



Spontaneous Regression of Atypical Myxoid and Spindle Cell Neoplasm

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Background / HPI

- A 64-year-old man presented to the clinic with a palpable mass in the left lateral hindfoot of one year duration.
- The patient had no other symptoms.
- There was no significant past medical history.
- On physical exam, the mass was soft, superficial, and compressible.
- In addition, intact sensation, no tenderness to palpation, no skin changes, and no distal edema were recorded.
- No regional adenopathy was noted, and distal pulses were recorded as 2+.

Imaging Findings

Figure 1. Ultrasound

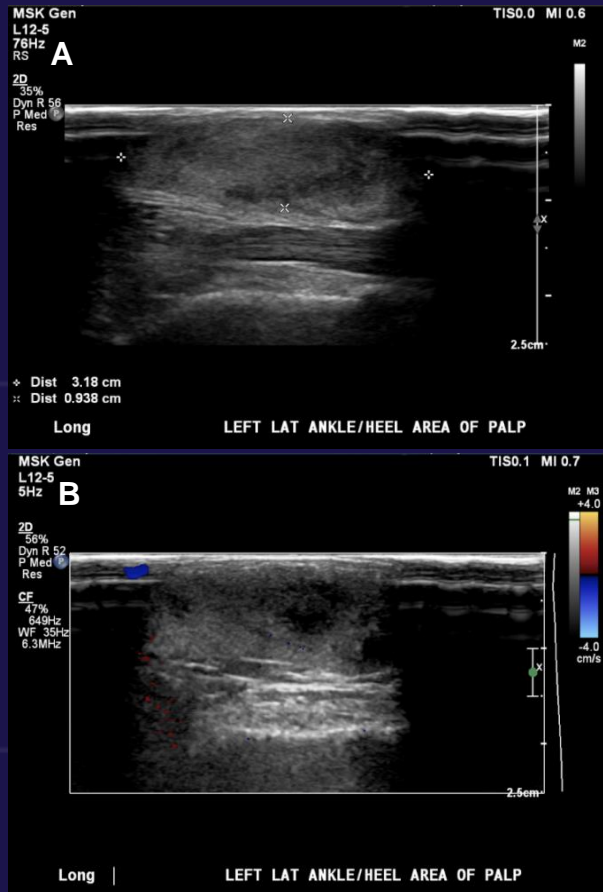
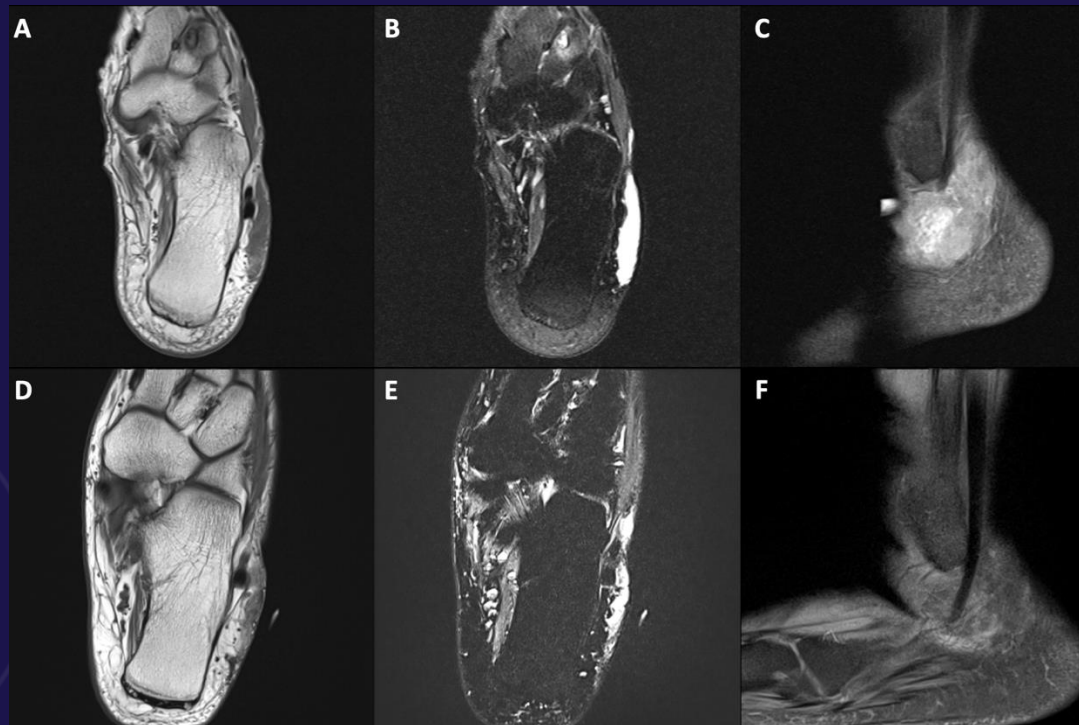


