

Axillary Artery Aneurysm

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ABSTRACT

Axillary artery aneurysm is a rare condition. Though mostly asymptomatic, it should be treated early as it can develop thrombosis, distal embolisation, pressure symptoms or rupture. We report here a case of a 24-year woman who presented with neurological deficit in her arm because of pressure by axillary artery aneurysm. Standard treatment of these aneurysms is excision and replacement with an interposition graft. We used reversed saphenous vein as interposition graft between axillary and brachial artery.

Key Words: Axillary. Aneurysm. Vein graft.

INTRODUCTION

Dilatations of localised segments of the arterial system are called aneurysms. Dilatation has to be twice the normal diameter of an artery to qualify it an aneurysm.¹ Aneurysms may contain all three layers of the arterial wall (intima, media, adventitia) in their wall when they are called true aneurysms, or they may be false aneurysms having a single layer of fibrous tissue as the wall of the sac. The latter are usually a result of accidental or iatrogenic trauma.²

Aneurysms, particularly of the true variety, are rarely found in the axillary artery.³⁻⁵ Thrombus formation within an aneurysm can result in ischemia of the affected limb.⁶ Most cases of axillary artery aneurysm are asymptomatic. Presentation is usually with acute vascular insufficiency in the hand or neurological deficit due to pressure on adjoining nerves.⁷ It is, therefore, important to resort to early treatment when managing this condition.

We report a case of a young female, diagnosed to have a thrombosed aneurysm of left axillary artery, treated with excision of the aneurysm followed by reverse saphenous vein interposition graft.

CASE REPORT

A 24-year married woman was admitted to our hospital with complaints of weakness of right arm for the past two months. She had also noted a swelling in the right axilla for the last one and a half months. Onset of weakness was rapid, associated with numbness of hand and the patient was unable to carry out daily household chores. The swelling in the right axilla was noted by the patient about one and a half months back, which was initially small but increased to the size of a lemon over a period of eight days.

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Received: December 29, 2017; Accepted: February 14, 2018.

On physical examination, an approximately 5 × 6 cm lump was palpable in right axilla (Figure 1). It was round in shape, had a smooth surface, was firm in consistency, non-tender and non-pulsatile. Peripheral pulsations were not palpable in right axillary, brachial, radial and ulnar arteries. Capillary refill was normal, and right hand and arm were warm. There was edema of the right hand along with wrist drop but no muscle wasting, tremors or fasciculations in the right hand. In addition, there was loss of abduction and opposition in right thumb and loss of abduction of fingers. There was no sensory loss except for a small part of distal index finger. No other abnormality was detected on physical examination. Except for a relatively low hemoglobin level of 9.6 g/dl, the laboratory investigations were within normal limits.

She initially presented to a local doctor who advised fine needle aspiration cytology (FNAC) of the lump that yielded acute inflammatory exudative aspirate. CT scan of the right axilla was also performed which revealed a well-circumscribed, abnormal dilatation of right axillary artery measuring 8.1×7.3×6.1 cm with layers of low, intermediate and high attenuation peripherally, secondary to layers of thrombus of various ages, as well as central zone of contrast enhancement representing patent lumen. No calcification was noted in its wall. Patient was referred to our department where a CT-angiography was performed that showed an aneurysmal dilatation of right axillary artery measuring 2.3×3.5×6.7 cm along with a peripheral thrombus of heterogeneous density measuring approximately 4.0×6.6 cm. The brachial, ulnar and radial arteries were well outlined (Figure 2).

The diagnosis of thrombosed aneurysm of right axillary artery was made. Surgery was planned to excise the axillary artery aneurysm and restore arterial continuity by placement of reverse saphenous vein interposition graft. Under general anesthesia, the aneurysm was exposed through a longitudinal skin incision. Proximal and distal control was achieved (Figure 3). It was found that median nerve was stretched over the wall of the aneurysm. The anterior wall of the aneurysm was



Figure 1: Swelling in axilla.



Figure 2: CT angiogram.



Figure 3: Clot in aneurysm evacuated after gaining proximal and distal control.



