International Surgery Journal
Simões LV et al. Int Surg J. 2026 Apr;13(4):646-649
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

Case Report

DOI: https://dx.doi.org/10.18203/2349-2902.isj20260853

Ruptured popliteal artery aneurysm presenting with cardiac arrest and requiring lifesaving amputation: a case report

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Received: 19 January 2026
Revised: 16 February 2026
Accepted: 05 March 2026

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ABSTRACT

Rupture of a popliteal artery aneurysm (PAA) is a rare but potentially fatal event, often presenting with haemorrhagic shock, limb loss and high mortality. Early diagnosis and prompt surgical management are critical for survival. A 50-year-old previously healthy man was found collapsed, agitated, and complaining of right leg pain. During prehospital transport, he became progressively unresponsive. On arrival at the emergency department, he experienced cardiac arrest with pulseless electrical activity. Advanced cardiovascular life support was initiated, achieving return of spontaneous circulation after three cycles of cardiopulmonary resuscitation. Despite aggressive resuscitation, persistent haemodynamic instability required vasopressor support and massive transfusion. Physical examination revealed a tense haematoma extending from the right thigh to the leg, with absent distal pulses. CT angiography demonstrated active haemorrhage from the right popliteal artery with a large intramuscular haematoma, consistent with ruptured PAA. As vascular surgery was unavailable locally, teleconsultation with a regional centre recommended emergency transfemoral amputation for life-saving haemorrhage control. The amputation was performed without complications. After 14 days in intensive care for pulmonary infection, the patient recovered and was discharged on postoperative day 18. Follow-up showed complete stump healing and successful prosthetic rehabilitation. Ruptured PAA is an extremely rare yet life-threatening condition. In hospitals without vascular surgery, rapid recognition and decisive intervention, including emergency amputation, may be the only viable life-saving option.

Keywords: Popliteal artery aneurysm, Arterial rupture, Cardiac arrest, Transfemoral amputation

INTRODUCTION

Popliteal artery aneurysms (PAAs) are the most common peripheral arterial aneurysms, accounting for approximately 70% of all non-aortic aneurysms.[1] Despite this frequency, true rupture of a PAA remains rare, occurring in fewer than 1% of cases.[2] Most PAAs arise secondary to atherosclerotic degeneration of the arterial wall, typically in older male patients with cardiovascular risk factors such as smoking, hypertension and associated aneurysmal disease elsewhere.[3] When rupture occurs, it is associated with high mortality and amputation rates due to rapid blood loss and distal ischaemia. The Society for Vascular Surgery (SVS) clinical practice guidelines recommend elective repair of asymptomatic PAAs≥20 mm in diameter to prevent thromboembolic events and rupture, however, once rupture occurs, the patient's prognosis depends on rapid recognition, haemorrhage control, and definitive surgical management.[4-6] We report a case of ruptured PAA presenting with cardiac arrest and managed by emergency transfemoral amputation performed by the general surgery team, emphasising the role of prompt decision-making and coordination with regional vascular services in resource-limited settings.

CASE REPORT

A 50-year-old previously healthy man was found collapsed in the street by family members, complaining of severe right lower-limb pain. Emergency medical responders observed progressive agitation, urinary and faecal incontinence, and decreasing responsiveness during transport. Upon arrival at the emergency department, the patient experienced a cardiac arrest presenting as pulseless electrical activity (PEA).

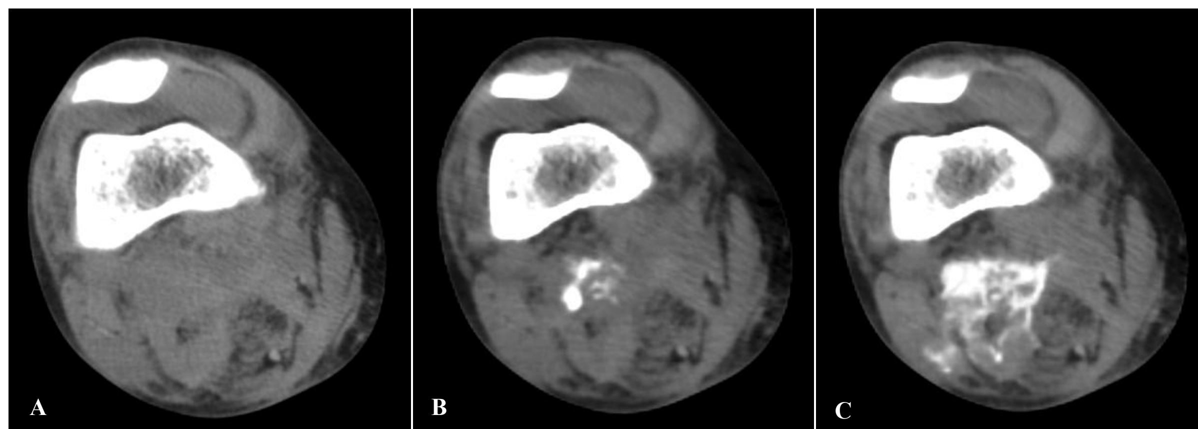

Figure 1 (A-C): Contrast-enhanced CT of the right leg, right above the knee joint, with images before (left), after endovenous contrast in arterial phase (middle) and in venous phase (right) that show in the location of the popliteal artery a contrast blush in the arterial phase that increases in size in the venous phase, consistent with hemorrhage with origin in a popliteal artery rupture.

