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Fibrolipoma Case Report: Navigating Diagnosis and Successful Surgical Intervention

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ABSTRACT

Background: Fibrolipoma is a rare histological variant of lipoma, composed of mature adipose tissue interspersed with dense fibrous connective tissue. It is usually found in the upper body, and occurrence in the lower limbs, particularly the ankle and shin, is extremely uncommon. We report an atypical case of fibrolipoma in the left ankle and shin, initially misdiagnosed as an arteriovenous malformation (AVM), and successfully managed with complete surgical excision.

Case presentation: A 24-year-old male presented with painless swelling over the left ankle and shin since childhood. Clinical examination revealed immobile swelling over the left ankle. Initial ultrasonography and computed tomography imaging suggested AVM, but magnetic resonance angiography ruled out vascular involvement. Surgical excision was performed, and histopathological analysis confirmed the diagnosis of fibrolipoma.

Conclusion: Fibrolipoma involving the ankle and shin is extremely rare and may mimic vascular malformations. Early imaging and definitive diagnosis ensure improved outcomes in such rare cases. Surgical intervention and histopathological examination lead to effective treatment with low recurrence risk.

Keywords: *Fibrolipoma, lipoma, ankle, shin, surgical excision*

1. INTRODUCTION

Fibrolipoma is a rare microscopic variant of lipoma, a common benign tumor made up of mature fat cells. Histologically, fibrolipoma is distinguished by mature fat cells divided into lobules by fibrous tissue.(1,2) The usual sites for fibrolipomas are similar to those of typical lipomas, primarily depending on the presence of adipose tissue, and are often found in the upper back, neck, shoulder, and abdomen, while involvement of the lower limbs is rare.(1,3) The presence of fibrolipoma in the left ankle is extremely rare and is regarded as a distinct entity. Due to its slow growth, fibrous content, and lack of symptoms, it is often misdiagnosed as other soft tissue lesion.(1,4,5) Imaging techniques followed by histopathological analysis are vital for the accurate diagnosis of fibrolipoma.(6) The diagnosis and surgical management of fibrolipoma in such rare locations are scarcely reported. Herein, we present a rare case of fibrolipoma involving the left ankle and shin in a young male, initially misdiagnosed as an arteriovenous malformation (AVM), and was successfully treated with surgical excision, which resulted in a favorable postoperative outcome.

2. CASE REPORT

A 24-year-old male presented with a history of swelling over the left ankle and shin, since childhood. The swelling was not associated with pain, fever, or discharge. Initially the mass was small in size, had gradually increased in volume over the years. A computed tomography (CT) was performed at an outside facility suggesting the possibility of an AVM, following which the patient was referred to the higher institute for further management. Clinical examination revealed a 5×6 cm swelling over the left ankle that was soft in consistency, immobile, and non-tender. Additionally, another swelling measuring

10×6 cm was noted over the lateral aspect of the left shin. This lesion was firm and non-mobile, and the skin overlying both swellings appeared normal. Ultrasonography of the local swelling was suggestive of AVM. Hence, magnetic resonance angiography (MRA) -Figure 1 was performed, which showed a normal study with no signs of vascular malformation. Finally, surgical intervention was planned, and complete excision of both swellings was performed – Figure 2. The post-operative period was uneventful. Histopathological examination confirmed the diagnosis of fibrolipoma. At 12-month follow-up, the patient was asymptomatic.

