

Case Blog

## Hypothenar Hammer Syndrome Caused by Playing Soccer Goalie

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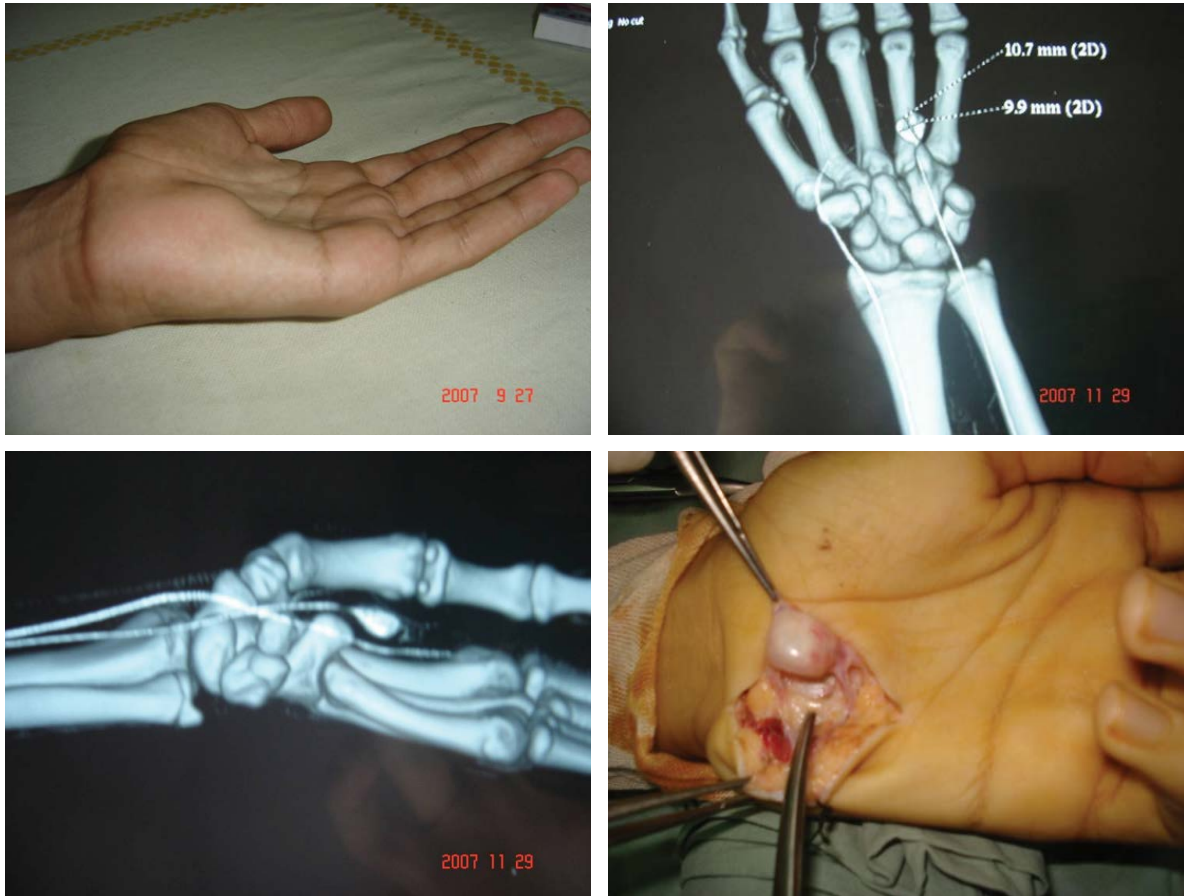


Figure 1: Showing extent of palmar aneurysm.

Figure 2: X-ray films of the hand.

Figure 3: Digitalized angiography.

Figure 4: Intraoperative photograph shows the ulnar artery aneurysms.

### Abstract

In isolated true aneurysm of the upper extremity especially of the palmer arch, have been well described as a clinical finding as a part of the Hypothenar Hammer Syndrome. Presented is a case of true ulnar artery aneurysm in a 14 year old patient in with there was a history of repeated trauma probably caused by playing soccer goalie. The aneurysm was successfully resected and reconstructed by end to end anastomosis.

### Introduction

Aneurysms should be suspected in patients with a mass in the hand following either open or closed trauma. Posttraumatic aneurysms are classified as true or false [1]. False aneurysms usually result from penetrating trauma and can occur in any

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disrupted vessel. In contrast, true aneurysms usually occur in either the thenar or hypothenar eminence a few weeks following closed hand injuries. In this work, we report the case of a 14-year patient who presented with an isolated palmar arch aneurysm due to repetitious blunt trauma, probably caused by playing soccer goalie. The case is discussed in the context of other reported cases of ulnar artery aneurysms in children.

