A rare presentation of idiopathic distal radial artery aneurysm in anatomical snuff box in a 40 year old male

Case presentation

A 59-year-old male came to the outpatient services at Apollo Main Hospitals, Chennai, with wrist pain since one month. The patient had a history of right wrist swelling since 5 years, with gradual increase in size of the swelling. No other significant history was noted. He gave history of pain and difficulty in performing routine activities. There was no history of numbness or tingling sensation in lateral aspect of the hand. There was no history of trauma, previous cannulation or surgery. On physical examination, swelling was solitary, smooth, soft, cystic, well defined margins, located in the right anatomical snuff box, measuring 2 x 2 cm, skin over the swelling was normal. The swelling on examination was non pulsatile and no bruit was detected, but with regard to the differential diagnosis radial artery aneurysm needed to be ruled out. He was evaluated with MRI which was suggestive of non-conclusive soft tissue swelling. As imaging was inconclusive, patient was offered surgical excision of the swelling, Under local anesthesia, an vertical incision was made...
over the swelling, tissues opened in layers and swelling was exteriorised. It was then noticed that the swelling was pulsatile with findings consistent with an aneurysm (Figure 1). Intraoperatively vascular surgeon opinion was obtained. Patient was explained about the findings. After performing Allen’s test and confirming the patency of ulnar artery, the swelling was meticulously dissected and doubly lighted both proximally and distally, excised in toto and sent for Histopathology. Since the aneurysm was smaller in size and patency of the ulnar artery was good, the excision was not followed by reconstruction of the artery. Post operative period was uneventful, patient did not develop any tingling sensation or digital gangrene. Patient was advised CT Angiogram to rule out any other missed aneurysms. Histopathology findings were conclusive of true Radial artery true aneurysm bound by all three layers of the vessel wall (intima, media and adventitia) (Figure 2).

**Discussion**

Upper extremity arterial aneurysms are rare [1,2]. Radial artery aneurysms account for only 2.9% of all upper-extremity aneurysms [3]. The majority of radial artery aneurysms that had perviously been documented were pseudoaneurysms in the wrist brought on by trauma from arterial cannulation or cardiac interventional operations. However, idiopathic radial artery aneurysms are quite uncommon [4]. Snuff box radial artery aneurysms have been recorded in a total of 20 occurrences to date. In the anatomical snuff box, 16 cases of radial artery aneurysms were discovered as of 2016. Four other instances were reported between January 2016 to January 2022 [5-7].

In the current case, the cause of distal radial artery aneurysm was unknown. Based on normal inflammatory marker levels and an analysis of the aneurysm's histology, the likelihood of an connective tissue problem or inflammatory condition was ruled out. Extensor pollicis longus tendon compression on the radial artery, according to Halbach et al., may have a role in the development of an idiopathic aneurysm [6]. A true radial artery aneurysm in a tailor was documented by Behar et al., as a result of recurrent industrial damage [7]. Other reported cases of aneurysms describe trauma, infection, connective tissue disease, or atherosclerosis as the etiological factors [8].

Clinical examination might provide the initial diagnosis [4]. In majority of cases, a pulsatile swelling is the first sign. Apart from that, nerve irritation, paresthesia, restricted wrist movement, distal thrombosis, digital ischemia, rupture, hemorrhosis, skin ulceration, and secondary infection are other problems that may appear [4]. This condition can be often confused with ganglion cyst. Other differential diagnosis includes synovial cyst, lipomas, and neuromas [2].

This condition can be preoperatively diagnosed using angiography, it also helps in identifying other vascular pathologies, such as arteritides, arteriovenous fistulas and malformations, fibromuscular dysplasia and venous anomalies [9]. Duplex ultrasonography can play an important role in distinguishing true arterial aneurysms from pseudoaneurysms and the quality of in-line flow [9].

Resection of the aneurysm and arterial reconstruction with primary end-to-end anastomosis or proximal and distal ligature of the vessel appears to be the preferred approach in cases where the ulnar artery is the dominant arterial supply for the hand [10]. The most common approach for Radial artery an-
eurysms is ligation and excision, which appears to be the preferred approach [11]. Transcatheter therapeutic options such as covered stent exclusion, coil, polymerizing agent embolization are extremely limited and ill advised given the local anatomical restrictions [12]. In the case described here, the location of the aneurysm is within the anatomical snuffbox and affecting the distal radial artery, vascular surgeon opinion was obtained and decision was made to do ligation and excision of the aneurysm, following which distal flow was well maintained and patient developed no complications.

**Conclusion**

Idiopathic distal radial artery aneurysms of the anatomical snuffbox and extremely rare in presentation, and can be misdiagnosed with a synovial or ganglion cyst. Through preoperative evaluation shall be performed and patient education is necessary. Patient shall be advised to have regular follow up because idiopathic aneurysms can occur anywhere in the body.

**References**