Distal and Proximal Tibiofibular Dislocation: A Maisonneuve Equivalent. Case Report

Juan Manuel Romero Ante, Juan Sebastián Nanclares
Orthopedics and Traumatology Service, Hospital Alma Mater de Antioquia, Medellin, Colombia

ABSTRACT
We present a 32-year-old male patient with simultaneous dislocation of the proximal and distal tibiofibular joint without associated fibula fracture, an atypical injury and with very few cases described in the literature, presented after a sports trauma. By mechanism of trauma and analysis of the injury, it is set up parallel with a Maisonneuve injury. The diagnosis was made by radiographs which showed a diastasis in the proximal tibiofibular joint and an increase in the medial clear space in the ankle. Treatment included closed reduction of the proximal dislocation and an open reduction with internal fixation of the distal dislocation. After twelve months of follow-up, the patient showed a complete recovery, without pain or instability, and with a satisfactory American Orthopedic Foot and Ankle Society Score (AOFAS) score, which allowed him to resume his sports and work activity.
Keywords: Ankle injury; interosseous membrane; surgical treatment; syndesmosis lesion; tibiofibular diastasis; Maisonneuve fracture.
Level of Evidence: IV

Luxación tibioperonea distal y proximal: equivalente de Maisonneuve. Reporte de un caso

RESUMEN
Se presenta el caso de un hombre de 32 años con luxación simultánea de la articulación tibioperonea proximal y distal, sin fractura asociada del peroné, ocurrida luego de un trauma deportivo. Se trata de una lesión atípica y con muy pocos casos publicados. Por el mecanismo de trauma y el análisis de la lesión, se establece un paralelo con una lesión de Maisonneuve. Se llega al diagnóstico con radiografías que mostraron una diástasis en la articulación tibioperonea proximal y un aumento del espacio claro medial en el tobillo. El tratamiento incluyó la reducción cerrada de la luxación proximal y una reducción abierta con fijación interna de la luxación distal. Tras 12 meses de seguimiento, la recuperación del paciente era completa, no tenía dolor ni inestabilidad, el puntaje de la AOFAS era satisfactorio, y retomó su actividad deportiva y laboral.
Palabras clave: Lesión de tobillo; membrana interósea; tratamiento quirúrgico; lesión de sindesmosis; diástasis tibioperonea; fractura de Maisonneuve.
Nivel de Evidencia: IV

INTRODUCTION

The proximal tibiofibular joint is formed by the lateral aspect of the lateral tibial plateau and the fibular head, with articular cartilage and synovium interposed between them. It is stabilized by a fibrous capsule and two ligaments: the anterosuperior tibiofibular ligament, composed of two or three flat bands that are thicker and stronger than its counterpart, and the posterosuperior tibiofibular ligament, which consists of a single band. This joint may be classified according to its configuration as either horizontal or oblique. The horizontal configuration provides a larger articular surface and greater rotational mobility, whereas the oblique configuration, because of its smaller articular surface and reduced rotational mobility, is more prone to dislocation.[1]

Received on December 20th, 2024. Accepted after evaluation on August 22nd, 2025 • Dr. JUAN MANUEL ROMERO ANTE • juanmaorto@hotmail.es https://orcid.org/0000-0002-9390-9496
How to cite this article: Romero Ante JM, Nanclares JS. Distal and Proximal Tibiofibular Dislocation: Maisonneuve Equivalent. Case Report. *Rev Asoc Argent Ortop Traumatol* 2026;91(3):250-259. https://doi.org/10.15417/issn.1852-7434.2026.91.3.2090

The distal tibiofibular syndesmosis is a fibrous joint formed by the tibia and fibula, which are maintained together within the fibular notch of the tibia by four ligaments: the anteroinferior tibiofibular ligament, the posteroinferior tibiofibular ligament, the transverse ligament, and the interosseous ligament, the latter being a direct continuation of the interosseous membrane. This joint may be injured in approximately 50% of Weber type B fibular fractures and in all type C fractures. In ankle sprains, the reported incidence ranges from 1% to 11%.[2]

