

CASE REPORT

Surgical Repair of Multiple Superficial Femoral Artery Pseudoaneurysms Following Failed and Complicated Endovascular Interventions: A Case Report

Başarısız ve Erken Komplikasyon İzlenen Tekrarlayan Endovasküler Girişimler Sonucu Oluşan Çoklu Yüzeyel Femoral Arter Psödoanevrizmasının Cerrahi Onarımı: Olgu Sunumu

¹Elgin Hacızade , ¹Cavid İbrahimov , ¹Memmed Jafarov , ²Emre Kubat , ¹Nazim Hacıyev 

¹Central Military Hospital of the Ministry of National Defense of Azerbaijan, Bakü, Azerbaijan
²Gülhane Training and Research Hospital, Ankara, Türkiye

Correspondence

Elgin Hacızade M.D.
Central Military Hospital of the Ministry of National Defense of Azerbaijan, Bakü, Azerbaijan

E-Mail: elginhacizade@gmail.com

How to cite ?

Hacızade E, İbrahimov C, Jafarov M, Kubat E, Hacıyev N. Surgical Repair of Multiple Superficial Femoral Artery Pseudoaneurysms Following Failed and Complicated Endovascular Interventions: A Case Report. Genel Tıp Derg. 2025;35 (2): 388-392

ABSTRACT

In recent years, the rise in arterial endovascular procedures has led to an increase in associated complications. In this case, the example we present here demonstrates how an endovascular intervention can be traumatic and complication-prone for total occluded superficial femoral artery, which is their application for long segment total occlusions increase day by day.

Keywords: Complication, endovascular procedures, peripheral vascular diseases

ÖZ

Son yıllarda, arteriyel endovasküler prosedürlerdeki artış, ilişkili komplikasyonlarda bir artışa yol açmıştır. Bu durumda, burada sunduğumuz örnek, endovasküler bir müdahalenin, uzun segmentli total tıkanıklıklar için uygulamaları her geçen gün artan, total tıkalı süperfiyal femoral arter için ne kadar travmatik ve komplikasyona yatkın olabileceğini göstermektedir.

Anahtar Kelimeler: Endovasküler prosedürler, komplikasyon, periferik vasküler hastalıklar

Introduction

Peripheral artery disease (PAD) is characterized by the accumulation of plaques in the arteries of the extremities. It is estimated to affect between 4.3 and 5.9% of individuals aged between 40 years or older, and 14.5% of individuals aged between 70 and older (1). Without successful revascularization, peripheral arterial disease can result in significant morbidity, with a limb loss rate as high as 90% within one year (2). Managing occlusive lesions in the superficial femoral artery (SFA) is a matter of significant debate. Treatment has traditionally involved surgical bypass although endovascular treatment has gained widespread acceptance in recent years with similar outcomes for certain patients (2). Endovascular repair for long-segment occlusion often requires the use of stents. One of the infrequent complications is a stent fracture in

SFA and the formation of associated pseudoaneurysms. Here, we report the first documented case of surgical correction of SFA stent fracture with multiple associated pseudoaneurysms following the failure of numerous endovascular treatments.

Case

A 68-year-old male patient with a history of coronary artery bypass surgery, femoropopliteal bypass surgery on the contralateral side, smoking, hyperlipidemia, and undergoing spine surgery was admitted to our clinic with swelling in the groin area, pain, and walking limitation. Initial arterial duplex ultrasound (US) demonstrated multiple SFA pseudoaneurysms due to the stent rupturing the femoral artery at previous interventions (Fig. 1). The patient had undergone left lower extremity

angiography and recanalization of the long segment of the left SFA CTO in another center 15 days before, fusiform aneurysms with a maximum diameter of 10 and 8 cm originating from the proximal and mid-portion of



Figure 1. The Doppler ultrasound reveals a distal pseudoaneurysm caused by the rupturing of the distal SFA stent.

applying to us. After reviewing the procedure images, we noticed that two stents had been initially placed. However, after 10 days, they became thrombosed and required reintervention. When the images from the second procedure were examined, we concluded that the stent ruptured the femoral artery due to balloon tension, resulting in the formation of pseudoaneurysms in the proximal and mid-segments between the two stents (Fig. 2).



