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# Haemangioma of the Distal Palm treated by Surgical Excision – A Case Report

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**Abstract** **Case Report**

Vascular anomalies are broadly classified as either vascular tumours or vascular malformations. Haemangiomas come under vascular tumours and are the fourth most common tumor of the hand and consist primarily of proliferating blood vessels within the soft tissue. The common symptoms include progressive enlargement of the lesion and throbbing pain. Haemangiomas are readily compressible, poorly defined, bluish, subcutaneous masses that distended when the venous return was obstructed and contracted when the extremity was elevated. Plain radiographs will show a soft tissue mass and the typical calcification of phleboliths may be seen. The treatment of haemangiomas is surgical excision with the ligation of the tributory vessels to decrease the chances of recurrence. Here, we report a case of a haemangioma of the hand which was surgically excised.

**Key words:** Vascular anomaly, Blood vessel, Benign, Endothelium, Complications.



## INTRODUCTION

Haemangiomas are benign neoplasm of endothelial cells and arethe most common childhood tumour occurring in about 12% of babies, especially in Caucasian females [1, 2]. They are usually absent at birth (60%) and have a characteristic twostep process of growth and regression [2, 3]. Haemangiomas can have superficial, deep or mixed components and during the proliferative phase, they appear as high flow lesions [1]. The clinical picture depends on the depth of lesion and degree of dermal involvement [2, 4]. Strawberry lesions occur when the lesions involve the skin, whereas deep lesions usually have a bluish appearance [5]. The diagnosis is usually clinical but contrast MRI helps in differentiating from other low flow lesions and gives information regarding the extent of the lesion [6, 7]. The treatment is usually conservative but when complications arise, we treat with high dose steroids, alpha interferon or chemotherapeutic agents, all which have side-effects. When the lesion ulcerates or bleeds, surgery is required.

## CASE REPORT

An 8 year old boy presented to our department along with his mother complaining of a swelling in the left hand for 4 years. He was apparently normal 4years ago when the mother saw a small swelling in the left palm. It was spontaneous in onset and gradually progressed to the present size. There was no history of pain, bleeding or ulceration of the swelling. There were no other co-morbid illnesses. On examination, a diffuse swelling of size 4 x 2 x 2cm was found on the left distal palm in the 4$^{th}$ web space. The surface was smooth with no dilated veins or ulcers. The swelling was not warm or tender with ill-defined margins and was compressible (Fig. 1). A clinical diagnosis of a vascular anomaly was made probably a haemangioma. The diagnosis was confirmed by MRI which showed the swelling as a

well-circumscribed lesion enhancing with gadolinium with a hypointense T1 signal and hyperintense T2 signal with some heterogeneity. We planned for surgical excision of the lesion. Under general anaesthesia, tourniquet control and loupe magnification, we explored through a web space incision at the summit of the swelling. The lesion was carefully dissected out and sent for histopathology. Tourniquet was released and haemostasis was secured. The incision was closed in layers and a compression dressing was applied. Post-operative was uneventful and the sutures were removed on the 10$^{th}$ post-operative day.

