

# Unstable Chopart Joint following Talonavicular dislocation: Comparison of Conservative and Surgical Management

Adrian Akhavan, DPM, FACFAS<sup>1</sup> Rafael Lappost, DPM<sup>1</sup> Rishad Ahmed, DPM<sup>2</sup> Sara Rose, DPM<sup>3</sup> Joseph Watson, DPM<sup>4</sup>

<sup>1</sup>Attending Physician, Palmetto General Hospital Department of Orthopedics- Podiatric Medicine, Hialeah, FL  
<sup>2</sup>Resident, Foot and Ankle Surgery, PGY-3, Palmetto General Hospital Department of Orthopedics- Podiatric Medicine, Hialeah, FL  
<sup>3</sup>Resident, Foot and Ankle Surgery, PGY-3, Palmetto General Hospital Department of Orthopedics- Podiatric Medicine, Hialeah, FL  
<sup>4</sup>Chief Resident of Foot and Ankle Surgery, PGY-3, Palmetto General Hospital Department of Orthopedics- Podiatric Medicine, Hialeah, FL

## Statement of Purpose and Procedures

Talonavicular joint dislocation (TNJ) is a rare injury with most reported cases occurring after trauma. When a dislocation occurs, closed reduction is recommended as soon as possible to avoid neurovascular compromise or potential skin necrosis. Surgical intervention is generally recommended when instability of the joint remains post reduction. This case series compares the patient outcome for cast immobilization and surgical intervention for an unstable chopart joint after successful a reduction.

## Methodology and Hypothesis:

5 patients were evaluated in the Emergency Department with talonavicular joint dislocations to their respective lower extremity. All patients had mild to no past medical history (i.e. controlled hypertension or healthy). The history of injury included fall from height or fall with rotational force. The dislocation was inspected both clinically and on pre-reduction radiograph views in each case including AP, MO and lateral of foot and ankle. A stress test was performed after successful reduction to confirm instability. This mini case series aims to demonstrate that similar outcomes can be reached for an unstable chopart joint after a traumatic talonavicular joint dislocation using either surgical or non surgical treatment options.

## Procedure:

Five patients were included in this study. Pre-reduction standard radiographs demonstrated dislocation of the talonavicular joint. Instability of chopart joint was confirmed with stress test being performed after successful closed reduction.

During the reduction in the ER, three patients received conscious sedation while the other two received local anesthesia. A jones compression dressing and posterior splint was applied to all of them after the reduction. One patient was admitted for 1 night for pain control. All patients were at minimum seen in office 3 days after discharge and on the 6 week mark, when they were allowed to begin full weight bearing.

One patient underwent closed reduction with percutaneous crossing 0.062 k-wire fixation across the talonavicular joint in the operating room(Fig 1). This patient was followed on a weekly basis in an outpatient setting for pin site care. The k-wires were removed in 6 weeks and patient was allowed to fully bear weight.



Fig 1: AP XR of Crossing K-wire fixation

One patient underwent open reduction with inspection of talonavicular joint and application of delta frame. Upon inspection an osteochondral defect was noted within the joint that was extracted at that time. A steinman pin was inserted across the joint and the delta frame was added for stability (Fig 3,4). Patient was followed on a weekly bases after discharge for pin site care. At 6 weeks post op, the delta frame and steinman pin were removed. All patients were non weight-bearing for a period of 6 weeks, then allowed to fully weight bear.

## Review of the Literature

Talonavicular joint dislocations are a rare injury of the foot and ankle with majority of cases related to trauma. When a dislocation occurs at the joint, it is considered a serious injury due to the instability that can occur across chopart joint (1).

Different treatment methods are available for dislocations of TNJ, including closed reduction and/or open reduction with or without internal or external fixation. Richter et al reported 110 chopart dislocations and compared the treatment modalities. The results showed that the group with closed reduction without internal fixation had similar results as compare to other groups (2). On follow up the AOFAS scores were not significantly different between the groups however, significant distinction between open reduction versus closed reduction could not be concluded (7).

A single patient case study was published by Pehlivan, et al., that described an isolated medial dislocation at talonavicular joint. The injury was from a low energy mechanism. An open reduction in the operating room was performed due to difficulty of closed reduction from buttonholing of talar head through the extensor retinaculum. Percutaneous fixation was placed across the joint and removed at 6 weeks post op. At the latest follow up, the only significant complaint was lateral column pain with long distance ambulation (4)

Richter, et al., advocated that all dislocations at TNJ be treated with open reduction and internal fixation due to potential vascular compromise (5). Inal et al described closed reduction without need for percutaneous fixation in a single case report of a medial swivel dislocation with fractures of the fourth and fifth metatarsals. In this case, the TNJ dislocation was reduced intraoperatively and the metatarsal fractures were fixated with k wires. The patient was immobilized for 6 weeks and allowed to bear weight after fixation removal at 6 weeks. At a 14 month follow up the patient reported having mild instability and return to normal activity. They concluded that it is best to perform an open reduction if an attempt at closed reduction has failed (6).

