Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Vascular Surgery

Guideline-Concordant Redo Aorto-Bifemoral Bypass with Bilateral Profunda Femoris Reimplantation and Epiploplasty for Critical Limb-Threatening Ischaemia

Dr Imane Boulahroud[1]*, Dr Imane Halaouate[1], Dr Saleh Khader[1], Dr Mehdi Lekehal[1], Prof Tarik Bakkali[2], Prof Ayoub Bounssir[1], Prof Brahim Lekehal[1]

[1]Department of Vascular Surgery, Centre Hospitalo Universitaire Ibn Sina Rabat, Morocco
[2]Department of Vascular Surgery, Mohammed V University Rabat, Morocco

DOI: https://doi.org/10.36347/sjmcr.2025.v13i09.058 | **Received:** 13.07.2025 | **Accepted:** 25.09.2025 | **Published:** 30.09.2025

***Corresponding author:** Dr Imane Boulahroud
Department of Vascular Surgery, Centre Hospitalo Universitaire Ibn Sina Rabat, Morocco

Abstract **Case Report**

Background: Redo aortoiliac and femoral revascularisation in patients with multiple prior interventions is technically demanding and associated with increased perioperative risk. Current European Society of Cardiology 2024 Guidelines (ESC 2024) and Global Vascular Guidelines 2019 (GVG 2019) emphasise preservation or reconstruction of the profunda femoris arteries, minimisation of dissection in hostile operative fields, and use of adjunctive measures to reduce infection risk. ***Case presentation:*** We report the case of a 67-year-old man with severe peripheral arterial occlusive disease and a history of right iliac stenting, left-to-right femoro-femoral crossover bypass, and aorto-bi-iliac bypass. He presented with bilateral critical limb-threatening ischaemia (CLTI) with an ankle–brachial index (ABI) of 0.30 due to thrombosis of both grafts. Surgical management consisted of an infrarenal aorto-bifemoral bypass using an 18 mm Dacron graft with distal anastomoses to the superficial femoral arteries (SFA), bilateral profunda femoris artery reimplantation using 6 cm autologous great saphenous vein grafts, and protective epiploplasty. Intraoperative infrarenal clamp time was 20 minutes. The immediate postoperative course was uneventful, with restoration of femoral and popliteal pulses and resolution of ischaemic pain. ***Discussion:*** This anatomy-driven, guideline-concordant approach avoided hostile scarred groins, preserved deep collateral circulation, and incorporated infection-prevention measures. One-year follow-up with duplex ultrasonography and computed tomography angiography (CTA) confirmed primary graft patency, absence of recurrent ischaemia, and full functional recovery. The case aligns with published evidence supporting profunda preservation in complex redo surgery and illustrates the feasibility of durable revascularisation in multiply operated patients. ***Conclusion:*** In complex redo aortoiliac and femoral reconstructions, strategic anatomical planning, profunda femoris preservation, and adjunctive protective measures can achieve excellent haemodynamic and clinical outcomes. This case reinforces the applicability of ESC 2024 and GVG 2019 recommendations in high-risk surgical scenarios.

Keywords: Critical limb-threatening ischaemia; redo aorto-bifemoral bypass; profunda femoris reimplantation; epiploplasty.

INTRODUCTION

Redo aortoiliac and femoral revascularisation remains one of the most technically demanding scenarios in vascular surgery. Multiple studies have highlighted the high technical complexity and increased perioperative risk associated with these procedures [1–4]. Patients with multiple prior interventions often present with complex scarred anatomy [1,2], limited conduit availability [3], and compromised distal targets [4], all of which further complicate surgical planning and execution.

In the setting of critical limb-threatening ischaemia (CLTI), such cases require a carefully tailored strategy that balances anatomical feasibility, haemodynamic optimisation, and long-term durability. The 2024 European Society of Cardiology (ESC) Guidelines [5] and the 2019 Global Vascular Guidelines [6] emphasise the importance of preserving or reconstructing the profunda femoris arteries, minimising dissection in hostile operative fields, and considering adjunctive measures such as omental coverage to reduce the risk of graft infection.

We report the case of a 67-year-old man with a history of multiple failed aortoiliac and femoral reconstructions who presented with bilateral CLTI. He underwent a redo aorto-bifemoral bypass with bilateral profunda femoris artery reimplantation and epiploplasty, achieving excellent haemodynamic and clinical outcomes sustained at one-year follow-up. This case illustrates the feasibility and durability of a guideline-concordant, anatomy-driven approach in a multiply operated vascular patient.

