Chronic Swivel Dislocation of the Talonavicular Joint Due to Low-Energy Trauma: A Case Report

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ABSTRACT
Midfoot dislocations are rare injuries, and talonavicular joint dislocations often go unnoticed. In the literature, reports of swivel dislocations are limited to case studies, most of which are associated with high-energy trauma and acute kinematics. We present a case of a swivel dislocation with a six-week evolution following low-energy trauma. This report discusses the management of this unusual condition and how an earlier diagnosis could have been suspected and achieved.
Keywords: Talus; dislocation; swivel; chronic; arthrodesis; low energy.
Level of Evidence: IV

Luxación inveterada de la articulación astrágalo-escafoidea, de tipo giratoria, por traumatismo de baja energía. Reporte de un caso

RESUMEN
Las luxaciones del mediopié son lesiones raras, y las de la articulación astrágalo-escafoidea, con frecuencia, se pasan por alto. En la bibliografía, solo hay informes de casos sobre luxaciones de tipo giratorio (*swivel*), la mayoría de ellas, secundarias a traumatismos de alta energía y cinemática aguda. Se presenta un caso de una luxación de este tipo provocada por un traumatismo de baja energía, con 6 semanas de evolución. Se comenta el manejo de este cuadro inusual y cómo se podría haber sospechado y diagnosticado antes.
Palabras clave: Astrágalo; luxación giratoria; inveterado; artrodesis; baja energía.
Nivel de Evidencia: IV

INTRODUCTION

Midfoot dislocations are rare injuries, accounting for 2% of all traumatic foot injuries, according to Elmaghrby et al. Fewer than 12% of midfoot dislocations correspond to a talonavicular swivel dislocation, making it a unique injury.[1]

In 1975, Main and Jowett published the first descriptions of the classification and presentation of this type of injury. They defined dislocation of the talonavicular joint with preservation of the calcaneocuboid and talocalcaneal joints as "rotating" or rotational injuries, depending on the direction of the deforming force: medial compression, lateral, plantar, longitudinal, and crushing. In these cases, the talus rotates over the calcaneus, with the sustentaculum tali and interosseous ligament acting as a fulcrum, leading to talonavicular dislocation (Figure 1).[2,3]

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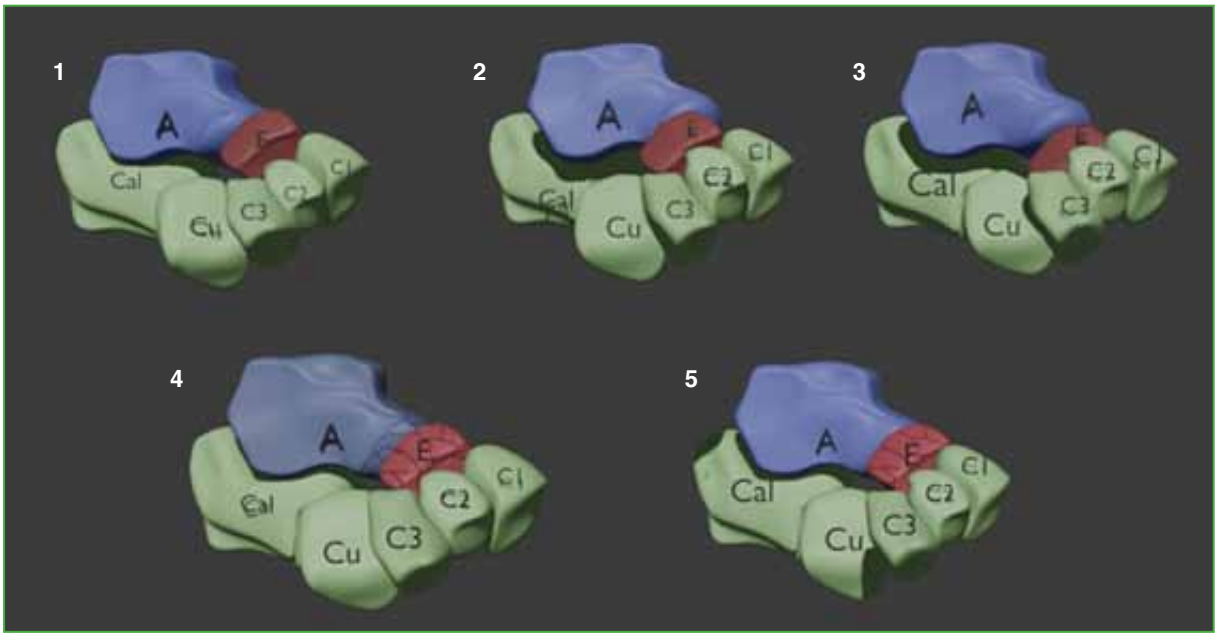

Figure 1. Main and Jowett's 1975 classification of talonavicular injuries according to direction. **1.** Medial dislocation. **2.** Lateral dislocation. **3.** Plantar dislocation. **4.** Crush injury. **5.** Longitudinal compression injury (3D model of the foot courtesy of Juan Fernando Romero Rosero).

In this article, we describe the clinical history, treatment, and follow-up of a patient with a chronic medial swivel dislocation caused by low-energy trauma. The literature on this condition is limited to a few case reports.[3-8.]