Figure 2. Pseudoaneurysms in proximal and distal SFA and thrombosed stent

The computed tomography scan showed us two

SFA (Fig. 3). Images identified proximal and distal stents that had eroded into the tissue around SFA (Fig. 4). We decided these pseudoaneurysms could not be repaired invasively and needed surgical intervention. The patient underwent surgical removal of the extruded SFA stents due to the risk of infection from foreign matter and femoropopliteal bypass surgery with an 8 mm PTFE synthetic vascular graft. After the groin incision, the femoral artery's pseudoaneurysm was reached. The proximal and distal femoral artery was prepared for surgery. Proximal dissection was challenging due to significant inflammation. Fluid collection and stents were encountered within thigh muscle tissue. The pseudoaneurysm sac in the femoral region was opened. After the extruded stents were removed, the proximal common femoral artery was prepared for anastomosis at the bifurcation site, including the deep femoral artery. Thus, the flow of the deep femoral artery was preserved. Following the removal of the stent in the distal region, the vascular graft was used for the bypass to the traditional anastomosis site (Fig. 5A, B, and C). Multiple reactive lymph nodes were observed in the femoral region, and the area was enlarged after the pseudoaneurysm was removed. Based on our experience, we decided to close the enlarged femoral groin. The wound was irrigated with a chlorhexidine solution, and two 15F Blake drains were placed. After the surgery, the Doppler US was performed in the intensive care unit, and peripheral pulses were found to be triphasic. Postoperatively, *Acinetobacter baumannii* was identified in the wound culture, and antibiotic treatment was started based on sensitivity.

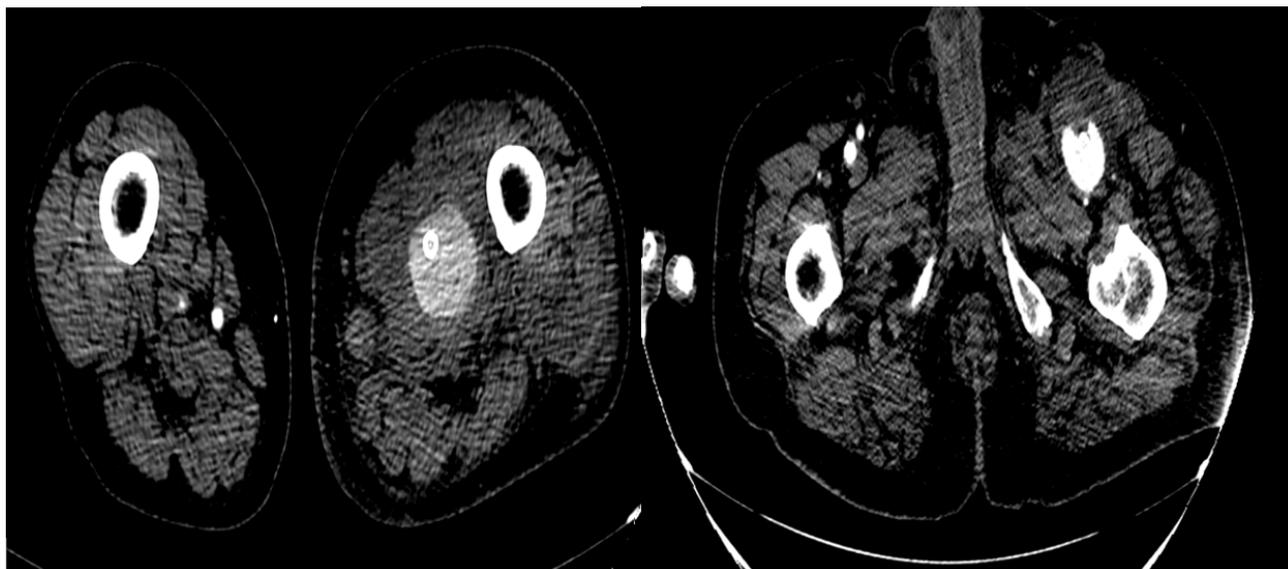


Figure 3. Pseudoaneurysms in proximal and distal SFA and thrombosed stent

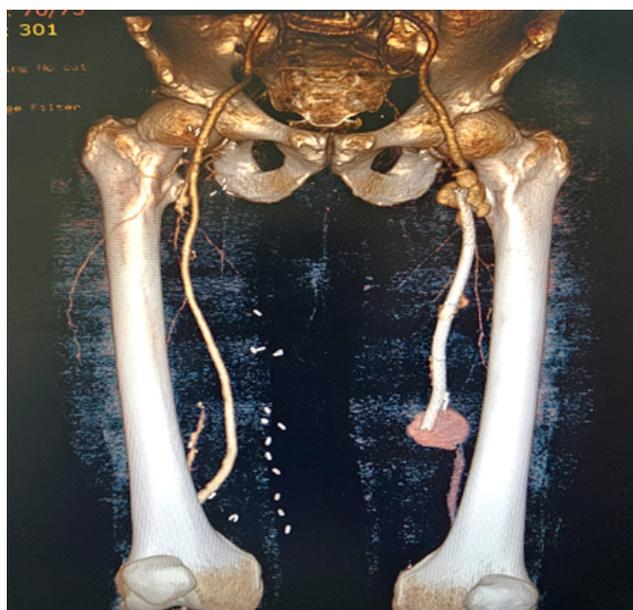


Figure 4. 3 D Computed tomography angiography images of pseudoaneurysm

Despite medical and compression treatments, 100-150 cc of serous lymph fluid was drained from the femoral area daily. After 10 days with no reduction in fluid flow, we decided to revise the femoral region following a plastic surgery consultation. Under general anesthesia, a partial sartorius flap was transferred to cover the vascular graft, reduce lymphorrhea, and prevent infection of the PTFE graft (Fig. 6A and B). The drains were replaced, and the femoral region was anatomically closed. On the 7th day after the second surgery, despite some reduction in lymphorrhea, the drains were not ready for removal. We decided to