Case Presentation

Patient profile

A 67-year-old man with severe peripheral arterial occlusive disease was admitted for bilateral critical limb-threatening ischaemia (CLTI) secondary to thrombosis of both a left-to-right femoro-femoral crossover bypass and a latero-terminal aorto-bi-iliac bypass. His past medical history included an ischaemic stroke with residual right hemiplegia four years earlier, dyslipidaemia, and a history of smoking. Surgical history comprised right iliac artery stenting in 2021, followed the same year by a femoro-femoral crossover bypass for stent thrombosis, and in 2022 an aorto-bi-iliac bypass for progressive occlusive disease.

On admission, he reported severe rest pain with nocturnal exacerbation and persistent cutaneous hyperaemia. Clinical examination revealed absent femoral, popliteal, and distal pulses bilaterally, with an ankle–brachial index (ABI) of 0.30. His general condition was preserved (GCS 15/15), with blood pressure 130/80 mmHg, heart rate 80 bpm, oxygen saturation 96%, and temperature 37 °C. CT angiography demonstrated complete occlusion of the aorto-bi-iliac bypass and femoro-femoral crossover graft, with preservation of profunda femoris collaterals (see Figure 1). Laboratory tests showed haemoglobin 150 g/L, white blood cell count $6.7 \times 10^3/\mu L$, platelets $336 \times 10^3/\mu L$, creatinine 75 µmol/L, and C-reactive protein 222 mg/L. Cardiac evaluation revealed a normal left ventricular ejection fraction with no segmental wall motion abnormalities.

Surgical management

The procedure was performed under general anaesthesia with the patient in the supine position. A midline xipho-pubic laparotomy was carried out, followed by meticulous dissection of the abdominal aorta. After systemic heparinisation, infrarenal aortic clamping was applied for 20 minutes, and a proximal aorto-prosthetic anastomosis was fashioned on a healthy infrarenal aortic neck. An 18 mm Dacron bifurcated graft was then tunnelled to both groins, with distal anastomoses constructed to the superficial femoral arteries to avoid dismantling prior reconstructions. Bilateral profunda femoris artery reimplantation was performed using 6 cm segments of autologous great saphenous vein (see Figure 2). An epiploplasty was achieved by mobilising the greater omentum to wrap and protect the prosthesis and distal anastomoses (see Figure 3). Final intraoperative assessment confirmed restoration of palpable femoral and popliteal pulses bilaterally.

Immediate postoperative course

The postoperative course was uneventful. The patient was extubated early and remained haemodynamically stable. He was transferred from the intensive care unit on postoperative day 2, with bowel function restored by day 3. Clinical improvement was marked, with complete resolution of ischaemic pain. Prophylactic low-molecular-weight heparin was administered, and lifelong antiplatelet therapy with aspirin (Kardégic®) and a statin were initiated. The patient was discharged home in good condition on postoperative day 7.

Table 1: Summary Table of Clinical Presentation, Surgical Management, and Follow-up

Postoperative interval	Clinical status	Imaging	Treatment
1 month	Complete wound healing, palpable peripheral pulses, pain-free walking	Duplex ultrasound: full graft patency	Aspirin (Kardégic®)
3 months	No ischemic recurrence, full autonomy	Duplex: triphasic flow	Aspirin
6 months	Good exercise tolerance, no claudication	Duplex: maintained patency	Aspirin
12 months	Sustained improvement, asymptomatic, return to daily activities	Duplex: primary patency preserved, no significant stenosis	Aspirin

Follow-up at 1 year: table 1

Discussion

Redo aortoiliac and femoral reconstructions after multiple prior interventions are among the most technically demanding procedures in vascular surgery [1–4], carrying increased risks of perioperative morbidity, graft infection, and limb loss. In the present case, the surgical strategy was shaped by several key challenges: the presence of complex scarred anatomy resulting from a prior iliac stent, a left-to-right femoro-femoral crossover bypass, and an aorto-bi-iliac bypass; the need to address critical limb-threatening

ischaemia while preserving bilateral profunda femoris collaterals; and the imperative to minimise dissection in order to reduce operative trauma and lower the risk of postoperative infection.

Several series have demonstrated that preservation or reconstruction of the profunda femoris arteries is a key determinant of limb salvage and long-term graft patency in redo settings. Bisdas et al. reported secondary patency rates exceeding 70 % at five years when profunda flow was maintained [1]. Sachsamanis et al. described the use of autologous vein interposition for profunda reimplantation following removal of an infected patch, achieving durable patency at six months without reinfection [3]. Likewise, Tse et al. demonstrated that patchless profundoplasty can avoid the use of prosthetic material in high-risk groins, with no surgical site infections observed at a median follow-up of 199 days [4]. In the present patient, bilateral profunda reimplantation was undertaken to replicate these favourable outcomes and ensure robust deep collateral circulation.

