

Case Report: A 46-Year-Old Man With Giant Pseudoaneurysm of the Left Superficial Femoral Artery

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Abstract

Introduction: Pseudoaneurysm is a complication caused by vascular injury, which is more common in firearm injuries, stab wounds, iatrogenic injuries, etc. Clinically, femoral pseudo-artery caused by intravenous drug abuse is not uncommon, but giant pseudoaneurysms are relatively rare.

Case presentation: A 46-year-old man presented with a 6-month history of a pulsating mass in the left groin, which was aggravated with pain for 3 days. The patient has a history of intravenous drug use for more than half a year. Six months ago, the patient found a lump in the left groin, and no special treatment was given. Three days ago, the mass in the patient's left groin suddenly enlarged with severe pain. The patient then came to our hospital for treatment, and ultrasound revealed a pseudoaneurysm in the left femoral artery. CTA of the lower extremity arteries suggested a huge pseudoaneurysm in the left femoral artery. To avoid the rupture of the huge pseudoaneurysm of the left superficial femoral artery, we implemented emergency interventional surgery. The operation was successful and the patient recovered well after the operation.

Conclusions: In order to avoid the rupture of a huge pseudoaneurysm of the femoral artery, emergency interventional surgery is an option. However, considering that pseudoaneurysms caused by intravenous drug abuse are often associated with fungal infections, surgery is still the best choice.

Introduction

Pseudoaneurysm is a complication caused by vascular injury, which is more common in firearm injuries, stab wounds, iatrogenic injuries, etc., and the use of anticoagulant drugs may also induce the disease. Clinically, femoral pseudo-artery caused by intravenous drug use is not uncommon, but giant pseudoaneurysms are relatively rare. In this case, repeated puncture of the left femoral vein caused a huge pseudoaneurysm in the left superficial femoral artery for intravenous drug use.

Case Presentation

The patient was admitted to the hospital due to a lump in the left groin for half a year, worsening with pain for 3 days. The patient is pale, mentally tired and have a chronic illness face. Blood pressure, 135/82 mmHg; heart rate, 80 beats/min; T, 36.4 °C; respiratory rate, 18 breaths/min; arterial oxygen saturation on room air, 98%. The height is 174 cm, the weight is 82 kg, and the body mass index(BMI) is 27.1kg/m². Scattered red rashes can be seen on the extremities without itching. Swelling of the left lower limb. A mass of about 13 cm in diameter can be seen in the left groin (Figure 1), and systolic murmurs can be heard, and pulsations can be palpable. The patient's laboratory test results are as follows: WBC, 7.5x10⁹/L; NEUT%, 54%; C-reactive protein, 8mg/L; Hemoglobin, 88g/L; total cholesterol, 5.1mmol/L; triglyceride, 2.13mmol/L. Syphilis and HIV antibodies are negative. Hepatitis B and C antibodies are positive. Tests for fungi and respiratory viruses were negative. The Covid-19 nucleic acid test was negative. He has no history of hypertension, arteriosclerosis, and coronary heart disease. He had a history

of intravenous drug use for half a year and repeatedly punctured the left femoral vein. He denied the history of trauma and iatrogenic puncture. Subsequently, the patient underwent color ultrasound to diagnose a pseudoaneurysm of the left femoral artery. Further CT of the lower limbs (Figure 2a-c) confirmed a huge pseudoaneurysm of the left superficial femoral artery with thrombosis in the tumor cavity. On the basis of these findings, a clinical diagnosis of pseudoaneurysm of the left superficial femoral artery was made. Considering that the patient's pseudoaneurysm is huge, the largest diameter of the pseudoaneurysm is about 10 cm, and the risk of rupture is high, we decided to perform emergency surgery after careful discussion. We implemented the left superficial femoral artery stent graft through the right femoral artery turning technique. Preoperative selective femoral angiography (Figure 3a) confirmed a huge pseudoaneurysm of the left superficial femoral artery with a neck diameter of about 2.5 cm. Postoperative selective femoral angiography (Figure 3b) showed that the covered stent completely covered the breach, and no contrast agent entered the pseudoaneurysm cavity, which was completely isolated. Postoperative femoral artery CT (Figure 4) showed that the pseudoaneurysm was completely isolated and the stent graft was properly positioned. The patient recovered well after the operation and was discharged 3 days later.

