

# Hand Tumor: Giant Hemangioma

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#### Abstract

Hemangiomas are classified as endothelial tumors that are present in soft tissues. This report describes a case wherein a large intramuscular hemangioma was noted in the hand of a 53-year-old woman. The peculiarities of the case, ranging from symptomatology to the treatment used for the tumor, are discussed.

# Keywords

Giant Hemangioma, Hand Tumor, Diagnosis

# **1. Introduction**

http://creativecommons.org/licenses/by/4.0/ Hemangiomas are asymptomatic tumors composed of proliferative tissue characterized by immature endothelial cells. These lesions represent the most common type of benign tumor in infants and children, with the majority undergoing spontaneous regression. They are predominantly located on mucosal and cutaneous surfaces, especially in the head and neck regions. However, intramuscular hemangiomas most frequently occur in the extremities and typically do not regress spontaneously. [1] [2] Treatment options range from conservative approaches, such as corticosteroid therapy, to surgical excision in severe cases where the tumor compromises surrounding healthy tissues. [3] [4]

> This report examines the clinical management of a distal intramuscular hemangioma in the right hand. Although surgical excision was indicated due to the lesion's potential to cause functional impairment and damage to adjacent structures, a non-surgical approach was ultimately selected. This decision was based on several factors, including the patient's clinical stability, the absence of severe functional limitations at presentation, and the risks associated with surgery in this anatomical region. The chosen approach highlights the importance of \*First author.

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individualized treatment planning in cases of intramuscular hemangiomas.

#### 2. Case Report

A 53-year-old woman presented with painless enlargement of the soft tissues in the fingers, as well as the dorsal and volar regions of her dominant right hand. On physical examination, sensory function was preserved, and the normal appearance of hand and finger folds was maintained. Wrist and thumb mobility were intact; however, there was a notable restriction in the range of motion of the metacarpophalangeal and interphalangeal joints of the fingers, which prevented full flexion and extension.

Despite these limitations, the patient was able to perform essential hand functions, including pincer and writing movements. Additionally, she could execute minor supportive actions, such as holding the steering wheel while driving, which allowed her to maintain a degree of independence in activities of daily living.

The clinical findings suggested the presence of a vascular lesion as the underlying cause of the soft tissue enlargement, as shown in Figures 1 (A)-(C). Further diagnostic evaluation was recommended to confirm the etiology and guide appropriate management.



**Figure 1.** A) Physical examination of the volar face hand, with preserved folds. B) Dorsal side, with reduced extension of the fingers. C) Pincer movement.

The primary complementary diagnostic tools utilized to confirm the diagnosis were radiography and magnetic resonance imaging (MRI). [3] [4] Radiographic findings revealed the presence of phleboliths and a periosteal reaction located between the metacarpal bones, suggesting a vascular lesion.

Magnetic resonance imaging provided further characterization of the lesion, demonstrating a large, expansive mass with intense and heterogeneous enhancement. Internal rounded foci of low signal intensity, consistent with phleboliths, were also observed. The lesion exhibited an infiltrative pattern, extending into the deep muscular planes and involving the synovial sheaths of the digital flexor tendons. Additionally, MRI revealed evidence of bone remodeling, including irregularities and erosive changes affecting the metacarpal bones (Figures 2 (A)-(C)).

These imaging findings were critical in establishing the diagnosis, providing detailed anatomical information regarding the lesion's extent and its effects on adjacent structures.



**Figure 2.** A) Radiographic imaging exams indicating the presence of periosteal reaction and phleboliths. B and C) Magnetic resonance imaging demonstrates the infiltrative aspect of the lesion and bone remodeling.

Doppler ultrasound studies confirmed the patency of the subclavian, axillary, brachial, radial, and ulnar arteries, demonstrating preserved vessel pathways and calibers. Normal peak systolic velocities were observed, with no evidence of stenosis, plaques, or intimal-medial thickening. These findings ruled out a significant vascular compromise in the major arteries supplying the affected region.

Anatomopathological examination revealed irregular, brownish, elastic, and friable fragments measuring  $1.5 \times 1.5 \times 1.07$  cm. Microscopic evaluation identified adipose tissue interspersed with a proliferation of blood vessels of varying calibers and sizes, permeated by mature adipose elements (Figure 3). Immunohistochemical analysis showed the expression of CD31 and ERG markers confirming endothelial origin. Importantly, no evidence of malignancy was found in the collected tissue, supporting the diagnosis of intramuscular hemangioma.



**Figure 3.** Adipose tissue contains a proliferation of vessels of varying calibers and sizes permeated by mature adipose tissue.

Given the lesion's infiltrative nature and its propensity for recurrence and pain, embolization was considered but ultimately deemed unsuitable due to the involvement of multiple vascular territories. The only definitive treatment option discussed was surgical resection, which would necessitate amputation of the right hand.

