Journal of Surgical Radiology

Site: https://journalsurgrad.com/

ISSN Print 2156-213X| ISSN Online: 2156-4566 Volume: 05 Issue: 07 Open Access

Research Article

SILENT SWELL, SUDDEN RUPTURE: PSEUDOANEURYSM OF THE RIGHT SUBSCAPULAR ARTERY – A CASE REPORT

[1]Dr Pramesh Jain, [2]Dr Ankur Goel, [3]Dr Akanksha Mishra

[1]Associate Professor, Department of Cardiothoracic and Vascular Surgery, MGM Medical College (MGMMC) and M.Y. Hospital, Indore, Madhya Pradesh, India
[2]Assistant Professor, Department of Cardiothoracic and Vascular Surgery, MGM Medical College (MGMMC) and M.Y. Hospital, Indore, Madhya Pradesh, India
[3]Resident, Department of General Surgery, MGM Medical College (MGMMC) and M.Y. Hospital, Indore, Madhya Pradesh, India

*Corresponding Author
Dr Akanksha Mishra

Article History
Received: 09.06.2026
Revised: 19.06.2026
Accepted: 21.06.2026
Published: 09.07.2026

Citations:
Jain, P., Goel, A., & Mishra, A. (Year). Silent swell, sudden rupture: Pseudoaneurysm of the right subscapular artery – A case report. J Surg Radiol, V5 (7) 110-114

Abstract: ***Introduction:*** Pseudoaneurysm of the axillary artery is an uncommon vascular complication, and involvement of the subscapular branch is exceedingly rare. These lesions typically arise following trauma, surgical procedures, or iatrogenic vascular injury. Due to their deep anatomical location and close proximity to the brachial plexus, early diagnosis is often challenging, and delayed recognition can lead to serious complications such as rupture, hemorrhage, or neurological deficits.We report the case of a 45-year-old male who presented with a progressively enlarging swelling over the right axillary region for 8–9 months following trivial trauma. The lesion was initially asymptomatic but later showed sudden increase in size associated with pain and restricted shoulder movement. Radiological evaluation at a peripheral center suggested an organized hematoma, and incision and drainage were attempted, resulting in uncontrolled bleeding. On presentation to our center, the patient was hemodynamically unstable. Ultrasonography and computed tomography angiography revealed a pseudoaneurysm arising from the subscapular branch of the axillary artery with surrounding hematoma. Emergency surgical exploration was performed, with ligation of the feeding vessel and evacuation of approximately 1000 mL of hematoma. The postoperative period was uneventful, and the patient demonstrated good functional recovery without neurological deficit.This case highlights the importance of maintaining a high index of suspicion for vascular injuries in atypical post-traumatic swellings. Early imaging, particularly CT angiography, is crucial for accurate diagnosis and appropriate management. Prompt surgical intervention can prevent life-threatening complications and ensure favorable outcomes.

Keywords: Axillary artery pseudoaneurysm; Subscapular artery; Trauma; CT angiography; Surgical management

INTRODUCTION

A pseudoaneurysm, or false aneurysm, is a localized collection of blood that communicates with an arterial lumen due to a focal defect in the vessel wall, with the extravasated blood contained by surrounding soft tissues rather than the arterial layers themselves. This distinguishes it from a true aneurysm, which involves all three layers of the vessel wall [1–4]. Pseudoaneurysms commonly arise following trauma, surgical intervention, or iatrogenic vascular injury and are more prone to expansion and rupture due to the absence of a complete arterial wall.

Axillary artery pseudoaneurysms are rare clinical entities, representing a small proportion of peripheral arterial injuries. Traumatic involvement of the axillary artery accounts for approximately 2.9–9% of major arterial injuries, with pseudoaneurysm formation being an uncommon sequela of shoulder trauma [1]. While most cases are associated with high-energy injuries such as shoulder dislocation or proximal humeral fractures, pseudoaneurysms can also occur following trivial trauma, often leading to delayed diagnosis [2,3].

The axillary artery is anatomically divided into three parts, with nearly 90% of injuries involving the third portion [2,6–8]. This segment is relatively fixed due to the origin of major branches, including the subscapular and circumflex humeral arteries, making it particularly susceptible to injury during shoulder movement or trauma. Among these, the anterior circumflex humeral artery is most commonly involved.

Clinically, these lesions may present as a progressively enlarging mass in the axillary or shoulder region, often associated with pain or neurological symptoms due to brachial plexus compression. Classical signs such as pulsatility may be absent, especially in partially thrombosed lesions, leading to misdiagnosis as soft tissue tumors or hematomas [1,3]. Delayed recognition can result in serious complications, including rupture and hemorrhage.

