Traumatic dislocations of the proximal tibiofibular joint: a report of two cases

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CASE REPORT

Case 1
In March 2007, a 28-year-old man presented with open fractures of the right femur (type-II) and right tibia (type-I), along with liver laceration and head injury after a high-velocity motorcycle accident. After resuscitation, the patient underwent laparotomy, debridement, intramedullary nailing of the femur, and external fixation of the tibia with fasciotomy of the leg compartments. Radiographs showed posterolateral dislocation of the proximal tibiofibular joint with an intact fibula, an unstable knee with anteroposterior and varus laxity, and avulsion of the patellar tendon (Fig.1). The neurological status of the leg was difficult to assess because of the head injury.

On postoperative day 2, the leg vascularity diminished secondary to late thrombosis of the popliteal artery and infection of the tibia. Because of the uncontrolled infection and distal gangrene, the patient underwent a trans-knee amputation a week later. During surgery it was noted that the lateral collateral ligament, biceps tendon, posterior cruciate...
ligament, and lateral capsule of the knee joint were all ruptured, with total disruption of the tibiofibular joint. The medial structures and anterior cruciate ligament were intact. The common peroneal nerve was contiguous but stretched over the neck of the fibula. The patient died 3 months later from aspiration pneumonitis.

Case 2
In May 2007, a 22-year-old man presented with a closed fracture of the right femur and open fracture of the right tibia (type-II) with a common peroneal nerve injury after a motorcycle accident. Radiographs showed an inferior dislocation of the proximal tibiofibular joint (Fig. 2a). He underwent intramedullary nailing of both the tibia and femur (Fig. 2b). A closed reduction of the tibiofibular joint failed but an open procedure was deferred because the joint was pain free. Three weeks later, the tibial nail was replaced with an external fixator (Fig. 2c), because of persistent infection. At the 6-month follow-up, the fractures had healed and the external fixator was removed (Fig. 2d) and the patient had satisfactory sensory function, but his motor function showed no signs of recovery. He continued to use a foot drop splint and was lost to follow-up after 9 months.

DISCUSSION
Isolated traumatic dislocations of the proximal tibiofibular joint caused by twisting motions of the knee in a flexed position have been reported in soccer players,\textsuperscript{1-4} dancers,\textsuperscript{5} athletes,\textsuperscript{6} long jumpers,\textsuperscript{7} horse riders,\textsuperscript{8} skiers,\textsuperscript{9,10} a woman during pregnancy,\textsuperscript{11} and a person with generalised ligamentous laxity.\textsuperscript{12} Diagnosing them requires a high index of suspicion and good imaging.\textsuperscript{1,2,4} 5% of isolated proximal tibiofibular joint dislocations involve the common peroneal nerve. Treatments include closed reduction\textsuperscript{2,5,9,10} and casting\textsuperscript{5} with early mobilisation in acute stable injuries. Open reduction and internal fixation\textsuperscript{1,6} is preferred in irreducible, chronic, recurrent

Figure 1  Case 1: (a) Anteroposterior, (b) lateral, (c) and varus stress radiographs of the right leg showing posterolateral dislocation of the proximal tibiofibular joint with an intact fibula, an unstable knee with anteroposterior and varus laxity, and avulsion of the patellar tendon.

Figure 2  Case 2: Radiographs of the right leg showing (a) inferior dislocation of the proximal tibiofibular joint, (b) intramedullary nailing of the tibia, (c) conversion to external fixation, and (d) removal of the external fixator.
and unstable cases. Surgical treatments include screw fixation, Kirschner-wire fixation, fixation using the Tightrope Syndesmosis Device (Arthrex, Naples [FL], US), and fixation using tendons of the biceps femoris and gracilis. For patients with chronic instability, surgical options include arthrodesis, resection of the fibular head, and reconstruction. In patients with associated multiple injuries after high-energy trauma, the diagnosis of proximal tibiofibular joint dislocation is easily missed, as attention is focused on life-threatening injuries, causing secondary neurovascular complications.

The diagnosis is mainly based on the presence of neurovascular injuries, knee instabilities, and extensor apparatus injuries. In a series of 9 such cases, associated multiple injuries included tibial fractures (n=9), vascular damages (n=5), common peroneal nerve injuries (n=5), lateral collateral ligament damages (n=6), and avulsions of the patellar tendon from the tibial tuberosity (n=2). Three cases ended up with amputations. These 9 cases included 4 superior, one posterior, and 4 inferior dislocations. In other studies, one patient with an inferior dislocation had associated fibular and ankle fractures and neurovascular injuries. One patient with a superior dislocation had an associated tibial shaft fracture. Two patients with anterolateral dislocations had associated tibial shaft fractures. One patient with a superior dislocation had associated hip dislocation and pelvic and floating knee injuries.

Proximal tibiofibular joint dislocations were initially classified as anterior, posterior, upward, and double dislocations. This was modified to subluxation, anterolateral, posteromedial, and superior dislocations. Posteralateral and inferior dislocations should be included in this classification.

REFERENCES

17 Gabrion A, Vernois J, Havet E, Mertl P, De Lestang M. Dislocation of the proximal tibiofibular joint due to severe leg and nerve injuries (n=5), lateral collateral ligament damages (n=6), and avulsions of the patellar tendon from the tibial tuberosity (n=2). Three cases ended up with amputations. These 9 cases included 4 superior, one posterior, and 4 inferior dislocations. In other studies, one patient with an inferior dislocation had associated fibular and ankle fractures and neurovascular injuries. One patient with a superior dislocation had an associated tibial shaft fracture. Two patients with anterolateral dislocations had associated tibial shaft fractures. One patient with a superior dislocation had associated hip dislocation and pelvic and floating knee injuries.

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