Management of Acute Rupture of a Post-Traumatic Lateral Plantar Artery Pseudoaneurysm: A Case Report

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PURPOSE & LITERATURE REVIEW

Lateral Plantar Artery (LPA) pseudoaneurysm formation is rare and scarcely reported in the literature. Pseudoaneurysm of the LPA may arise following surgery, lacerations or other incidences of penetrating trauma. Two case studies present formation of LPA pseudoaneurysms following surgical intervention such as endoscopic plantar fascia releases and calcaneal osteotomies[1,2]. Several reports exist which support ligation of the LPA as treatment for diagnosed pseudoaneurysms. To the authors' knowledge, there is only one other article reporting an acutely ruptured pseudoaneurysm[3]. The authors' goal is to present a case of an acute rupture of an LPA pseudoaneurysm 10 days status post traumatic laceration and subsequent management.

The LPA is more commonly involved in formation of a pseudoaneurysm as compared to the medial plantar artery (MPA). This is thought to be due to its more superficial location in the foot and lack of soft tissue protection[2-4]. Thornton et. al. performed a cadaveric dissection to study the LPA and found that the artery courses laterally underneath the abductor hallucis and flexor digitorum brevis muscle bellies to then course along the lateral aspect of the flexor digitorum brevis where it lays just deep to the plantar fascia[4]. This particular area makes the LPA more vulnerable to vascular injury. Generally, the patient will present with a pulsatile mass that may or may not be tender to touch[1-8]. Intermittent bleeding from the plantar aspect of the foot may be described by the patient. While there is usually a history of blunt or penetrating trauma, one case report describes a LPA pseudoaneurysm formation following an elective calcaneal osteotomy. Another case report describes incidence after an endoscopic plantar fascia release[2,3]. In all reported cases reviewed, treatment of pseudoaneurysms included proximal and distal ligation of the injured vessel.

CASE STUDY

A 68 year old male presented to the emergency department for psychiatric evaluation 10 days after incurring a left foot plantar laceration caused by glass. The patient previously had a primary laceration repair at an outside facility, however the wound had gapped during a physical altercation with law enforcement. He reported active bleeding from the wound prior to arrival to the emergency department which was controlled with direct pressure. The podiatry service was consulted in the emergency room for clearance of the wounds prior to psychiatric placement. During the evaluation and deep inspection of the laceration site, forceful pulsatile bleeding was visualized and approximately 200 ml of blood loss occurred. Blood loss could not be controlled with compression alone and required mid-calf trauma tourniquet application.

CASE STUDY CONT'D

The podiatry service was consulted in the emergency room for clearance of the wounds prior to psychiatric placement. During the evaluation and deep inspection of the laceration site, forceful pulsatile bleeding was visualized and approximately 200 ml of blood loss occurred. Blood loss could not be controlled with compression alone and required mid-calf trauma tourniquet application.The patient was then emergently consented and transferred to the operating room where the wound was thoroughly irrigated under tourniquet. During intra-operative exploration and inspection of the wound the lateral plantar artery was located and noted to be lacerated with the walls of the vessel outstretched. The ruptured LPA was ligated both proximally and distally and a delayed primary wound closure was performed using nylon suture.The patient was admitted for acute blood loss and post-operative monitoring. He was followed daily during his 3-day admission where signs of vascular compromise and devitalization to the left foot were closely monitoried. The patient's sensation and vascular status continued to be intact. Upon discharge the patient followed up with the primary surgeon in his private office at regular intervals for 18 months. The plantar laceration site healed uneventfully following surgery and the patient continued to be neurovascularly intact without any noted deficits.

Cadaveric dissection performed by primary author demonstrating the lateral plantar artery as it courses lateral to the flexor digitorum brevis muscle belly in the plantar arch of the foot.. *PF = plantar fascia ; FDB = flexor digitorum brevis.*

RESULTS & DISCUSSION

To our knowledge, only one other report exists involving an acute rupture of an LPA rupture which was also successfully treated with proximal and distal ligation of the artery. Surgical intervention with ligation of the distal and proximal ends of the LPA allowed for definitive cessation of blood loss from this 68 year old male's left foot. Upon delayed primary closure of the wound, the surgical incision site healed uneventfully and the patient was noted to have minimal pain throughout the post-operative course. While incidence and documentation of LPA pseudoaneurysms are rare, these injuries may occur following either trauma or elective surgery and therefore a working knowledge of risk, symptoms and management should be understood. Our clinical findings and research further support ligation as appropriate management of an LPA pseudoaneurysm in an acutely ruptured situation.

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