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**Case Report**

# Veins that bulge: understanding rare venous aneurysm of the upper extremity: a case report

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## ABSTRACT

Venous aneurysm (VA) of upper extremity is an extremely rare condition in children. The reported incidence of upper limb VA is around 10% which mostly presents as an asymptomatic mass. Due to subtle clinical presentation and resemblance to common soft tissue lesions, evaluation of VA requires careful clinical examination with radiological imaging. We present a rare case of VA in a 16-year male in forearm involving the cephalic vein that was managed successfully with surgical excision.

**Keywords:** Venous aneurysm, Forearm, Cephalic vein, Upper arm

## INTRODUCTION

Venous aneurysm (VA) is a rare entity as localised outpouching that communicates with normal venous system.[1,2] They are distinct from varicose vein, arterio-venous malformations and pseudoaneurysm.[1] VA can occur in any part of the body and in approximately 10% of cases it is located in upper extremity.[3] Authors present a rare case of venous aneurysm in a 16 year male in forearm involving the cephalic vein that was managed successfully with surgical excision.

## CASE REPORT

A 16-year male presented with an asymptomatic swelling of left forearm for last two years. There is no history of trauma previously. There is no history of pain, fever or discomfort associated with the swelling. On local examination a single 2×3 cm in size, nontender, soft, smooth, compressible, non-pulsatile swelling is noted in left forearm below the cubital fossa. The swelling disappears on raising left arm above the heart level. Doppler ultrasonography reveals focal ectasia of cephalic vein measuring up to 10 mm in size in left forearm suggestive of venous varix. Distal cephalic vein is normal. Surgical exploration was performed and venous aneurysm of 2×3 cm is excised after ligating the cephalic vein proximally and distally (Figure 1).

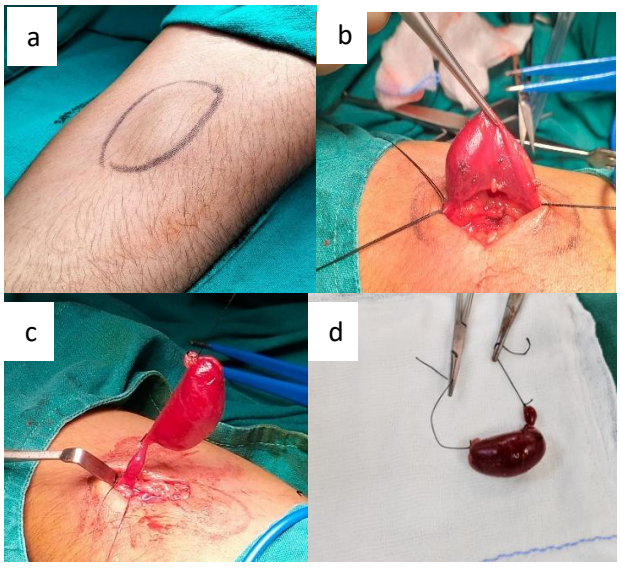



**Figure 1 (a-d): Clinical and intraoperative images of VA of cephalic vein of right forearm.**

Postoperative and follow up periods remains uneventful. Histopathology confirms thin and thick-walled anastomosing congested vessels lined by benign endothelial cells and variably thickened muscularized vessel walls (Figure 2).

## DISCUSSION

Venous aneurysms (VAs) of the upper extremity are uncommon vascular anomalies that are frequently underdiagnosed due to subtle clinical presentation and resemblance to common soft tissue lesions. The lesions involve local dilation of a venous segment and are different from varicose vein, arteriovenous malformations and pseudo-aneurysm.[1] Although VAs can occur anywhere, the upper extremity accounts for only 4.2% to 10% of reported cases.[3] The rarity along with its asymptomatic presentation may lead to delayed diagnosis. Upper extremity VAs can involve the superficial or deep venous systems. It can be fusiform or saccular. While typically described in middle-aged individuals, they can also present in infants, children or the elderly populations.

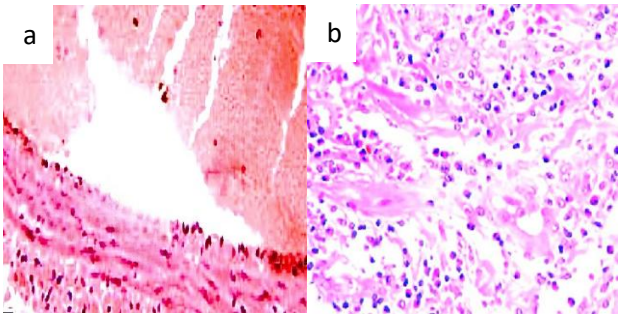



**Figure 2 (a and b): A breach in the intima with thinning of tunica media in area of ecstatic deformation with blood thrombus in the luminal area with chronic inflammatory response.**

Both male and females are equally affected, although a higher incidence has been noted in individuals with elevated body mass index.[4] Mostly patients present with a soft, compressible subcutaneous mass that enlarges with Valsalva maneuver.[5] These lesions are often initially misinterpreted as soft tissue tumors or lymphadenopathy, which emphasizes the importance of a careful history and physical examination.[6] The pathogenesis of upper extremity VAs is multifactorial.

Secondary causes such as trauma, infection, or arteriovenous fistulas contribute to acquired aneurysms, primary (congenital) VAs occurs due to defect in the venous wall during embryogenesis.[1,2,7] The Hamburg and ISSVA classifications both describe such aneurysms as truncular venous malformations, which arise from anomalies in major named vessels due to incomplete development.6 Histological studies show absence of smooth muscle in the tunica media, fragmented elastic fibers, and increased fibrous tissue, all pointing toward congenital structural weakness.[2] Diagnostic imaging plays a critical role in confirming the nature of the lesion. Doppler ultrasonography is the first line investigation due to its non-invasive nature and ability to identify the size, extent, and presence of thrombus. Other imaging modalities such as CT or MRI can further delineate the lesion's relationship to adjacent structures.[8,9] Most of upper extremity VAs are asymptomatic, however complications such as thrombosis, venous obstruction, rupture, and embolism have been reported. Management strategies depend on the presence of symptoms, thrombotic complications, and cosmetic concerns.[10] In asymptomatic cases without thrombus, conservative treatment and close monitoring may be appropriate.

However, the risk of thromboembolic events often justifies surgical intervention. Resection is the treatment of choice in most symptomatic cases. For saccular aneurysms, tangential aneurysmectomy with lateral venorrhaphy is preferred due to simplicity and favorable outcomes. Fusiform aneurysms may require resection with end-to-end anastomosis or interposition grafting. Autologous vein grafts are preferred to minimize immunogenic and thrombogenic complications.[6]

Early recognition of this condition through clinical evaluation and radiological assessment is essential. Surgical resection plays a crucial role, not only in preventing potential complications but also in achieving better cosmetic outcomes, as demonstrated in our case. Only a few reports are available in the literature regarding primary cephalic vein aneurysms, especially in the Pediatric population.

## CONCLUSION

Upper limb venous aneurysms are unusual, early identification with proper imaging and planning surgical excision is very important.

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