Imaging plays a crucial role in diagnosis. Doppler ultrasonography is a useful initial screening tool, while computed tomography angiography (CTA) remains the

gold standard for defining vascular anatomy, identifying the feeding vessel, and guiding definitive management [1,5]. Early diagnosis and timely intervention are essential to prevent life-threatening complications and preserve limb function.

Pseudoaneurysm of the subscapular artery, a branch of the third part of the axillary artery, is exceedingly rare, with very few cases reported in the literature. We present a case of ruptured subscapular artery pseudoaneurysm following trivial trauma, initially misdiagnosed as an organized hematoma and complicated by inappropriate incision and drainage, resulting in massive hemorrhage.

CASE PRESENTATION

A 45-year-old male presented with a progressively enlarging swelling over the lateral aspect of the right chest for the past 8–9 months. The swelling was initially small but gradually increased in size. The patient gave a history of a trivial fall approximately nine months prior to presentation; however, there was no apparent shoulder injury at that time, and no medical evaluation was sought.

Clinical Presentation

Three days prior to admission, the patient noted a sudden increase in the size of the swelling, which was associated with pain on movement of the right shoulder and weakness of the right upper limb. He underwent a contrast-enhanced computed tomography (CT) scan of the thorax at a peripheral center, which was reported as suggestive of an organized hematoma. Based on this diagnosis, incision and drainage were attempted. During the procedure, the patient developed uncontrolled active bleeding, following which he was referred to our tertiary care center.

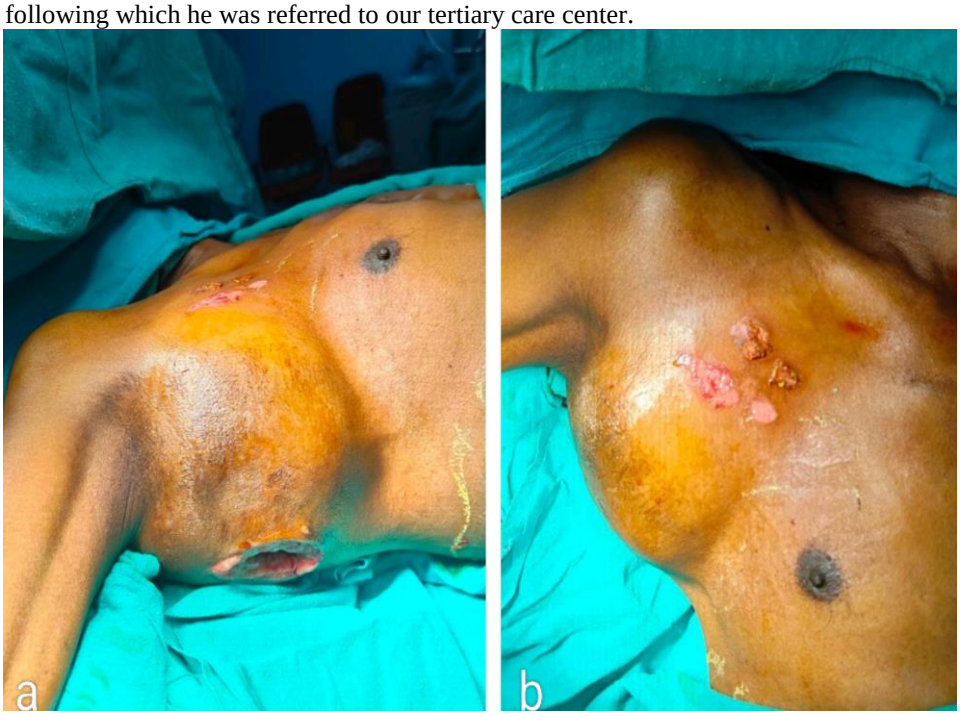

Figure 1. Clinical presentation of right axillary artery pseudoaneurysm. (a) Clinical photograph showing a large swelling over the right shoulder and axillary region. The mass appears firm, tender, immobile, and non-pulsatile with ill-defined margins. An incision and drainage wound is visible over the swelling; (b) Anterior view demonstrating the extent and contour of the pseudoaneurysm involving the right axillary region.

Examination Findings

On arrival at the emergency department, the patient was pale and hypotensive. Initial resuscitation with intravenous fluids and blood products was initiated. Local examination revealed a 10 × 8 cm swelling in the right axillary region. The swelling was firm, tender, immobile, and non-pulsatile, with an incision mark measuring approximately 4 × 2 cm over its surface. Active bleeding was noted from the incision site. The range of motion of the right upper limb was restricted, particularly at the shoulder joint.

Diagnostic Assessment

Ultrasonography (USG) of the local region demonstrated a 2.5 × 2.1 cm fusiform dilatation arising from the right subscapular artery, showing turbulent flow without evidence of thrombus, suggestive of a pseudoaneurysm. A surrounding hematoma was also noted.