The high fibular fracture caused by a pronation-external rotation mechanism associated with injury to the distal tibiofibular syndesmosis was first described by the French surgeon Jules Germain Maisonneuve in 1840, although the eponym was later popularized by his compatriots Quenu, Chaput, and Destot. Currently, the most widely accepted definition of a Maisonneuve injury is a fracture of the proximal fourth of the fibula associated with injury to at least the anteroinferior tibiofibular ligament and the interosseous ligament, usually extending to involve the medial column of the ankle.[3]

The simultaneous occurrence of proximal and distal tibiofibular dislocation without an associated fibular fracture is an extremely rare injury, with only a few cases reported in the literature.

We present the case of a patient who sustained this injury following sports-related trauma, including its diagnosis, management, and clinical and radiographic outcomes.

CLINICAL CASE

A 32-year-old man with no relevant medical history presented to the emergency department after sustaining an eversion and rotational injury to his left ankle while playing soccer 24 hours earlier. He reported severe pain, functional impairment, and inability to bear weight on the affected limb. Physical examination revealed bimalleolar swelling and tenderness, a positive squeeze test over the mid and distal thirds of the leg, and tenderness along the lateral aspect of the fibula at its proximal fourth. No wounds or distal neurovascular deficits were identified. Ankle trauma series radiographs were obtained. The images showed only widening of the medial clear space and findings suggestive of a posterior malleolar fracture (Figure 1).

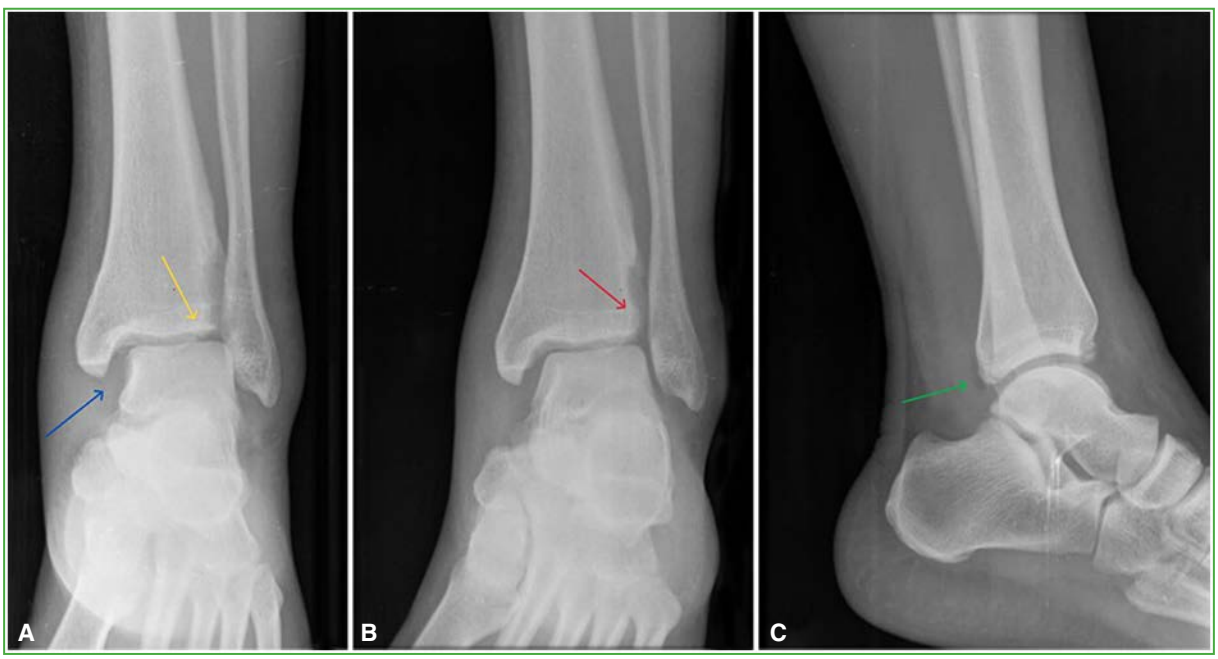

Figure 1. Radiographs of the left ankle. **A.** Anteroposterior view. Increased medial clear space, lateral displacement of the talus (blue arrow), and tibiotalar asymmetry (yellow arrow). **B.** Mortise view. Widening of the distal tibiofibular clear space (red arrow). **C.** Lateral view. Small posterior malleolar fracture (green arrow).