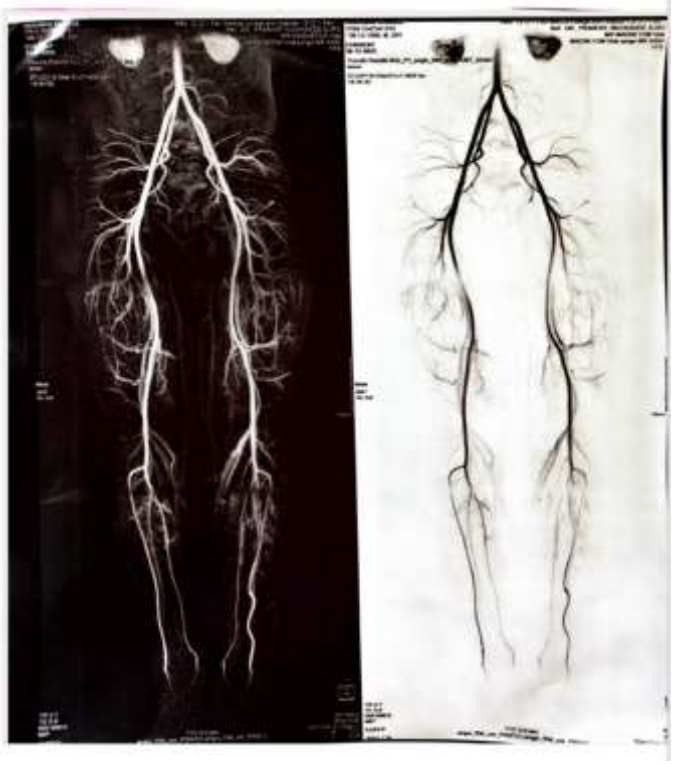

Figure 1 – MRA showing normal vascular anatomy of bilateral lower limbs.

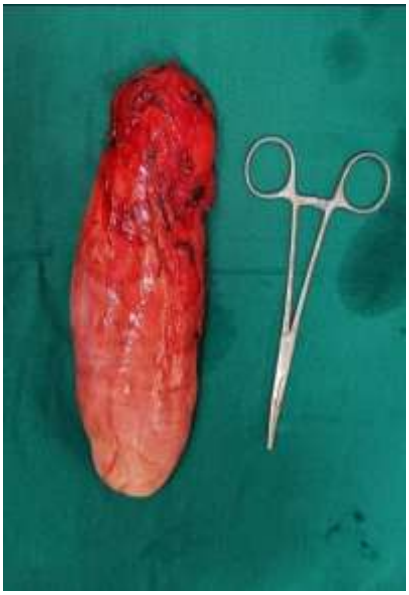

Figure 2 – Showing excised specimem.

3. DISCUSSION

Typically, a lipoma is a well-defined, encapsulated growth of fat cells, divided by thin collagen strands.(5) It is a prevalent

tumor, making up about 4–5% of all benign tumors in the body.(6) When a lipoma contains a significant amount of fibrous tissue and consists of mature fat cells interspersed with thick bands of dense connective tissue, it is termed fibrolipoma. Unlike standard lipomas, fibrolipomas are generally not encapsulated.(7) The WHO categorizes benign lipomas into various types, including classic lipoma, lipomatosis, lipoblastoma or fetal lipoma, spindle cell/pleomorphic lipoma, angiolipoma, angiomyolipoma, hibernoma, myelolipoma, atypical lipoma, and lipofibroma.(8)

Fibrolipoma, a rare benign hamartomatous condition, was first identified by Hoffmann and Zurhelle in 1921.(9) Lipomas and their variants represent about 8–16% of all benign soft tissue tumors and roughly 3% of all tumors found in the foot. Research indicates that 67% of foot lipomas are located in the ankle area, and 33% on the top of the foot, with the majority occurring around the ankle or heel (33%), while only 9% are found in the big toe, toes, sole, or dorsal surface of the foot. Lipomas can appear at any age, but they are most commonly seen in the fifth and sixth decades of life. The incidence between genders is still uncertain, as no definitive gender preference has been established.(3) Similarly, our patient was a 24-year-old male.