Figure 2. MRI before and after spontaneous regression



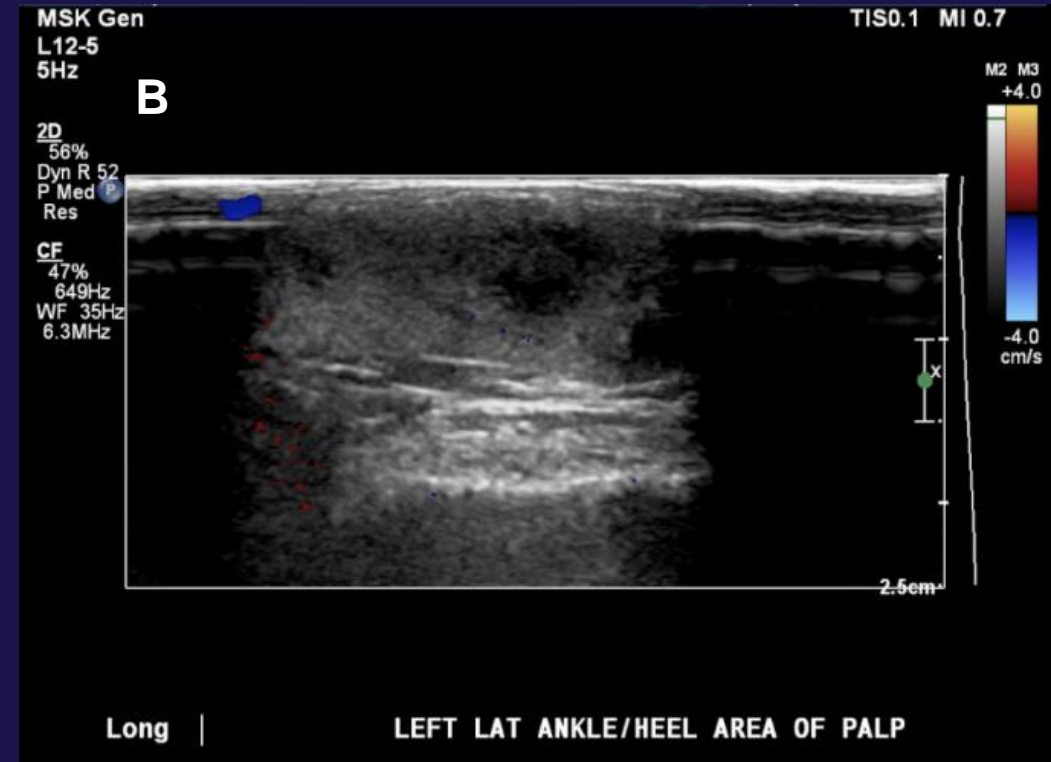
Note: A, B and C were taken on 08/23/2023; D, E, and F were taken on 12/08/2023