Despite this recommendation, a decision was made to preserve the limb based on the patient's current functional capacity and absence of pain. The patient has been monitored for seven years, during which she has remained pain-free. Functionally, she retains the ability to perform pinch movements and write, although with limited mobility in the other fingers. Importantly, her dominant right hand remains functional for essential tasks, and the auxiliary use of her left hand further compensates for functional limitations.

Histopathological follow-up continues to show no evidence of malignant transformation, and no pharmacological treatment has been indicated (Figure 4). The decision to delay surgical intervention is supported by the patient's current quality of life, with the understanding that limb preservation will be reassessed should pain or significant functional decline arise.



**Figure 4.** Painless hand with a reasonable degree of functionality.

#### 3. Discussion

Hemangiomas are abnormal proliferations of blood vessels that account for up to 7% of benign soft tissue tumors. Their incidence is likely underestimated due to the fact that most lesions are small and asymptomatic, often going unnoticed until they cause significant functional or aesthetic issues. While the majority of hemangiomas are congenital and manifest before the age of 30, these lesions are most commonly found in subcutaneous adipose tissue. However, in approximately 1% of cases, hemangiomas can also occur within muscle tissue, posing additional diagnostic and management challenges. [5]

A key differential aspect in this case was the absence of pain, which is notable because pain is present in about 60% of published cases of intramuscular hemangiomas. Exacerbation of symptoms is commonly observed during physical activity due to increased local blood flow, which can lead to compression of surrounding tissues. Symptoms may also include pulsations, worsening edema (particularly in the lower limbs), increased local temperature, contractures, and weakness. Larger or more superficial hemangiomas may present with visible changes in skin color and deformities. [6] In the case presented here, the patient's primary complaint was not pain but rather a loss of mobility in the fingers, along with an increase in volume in the dorsal and volar regions of the right hand.

Magnetic resonance imaging (MRI) is the preferred imaging modality for

evaluating soft tissue hemangiomas, as it provides detailed anatomical information and can differentiate hemangiomas from other tumors without the need for invasive biopsy.7 In addition, ultrasonography may be useful in detecting abnormal blood flow at the site of the lesion, aiding in the identification of vascular characteristics. Aspiration biopsy is typically reserved for cases in which the diagnosis cannot be conclusively established through imaging alone.

In the present case, a radiographic examination of the hand revealed a periosteal reaction and phleboliths between the metacarpals, indicative of a vascular lesion. MRI confirmed the presence of a large, expansive lesion with heterogeneous enhancement, further supporting the diagnosis of an intramuscular hemangioma.

Management strategies for intramuscular hemangiomas vary based on the severity of symptoms, functional impairment, and the risk of complications. Treatment options include conservative management, systemic corticosteroid therapy, embolization, radiation, sclerotherapy, and surgical excision. The choice of treatment is largely influenced by the severity of the symptoms, with pain and limitations in daily activities being the most significant factors in determining the approach. According to Mitsionis *et al.* [7], these considerations are paramount when deciding between non-invasive and surgical options.

Conservative management, as suggested by Wierzbick *et al.* [3], is often the first-line approach for isolated intramuscular hemangiomas, particularly in the absence of pain or severe functional limitations. Although these lesions do not carry a risk of malignancy, regular monitoring is crucial to assess for potential changes in size, symptoms, or the development of complications. Conservative measures may include activity modification, compression bandages, elevation of the affected extremity, non-steroidal anti-inflammatory drugs (NSAIDs) for pain relief, and specific physical therapy protocols aimed at improving function and minimizing discomfort.

In cases where the hemangioma demonstrates rapid growth, persistent pain, or functional and aesthetic impairment, more aggressive interventions such as embolization or surgical excision may be indicated. Surgical intervention is typically reserved for cases where the lesion is causing significant functional impairment or cosmetic deformities and when other treatments have been ineffective. The risk of recurrence after surgical excision can range from 18% to 61%, with hemorrhage being the most common complication postoperatively. [3] [7]

#### 4. Conclusions

As highlighted in this case, the decision to preserve the limb is clinically significant. Despite the considerable volume increase in the affected hand, the absence of pain and the preservation of function are key factors supporting the conservative approach. The patient maintains the ability to perform essential hand functions, such as pinching and writing, as well as utilizing the unaffected hand to assist in tasks that require bilateral coordination. These functional abilities are crucial for daily activities and quality of life.

Moreover, the patient has been able to lead an active and fulfilling social and

professional life, further emphasizing the importance of limb preservation. In cases like this, where the function is preserved despite significant structural changes, the potential benefits of surgical intervention, such as amputation or resection, must be carefully weighed against the patient's ability to maintain independence and manage daily tasks effectively. The decision to forgo surgery reflects a thoughtful consideration of the patient's current functional status and overall well-being, with the understanding that the situation will be closely monitored for any signs of pain or functional decline.

# **Conflicts of Interest**

The authors declare that there are no conflicts of interest.

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