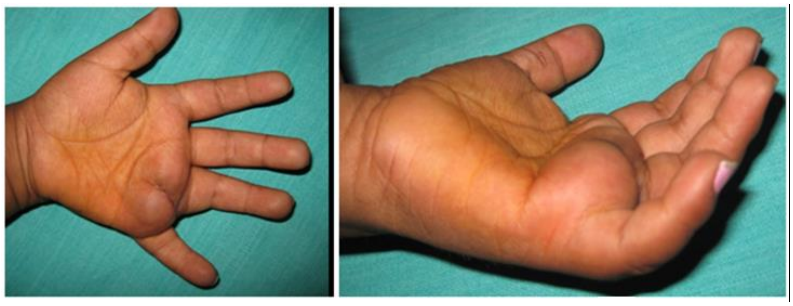

**Fig-1: Clinical photograph showing the lesion in the left distal palm**

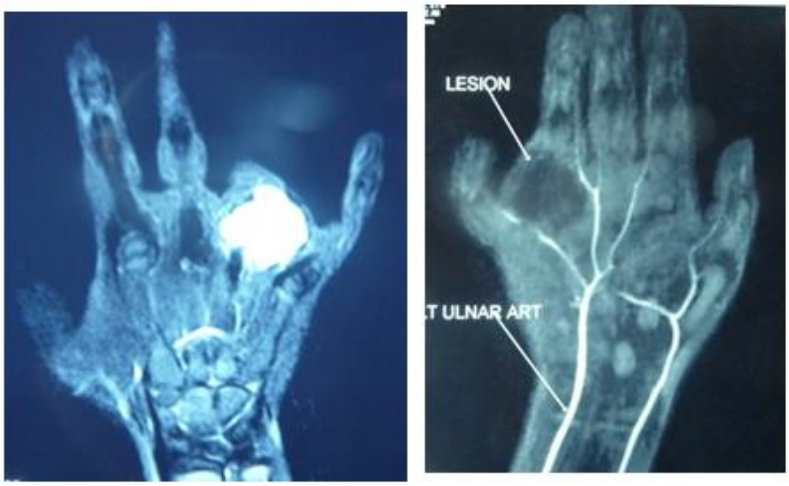


**Fig-2: MRI pictures showing low T1 and high T2 signals with gadolinium contrast**

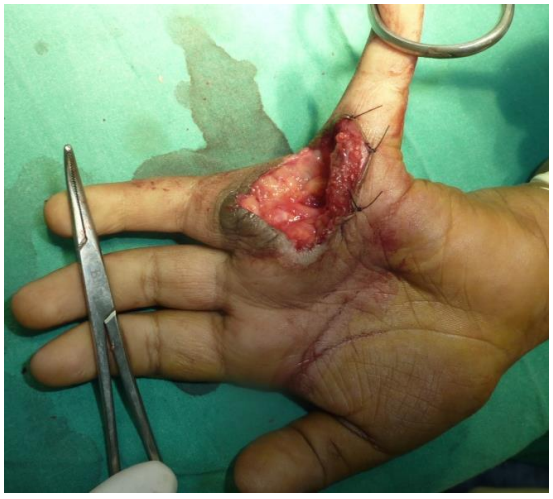

**Fig-3: Picture after excision of swelling**

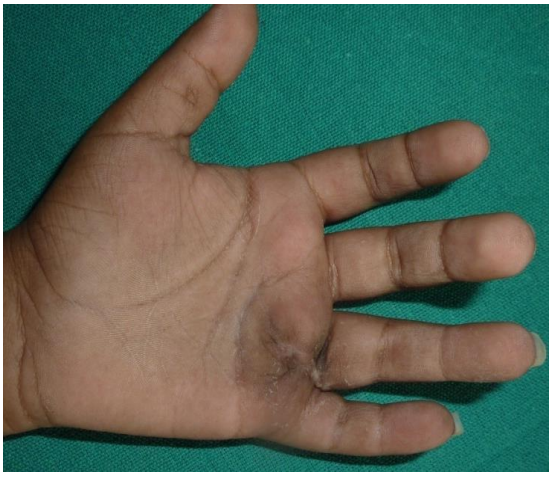

**Fig- 4: Late post-operative photograph**

## DISCUSSION

Vascular tumours are common in children and account for approximately 65% of childhood tumours of which 7 – 10% are haemangiomas [8, 9]. Hemangiomas affect the upper extremity in 15% of cases [10]. Haemangiomas are benign and have a

