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(CASE REPORT)

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Proximal tibiofibular joint dislocation associated with an ipsilateral lateral malleolar fracture: A rare case report

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Abstract

Proximal tibiofibular joint (PTFJ) dislocation is an uncommon injury that is frequently overlooked, particularly when associated with more evident lesions of the lower limb. We report a rare case of PTFJ dislocation associated with an ipsilateral lateral malleolar fracture following a road traffic accident in a 35-year-old female patient. Clinically, the patient presented with knee and ankle pain, inability to bear weight, and subtle prominence of the fibular head. Radiographic assessment revealed an anterolateral dislocation of the proximal tibiofibular joint combined with a supratubercular fracture of the lateral malleolus. Surgical management was performed, consisting of open reduction and internal fixation of the lateral malleolus using a plate and screws, followed by anatomical reduction and stabilization of the PTFJ with a transarticular screw. Postoperative evolution was uneventful, and progressive rehabilitation was initiated after six weeks of immobilization. At three months follow-up, the patient regained full weight bearing with satisfactory knee and ankle range of motion and no evidence of instability or neurological deficit. This case highlights the importance of a systematic clinical and radiological evaluation of the entire tibiofibular axis in patients presenting with ankle trauma. Early diagnosis and appropriate surgical management are essential to prevent chronic instability and ensure favorable functional outcomes.

Keywords: Proximal tibiofibular joint dislocation; Lateral malleolar fracture; Ankle trauma; Fibular injuries; Surgical fixation; Case report

1. Introduction

Proximal tibiofibular joint dislocation is a rare injury, most often related to high-energy trauma or sports mechanisms involving rotational forces. Because of its rarity and frequently subtle clinical presentation, it is often overlooked, particularly when associated with more obvious injuries of the ankle or leg.

Lateral malleolar fractures are common and usually well recognized; however, their association with a proximal tibiofibular joint dislocation on the same side is exceptional and rarely described in the literature. In such situations, diagnostic attention is typically focused on the ankle injury, which may lead to delayed recognition of the proximal lesion and potentially unfavorable functional outcomes.

We report a rare case of proximal tibiofibular joint dislocation with an ipsilateral lateral malleolar fracture, highlighting the importance of a systematic clinical and radiological evaluation of the entire tibiofibular axis in patients presenting with ankle trauma.

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2. Case Presentation

We report the case of a 35-year-old female patient who was admitted to the emergency department following a twisting injury to the **left lower limb** sustained during a **road traffic accident**. She immediately complained of pain in the left knee and ankle, associated with a **complete inability to bear weight** on the affected limb. The patient had no significant past medical or surgical history and was not taking any regular medication.

On admission, she was hemodynamically stable and afebrile. Clinical inspection revealed a superficial abrasion over the **contralateral knee**. The injured left lower limb showed swelling of the knee as well as edema of the left ankle. External rotation of the left leg segment was also noted. Palpation elicited localized tenderness over the left proximal fibular head, with a subtle prominence suggestive of joint displacement. The ankle was tender over the lateral aspect, with pain exacerbated during active and passive range-of-motion testing. No obvious deformity of the leg was observed. The skin over the injured limb was intact, and there were no signs of compartment syndrome (figure 1).

Neurovascular examination was normal. Distal pulses (dorsalis pedis and posterior tibial arteries) were palpable and symmetrical. Motor function of the ankle and toes was preserved, and no sensory deficit was found in the distribution of the common peroneal or tibial nerves.

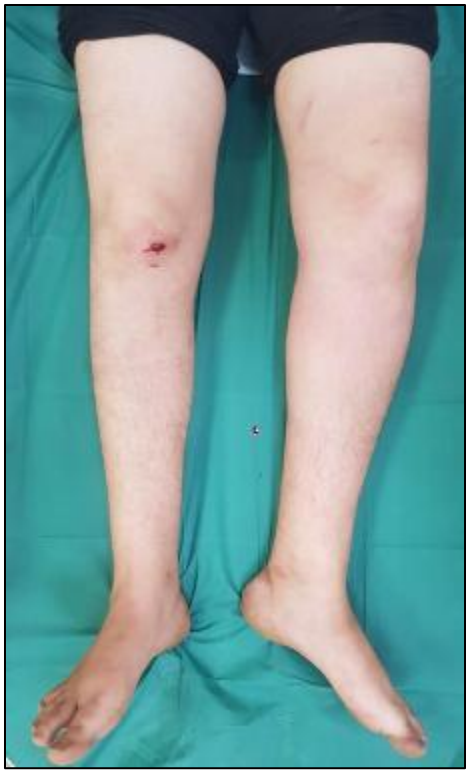

Figure 1 Clinical appearance of the lower limbs showing external rotation of the injured (left) limb