Figure 3. Gradient Echo MR Sequence



Labeled Imaging Findings

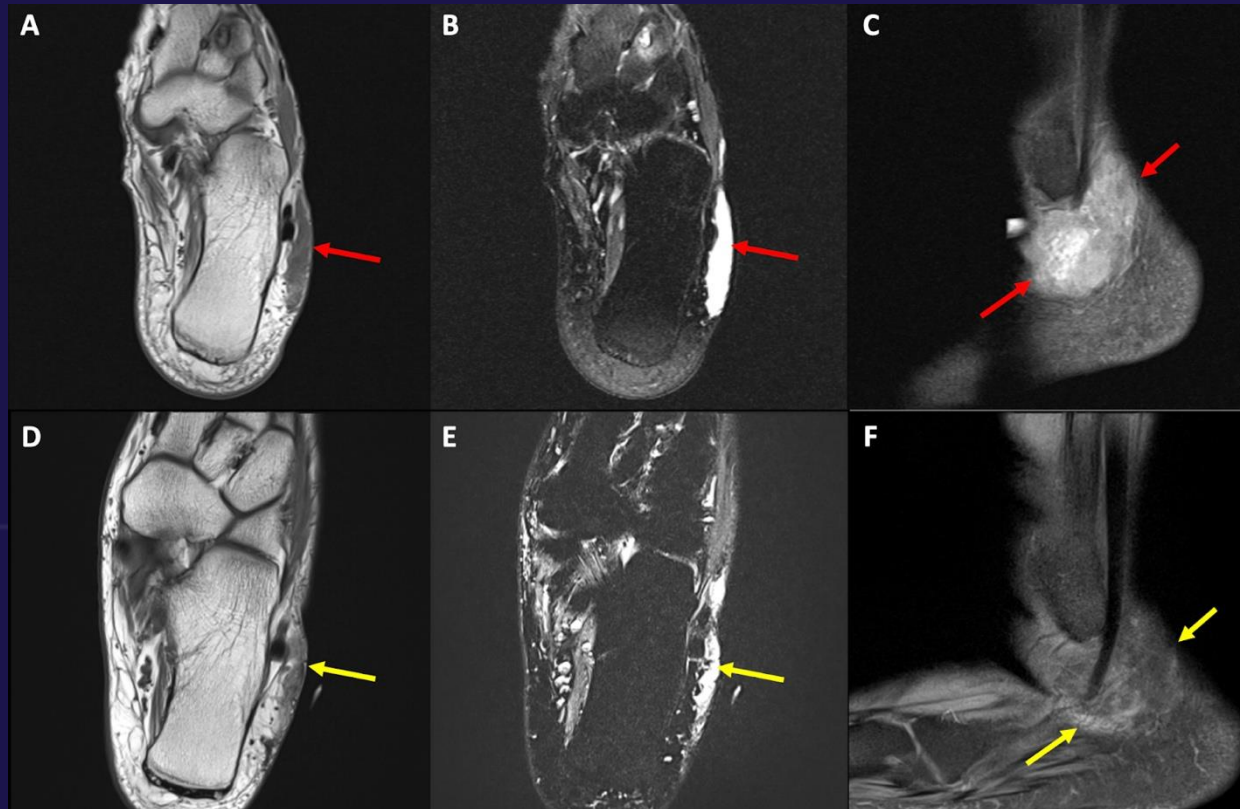
Figure 1. Ultrasound



The ultrasound confirmed the presence of a superficial, compressible mass with intermediate echogenicity. No posterior acoustic shadowing was noted to indicate the presence of calcifications (**Figure 1a**). The mass had no significant vascularity on color doppler images (**Figure 1b**).

Labeled Imaging Findings

Figure 2. MRI before and after spontaneous regression



Note: A, B and C were taken on 08/23/2023; D, E, and F were taken on 12/08/2023

Homogeneous T1 hypointensity similar to fluid was suggestive of cystic nature (Figure 2A). T2-weighted images helped to further characterize the mass as a well defined lesion with cyst-like quality and no significant internal heterogeneity (Figure 2B). The lesion demonstrates patchy enhancement on post contrast images (Figure 2C).

Four months after the biopsy, the patient returned to the clinic with a noticeably smaller mass on the left lateral hindfoot. To further assess the nature of this shrinkage, a follow-up MR imaging study was performed (Figure 2D-F). The imaging revealed a significant decrease in size of the mass, confirming spontaneous regression.

Figure 3. Gradient echo MR sequence



Coronal localizer GRE showing dephasing artifact with signal void over the area of the lesion.



