Osteosynthesis of Comminuted Proximal Fibula Fractures Using a Tension-Slide Technique

***David Cinats, MD**; Trevor Stone, MD*
Royal Columbian Hospital, New Westminster, BC, Canada

Purpose: Comminuted proximal fibula fractures (AO/OTA 4F1B) (Fig. 1A) can defunction the posterolateral corner (PLC) and result in posterolateral knee instability. We describe a tension-slide technique (TST) for osteosynthesis of these injuries with reconstitution of the PLC.

Methods: A retrospective review was performed of the senior author's (T.S.) practice to identify patients with a 4F1B injury and posterolateral instability who were treated with the TST. The technique was performed by using an lateral approach to the knee. The fracture was identified and a #5 FiberWire (Arthrex) was sutured through the fragments and weaved in a running-locked fashion proximal and distal through the PLC soft-tissue structures. A 3.2-mm drill pin from the Arthrex BicepsButton is used to drill the intact fibula cortex. The FiberWire is placed through the BicepsButton and deployed beyond the fibular cortex (Fig 1B). The fracture is reduced and PLC structures tensioned using the TST.

Results: Nine patients (6 males, 3 females) with a mean age of 40 years were treated with the TST. Mean follow-up was 12.4 months (range, 2-24 months) with fracture healing occurring in all patients. Seven patients returned to full activities as tolerated with no posterolateral instability. There were 2 failures (defined by ongoing instability and/or the need for further surgery). One patient required a total knee arthroplasty following a medial tibial plateau fracture malunion. The second patient had a multiligamentous knee injury requiring additional ligament reconstruction.

Conclusion: The TST is novel and effective for osteosynthesis of isolated 4F1B fractures. The restoration of fibular head bone stock with minimal hardware allows for future fibula-based reconstructions if necessary.