While open surgery remains the gold standard in such complex redo settings, endovascular strategies have been increasingly reported. Endovascular options such as bilateral kissing stents, covered endovascular reconstruction of the aortic bifurcation (CERAB), or covered stent reconstruction are recommended for selected TASC II D lesions. In a recent meta-analysis, Koeckerling et al. reported high technical success rates and acceptable mid-term patency for endovascular revascularisation of aortoiliac and femoropopliteal disease but highlighted the limited evidence available for complex redo settings [2]. In our patient, multiple prior reconstructions, complete occlusion of existing grafts, the need for profunda femoris artery reimplantation, and hostile groins made both the technical feasibility and the long-term durability of an endovascular approach uncertain. These considerations are summarised in Table 2, which compares the surgical strategy adopted in this case with current ESC 2024 [5] and Global Vascular Guideline [6] recommendations.

Redo aorto-bifemoral bypasses are more complex than primary procedures, but recent series report perioperative mortality rates of 0–3 %, major morbidity comparable to primary bypasses, and two-year limb salvage rates exceeding 85–90 % when profunda outflow is preserved [1,2]. The chosen approach in this case was anatomically tailored to respect prior reconstructions, ensuring optimal exposure and anastomotic placement while minimising unnecessary dissection. Preservation of the profunda femoris arteries, in line with current evidence and international guidelines [1,2,5,6], provided robust outflow and maintained deep collateral circulation. The use of epiploplasty offered an additional protective layer to reduce the risk of graft infection [5,6], and autologous vein grafts were selected for critical anastomoses to optimise healing and durability [5,6].

However, the absence of intraoperative completion angiography limited immediate quality control, and the follow-up period of 12 months, although favourable, does not allow definitive conclusions on long-term outcomes. Future cases could benefit from systematic completion imaging and participation in multicentre registries to benchmark results.

This case underscores that redo aorto-bifemoral bypass with profunda femoris reimplantation is not merely a salvage option but, when carefully planned, can achieve durable outcomes aligned with current international recommendations. Optimal results are obtained when the proximal anastomosis is constructed on a healthy infrarenal aortic segment, distal targets are selected to avoid hostile scarred fields, and the profunda femoris arteries are preserved or reconstructed to maintain robust deep collateral circulation [1–3]. The application of adjunctive measures such as epiploplasty and the use of autologous vein for critical anastomoses further mitigates the risk of infection and promotes long-term graft healing and patency [5,6]. Even in multiply operated groins and aortoiliac segments, strategic anatomical planning guided by ESC 2024 [5] and the Global Vascular Guidelines [6] can yield excellent functional and haemodynamic outcomes. Profunda femoris reimplantation should be regarded as a cornerstone of redo lower limb revascularisation rather than an optional adjunct.

Table 2: Comparison of Surgical Strategy with ESC 2024 and SVS 2023 Guideline Recommendations

Theme	ESC 2024 recommendations	SVS 2023 recommendations	Application in our case
Redo revascularisation	prefer complete anatomical reconstruction if patient condition allows	Preserve or reconstruct profunda femoris arteries	Aorto-bifemoral bypass with bilateral profunda reimplantation
Distal anastomosis site	Avoid heavily scarred or diseased segments	Anastomose to healthy artery, even if superficial	Anastomosis to superficial femoral arteries
Infection prevention	Consider omental coverage (epiploplasty) in redo or high-risk cases	Same	Epiploplasty performed

Theme	ESC 2024 recommendations	SVS 2023 recommendations	Application in our case
Graft choice	Autologous vein preferred for adjunctive reconstructions	Same	Vein grafts for profunda reimplantation
Follow-up	Clinical + duplex at 1, 3, 6, 12 months, then annually	Same	Follow-up adhered to, patency confirmed at 1 year

Figure 1: CT angiography showing thrombosis of the right iliac stent and the femoro-femoral crossover bypass. The aorto-bi-iliac Dacron graft is not visualized