Imaging Differential Diagnosis:

1. Post-traumatic degloving injury (Morel-Lavallee lesion)
2. Subcutaneous lipomatous variants
 - a. Myxoliposarcoma
 - b. Atypical lipomatous tumor
 - c. Liposarcoma
 - d. Hemosiderotic fibrolipomatous tumor

Intervention

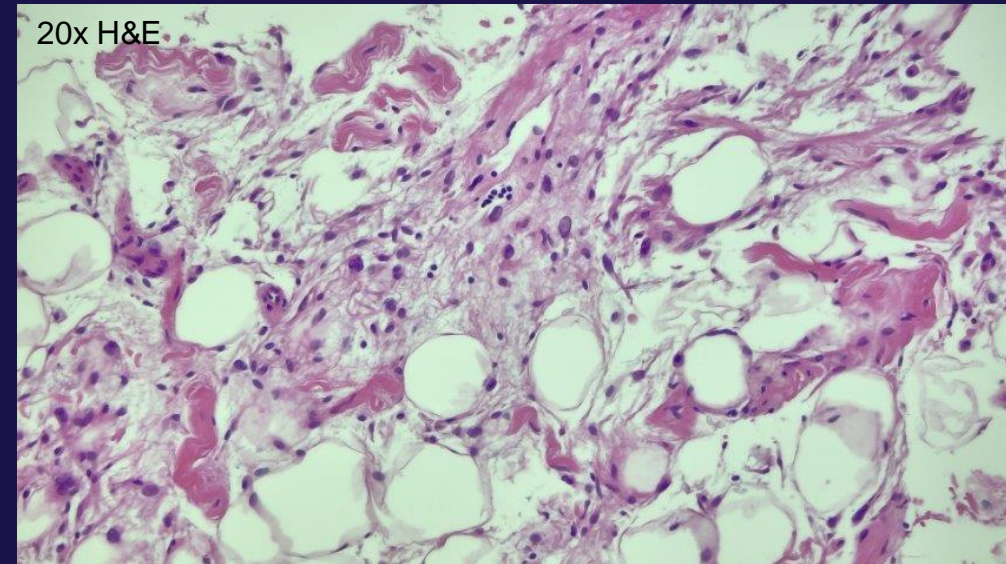
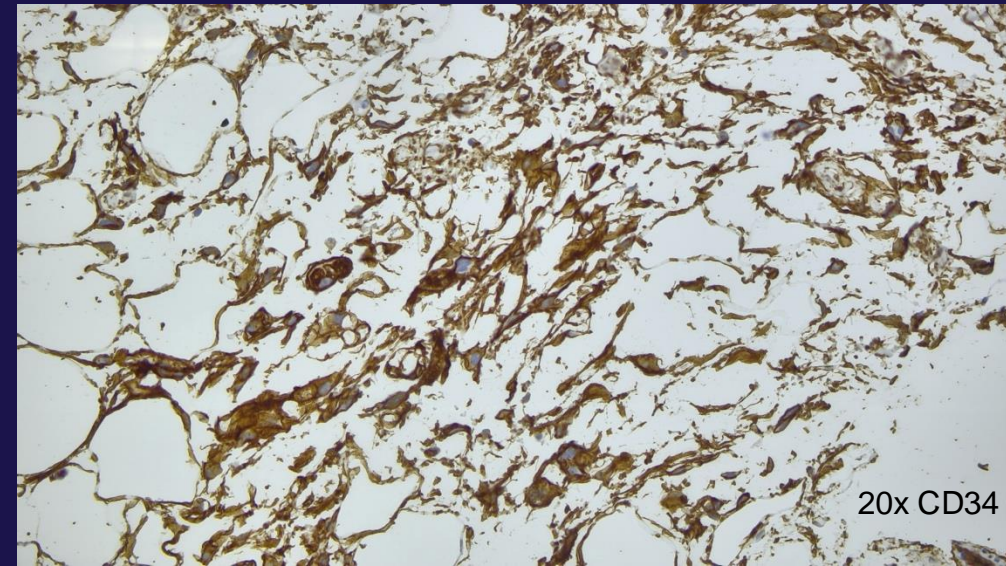
1. Ultrasound guided needle biopsy to determine nature of the lesion

