Femoral venous aneurysms are rare, yet confer significant mortality risk due to venous thromboembolism; consider in venous thromboembolism of unknown aetiology

Bence Csongor Baljer, Lauren Shelmerdine and Gerard Stansby
Vascular Surgery, Freeman Hospital, Newcastle upon Tyne NE7 7DN, UK
Corresponding author: Bence Csongor Baljer. Email: bbaljer.80@gmail.com

Summary
Femoral venous aneurysms are a rare disease entity, yet they carry the risk of significant mortality due to venous thromboembolism, as demonstrated by a case report of an otherwise fit and well 74-year-old gentleman.

Keywords
Vascular surgery, pulmonary embolism, respiratory medicine

Introduction
Venous aneurysms, reported in all major veins, are an uncommon pathology, often misdiagnosed as soft tissue masses or hernias.\(^1,2\) They can be defined as a solitary dilation of a venous segment that communicates with a main venous structure by a single channel.\(^3\) They occur in non-varicose veins and are not associated with arteriovenous communications or pseudo-aneurysms.\(^3\) The definition remains controversial, as there are no specific size criteria in the literature, but a twofold or greater increase in diameter of a normal vein is commonly regarded as aneurysmal.\(^2,4\)

Primary venous aneurysms are usually incidental findings on physical examination or imaging and seldom have clinical significance. A notable exception to this are popliteal vein aneurysms, with a wealth of literature recognising them as a cause of recurrent pulmonary embolism.\(^1,2,4,5\) As such it is recommended that even asymptomatic popliteal vein aneurysms should be considered for repair.

Femoral vein aneurysms have been rarely reported in literature, but can also be a source of a pulmonary embolism.\(^6-9\) We present a case of recurrent pulmonary embolism associated with a femoral vein aneurysm despite anticoagulation, which was successfully treated surgically.

Case
A 74-year-old gentleman presented to his General Practitioner feeling slightly short of breath. He was otherwise fit and well, aside from hypertension, managed with lisinopril. He was promptly admitted to the Emergency Department and collapsed once there. Urgent echocardiogram was normal. A computed tomography pulmonary angiography revealed massive bilateral pulmonary embolisms: large volume central pulmonary embolus with multiple lobar and segmental pulmonary arterial occlusion. He was thrombolysed immediately. The patient unfortunately suffered a further collapse three days later. Repeat computed tomography pulmonary angiography revealed new pulmonary embolisms demonstrated in the right upper lobe, anterior and posterior segmental arteries.

A computed tomography chest-abdomen-pelvis (Figure 1) excluded malignancy, but revealed incidental aneurysmal dilatation of the common femoral veins, most marked on the right. A lower limb duplex venous ultrasound validated these findings, highlighting a distal common femoral vein aneurysm, 2.7 cm in diameter, at the sapheno-femoral junction level. A non-occlusive thrombus was also detected within the common femoral vein, extending into the proximal long saphenous vein. As the aneurysm was the presumed source of the recurrent embolism despite anticoagulation, a temporary inferior vena cava filter was inserted to prevent further pulmonary embolisms. The patient was also established on the anticoagulation therapy warfarin.

The patient was later referred to Vascular Surgery for the consideration of surgery. At the clinic appointment, 10 weeks following the original presentation, the aneurysm had dilated to 3.3 cm on repeat duplex ultrasound. Additionally, a new finding of a mildly incompetent, dilated popliteal vein (1.7 cm in diameter) was seen. The long saphenous vein was competent.

Based on the risk of further pulmonary embolism, the decision to resect the right common femoral vein aneurysm was made and carried out successfully through a transverse groin incision (Figure 2).
The aneurysm was opened and a tangential resection with venorrhaphy was performed. The postoperative ultrasound Doppler confirmed the presence of good luminal filling of the common femoral vein, Superficial femoral vein (SFV) and popliteal veins, alongside spontaneous phasic flow. As there was no evidence of inferior vena cava thrombus on imaging, the inferior vena cava filter was also successfully retrieved.

After having clinically improved, the patient was discharged on warfarin, and has had no repeat episodes of shortness of breath. Due to his bilateral common femoral vein aneurysms, the patient is under ultrasound surveillance. The most recent scan, carried out two years post resection, highlighted that the right common femoral vein measures 5.9 mm, remains patent and had not dilated significantly post-surgery. His left common femoral vein currently measures 10.5 mm, which does not indicate surgical intervention neither radiologically nor clinically. The popliteal veins were also determined to be stable.

Discussion

The pathogenesis of venous aneurysms is uncertain. Trauma, inflammation, congenital weakness and localised degenerative changes have all been implicated as possible causes, but they may also be idiopathic.3–5 In our presented case, the patient had no history of trauma to the area, or any known history of femoral venous injections or instrumentation; no discernible cause was found.

Although potentially fatal,7 the low prevalence and often late presentation of venous aneurysms has led to ongoing variability in diagnosis and treatment. As venous aneurysms are commonly asymptomatic, they are typically detected when local lower extremity symptoms or pulmonary embolisms are present.1 Diagnosis is confirmed by venous duplex scan, a fast and safe method defining the size and morphology of the aneurysm. Computed tomography provides a more detailed depiction of the aneurysm and is useful prior to surgical intervention.1

Although the most appropriate investigative modalities are well known, no concurrent guidelines regarding screening practices exist. Sessa et al. were the first to recommend active screening for popliteal venous aneurysms in patients undergoing lower limb duplex ultrasound, or those presenting with unprovoked deep venous thrombosis or pulmonary embolism.5 Regarding the femoral vein, no recommendations have yet been proposed.
Anticoagulation in symptomatic patients with lower extremity venous aneurysm is deemed insufficient to alleviate compressive symptoms or minimise thromboembolism risk; therefore, surgical intervention is warranted. In the presented case, the Haematology team initially recommended a >6 months duration, but a mutual decision on life-long anticoagulation was reached on discussions between patient and Vascular team.

Clinical and radiological follow-up is scarcely documented in literature, likely attributable in part that no recurrent pulmonary embolisms have been reported after surgery. Although our patient has been discharged from Vascular follow-up, he attends pulmonary embolism clinic for regular monitoring.

As most lower extremity venous aneurysms occur in the popliteal vein, and indeed are the most causatively linked to pulmonary embolisms, characterisation and recommendations of lower extremity venous aneurysms have focused primarily on popliteal aneurysms. However, as femoral vein aneurysms can also result in pulmonary embolisms, they should not be neglected. We therefore recommend a similar conscious awareness of the risks of thromboembolism when femoral vein aneurysms are encountered, and advocate that when a popliteal duplex is clinically warranted, the femoral vein, alongside all remaining lower limb venous structures, be examined as well. This would hold especially true if the popliteal vein was found to be normal calibre.

Conclusion

Although femoral venous aneurysms are a rare disease entity, they carry the risk of significant mortality due to venous thromboembolism.

Declarations

Competing Interests: None declared.

Funding: None declared.