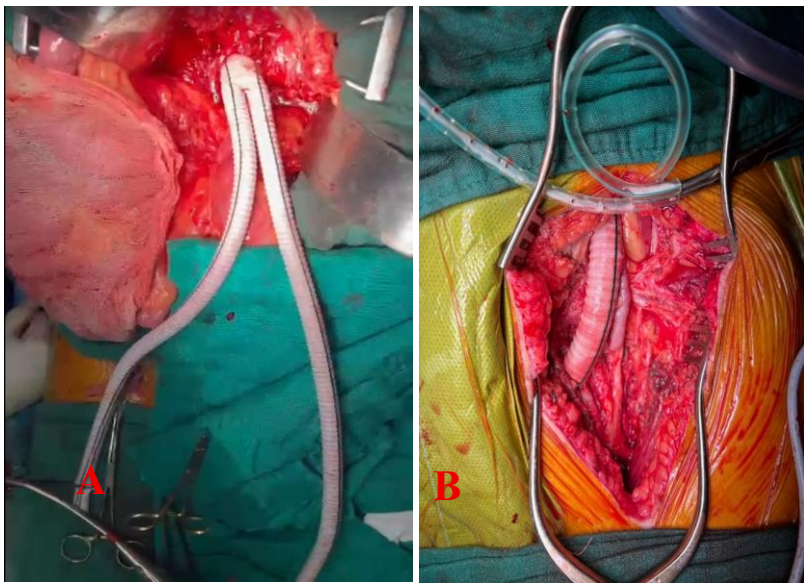

Figure 2: Peroperative view showing preparation of the aorto-bifemoral Dacron graft with construction of the proximal anastomosis (A), and distal anastomosis to the superficial femoral artery with reimplantation of the profunda femoris artery (B)

Figure 3: Peroperative view of the epiploplasty covering the vascular graft to provide additional protection

CONCLUSION

This case demonstrates that even in the setting of multiple prior aortoiliac and femoral reconstructions, a carefully planned, anatomy-driven redo procedure can achieve durable limb salvage. By combining an infrarenal aorto-bifemoral bypass with bilateral profunda femoris artery reimplantation, distal anastomoses to the superficial femoral arteries, and protective epiploplasty, we adhered closely to current ESC 2024 and Global Vascular Guidelines 2019 recommendations.

The one-year follow-up confirmed sustained primary graft patency, complete resolution of ischaemic symptoms, and full functional recovery. This outcome underscores the importance of preserving profunda outflow, minimising dissection in hostile operative fields, and employing adjunctive measures to reduce infection risk. In complex redo vascular surgery, such a guideline-based, tailored approach can offer excellent haemodynamic results and long-term clinical benefit

Key Messages

- Redo aorto-bifemoral bypass with bilateral profunda reimplantation and epiploplasty was performed in full compliance with ESC 2024 and Global Vascular Guidelines 2019.
- Distal anastomoses to the SFA avoided scarred groins and preserved profunda outflow.
- Autologous vein grafts and omental coverage enhanced graft protection and healing.
- One-year follow-up confirmed primary patency, symptom resolution, and functional recovery.

REFERENCES

1. Bisdas T, Borowski M, Stavroulakis K, Torsello G, Stachmann A, Schwindt A, et al. Secondary patency rates and clinical outcome after redo aortobifemoral bypass. *J Vasc Surg*. 2015;62(4):965-973.e3. doi: 10.1016/j.jvs.2015.04.416.
2. Koeckerling D, Raguindin PF, Kastrati L, Bernhard S, Barker J, Quiroga Centeno AC, Raeisi-Dehkordi H,. Endovascular revascularization strategies for aortoiliac and femoropopliteal artery disease: a meta-analysis. *Eur Heart J*. 2023;44(11):935-950. doi:10.1093/eurheartj/ehac722.
3. Sachsamanis G, Koutsoumpelis A, Karamitros A, Kordzadeh A, Koutsoumpelis N. Profunda femoris artery reimplantation with autologous vein after infected patch removal: a case report. *Open J Clin Med Case Rep*. 2025;11(3):2327.
4. Tse LWH, Kapila V. Patchless profundoplasty: a novel technique to avoid prosthetic material in high-risk groins. *Can J Surg*. 2023;66(1):E66-E72. doi:10.1503/cjs.019021.
5. Mazzolai L, Teixido-Tura G, Lanzi S, Boc V, Bossone E, Brodmann M, Bura-Rivière A, De Backer; ESC Scientific Document Group. 2024 ESC Guidelines for the management of peripheral arterial and aortic diseases. *Eur Heart J*. 2024;45(36):3538-3700. doi:10.1093/eurheartj/ehae179.
6. Conte MS, Bradbury AW, Kolh P, White JV, Dick F, Fitridge R, Mills JL Sr, Ricco JB. Global Vascular Guidelines on the management of chronic limb-threatening ischaemia. *Eur J Vasc Endovasc Surg*. 2019;58(1S):S1-S109.e33. doi: 10.1016/j.ejvs.2019.05.006.