

Case Report

A case report of rare incidence of benign vascular lesion of hand masquerading magnetic resonance imaging findings

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ABSTRACT

Vascular anomalies of hand can present as soft tissue swelling and can be one of differential along with the common ones' ganglion cyst, giant cell tumor (GCT), and epidermoid cyst. It can be hemangioma or vascular malformation, they differ based on histological, clinical and biological characteristics. A 65-year-old male presented with swelling in right little finger dorsal part since one month. It was insidious in onset and not associated with pain or trauma. Vascular lesions of hand should be kept in mind as one of differential while examining swellings of hand. Initial investigation like ultrasonography (USG), X ray, magnetic resonance imaging (MRI) and fine needle aspiration cytology (FNAC) should always be followed by excisional histopathology for confirmation and labelling the diagnosis.

Keywords: Vascular lesion, Hemangioma, Hand swelling, Giant cell tumor, MRI misdiagnosis, Histopathology

INTRODUCTION

Hand swellings are a frequent presentation in clinical practice and may arise from diverse tissues, including skin, subcutaneous fat, tendon sheaths, bone, and vascular structures. The majority of cases typically involve ganglion cysts, epidermoid inclusion cysts, and giant cell tumors of the tendon sheath, which are usually site-specific and amenable to clinical diagnosis.¹

Most swellings present with insidious onset, are gradually progressive, and generally painless. Vascular anomalies account for the fourth most common mass in the hand and wrist after ganglion cysts, giant cell tumors, and epidermoid cysts.² Among vascular anomalies, hemangiomas and vascular malformations are the two principal subtypes that differ in biological behavior, clinical presentation, and histopathological features.³

Hemangiomas are benign vascular tumors characterized by endothelial proliferation and lobules of microcapillaries. They are often not visible at birth, but undergo a rapid growth phase followed by spontaneous

involution.³ Conversely, vascular malformations are congenital lesions with structurally abnormal vessels and no endothelial proliferation. They can enlarge due to trauma, hormonal changes, or infection and are classified into low-flow (venous, lymphatic, capillary) and high-flow (arteriovenous) types.⁴

Differentiating between vascular malformations and hemangiomas is crucial due to differences in treatment and prognosis. Moreover, neoplastic and non-neoplastic vascular swellings may simulate other benign or malignant lesions, posing diagnostic challenges. In this report, we describe an unusual case of a benign vascular lesion of the hand misinterpreted as a giant cell tumor on magnetic resonance imaging (MRI), reinforcing the importance of histopathology in confirming the diagnosis.

CASE REPORT

A 65-year-old right-handed male presented to the outpatient department of P.D.U Civil Hospital, Rajkot, with a painless swelling over the dorsum of the right little finger, persisting for one month. He denied any history of

trauma, fever, discharge, or systemic symptoms such as weight loss.

On physical examination, a firm, well-circumscribed, globular swelling measuring approximately 32×16 mm was observed on the proximal dorsal aspect of the right little finger. The mass was non-tender, non-pulsatile, with no overlying skin changes or signs of inflammation.



Figure 1: Clinical appearance of swelling.

Ultrasonography revealed a 33×19 mm heterogeneous, hypoechoic lesion with internal vascularity, raising suspicion for a neoplastic etiology. Fine needle aspiration cytology (FNAC) suggested a probable vascular lesion. Magnetic resonance imaging (MRI) showed a well-defined heterogeneous soft tissue lesion encasing the extensor tendon at the proximal phalanx, with a radiological impression favoring a giant cell tumor (GCT) of the tendon sheath.

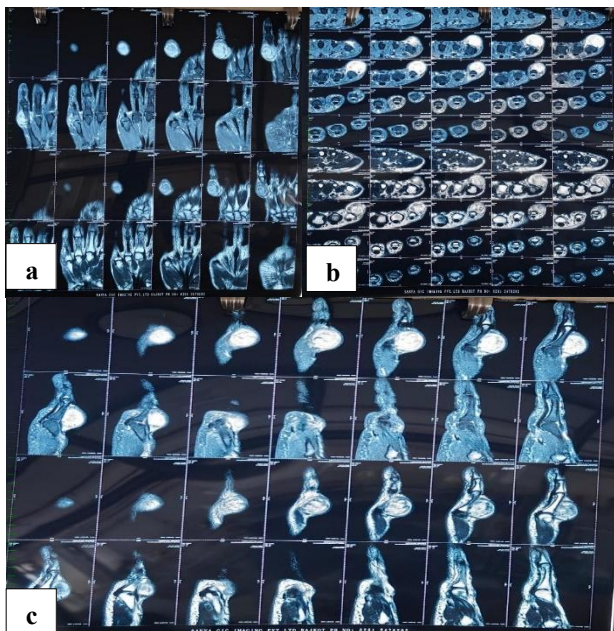


Figure 2 (a-c): MRI findings showing well defined heterogeneous soft tissue lesion.

