



ORIGINAL RESEARCH PAPER

Vascular Surgery

POST-TRAUMATIC PSEUDOANEURYSM OF DIGITAL ARTERY OF HAND: A RARE ENTITY

KEY WORDS:

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ABSTRACT

INTRODUCTION: Pseudoaneurysms of the hand are extremely rare. The most common mechanism involves acute penetrating or repeated microtrauma. The clinical presentation is a painful and pulsatile mass. Radiological investigations usually confirm the diagnosis. The treatment is generally surgical. Prognosis is usually good and only a delayed diagnosis with mismanagement may lead to vascular and neurological complications. **AIMS AND OBJECTIVES:** The study aims to identify when to suspect a pseudoaneurysm of the digital artery of the hand. **Objectives:** Discuss the aetiologies and management of pseudoaneurysm of the digital artery of the hand. **METHODS:** We will present a case of digital pseudoaneurysm of the hand **RESULTS:** The differential diagnosis of a pulsatile mass in the palm should be kept in mind. **CONCLUSION:** Digital artery Pseudoaneurysms are rare, and only a very few cases have been reported in literature. The type of surgery largely depends on the type, location, and symptoms of patient presentation.

Introduction:

Pseudoaneurysms of the hand are rare and only a handful of cases have been reported. The upper limb deep arteries are more commonly affected than superficial arteries which are more vulnerable to penetrating injury. The most common mechanism involves acute penetrating trauma or repeated microtrauma. The clinical presentation of Pseudoaneurysm is a painful and pulsatile swelling[1]. Diagnosis is usually confirmed by ultrasound colour Doppler, MR or CT angiography. The treatment is surgical. Prognosis is usually good and only a delayed diagnosis with mismanagement may lead to vascular and neurological complications.

Case report :

68-year-old male presented with a persistently painful focal area of his right palm at the base of his 4th webspace for 2 years(Fig.1). Initially, there was a painless swelling for which the patient consulted with a local doctor and incision and drainage was done for the same. The patient is vitally stable. The patient has no comorbidities. On local examination, a single 2*2 cm swelling is present over the 4th web space. 1 cm scar incision present from previous surgery. The skin over the swelling is normal. Local tenderness is present. Swelling is tense, palpable thrill and audible bruit were heard. His radial and ulnar pulse were normal with a normal capillary refill of his ulnar and radial-sided digits. Allen's test was negative. There was no evidence of digital ischemia. Ultrasound demonstrated a 2.1*2*1.3 cm sized well-defined heterochoic dilatation arising from the digital branch of the ulnar artery at the junction of the phalangeal-metacarpal joint of the 5th digit. The dilatation shows a complete lumen occluding heterochoic thrombus within with evidence of digital branching of the ulnar artery proximal to focal dilatation(Fig. 2). No evidence of any inflammatory changes. Underlying musculature, vasculature and bone appear normal. The patient was taken up for surgical exploration with excision of Pseudoaneurysm and repair of the feeding vessel(Fig. 3). The pathology report described a saccular dilation of the artery with the fragmentation of the elastic and muscular fibre, consistent with a Pseudoaneurysm.

Discussion:

Pseudoaneurysm or false aneurysm is an outpouching or dilation of an arterial wall that involves the innermost layers of a blood vessel (intima and media) with an intact outer layer (adventitia) with bleeding being contained by a surrounding clot or structures with communication of the intravascular and extravascular space. It differs from a true aneurysm which

involves all three layers of the arterial wall. Aneurysms of the hand are uncommon[2]. The most common location involves the ulnar artery. Aneurysms of the palmar arch and digital arteries are even rarer[3]. The usual presentation of digital artery aneurysms is a painless pulsatile mass in the palm or digits. Direct penetrating injury leading to a saccular aneurysm or repeated microtrauma evolving into a fusiform aneurysm which is the main mechanism in hypothenar hammer syndrome[1]. The anatomy of the ulnar artery as it enters the palm plays an important role in the pathogenesis of hypothenar hammer syndrome. The ulnar artery branches off to the deep palmar arch and exits the canal to form the superficial palmar arch in the Guyon's canal. This superficial branch of the ulnar artery crosses the surface of the hypothenar muscles for about 2 cm before penetrating the palmar aponeurosis. This superficial arterial segment is very susceptible to injury with limited protection from overlying tissues. With repetitive blunt trauma, the superficial palmar branch of the ulnar artery can develop intimal damage leading to vasospasm and causing platelet aggregation and thrombus formation. Eventually the damage spreads through the media into the arterial wall, forming an aneurysm[4]. Vascular complications include digital ischemia from microemboli and neurologic complications such as paresthesia and pain from compression of the sensory branches of the ulnar nerve which run in close proximity to the ulnar artery. Diagnosis is usually done by CT or MR angiography but recent advances in ultrasonography are used successfully for diagnosis and surgical planning. The pathognomonic angiographic features include tortuosity of the ulnar artery with a typical "corkscrew" appearance which on colour Doppler ultrasound demonstrated the so-called 'yin-yang' sign[5]. These imaging findings and history are classic for a traumatic arterial pseudoaneurysm. The recommended treatment for these aneurysms is resection and reconstruction. If the hand is well perfused and the aneurysm is thrombosed simple resection without revascularization is possible. Some authors propose angioplasty with stent if larger vessels are involved, embolization by interventional radiography and ultrasound-guided thrombin injection. These alternatives remain controversial with limited knowledge leading to fatal complications.

CONCLUSION:

Digital artery Pseudoaneurysms are rare, and only a very few cases have been reported in the literature. The type of surgery largely depends on the type, location, and symptoms of patient presentation.



Fig. 1: Preoperative image of swelling.

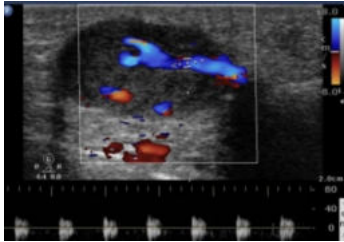


Fig. 2: Ultrasound showing complete lumen occluding thrombus



Fig. 3: Intraoperative image of pseudoaneurysm

REFERENCES:

1. Alexandra Maertens, Frederica Jessie Tchoungui Ritz, Marie Anne Poumellec, Olivier Camuzard, Thierry Balaguer. Posttraumatic pseudoaneurysm of a superficial branch of the ulnar artery: A case report. *International Journal of Surgery Case Reports.* 2020(75):317-321
2. Rivera PA, Dattilo JB. Pseudoaneurysm. *Stats Pearls.* Treasure Island. 2022 Jan
3. Ryan A. Shutze, Joseph Leichty & William P. Shutze (2017) Palmar Artery Aneurysm, *Baylor University Medical Center Proceedings*;30(1):50-51
4. Ablett CT, Hackett LA. Hypothenar hammer syndrome: case reports and brief review. *Clin Med Res.* 2008 May;6(1):3-8.
5. Woodley-Cook J, Konieczny M, Simons M. The ulnar artery pseudoaneurysm. *BMJ Case Rep.* 2015