

 Nurkay Katrancioglu,  Ertugrul Ertugrul

Malatya Turgut Özal University, Malatya Training and Research Hospital, Faculty of Medicine, Department of Cardiovascular Surgery, Malatya, Türkiye

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Corresponding Author: Nurkay Katrancioglu, Malatya Turgut Özal University, Faculty of Medicine, Department of Cardiovascular Surgery, Malatya, Türkiye
Email: nurkay@gmail.com

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Obturator bypass as a salvage procedure for infected femoral graft: A case report

Abstract

Prosthetic vascular graft infections in the groin are rare but potentially fatal complications requiring immediate intervention. Obturator bypass offers a valuable extra-anatomical route for limb salvage in cases where conventional pathways are compromised by infection. We present a 67-year-old female who developed a right femoral artery pseudoaneurysm secondary to iatrogenic dissection after coronary angiography. Initial graft interposition was complicated by persistent wound infection and eventual hemorrhagic dehiscence at the distal anastomosis. The infected graft was urgently excised, and revascularization was successfully achieved using an obturator bypass with an 8 mm ringed polytetrafluoroethylene (PTFE) graft. Postoperative recovery was uneventful, and infection was rapidly controlled. Obturator bypass is a reliable and effective revascularization strategy in the context of groin graft infections with severe local complications.

Keywords: Obturator bypass, femoral artery, graft infection, pseudoaneurysm, limb salvage, vascular surgery

INTRODUCTION

Groin infections following prosthetic vascular graft placement are infrequent but life-threatening events that present unique surgical challenges (1). These infections, often associated with pseudoaneurysm formation, wound dehiscence, or uncontrolled hemorrhage, require prompt removal of the infected material and re-establishment of arterial continuity. Among various extra-anatomical techniques, obturator bypass is particularly valuable due to its route through uninfected tissue planes, offering both infection control and limb preservation (2).

This report presents a rare case of an infected femoral artery pseudoaneurysm with hemorrhagic rupture following failed graft interposition, which was successfully managed with emergency obturator bypass.

CASE REPORT

A 67-year-old woman underwent coronary angiography and subsequently developed dissection in the right

superficial and common femoral arteries, resulting in a pseudoaneurysm. Emergency surgery was performed, during which hematoma evacuation and attempted primary repair failed due to extensive dissection. An 8 mm polytetrafluoroethylene (PTFE) graft was interposed between the common femoral and superficial femoral arteries. In the early postoperative period, persistent serous drainage from the groin wound was noted. Despite repeated debridement, targeted antibiotics, vacuum-assisted closure therapy, and wound care, healing remained inadequate (Figure 1).

After approximately one month, the patient presented with acute bleeding from the distal anastomosis due to graft dehiscence. An urgent operation was performed. The infected graft was excised, and both proximal and distal arterial stumps were ligated. A retroperitoneal incision was made approximately 3 cm above the inguinal ligament to expose the external iliac artery. The distal popliteal artery was accessed via a longitudinal incision over the distal femur.

A tunnel was created through the obturator canal beneath the adductor longus muscle (Figure 2). An 8 mm external ringed PTFE graft was passed through this tunnel and anastomosed proximally to the external iliac artery and distally to the popliteal artery (Figure 3).

Postoperatively, peripheral pulses were palpable, and the groin wound showed rapid improvement. Antimicrobial therapy targeted to the suspected pathogen and wound care were continued until wound cultures returned negative and systemic infection markers normalized. Once infection parameters had resolved, the groin wound was closed with a graft by the plastic surgery team. She was discharged uneventfully on the 10th postoperative day.



Figure 1. Infected groin wound

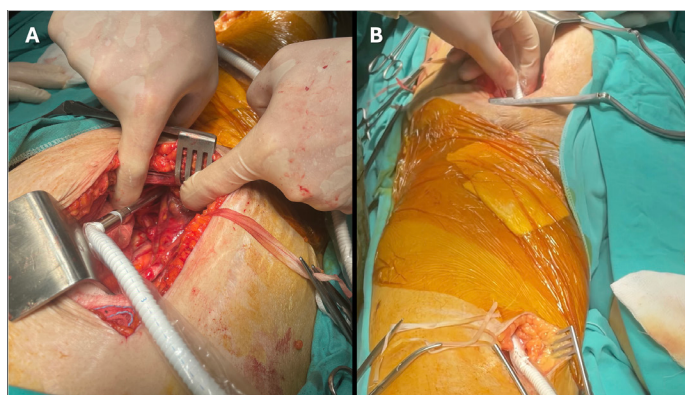


Figure 2. Retroperitoneal vascular graft tunneling through the obturator foramen between the external iliac artery (A) and the popliteal artery (B)