Given the diagnostic ambiguity, the patient was taken for elective surgical excision under regional anesthesia. A longitudinal dorsal incision was made, and careful dissection revealed an ovoid, encapsulated, 35×7 mm lesion with prominent surface vascularity. The lesion was excised completely, followed by saline irrigation and primary closure.

Histopathological examination revealed capillary proliferation and lobules of endothelial hyperplasia without atypia—confirming the diagnosis of a benign capillary hemangioma.

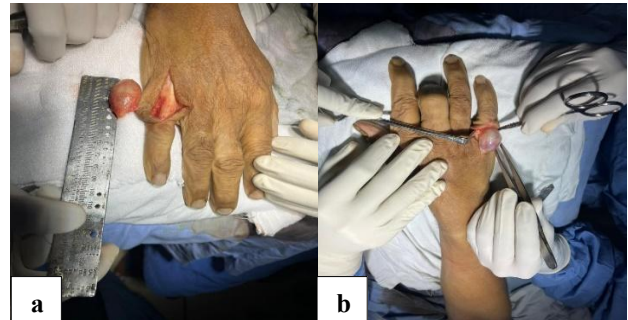


Figure 3 (a and b): Intraoperative clinical image and excised mass.

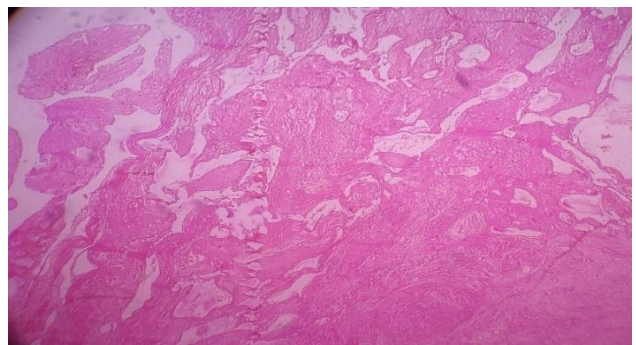


Figure 4: Histopathology image.

The postoperative course was uneventful. Sutures were removed on the 10th postoperative day, and the patient regained full range of motion within three weeks. On 3-month follow-up, there was no recurrence or residual deformity.

DISCUSSION

Vascular lesions of the hand, although rare, present significant diagnostic dilemmas due to their resemblance to more common benign soft tissue tumors. Most reported vascular tumors involve the head, neck, and trunk, with skeletal involvement being uncommon.⁵ When present in the hand, hemangiomas can mimic ganglion cysts, epidermoid inclusion cysts, or GCTs due to overlapping clinical and imaging features.⁶

In our case, the MRI suggested a GCT, which is consistent with findings reported by Sharma et al, where 22% of soft tissue hemangiomas were misdiagnosed on imaging alone.⁷ GCTs typically appear as solid, well-defined, heterogeneous lesions on MRI, and due to their frequency, they are often the first differential. However, hemangiomas may display similar signal intensities due to the presence of slow-flow vascular channels and fibrous septa, leading to potential misinterpretation.

Histopathology remains the gold standard for definitive diagnosis. Our findings of endothelial hyperplasia and capillary proliferation are hallmark features of capillary hemangiomas, in contrast to GCTs, which characteristically show multinucleated giant cells and mononuclear stromal cells.⁸

The age of presentation in our case is atypical, as hemangiomas are more commonly diagnosed in children and young adults. However, cases of late-onset capillary hemangiomas have been reported, albeit infrequently. A study by Patel et al described a similar presentation in a 62-year-old female, reinforcing that vascular tumors should be considered in elderly patients as well.⁹

Imaging modalities, while helpful, can often be inconclusive. In a retrospective review by Lee et al, ultrasonography had a diagnostic accuracy of 72% in distinguishing hemangiomas, while MRI was helpful in 68% of cases when supported by clinical correlation.¹⁰ FNAC provides preliminary insight but is often nonspecific in vascular lesions due to hemorrhagic aspirates.

Treatment for symptomatic vascular lesions includes options like sclerotherapy, laser ablation, or surgical excision. While minimally invasive techniques like sclerotherapy have shown effectiveness in reducing lesion size, surgical resection remains the treatment of choice for well-defined lesions, as in our case, offering both diagnosis and cure.¹¹

CONCLUSION

Benign vascular lesions should be considered in the differential diagnosis of hand swellings, regardless of age. Imaging studies, though valuable, can be misleading—as demonstrated in our case where MRI findings pointed toward a GCT. This case highlights the indispensable role of histopathological examination in confirming the diagnosis and guiding appropriate treatment. Early

identification and complete excision can ensure excellent outcomes and prevent recurrence.

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