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CASE REPORT

Serratia liquefaciens Infection of a Previously Excluded Popliteal Artery Aneurysm

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Introduction: Popliteal artery aneurysms (PAAs) are rare in the general population, but they account for nearly 70% of peripheral arterial aneurysms. There are several possible surgical approaches including exclusion of the aneurysm and bypass grafting, or endoaneurysmorrhaphy and interposition of a prosthetic conduit. The outcomes following the first approach are favorable, but persistent blood flow in the aneurysm sac has been documented in up to one third of patients in the early post-operative setting. Complications from incompletely excluded aneurysms include aneurysm enlargement, local compression symptoms, and sac rupture. Notably infection of a previously excluded and bypassed PAA is rare. This is the third reported case of PAA infection after exclusion and bypass grafting and the first due to *Serratia liquefaciens*.

Methods: Relevant medical data were collected from the hospital database.

Results: This case report describes a 54 year old male patient, diagnosed with acute limb ischaemia due to a thrombosed PAA, submitted to emergency surgery with exclusion and venous bypass. A below the knee amputation was necessary 3 months later. Patient follow-up was lost until 7 years following surgical repair, when he was diagnosed with aneurysm sac infection with skin fistulisation. He had recently been diagnosed with alcoholic hepatic cirrhosis Child—Pugh Class B. The patient was successfully treated by aneurysm resection, soft tissue debridement and systemic antibiotics.

Conclusion: PAA infection is a rare complication after exclusion and bypass procedures but should be considered in any patient with evidence of local or systemic infection. When a PAA infection is diagnosed, aneurysmectomy, local debridement, and intravenous antibiotic therapy are recommended. The "gold standard" method of PAA repair remains controversial. PAA excision or endoaneurysmorrhaphy avoids complications from incompletely excluded aneurysms, but is associated with a high risk of neurological damage.

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INTRODUCTION

Popliteal artery aneurysms (PAAs) are rare in the general population but can cause significant morbidity and mortality, being the commonest cause of non-traumatic leg amputation. Despite their rarity, PAA are the most common peripheral arterial aneurysms and many of those affected have concomitant abdominal aortic aneurysms (33%) and contralateral PAA disease (50%).[1]

There are several possible surgical approaches including exclusion of the aneurysm and bypass grafting or endoaneurysmorrhaphy and interposition of a prosthetic conduit, usually through a posterior approach. However, the "gold standard" method of repair remains controversial, as both methods have unique merits and risks.[2,3]

The most common complication after elective PAA surgical repair is late bypass failure, independent of the approach. Outcomes following PAA exclusion are favorable, but persistent blood flow in the aneurysm sac has been documented in up to one third of patients in the early post-operative setting. Complications from incompletely excluded aneurysms include aneurysm enlargement, local compressive symptoms, and sac rupture. Notably infection of a previously excluded and bypassed PAA is rare.[4]

This paper describes one case of *Serratia liquefaciens* infection of a previously excluded popliteal aneurysm 7 years after initial surgical repair. This is the third reported case of PAA infection after exclusion and bypass grafting and the first reported case due to *S. liquefaciens*.[2,5]

CASE REPORT

The patient was a 54 year old male with a previous history of smoking and heavy drinking (mean 70 grams of alcohol

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per day). He was chronically medicated with acetylsalicilic acid and simvastatin.

In 2009 he was referred to the emergency department with acute limb ischaemia. A thrombosed popliteal artery aneurysm was discovered during the diagnostic workup. The runoff was poor, and no distal tibial vessel was identified. The patient was submitted to emergency surgery with aneurysm exclusion and bypass with a venous conduit (great saphenous vein). Owing to an adverse clinical outcome, below the knee amputation was necessary 3 months later. A contralateral PAA was diagnosed, but abdominal aortic aneurysm was excluded.

The patient was lost to follow-up until 7 years later, when he was admitted to the emergency department with a 2 day history of pain and inflammatory signs over the supra-articular incision for the PAA repair. There was no history of local trauma. When specifically asked, he denied pulmonary, urinary or any other symptoms. He had been diagnosed with alcoholic hepatic cirrhosis Child—Pugh B during the lost follow-up period.

Physical examination included hemodynamic stability, apyrexia, and exuberant inflammatory signs over the supra-articular incision with hematoma mixed with purulent drainage. No signs of cirrhosis decompensation were evident on examination.

