

## Haemosiderotic fibrohistiocytic lipomatous lesion – A case report

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**Section:** Musculoskeletal system

**Area of Interest:** Musculoskeletal soft tissue

**Procedure:** Diagnostic procedure

**Imaging Technique:** Digital radiography

**Imaging Technique:** Ultrasound

**Imaging Technique:** MR

**Special Focus:** Neoplasia Case Type: Clinical Cases

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**Patient:** 72 years, female

### Clinical History:

Painful mass over dorsum of right ankle, first noted 4 years ago. The patient sustained trauma 2 years later and states that the mass had been slowly enlarging.

### Imaging Findings:

Initial radiographs demonstrate a soft tissue swelling at the anterolateral aspect of ankle. Subsequent ultrasound shows a non-specific swelling within the subcutaneous fat with no concerning features (Fig 1). Interval enlargement of the swelling is seen on radiograph 2 years later, following an episode of trauma (Fig 2). Subsequent MRI shows an ill-defined lesion at the anterolateral aspect of the right ankle of heterogeneous intermediate to high T1 signal (Fig 3). There are some foci of high T1 signal which suppress on PD fat suppressed sequences, reflecting the presence of intrinsic fat, although other areas remain hyperintense (Fig 4). In addition, there is extensive blooming artefact on the gradient echo sequences reflecting haemosiderin deposition (Fig 5) and mild heterogeneous enhancement (Fig 6). A follow-up MRI was performed after an interval of 10 months, showing the lesion to have enlarged slightly, with unchanged signal characteristics.

### Discussion:

Haemosiderotic fibrohistiocytic lipomatous lesion (HFLL) is a rare benign soft tissue lesion which typically occurs in middle-aged females [1]. It has a predilection for subcutaneous tissues of the foot/ankle but can be present in other extremity areas [1, 2, 3, 6]. It is typically slow-growing and can be large at presentation [1, 2]. Implicated risk factors include trauma, ill-fitting footwear and venous insufficiency [1, 2, 5]. Given the possibility of sarcomatous change [4], HFLL is probably neoplastic in origin, though a reactive/inflammatory mechanism has also been postulated [1]. Treatment is surgical excision, though recurrent disease up to 50% is reported [1].

Histologically, HFLL consists of mature adipocytes, inflammatory infiltration, spindle cells and macrophages rich in haemosiderin pigment [1, 2]. These features contribute to the unique radiological findings of HFLL; the high fatty signal on T1 and blooming artefact on gradient echo images respectively reflecting the presence of fat and haemosiderin in the lesion. Other described imaging findings in the literature include an ill-defined subcutaneous lesion of heterogeneously high T1, T2 and STIR signal, with diffuse post-contrast enhancement [3, 7], similar to our case. Calcification, though absent in our case, has also been reported [3].

Curiously, despite the well-known presence of haemosiderin deposition in HFLL, we are the first to describe

blooming artefact on gradient echo sequences as an imaging finding. This is perhaps due to the gradient echo sequence not being routinely performed or haemosiderin pigment not being particularly abundant so that additional gradient echo sequence was not performed [3, 7].

The differential diagnoses based on our radiological findings include benign lipoma variant, atypical lipomatous tumour (ALT) and extra-articular pigmented villonodular synovitis. None of these lesions, however, explain all the radiological findings. The absence of homogenous fatty signal excludes this being a benign lipoma. Heterogeneity within a fatty lesion is seen in lipoma variants / ALT but neither of these would cause the susceptibility artefact seen on gradient echo. An extra-articular PVNS would give the latter appearance but would not have internal fat signal. Lipoma or lipoma complicated by fat necrosis would be in the differential for HFLL with low haemosiderin content.

Ultimately, this lesion required ultrasound-guided biopsy to confirm the diagnosis but the presence of blooming artefact and internal fat is thought relatively specific for HFLL and should be considered as a differential diagnosis for lipoma variants and extra-skeletal PVNS, especially around the foot and ankle.