Discussion And Conclusions

Pseudoaneurysm refers to the arterial wall being torn or punctured, blood flows out from the breach and is wrapped by tissue adjacent to the artery to form a hematoma, mostly due to trauma. Clinically, femoral artery pseudoaneurysms account for about 90% of peripheral aneurysms¹. The pseudoaneurysm of the left superficial femoral artery in this patient was caused by repeated puncture of the femoral vein due to long-term intravenous drug use. Six months ago, the patient had a lump in the left groin, but the symptoms were not obvious, so the patient did not pay enough attention. Three days ago, the patient's femoral artery pseudoaneurysm suddenly enlarged with severe pain, so he came to our hospital for treatment. Given that the patient's left femoral artery pseudoaneurysm is huge (Figure 1-2) and the risk of rupture is extremely high, we chose emergency surgery and achieved good clinical results.

Pseudoaneurysms are more common in people who are prone to vascular damage, such as the elderly and atherosclerotic people. Their poor vascular elasticity and increased systolic pressure can easily lead to bleeding after vascular rupture. However, this patient is relatively young, and ultrasound and vascular CT have not found femoral atherosclerosis. The patient's giant pseudoaneurysm is caused by repeated intravenous drug use. Detailed medical history collection and physical examination can provide accurate information for clinical diagnosis.

The clinical manifestations of pseudoaneurysm are local masses and swelling pulsations, systolic tremor can be palpable, and systolic murmurs are heard. If there is mural thrombosis in the pseudoaneurysm, thrombus migration may occur, causing embolization of the distal artery and causing corresponding symptoms. It may also rupture and hemorrhage due to trauma or increase in internal pressure, which may easily lead to infection. In this case, the pseudoaneurysm had thrombosis in the lumen, but there was no thrombus detachment leading to embolization of the distal artery. Because the superficial femoral artery

pseudoaneurysm is huge, it locally compresses the superficial femoral artery and femoral vein, causing pain and swelling in the left lower limb. After we successfully blocked the internal port of the left superficial femoral artery pseudoaneurysm, the patient's left lower limb pain and swelling symptoms gradually eased. In this case, the local skin of the patient was infected, but the skin was not broken. We disinfected the skin with iodophor to obtain a better clinical effect.

Radiographic examination has important value in the diagnosis of pseudoaneurysm². Color Doppler ultrasonography has diagnostic value for pseudoaneurysms. Ultrasound shows that there is an extravascular false cavity at the puncture site, and there is a tube communicating with the artery. CT and magnetic resonance angiography are used in the diagnosis and treatment of difficult cases, which can determine whether there are mural thrombi in the cavity when examining giant aneurysms. In this case, ultrasound diagnosis of left femoral artery pseudoaneurysm, CT further confirmed the left superficial femoral artery pseudoaneurysm (Figure 2). The radiography of this patient provided us with abundant clinical data, and we actively implemented emergency surgery to avoid the rupture of the huge pseudoaneurysm.

Pseudoaneurysms are rarely healed by themselves. Once a pseudoaneurysm ruptures, it can cause massive bleeding, which can be life-threatening. Therefore, prevention of pseudoaneurysm rupture is the top priority of treatment. At present, the treatment of pseudoaneurysms can be divided into three categories, namely non-invasive treatment, interventional treatment and traditional surgical treatment³. Non-invasive treatment includes local compression therapy, which is the simplest method and may be effective for cases where the pseudoaneurysm is small and the maximum diameter does not exceed 2 cm. Interventional therapy mainly includes percutaneous puncture or intraarterial catheter injection of procoagulant drugs, coil embolization and endovascular exclusion. Traditional surgical procedures are used to remove pseudoaneurysms and reconstruct damaged blood vessels, which are currently less clinically used. In this case, the pseudoaneurysm of the superficial femoral artery is so huge that I have never seen before, the diameter of the pseudoaneurysm is 10 cm, and the neck width of the pseudoaneurysm is about 2.5cm in diameter. After careful discussion, we finally decided to adopt interventional endovascular isolation, inserting a covered stent to seal the rupture of the femoral artery, and finally achieved a good therapeutic effect.