Standard anteroposterior and lateral radiographs of the leg and ankle demonstrated a dislocation of the left proximal tibiofibular joint, with an anterolateral displacement of the fibular head relative to the lateral tibial condyle. Imaging also revealed an ipsilateral supratubercular fracture of the left lateral malleolus. The ankle mortise was preserved, and no additional fractures were identified along the tibiofibular axis. Careful evaluation of the left knee radiographs showed no associated tibial plateau or femoral condyle injury, and radiographs of the contralateral knee were normal (figure 2) (figure 3).

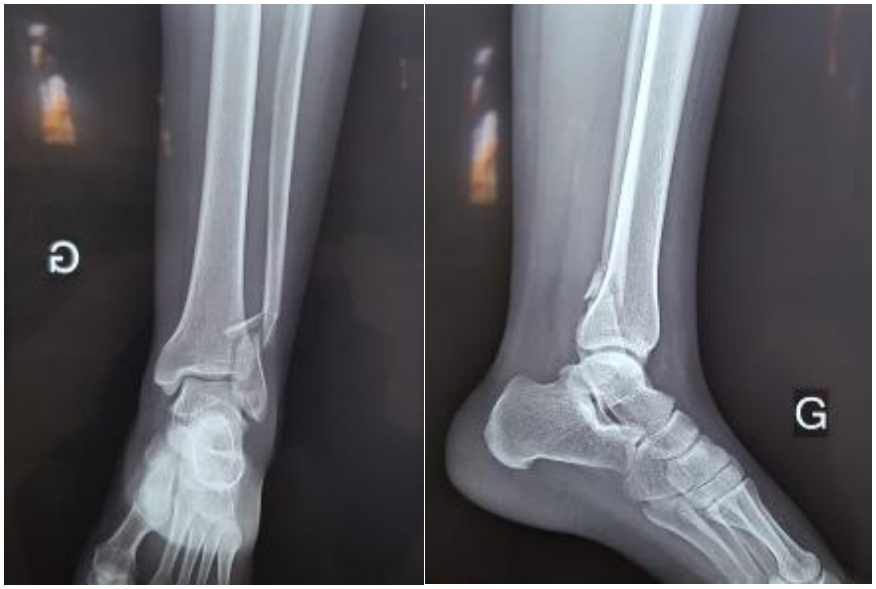

Figure 2 Anteroposterior and lateral ankle radiographs showing a displaced supratubercular fracture of the left lateral malleolus

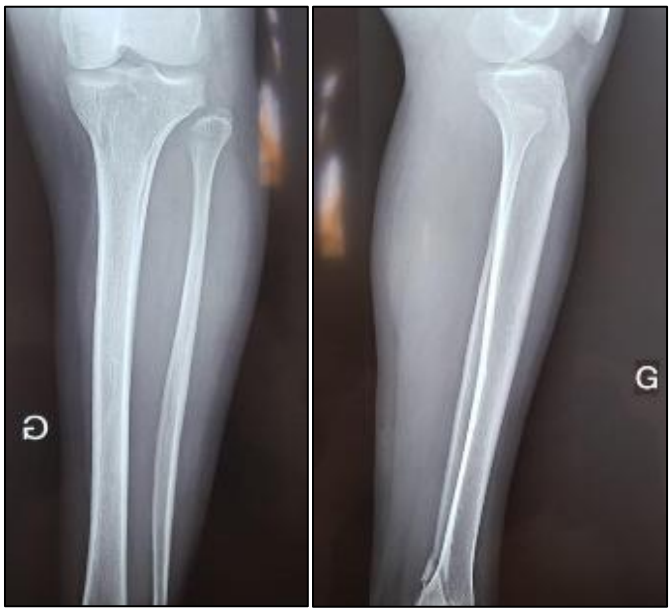

Figure 3 Anteroposterior and lateral leg radiographs showing dislocation of the left proximal tibiofibular joint associated with a lateral malleolar fracture visible on the lateral view

Given this combined injury pattern, surgical management was indicated. Under spinal anesthesia and tourniquet control, the procedure began with fixation of the left lateral malleolar fracture. Through a standard lateral approach, open reduction and internal fixation were performed using a plate and screws, restoring fibular length, alignment, and ankle stability.

