BJCR
Brazilian Journal of Case Reports

PCAA
Publicações Científicas de Acesso Aberto

Case Report

Pseudoaneurysm of Muscular Artery in the Thigh Following Low-Energy Trauma: A Case Report

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Abstract: This report presents the case of a 38-year-old female who developed a pseudoaneurysm in the left thigh two years after a low-energy fall. Progressive thigh swelling prompted further evaluation. Initial computed tomography (CT) revealed a large vascular lesion, approximately 15 cm, but lacked definitive pseudoaneurysm characteristics. Doppler ultrasound provided diagnostic clarity, demonstrating the characteristic "yin-yang" sign indicative of bidirectional blood flow. The patient underwent successful surgical resection, with an aspirative drain removed on the tenth postoperative day. This case emphasizes the diagnostic complexities of pseudoaneurysms, particularly in delayed trauma presentations, and underscores the vital role of Doppler ultrasound in identifying vascular flow dynamics. Additionally, it highlights the necessity of a multidisciplinary approach in managing complex vascular lesions, combining diagnostic precision and tailored therapeutic strategies.

Keywords: Pseudoaneurysm; Vascular Imaging; Trauma Sequelae; Thigh Mass; Doppler Ultrasound.

Citation: Rocha LFR, Rosati APM, Rocha ALCMR, Ribeiro J, Abbade MA, Oliveira RF, Pimenta DC, Matos JF. Pseudoaneurysm of Muscular Artery in the Thigh Following Low-Energy Trauma: A Case Report. Brazilian Journal of Case Reports. 2025 Jan-Dec;05(1):bjcr55.

https://doi.org/10.52600/2763-583X.bjcr.2025.5.1.bjcr55

Received: 16 December 2024
Accepted: 10 January 2025
Published: 14 January 2025

1. Introduction

Arterial pseudoaneurysms result from ruptures in the intimal and medial layers of an artery, leading to blood leakage contained by surrounding tissues. Unlike true aneurysms, pseudoaneurysms lack involvement of all arterial wall layers. They often arise from trauma, invasive procedures, or surgical interventions [1, 2]. Epidemiological studies indicate pseudoaneurysms are rare, especially following low-energy trauma, yet they pose significant diagnostic and therapeutic challenges [3].

The diagnosis of pseudoaneurysms in muscular arteries is particularly demanding due to their nonspecific clinical presentation, such as localized pain and progressive mass growth. Imaging techniques, especially computed tomography (CT) and Doppler ultrasound, are indispensable for characterizing these lesions [4,5]. This case underscores the importance of integrating multimodal imaging and a multidisciplinary approach for effective management.

2. Case Report

A 38-year-old female presented with progressive pain and swelling in the left thigh two years after experiencing a fall from standing height. Initially asymptomatic, the patient reported the gradual development of a visible and painful mass over time. Upon

physical examination, a firm, painful mass was identified without signs of skin discoloration or infection. Diagnostic imaging was performed to investigate the lesion. Computed tomography (CT) revealed a 15 cm mass with vascular characteristics, though it lacked diagnostic specificity. Doppler ultrasound subsequently confirmed the diagnosis of a pseudoaneurysm, demonstrating turbulent flow with the characteristic "yin-yang" sign. Given the lesion's size and associated symptoms, surgical resection was deemed the most appropriate treatment option for endovascular repair. The procedure involved the complete excision of the pseudoaneurysm and the placement of an aspirative drain, which was removed on the tenth postoperative day. The patient achieved a full recovery, and follow-up imaging confirmed the absence of recurrence.

Figure 1. CT scan showing a large tumor mass in the left thigh, compressing the muscles.

3. Discussion

Pseudoaneurysms of muscular arteries are rare and often underdiagnosed due to delayed symptom onset, posing significant diagnostic challenges. In this case, imaging modalities played a critical role in establishing an accurate diagnosis. CT provided detailed anatomical visualization of the lesion but was limited in confirming vascular flow dynamics. Doppler ultrasound, on the other hand, offered real-time assessment of hemodynamic patterns, with the "yin-yang" sign being a key diagnostic feature. These complementary modalities were instrumental in diagnosing the pseudoaneurysm accurately. The therapeutic decision to pursue surgical resection instead of endovascular techniques was guided by factors such as the lesion's size, symptomatic severity, and the delayed diagno-

sis. Surgical intervention remains the gold standard for large or symptomatic pseudoaneurysms, ensuring complete resolution and reducing the risk of rupture. Multidisciplinary collaboration between radiologists, vascular surgeons, and rehabilitation specialists was essential in achieving favorable outcomes.

Figure 2. Pseudoaneurysm on the left thigh.

This case aligns with existing literature that highlights the rarity of pseudoaneurysms following low-energy trauma, while the lesion's considerable size underscores the need for early detection and proactive management. Additionally, literature emphasizes the value of Doppler ultrasound in diagnosing vascular anomalies that CT may overlook. Looking ahead, emerging imaging modalities such as contrast-enhanced ultrasound or magnetic resonance angiography hold promise in refining diagnostic accuracy. Furthermore, advancements in minimally invasive treatments, such as ultrasound-guided thrombin injection, warrant further exploration for managing pseudoaneurysms effectively.

4. Conclusions

This case report underscores the critical role of Doppler ultrasound in diagnosing and managing pseudoaneurysms, particularly in delayed presentations. The multidisciplinary approach employed highlights the importance of integrating diagnostic precision with individualized therapeutic strategies. For patients presenting with extremity masses and a history of trauma, comprehensive imaging protocols should prioritize Doppler evaluation to ensure accurate diagnosis and optimal outcomes.

Figure 3. Surgical piece showing the aspect of the pseudoaneurysm.

Funding: Not applicable.

Research Ethics Committee Approval: We declare that the patient approved the study by signing an informed consent form and the study followed the ethical guidelines established by the Declaration of Helsinki.

Acknowledgments: None.

Conflicts of Interest: The authors declare no conflicts of interest.

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