Long-standing Pseudoaneurysm of Proximal Brachial Artery Mimicking Soft Tissue Neoplasm

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Abstract

Pseudoaneurysms of brachial artery are rare cause of upper limb mass. Their diagnosis is straightforward in the setting of a rapidly growing pulsatile soft tissue mass with bruit or distal limb ischemia. We hereby present a case of hard nonpulsatile left upper limb soft tissue mass in a 50-year-old female. Mass of 5-year duration was misdiagnosed clinically as soft tissue neoplasm and underwent trucut biopsy. The case came out to be a large pseudoaneurysm of brachial artery and was successfully excised.

Keywords: Brachial artery, neoplasm, pseudoaneurysm

INTRODUCTION

True aneurysm of a blood vessel is defined as a permanent localized dilatation of its complete wall having at least a 50% increase in diameter compared with expected normal diameter. In general, this term is used for arteries as it is more common in them, but it can also be used for veins which are extremely rare presentation.

Differing from true aneurysms, pseudoaneurysms of blood vessels result from arterial wall disruptions. They are usually common in lower limb and are quite rare in upper extremities. Most commonly, they are sequelae of penetrating injuries (accidental or postinterventional) and are of short duration. However, infection, various vasculitis disorders, congenital arterial defects, and trivial vascular injuries due to long bone fractures may play a role in their pathogenesis. The absence of characteristic history of onset and duration makes their diagnosis difficult as was in our case.

CASE REPORT

A 50-year-old female presented to us with a large painless lump in her left upper limb. This lump was first observed by the patient 5 years back and was initially small in size. Lump was painless initially. There was no history of trauma to the local site. Furthermore, there was no history of fever suggestive of the ongoing inflammation or infection. This lump was initially neglected by this poor patient due to which it slowly progressed in size. It finally forced her to seek medical attention due to complaints of numbness of the left upper limb.

The patient was admitted by some general surgeons who did fine-needle aspiration cytology of this mass after which it became tenser and painful. Thereafter, the patient was referred to our hospital. On clinical examination, we found a 15 cm × 10 cm globular mass of hard consistency in the proximal half of the left upper arm. Skin over the mass was fixed with few prominent veins. Mass was noncompressible, nonpulsatile, and appeared to be fixed to left upper humerus. Left radial and brachial pulses were feeble. However, limb was warm with normal capillary refill time.

A provisional diagnosis of the left upper limb bony or soft tissue mass was made and an upper limb X-ray was done. Left humerus was found to be normal. Hyperdense soft tissue swelling separate from the bone was evident on upper limb X-ray. The patient was taken for magnetic resonance imaging of the upper limb which revealed the mass to be organized thrombus. Angiography of the left upper limb revealed...
pseudoaneurysm of left upper brachial artery with two distinct points of contrast leak into pseudoaneurysm cavity [Figure 2]. The patient was operated under general anesthesia. Left axillary artery was exposed by infraclavicular incision and controlled. Similarly, left brachial artery was exposed just above the cubital fossa. Capsule of the pseudoaneurysm was incised, and organized blood clot was removed from the pseudoaneurysm cavity [Figure 3]. Pressure necrosis of proximal brachial artery was observed with two separate rents, from which arterial blood was spurring. Brachial artery was ligated proximal and distal to necrosed area, and reverse saphenous vein graft was placed from distal axillary artery to brachial artery in the cubital fossa [Figures 3-5]. Pseudoaneurysm cavity was thoroughly washed, and soft tissue approximation was done in layers.

