

Post-Traumatic Pseudoaneurysm of the Axillary Artery: A Case Report and Review of Literature

A Zerhouni*, Y Boulani, A Ellouadghiri, M Moussaoui and M Mouhaoui

Emergency Department of Ibn Rochd University Hospital, Casablanca, Morocco

***Corresponding Author:** A Zerhouni, Emergency Department of Ibn Rochd University Hospital, Casablanca, Morocco.

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Abstract

Pseudoaneurysms arise from a disruption of the continuity of the arterial wall as a result of inflammation, trauma or iatrogenic causes such as surgical procedures, percutaneous biopsy or drainage. There is no standardised, consensus-based management of pseudo aneurysms; however, the fear of rupture of the false aneurysm, the risk of distal embolisation or local compression have led to surveillance protocols being abandoned. In view of the particularly rare complication, the authors allowed themselves to report a clinical case of post-traumatic pseudoaneurysm of the axillary artery.

Keywords: *Post-Traumatic Pseudoaneurysm; Axillary Artery; Computed Tomographic Angiography (CTA)*

Introduction

Pseudoaneurysms can affect any artery in the human body. Their presentation can vary from a clinically silent state to a life-threatening emergency scenario. Computed tomographic angiography (CTA) remains the gold standard for diagnosis but is invasive, and non-invasive diagnostic modalities like ultrasound should be included in the initial work-up. Advances in treatment have allowed non-surgical therapy in a significant number of cases. Given the particularly rare clinical presentation, the authors have therefore taken the liberty of reporting the observation of a patient with a post-traumatic pseudoaneurysm of the axillary artery.

Case Report

A 16 year old patient, with no previous pathological history, was admitted to the emergency department for a fall from a high place with a point of impact on the right upper limb. On admission, the patient was conscious, hemodynamically and respiratorily stable, and presented with filling of the right delto-pectoral groove with disappearance of the shoulder curve without any downstream vascular or nerve complications. An antero-internal shoulder dislocation was suspected and confirmed by standard radiology, and the team opted for an orthopedic reduction with elbow immobilisation. The patient presented 15 days later to the emergency department with intense pain in the right shoulder. The clinical examination revealed total functional impotence of the joint with the presence of a swelling extending into the axillary cavity. A soft tissue ultrasound was performed showing a pseudo-aneurysm of the right axillary artery with a partially thrombosed wall. The diagnosis was confirmed by angiography. The management was surgical including resection-bridging. The evolution was favorable.



Figure 1: Ultrasound exam showing a pseudo-aneurysm of the right axillary artery with a partially thrombosed wall.



Figure 2: Computed tomographic angiography showing a pseudoaneurysm of right axillary artery.

Discussion

Pseudoaneurysms arise from a disruption of the continuity of the arterial wall as a result of inflammation, trauma or iatrogenic causes such as surgical procedures, percutaneous biopsy or drainage. Under the influence of sustained arterial pressure, blood dissects into the tissues around the damaged artery and forms a perfused sac that communicates with the arterial lumen [1].

However, it has been observed that the incidence of iatrogenic pseudoaneurysms is 0.44 - 1.8% following diagnostic catheterization and 3.2 - 7.7% after interventional treatment. The precise incidence of overall peripheral post traumatic artery pseudoaneurysms is unknown [2].

The most common symptoms are pain and swelling, although other early symptoms of extremities pseudoaneurysms include bruising, pain on probing, auscultation of a bruit, a dilated pulse, and a pulsatile mass.

Due to its ease of use and low cost, ultrasonography has replaced other imaging techniques as the primary method for diagnosing peripheral artery pseudoaneurysms. Despite this, ultrasonography is highly operator dependent, prone to intestinal gas, subcutaneous fat, and limb swelling, and provides inferior images of the distal branch of the artery and deeply positioned lesions. It may show a hypochoic cystic structure supplanting an artery, but the gold standard is angiographic examination [1].

As it provides a three-dimensional capability that enables observation of pseudoaneurysms from various angles, the computed tomographic angiography (CTA) is another frequently utilized imaging modality for the diagnosis of pseudoaneurysms. In order to effectively design treatment methods, it can identify the precise position, origin, surrounding hematoma, collateral circulation, and associated injuries [3]. Additionally, CTA can be employed for pseudoaneurysms that are deep-seated or have large, irregularly formed, or irregularly shaped pseudoaneurysms in the subclavian artery that the ultrasound could not fully characterize.

There is no standardised, consensus-based management of pseudo aneurysms; however, the fear of rupture of the false aneurysm, the risk of distal embolisation or local compression have led to surveillance protocols being abandoned. Open surgery is the standard treatment for peripheral artery pseudoaneurysms. According to reports, the technical and clinical success rates are 50 - 100% and 86 - 100%, respectively [4]. Operative consequences can include thrombosis, excessive bleeding, lymphorrhea, nerve damage, and wound infections. There have been reports of a 50% compliance rate [5]. Recent years have seen an increase in the use of minimally invasive endovascular therapy approaches including embolization and stent implantation, which offer similar outcomes to open surgery thanks to developments in interventional techniques and materials.

With a success rate of 93 - 100%, ultrasound-guided thrombin injection is a popular treatment for peripheral artery pseudoaneurysms. It is frequently done in pseudoaneurysms with a narrow neck, a small size, and a sufficient depth. Distal embolization, significant bleeding, infection, and mortality are some of the risks.

Conclusion

Within a day following the trauma, a traumatic pseudoaneurysm that is likely to rupture due to the brittleness of the aneurysm wall can be found.

CTA is a reliable method for identifying and characterizing traumatic artery damage to the extremities, but due to its ease of use and low cost, ultrasonography has replaced other imaging techniques as the primary method for diagnosing peripheral artery pseudoaneurysms. There is no standardised, consensus-based management of pseudo-aneurysms.

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