apply a 1% aethoxysklerol® injection and compression to further reduce the fluid. After three injections and compression over six days, the lymphorrhea decreased and eventually stopped. The patient was discharged in stable condition. A follow-up Doppler US at month 6 showed satisfactory graft patency, and the aneurysm was no longer palpable.

Discussion

In recent years, the increase in the use of arterial endovascular procedures has led to a rise in the frequency of their associated complications. Rarely, wire navigation or catheter manipulation results in vessel wall trauma that may be of sufficient force to cause fatal perforation. In general, prompt use of balloon tamponade is critical once a perforated vessel is identified, along with rapid reversal of anticoagulation and antiplatelet therapy. The SFA is a common site for the development of atherosclerotic plaques in people with symptomatic lower extremity arterial occlusive disease. Traditional treatment for this disease typically involved open arterial bypass surgery, with debate centered on the choice of bypass conduit: autogenous vein (often considered the "gold standard") versus synthetic graft. Several well-designed studies have evaluated this approach, and the results consistently demonstrate its efficacy in promoting long-term limb salvage and improving the quality of life for patients. However, in recent years, there has been a significant shift in the treatment paradigm, with many medical centers adopting an endovascular first approach for all patients. In numerous medical centers, catheter-based interventions are used as the primary treatment for

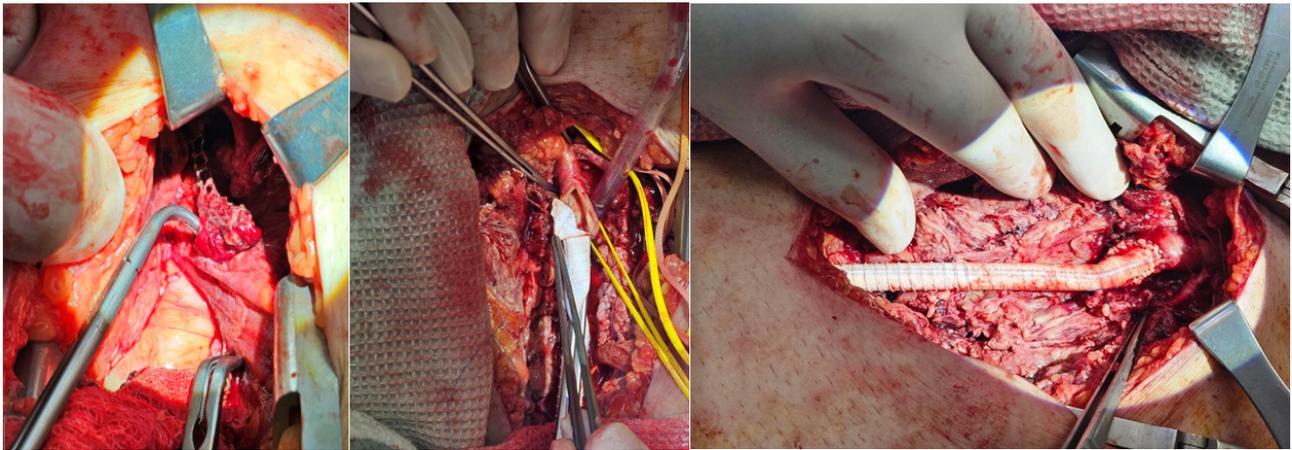


Figure 5. Removing the distal part of the stent material (A). Preserved deep femoral artery (B). Completed proximal anastomosis with 8mm PTFE vascular graft (C)

