



## Brachial Artery Pseudoaneurysm Causing Median Nerve Compression: A Case Report

Authors

**Amit Singh<sup>1</sup>, Vijendra Kumar<sup>2</sup>, Shekhar Tandon<sup>3</sup>**

<sup>1</sup>Assistant Professor, Dept of Cardiovascular & Thoracic Surgery, UP RIMS & R, Saifai, Etawah, India

<sup>2</sup>Associate Professor, Department of Neurosurgery, UP RIMS&R, Saifai, Etawah, India

<sup>3</sup>Professor, Department of Cardiovascular & Thoracic Surgery, UP RIMS&R, Saifai, Etawah, India

Corresponding Author

**Amit Singh**

Assistant Professor, Department of Cardiovascular and Thoracic Surgery, Uttar Pradesh Rural Institute of Medical Science and Research, Saifai, Etawah, Uttar Pradesh, India-206301

Mob: 09917550631 Email: [softmedbiz@yahoo.com](mailto:softmedbiz@yahoo.com)

### ABSTRACT

*Pseudoaneurysms in the upper extremities are less frequent than in the lower extremities. They commonly cause local pain, skin ischemia, rupture, distal embolization and venous edema. Very rarely, median nerve neuropathy can be caused due to compression by a brachial artery pseudoaneurysm. We present an unusual case of median nerve neuropathy due to compression by a long standing iatrogenic giant brachial artery pseudoaneurysm in a middle aged woman, which was managed surgically by aneurysmal resection and saphenous vein graft interpositioning.*

**Key words:** Pseudoaneurysm, Brachial artery, Median nerve.

### INTRODUCTION

Peripheral artery pseudoaneurysms are less frequent in the upper extremities than in the lower extremities. Pseudoaneurysms distal to the axillary artery are rare. Brachial artery pseudoaneurysms cause local pain, skin ischemia, distal embolization & rupture<sup>(1,3)</sup>.

Giant pseudoaneurysms can cause peripheral venous edema and may even compress the adjacent neurologic structure causing sensory and motor deficits<sup>(2)</sup>. The nerve involvement is mainly

neuropraxia which responds well to early surgical intervention. Early diagnosis and surgical therapy is essential to avoid complications, including loss of fingers.

### CASE REPORT

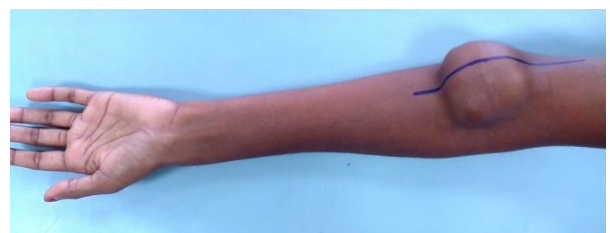
A 40-year old female patient presented with a swelling in the left cubital fossa of 8 years duration. The swelling appeared a few days after she received intravenous injections at her left cubital fossa for fever at a private nursing home.

The swelling increased in size gradually over a few months to achieve the present dimensions. It was associated with dull aching intermittent pain relieved by analgesics. In the subsequent years the size of the swelling remained constant but she noticed gradual thinning of her left forearm and claudicating pain in the left forearm while performing household chores. Since last two weeks she developed pain and numbness of the left thumb and index fingers as well as weakness of the left hand, which prompted her to seek medical attention.

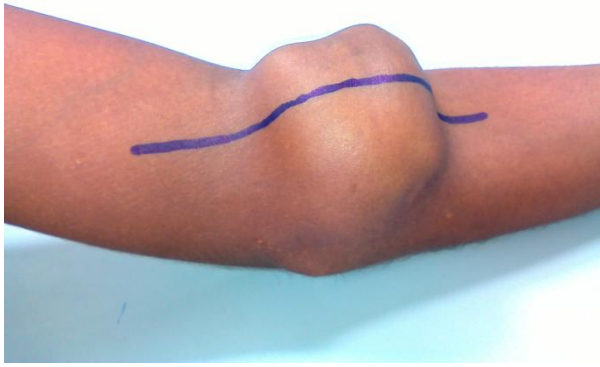
Physical examination revealed a soft oval swelling measuring 7cm x 5cm x 4cm was present in the left cubital fossa with smooth surface and well defined borders. It was non tender, firm to hard in consistency, non-pulsatile, more mobile in the horizontal than longitudinal plane. The overlying skin was stretched. Arterial thrill and bruit were present. The left forearm muscles were wasted with weakness in forearm pronation. There was weakness of the long flexor muscles of the thumb and the index finger, thenar muscles and wrist flexor muscles. Thenar eminence was atrophied. Sensory loss to light touch was detected in the left thumb, index finger, long finger and the radial aspect of the ring finger. Both radial and ulnar arterial pulses were weak. The left hand was colder than the right.

