

# Isolated Traumatic Dislocation of the Proximal Tibiofibular Joint: A Case Report and Review of the Literature

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## Abstract

**Background:** Traumatic dislocation of the proximal tibiofibular joint (PTFJ) is a rare injury, accounting for less than 1% of all knee injuries. Its subtle clinical presentation, often mimicking lateral meniscal pathology, can lead to missed diagnosis. Failure to recognize this injury may result in chronic knee pain and instability, making prompt diagnosis and appropriate treatment essential.

**Case Description:** We present the case of a 19-year-old male who presented to the emergency department with left knee pain after a torsional injury while skating. He reported pain in the proximal lateral leg and an inability to fully bear weight. Plain radiographs showed a lack of overlap between the fibular head and the lateral tibial condyle, raising suspicion for a PTFJ dislocation. A subsequent computed tomography (CT) scan confirmed an anterolateral dislocation of the proximal tibiofibular joint. The patient underwent a closed reduction under sedation and fluoroscopic guidance. Post-reduction imaging confirmed adequate joint congruity. Magnetic resonance imaging (MRI) ruled out associated injuries to the posterolateral corner. The patient progressed favorably and returned to full sports activities.

**Conclusions:** Isolated PTFJ dislocation is an uncommon but clinically significant injury that can be easily overlooked. Anterolateral dislocation is the most frequent subtype. Early diagnosis with a high index of suspicion and confirmation by CT scan, followed by urgent closed reduction, is crucial to achieve optimal outcomes and prevent chronic instability.

**Keywords:** Proximal Tibiofibular Joint, Fibular Head Dislocation, Sport Injury.

## Introduction

Traumatic dislocation of the proximal tibiofibular joint (PTFJ) is a rare entity, representing less than 1% of all knee injuries. Its clinical presentation is often subtle, with symptoms that can mimic lateral meniscal pathology, leading to a high rate of missed diagnoses [1]. Overlooking this injury can result in chronic knee pain, instability, and functional impairment. Therefore, a high index of suspicion, accurate diagnosis, and prompt treatment are paramount to avoid long-term sequelae.

This report presents a case of isolated traumatic PTFJ dislocation in a young athlete, accompanied by a review of the literature on the diagnosis and management of this injury.

## Case Presentation

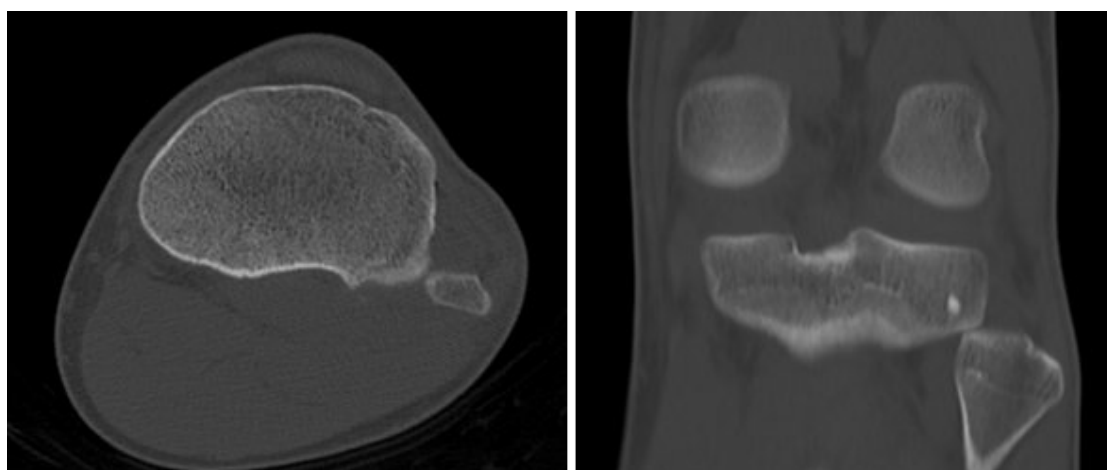
A 19-year-old male presented to the emergency department with acute left knee pain following a non-contact torsional injury while skating. He reported immediate pain localized to the proximal lateral aspect of his leg and was unable to bear weight.

On physical examination, there was tenderness to palpation over the fibular head. No neurovascular deficits were noted, and there was no evidence of injury to the ipsilateral ankle or hip.

