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Case Report

Superficial palmar arch aneurysm secondary to blunt trauma: Bag of ice versus bare hand!

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ABSTRACT

A 45-year-old male prisoner was referred to the orthopedic outpatients clinic after he sustained a blunt palmar injury when he tried to break-up a bag of ice with the volar aspect of his hand. A few months later a pulsatile expansile mass developed at the site of blunt trauma affecting flexion and extension of the fingers and inability to hold objects. A computed tomography angiogram confirmed the mass to be a true aneurysm of the superficial palmar arch 3 cm in size. The patient was referred to the vascular surgery department where the aneurysm was dissected and ligated with removal of the thrombus with no reconstruction of the vessel necessary. The patient had an uneventful recovery with return of full function.

Introduction

Aneurysms of the hand are a rare clinical entity affecting the ulnar artery most commonly followed by the palmar and digital arteries. [1] The first documented report on PubMed was in 1946 by Zuckerman (Lieut Col.) et al. in the *American Journal of Surgery* [2] with only 32 documented reports since then based on a “title/abstract search” with the majority between 1995 and 2013. They may be classified into true and false types with the false types associated with penetrating trauma and the true category associated with congenital defects [3], ipsilateral clubbing [4], hypothernar hammer syndrome [5], occupation-related [6], tumours [7,8], infective endocarditis [9,10] and haemophilia [14].

Case report

A 45-year-old male prisoner was referred to the orthopedic clinic after sustaining an injury to the palm after trying to break up a bag of ice with the volar aspect of his hand. A few months later a pulsatile expansile mass developed at the site of trauma affecting function. A computed tomography angiogram confirmed the mass to be a superficial palmar arch true aneurysm {Figs. 1 & 2}. The patient was referred to the vascular surgery department for exploration and repair of the aneurysm. Anaesthesia was done using a regional brachial plexus block, followed by surgical exploration of the aneurysm sac. This was exposed through a longitudinal incision in the palm along the lines of Langer. The sac was dissected circumferentially and the ends of the superficial palmar arch supplying the sac were controlled using Yaşargil aneurysm clips (manufactured by Aesculap Surgical Instruments, B. Braun©){Fig. 3} and ligated in

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Fig. 1. Lateral view of CT angiogram showing an aneurysm of the superficial palmar arch.



Fig. 2. AP view of CT angiogram showing a true aneurysm of the superficial palmar arch.

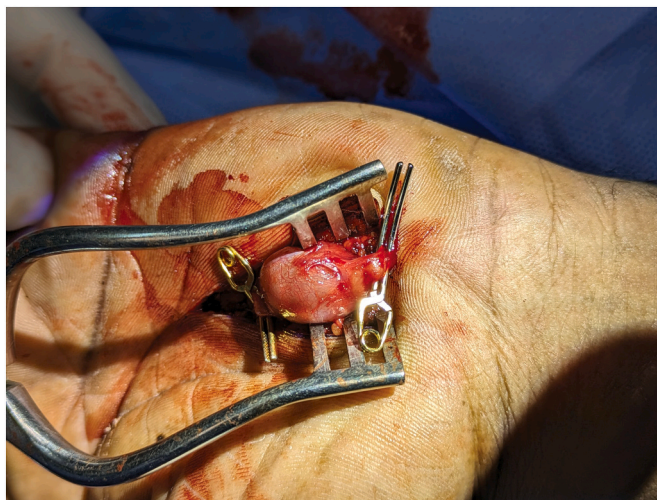


Fig. 3. Sac of superficial palmar arch aneurysm aneurysm dissected and controlled using Yasargil Clips.

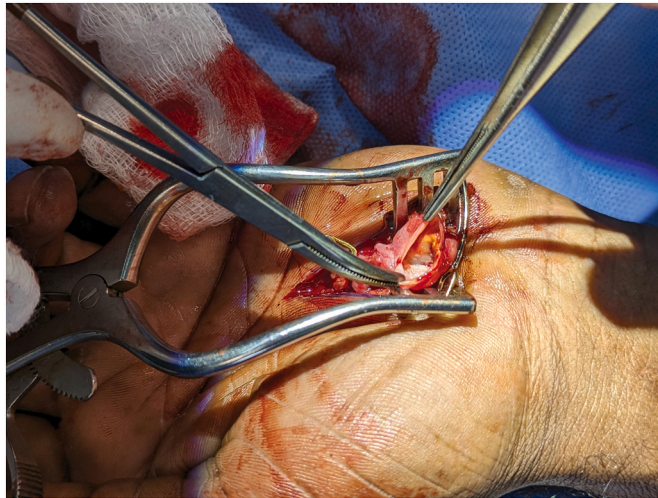


Fig. 4. Sac opened and thrombus removed.



Fig. 5. Postoperative skin closure.

continuity with a 3.0 polypropylene suture. The thrombus was subsequently removed {Fig. 4} and the remnant sac excised so there would be no residual mass in the palm {Fig. 5}. Reconstruction of the vessel was not necessary in this case due to the rich collateral blood supply of the hand. On follow-up the patient had an uneventful recovery.

Discussion

Aneurysms of the hand are rare and can be classified into true and false types. There are only 32 reports documented on a PubMed search using the “title/abstract” option. The documented congenital causes include a true aneurysm of the hand [3] and an association with ipsilateral clubbing finger [4]. Occupational and sport associations include hypothenar hammer syndrome from ice-hockey stick-handling [5] and use of a screwdriver in an electrical construction engineer [6]. Tumours documented include a glomangioma of the superficial palmar arch [7] and a malignant epithelioid hemangioendothelioma [8]. Infective causes include a mycotic aneurysm of the superficial palmar arch associated with bacterial endocarditis [9] and mycotic aneurysm of the digital artery [10]. With regard to false aneurysms there are cases documented in children resulting from penetrating trauma with a knife in a six-year old [11] and the superficial palmar arch in another [12]. There is one iatrogenic injury post-operative after carpal tunnel decompression [13]. Other rare aneurysms include those of the digital artery [14] and those secondary to blood dyscrasias such as haemophilia [15].

Management options include ligation in continuity and segmental reconstruction using reversed venous grafting which is reserved for end digital artery reconstruction [16]. With regard to the palm reconstruction, this is decided upon by surgical judgement at the time of exploration as it may not be necessary due to the rich collateral blood supply of the palm of the hand and the aneurysm may be ligated in continuity as in this case with a 3.0 polypropylene suture [16,17]. We would advise the remnant sac should always be excised completely and thrombus removed so as not to have any residual mass in the palm which may affect function, cosmesis and feel uncomfortable for the patient in the future.

CRedit authorship contribution statement

Michael Ramdass: Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Conceptualization. **Megan Augustus:** Writing – original draft. **Keagan Dos Santos:** Writing – original draft, Investigation. **Richard Spence:** Writing – original draft, Project administration. **Chanelle Skeete:** Writing – original draft, Writing – review & editing. **Adedapo Oladiran:** Supervision, Project administration, Methodology. **Adrian Brahim:** Software, Data curation.

Declaration of competing interest

The authors hereby declare that there are no financial or other type conflicts of interest in the creation of this article. There is no related funding source, no animal experiment, no trial number and written consent was obtained from the patient.

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