characteristic phase of rapid growth followed by a static period and then a slow involution. Haemangiomas do not recur. The growth phase of a haemangioma is a endothelial proliferation and is accelerated out of proportion to the growth of the child lasting until about one year of age. The static phase is actually still a growth phase for haemangiomas but this growth in the mass now matches the growth of the child lasting for many years. The involution of the haemangioma is typically a slow process of softening, shrinkage, and colour change. Telangiectasias, fibrous masses, and inelastic skin commonly remain [11]. Approximately 50% of haemangiomas involute by 5 years of age and 70% by 7 years [12]. Congenital haemangiomas are less common and appear fully formed at birth. These haemangiomas typically involute rapidly and are called *rapidly involuting congenital haemangiomas* or they remain stable long term and are called *noninvoluting congenital haemangiomas*. Magnetic resonance imaging (MRI) findings can be helpful in cases in which the haemangioma does not follow a typical course. Ultimately, biopsy or excision can be diagnostic [12]. Another entity is the intramuscular haemangioma which is uncommon and being more prevalent in the lower extremity. They present in adolescence as a painful swelling, particularly during periods of strenuous exercise. Diagnostic imaging might prove to be particularly useful in the diagnosis of intramuscular haemangioma, especially if surgical intervention is planned [13, 14]. Histologic evaluation of haemangiomas reveals 2 distinct types, capillary and cavernous. Capillary type lesions are nonvascular, with a spongy appearance whereas the cavernous type has large vessels, with thin walls lined by flat endothelium. During the proliferating phase, the histologic appearance demonstrates rapid turnover of the endothelium with enlarging vessel diameter. There are large endothelial cells lining the capillary lumens. As the haemangioma matures and enters the static growth phase, there is flattening of the endothelial cells. During the involution phase, there is considerable mast cell infiltration and progressive fibrosis of the mass [12, 15]. The etiology of haemangiomas is unknown. An association has been found between haemangioma development and the pattern of Notch gene expression in haemangioma cells. Notch signaling has a role in the stabilization of arterial endothelial fate and angiogenesis [16]. Abnormal production of vascular endothelial growth factor might also lead to haemangioma formation [12]. There is a female predominance of haemangiomas between 3:1 and 5:1, and increased estrogen levels have been documented in children with haemangiomas, suggesting a hormonal influence [17]. Unlike vascular malformations and other vascular tumors, haemangiomas uniquely express GLUT-1, an erythrocyte-type glucose transporter protein [18]. Magnetic resonance imaging is a common imaging modality done in patients with haemangiomas. On MRI, haemangiomas appear as well-circumscribed lesions that enhance with gadolinium. The T1 signal is typically low or isointense to muscle and the T2 signal is high, with some heterogeneity. The heterogeneity corresponds to the feeding and draining vessels that are higher flow areas [19]. Treatment of haemangiomas is generally observation as most haemangiomas will spontaneously involute. Some symptomatic or persistent lesions require additional management. Treatment options include intralesional or systemic steroids, lasers, chemotherapeutic and sclerosing agents. Oral steroids might have success in halting lesion growth, although the systemic effects must be considered. Pulsed dye lasers have also been used particularly in ulcerated haemangiomas, resulting in decreased pain and reduced healing time [20, 21]. Sclerosing agents and bleomycin have been used with equivocal results [12, 22]. Intralesional bleomycin injections have shown success in treating infantile haemangiomas, but it requires multiple sittings and it causes local pigmentation changes, scarring and pulmonary fibrosis [23]. Additional treatment might be required when the haemangioma is refractory to first-line measures, has a mass effect that is harming adjacent structures, or is causing haematological or hemodynamic instability. Ulceration occurs in approximately 30% of haemangiomas, typically during the proliferative phase, and most often, local measures are sufficient to control the lesion. In refractory cases, lasers have demonstrated good success [12, 24]. Tang *et al*. in his retrospective review of 89 patients of a variety of vascular tumours over 25 years, showed a marked decrease in recurrence following removal with clean surgical margins [25]. Intralesional or marginal resection resulted in a 19% recurrence rate. Larger tumour size was the primary determinant for recurrence. Overall, 83% of the patients reported excellent function with no impairment, and only 2% reported poor function [25].

## CONCLUSION

Haemangiomas are common in newborns and have a characteristic phase of rapid growth, then a static period, and followed by a slow involution. Haemangiomas do not recur. In contrast, vascular tumors present later and do not have spontaneous involution. The treatment depends on the size of the lesion and the predominant vessel type. Low-flow vascular malformations are more common than high-flow lesions. Imaging, especially MRI can help distinguish the type and extent of the lesion. Treatment options include conservative management and/or surgical excision. Recurrence is common following incomplete resection.

## REFERENCES

1. Burrows, P. E., Laor, T., Paltiel, H., & Robertson, R. L. (1998). Diagnostic imaging in the evaluation of vascular birthmarks. *Dermatologic clinics*, *16*(3), 455-488.