**Differential Diagnosis List:** Haemosiderotic fibrohistiocytic lipomatous lesion, Benign lipoma variant, Atypical lipomatous tumour, Extra-articular pigmented villonodular synovitis

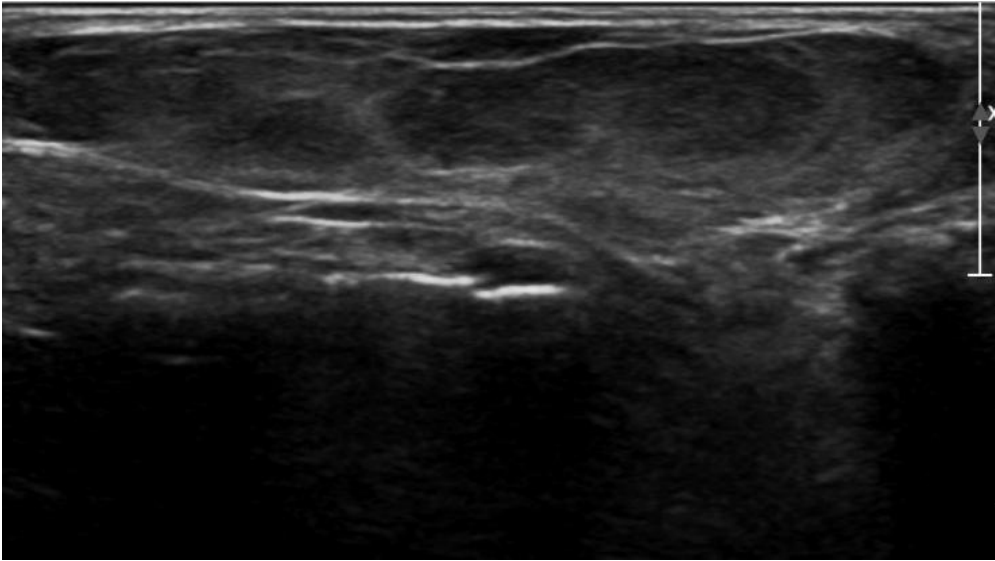
**Final Diagnosis:** Haemosiderotic fibrohistiocytic lipomatous lesion

#### References:

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**Figure 1**

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**Description:** Ultrasound image showing superficial heterogenous mass **Origin:** Department of Radiology, Glasgow Royal Infirmary, Glasgow, United Kingdom.

**Figure 2**

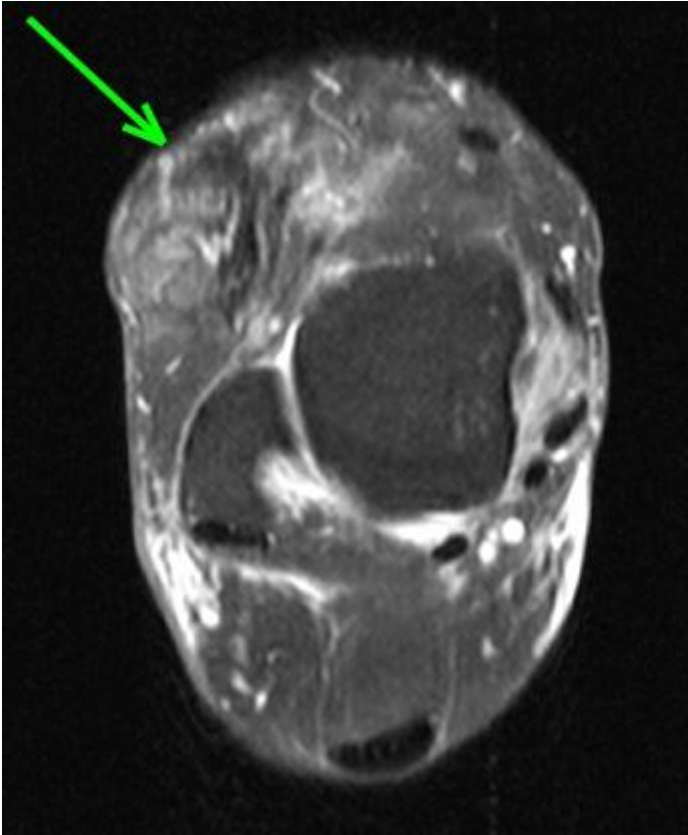
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**Description:** Lateral radiograph showing ill-defined soft tissue mass anterior aspect of ankle **Origin:** Department of Radiology, Glasgow Royal Infirmary, Glasgow, United Kingdom.