Radiographs of the leg demonstrated diastasis of the proximal tibiofibular joint without evidence of a fracture of the proximal fourth of the fibula (Figure 2). In addition, visualization of both the proximal and distal fibular articular facets was noted, an indirect sign of simultaneous tibiofibular dislocation, with the distal fibula in external rotation (Figure 3).[4]

Figure 2. Radiographs of the left leg. **A.** Anteroposterior view. No fibular fracture is observed. **B.** Lateral view. Anterior displacement of the proximal fibula (white arrow).

Figure 3. Radiograph of the left leg. The proximal and distal fibular articular facets are visible (double facet sign) (black circles). The distal fibula demonstrates a pointed appearance (black arrow).

A diagnosis of simultaneous proximal and distal tibiofibular dislocation associated with injury to the medial ankle complex and a posterior malleolar fracture, without an associated fibular fracture, was established. The patient was immobilized with a splint, and reduction and stabilization were scheduled for the day of admission.

Surgical Technique

The patient was placed in the supine position and received spinal anesthesia and intravenous antibiotic prophylaxis. No tourniquet was used. Fluoroscopic guidance was employed throughout the procedure to assess the injury pattern (Figure 4).

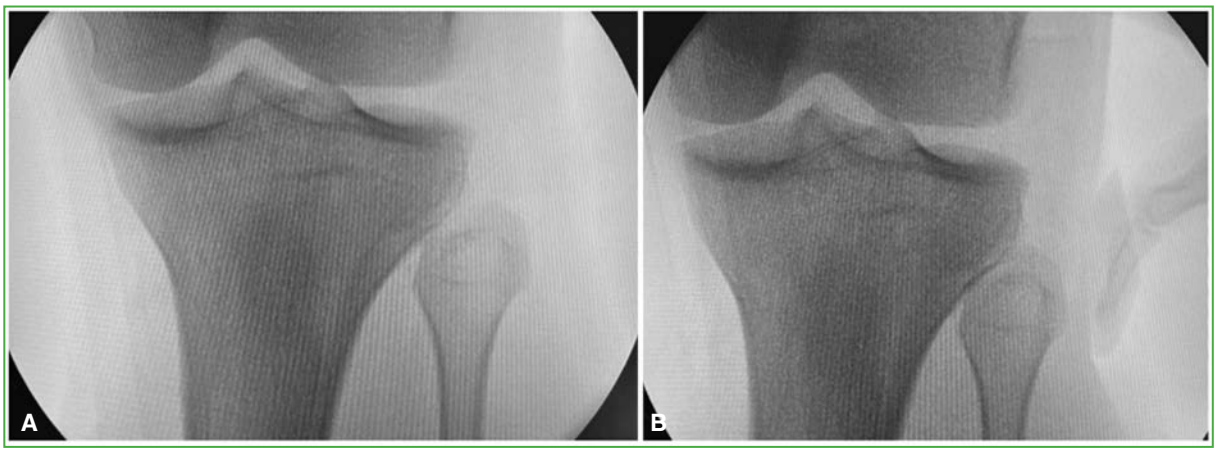

Figure 4. Left knee under fluoroscopic view. **A.** Note the proximal tibiofibular dislocation. **B.** Reduction achieved with manual compression.