Figure 4: Saphenous vein graft in place.

incised longitudinally and clot was evacuated. Hemostasis of reverse bleeding from collaterals inside the aneurysm was achieved. The great saphenous vein was harvested from the right thigh, and interposed as a reverse graft between right axillary and brachial artery (Figure 4). A drain was placed, and the wound was closed in layers. The postoperative course of the patient was uneventful, and she was discharged on fifth post-operative day with advice to continue physiotherapy of her right hand.

DISCUSSION

Axillary artery aneurysm is the rarest of all peripheral artery aneurysms.⁶ Blunt or penetrating trauma, leading to weakening of the artery, is considered to be a cause of this aneurysm. Activities causing such trauma include the use of axillary crutches or repetitive overhead arm motions during sports such as baseball and cricket.^{3,6,8-10} The exact etiology seems to be the attrition on the axillary artery by humeral head or pectoralis minor muscle.^{8,10} Infections and degeneration of arterial wall have been reported as unusual causes.^{11,12} Atherosclerosis, advanced age, collagen vascular disease, mycotic aneurysm and thoracic outlet syndrome have also been described as etiologies.^{3,8}

Most axillary artery aneurysms are asymptomatic. Due to a very small number of reported cases, natural history of this aneurysm is not well known. Diagnosis, although straight forward, is likely to be missed because of rarity

of this condition. A high index of suspicion in all axillary lumps would preclude delay in diagnosis. Availability of sophisticated imaging modalities like CT angiography has made it fairly easy to evaluate these aneurysms.

Axillary artery aneurysm may present as a mass, that may or may not be pulsatile.^{3,6,9} Absence of pulsatility is apparently because of absent blood flow through a thrombosed aneurysm. Other symptoms may include pain, numbness or coldness of the affected upper limb.^{6,8} The patient may complain of cramping or fatigue in the affected limb brought on by the use of the limb. Ischemic changes may be observed in fingers.^{9,10} As nerves of the upper limb are closely related to the axillary artery, an aneurysm of the artery can cause stretching of the nerves. In our patient, median nerve was stretched over the aneurysm causing motor deficit in the limb.

Presence of thrombus in the aneurysm, as in this case, is a common finding. Thrombosis occurs due to sluggish blood flow through the dilated segment. Thrombus formation has the potential to occlude the blood flow through aneurysm or to embolise to the digital vessels, resulting in digital ischemia.^{4,9,10}

An early diagnosis and intervention are important to prevent complications such as thrombosis, embolisation, compression of adjacent structures and a risk of rupture of the aneurysm. Embolisation to distal vessels can cause limb-threatening ischemia. Prolonged compression of adjacent nerves can lead to irreversible neurological damage.⁷ Literature lacks any documented evidence of a correlation between the size of an aneurysm and potential risk for its rupture. However, if left untreated, a rupture can lead to life-threatening blood loss.

Whereas all axillary artery aneurysms require an intervention, complications such as thrombosis, embolism, rupture and increasing symptoms, are absolute indications of surgery.⁷ Thrombolysis may be attempted in case of thrombosis of the axillary artery but is usually unsuccessful.¹⁰

Surgery may involve excision of the aneurysm, but at times, like in our case, excision may not be possible

because of difficulty to separate the wall of aneurysm from surrounding structures like nerves. In such cases, clot is evacuated by incising the aneurysm, any reverse flow in its lumen is stopped by sutures, both ends transected, and the gap is bridged with a native or artificial graft.³ Goncu *et al.* and Todd *et al.* found that the use of a saphenous vein graft is efficient in the repair of an axillary artery aneurysm.^{1,9} Schneider *et al.*, on the other hand, argue that there may be an issue with size mismatch between the artery and saphenous vein.¹⁰ Todd *et al.* found no need for using artificial grafts while Schneider *et al.* found them difficult to heal at the anastomosis.^{9,10} Although few cases have been reported in literature,⁷ endovascular stents have been successfully used to treat these aneurysms,¹³ and are a good alternative to the standard surgical reconstruction.

Axillary artery aneurysms, although rare, should always be included in the differential diagnosis of any swelling in the axilla. Early recognition and management of these aneurysms can prevent complications which can lead to loss of limb or fingers.

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