

Delayed Hypersensitivity Reaction of Suture Anchors in Foot and Ankle Surgery

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Statement of Purpose

Surgical procedures involving the Achilles' tendon are frequently performed by foot and ankle surgeons. It is well published that these procedures carry a notable risk of wound complications (1) and suture reactions causing delayed wound healing (3-7). However, there is a paucity of information regarding complications of suture anchors. We present two cases of delayed hypersensitivity reactions with sterile abscess formation using two different suture anchor systems.

Literature Review

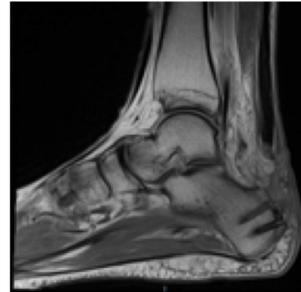
To our knowledge, there are 3 reported cases of complications associated with suture anchors. Zaidenberg et al. 2016 reported on a case of the development of a foreign body reaction associated with a suture anchor in orthopedic hand literature. The patient developed persistent pain 6 months following a repair of dorsal scapholunate ligament and volvar lunotriquetral ligament using a Poly (L) Lactic Acid suture anchor. The patient presented 12 months post operatively for a reoperation and to obtain cultures for microbiology and pathology which demonstrated a foreign body reaction to the anchors (8). Chow and Gu 2004 introduced a report for on a male patient who had a rotator cuff repair using 2 small corkscrew anchors. The patient underwent exploratory surgery with the removal of all suture and anchors after developing a wound. Interestingly, the only abnormal lab finding was an elevated erythrocyte sedimentation rate of 49mm/hour which decreased to 4mm/hour three weeks following the explantation of the foreign material (9). Giannikas et al. 2009 reported on a patient who sustained a laceration to the flexor tendon on the right hand. A barbed anchor was used to repair the tendon to bone under tension. At 14 months status post anchor placement, the patient presented with a recurrent ulceration and palpable mass on the palmar side of the hand. The patient was taken back to the operating room for the removal of the non-absorbable suture and anchor with bone culture. Intraoperative cultures finalized as no growth and the surgical site was fully healed. (10).

Financial Disclosures

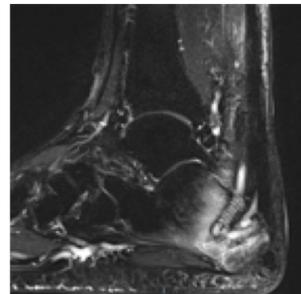
C.T. Clifton- None
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Case Study

Patient 1:
A 45-year-old healthy male firefighter was seen four weeks status post insertional calcific spur resection after tripping on stairs while not wearing his CAM boot. MRI confirmed an acute mid-substance Achilles tendon rupture.



The Achilles rupture was surgically repaired with suture tape utilizing a Krackow stitch. The tail ends were passed subcutaneously to two small stab incisions on the posterior heel and anchored into the posterior aspect of the calcaneus for additional support. Approximately twenty-eight weeks postoperatively he began to experience new onset pain and swelling with activity. Repeat MRI indicated a re-rupture of the right Achilles Tendon. He was placed in a below knee cast. After 2-3 weeks he developed increased tightness in the right ankle and the cast was removed. A repeat MRI was performed which demonstrated increased uptake to the anchor and non-absorbable suture.



T2 image demonstrating increased uptake in the suture anchor and non-absorbable suture tape

Case Study

He underwent removal of the remaining suture tape and anchors. The area was flushed with normal saline with bacitracin and calcaneal bone cultures were taken for microbiology and pathology. Cultures were negative and pathology was unremarkable. The post-operative course was uneventful with complete healing at four week.

Patient 2:
A 65-year-old healthy male with past history only positive for previous knee surgery and rotator cuff repair was seen after falling off a ladder landing on his left foot. He was diagnosed with an acute Achilles tendon rupture and underwent surgical repair of his left Achilles tendon. A suture tape was used to secure the tendon edges with a Krackow suture technique and the tails were passed percutaneously then secured into the posterior aspect of the calcaneus with two 4.7mm bone anchors.



At post-operative week forty-five he returned to clinic with increased redness and pain, along with an open wound. An MRI was performed demonstrating a foreign body reaction to retained bone anchors and embedded suture material. During surgical removal of the suture tape and bone anchors, two bone specimens were taken from the calcaneus for culture and pathology to rule out osteomyelitis. The results of the microbiology cultures were negative for bacteria and pathology was negative for osteomyelitis. The patient had complete resolution at three weeks.

Analysis/Discussion

Wounds and delayed foreign body reactions are unfortunate aspects of surgical intervention, with the distal aspect of the Achilles tendon being a common location for these complications. The lack of subcutaneous tissue and watershed region of diminished blood flow can make these ramifications ever more prevalent (11). Suture anchors can be effective devices to help strengthen surgical fixation when placing the tendon under tension. However, while rare, they also place the patient at increased risk for adverse foreign body reactions. It is important to discuss these complications as they require prolonged immobilization, as well as significant financial burden often requiring additional surgeries and time off work.

In the cases presented, both patients had intraoperative bone cultures taken at the time of surgical removal of the suture anchors. All cultures from soft tissue and bone were reported as no growth. Both patients subsequently healed and are back to their normal activity following the removal of all non-absorbable suture and suture anchors.

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