Attention was then turned to the left proximal tibiofibular joint dislocation. Reduction was performed under fluoroscopic guidance using a pointed reduction clamp. After achieving anatomical reduction, stabilization was obtained with a transarticular cancellous screw. Intraoperative fluoroscopy confirmed satisfactory reduction and stable fixation of both the distal and proximal fibular lesions(figure 4).

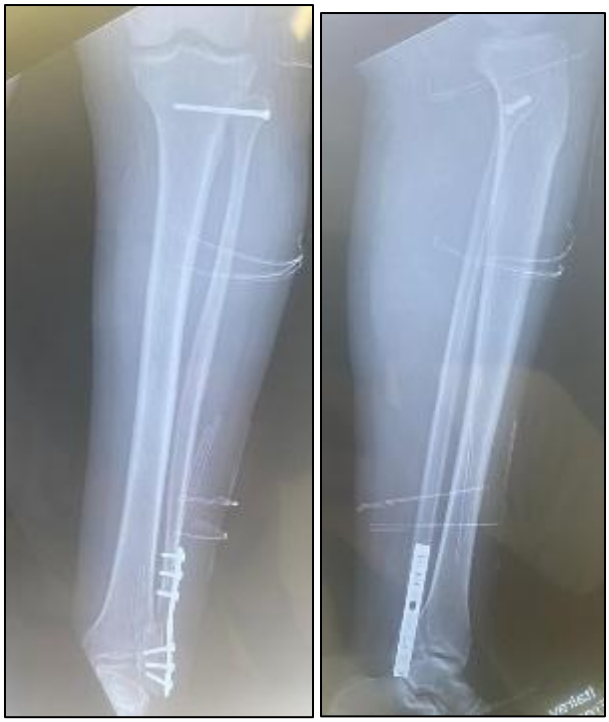

Figure 4 Follow-up anteroposterior and lateral radiographs of the left leg showing plate fixation of the lateral malleolar fracture and transarticular screw stabilization of the proximal tibiofibular joint

The immediate postoperative course was uneventful. No infectious, vascular, or neurological complications occurred. Pain was adequately controlled with appropriate analgesia, and distal limb perfusion remained satisfactory.

The left lower limb was immobilized in a posterior splint with strict non–weight bearing for six weeks. Thromboprophylaxis and analgesic therapy were administered according to institutional protocol. Postoperative radiographs confirmed appropriate implant positioning and satisfactory reduction.

At six weeks, follow-up radiographs demonstrated maintained fixation and early signs of bone healing. Immobilization was discontinued, and progressive rehabilitation was initiated, focusing on restoring knee and ankle range of motion, followed by muscle strengthening and proprioceptive training. Weight bearing was gradually resumed according to clinical and radiological progression.

At three months postoperatively, the patient was able to walk without assistance and with full, pain-free weight bearing. Knee and ankle range of motion were satisfactory and comparable to the contralateral side. No instability of the ankle or proximal tibiofibular joint was detected.

At final follow-up, bone union was achieved within the expected timeframe. The patient had resumed normal daily activities without significant functional limitation. There was no residual pain, joint instability, or neurological deficit, and no mechanical complication or secondary displacement of the fixation was observed.

3. Discussion

Proximal tibiofibular joint (PTFJ) dislocation is an uncommon and frequently underrecognized injury, representing only a small proportion of lower extremity trauma cases (1). It typically occurs in the setting of high-energy trauma or rotational mechanisms in which the knee is slightly flexed while the foot is plantarflexed and externally rotated (1,3). In the present case, the injury followed a road traffic accident, a mechanism capable of generating sufficient torsional force to disrupt the proximal tibiofibular joint. The most frequently reported pattern is anterolateral dislocation, which was also observed in our patient (4,8,13).

