Purpose

Today, the majority of deltoid ligament injuries are not repaired due to surgical intervention for bimalleolar equivalent, ankle fractures. This is based primarily on Level III and IV studies where the description of deltoid instability was not always directly reported. Hence, acute deltoid repair may be indicated in certain cases (1). Therefore, we present a case report utilizing FT Tightrope® (Arthrex- Naples, FL) technology to return to normal activities at final follow up.

We report the case of a 56 year old female who presented to our emergency department with a left ankle sprain that occurred while playing basketball. The patient was able to put weight on the ankle post injury, but reported medial ankle pain and swelling. Examination demonstrated tenderness along the medial aspect of the ankle and a positive medial joint line tenderness. The patient denied any history of trauma to the foot or ankle. Pain was noted with resisted ankle eversion, although no injury was reported. Initial radiographs of the ankle were negative for any fracture.

Literature Review

Roughly 14,000 ankle fractures occur in the United States daily (1) with supination-external rotation, or Weber B ankle fractures accounting for 80% of these fractures (2). SER type II injuries can typically be treated conservatively with non-operative management. Though type IV fractures may appear as an SER type II if the deltoid has been compromised and there is no medial malleolar fracture. The large majority of the literature supports operative management of this injury pattern. It is paramount that a deltoid injury does not go unrecognized. A missed deltoid injury can lead to post-traumatic arthritis (3). Signs of injury may include ecchymosis, pain, or instability (4). Recent literature shows that medial tenderness as a predictor of syndesmotic instability. Though this is more common in pronation external rotation (PER) injuries, it may present itself in SER injuries as well (5). A study of syndesmotic instability (6) showed that medial gutters were wider than the corresponding lateral gutters in 39% of their patients post operative management of this injury pattern. It is paramount that a deltoid injury does not go unrecognized. A missed deltoid injury can lead to post-traumatic arthritis (3). Signs of injury may include ecchymosis, pain, or instability (4). Recent literature shows that medial tenderness as a predictor of syndesmotic instability. Though this is more common in pronation external rotation (PER) injuries, it may present itself in SER injuries as well (5). A recent systematic review for deltoid evaluation in SER ankle injuries showed that a manual external rotation stress test or a gravity stress test was most likely to predict deltoid injury. A medial clear space of ≥4mm with that value being at least 1 mm greater then the superior tibiotalar articulation was most suggestive of deltoid compromise (4). Medial clear space widening may also be suggestive of syndesmotic instability. Through this is more common in pronation external rotation (PER) injuries, it may present itself in SER injuries as well (5). A study of 238 unstable SER type Weber B ankle fractures with concurrent deltoid injuries showed syndesmotic widening in 39% of their patients after fibular fracture fixation (6). Syndesmotic instability may be tested intra-operatively via the external rotation test (7). With the patient operated via the external rotation test and/or cotton test. (7). With the patient operated via the external rotation test and/or cotton test. With the patient operated via the external rotation test and/or cotton test. With the patient operated via the external rotation test and/or cotton test.

Case-Study

After intubation was performed and general anesthesia administered, a thigh tourniquet was applied in standard manner. The leg was prepoped and draped in the usual sterile fashion and extanguinated. A lateral linear incision was made, first sharply, then bluntly. Bleeders were cauterized as appropriate. Periosteum was reflectex exposing the long fibular guide wire. The wire was entered the bisection of the medial malleolus approximately 1 cm from the tip and into the medial body of the talus. The wire was taken to the level of the subtalar joint but not across the articular surface. Next, the under-drill, overdrill and tap were utilized in proper technique. The tip of the overdrill was passed just into the wall of the medial talus. The tap was passed down just shy of the subtalar joint after removal of the medial malleolar guide wire. Next, the absorbable anchor was passed into the talus body. Utilizing live fluoroscopy confirmation was made that it was within the body of the talus but not through the subtalar joint, and it was in the midline of the talus body as confirmed under lateral radiographs. The medial button was then secured to the medial malleolus and tightened in standard fashion with the suture tails cut long to avoid a prominent knot. Now, the ankle was placed under stress in all three cardinal planes, and the morselize was not to be intact with symmetrical ankle gutters and no increased excursion of the distal fibular syndesmosis. All wounds were irrigated with copious amounts of saline. Deep closure was performed with 5-0 and 4-0 Vycril skin closure with 5-0 nylon. Complete closure was performed after release of the tourniquet. No active bleeders were seen. Good capillary refill time was appreciated. This was followed by the appropriate sterile dressing and bulky posterior splint. The patient tolerated the procedure and anesthesia very well. She left the operating room with vital signs stable and neurovascular status grossly intact.

Analysis/Discussion

Following surgery, the patient was non-weightbearing for 4 weeks after which full weightbearing in a walking boot was implemented. The patient was full weightbearing in a stiff soled shoe as tolerated at 7 weeks. Physical therapy was started at this time as well. There were no reported complications secondary to deltoid rupture repair. Follow up radiographs displayed a normal ankle mortise with no medial gutter widening. The patient was able to return to normal activities at final follow up.

References