Management

1. Continued surveillance of this lesion to assess for interval growth
2. Surgical excision may be indicated if interval changes are noted

Pathology Differential Diagnosis:

Due to the initial imaging findings, an ultrasound guided needle biopsy was performed. The biopsy revealed an atypical myxoid and spindle cell neoplasm with the following profile: CD34: Positive, Desmin: Negative, S100: Positive only in adipocytes, RB1: Retained, MDM2: Not amplified, MGEA5 FISH: Abnormal signal. Given these findings, the differential diagnosis included Hemosiderotic Fibrolipomatous Tumor (HFLT), Pleomorphic Hyalinizing Angiectatic Tumor (PHAT), and Low-Grade Myxoinflammatory Fibroblastic Sarcoma (LG-MIFS).



Pathology Differential Diagnosis

	Site of involvement	Size	Consistency	Vascularity	Hemosiderin	CD34	Desmin	S100	RB1	MDM2 Amplification	MGEA5 FISH
HFLT	Foot and ankle region	7-8 cm	Soft	Minimal	+	+	-	+*	Retained	-	Abnormal
PHAT	Lower extremities	Variable	Soft	Minimal	-	+	-	-	Retained	-	Abnormal
LG-MIFS	Extremities and trunk	< 5 cm	Firm	Minimal	-/+	-	-	-	Retained	+	Abnormal

Note: HFLT: Hemosiderotic Fibrolipomatous Tumor ; PHAT: Pleomorphic Hyalinizing Angiectatic Tumor ; LG-MIFS: Low-Grade Myxoinflammatory Fibroblastic Sarcoma. *Positive only in adipocytes.



Brief Discussion

Hemosiderotic fibrolipomatous tumor (HFLT) was favored as the diagnosis due to the clinical and histological profile, combined with the compressible nature of the mass. HFLT is a locally invasive tumor composed of mature adipocytes accompanied by spindle cells containing hemosiderin deposits [1,2]. Hemosiderin deposits in HFLT may present as “blooming” artifacts on gradient-echo sequences [1], as seen in our patient. These tumors classically occur in the ankle and foot [3]. While HFLT are recognized in the literature, they are rather uncommon soft tissue tumors [2]. Spontaneous regression (SR) of soft tissue neoplasms is a rare occurrence with only 1 in every 60,000–100,000 cancer cases undergoing SR [4].

The initial and follow-up MRI studies for this patient document the tumor's regression, providing visual evidence of this rare event. This serves as an important reference for radiologists. Most literature on soft tissue neoplasms focuses on their progressive nature and the need for medical or surgical intervention. The spontaneous and significant reduction in tumor size over four months without any treatment in our patient makes this case unique and clinically significant. Given that HFLT tumors are capable of malignant transformation and recurrence, in cases with spontaneous regression we recommend continued surveillance of this lesion to assess for interval growth and complete surgical excision may also be recommended [5].

Clinical Pearls

- **HFLT is a rare, locally aggressive tumor predominantly affecting the foot and ankle**
 - HFLT are uncommon soft tissue tumors that typically present as slow-growing, painless masses, primarily in the foot and ankle region. Their infiltrative nature and potential for recurrence make accurate imaging and diagnosis essential.
- **Gradient echo (GRE) sequences are key for diagnosing HFLT**
 - HFLT contains hemosiderin-laden spindle cells, which can be best visualized as blooming artifacts on **GRE MRI sequences**. The absence of this imaging modality can make diagnosis more challenging.
- **Spontaneous regression of soft tissue tumors is extremely rare**
 - The spontaneous regression of a soft tissue neoplasm, particularly HFLT, is an exceptional phenomenon. Spontaneous regression occurs in only 1 in 60,000 to 100,000 cancer cases, with very few reports in myxofibrosarcoma and other sarcomas. This case represents the first reported instance of spontaneous regression in HFLT.
- **Despite regression, close monitoring or surgical excision is recommended due to recurrence risk**
 - HFLT has a **50% recurrence rate** after primary excision, and malignant transformation is a concern. Even in cases of spontaneous regression, continued **clinical and radiological** surveillance of this lesion to assess for interval growth is advised, with surgical excision being a consideration to prevent recurrence.

References

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