This patient had a very successful operation and recovered well after the operation. He is very grateful for everything we have done for him. He is willing and authorized to share his surgical treatment process to benefit more patients.

In conclusion, femoral artery pseudoaneurysm may not have obvious clinical symptoms. Clinicians should take detailed medical history and careful physical examination to obtain an accurate diagnosis. In order to avoid the rupture of a huge pseudoaneurysm of the femoral artery, emergency interventional surgery is an option. However, considering that pseudoaneurysms caused by intravenous drug abuse are often associated with fungal infections, surgery is still the best choice. We recommend that this patient still needs long-term follow-up.

Abbreviations

CTA: computed tomography angiography

CT: computed tomography

BMI: body mass index

WBC: white blood cell

NEUT: neutrophils

HIV: human immunodeficiency virus

Declarations

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Authors' contributions

JD wrote this manuscript. JD and JD performed the operation.

All authors read and approved the final manuscript.

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Availability of data and materials

Not applicable.

Ethics approval and consent to participate

This study has been approved by the ethics committee of the Chongqing Kanghua Zhonglian Cardiovascular Hospital has been recognized as exempt from ethical review.

Consent for publication

Informed consent and ethical approval were waived for this report, which contains no patient identifiable data.

Competing interests

The authors declare that they have no competing interests.

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Figures



Figure 1

A mass of about 13 cm in diameter can be seen in the patient's left groin. Local skin infection can be seen, and the surrounding tissues are red and swollen.



Figure 2

A cross-sectional CT of the femoral artery (a) shows a huge pseudoaneurysm of the left superficial femoral artery, with a diameter of about 10 cm. Thrombosis and bleeding can be seen in the cavity of the pseudoaneurysm. Coronary CT (b) indicates that the pseudoaneurysm of the left superficial femoral artery has compressed the superficial femoral artery, resulting in stenosis at the proximal end of the superficial femoral artery, but the distal end is not affected. There was no breach in the deep femoral artery. Femoral artery CTA (c) confirmed that the left superficial femoral artery has a huge pseudoaneurysm, which protrudes from the skin edge and has a high risk of rupture.

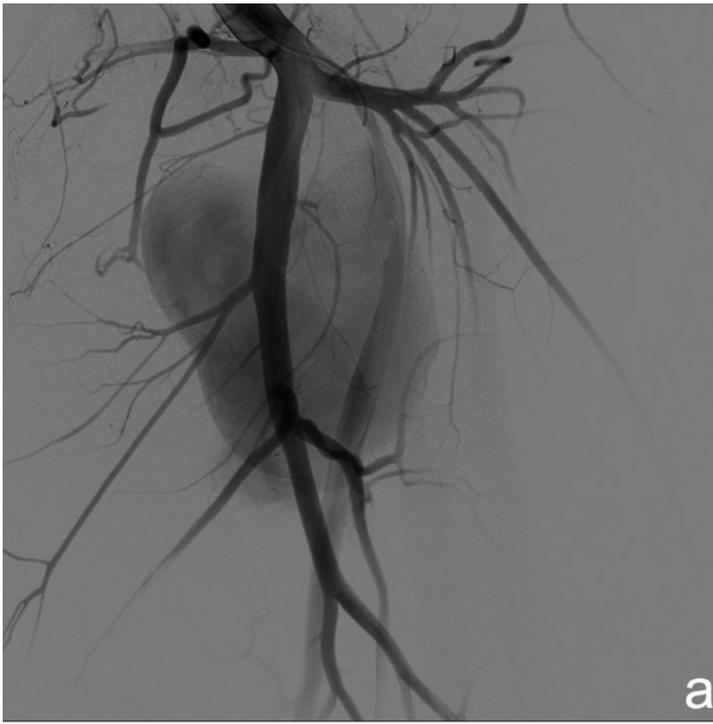


Figure 3

Preoperative selective femoral angiography (a) confirmed a huge pseudoaneurysm of the left superficial femoral artery, with an diameter of about 10 cm and a rupture diameter of about 2.5 cm. There was no rupture in the deep femoral artery. Postoperative selective femoral angiography (b) showed that the left superficial femoral artery pseudoaneurysm breach was completely isolated, the middle section of the covered stent was deformed due to the large breach in the neck of the pseudoaneurysm, and the left deep femoral artery was unobstructed.