2. Fishman, S. J., & Mulliken, J. B. (1993). Hemangiomas and vascular malformations of infancy and childhood. *Pediatric Clinics of North America*, *40*(6), 1177-1200.
3. Mulliken, J. B., & Glowacki, J. (1982). Hemangiomas and vascular malformations in infants and children: a classification based on endothelial characteristics. *Plastic and reconstructive surgery*, *69*(3), 412-422.
4. Waner, M., Suen, J. Y., & Dinehart, S. (1992). Treatment of hemangiomas of the head and neck. *The Laryngoscope*, *102*(10), 1123-1132.
5. Fordham, L. A., Chung, C. J., & Donnelly, L. F. (1999). Congenital vascular and lymphatic malformations of the head and neck. *Radiol Clin North Am*.
6. Meyer, J. S., Hoffer, F. A., Barnes, P. D., & Mulliken, J. B. (1991). Biological classification of soft-tissue vascular anomalies: MR correlation. *AJR. American journal of roentgenology*, *157*(3), 559-564.
7. Barnes, P. D., Burrows, P. E., Hoffer, F. A., & Mulliken, J. B. (1994). Hemangiomas and vascular malformations of the head and neck: MR characterization. *AJNR: American Journal of Neuroradiology*, *15*(1), 193.
8. Fleming, A. N., & Smith, P. J. (2000). Vascular cell tumors of the hand in children. *Hand clinics*, *16*(4), 609-624.
9. Blei, F. (2005). Basic science and clinical aspects of vascular anomalies. *Current opinion in pediatrics*, *17*(4), 501-509.
10. Dayicioglu, D., Martell, E. G., Ogilvie, M., Gozu, A., Panthaki, Z. J., & Armstrong, M. B. (2009). Vascular anomalies of the upper extremity in children. *Journal of Craniofacial Surgery*, *20*(4), 1025-1029.
11. Enjolras, O., Chapot, R., & Merland, J. J. (2004). Vascular anomalies and the growth of limbs: a review. *Journal of Pediatric Orthopaedics B*, *13*(6), 349-357.
12. Smolinski, K. N., & Yan, A. C. (2005). Hemangiomas of infancy: clinical and biological characteristics. *Clinical pediatrics*, *44*(9), 747-766.
13. Ranero-Juárez, A. G., Rosales-Galindo, V. M., León-Takahashi, A. M., Arenas-Guzmán, R., & García, C. (2009). Intramuscular hemangiomas of the extremities: report of six cases. *International journal of dermatology*, *48*(8), 875-878.
14. Wisniewski, S. J., Newcomer, K. A. R. E. N., & Stanson, A. W. (2005). Intramuscular hemangioma of the foot: a diagnostic dilemma. *Medicine and science in sports and exercise*, *37*(10), 1655-1657.
15. Tille, J. C., & Pepper, M. S. (2004). Hereditary vascular anomalies: new insights into their pathogenesis. *Arteriosclerosis, thrombosis, and vascular biology*, *24*(9), 1578-1590.
16. Wu, J. K., Adepoju, O., De Silva, D., Baribault, K., Boscolo, E., Bischoff, J., & Kitajewski, J. (2010). A switch in Notch gene expression parallels stem cell to endothelial transition in infantile hemangioma. *Angiogenesis*, *13*(1), 15-23.
17. Mulliken, J. B., Fishman, S. J., & Burrows, P. E. (2000). Vascular anomalies. *Current problems in surgery*, *37*(8), 517-584.
18. North, P. E., Waner, M., Mizeracki, A., & Mihm Jr, M. C. (2000). GLUT1: a newly discovered immunohistochemical marker for juvenile hemangiomas. *Human pathology*, *31*(1), 11-22.
19. Gampper, T. J., & Morgan, R. F. (2002). Vascular anomalies: hemangiomas. *Plastic and reconstructive surgery*, *110*(2), 572-85.
20. Kim, H. J., Colombo, M., & Frieden, I. J. (2001). Ulcerated hemangiomas: clinical characteristics and response to therapy. *Journal of the American Academy of Dermatology*, *44*(6), 962-972.
21. Matsumoto, K., Nakanishi, H., Koizumi, Y., Seike, T., Kanda, I., & Kubo, Y. (2003). Sclerotherapy of hemangioma with late involution. *Dermatologic surgery*, *29*(6), 668-671.
22. Pienaar, C., Graham, R., Geldenhuys, S., & Hudson, D. A. (2006). Intralesional bleomycin for the treatment of hemangiomas. *Plastic and reconstructive surgery*, *117*(1), 221-226.
23. Astner, S., Anderson, R.R. (2005). Treating vascular lesions. *Dermatol Ther*, 18:267–281.
24. Tang, P., Hornicek, F. J., Gebhardt, M. C., Cates, J., & Mankin, H. J. (2002). Surgical treatment of hemangiomas of soft tissue. *Clinical Orthopaedics and Related Research®*, *399*, 205-210.