Acute upper limb ischaemia complication of thrombosed arteriovenous fistula

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SUMMARY

Thrombosed arteriovenous fistula is usually uncomplicated and adherent to the wall. Thrombosed vascular access causing acute limb ischaemia is rare, with only 16 cases reported in the literature. Varying treatment modalities such as percutaneous catheter-directed thrombolysis, aspiration, embolectomy, segmental aneurysm resection and ligation have been described in the literature for acute limb ischemia secondary to thrombosed fistula. The surgical approach aims to restore vascular patency, arterial stenosis and recurrence of acute limb ischaemia. This case series describes three cases of acute limb ischaemia due to a thrombosed fistula with a embolectomy via arterialized vein graft and ligation of the fistula at juxta-anastomosis. The clinical management and learning experience are shared within the report. This case report would timely contribute to the growing literature on thrombosed vascular access associated with acute limb ischaemia.

INTRODUCTION

Acute limb ischaemia (ALI) is a surgical emergency requiring urgent intervention. Upper limb ALI is commonly due to cardiac embolism and steal syndrome following vascular access creation. With the increasing global incidence of end-stage renal failure (ESRF) patients and advancement in medical care, multiple venous access creation prevails to be a necessary measure following aneurysmal degeneration and thrombosis of vascular access.[1] Chronic thrombosis of vascular access routinely does not require routine intervention unless associated with other complications. ALI is an infrequent complication of thrombosed vascular access, which occurs following multiple cannulations, fistula massage, dislodged free-floating thrombus and retrograde propagation to the arterial anastomosis. There are only 16 reported cases, with digital ischaemia being the most typical presentation.[2-4] We presented three cases of upper limb ALI secondary to a thrombus involving a brachial fistula. These cases would contribute to the growing literature on thrombosed vascular access associated with ALI with an alternative surgical approach.

CASE PRESENTATION

Case 1

A 66-year-old man presented following 24-hour symptoms of the right hand and distal forearm coldness and pain. He had a right brachiocephalic fistula (BCF) created 7 years ago, which failed to mature. Right brachio-basilic fistula was followed by transposition 6 years ago and was functional for 3 years. He was on regular dialysis via the right cuffed catheter.

There was an aneurysmal venous limb, and no thrill felt. His fingers, thenar and hypothenar eminence appear cyanosed (Figure 1a). He had a weak grip test and intact sensation, and prolonged capillary refill time was observed.

Computed tomography angiography (CTA) upper limb shows a thrombosed right BCF. Patent brachial artery down to a proximal third of radial and ulnar artery on delayed images. Faint opacification is seen distal to it due to heavy calcification.

We performed embolectomy in this case series via venotomy adjacent to juxta-anastomosis and ligation of venous limb. He had a stormy recovery requiring intensive care unit care, most likely due to reperfusion injury. His upper limb had a poor recovery, and the patient was counseled for above elbow amputation, which he refused. He passed away at home 1 month later.

Case 2

A 68-year-old woman presented with acute onset of right-hand pain and coldness while undergoing regular haemodialysis in our facility. She had multiple failed venous access and was dialysing using the right BCF, which was created 8 years ago and used for 6 years. She was on regular dialysis via right cuffed catheter when she complained of sudden pain and coldness 2 hours through her dialysis. Her dialysis was stopped due to worsening symptoms, and she was referred immediately to the surgical team.

Her fingers were cold with delayed capillary filling. Fingers appear cyanosed with peripheral capillary oxygen saturation ranging from 60 to 80% (Figure 1b). She had no muscle weakness; however, there was numbness over her fingers. The thrombosed arteriovenous fistula (AVF) had a pseudoaneurysm with no palpable thrill.

CTA shows thrombosed right BCF with non-opacification in the distal brachial artery measuring 2.7 cm in length with circumferential calcification of the right radial and ulnar arteries. Faint opacification is seen in the radial and ulnar

This article was accepted: 28 November 2022
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