Investigations revealed no leukocytosis (8.19 $\times$ 10^3/μL), and marginal elevation in ultra-sensitive C-reactive protein (5.30 mg/dL). Liver workup revealed no cirrhosis decompensation.

Given the patient's clinical findings, computed tomography angiography (CTA) was performed, which revealed a liquid collection 79 $\times$ 62 mm with a thin wall in the postero-medial left thigh. There were no clear limits between the vascular structures and the inflammatory collection, so communication with the aneurysmal sac could not be excluded. Persistent aneurysm perfusion and rupture signs were not identified, but could not be excluded (Fig. 1).

The patient was submitted to urgent surgery, with a medial approach over the previous incision. Intra-operative findings included abundant liquefied hematoma mixed with

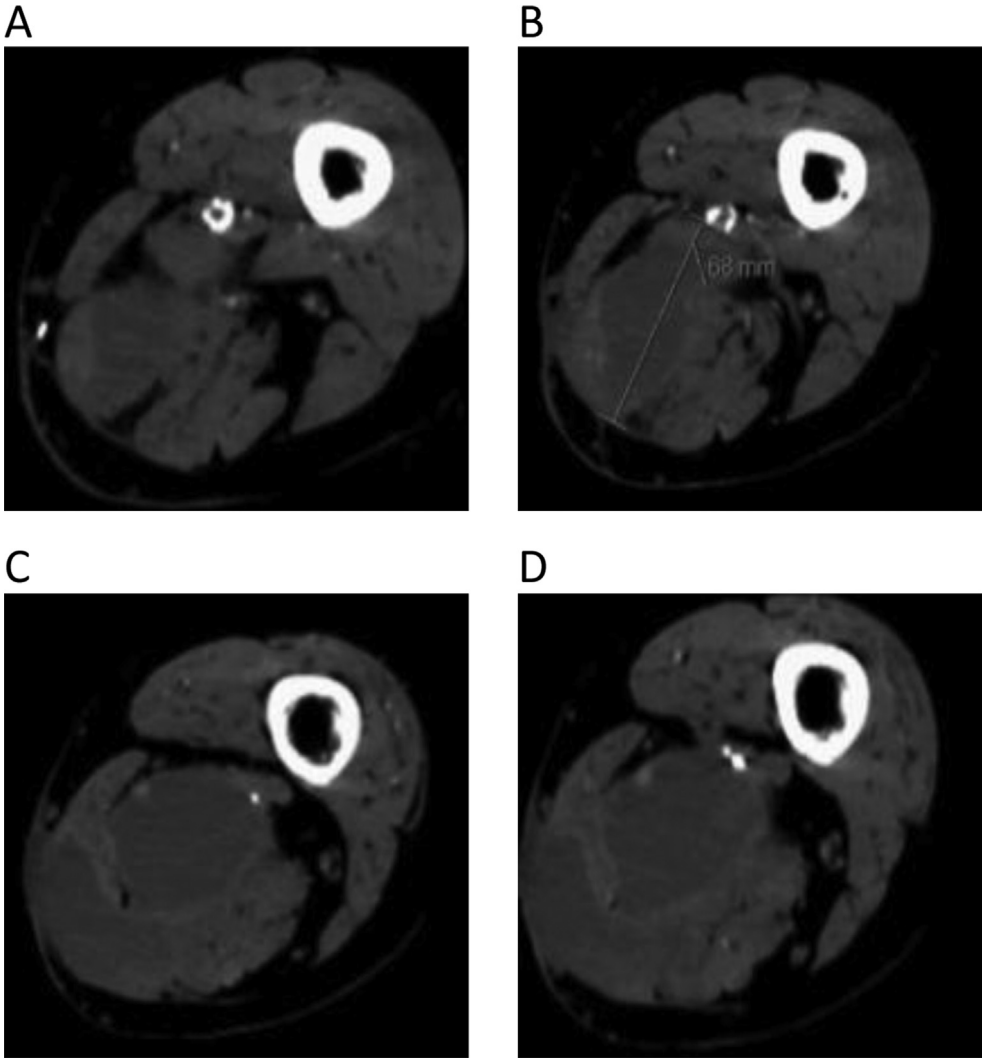

Figure 1. Computed tomography angiography at admission. Autogenous bypass occlusion (A), aneurysmal sac rupture (B) with hematoma formation (C), and skin fistulisation (D).

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