



Superior Tibiofibular Joint Dislocation with a Pilon Fracture: A Case Report

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Abstract

Case: Pilon fractures with an intact fibula are very rare injuries. We present a case of a female who sustained a closed pilon fracture without a fibular injury following a fall off a ladder. After initial external fixation she subsequently underwent exploration of common peroneal nerve, open reduction, and internal fixation of pilon fracture and superior tibiofibular joint with shortening of the fibula.

Conclusion: In the case of pilon fractures without a fibular fracture, one should have a high index of suspicion for superior tibiofibular joint injuries. This case also highlights the fact that to overcome severe shortening of tibia, fibula was shortened correspondingly.

Keywords: Pilon fractures; Superior tibiofibular joint dislocation; Common peroneal nerve

Case Presentation

A woman in her late 60s presented to the emergency department following a fall off a ladder from approximately 8ft. She complained of pain and swelling of her right lower leg and an inability to weight bear along with paresthesias in common peroneal nerve distribution. The injury was noted to be closed with significant bruising of the lower leg and lateral aspect of knee/popliteal fossa.

Her past medical history was unremarkable with no history of smoking and with good pre-fall mobility.

Plain X-rays revealed a comminuted pilon fracture AO 43C3 with an intact fibula with shortening of the tibia. Radiographs of the knee were suggestive of a proximal tibiofibular joint dislocation. CT knee confirmed a superior tibiofibular joint dislocation (Figure 1).

Due to significant swelling around the ankle and soft tissue compromise, a temporary external fixator was applied followed by interval open reduction and internal fixation of the fracture 10 days later. The common peroneal nerve was first explored, decompressed, and open reduction and k wire stabilization of the superior tibiofibular joint was performed.

Pilon fracture was approached through a standard anterolateral and a small medial approach. Comminuted fracture fragments were reduced and fixation was achieved with anatomical medial and anterolateral distal tibia plates. The apex of the fracture posteromedially was buttressed with a third tubular plate. Cavitory defect was augmented with iliac bone graft (Figure 2).

Due to tibial bone loss, it was decided to shorten the fibula which was achieved by an osteotomy and fixation with a third tubular plate.

The superior tibiofibular joint was stabilized by exchanging k wire for a 4.5 mm cortical screw with a washer (Figure 3, 4).

At 2 weeks the patient was noted to have partial dehiscence of her anterior and lateral ankle wounds. She underwent wound debridement and a vacuum dressing was applied. The patient was given a walking boot and non-weight bearing ankle ranges of motion exercises were started. Subsequently, wounds went on to heal with vacuum therapy.

Discussion

Acute superior tibiofibular joint dislocation is a rare condition with an incidence of less than 1%. Just like other high energy injuries, it is prevalent in the younger male population [1]. There have been case reports of superior tibiofibular joint dislocations with tibial shaft fractures but only one previously reported association with a pilon fracture [2]. Most of the literature has been focused

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Figure 1: Preoperative AP and lateral radiographs of ankle/knee.



Figure 2: Intraoperative AP and lateral radiographs of ankle.

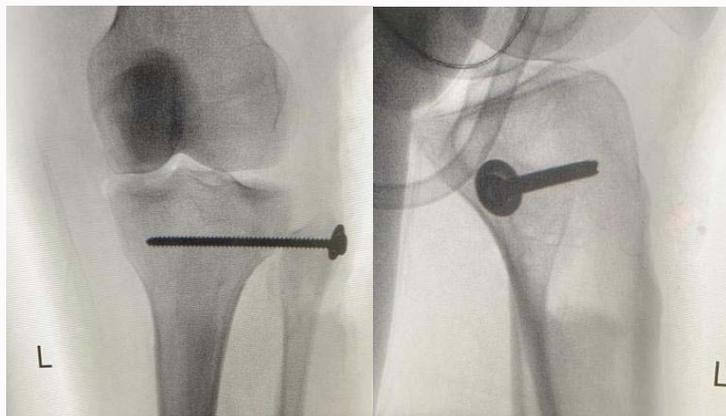


Figure 3: Intraoperative AP and lateral radiographs of knee.

on isolated injuries of the joint. Approximately 15% to 25% of pilon fractures have an intact fibula. According to Barei, such fracture patterns are more complex than those without fibula fractures [3].

The superior tibiofibular joint is a synovial joint whose stability is provided by the bony and ligamentous structures. Ogden in his cadaveric study has shown significant morphological variation describing two types of joints [4].

The mechanism of injury is usually a twisting injury on a flexed knee. These injuries can vary from subluxations in children to frank

dislocations [5]. Dislocations can be anterolateral, posteromedial, or superior with anterolateral being the most common type [4]. Posteromedial dislocation is associated with peroneal nerve injury [6]. Superior dislocation is a high energy injury associated with complex ankle and tibial shaft fractures [7]. In the setting of polytrauma or complex ipsilateral ankle fractures, these injuries can easily go unnoticed.

Diagnosis requires a high index of suspicion and is essentially clinical. Plain X-rays include an AP knee with 45-degree internal



Figure 4: Postoperative radiographs of ankle and knee, right knee radiograph for comparison.

rotation and a lateral X-ray of knee [8]. The principle finding on the internal rotation view is lateral displacement of the fibula while on the lateral; the fibular head may be displaced anteriorly or posteriorly. The diagnostic study of choice remains the CT due to limitations of X-rays [9].

Management of acute superior tibiofibular joint dislocations is by closed reduction failing which open reduction should be performed. If unstable, the joint should be stabilized with Kirschner wires or temporary screw fixation combined with a repair of capsuloligamentous structures [9-11]. Acute posteromedial or superior dislocations are indications for surgery. Postoperative rehabilitation is controversial with some suggesting immobilization and non-weight bearing for 6/52. Concomitant injuries influence the postoperative mobilization protocols.

Displaced tibial fractures are commonly associated with a fracture of the fibula. However, in cases of high-energy displaced tibial fractures in association with an intact fibula, one should specifically assess for superior tibiofibular joint injury after tibial fixation is achieved [12]. Spectrum of injuries can range from subtle instability to subluxations and frank dislocations. One should be vary of associated injuries with dislocations such as lateral collateral ligament injury with anterolateral dislocations, or peroneal nerve injury with posteromedial dislocations.

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