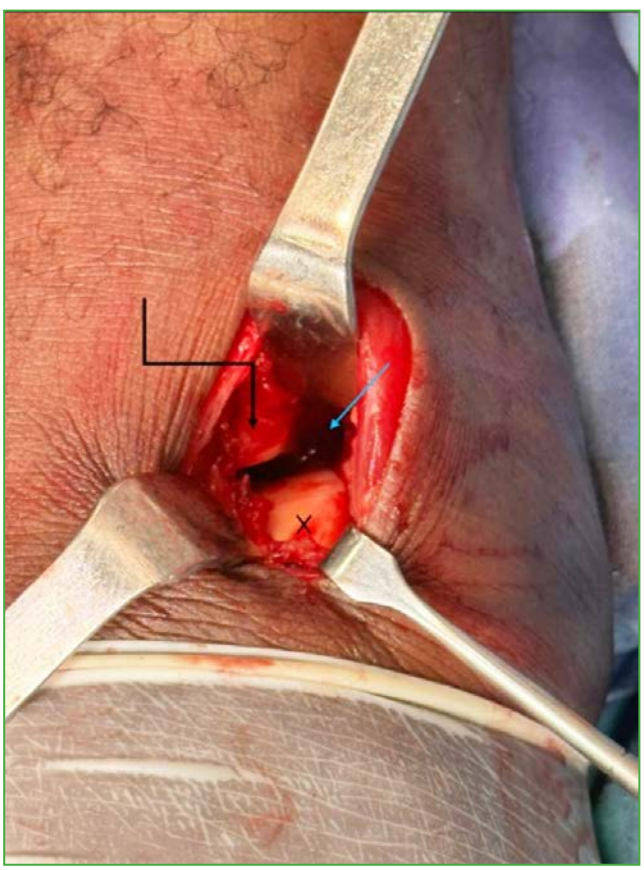

Figure 5. Intraoperative image of the left ankle. The distal tibia (angled black arrow), the talus (black cross), and the opening of the tibiofibular syndesmosis (blue arrow) are visible.

With the knee flexed, the proximal tibiofibular dislocation was reduced by applying anteroposterior compression to the fibular head. A distal anterolateral approach to the ankle was then performed. After protecting the superficial peroneal nerve, syndesmotic diastasis was identified, with lateral displacement of the talus and external rotation of the fibula (Figure 5). Using a Steinmann pin as a joystick in the distal fibula, the external rotation deformity was corrected and the fibula was temporarily fixed to the tibia. Subsequently, through a lateral approach to the fibula, a pointed reduction clamp was applied, and a tibiofibular suture-button fixation device was inserted, along with a syndesmotic screw to enhance construct stability (Figures 6 and 7).

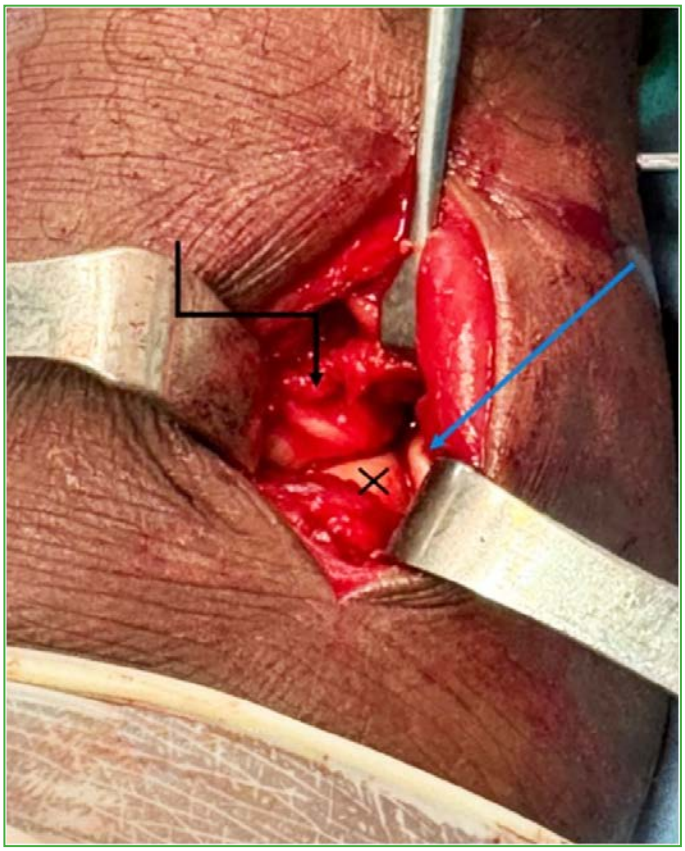

Figure 6. Intraoperative image of the left ankle. Correction of the tibiofibular diastasis. The distal tibia (angled black arrow), talus (black cross), and fibula (blue arrow) are visible.

