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CASE REPORT / ПРИКАЗ БОЛЕСНИКА

Ruptured aneurysm of the superficial femoral artery

Miroslava Popović[1], Ivana Mitrović Tanić[1], Marko Šurlan[1], Ljiljana Milić[1,2]

[1]Zvezdara University Clinical Hospital Center, Nikola Spasić Clinic for Surgery, Belgrade, Serbia;
[2]University of Belgrade, Faculty of Medicine, Belgrade, Serbia

SUMMARY

Introduction Aneurysm rupture is rare, most often affecting the distal third of the superficial femoral artery (SFA). An isolated aneurysm of the SFA is even rarer, occurring in only 1% of all femoral artery aneurysms and in 0.5% of all peripheral artery aneurysms. The aim of this report is to describe the diagnosis and surgical treatment of a rare case of a ruptured true aneurysm of the SFA.

Case report We present an 80-year-old man admitted due to sudden pain in his right leg. Physical examination and radiological imaging confirmed a ruptured isolated SFA aneurysm. SFA–SFA bypass surgery was performed in the distal femoral region of the right leg three months after the first symptoms occurred. An SFA–SFA bypass using an 8 mm Dacron graft was performed, and the patient achieved full recovery with palpable pedal pulses at the one-month follow-up. Two months after hospital discharge, the patient died from acute myocardial infarction, making further follow-up impossible.

Conclusion This report demonstrates that even three months after SFA aneurysm rupture, complete recovery can be achieved with an appropriate surgical technique.

Keywords: superficial femoral artery; ruptured aneurysm; true femoral aneurysm; rupture

INTRODUCTION

Superficial femoral artery (SFA) aneurysm is more common in men than in women, with an incidence of about 85%. Factors contributing to the development of a true SFA aneurysm include smoking, age, and cardiovascular disease [1].

An isolated aneurysm of the SFA is extremely rare, occurring in only 1% of all femoral artery aneurysms and 0.5% of all peripheral artery aneurysms [2]. Aneurysm rupture is uncommon, most frequently affecting the distal third of the SFA [3]. The complications most often associated with SFA aneurysms include rupture, distal embolization, and thrombosis [4].

The objective of this report is to describe the diagnosis and surgical treatment of a rare case of a ruptured SFA aneurysm.

CASE REPORT

An 80-year-old man complained of pain in the lower third of the right thigh. Five days after the onset of pain, the symptoms worsened, and swelling of the right thigh appeared. Two days later, swelling and hematoma around the right upper knee were confirmed at the local hospital.

Upon hospital admission, his international normalized ratio was 5.2, hemoglobin 80 g/dl, and he received two units of blood. He denied any allergies to medication or food. He was a non-smoker and did not consume alcohol. His medical history included chronic obstructive pulmonary disease, type 2 diabetes, and hypothyroidism. In the year 1992, he had a myocardial infarction without subsequent revascularization.

Three months later, he was admitted to our institution, pulmonology department, due to shortness of breath, pain in the right upper knee, and severe calf spasms. He was afebrile, with blood pressure of 105/60 mmHg and a heart rate of 70 beats per minute. D-dimer level was 15.2 mg/L fibrinogen equivalent unit, and chest multidetector computed tomographic angiography revealed bilateral peripheral microembolism.

Two days later, major swelling appeared in the lower right thigh (Figure 1a). The patient was unable to stretch his leg, and the knee joint was locally warm at the site of the swelling. A Doppler scan of the lower extremities showed a hypoechogenic mass measuring approximately 40 × 48 cm, with monophasic flow in the popliteal and posterior tibial arteries. The popliteal vein of right leg was partially non-compressible, with suspicion of a fresh thrombus. No other deep vein thrombosis was detected.

Multidetector computed tomographic angiography of the right leg showed rupture of the posterior wall in the distal third of the SFA, with contrast extravasation and a hematoma over 300 mm in length, extending below the knee and compressing the surrounding structures (Figure 1b). A large saccular aneurysm of the internal iliac artery, 51 mm in diameter, was also diagnosed. The patient was transferred to the vascular surgery department for further treatment.