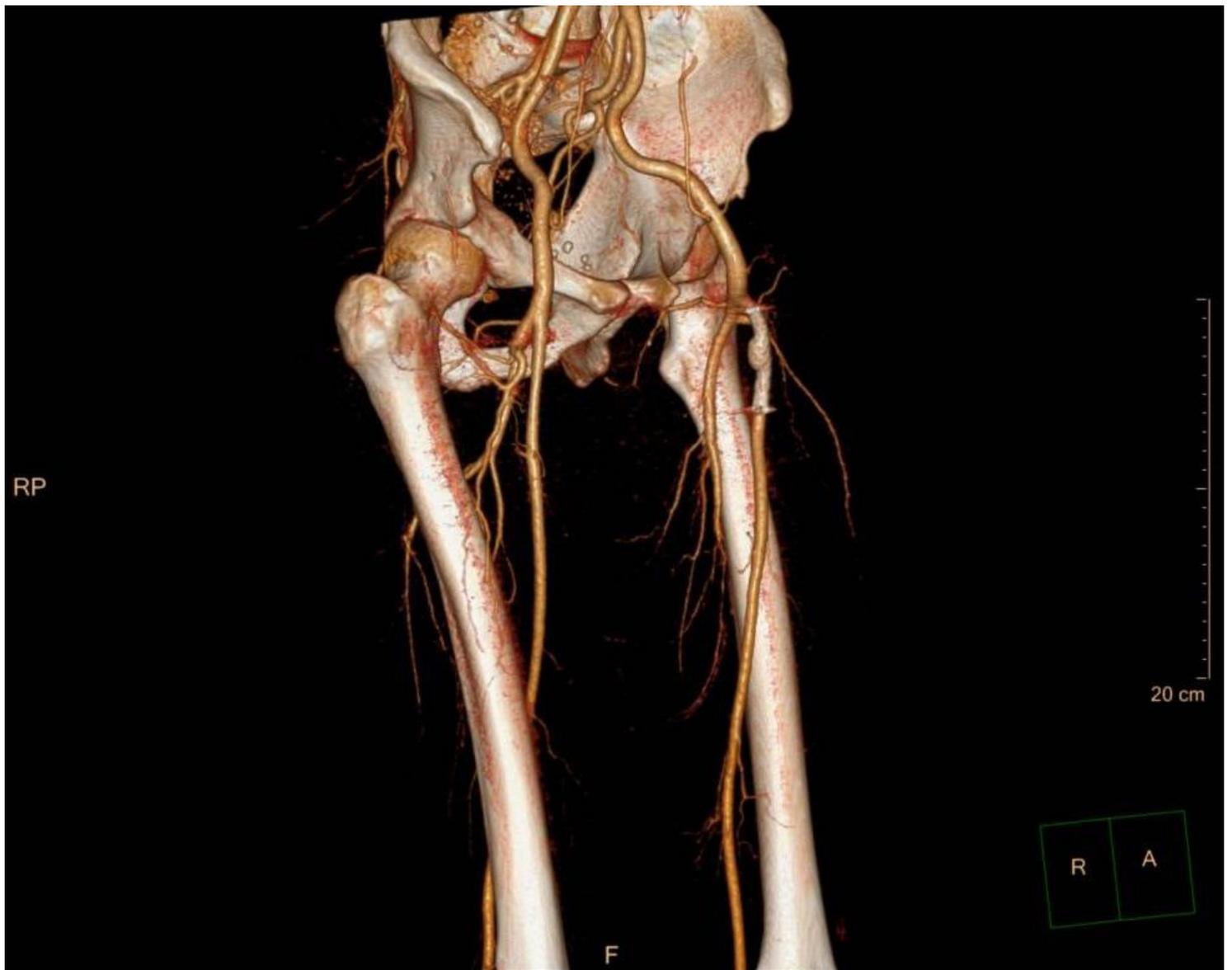


Figure 4

Postoperative femoral artery CTA showed that the left superficial femoral artery pseudoaneurysm was completely isolated, without endoleak, and the covered stent position was proper, and did not affect the left deep femoral artery opening.

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