Figure 7. Fluoroscopic image showing reduction and syndesmotic fixation using a pointed reduction clamp, a Steinmann pin, and a suture-button fixation device.

Intraoperative stability testing of both the proximal and distal tibiofibular joints demonstrated that reduction had been maintained and that both joints were stable. The posterior malleolar fracture was not considered amenable to surgical fixation because of its small size and minimal articular involvement.

The patient remained hospitalized for 24 hours. A postoperative computed tomography scan confirmed satisfactory reduction of both dislocations, appropriate positioning of the implants, and the absence of additional injuries (Figure 8).

The patient was discharged with an ankle orthosis and instructed to remain non-weight-bearing. Physical therapy was initiated during the third postoperative week. Protected weight-bearing was allowed at 6 weeks, progressing to full weight-bearing at 3 months.

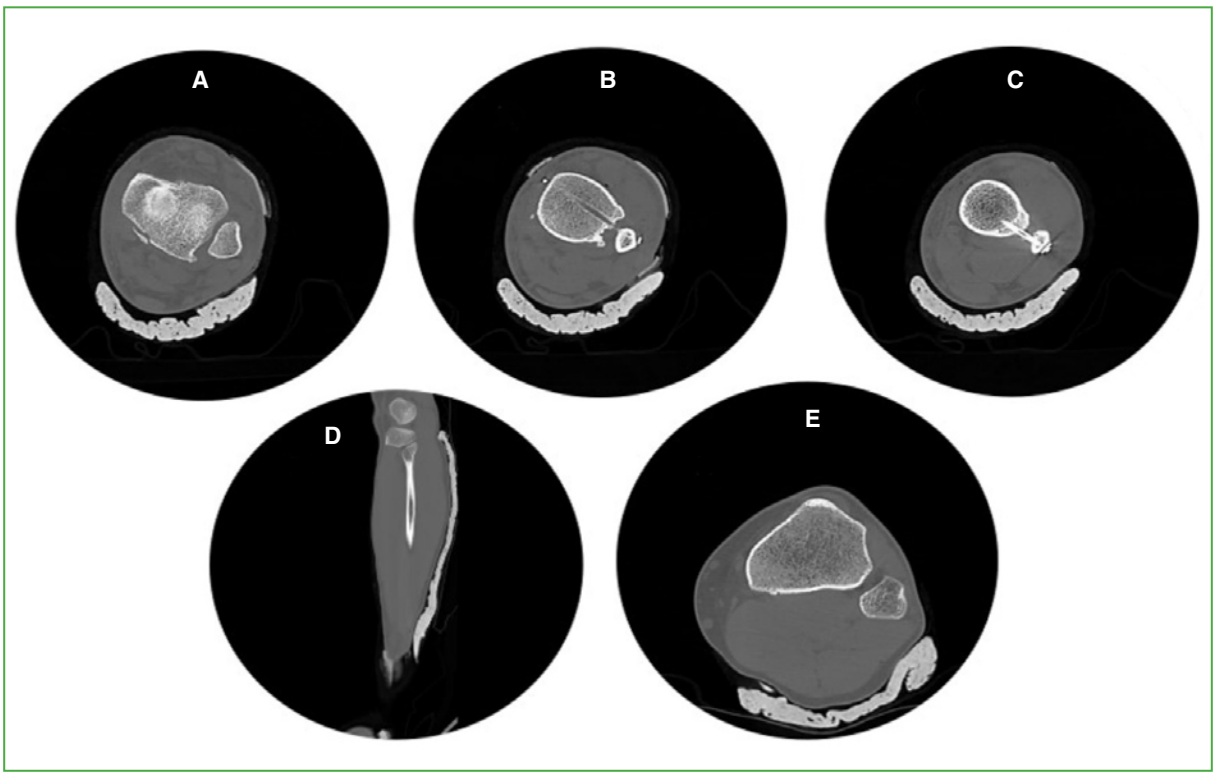

Figure 8. Postoperative computed tomography of the left leg. **A.** Axial image. Adequate fibular reduction within the incisura and an extra-articular posterior malleolar fragment. **B.** Axial image. Suture-button fixation in position. **C.** Axial image. Syndesmotic screw in position. **D.** Sagittal image. Reduced oblique proximal tibiofibular joint. **E.** Axial image. Congruent reduction of the proximal tibiofibular joint.

At 12 months of follow-up, the patient reported no pain and showed no clinical or radiographic evidence of instability of either the knee or the ankle (Figure 9). He had returned to both work and sports activities. His score on the *American Orthopaedic Foot & Ankle Society* (AOFAS) scale was 97/100.

Figure 9. Anteroposterior (**A**) and lateral (**B**) radiographs of the left leg obtained 12 months after surgery. Adequate reduction of the tibiofibular syndesmosis and maintenance of the combined fixation construct.

DISCUSSION

Simultaneous injury to the proximal and distal tibiofibular joints is uncommon. Very few cases have been reported, and no standardized treatment protocol has been established because of the heterogeneity of the available studies. Reported follow-up ranges from 6 to 12 months, although outcomes have generally been satisfactory (Table).[5-9]

