Surgical Repair of Idiopathic Mid-Forearm Radial Artery Aneurysm Using a Reversed Greater Saphenous Vein Interposition Graft

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Background

- True idiopathic radial artery aneurysms are uncommon. There are currently only 24 published case reports of non-traumatic radial artery aneurysms
- The location of the radial artery aneurysm is either proximal near the antecubital fossa or distal in the anatomic snuffbox. There are currently no published cases reporting the aneurysm as idiopathic and mid-forearm
- Due to the infrequent nature of this condition, there are no guidelines on management or surgical intervention

Figure 1. Left Thenar Eminence Atrophy

Case Presentation

- Physically active 56-year-old male diver and who presented to the vascular surgery clinic following a referral from orthopedic surgery
- 15-month history of chronic, generalized left-hand pain and atrophy of the thenar eminence in his left hand
- Chief complaint was decreased function and numbness, tingling, and aching of his left hand
- Electromyography (EMG) showed severe neuropathy of the left hand and moderately severe neuropathy of the right.
- MRI revealed an unlikely finding of an ovoid T2 hyperintense lesion adjacent to the distal radius.
- Duplex ultrasound of the extremity which confirmed a 1.01 cm x 1.31 cm left radial artery aneurysm, 3 mm proximal to the wrist. Physical exam demonstrated thenar muscle wasting of the left hand. He had palpable pulses in all four extremities and there were no clinical signs of ischemia.

Figure 2. Radial Artery Aneurysm

Figure 3. Reversed Saphenous Vein Interposition Graft

Surgical Technique

- An incision was made approximately 3-4 cm through the skin and fascia until the aneurysm was identified. The proximal and distal branches of the radial artery were identified and vessel loops were placed at either end (Figure 2)
- Systemic heparinization was utilized.
- A small segment of greater saphenous vein was harvested from the right lower extremity. The radial artery aneurysm was excised.
- The vein was reversed and an end-to-end anastomosis was created with 6-0 Prolene suture in a running fashion (Figure 3).
- Heparin was reversed and the subcutaneous tissues and skin were closed. The patient had a palpable radial pulse and restoration of flow to the left hand

Discussion

- Options for repair following excision of the aneurysm include primary end to end ligation of the radial artery, use of the cephalic vein or GSV as an interposition graft, or use of synthetic graft
- In this patient, the more proximal location of the aneurysm made ligation a less appealing option.
- The GSV was chosen due to the larger size of the radial artery at this location
- Future surveillance with noninvasive vascular testing will be used to monitor the patency of the GSV graft.
- We hope that this article will provide guidance regarding how to manage these types of radial artery aneurysms.