

A New Technique for Identification and Stabilization of Dislocating Peroneal Tendons Following Open Treatment of Intra-Articular Calcaneus Fractures*Michael A. Maceroli, MD¹; Edward Shields, MD¹; Roy W. Sanders, MD²; John Ketz, MD¹;**¹University of Rochester Medical Center, Rochester, New York, USA;**²Florida Orthopaedic Institute, Tampa, Florida, USA*

Purpose: Peroneal tendon subluxation is an established, painful complication of operatively treated intra-articular calcaneus fractures. Currently there is no established protocol for intraoperative evaluation of peroneal tendon stability following calcaneus fracture fixation. The purpose of this multicenter study is to introduce a new and reliable technique for diagnosis of peroneal tendon dislocation in the setting of calcaneus fractures and to identify specific risk factors that correlate with tendon instability.

Methods: All intra-articular calcaneus fractures treated by the authors from January 1, 2002 to December 31, 2012 were evaluated on preoperative radiographs and CT scans for evidence of peroneal tendon dysfunction. Preoperative imaging was reviewed to classify fractures (AO/OTA, Sanders) and identify radiographic findings suggestive of peroneal instability including tendon subluxation, fracture-dislocation, lateral wall displacement beyond the midaxis of the fibula, and associated fibular fracture/fleck sign. Extra-articular fractures and patients under age 18 were excluded. At time of surgery all calcaneus fractures were reduced and fixed prior to tendon evaluation. A Freer elevator was then inserted into the peroneal tendon sheath to the level of the fibular malleolus and anterior pressure was applied. Peroneal instability was defined as Freer displacement anterior to the fibula indicating the peroneal sheath had been torn off the fibula. All unstable cases were then repaired. All patients were followed for a minimum of 12 months postoperatively.

Results: 244 operatively treated calcaneus fractures were identified in 225 patients. Of these 244 calcaneus fractures, 19 had peroneal tendon instability identified intraoperatively using the described protocol for an 8% overall incidence. One of the remaining 225 fractures developed late symptomatic tendon dislocation after demonstrating stability on intraoperative testing. Preoperative CT scan had radiographic signs of peroneal tendon dislocation or subluxation in 30% of fractures; however, after open reduction and fixation only 20% of those identified radiographically were unstable on intraoperative examination. Furthermore, 78% of fractures with intraoperatively confirmed unstable tendons had no evidence of peroneal subluxation on preoperative imaging. 80% of fracture dislocations displayed true peroneal instability. In addition, 56% of associated distal fibula fracture/fleck sign and 44% of fractures with significant lateral wall displacement demonstrated intraoperative instability. There were no significant differences in complications between any of the groups.

Conclusion: The present study introduces a novel technique for intraoperative evaluation of peroneal tendon instability in the setting of intra-articular calcaneus fractures. The study protocol identified an 8% incidence of peroneal tendon instability. Although preoperative imaging can show peroneal dislocation, a large number of these cases will reduce and be stable following fracture fixation. Routine intraoperative examination of peroneal tendon stability is easy to perform and is associated with a low rate of postoperative peroneal tendon subluxation.

- The FDA has not cleared this drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an "off label" use). For full information, refer to page 600.