Emergency surgery revealed a large amount of coagulum and blood extending from the

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Correspondence to:
Ljiljana MILIĆ
Pančićeva 4
11000 Belgrade
Serbia
ljilja.milic@gmail.com

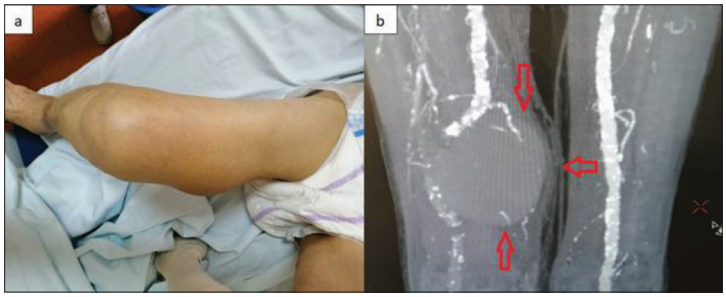

Figure 1. a – Clinical finding of rupture the right superficial femoral artery aneurism rupture; b – computed tomography angiography of the lower limb shows aneurism of superficial femoral artery with compression of neighboring structures (labeled by red arrows)

Figure 2. Intraoperative finding of ruptured aneurysm of the superficial femoral artery

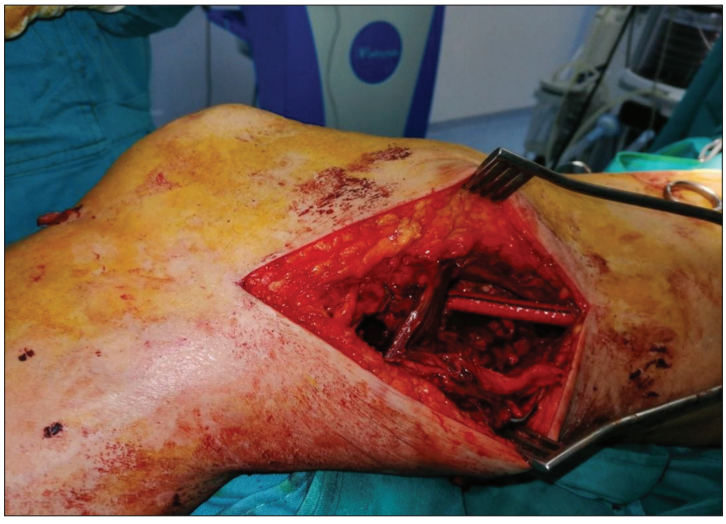

Figure 3. Superficial femoral artery bypass – reconstruction using Dacron 8 mm graft

distal part of the right thigh to the lower limb, with a ruptured aneurysm of the SFA (Figure 2). An SFA–SFA bypass was performed using an 8 mm Dacron graft (Figure 3). During the operation, the patient received one unit of erythrocytes, one unit of fresh frozen plasma, and three units of albumin. Postoperative laboratory findings were within normal limits.

On the first postoperative day, palpable dorsalis pedis pulse was noted, with preserved motility and sensation. On the 20th postoperative day, the patient was discharged home in good general condition and fully recovered.

At the one-month follow-up, the patient had palpable pedal pulses and no complaints. During the preparation for elective surgical treatment of the iliac artery aneurysm, the patient developed an acute myocardial infarction and died two months after hospital discharge, which made further follow-up impossible.

Ethics: The patient agreed to have his photos and medical information published in the journal. He was aware that his name will not be revealed and that every effort will be made to maintain his anonymity.

DISCUSSION

Atherosclerotic aneurysms of the SFA are very rare, occurring as isolated lesions in 15–25% of cases. They most often occur in the lower third of the SFA, typically as focal arterial involvement, while diffuse or long-segment involvement is extremely uncommon [3, 5]. In our patient, the aneurysm was located in the lower third of the SFA but involved a 7 cm segment, which is rare.