Standard radiographs of the left knee (Images 1 and 2) revealed a loss of the normal overlap between the fibular head and the lateral tibial condyle on the coronal view, suggesting a PTFJ dislocation. To confirm the diagnosis and characterize the dislocation pattern, a computed tomography (CT) scan was performed. Axial and coronal CT images (Images 3 and 4) confirmed an anterolateral dislocation of the proximal tibiofibular joint.



**Figure 1&2.** Plain radiographs of a PTFJ dislocation.



**Figures 3&4.** CT scan of a PTFJ dislocation.

The patient was taken to the operating room for closed reduction under sedation and fluoroscopic guidance. The reduction maneuver was performed with the knee flexed to 90 degrees and the foot in gravity-assisted plantar flexion, applying direct pressure over the fibular head. Post-reduction stability was assessed throughout the full range of motion and found to be stable. The knee was subsequently immobilized with a splint for weight restriction.

Post-reduction oblique radiograph (Image 7) demonstrated restoration of the normal fibular head overlap and articular congruity. A magnetic resonance imaging (MRI) scan was obtained to rule out associated injuries, particularly to the posterolateral corner and surrounding ligamentous structures. No additional lesions were identified.



**Figure 5.** Post reduction radiograph with congruity of the PTFJ.

The patient after 2 weeks of weight restriction started progressive weight-bearing. He followed a structured rehabilitation protocol and achieved a full recovery, returning to his pre-injury level of sports activity without residual pain or instability.

## Discussion

Isolated dislocation of the proximal fibula was first described by Nelaton in 1874 [2]. The primary function of the PTFJ is to dissipate torsional forces transmitted from the ankle, valgus stresses on the tibia, and tensile forces during weight-bearing [2, 3]. Ogden described two anatomical variants of this joint: the oblique type (inclination angle  $>20^\circ$  relative to the horizontal plane), which is less tolerant to rotational forces and more vulnerable to trauma, and the horizontal type (inclination  $<20^\circ$ ) [2]. Anatomical studies by Bozkurt et al. have demonstrated greater variability in the insertion of the biceps femoris tendon and a higher rate of communication with the femorotibial joint in the oblique variant, contributing to a higher incidence of dislocation in this subtype [3].

Two main types of PTFJ dislocation have been described: anterolateral (85% of cases) and posteromedial (15% of cases) [4]. Anatomical studies by Marcheti et al. have shown the anterior ligamentous complex to be stronger than the posterior complex (517 N vs. 322 N), which may explain the higher prevalence of anterolateral dislocations [5]. In anterolateral dislocations, the biceps femoris tendon becomes more superficial and under tension, and may be palpable, aiding in diagnosis. Posteromedial dislocations are more commonly associated with sensory disturbances in the common peroneal nerve distribution.

Radiographically, cadaveric studies by Keogh et al. demonstrated a diagnostic accuracy of 72.5% with standard AP and lateral projections, which did not improve significantly with oblique views but increased to 81.3% when contralateral comparative views were obtained. The addition of CT imaging increased accuracy to 86.3%, establishing it as the complementary study of choice [6].

There is no consensus in the literature regarding the necessity or duration of immobilization following successful closed reduction, nor whether the ankle should be positioned in dorsiflexion or plantarflexion [7]. If open reduction is required, anatomical repair of ligamentous remnants using bone anchors is recommended.

Missed or inadequately treated dislocations can lead to chronic instability. In chronic cases, there has been a trend away from techniques such as proximal fibular resection or arthrodesis of the PTFJ, as these alter lower limb biomechanics and load distribution at the ankle. Reconstructive techniques, such as the posterior ligamentous complex reconstruction using iliotibial band fascia proposed by Shapiro, have shown promising results, though published cases remain limited [8].

## Conclusions

Isolated dislocation of the proximal tibiofibular joint, though rare, is a significant injury that can be easily missed. Anterolateral dislocation is the most common variant. Early diagnosis and appropriate treatment are essential to prevent long-term complications such as chronic pain and instability.

CT is the imaging modality of choice for confirming the diagnosis. Closed reduction should be performed urgently. Open reduction and anatomical ligamentous repair are reserved for cases of chronic instability or when closed reduction is unsuccessful.

## Conflict of Interest

The authors declare no conflict of interest.

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