Biomechanically, the PTFJ plays an important role in dissipating torsional stresses transmitted along the fibula and accommodating ankle motion during gait. Anatomical studies have demonstrated that this joint is stabilized by the anterior and posterior tibiofibular ligaments, the joint capsule, and dynamic stabilizers such as the biceps femoris

tendon and the lateral collateral ligament (7,9,12). This complex stabilizing system explains why PTFJ dislocation is rare compared with other knee injuries (9). However, when a strong external rotational force is applied to the ankle, the stress may be transmitted proximally along the fibular shaft. If this force exceeds the resistance of the proximal ligamentous structures, joint disruption may occur (1,3). The associated ipsilateral lateral malleolar fracture in our case clearly illustrates this mechanism, demonstrating how rotational energy can involve both ends of the fibula in a single trauma.

Clinically, patients with PTFJ dislocation typically complain of lateral knee pain or discomfort over the proximal fibula, sometimes accompanied by swelling or a palpable prominence of the fibular head (1,3). These findings can be subtle and are often overshadowed by more evident injuries, particularly fractures of the ankle or tibia. In our patient, the lateral malleolar fracture represented the most obvious lesion and could have diverted attention from the proximal injury. This highlights the importance of a systematic examination of the entire lower limb in trauma patients, especially when a fibular fracture is present distally.

Radiological assessment remains essential for diagnosis. Standard anteroposterior and lateral radiographs may reveal abnormal positioning of the fibular head relative to the lateral tibial condyle (3). Comparison with the contralateral side can help identify subtle displacement. Computed tomography can further clarify joint alignment and detect associated fractures, while MRI may be useful in assessing ligamentous injuries or soft-tissue damage when clinical suspicion persists despite inconclusive radiographs (9,12). Failure to recognize the injury at an early stage may result in chronic instability, persistent pain, and functional impairment (8,11).

Neurological complications are a well-known concern in PTFJ dislocations. The common peroneal nerve lies in close proximity to the fibular head and is particularly vulnerable to traction or compression during dislocation. Cases of transient neuropraxia as well as permanent nerve palsy have been reported (2). Although rare, vascular injuries may also occur in high-energy trauma (2). In our case, repeated neurovascular assessments were normal, emphasizing the importance of careful and repeated examinations in the acute and postoperative periods.

Although many PTFJ dislocations occur in isolation, combined injury patterns involving the tibiofibular axis have been described. The association with an ipsilateral lateral malleolar fracture, as observed in our patient, remains exceptional (5,6). Such cases reinforce the concept of the fibula as a functional unit, where forces applied distally may be transmitted proximally. This pattern underlines the need to assess both the proximal and distal tibiofibular joints whenever a rotational ankle injury is identified.

Treatment strategies depend on the timing of diagnosis and the presence of associated lesions. Acute isolated dislocations may be managed with reduction and temporary immobilization (3). However, when instability persists, reduction is not maintained, or fractures are present, surgical stabilization is recommended (5,10). Several fixation methods have been described, including transarticular screws, suture-button devices, and temporary flexible fixation, all aiming to restore joint congruence while allowing eventual physiological motion (10,11). In our patient, the use of a transarticular cancellous screw for the PTFJ dislocation, combined with plate fixation of the lateral malleolar fracture, ensured restoration of fibular length and alignment along its entire axis.

Functional outcomes after timely and appropriate management are generally favorable (3,5). Most patients recover good joint stability and return to their normal level of activity without chronic pain. Conversely, delayed or missed diagnosis can lead to chronic instability, recurrent subluxation, and degenerative changes of the joint (8,11). The excellent outcome observed in our patient — with fracture union, stable joint alignment, and absence of residual pain or instability — highlights the importance of early recognition and comprehensive management of combined proximal and distal fibular injuries.

4. Conclusion

Proximal tibiofibular joint dislocation is a rare and frequently overlooked injury, particularly when associated with an ankle fracture that may divert clinical attention. The present case, resulting from high-energy trauma due to a road traffic accident and associated with an ipsilateral lateral malleolar fracture, underscores the importance of meticulous clinical examination and systematic radiological evaluation of the entire fibula as well as both tibiofibular joints.

Early diagnosis and appropriate surgical management aimed at restoring anatomical alignment and joint stability along the entire fibular axis can lead to satisfactory fracture healing and full functional recovery, without residual pain or instability.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

The authors declare that they have no competing interests.

Statement of ethical approval

This case report is exempt from ethical approval at our institution.

Statement of informed consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Provenance and peer review

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