Proximal tibiofibular dislocation is estimated to account for approximately 1% of all knee injuries; however, the rate of missed diagnosis may be as high as 60%.[10] The injury mechanism typically involves either high-energy trauma or sports-related trauma causing knee flexion (which relaxes the dynamic stabilizers and renders the joint vulnerable) combined with rotational forces,[11] similar to the mechanism observed in our patient.

For radiographic diagnosis, the most commonly cited landmark is the Resnick line, a radiopaque line seen on the lateral knee radiograph that corresponds to the posterior aspect of the lateral tibial plateau and should intersect the midpoint of the fibular head. An anterior displacement of the fibular head relative to this line suggests anterior dislocation.[12]

Ogden classified this injury into four categories: atraumatic subluxation (3%), anterolateral dislocation (85%), posteromedial dislocation (10%), and superior dislocation (2%). This is a highly heterogeneous injury with limited representation in the current literature; consequently, there is no clear consensus regarding treatment. Management options range from nonoperative treatment to ligament repair or reconstruction, proximal tibiofibular arthrodesis, and proximal fibular head resection.[13,14]

In our case, once a stable closed reduction of the proximal tibiofibular dislocation had been achieved, we elected not to perform fixation or use external immobilization, such as a brace or splint, in order to avoid knee stiffness and facilitate earlier rehabilitation.

For the distal tibiofibular injury, open reduction and internal fixation was performed because closed reduction of the fibula into the fibular notch with percutaneous syndesmotic fixation is strongly contraindicated.[15] The patient underwent surgery on the day of admission to our institution, 24 hours after the injury. In this case, the patient had not one but two dislocations, and joint dislocations constitute an orthopedic emergency that should be reduced as soon as possible, particularly when multiple injuries affect the same limb segment.

Table. Review of previously reported cases.