Subsequent CT angiography revealed pooling of contrast in the subscapular branch of the right axillary artery, with a breach in the skin surface over the posterior aspect of the right shoulder. These findings were consistent with a partially thrombosed pseudoaneurysm of the subscapular artery with associated hematoma formation.

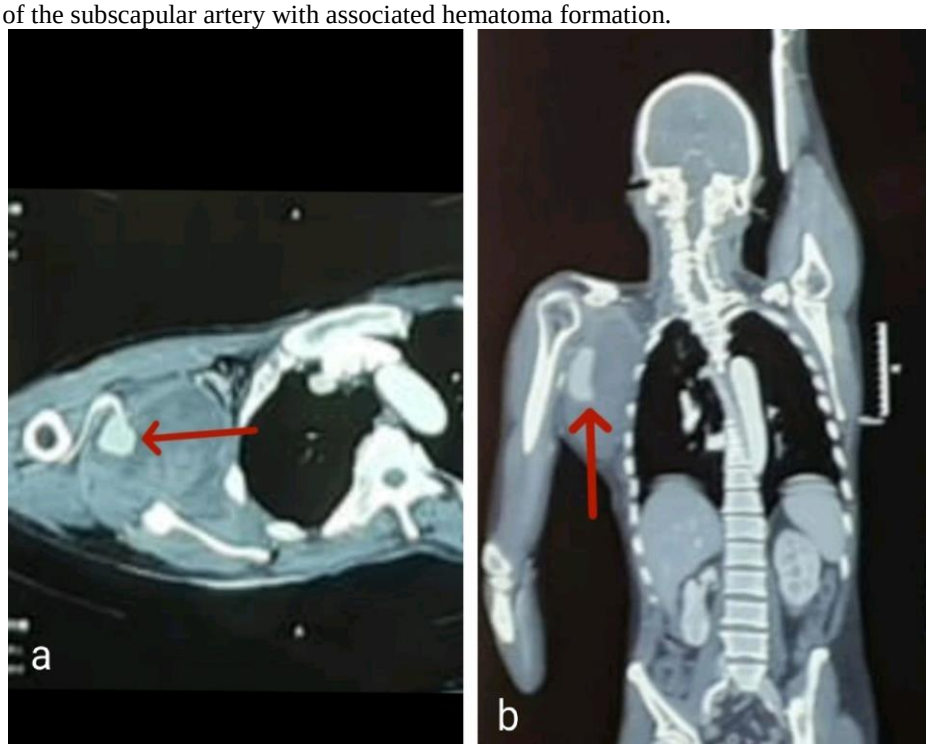

Figure 2. Contrast-enhanced computed tomography (CT) findings. (a) Axial section and (b) coronal section of contrast-enhanced CT scan of the right upper limb and axilla showing a well-defined, contrast-filled saccular lesion along the course of the axillary artery, consistent with a pseudoaneurysm. An oval-shaped "eggshell" calcification is noted within the lesion (red arrow). Surrounding soft tissues are displaced, indicating an expansile vascular mass.

Therapeutic Intervention

Following hemodynamic stabilization, the patient was taken up for emergency surgical exploration. The axillary artery was approached and proximal vascular control was achieved through a right subclavicular incision. Careful dissection was performed with identification and preservation of the brachial plexus cords.

The subscapular branch of the axillary artery was identified as the source of bleeding and was ligated. A separate incision was made over the previous incision and drainage site, and approximately 1000 mL of hematoma and blood clots were evacuated along with the pseudoaneurysm sac. Extensive debridement of necrotic tissue beneath the pectoral muscles was performed. Two drains were placed, and the wounds were closed in layers.

Follow-Up and Outcomes

In the postoperative period, the patient remained hemodynamically stable. Sensory and motor functions of the right upper limb were preserved, although shoulder movements were initially restricted. The drains were removed on postoperative day 4, and physiotherapy was initiated. At the time of discharge, the patient showed significant improvement in shoulder mobility with no evidence of neurological deficit. Follow-up evaluation demonstrated satisfactory recovery without complications.