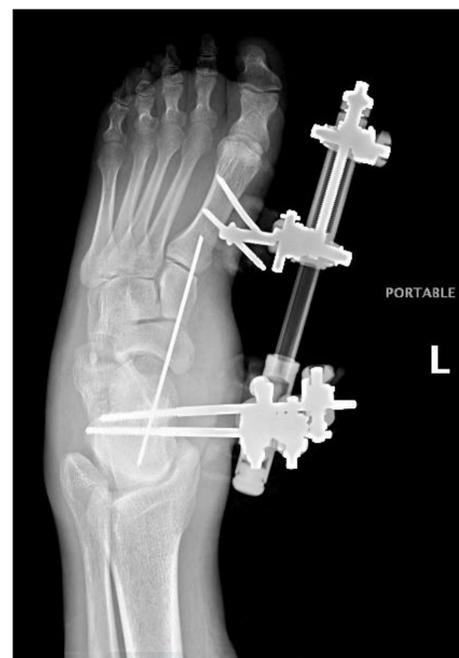


Fig 3: AP view Delta frame fixation



Fig 2: Lateral view TNJ dislocation



Figure 4: Delta frame fixation

## Results

Five patients with gross dislocation of talonavicular joint were reviewed. Overall similar patient outcome was achieved for all treatment modalities with all patient returning to normal activity with minimal to no impairment. Physical therapy for muscle strengthening, range of motion and gait training was initiated shortly after immobilization, k wire removal and delta frame removal for respective patient. One patient that was treated with only immobilization developed DVT that was treated with readmission to hospital and anticoagulation. The patient that was treated with delta frame application experienced more stiffness in midfoot in comparison to other patients.

## Discussion and analysis

Most authors advocate the use of internal fixation for stabilization of the acutely dislocated Chopart joint (5,8). In this case study, five talonavicular dislocations without fractures were discussed. Surgical and non surgical options were compared to demonstrate the preferred treatment. Each treatments goal was to maintain anatomic reduction with a period of immobilization of 6 weeks. With follow up, all patients showed similar results in terms of returning to normal activity. From our small case study, we found that in the cases were surgical intervention was performed, the patient yielded no additional benefits and that similar results were obtained from all treatment modalities. The fixation also could have caused the patient more stiffness although a larger sample size would be necessary to confirm this result. It should be added that the ability of the patient to remain non-weight bearing on foot is essential for good outcome. The threshold for surgery for this type of injury should be lower and the physician can use a conservative option to achieve optimal results.

## REFERENCES

- Benirschke SK, Meinberg E, Anderson SA et al (2012) Fractures and dislocations of the midfoot: Lisfranc and Chopart injuries. J Bone Joint Surg Am 94:1325-1337.
- Van Dorp KB, De Vries MR, Van Der Elst M et al (2010) Chopart joint injury: a study of outcome and morbidity. J Foot Ankle Surg Off Publ Am Coll Foot Ankle Surg 49:541-545
- Rammelt S (2014) Chopart and Lisfranc joint injuries. In: Bentley G (ed) European surgical orthopaedics and traumatology. The EFORT textbook. Springer, Berlin, Heidelberg (Germany), New York, pp 3835-3857
- Pehlivan O, Akmaz I, Solakoglu C, Rodop O. Medial peritalar dislocation. Arch Orthop Trauma Surg 2002 122: 541-543.
- Richter M, Wippermann B, Krettek C, Schmitt HE, Hufner T, Thermann H. Fractures and fracture dislocations of the midfoot: Occurrence, causes and long-term results. Foot Ankle Int 2001 22: 392-398.
- Inal Sermet. An unusual variety of simultaneous fracture dislocation pattern: medial swivel dislocation of talonavicular joint with displaced fractures of the fourth and fifth metatarsals. JFAS 2013; 501-504.
- Powel, Eric. Swivel - type dislocation of talonavicular joint: a case report. Foot and ankle international. June 1, 2011.
- Ip K, Lui TH. Isolated dorsal midtarsal (Chopart) dislocation: a case report. J Orthop Surg 2006 14: 357-359.
- Kutlish, H., Stern, R., Drittenbass, L., & Assal, M. (2017). Injuries to the Chopart joint complex: A current review. European Journal of Orthopaedic Surgery & Traumatology, 27(4), 425-431. doi:10.1007/s00590-017-1958-0