Published cases	Number of patients	Age	Mechanism of injury	Type of injury	Open/closed reduction	Follow-up	AOFAS score
Kumar et al.[5] 2003	1	36	Pedestrian struck by a car	Closed PTFI and DTFI with deltoid ligament injury	Closed reduction of PTFI Repair of the deltoid ligament plus fixation screws (#2)	Non-weight-bearing brace for 8 weeks and removal of osteosynthesis hardware. 3 months, no symptoms. No radiographic follow-up.	N/A
Levy et al.[6] 2006	1	17	Ankle sprain	Closed PTFI and DTFI with avulsion of the medial malleolus apex	Open reduction of PTFI (fixed with a 4.5 mm screw) and percutaneous reduction of DTFI (fixed with two 3.5 mm screws)	Non-weight-bearing brace for 12 weeks. Removal of osteosynthesis hardware at 6 months. At 8 months, pain-free for daily activities and sports.	N/A
Corrigan et al.[7] 2011	1	46	Multiple trauma	Closed PTFI and DTFI	Open reduction of PTFI and DTFI, with 3.5- and 4.0-mm screws (proximal) and a 3.5-mm screw (distal)	9 months with ankle-foot orthosis (bilateral foot drop due to aortic dissection). 15 months: stable knee and ankle. Distal screw fracture.	N/A
Bissuel et al.[8] 2017	1	31	Fall from height (2 m)	Closed PTFI and DTFI with deltoid ligament injury	Closed reduction of PTFI, open reduction of DTFI, with plate and #2 3.5 mm screws and repair of the anterior tibiofibular ligament	No weight-bearing for 8 weeks and removal of osteosynthesis hardware. 18 months without symptoms.	100
Alencar et al.[9] 2019	1	34	Sports (soccer)	Closed PTFI and DTFI	Open reduction of PTFI (fixation with a 3.5 mm screw) and percutaneous DTFI (fixation with two 3.5 mm #2 screws)	Immediate protected weight-bearing with crutches. Unrestricted walking after one month. 6 months without symptoms. No radiographic follow-up.	N/A

AOFAS = *American Orthopaedic Foot and Ankle Society*; PTFI = proximal tibiofibular injury; DTFI = distal tibiofibular injury; N/A = not available.

The distal tibiofibular syndesmosis was stabilized using a combination of flexible fixation (suture-button fixation) and rigid fixation (a syndesmotic screw), based on current recommendations advocating augmentation in axially unstable fibular injuries, such as Maisonneuve injuries, and considering its similarity to our patient's injury (proximal dislocation).[16,17]

Current evidence does not support routine repair of the deltoid ligament in Maisonneuve injuries unless concentric reduction of the medial clear space cannot be achieved after fibular reduction because of deltoid ligament interposition, or unless gross valgus instability persists.[18] In our patient, restoration of the medial clear space was achieved following fixation and remained stable; therefore, neither exploration nor repair of the deltoid ligament was performed.

At the time of this report, the patient has experienced no symptoms related to either the flexible or rigid fixation constructs, thus implant removal has not been scheduled.

CONCLUSIONS

This case report highlights the importance of carefully analyzing the injury sustained by the patient, understanding the trauma mechanism, and correctly interpreting diagnostic studies in order to ensure timely management of atypical injuries, such as simultaneous proximal and distal tibiofibular dislocation without an associated fibular fracture.

The treatment strategy consisted of closed reduction of the proximal dislocation and open reduction with internal fixation of the distal injury. This approach resulted in complete recovery without complications, supporting its effectiveness and suggesting that it may be considered in similar cases in the future.

To the best of our knowledge, this represents the sixth reported case of combined proximal and distal tibiofibular dislocation without an associated fibular fracture. Given the absence of large case series, it remains difficult to propose evidence-based treatment guidelines for this uncommon injury. At present, management must rely on the recommendations established for each component injury individually.

Conflicts of interest: The authors declare no conflicts of interest.