CLINICAL CASE

A 60-year-old male, employed in a factory, with a history of uncontrolled hypertension and a body mass index of 24.2, reported having sustained trauma to his right foot six weeks earlier. The incident occurred while stepping off a stationary bus while carrying a 10 kg bag in his right hand. After placing full weight on his right foot, he experienced intense pain, perceived a deformity, and had significant functional limitation.

He was initially evaluated by a general practitioner, who referred him to Orthopedics for outpatient consultation rather than emergency care. He presented late to our Department, with lameness, residual edema, pain, and medial deformity in the midfoot, as well as a tendency toward supinatus and cavus. He had limited inversion, eversion, and plantar flexion movements.

Initial radiographs showed a medially rotated talonavicular dislocation with impaction of the navicular on the anterior articular surface of the talus and a fracture of the cuboid. A CT scan was performed to identify associated injuries and assist in surgical planning (Figure 2). Given the chronic nature of the case and the presence of an osteochondral injury, we opted for open reduction of the dislocation, followed by stabilization with arthrodesis and bone graft. The patient signed an informed consent form authorizing the use of his images.

Surgical Technique

A dorsal approach was performed in the midfoot over the area of deformity. Using blunt dissection, the extensor hallucis longus tendon and the dorsalis pedis artery were retracted laterally, and the anterior tibial tendon medially. The joint capsule was incised, and the fibrous tissue interposed in the talonavicular space was removed. The remaining cartilage from both bones was debrided using a blade, distractor, and a reaming drill. Headless compression screws were placed, and a bone substitute was applied to the arthrodesis site as well as to the articular defect of the talus. In this case, no procedures were performed for the cuboid fracture, which was chronic, with a sagittal fracture line and minimal displacement.

Figure 2. **A.** Clinical image of the right foot (x) showing medial arch deformity with a tendency toward cavus. **B.** Anteroposterior and oblique radiographs of the right foot demonstrating dislocation of the talus, with the talar head impacted on the tarsal scaphoid. **C.** Axial computed tomography of the right foot showing an intact subtalar joint (red arrow) and a cuboid fracture (yellow arrow) with a congruent calcaneocuboid joint.

Postoperatively, control radiographs were obtained, analgesia was administered, and intravenous antibiotic prophylaxis was given for 24 hours. Early rehabilitation was indicated by the physiatry team.

The patient was discharged. At the 3-week follow-up visit, sutures were removed. Weight-bearing was restricted for 8 weeks, after which progressive loading was allowed.

At the conclusion of follow-up, 18 months postoperatively, the patient had a stable, plantigrade, pain-free foot. The American Orthopaedic Foot and Ankle Society (AOFAS) score was 87.

Figure 3. Anteroposterior and oblique radiographs of the right foot. **A.** Initial postoperative control. **B.** Complete consolidation of the arthrodesis at 6 months.

DISCUSSION

Dislocations of the talonavicular joint are infrequent injuries; only isolated case series have been published. When reviewing the literature since 1977, we found cases of this type associated with high-energy trauma mechanisms, such as falls from heights and traffic accidents,[4,5] as well as low-energy mechanisms such as ankle inversion, twisting of the foot, or even walking—[1,6,8] all managed acutely within the first 21 days.

Regarding treatment, closed reduction is the first step in managing this condition.[1,6] When this is not possible, a direct surgical approach to the talonavicular joint is used to achieve a congruent reduction. In such cases, the joint has been stabilized with Kirschner wires (K-wires).[4,5,8]

Cases of late-treated injuries have also been reported.[7,9] Only three involved high-energy trauma and were managed after more than 6 weeks. In two of these cases, open reduction and stabilization with K-wires were performed (in patients aged 20 and 35 years). In the third case, Kumar et al.[7] performed arthrodesis due to the time elapsed and the joint damage to the talar surface, in a 48-year-old patient.

Our case is unique in the literature of the last 45 years, as it involves a chronic medial swivel talonavicular dislocation caused by a low-energy mechanism, in an active working patient without risk factors such as overweight, steroid use, or known collagen disorders. A cuboid fracture was also documented, likely due to tension in the lateral column—contrary to Main and Jowett's 1975 hypothesis,[2] which associated cuboid fractures exclusively with lateral rotational injuries involving compression of the lateral column. This raises the possibility that the pathophysiological mechanisms underlying this type of injury are not yet fully understood.

CONCLUSIONS

Injuries of this nature are relatively easy to diagnose in the acute setting when associated with high-energy trauma, such as motorcycle accidents or falls from heights. They present with pain, edema, ecchymosis, deformity, loss of the medial arch contour, and inability to bear weight. A radiographic foot series including anteroposterior, oblique, and lateral views enables visualization of the disrupted talonavicular relationship. Closed reduction can then be attempted under sedation or general anesthesia to achieve maximum muscle relaxation.

However, in cases of low-energy trauma (e.g., twisting injuries or monopodal support), the findings may be subtle and fail to raise clinical suspicion, leading to delayed consultation and functional sequelae in the medium and long term.

When injuries are more than 3 weeks old (chronic), clinical findings such as gait limitation, residual edema, midfoot deformity, and radiographic evidence of disrupted talonavicular joint alignment, associated fractures, osteochondral lesions, joint impaction, or exposure of the talar head, suggest a delayed presentation. In these cases, closed reduction is no longer feasible, and open reduction is required. Joint stabilization may involve K-wire fixation or, depending on the condition of the articular cartilage, debridement and arthrodesis with rigid internal fixation.

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