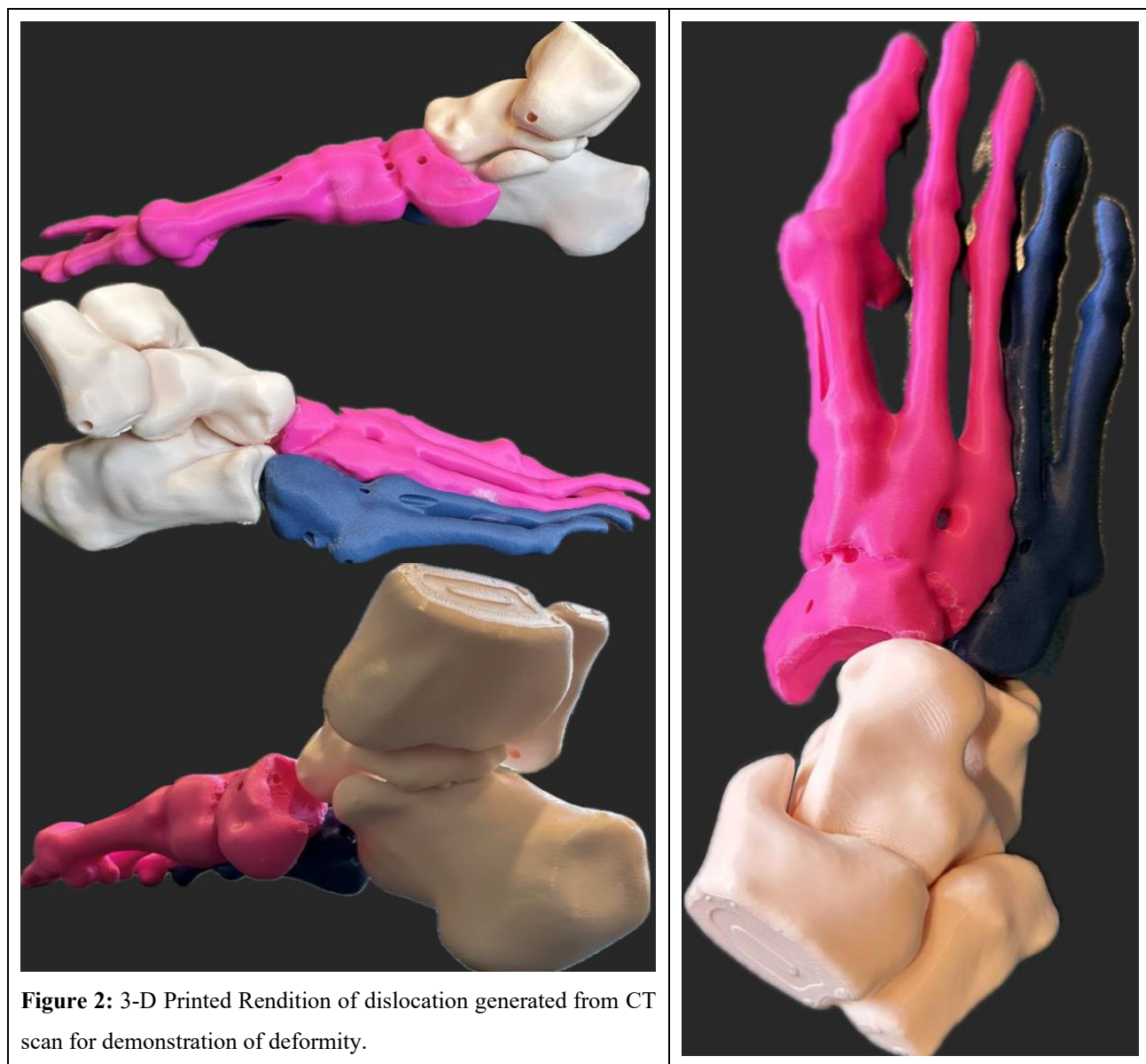


Figure 2: 3-D Printed Rendition of dislocation generated from CT scan for demonstration of deformity.

Emergency Department Reduction

Analgesia, monitoring and positioning

The patient received titrated intravenous morphine to a total dose of 10 mg. Immediately before and during the procedure she self-administered a 50:50 nitrous oxide/oxygen mixture (Entonox). Standard monitoring (non-invasive blood pressure and pulse oximetry) was used, with resuscitation equipment immediately available. She remained conscious, cooperative and hemodynamically stable throughout. She was positioned supine. The right knee was flexed to 90° over a padded bolster at the edge of the bed to relax the triceps surae and allow unimpeded manipulation of the foot.

