Case report

Tightrope stabilisation of proximal and distal tibiofibular syndesmosis rupture: The floating fibula—A case report

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Introduction

Suture endobutton fixation has been developed as a minimally invasive method of stabilising tibiofibular diastasis at the ankle to permit accelerated recovery and rehabilitation. Indications for the use of this endobutton suture have been extended to reconstruct other joints including the acromio-clavicular joint and the Lisfranc ligament complex in the foot.

The endobutton suture has previously been used to stabilise a proximal tibiofibular joint in the revision of a below knee amputation but has not as far as we know been previously used to stabilise acute injuries to the proximal tibiofibular joint.

We report a case of simultaneous proximal and distal tibiofibular joint disruption stabilised using tightrope endobutton sutures.

Case report

A 36-year-old male sustained multiple injuries during a motorcycle versus car road traffic accident travelling at 65 kph/40 mph. He suffered a head injury and significant retrograde amnesia however witnesses reported that he had sustained a compressive force to the left side of his body whilst colliding with a car.

On assessment at the accident unit, he became tachycardic and hypotensive but stabilised with fluid resuscitation. Secondary survey and imaging revealed: a left hip posterior fracture-dislocation with a posterior acetabular lip fracture, a complex unstable soft tissue injury to his left knee (Fig. 1) and a left open complete lateral talar dislocation (luxatio talo totalis) (Fig. 2).

Distal pulses were intact with good volume and he had no evidence of compartment syndrome. There was altered sensation to the dorsum of his foot and toe and ankle dorsiflexion was weak suggesting a common peroneal nerve injury.

Emergency surgery was performed to reduce the hip dislocation and talar dislocation. The hip was stabilised using a femoral skeletal traction pin. The ankle wound was debrided and irrigated, revealing a significant soft tissue degloving of his leg. The talus reduced and stabilised with a primary ligament repair. The distal tibiofibular syndesmosis was found to be widened upon direct examination through the open wound and this was reduced and stabilised using two tightrope anchors (Arthrex, Naples, FL, USA) (Fig. 3).

The patient was transferred to the Intensive Care Unit. Definitive fixation of his acetabulum was performed on day 2 using an eight-hole reconstruction plate. Post-operative care was continued on a High Dependency Unit.

Surgical stabilisation of his knee was performed on day 4. A pre-patella laceration was extended to give a mid line incision. Degloving of the soft tissue allowed easy access to the lateral collateral ligament and the head of the fibula. Findings included; a disruption of his posterolateral corner, a bony avulsion of his lateral collateral ligament from the distal femur, avulsion of the joint capsule/coronary ligament from the proximal tibia and an avulsion of the ilio-tibial band from Gerdy's tubercle. A mid-substance rupture of his posterior cruciate ligament was also identified. In addition the proximal fibula was dislocated superiorly and was found to be unstable following reduction.

Stabilisation of the proximal tibiofibular joint was achieved with a tightrope suture endobutton (Arthrex, Naples, FL, USA). This was inserted through a 3.5-mm drill hole directed towards the middle of the medial surface of the tibia parallel to the articular surface of the knee joint (Fig. 4).

He mobilised toe touch weight bearing to protect the acetabular injury for 6 weeks. His knee was supported using a range-of-motion knee brace (DJ Ortho, Vista, CA) and the talar dislocation was protected with a below knee cast for 6 weeks.

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Discussion

The relationship between the tibia and the fibula is maintained by the anterior and posterior syndesmotic ligaments of the proximal and distal tibiofibular joints together with the interosseous membrane. The joints permit external rotation 5–6° of the fibula relative to the tibia whilst walking and the ligaments act as a static restraint to the distal tibiofibular syndesmosis, allowing widening of 1.5 mm with ankle dorsi-flexion but preventing ankle instability.

Fig. 1. Radiographs of the knee showing increased opening of the lateral compartment suggestive of lateral collateral ligament rupture. There is a flake avulsion fragment from the lateral epicondyle and note also the undisplaced fracture of the tip of fibula pathognomonic of a posterolateral corner injury.

Fig. 2. Radiographs of the ankle showing the anterior talus dislocation.

Fig. 3. Post-operative radiographs of the knee showing reattachment of the lateral collateral ligaments using corkscrew anchors and stabilisation of the proximal tibiofibular joint using an endobutton suture anchor.

Fig. 4. Post-operative radiographs of the ankle showing reduction of the talus within the ankle joint and stabilisation of the distal tibiofibular joint using two endobutton suture anchors.