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Case Report

An Unusual Case of an Epidermoid Cyst Eroding into an Arteriovenous Graft Resulting in Graft Loss

Kailyn Wilcox, You Wang and Anthony Feghali*

SUNY Upstate Medical University, Department of Vascular Surgery, Syracuse, 13210 NY

ARTICLE INFO

Article history:

Received: 14 December, 2019

Accepted: 24 December, 2019

Published: 30 December, 2019

Keywords:

Dialysis

epidermoid cyst

ABSTRACT

Arteriovenous grafts (AVG) are unfortunately vulnerable to infection given their nature of being a foreign body that is routinely accessed in a patient population that typically has multiple comorbidities. Management of AVG infections can become more complex when a patient has exhausted all options of hemodialysis access and gets an infection involving the AVG or a chronic wound in closed proximity. Herein, we present a case of an epidermoid cyst that caused breakdown of a thigh PTFE dialysis graft, which became infected and encapsulated the femoral anastomosis.

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Introduction

Epidermoid cysts are a common benign skin lesion that are frequently complicated by infection and recurrent drainage [1]. They can also be a source of discomfort and are cosmetically displeasing. When these present as cutaneous lesions, they are typically superficial and do not penetrate so deep that they involve major blood vessels. A classic characteristic of epidermoid cysts is that they are well encapsulated with clear planes that define them. However, if there is chronic inflammation, these planes can become fibrosed, calcified and adherent to surrounding structures.

Case Report

A 76-year-old female presented to the emergency department from her outpatient hemodialysis center with a mass and open draining wound near her right thigh femoro-femoral AVG. The patient has a past medical history significant for end stage renal disease secondary to hypertensive nephrosclerosis, status post failed renal transplant, coronary artery disease, and congestive heart failure. She had previously undergone multiple failed upper extremity fistulas and AV grafts. Ultimately, she had the femoro-femoral thigh AVG that was revised almost three years

prior to presentation for chronic bleeding and a nonhealing eschar over her graft.

Recently, four months prior to her presentation in the emergency department an epidermoid cyst appeared. At that time, it appeared to be a mass possibly involving the AVG that was concerning for a pseudoaneurysm. Given these findings it was determined it would be best to explant this graft and replace. She was taken to the operating room which showed a cyst that had grown near the PTFE graft and was causing some deterioration of the graft with bleeding. The cyst was simply drained through a separate incision that was more distal on the thigh and the deteriorating portion of the graft was removed and repaired with bovine patch angioplasty. Cultures that were obtained at this time were negative and there were no overt signs of infection.

With her current presentation to our vascular department, there was a 3.3 x 2.9 x 2.4 cm round mass overlying her femoral vessels. Centered on this mass was a 1 cm wound with sebaceous material and scant purulent drainage. The surrounding skin was erythematous, indurated, and slightly fluctuant. She was admitted to the hospital with concern of AVG infection, given intravenous antibiotics, and a tunneled hemodialysis catheter was placed in her left femoral vein. A CT was obtained to further delineate whether this cyst and infection were involving the AVG. On review of the imaging, the cyst appeared to encapsulate the arterial

*Correspondence to: Anthony Feghali, MD, Department of Vascular Surgery, SUNY Upstate Medical University, Syracuse, 13210 NY; Tel: 315 464 6421; Email: FeghaliA@upstate.edu

portion of the PTFE graft near its anastomosis with the femoral artery (Figure 1).

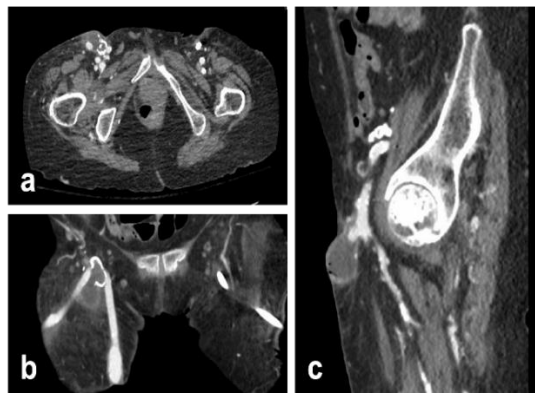


Figure 1: Representative cuts from a CT with IV contrast demonstrating the epidermoid cyst encapsulation of the PTFE graft and arterial anastomosis. In 1a & b, note the calcified rim that is intimately involving both anastomoses.

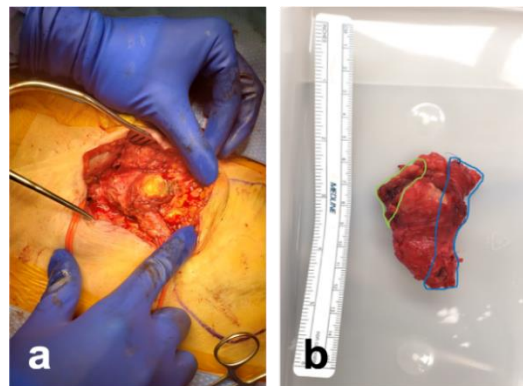


Figure 2: Specimen containing the epidermoid cyst with portions of PTFE graft (blue outline) and femoral artery wall (green outline).

Given these findings, the patient was taken to the operating room where she underwent excision of the epidermoid cyst en bloc with the nearby graft and a portion of the femoral artery as this could not be safely dissected free from the specimen (Figure 2). A bovine patch angioplasty was performed on the femoral artery and the distal aspect of the loop PTFE graft was resected as much as possible since the rest was well incorporated. Antibiotic beads of tobramycin and vancomycin were placed. The femoral vessels were covered with mobilized muscle and subcutaneous tissue and most of the skin was able to be closed without tension. However, removing the affected overlying skin and specimen left a defect with underlying dead space. This was addressed by placing a negative pressure wound therapy dressing. Cultures obtained in the

operating room grew *Bacteroides fragilis* and *Staphylococcus epidermidis* and her blood cultures were negative. She was treated with ertapenem and vancomycin for a total of 6 weeks.

Discussion

To our knowledge, this is the first case reported of an epidermoid cyst causing complications in an arteriovenous graft or fistula. Wollina et al. reviewed the management of 2,159 epidermoid cysts in 1,753 patients and found that with any signs of infection, these lesions were first managed with antibiotics, followed by definitive surgical excision. In those that were excised, rupture of the cyst wall was found in 23.7% of epidermoid cysts. Alternative strategies for management of epidermoid cysts include using CO₂, erbium-YAG laser and intralesional drainage and injection of triamcinolone acetonide [2, 3].

The management of an infected epidermoid cyst becomes more complex if an AVG is nearby. In the event that there is an epidermoid cyst near any portion of the AVG, we advocate for early excision of the epidermoid cyst in its entirety to prevent the complications that arose secondary to the presence of an epidermoid cyst in this patient's case. First, she had breakdown of the PTFE graft with bleeding likely secondary to chronic inflammation in the area. This was later followed by infection and deep rupture of the cyst to further encapsulating major blood vessels. Both situations can lead to life-threatening hemorrhage, which fortunately did not occur in this patient.

Disclosures

None.

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