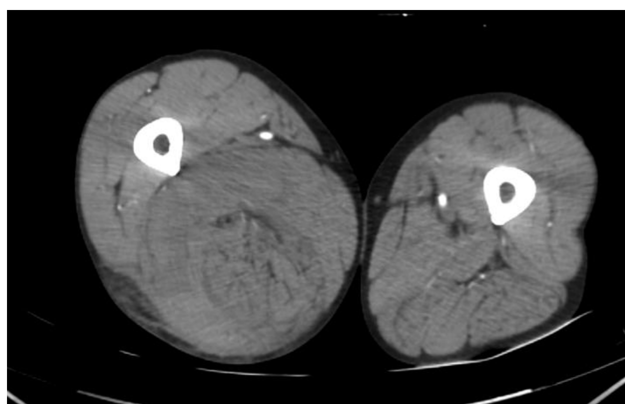

Figure 2: Contrast-enhanced CT of the thighs shows an increase in the volume of the right thigh due to a large hematoma with origin in the popliteal artery rupture.

Advanced cardiac life support (ACLS) was immediately commenced, and return of spontaneous circulation (ROSC) was achieved after three cycles of cardiopulmonary resuscitation. Following resuscitation, he was sedated, intubated, and mechanically ventilated. Central venous and arterial lines were inserted for haemodynamic monitoring and intravenous access. Despite aggressive fluid resuscitation, he remained hypotensive and required norepinephrine infusion, along with initiation of a massive transfusion protocol. Physical examination revealed a large, diffuse haematoma involving the right thigh and leg, with absent popliteal and pedal pulses. Urgent CT-angiography demonstrated a high-flow haemorrhage originating from the right popliteal artery, producing a large intramuscular haematoma consistent with rupture of a PAA (Figures 1 and 2).

As no vascular surgery service was available at the hospital, the regional vascular center was contacted. After discussion, emergency transfemoral amputation was advised as a life-saving measure due to uncontrollable hemorrhage and hemodynamic instability. Emergency transfemoral amputation was performed by the general surgery team without intra-operative complications. Postoperatively, the patient required 14 days in intensive care due to a pulmonary infection, after which he was transferred to the general surgery ward. He was discharged home on postoperative day 18. During outpatient follow-up in the general surgery and physical medicine and rehabilitation departments, with additional support from psychiatry, the amputation stump had healed completely. The patient underwent rehabilitation and prosthetic fitting, achieving full mobility and independence. No further vascular events were observed.

DISCUSSION

Rupture of a PAA is an uncommon but catastrophic vascular emergency. Historically, rupture has been estimated to occur in fewer than 1% of all diagnosed PAAs.[1,2] More recently, Abuduruk et al reported that approximately 3% of surgically treated PAAs presented with rupture, confirming that this remains a rare presentation even among hospitalized cases.[7] Although infrequent, rupture carries a high risk of haemorrhagic shock, limb loss and death, underscoring the need for rapid recognition and haemorrhage control.

The underlying etiology of PAA is predominantly atherosclerotic, with degeneration of the medial layer of the arterial wall. Histopathological studies demonstrate elastin fragmentation, smooth muscle cell loss, and extracellular matrix remodelling mediated by matrix metalloproteinases and oxidative stress.[8,9] The anatomical position of the popliteal artery exposes it to repetitive flexion, torsion, and mechanical shear stress, which contribute to aneurysmal formation and expansion. Although most PAAs remain stable, rupture may occur due to progressive wall thinning, sac thrombosis, inflammation or biomechanical failure of the vessel wall.[10] These mechanisms explain the occurrence of rupture even in moderately sized aneurysms and underscore the need for close surveillance in patients with known PAA.