Team roles and hand positions

- A second assistant stabilised the knee in flexion.
- A first assistant used a cylindrical grip with one hand on the distal tibia and the other on the calcaneus, maintaining the ankle in a plantigrade position. This engaged the talar body in the ankle mortise, limited hindfoot motion and provided a firm counter-traction point.
- The primary operator, standing at the foot of the bed, palpated the talar neck and held it in a pincer grip between thumb and fingers to monitor and influence the talar head vector. The other hand applied a diagonal volar grip on the first metatarsal, with the distal thumb close to the navicular to control the medial column.

Manoeuvre sequence

Accentuation of deformity

With the hindfoot and tibia stabilised, the existing deformity was gently accentuated by plantarflexing, adducting and pronating the midfoot. This aimed to “unlock” the navicular from the talar head and reduce peri-articular soft-tissue tension, following the principle of accentuation then reversal of deformity described in prior reports [2,4-6].

Longitudinal traction

Continuous longitudinal traction was then applied through the first ray by the primary operator, while the first assistant provided counter-traction through the distal tibia and calcaneus. This distracted the talonavicular joint and helped disengage the navicular from its locked medial position.

Reversal of deformity (reduction)

Maintaining traction, the operator gently elevated the medial column and supinated the midfoot, effectively abducting the forefoot around the stabilised talus (Figure 3). The first ray was guided laterally so that its axis realigned with the palpated talar neck vector. Subtle corrective pressure via the talar neck pincer grip helped guide the talar head and navicular into congruence. A palpable and audible “clunk” occurred, and the foot immediately adopted a more normal shape with restoration of the medial arch and lateral border. Reduction was achieved in a single attempt.

Immediate post-reduction assessment

The medial bony prominence resolved and global alignment appeared normal. Distal pulses remained palpable, with no new sensory deficit. The skin over the medial midfoot was no longer tented and soft-tissue tension was visibly reduced.

Gentle passive motion of the hindfoot and midfoot through a limited arc of supination–adduction and pronation–abduction revealed no gross laxity or tendency to redislocate and was comparable to the contralateral side within pain limits.

Post-reduction Imaging and Subsequent Management

Repeat radiographs confirmed anatomical reduction of the talonavicular joint with preserved subtalar and calcaneocuboid congruity. A non-contrast CT scan of the foot and ankle was obtained following reduction. This demonstrated a congruent talonavicular joint with a comminuted fracture of the lateral rim of the navicular and minimally displaced fragments, without subtalar or calcaneocuboid subluxation or a major intra-articular loose fragment (Figure 4).

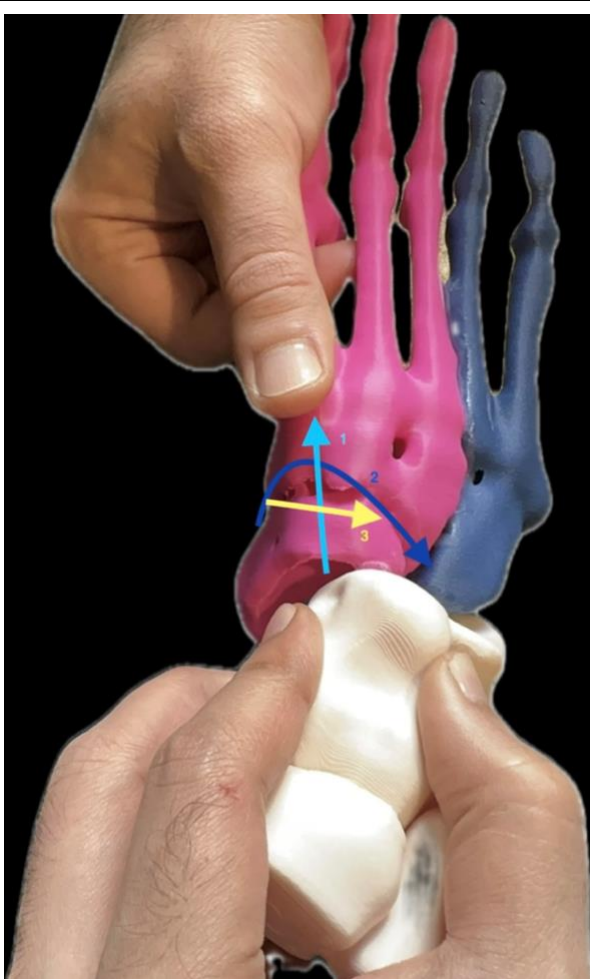


Figure 3: Reduction manoeuvre:

