

# Ruptured Mycotic Aneurysm of the Femoral Bifurcation: A Rare and Life-Threatening Vascular Emergency

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## Abstract

## Case Report

Mycotic aneurysms are rare but life-threatening vascular infections caused by microbial destruction of the arterial wall. Femoral artery involvement is uncommon, and mycotic aneurysms arising at the femoral artery bifurcation are exceptionally rare, particularly in children. Their management remains challenging because of the high risk of rupture, sepsis, and limb loss, especially in resource-limited settings. This case highlights the importance of early diagnosis, timely surgical intervention, aggressive infection control, and the challenges of vascular reconstruction in infected fields, particularly in resource-constrained settings where delayed treatment may adversely affect outcomes.

**Keywords:** Mycotic aneurysm, femoral artery bifurcation, femoral artery bifurcation reconstruction.

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## INTRODUCTION

A mycotic aneurysm is a localised, irreversible dilatation of an artery resulting from infectious destruction of the vessel wall [1]. Although rare, it constitutes a life-threatening vascular condition associated with substantial morbidity and mortality. Mycotic aneurysms of the femoral artery are particularly uncommon, representing approximately 0.8% of all aneurysms [2], while involvement of the femoral artery bifurcation is exceptionally rare. Despite considerable advances in vascular surgery, antimicrobial therapy, and perioperative care, infected aneurysms remain a formidable therapeutic challenge due to their aggressive course and high risk of rupture and sepsis [3].

We report the case of a 12-year-old child who presented with a ruptured mycotic aneurysm of the femoral artery bifurcation secondary to infective endocarditis. Financial constraints delayed definitive surgical management, and the patient re-presented following aneurysm rupture. Despite emergency surgical intervention, the outcome was fatal. This case highlights the diagnostic and therapeutic challenges posed by pediatric mycotic aneurysms occurring at an exceptionally rare anatomical location, particularly in resource-limited settings.

## CASE REPORT

A 12-year-old boy presented with a progressively enlarging, painful, pulsatile mass in the right groin that had been evolving over a period of one month. His medical history was notable for prolonged fever, for which he had been receiving continuous antibiotic therapy. On physical examination, a tender pulsatile mass measuring approximately 6 cm in diameter was identified in the right inguinal region. Distal arterial perfusion was preserved, with palpable popliteal and dorsalis pedis pulses on the affected side. Routine laboratory investigations were unremarkable.

Contrast-enhanced computed tomography (CT) angiography demonstrated a common femoral artery aneurysm extending to the origins of both the superficial femoral artery (SFA) and the profunda femoris artery (PFA), without evidence of mural thrombosis. An associated contralateral popliteal artery aneurysm was also identified. Transthoracic echocardiography revealed severe mitral regurgitation secondary to suspected valvular perforation and moderate aortic regurgitation, with no evidence of valvular vegetations. In view of these findings, surgical management was recommended.

However, financial constraints delayed definitive treatment. The patient subsequently re-presented as an emergency with rupture of the aneurysm,

resulting in a significant deterioration of his clinical condition.

### OPERATIVE MANAGEMENT

Intraoperative findings confirmed rupture of the femoral bifurcation aneurysm (Figure 1). The right foot exhibited dorsal cyanosis and was cold to the touch, indicating compromised distal perfusion. To obtain proximal vascular control, a separate incision was made in the right iliac region, allowing exposure and clamping of the external iliac artery (Figure 2). A longitudinal groin incision was then performed directly over the aneurysmal mass.

Upon opening the aneurysmal sac, a large quantity of purulent material mixed with organized haematoma was encountered (Figure 3). The infected contents were evacuated, and specimens were collected for microbiological analysis.

Extensive destruction of the femoral bifurcation was noted, with disruption and retraction of the common femoral artery (CFA), superficial femoral artery (SFA), and profunda femoral artery (PFA), which were subsequently identified and dissected individually.

Following thorough debridement of all infected and necrotic tissues, vascular reconstruction was

undertaken using an ipsilateral great saphenous vein graft.

An interposition bypass was first established between the CFA and the PFA, after which the SFA was reimplanted into the venous conduit (Figure 4), thereby restoring the femoral bifurcation. The operative field was then extensively irrigated with copious saline solution, and partial wound closure was performed to facilitate postoperative drainage and monitoring (Figure 5).

The patient was transferred to the intensive care unit for close postoperative surveillance. Continuous intravenous unfractionated heparin infusion was initiated, together with empirical broad-spectrum antibiotic therapy.