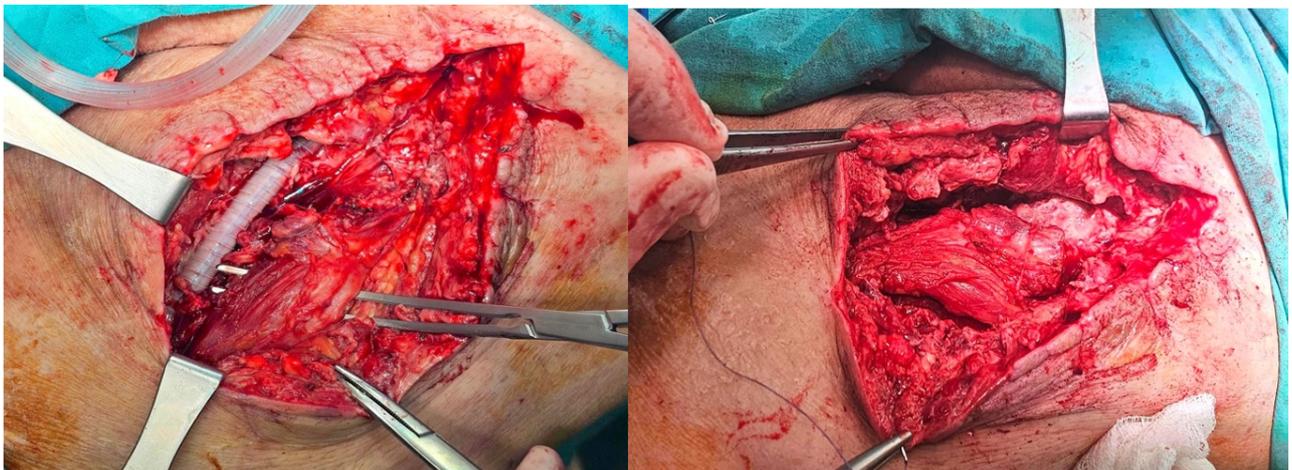


Figure 6. Preparing an incomplete musculus sartorius flap to cover a vascular graft. (A). Covered vascular graft as a result of the completed muscle flap procedure (B)

patients suffering from infrainguinal occlusive disease. Stent fracture is a specific complication of SFA stenting that can lead to restenosis, late clinical failure, and/or pseudoaneurysm development (3). Angioplasty, with or without stenting, is preferred because it has a low risk of complications, shorter recovery time, and is well-accepted by patients. However, the durability of the treatment and its cost-effectiveness are still matters of concern. In 2007, TASC II made the following recommendations for the treatment of femoropopliteal disease (4). Lesions classified as TASC A are most effectively treated by endovascular therapy, while those classified as TASC D are best treated by surgery. According to their recommendation, endovascular therapy is the preferred option for treating TASC B lesions, while surgery is preferable for TASC C lesions. Moreover, while treating B and C lesions, it is important to consider patient comorbidities, patient

preference, and operator experience in the decision-making process. In addition, nowadays most patients are not stratified according to TASC classifications, and the results are rarely reported on a treatment basis. According to TASC II recommendations, the endovascular approach is preferred for shorter lesions while the bypass is suggested for longer lesions (4). Comparison of femoral artery stenting and bypass surgery is challenging due to varying study designs; however, the assessment of patency and overall results of different treatment modalities is not well-established (5). However, we suggest an endovascular approach be the primary recommendation for short lesions and elderly patients with severe comorbidities.

Conclusion

In the clinical case we mentioned after perforation of the artery, work was stopped and referred to us. As a result, the results of applying long-segment

stents during long-segment SFA CTOs remain a topic of debate today. Although we accept that endovascular treatments have successful results in appropriate cases, we believe that in such cases that we presented here, the surgical option will be more successful and less traumatic regarding long-term postoperative results.

Conflicts of interest

The authors declare no conflicts of interest.

References

- 1.Olin JW, White CJ, Armstrong EJ, Kadian-Dodov D, Hiatt WR. Peripheral artery disease: evolving role of exercise, medical therapy, and endovascular options. *J Am Coll Cardiol.* 2016;67(11):1338–57. <https://doi.org/10.1016/j.jacc.2015.12.049>. ISSN 0735-1097.)
- 2.Wiseman JT, Fernandes-Taylor S, Saha S, Havlena J, Rathouz PJ, Smith MA, Kent KC. Endovascular versus open revascularization for peripheral arterial disease. *Ann Surg.* 2017;265(2):424–30. <https://doi.org/10.1097/SLA.0000000000001676>
- 3.Schlager O, Dick P, Sabeti S, Amighi J, Mlekusch W, Minar E, Schillinger M. Long-segment SFA stenting—the dark sides: in-stent restenosis, clinical deterioration, and stent fractures. *J Endovasc Ther.* 2005;12(6):676–84. <https://doi.org/10.1583/05-1672.1>
- 4.Norgren L, Hiatt WR, Dormandy JA, Nehler MR, Harris KA, Fowkes FG, et al. Inter-society consensus for the management of peripheral arterial disease (TASC II). *J Vasc Surg* 2007;45(Suppl S):S5-67
- 5.Dosluoglu HH, Cherr GS, Lall P, Harris LM, Dryjski ML. Stenting vs above knee polytetrafluoroethylene bypass for Trans Atlantic Inter-Society Consensus II C and D superficial femoral artery disease. *J Vasc Surg* 2008; 48: 1166–1174. Doi: 10.1016/j.jvs.2008.06.006