## Case Presentation

A 14-year-old-male patient was admitted to our hospital with a gradually enlarging pulsatile mass in his left palm in the hypothenar eminence. Our patient is a goal keeper without medical history who consulted for a swelling on the ulnar side of the left hand that has developed over 3 months and gradually increasing in volume with tingling of the 4<sup>th</sup> and 5<sup>th</sup> fingers (Figure 1). Physical examination revealed a pulsatile mass of the hypothenar eminence. Motor and sensory functions were normal, and there were no vascular changes distal to the site of swelling. Additional examinations showed that the inflammatory balance was normal. X-ray films of the hand did not present any abnormalities (Figure 2). The echography showed the presence of a cyst in the path of the ulnar artery, in addition the Doppler image and digitalized angiography showed the presence of arterial flow at this training, this image was in favor for an arterial aneurysm (Figure 3).

During surgical exploration, a longitudinal skin incision was made directly over the aneurysm. Sharp dissection through the fascia revealed a 1.5 cm ulnar artery aneurysm. Dissection was done and vessel loops were used to control the aneurysm (Figure 4). All vessels that communicated with the aneurysm were therefore ligated and the aneurysm sac was resected. Reconstruction was made by end-to-end anastomosis. Histology demonstrated a true aneurysm, the patient's postoperative course was uneventful, and he was discharged home on the second postoperative day. At follow-up 7 months later, the patient had normal left hand function and good perfusion.

## Discussion

Although injuries to the hand are very common in the athletic or occupational setting artery aneurysm of the hand has rarely been reported [2]. The first reported case of an arterial aneurysm involving the hand occurred in a coachman in Rome and was described by Guattani. The superficial ulnar artery distal to the hamet bone just as it leaves Guyon's canal is most susceptible to trauma, leading to arterial wall injury and possible aneurysm formation. If the anatomy of the ulnar artery in the palm is reviewed, it can be seen why traumatic true aneurysms are the most frequent sub-type. The artery lies against the hook of the hamate and is relatively unprotected in the region between Guyon's canal and the palmar fascia. It is within this region that trauma to the artery tends to occur and aneurysms form. True aneurysms were considered by Middleton to be occupational in origin and to be caused by blunt trauma, occurring in single or multiple episodes. Trauma causes contusion of the artery, with disruption of the tunica media due to hemorrhage and consequently the vessel dilates to form an aneurysm.

This diagnosis can be revealed by a swelling of the hypothenar eminence that can be pulsatile. The lesion's auscultation can objective a thrill witch confirms the vascular origin of the aneurysm. Sometimes, the aneurysm is associated with pain when placing hands on surfaces or gripped objects. We can also see a sensitive trouble in distality such as abnormal sensation or hypoesthesia of the fingers. Generally in front such lesion, we should make the difference between traumatic or occasional origin. Some aneurysms are revealed after blunt or penetrating trauma. Otherwise, some other lesions are perfectly asymptomatic.

confirmation by surgical exploration, angiography, and other noninvasive tests have been described [3,4]. Although the use of doppler has revolutionized the evaluation of vascular patency the relative quantification of hemodynamics by doppler mapping has not been described of Hypothenar Hammer Syndrome. Doppler mapping, a proven, noninvasive technique of visualizing vascular anatomy [5,6] has applicability in the preoperative assessment of ulnar artery aneurysm.

Surgery is the choice of treatment after intensive and careful investigation for other distal artery lesions. Intra-operatively the need for arterial reconstruction should be carefully considered.

True posttraumatic aneurysms of the hand are usually due to closed hand trauma while false aneurysms usually occur after open trauma [7]. False aneurysms can occur in any artery in the path of the penetrating object that produced the injury. In Middleton's series [5], the false aneurysms resulted from open trauma, with the exception of one case that followed closed reduction of a metacarpal-phalangeal dislocation of the thumb. True aneurysms are most common at two specific sites [8]. The first site is in the hypothenar eminence where the ulnar artery is very superficial and unprotected distal to Guyon's canal and proximal to the palmar aponeurosis. In this location the ulnar artery is close to the hamate, which functions as an anvil. The second site is in the thenar eminence where the superficial branch of the radial artery overlies the greater multangular bone, again in a superficial and unprotected portion of its course. In this paper, we present an isolated palmar arch aneurysm following repetitious blunt trauma, responding well to surgery.

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