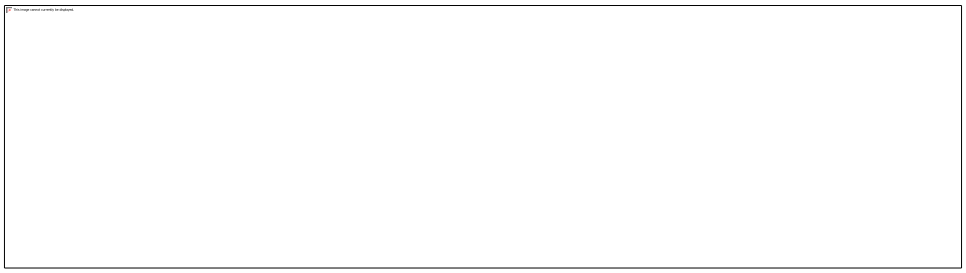

Figure 3. Intraoperative findings during surgical exploration (a) Intraoperative photograph showing exposure of the axillary artery (labelled) with adjacent brachial plexus cords in close proximity, highlighting the neurovascular relationship; (b) Identification of the feeding branch of the axillary artery supplying the pseudoaneurysm. Proximal and distal vascular control has been achieved using vascular loops.

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DISCUSSION

Axillary artery pseudoaneurysm is an uncommon but clinically significant vascular complication, most frequently associated with trauma to the shoulder region. While classically linked to high-energy injuries such as anterior shoulder dislocation or proximal humeral fractures, multiple reports have demonstrated that even trivial or blunt trauma can result in pseudoaneurysm formation with delayed presentation [2–4,9,10]. This was evident in our case, where a minor traumatic event led to a slowly progressive swelling over several months before acute deterioration.

Delayed presentation is a well-recognized feature of axillary artery pseudoaneurysms. Moss et al. and Dympep et al. described cases presenting weeks to months after injury, often with progressive neurological deficits or mass effect due to enlargement of the lesion [2,3]. Similarly, Setiawati et al. reported a neglected pseudoaneurysm mimicking a soft tissue tumor with delayed diagnosis [1]. Recent literature further supports that pseudoaneurysms may remain clinically silent initially and later present with rapid expansion or complications such as rupture and neurovascular compression [9,10].

A major diagnostic challenge is the absence of classical clinical signs. Although pseudoaneurysms are typically described as pulsatile masses, partially thrombosed lesions may present as firm, non-pulsatile swellings, leading to frequent misdiagnosis as hematomas or soft tissue tumors [1,3,11]. In our case, this resulted in inappropriate incision and drainage, which precipitated massive hemorrhage. Similar diagnostic pitfalls have been reported in recent studies, emphasizing the importance of considering vascular etiologies in atypical swellings following trauma [10,11].

Imaging plays a central role in diagnosis. Doppler ultrasonography is useful as an initial screening modality; however, computed tomography angiography (CTA) remains the gold standard for confirming diagnosis, identifying the feeding vessel, and planning intervention [1,5,12]. Advanced imaging techniques such as magnetic resonance angiography and digital subtraction angiography may be utilized in selected cases for further evaluation and therapeutic planning [12].

The third part of the axillary artery is most frequently involved due to its relatively fixed anatomical position and proximity to surrounding structures [2,6–8]. This anatomical relationship also predisposes to compression of the brachial plexus, which may result in neurological deficits. Studies have shown that delayed recognition and decompression can lead to poor neurological recovery, highlighting the importance of early diagnosis and timely intervention [3,9].

Management strategies include both open surgical repair and endovascular techniques. Endovascular approaches such as stent grafting and embolization are increasingly used in hemodynamically stable patients due to their minimally invasive nature and favorable outcomes [13,14]. However, open surgical exploration remains the treatment of choice in cases of rupture, active bleeding, or large hematoma, as seen in our patient [4,14,15]. Prompt vascular control and evacuation of hematoma are critical for preventing further complications and ensuring functional recovery.

This case is unique due to the ianvolvement of the subscapular artery, a rarely affected branch of the axillary artery, along with rupture precipitated by inappropriate incision and drainage. It underscores the importance of maintaining a high index of suspicion for vascular injuries in atypical post-traumatic swellings and highlights the critical role of early imaging in preventing life-threatening complications.

CONCLUSION

Axillary artery pseudoaneurysm is a rare but potentially life-threatening condition that may present late and mimic benign soft tissue lesions, especially after trivial trauma. Absence of classical signs often leads to misdiagnosis and inappropriate interventions, as seen in this case. Early suspicion and prompt imaging, particularly with CT angiography, are essential for accurate diagnosis. Management should be individualized, with surgical intervention preferred in cases of rupture or active bleeding. This case highlights the importance of considering vascular etiologies in atypical swellings to prevent catastrophic complications and ensure favorable functional outcomes through timely and appropriate treatment.

Acknowledgements

The authors would like to thank the Department of General Surgery and the Department of Radiology at our institution for their support in the diagnosis and management of this case. We also acknowledge the operating room staff and nursing team for their assistance during surgical intervention and postoperative care.

Conflicts of Interest

The authors declare that they have no conflicts of interest regarding the publication of this article.

Human Ethics

Consent was obtained or waived by all participants in this study. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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