Congenital aneurysm of the common digital artery: case report and literature review

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Introduction

Arterial aneurysms of the hand can rarely occur following chronic blunt trauma. This is most commonly seen in adults and often involves the ulnar artery as in hypothenar hammer syndrome. Aneurysms of the hand are much rarer in the pediatric population and of these, congenital causes of aneurysms and pseudoaneurysms of the hand are most seldom seen. We present a case of an infant with a congenital arterial aneurysm of the common digital artery and superficial palmar arch.

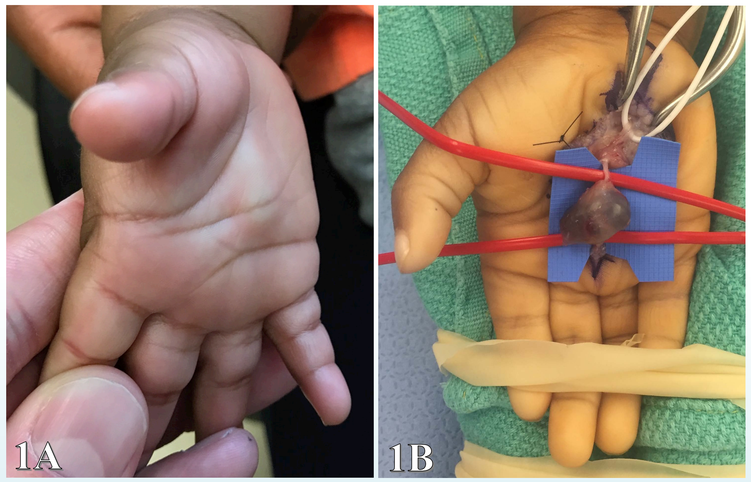


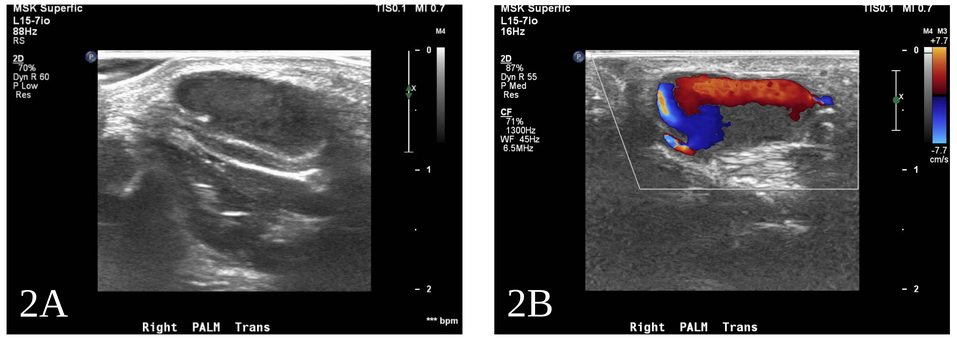
Figure 1A: Patient presented with an enlarging pulsatile mass. **1B:** Intraoperative photograph demonstrating 1.5 cm aneurysm.

Case Report

A 15-month-old African American boy without history of trauma presented with progressively enlarging, pulsatile mass of the right palm. Arterial angiography demonstrated an aneurysms of the common digital artery of the third web space just distal to its takeoff from the superficial palmar arch. Sclerotherapy was considered, but given concern for the distal propagation of thrombus into the digital vessels, we elected to proceed with surgical excision. During the operative resection, the 1.5 cm aneurysm was clamped with adequate distal flow, and subsequently resected without need for arterial reconstruction. Microscopic examination of the resected specimen revealed findings consistent with a true congenital arterial aneurysm. The patient recovered well from the procedure with no functional deficits.

Literature Review

A literature review found 13 documented cases of congenital or true arterial aneurysms of the hand in the pediatric population. Patient age ranged from 5 months to 18 yrs. One patient had a history of trauma. None had a history of hereditary collagen disease or Kawasaki disease. Locations of the aneurysms included: ulnar artery (n=9), superficial palmar arch (n=1), and common digital artery (n=2). In all cases, management consisted of operative exploration and aneurysm excision. Arterial reconstruction was performed in 5 cases.



Figures 2A and 2B: Ultrasound imaging with color doppler demonstrating characteristic 'ying-yang' sign.

Age	Sex	True/False	Artery	Cause	References
5 mo	F	True	Ulnar	Congenital	Iyer et al
8 mo	M	True	Common Digital	-	Itoh et al
18 mo	M	True	Ulnar	Congenital	Al-Omran
1 yr	M	True	Ulnar	Congenital	Offer and Sully
2 yr	M	True	Ulnar	-	Amjad
4 yr	F	True	Ulnar	-	Deune and McCarthy
4 yr	F	False	Superficial Palmar Arch	Congenital	Lourie
8 yr	M	True	Ulnar	-	Witt et al
12 yr	M	True	Ulnar	Congenital	Parsa
12 yr	M	True	-	-	Rikukawa et al
16 yr	F	True	Common Digital	-	Shutze et al
16 yr	M	True	Ulnar	Blunt trauma	Green
18 yr	M	True	Ulnar	-	Martin

Table 1: Patient characteristics of all reported cases of congenital palmar aneurysms and pediatric cases of true palmar aneurysms.

Discussion

Arterial aneurysms of the hand are infrequently encountered. These small-caliber arteries require high pressures to distend, and are much more likely to be fully transected by penetrating trauma. The ulnar artery is the most frequently involved, with the palmar artery and digital arteries being least common. Patients with aneurysms of the hand most commonly present with a pulsatile mass accompanied by varying degrees of pain, numbness/tingling, or cold intolerance depending on the level of nerve involvement. Diagnostic modalities include physical exam, ultrasonography, arteriography, or magnetic resonance (MR) arteriography. Treatment ranges from observation to surgery based on the degree of hand deformity, patient discomfort, or concern for thrombotic vessel occlusion. Microvascular reconstruction is reserved for cases without adequate collateral blood flow.

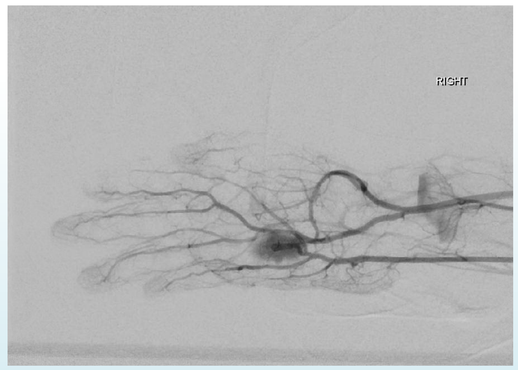


Figure 3: Angiogram localizing aneurysm to common digital artery of the third web space.

Conclusion

Few reported cases of congenital or true arterial aneurysms of the hand in pediatric patients exist in the present literature. Patients are diagnosed and treated utilizing similar approaches among these case reports. Our patient contributes to these rarely reported cases of pediatric palmar aneurysms and one of the first cases of a congenital true aneurysm originating from the common digital artery.

References

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