Doppler study revealed a 5cm diameter left brachial artery pseudoaneurysm containing thrombus. Left upper limb arteriography revealed a well defined pseudoaneurysm arising 5 cm above the brachial bifurcation from the anterior wall of the artery.

With informed consent, surgical exploration was done under general anaesthesia with tourniquet control. The median nerve was noted to be splayed across the capsule of the pseudoaneurysm. The brachial artery was freed from the fibrous capsule and its anterior wall was found to be incorporated within the giant pseudoaneurysm. A 4cm portion of brachial artery segment was resected along with the pseudoaneurysm, taking care to protect the median nerve, and saphenous vein interposition grafting was done. Distal pulses were confirmed by palpation. The median nerve was examined by neurosurgeon and found to be intact but compressed and external neurolysis was performed. The wound was irrigated and closure done. Postoperative period was uneventful and she was discharged after a week. Two weeks later the sensory symptoms had improved and two months post procedure the motor function at the wrist and forearm showed significant improvement both subjectively and objectively. Further motor recovery is anticipated. Left radial and ulnar artery pulsations were normal and the hand was warm.



**Fig.1** Swelling in the left cubital fossa with forearm muscle wasting



**Fig.2** Swelling in the left cubital fossa medial view



**Fig.3** Aneurysmal resection and interposition vein grafting.



**Fig.4** Cut section of pseudoaneurysm showing fibrous

### DISCUSSION

Pseudoaneurysms result from a breach in the vessel wall continuity leading to extravasation of blood into the surrounding tissues which is contained in a cavity surrounded by adjacent tissues, fascia, and thrombus<sup>(4)</sup>. Complications include local pain, rupture, venous edema, thrombosis, distal embolization with digital ischemia, extrinsic compression of nearby neurovascular structures and necrosis of the overlying skin and subcutaneous tissue<sup>(1-3)</sup>. Median nerve compression is a rare complication of an iatrogenic brachial artery pseudoaneurysm. Initially, patients present with a pure sensory neuropathy; motor function is preserved until later<sup>(2)</sup>. In long standing cases, the median nerve can become enveloped in fibrous adhesions surrounding the aneurysm<sup>(2,5)</sup>.

Upper extremity arterial doppler study and magnetic resonance angiography can be used for diagnosis, but the gold standard is selective upper extremity arteriography<sup>(6)</sup>. Arteriography provides valuable information regarding the native vessel

morphology and the relation of the pseudoaneurysm to major branches that influences the decision regarding treatment modality.

Several therapeutic strategies have been developed to treat this complication. These include ultrasound-guided compression repair, surgical repair, and minimally invasive percutaneous treatments (thrombin injection, coil embolization and insertion of covered stents). The most appropriate treatment modality must be selected according to the location, size, pathogenesis, accessibility and compression of the adjacent structures by the pseudoaneurysm<sup>(3,7)</sup>.

Surgical options include aneurysmectomy and repair of the arterial defect, which may be done by simple closure of the defect or direct end to end anastomosis. When the arterial defect is too long, interposition of autologous saphenous or basilic venous graft is required. Care should be taken to preserve the adjacent neurovascular structures which may be compressed by or even incorporated in the fibrous adhesions around the pseudoaneurysm.

## CONCLUSION

Median nerve compression is a rare complication of an iatrogenic brachial artery pseudoaneurysm which can cause significant morbidity. Early diagnosis and surgical intervention taking care to preserve the neural integrity is required to prevent permanent neurological deficit.

## REFERENCES

1. Nugud OO, Hedges AR. Axillary artery pseudoaneurysm. *Int J Clin Pract* 2001;55:494-9.
2. Robbs JV, Naidoo KS. Nerve compression injuries due to traumatic false aneurysm. *Ann Surg* 1984;200(1):80-2.
3. Eisenberg L, Paulson EK, Kliewer MA, Hudson MP, DeLong DM, Carroll BA. Sonographically guided compression repair of pseudoaneurysms: further experience from a single institution. *AJR Am J Roentgenol* 1999;173:1567-73.
4. Landau D, Schreiber R, Szendro G, Golcman L. Brachial artery pseudoaneurysm in a premature infant. *Arch Dis Child Fetal Neonatal Ed.* 2003;88:F152-F153.
5. Cartwright MS, Donofrio PD, Ybema KD, Walker FO. Detection of a brachial artery pseudoaneurysm using ultrasonography and EMG. *Neurology* 2005;65:649.
6. Ho PK, Weiland AJ, McClinton MA, Wilgis EF. Aneurysms of the upper extremity. *J Hand Surg* 1987;12:39-46.
7. Hamraoui K, Ernst SM, van Dessel PF, Kelder JC, ten Berg JM, Suttorp MJ, et al. Efficacy and safety of percutaneous treatment of iatrogenic femoral artery pseudoaneurysm by biodegradable collagen injection. *J Am Coll Cardiol* 2002;39:1297-1304.