The pathogenesis of fibrolipoma is unknown. Suggested causes include congenital factors, hormonal imbalances, degeneration of fibromatous tumors, or the maturation of lipoblastomatosis.(7) The clinical manifestation of lipomas depends on factors, including their size, location, growth rate, and the extent of pressure on nearby tissues. The most typical presentation is a painless, gradually enlarging, well-defined mass. Deep lipomas often grow without symptoms and thus, can become quite large before being detected.(5) Clinically, lipomas and their variants can appear in two main forms: a classic form, which appears as clusters of soft, smooth papules or nodules from birth, often affecting the pelvic girdle and gluteal region; and a solitary form, which appears as a domed, sessile papule typically developing in adulthood.(9) Similarly, our patient reported swelling over the left ankle and shin since childhood, which gradually increased in size over time, consistent with the natural progression of fibrolipoma. The swelling was not accompanied by pain, fever, or discharge.

The evaluation and diagnosis of lipomatous tumors, especially rare types like fibrolipoma, heavily rely on a combination of imaging and diagnostic tests. While lipomas are often identified through clinical examination, the uncommon nature and unusual locations of fibrolipomas necessitate imaging. Ultrasonography is frequently used as the initial imaging technique due to its accessibility and affordability. Lipomas usually show a uniformly hyperechoic mass compared to nearby muscle, though iso- or hypoechoic patterns can also occur. In fibrolipomas, ultrasonography might reveal hyperechoic lesions with internal linear hypoechoic bands, indicating dense fibrous septa within the fat tissue.(5,8) In our patient, ultrasonography of the left ankle and shin lesions suggested an AVM.

CT scans also assist in diagnosing and assessing the extent of deep-seated lipomas and infiltrative lesions. On CT, lipomas appear as hypodense, well-defined masses. In fibrolipomas, fibrous bands may be seen as thin streaky densities.(5,10) In our study, a CT scan previously conducted at another facility also interpreted the lesion as an AVM and provided a clear delineation of the lesion. Subsequently, MRA was performed, which showed a normal study and effectively excluded any vascular involvement. Furthermore, magnetic resonance imaging (MRI) is regarded as the gold standard for evaluating lipomatous tumors, offering detailed tissue characterization.(6) It is particularly useful in differentiating fibrolipomas from other soft-tissue masses by identifying internal fibrous components.(6) These tumors typically show high signal intensity on T1-weighted images, and lower signal on T2-weighted images, and appear more heterogeneous than classic lipomas.(10) A fat-suppressed MRI is especially advantageous, as the fibrous bands within the lesion appear as hypointense septa against the surrounding adipose tissue.(5)

Conservative management strategies include observing the lesion's size and any related sensory or motor impairments. Surgical options consist of reducing the mass, removing the mass, or performing an en-bloc resection of the nerve.(11) Surgical removal is considered the best treatment method, with a very low chance of recurrence. While lipomas are straightforward to diagnose clinically, histopathological analysis remains the definitive method for diagnosis.(6) Microscopically, fibrolipoma consists of mature fat cells within lobules of dense collagen fibers. It can be easily differentiated from a typical lipoma due to the greater presence of fibrous connective tissues.(6) In our case, surgical removal was performed, and histopathological analysis confirmed the fibrolipoma diagnosis, revealing mature adipose tissue separated by dense fibrous bands.

For fibrolipoma, postoperative care is not standardized, with protocols varying based on location, surgeon preference, and clinical setting. Recent research suggests using oral antibiotics after surgery, along with local wound care practices such as serial debridement, gradient compression dressings, and the application of collagenase or antibiotic ointment.(3,5,12) Furthermore, patient mobility can be encouraged early in recovery with the use of a wound care shoe.

4. CONCLUSION

Fibrolipoma of the soft tissues is a rare benign tumor that can present as a slow-growing, painless swelling with asymptomatic progression, often delaying diagnosis. Although uncommon, fibrolipomas should be considered in the differential diagnosis of painless swellings in the lower limb, especially when initial imaging suggests vascular anomalies. Complete excision is curative, and recurrence is seldom reported.

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