**DISCUSSION**

Pseudoaneurysms of the peripheral vessels are usually common in lower limb. They are quite rare in upper extremities. They consist of a central hematoma surrounding and contained by a reactive fibrous capsule. In due course, center of the hematoma may undergo organization, however maintaining its continuity with the main vessel lumen.\(^3\) Trauma (accidental or postinterventional) is the most common cause followed by infection or connective tissue disorder. Atherosclerotic pseudoaneurysms are very rare.\(^4\)

They present as rapidly enlarging painless pulsatile soft tissue masses following a history of penetrating trauma.\(^5\) Their differential diagnosis includes tense hematomas, arteriovenous malformations, pulsating bone sarcomas and osteoclastomas, lipomas, and abscesses.\(^6\) These asymptomatic masses may become suddenly symptomatic due to sudden disruption of the pseudoaneurysm sac or thrombosis of the sac with embolic showers in the distal circulation. Long-standing pseudoaneurysms can present with venous edema of the involved extremity, skin erosion, or compression of the adjacent nerve with all features of nerve compression. Often, nerve injury or adjacent nerve compression is the first presenting complaint\(^7\) as was in our case. In our patient, there was a history of slowly enlarging painless mass in the upper part of arm high up the cubital fossa with no previous history of trauma or any percutaneous vascular intervention. Mass was of 5 years duration. The patient sought medical advice when she started having numbness of left forearm. On clinical examination, mass was hard, nonpulsatile and appeared fixed to humerus due to which it was easily misconstrued as a neoplastic mass and underwent biopsy after X-ray revealed humerus to be normal. Following biopsy, mass became tenser probably

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**Figure 1:** Large, hard nonpulsatile, and fixed mass of the left upper limb with few prominent superficial veins

**Figure 2:** Computed tomographic angiographic view showing large pseudoaneurysm of proximal brachial artery with faint opacification of brachial artery distal to aneurysm

**Figure 3:** Pseudoaneurysm cavity. Also visible in the figure is the reverse saphenous graft tunneled through the axilla and anastomosed to brachial artery above bifurcation

**Figure 4:** Proximal anastomosis of venous graft to axillary artery
due to injury to fibrous capsule of the pseudoaneurysm, for which the patient was referred to our institute.

Another important finding in our case worth discussing was the large size of 15 (vertical) ×10 (horizontal) cm. Long-standing pseudoaneurysms of brachial artery have been reported in literature previously, but they are usually of smaller size. Yetkin and Gurbuz[9] in their series of nine patients with brachial artery aneurysms have reported a mean diameter of brachial artery aneurysms to be 4.6 cm (ranging from 3 to 8 cm). All patients in their series presented with a pulsating mass differing from our case in which the absence of pulsations leads to diagnostic dilemma. Crawford et al.[9] have also reported that in the absence of nerve compression and thromboembolic phenomenon aneurysms of 2 cm or less in diameter can be asymptomatic over a long period.

Upper extremity arterial Doppler study and computed tomography (CT) or magnetic resonance angiography are the diagnostic tools in the evaluation of pseudoaneurysms’ masses. CT angiography done in our case clearly showed the mass to comprise organized thrombus with contrast leak from proximal brachial artery into aneurysmal cavity. Doppler ultrasonographic evaluation is sufficient for late postoperative follow-up evaluation.[10]

Treatment options for pseudoaneurysm of extremity vessels are either percutaneous or open surgical. Percutaneous embolization, thrombin injections, and endovascular graft implantation are done under color Doppler or ultrasonographic guidance. These methods are usually reserved for small uncomplicated pseudoaneurysms.[9]

Proximal and distal ligation followed by resection of the aneurysmal segment can be done if the procedure is for a lesion in a noncritical distal vessel or if the surgeon is of the view that the collateral circulation is significant enough to maintain distal perfusion.[11] However, often large, tense pseudoaneurysms in proximal brachial artery cause pressure necrosis of large segment of artery with risk of distal ischemia in case diseased artery is excised without distal revascularization.[10] In our patient, expanding tense pseudoaneurysm had caused pressure necrosis of large segment of brachial artery from its proximal part to just above its bifurcation. We did revascularization of the distal brachial artery using reverse saphenous vein graft. Prosthetic graft was not preferred due to fear of graft infection under emergency conditions. Proximally graft was anastomosed to the first part of axillary artery which was exposed using infraclavicular incision. Rudolphi and Clark et al.[11,12] have reported using saphenous vein graft for brachial artery aneurysms. Authors have reported an amputation rate of 6% in patients with grafting in comparison to more than 50% in patients in whom simple brachial artery ligation was done.

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Conflicts of interest There are no conflicts of interest.

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