**Figure 3**

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**Description:** Axial PD fat sat image showing suppression of fat signal within the mass **Origin:** Department of Radiology, Glasgow Royal Infirmary, Glasgow, United Kingdom.

**Figure 4**

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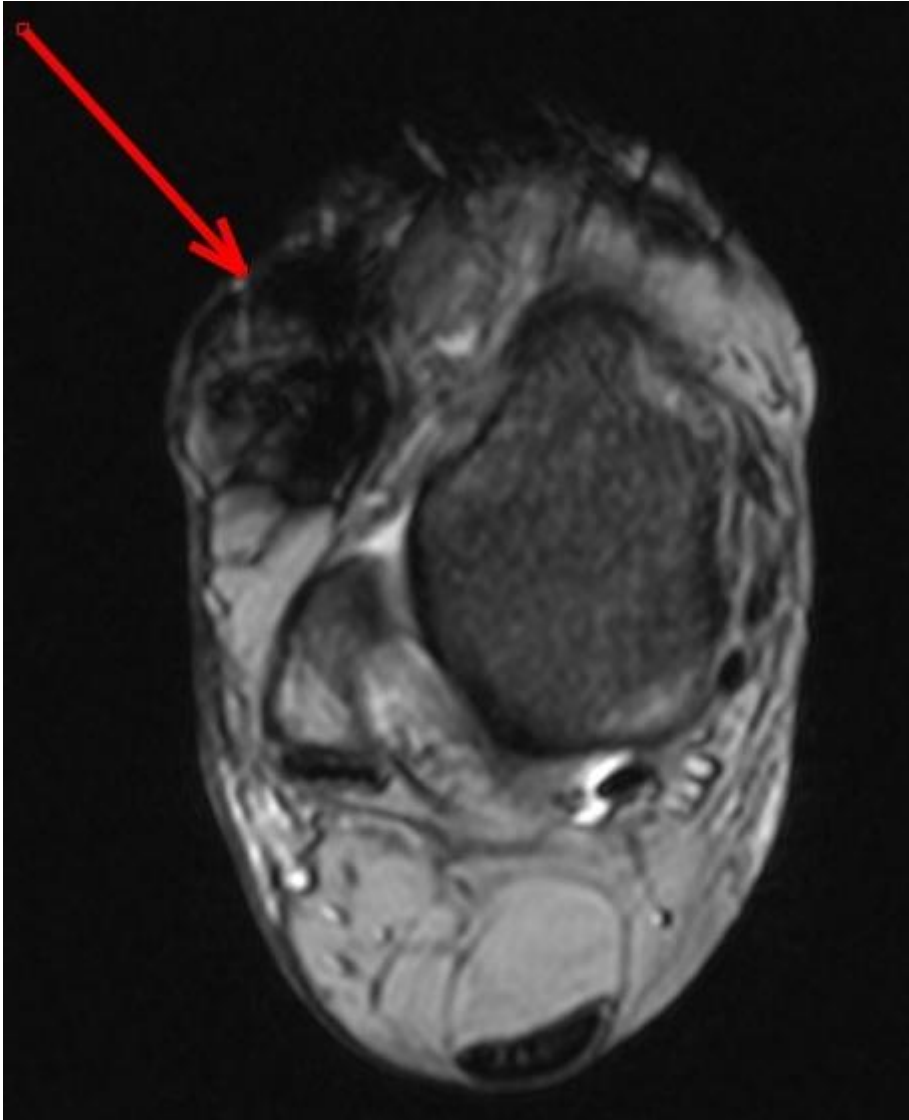