1. Longitudinal traction
2. Supination
3. Abduction

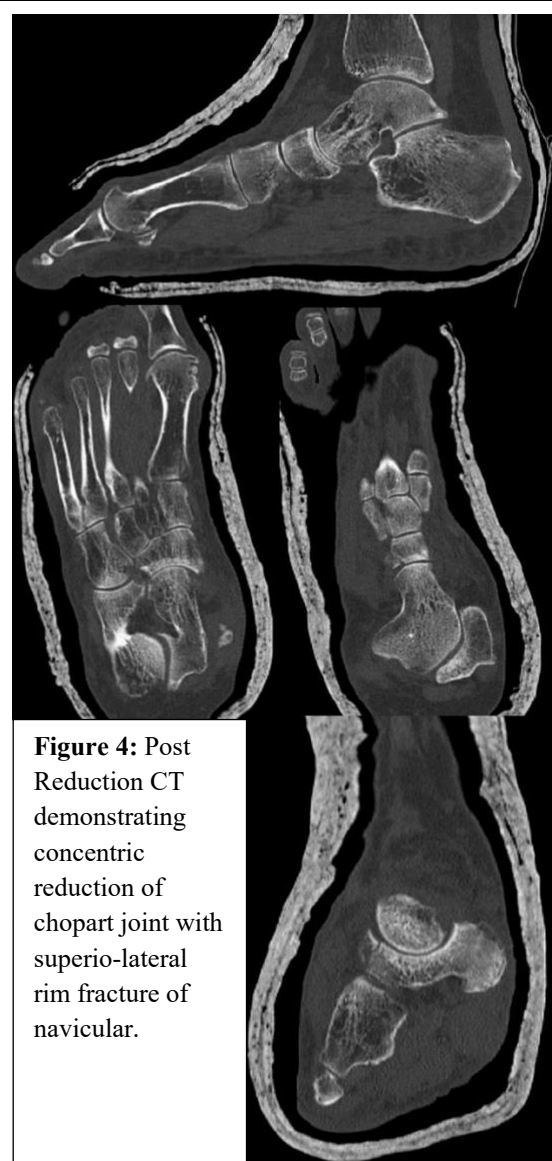


Figure 4: Post Reduction CT demonstrating concentric reduction of chopart joint with superio-lateral rim fracture of navicular.

Given the anatomic reduction, absence of sizeable loose bodies and clinical stability, surgical stabilisation was not performed. The foot and ankle were immobilised in a below-knee posterior plaster backslab in plantigrade position, and the patient was instructed to remain non-weight-bearing with crutches. Analgesia and thromboprophylaxis were prescribed according to institutional protocol.

At 14 days, the backslab was converted to a circumferential below-knee fibreglass cast, which was maintained for a further 4 weeks (6 weeks total immobilisation). There were no cast-related complications. At 6 weeks, radiographs showed maintained talonavicular congruency. The cast was removed and weight bearing as tolerated in moonboot was instated. At 12 weeks, the patient was fully weight-bearing in normal footwear with minimal midfoot pain and near-symmetric range of motion compared with the contralateral side (Figure 5 and 6). No clinical indication of mid-foot instability. Overall FAOS Score at 3 months was 65%. Progressive strengthening physiotherapy was initiated.



Figure 5: Clinical photographs at 3 months post injury.



Figure 6: Weight-bearing Radiographs at 3 months.

Table 1: FAOS = Foot and Ankle Outcome Score. Subscale scores are transformed to a 0–100 scale, where 100 indicates no foot- or ankle-related symptoms or functional limitations and 0 indicates extreme symptoms. Scores shown are at 3 months after injury and closed.