Microbiological cultures subsequently yielded *Staphylococcus aureus* sensitive to cloxacillin, prompting adjustment of the antimicrobial regimen. Four days later, surgical repair of the contralateral popliteal artery aneurysm was successfully performed.

### OUTCOME

The patient remained hospitalised for 14 days and continued to receive targeted antibiotic therapy, with initial favourable clinical progress. However, on postoperative day 15, he developed a sudden catastrophic haemorrhage leading to haemodynamic collapse and death despite resuscitative efforts.



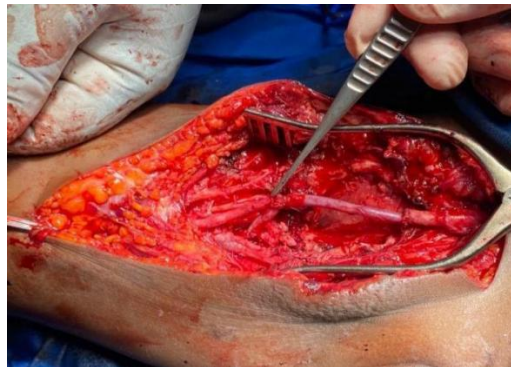
**Figure 1: Shows cutaneous necrosis after aneurysm rupture**



**Figure 2: The control of bleeding by clamping the external iliac artery (1)**



**Figure 3: Evacuation of hematoma**



**Figure 4: Shows the femoral artery bifurcation after reconstruction**



**Figure 5: Cutaneous closure at the end of the procedure**

## DISCUSSION

Mycotic aneurysms are uncommon and are defined as localized, irreversible dilatations of blood vessels resulting from weakening and destruction of the vessel wall due to invasion by pathogenic microorganisms, leading to infective arteritis [2]. Embolic events occur in approximately 22% to 50% of patients with infective endocarditis and typically result in arterial occlusion rather than aneurysm formation; emboli most commonly lodge at arterial branch points [4]. Diagnosis is often challenging and generally requires an integrated approach combining clinical evaluation, laboratory investigations, imaging studies, and

intraoperative findings [5]. In our case, the aneurysm developed as a complication of infective endocarditis, as evidenced by prolonged fever and the mechanism of mitral regurgitation, namely, valvular perforation identified on echocardiography. Indeed, the presence of a pulsatile groin mass and a common femoral artery aneurysm extending to the origin of both SFA and PFA in diameter on computed tomography angiography, together with intraoperative findings with detachment of the three branches of the femoral bifurcation, supports the diagnosis of a femoral bifurcation aneurysm.

Furthermore, the presence of purulent material strongly reinforces the infectious etiology of the

aneurysm. *Staphylococcus aureus* was the most common bacterium isolated in the trial of Gg Salzler *et al* [6]. The pathogen isolated in our patient conforms to the typical microbiological profile, namely *Staphylococcus aureus*, which was found to be sensitive to cloxacillin.

Peripheral mycotic aneurysms have been described in the literature for several decades; however, their optimal management remains a matter of debate.

While there is broad consensus on the need for extensive debridement of infected tissue, the decision to perform revascularization remains controversial and poorly defined [6].

Naqi *et al.* reported a series in which 16 of 17 consecutive infected femoral pseudoaneurysms were managed without revascularization, resulting in an amputation rate of 17% [8]. Among civilian populations, amputation rates of up to 33% have been reported in patients who did not undergo revascularization [8].

However, it has been suggested that these high amputation rates are likely attributable to insufficient collateral circulation in otherwise healthy patients [9].

Although anatomic revascularization is not suitable in all cases, it provides clear benefits, including optimal limb perfusion, preservation of muscle function and tissue integrity, and enhanced graft durability. It is indicated in hemodynamically stable patients with well-controlled infection.

Reconstruction of the femoral artery bifurcation was challenging in our case. The decision was guided by the onset of ischemia in the affected limb after aneurysm rupture, normal laboratory findings, the patient's stable hemodynamics, and ongoing antibiotic therapy.

Despite satisfactory clinical and laboratory evolution, local infection control remained inadequate, resulting in SFA -vein graft anastomotic failure on postoperative day 15, with fatal consequences.

## CONCLUSION

Management of a ruptured aneurysm remains challenging. When vascular ligation is clinically unfavorable, anatomic reconstruction has inherent limitations despite apparent infection control, while extra anatomic reconstruction, though potentially valuable, may be technically demanding in femoral artery bifurcation reconstruction.

**Ethical Considerations:** Informed consent was obtained from all patients. The study complied with institutional ethical standards.

**Conflicts of interests:** The authors declare that there is no conflict of interest regarding the publication of this paper.

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