J. S. Nanclares ORCID ID: https://orcid.org/0009-0008-8130-4941

REFERENCES

1. Bozkurt M, Yilmaz E, Atlihan D, Tekdemir I, Havitçionlu H, Günal I. The proximal tibiofibular joint: an anatomic study. *Clin Orthop* 2003;(406):136-40. https://doi.org/10.1097/01.blo.0000030167.56585.2f
2. Hermans JJ, Beumer A, De Jong TAW, Kleinrensink G. Anatomy of the distal tibiofibular syndesmosis in adults: a pictorial essay with a multimodality approach. *J Anat* 2010;217(6):633-45. https://doi.org/10.1111/j.1469-7580.2010.01302.x
3. Bartoníček J, Rammelt S, Tuček M. Maisonneuve fractures of the ankle: A critical analysis review. *JBJS Rev* 2022;10(2). https://doi.org/10.2106/JBJS.RVW.21.00160
4. Chang SM, Li HF, Hu SJ, Du SC, Zhang LZ, Xiong WF. A reliable method for intraoperative detection of lateral malleolar malrotation using conventional fluoroscopy. *Injury* 2019;50(11):2108-12. https://doi.org/10.1016/j.injury.2019.07.006
5. Kumar G, Sankar B, Anand S, Murali SR. Superior tibiofibular joint disruption—as a variant of Maisonneuve injury. *Foot Ankle Surg* 2004;10(1):41-3. https://doi.org/10.1016/S1268-7731(03)00104-8.
6. Levy BA, Vogt KJ, Herrera DA, Cole PA. Maisonneuve fracture equivalent with proximal tibiofibular dislocation: A case report and literature review. *J Bone Joint Surg* 2006;88(5):1111-6. https:/doi.org/10.2106/JBJS.E.00954
7. Corrigan C, Asbury B, Alvarez RG, Nowotarski P. Dislocation of the proximal and distal tibiofibular syndesmotic complex without associated fracture: case report. *Foot Ankle Int* 2011;32(10):1009-11. https://doi.org/10.3113/FAI.2011.1009
8. Bissuel T, Gaillard F, Dagneaux L, Canovas F. Maisonneuve equivalent injury with proximal tibiofibular joint dislocation: Case report and literature review. *J Foot Ankle Surg* 2017;56(2):404-7. https://doi.org/10.1053/j.jfas.2016.10.003

9. Alencar JB, Cavalcante MLC, Pinto LH, Lucena IF, Garrido RJ, Rocha PHM. Lesão variante de Maisonneuve com luxação tibiofibular proximal. *Rev Bras Ortop* 2019;54(3):339-42. https://doi.org/10.1055/s-0039-1692625
10. Calvo R, Guiloff R, Calvo-Mena R, Arellano S, Caro P. Luxación tibiofibular proximal diagnóstico y tratamiento. *Acta Ortop Mex* 2021;35(6):560-6. https://doi.org/10.35366/105711
11. Ogden JA. Subluxation and dislocation of the proximal tibiofibular joint. *J Bone Joint Surg Am* 1974;56(1):145-54. PMID: 4812157
12. Resnick D, Newell JD, Guerra J, Danzig LA, Niwayama G, Goergen TG. Proximal tibiofibular joint: anatomic-pathologic-radiographic correlation. *AJR Am J Roentgenol* 1978;131(1):133-8. https://doi.org/10.2214/ajr.131.1.133
13. Gonzalez-Arroyave D, Arango Duque M, Carrasco Velez F, Corrales Herrera H, Ardila CM. Anterior dislocation of the tibiofibular joint: A case report. *Cureus* 2023;15(4):e37780. https://doi.org/10.7759/cureus.37780
14. Kruckeberg BM, Cinque ME, Moatshe G, Marchetti D, DePhillipo NN, Chahla J, et al. Proximal tibiofibular joint instability and treatment approaches: A systematic review of literature. *Arthroscopy* 2017;33(9):1743-51. https://doi.org/10.1016/j.arthro.2017.03.027
15. Gardner MJ, Demetrakopoulos D, Briggs SM, Helfet DL, Lorich DG. Malreduction of the tibiofibular syndesmosis in ankle fractures. *Foot Ankle Int* 2006;27(10):788-92. https://doi.org/10.1177/107110070602701005
16. Riedel MD, Miller CP, Kwon JY. Augmenting suture-button fixation for Maisonneuve injuries with fibular shortening: Technique tip. *Foot Ankle Int* 2017;38(10):1146-51. https://doi.org/10.1177/1071100717716487
17. Kim GB, Park CH. Hybrid fixation for Danis-Weber type C fractures with syndesmosis injury. *Foot Ankle Int* 2021;42(2):137-44. https://doi.org/10.1177/1071100720964799
18. Wiegerinck JJI, Stufkens SA. Deltoid rupture in ankle fractures. *Foot Ankle Clin* 2021;26(2):361-71. https://doi.org/10.1016/j.fcl.2021.03.009