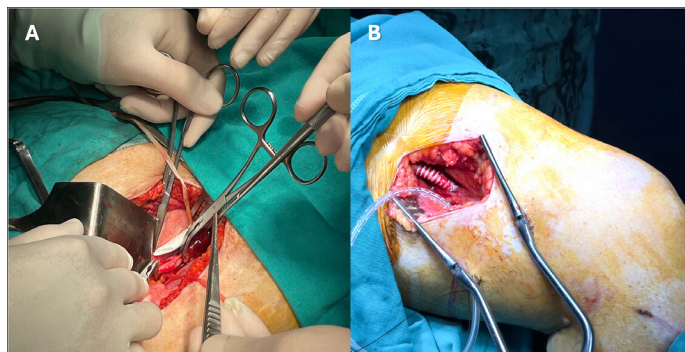


Figure 3. The vascular graft was anastomosed proximally to the external iliac artery (A) and distally to the popliteal artery (B)

DISCUSSION

Graft infections involving the femoral artery remain one of the most serious complications in vascular surgery, carrying a high risk of both limb loss and life-threatening systemic infection (3). In the context of groin infections, determining the optimal revascularization strategy is critical for surgical success and patient survival.

Obturator bypass, first described by Shaw and Baue (4) in 1963, is an extra-anatomical technique that avoids the infected groin area by tunneling the graft through the obturator foramen, thereby minimizing the risk of bacterial contamination. Unlike conventional bypass routes that pass through the femoral triangle, the obturator route proceeds posteriorly between the adductor longus and magnus muscles, creating a path that is anatomically remote from the infected field and significantly reduces the risk of recurrent infection (3).

Current literature provides no definitive data on the frequency of obturator bypass procedures. With the increasing use of endovascular interventions, stricter adherence to aseptic protocols, the availability of effective antimicrobial therapies, and the adoption of vacuum-assisted wound closure systems, obturator bypass performed for graft-related infection has become exceedingly uncommon.

Graft infection can be managed medically, and graft removal

is not always required. In our case, we initially attempted to preserve the graft using systemic and local antibiotic therapy, vacuum-assisted wound therapy, and frequent dressing changes. However, these measures were unsuccessful, necessitating graft removal.

Reported primary patency rates for obturator bypass range between 63% and 84%, with secondary patency rates exceeding 80% in some series. In a prospective cohort study by Moawad et al. (3) involving 100 patients, the 24-month secondary patency rate was 83%, with a major amputation rate of 2.6% and a 30-day mortality of 3.4%. In our case, similarly favorable outcomes were observed: following complete graft excision and obturator bypass, infection was controlled, graft patency was preserved, and the postoperative course was uneventful.

As an alternative, lateral femoral bypass (LFB) offers a technically less invasive approach, although the anatomical distance from the infected site is not as great as in obturator bypass. In a series by Madden et al. (5), 24-month primary and primary-assisted patency rates were reported as 73% and 83%, respectively, with a limb salvage rate of 94%. While LFB may be more technically accessible in certain patients, obturator bypass offers superior anatomical isolation, making it a more suitable option in cases of deep or extensive groin infection (3,6).

The technical challenges of obturator bypass include potential injury to the obturator artery, vein, or nerve, as these structures lie close to the surgical field. Additionally, in obese patients or those with narrow pelvic anatomy, dissection may be more difficult (7). Nonetheless, when performed by experienced vascular surgeons, these risks can be minimized, and high graft patency rates can be achieved. In a study by Bath et al. (8), a 3-year limb salvage rate of 81% was reported, further supporting the long-term efficacy of this approach.

Although *Staphylococcus* species are the most frequently isolated microorganisms in vascular graft infections, *Pseudomonas*, *Streptococcus*, and *Corynebacterium* are also commonly reported pathogens (8). In our case, the causative agent was identified as *Pseudomonas aeruginosa*.

Notably, in our case, the infection progressed to cause dehiscence at the distal anastomosis with massive hemorrhage and signs of systemic sepsis—highlighting that graft infections are not only localized complications but can also evolve into emergent, life-threatening conditions. The rapid decision to perform an obturator bypass was critical for both infection control and limb

salvage.

CONCLUSION

In conclusion, obturator bypass should be considered a reliable and effective revascularization option in patients with prosthetic graft infections, particularly when traditional routes are compromised or unsafe. Early diagnosis, multidisciplinary management, and thorough anatomical understanding are essential components of success in such complex surgical interventions.

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Patient Informed Consent: Written informed consent was obtained from the patient for publication of this case report.

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