The present case demonstrates the potential severity of this condition, with cardiac arrest resulting from haemorrhagic collapse. Similar life-threatening presentations have been described in the literature, highlighting the importance of early diagnosis and urgent surgical intervention.[11-13] In the largest systematic review of thrombosed and ruptured PAAs, Kropman et al reported amputation rates up to 14% and mortality approaching 20%, despite revascularization attempts.[2] According to the SVS, early detection and elective repair of asymptomatic PAAs ≥20 mm in diameter are recommended to prevent thromboembolic and rupture-related complications.[4] For patients presenting with rupture, immediate open surgical repair, aneurysmectomy with bypass or ligation with distal reconstruction, remains the gold standard.[5] Endovascular repair may be considered in selected stable patients, but its role in haemodynamically unstable or massively bleeding cases is limited.[6-14]

Recent outcome data support this observation. In a contemporary series, Pomatto et al reported that patients presenting with ruptured or acutely ischaemic popliteal aneurysms had substantially lower rates of limb salvage and survival compared with patients undergoing elective repair of non-ruptured aneurysms.[15] In unstable patients or hospitals without vascular surgical services, major amputation may represent the only viable life-saving option.[12,13] This principle applied to our patient, where emergency transfemoral amputation successfully controlled the haemorrhage.

Post-operative multidisciplinary management, including intensive care, surgical follow-up, physiotherapy and psychiatric support, is crucial to optimise recovery, wound healing and prosthetic adaptation. This case also highlights the importance of prompt communication and coordination with the regional vascular surgery service when managing such rare vascular emergencies in hospitals lacking onsite vascular teams. Given the exceptional rarity of rupture, formal institutional protocols may be unnecessary, but immediate consultation with vascular specialists can guide decision-making and improve outcomes.

CONCLUSION

Ruptured PAA is an exceptionally rare but life-threatening condition. In unstable patients without access to vascular surgery, emergency transfemoral amputation may be the only lifesaving option. General surgeons should maintain a high index of suspicion when encountering unexplained limb swelling and shock, and ensure early communication with regional vascular specialists for guidance and timely treatment.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Dawson I, Sie RB, van Bockel JH. Atherosclerotic popliteal aneurysm. Br J Surg. 1997;84(3):293-9.
2. Kropman RHJ, Schrijver AM, Kelder JC, Moll FL, de Vries JP. Clinical outcome of acute leg ischaemia due to thrombosed popliteal artery aneurysm: systematic review of 895 cases. Eur J Vasc Endovasc Surg. 2010;39(4):452-7.
3. Aguila FN, Hartranft TH, Hannun GA, Hartranft CA, Holden CR. Evaluation, Diagnosis and Management of Popliteal Artery Aneurysms: A Clinical Review. J Curr Surg. 2013;3(2):51-5.
4. Farber A, Angle N, Avgerinos E, Dubois L, Eslami M, Geraghty P, et al. The Society for Vascular Surgery clinical practice guidelines on popliteal artery aneurysms. J Vasc Surg. 2022;75(1):109-20.
5. Huang Y, Gloviczki P, Noel AA, Sullivan TM, Kalra M, Gullerud RE, et al. Early complications and long-term outcome after open surgical treatment of popliteal artery aneurysms. J Vasc Surg. 2007;45(4):706-13.
6. Medscape. SVS Guidelines for Popliteal Artery Aneurysms – summary. Medscape Reference. 2024. Available at: https://emedicine.medscape.com/article/461910-guidelines. Accessed on 19 December 2025.
7. Abuduruk A, Abdallah A, Stather P, Al-Jundi W. Ruptured Popliteal Aneurysms: A Case Series and Systematic Review. Ann Vasc Surg. 2025;115:281-9.
8. Loukas M, Klaassen Z, Tubbs RS, Apaydin N. Popliteal artery aneurysms: a review. Folia Morphol (Warsz). 2007;66(4):272-6.
9. Rowlands C, Youssef S, Rajagopalan S. Popliteal arterial aneurysms. Br J Hosp Med (Lond). 2022;83(5):1-7.
10. Duarte GP, Da Cunha JR. Ruptured popliteal artery aneurysm: case report. J Vasc Bras. 2020;19:e20200017.

11. Elliott JE, Jenkins J. Management of a large ruptured popliteal artery aneurysm. J Vasc Surg Cases Innov Tech. 2020;6(1):27-30.
12. Kitagata Y, Nakatsu T, Suenaga E. Successful surgical treatment of ruptured popliteal artery aneurysm with Distal Embolism. Cureus. 2024;16(12):e75365.
13. Pomatto S, Faggioli G, Pini R, Ficarelli I, Pini A, Angherà C, et al. Urgent surgical treatment of popliteal artery aneurysm: limb salvage and survival. World J Emerg Surg. 2023;18:49.
14. Cohnert T, Siegl G, Föger N, Koter SH, and Baumann A. Ruptured popliteal aneurysm: Is endovascular first?. EJVES Vasc Forum. 2024;63:12-5.
15. Lonzanida JAJ, Love BE, Anderson BL. Ruptured popliteal aneurysm: case and review. Clin Pract Cases Emerg Med. 2023;7(2):99-103.

Cite this article as: Simões LV, Silva AA, Lourenço BR, Fernandes PM, Carrazedo AM, Meireles LJ. Ruptured popliteal artery aneurysm presenting with cardiac arrest and requiring lifesaving amputation: a case report. Int Surg J 2026;13:646-9.