**Description:** Axial T1 image showing ill-defined heterogenous mass at anterolateral aspect of ankle

**Origin:** Department of Radiology, Glasgow Royal Infirmary, Glasgow, United Kingdom.

**Figure 5**

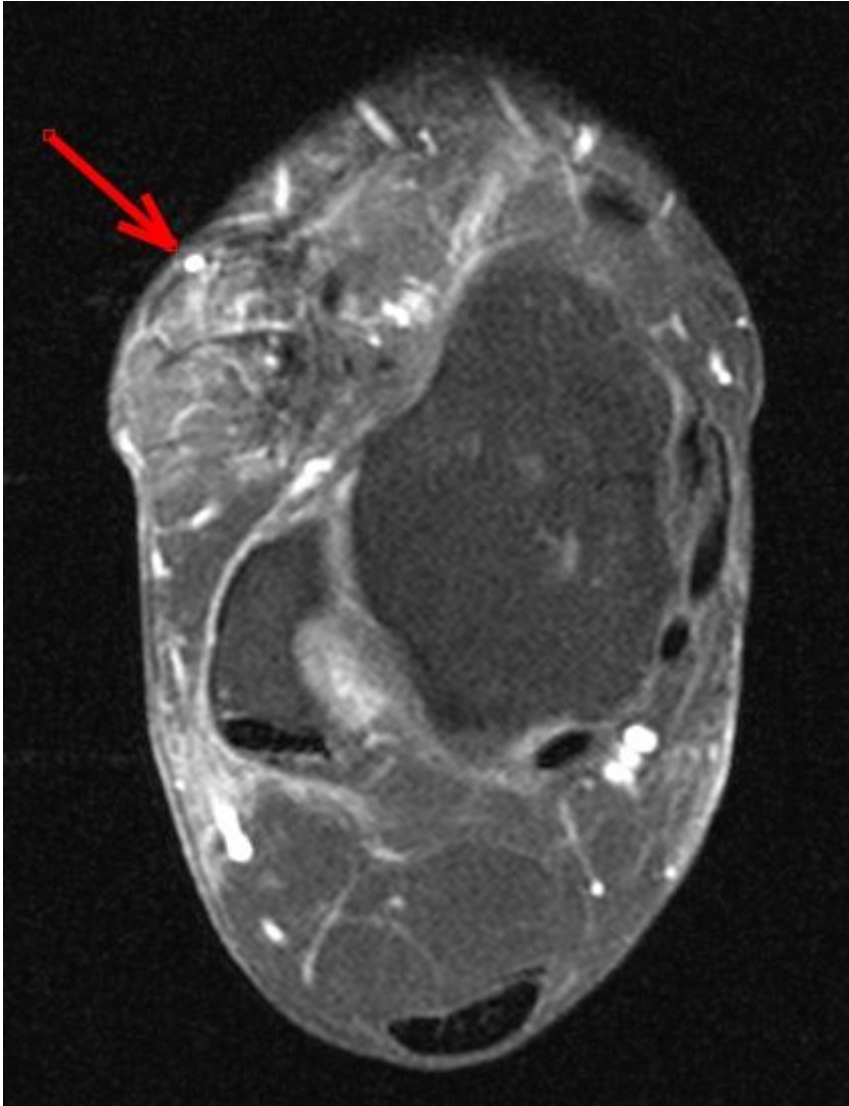
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**Description:** Axial T2\* image showing blooming artefact indicating presence of haemosiderin **Origin:** Department of Radiology, Glasgow Royal Infirmary, Glasgow, United Kingdom.

**Figure 6**

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**Description:** Axial T1 fat sat post contrast image showing mild heterogenous enhancement **Origin:** Department of Radiology, Glasgow Royal Infirmary, Glasgow, United Kingdom.