SFA aneurysms are frequently associated with aortic and iliac artery aneurysms (69%), and with popliteal or common femoral artery aneurysms in 54% of cases [6]. Our patient had a saccular aneurysm of the internal iliac artery measuring 51 mm in diameter. Since the patient did not present with acute symptoms related to this aneurysm, urgent intervention was not indicated. Elective surgical treatment was planned following full recovery and appropriate preparation for the procedure.

At the time of diagnosis, approximately 35% of patients with isolated SFA aneurysms are symptomatic, which is significantly higher than for common femoral artery aneurysms, where only about 7% of patients are symptomatic [7]. This difference may be explained by the anatomical localization and the deep position of the artery, which make early detection and elective surgery more difficult. Clinical recognition is also challenging in thin patients because of the deep muscular position of the vessel [6].

Rupture is the most common presentation of SFA aneurysms, occurring in 26–34% of cases, which is much higher than in popliteal artery aneurysms, where rupture is the initial symptom in only about 3% of cases [6, 8]. The patient in this report presented initially with rupture, consistent with previous studies.

Surgical treatment is indicated in symptomatic patients with ruptured SFA aneurysms or ischemic symptoms. In asymptomatic cases, there is still no consensus on the appropriate timing for intervention, though some authors recommend surgery when the aneurysm diameter exceeds 20–25 mm [3, 9].

Both open and endovascular repair are viable treatment options. Open repair provides favorable short- and long-term outcomes with excellent limb salvage rates [10]. The most common procedure is aneurysmectomy with prosthetic graft interposition [3]. In our case, aneurysmectomy was performed three months after rupture, with reconstruction using an 8 mm Dacron graft. The great saphenous vein was not used due to varicosities, because both great saphenous veins were varicose and unsuitable for reconstruction in our patient, we decided to implant a Dacron graft. The choice of procedure was based on clinical experience and literature-reported efficacy for aneurysms of similar etiology.

SFA rupture presents differently from other peripheral arterial ruptures, as it may enlarge significantly before detection. Early recognition and prompt surgical intervention offer the best chance of survival and full recovery. Although SFA aneurysms are rare, any hematoma in the upper leg especially near the course of the femoral artery should be considered a potential aneurysm until proven otherwise.

This case demonstrates that even three months after rupture of an SFA aneurysm, complete recovery can be achieved with an appropriate surgical approach.

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Conflict of interest: None declared.

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Руптура анеуризме површинске бутне артерије

Мирослава Поповић[1], Ивана Митровић Танић[1], Марко Шурлан[1], Љиљана Милић[1,2]

[1]Универзитетски клиничко-болнички центар „Звездара“, Клиника за хирургију „Никола Спасић“, Београд, Србија;
[2]Универзитет у Београду, Медицински факултет, Београд, Србија

САЖЕТАК

Увод Руптура анеуризме површинске феморалне артерије представља изузетно редак клинички ентитет, са учесталошћу мањом од 1% свих периферних анеуризми, укључујући и псеудоанеуризме, односно свега 0,5% када се ради о правим периферним анеуризмама. Циљ овог рада је приказ дијагностике и хируршког лечења ретке руптуре праве анеуризме површинске феморалне артерије.

Приказ болесника Приказујемо болесника старости 80 година, примљеног због изненадног бола у десној нози. Клиничким прегледом и радиолошком дијагностиком потврђена је руптура изоловане анеуризме површинске феморалне артерије. Три месеца након појаве првих симптома изведен је *SFA–SFA* бајпас са дакронским графтом пречника 8 *mm*, а болесник се потпуно опоравио, са опипљивим пулсовима на стопалима на контролном прегледу после месец дана. Два месеца након отпуста из болнице болесник је преминуо од акутног инфаркта миокарда, што је онемогућило даље праћење.

Закључак Овај приказ потврђује да је и три месеца после руптуре анеуризме површинске феморалне артерије могуће постићи потпуни терапијски успех уз примену адекватне хируршке методе.

Кључне речи: површинска феморална артерија; руптура анеуризме; права феморална анеуризма; руптура