FAOS Subscales	Score
Overall	65%
Symptom + Stiffness	82%
Pain	72%
Function; daily living	72%
Function; sports and recreational activities	30%
Quality of Life	38%

Discussion

Medial talonavicular swivel dislocation is an uncommon variant of Chopart injury in which the navicular displaces medially while the calcaneocuboid joint remains congruent and the talus remains seated within the ankle mortise [2-4,7]. Misinterpretation as a subtalar or more global peritalar dislocation may delay appropriate management [1,2]. Several case reports have described differing patterns and management strategies. Datt et al. reported a chronic medial swivel dislocation with an anteromedial talar head impaction fragment in which closed reduction failed and open reduction with K-wire stabilisation was required [2]. Jung et al. described a pure medial talonavicular dislocation where closed reduction in the ED and then under spinal anaesthesia failed due to interposed dorsal talonavicular ligament; MRI identified the block, and open reduction with temporary K-wire fixation restored congruity [3]. Algouaiz et al. presented a medial swivel dislocation with a nondisplaced navicular fracture and small medial fragments successfully treated with closed reduction and cast immobilisation [4].

Sakharkar et al. managed a high-energy medial swivel dislocation with closed reduction under spinal anaesthesia, emphasising accentuation of deformity followed by traction and forefoot abduction with digital pressure on the talar head and navicular [5]. Nair et al. reported a low-energy medial swivel dislocation reduced under spinal anaesthesia, with subsequent K-wire fixation after instability was demonstrated on stress views [6]. Sabir et al. described a medial swivel dislocation with associated fifth metatarsal base fracture, talar head impaction and talocalcaneal subluxation, treated with closed reduction under sedation and cast immobilisation after fluoroscopic stress testing confirmed stability [7]. Layson et al. presented a fixed, irreducible medial swivel dislocation with navicular fracture and skin compromise requiring urgent open reduction, navicular fixation and talonavicular K-wire stabilisation [8].

A systematic review by Metcalfe et al. highlighted the overall rarity of pure Chopart dislocations, the frequent use of CT to characterise injury patterns and the association of timely anatomical reduction and appropriate stabilisation with better outcomes [1].

Our case differs from many prior reports in that definitive management occurred in the ED under procedural analgesia rather than in the OR under regional or general anaesthesia. The reduction followed established mechanical principles—accentuation of deformity, longitudinal traction to disengage the navicular, then reversal with rotation and directed pressure on the talar head/navicular [2,4,5,6,8]—but adds stepwise detail on hindfoot stabilisation and medial column control. Firm stabilisation of the calcaneus and distal tibia maintained the talus as a fixed pivot, while a first-ray grip aligned the medial column with the talar neck vector. These practical points may assist ED and orthopaedic clinicians when immediate theatre access is limited.

Post-reduction CT was essential to confirm joint congruity and define the associated comminuted lateral navicular rim fracture. Similar rim or small osteochondral fragment patterns have been reported in other medial swivel cases and may be subtle on plain radiographs [2,4,7]. In this patient, fragment displacement was minimal and there was no subtalar or calcaneocuboid involvement, supporting non-operative management.

Stability assessment is a key decision point. Where available, fluoroscopic stress testing can guide the choice of temporary K-wire fixation [3,5,8]. In this ED-based case, stability was judged by symmetrical midfoot motion compared with the contralateral side, absence of recurrent subluxation during gentle manipulation and maintained congruity on CT and follow-up radiographs. Under these conditions, cast immobilisation and structured rehabilitation resulted in an uneventful early recovery.

Taken together with existing literature, this case supports an approach in which patients with pure medial talonavicular swivel dislocation and minimally displaced associated fractures can be managed definitively in the ED with closed reduction under procedural analgesia, provided that post-reduction imaging confirms congruity and the joint is clinically stable. Persistent irreducibility, large osteochondral fragments, instability or soft-tissue compromise should prompt early surgical exploration and stabilisation.

Conclusion

Isolated medial talonavicular swivel dislocation is a rare midtarsal injury. This case demonstrates that, in appropriate patients, closed reduction can be safely and effectively performed in the ED under intravenous morphine and Entonox using a coordinated manoeuvre that accentuates and then reverses the deformity while maintaining hindfoot stability. Detailed description of positioning, team roles and hand placement may help clinicians reproduce the technique. Routine post-reduction CT and careful assessment of stability are essential, and irreducibility, large associated fractures or instability should prompt early surgical intervention.

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Patient Consent

Written informed consent was obtained from the patient and submitted to the journal for publication of this case report and the accompanying radiological images.

Conflict of Interest and Funding

The authors declare no conflicts of interest related to this case. No external funding was received for this work.

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