

# Pedunculated Subcutaneous Lipoma in the Popliteal Fossa Causing Eczema

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## SUMMARY

**Pedunculated subcutaneous lipoma in the popliteal fossa extending through the superficial fascia causing chronic irritant dermatitis of the adjacent skin with "psoriatic-like" plaque. To the author's knowledge, no similar case has been reported in the literature.**

## KEY WORDS:

*Lipoma, Liposarcoma, Fibrolipoma, Popliteal mass*

## INTRODUCTION

Lipomas are the most common soft tissue tumours. There is a wide spectrum of fat-containing soft tissues masses in the extremities and often a combination of history, clinical examination, laboratory and imaging findings can help suggest a specific diagnosis. However, there are times when histopathological correlation is necessary in certain diagnostic dilemmas such as the differentiation between a soft tissue lipoma, well-differentiated liposarcoma and a fibrolipoma. We present an unusual case of a pedunculated subcutaneous lipoma in the popliteal fossa extending through the superficial fascia causing chronic irritant dermatitis of the adjacent skin with "psoriatic-like" plaque. To the authors' knowledge, no similar case has been reported in the literature.

## CASE REPORT

A 39 year-old gentleman, with no past medical history, presented with a gradually increasing left popliteal fossa lump for more than 10 years.

Clinical examination revealed a 4.0 x 4.0 cm soft, mobile mass in the left popliteal fossa with 1.5 x 1.5 cm pedunculated nodule and an isolated scaly skin plaque inferior to the nodule (Fig. 1a). Radiograph was normal. Laboratory investigations revealed normal full blood count, erythrocyte sedimentation rate and C-reactive protein suggesting an infective or inflammatory aetiology was unlikely. Serum antinuclear antibody commonly present in autoimmune conditions was negative. Serum uric acid level was normal, hence excluding gout. Isolated finding of mildly elevated rheumatoid factor (10.5 U/ml) was non-specific as it can be positive in 1-5% of healthy individuals and many other conditions.

The initial workup suggested most likely differential diagnosis of a lipoma or liposarcoma, other less likely possibilities included fibrolipoma. The popliteal mass displayed features that were concerning for a malignant lesion such as increasing size, pedunculated component and overlying skin changes. A Magnetic Resonance Imaging (MRI) study was thus performed for lesion characterisation and to exclude involvement of the deeper structures such as muscles, bones, vessels or nerves.

MRI demonstrated a 5.8 x 1.8 x 4.0 cm encapsulated lesion in the subcutaneous fat of the popliteal fossa. It displayed high signal on T1-weighted sequence and homogeneous fat suppression on Short Tau Inversion Recovery (STIR) sequence with internal striations but no enhancement or solid component. This lesion extended through the superficial fascia to the skin surface to form a pedunculated nodule with similar signal characteristics (Fig. 2). MRI findings were compatible with a subcutaneous lipoma.

Decision was made for surgical removal as the pedunculated nodule was catching on clothes and causing skin irritation. Patient subsequently underwent "en bloc" excision of the popliteal mass. An elliptical skin crease incision was made incorporating the pedunculated component and the lesion was resected in entirety with the overlying eczematous skin. Intra-operatively, the mass was identified in the subcutaneous fat plane, closely adherent to but not attached to the underlying deep fascia. Patient was discharged on post-operative day one with analgesics and antibiotics. No complications or recurrence occurred at follow-up outpatient reviews at intervals of 2 weeks, 1 month and 1 year after surgery (Fig. 1b).

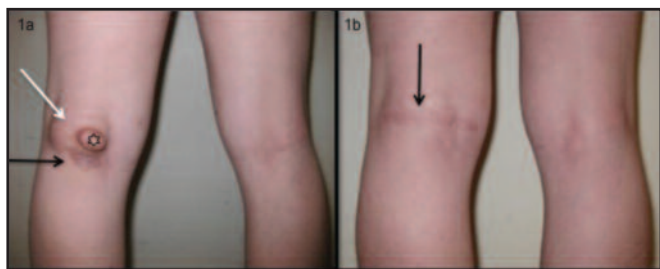
Cut sections of the tumour showed a uniformly yellowish fatty appearance without haemorrhage, necrosis or fibrosis. Histopathological analysis revealed a circumscribed, lobulated subcutaneous lesion continuous with a polypoid nodular projection on the skin surface containing typical mature adipocytes (Fig. 3). FISH MDM2 amplification was negative, hence effectively excluding the possibility of a well-differentiated liposarcoma.

## DISCUSSION

The most common cause of a popliteal swelling is a popliteal cyst, often related to underlying intra-articular or meniscal

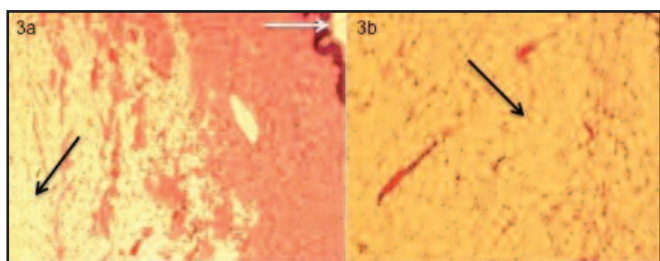
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**Fig. 1:** (a) Photograph showing the smooth mass (white arrow) in the left popliteal fossa with a pedunculated nodule (asterisk) and an isolated scaly skin plaque (black arrow) just inferior to the nodule. (b) Photograph showing left popliteal fossa with residual surgical scar (black arrow) post excision of the popliteal mass.

Patient consent was obtained regarding the use material to be published Medical Journal of Malaysia (MJM), and other publications produced by the MJM, in print and online.

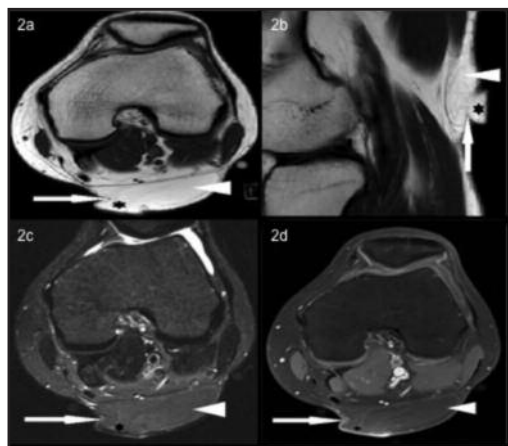


**Fig. 3a & 3b:** High power histological slides showing characteristic fat lobules (black arrow) and adjacent skin surface (white arrow).

pathology.<sup>1</sup> Other differential diagnoses of popliteal swellings include neoplastic lesions, popliteal arterial/venous aneurysms, deep venous thromboses, meniscal and ganglion cysts. Due to its location and size, popliteal masses can often compress on the popliteal vessels, common peroneal and tibial nerves resulting in ischemia, thrombosis and/or neuropathy.<sup>2</sup>

Lipomas are the most common soft tissue masses and account for approximately half of all soft tissue tumours. There is a wide spectrum of fat-containing tumours occurring in the extremities, from benign to malignant and include superficial, intramuscular and intermuscular lipoma, neurofibrolipoma, lipoblastoma, hibernoma, hemangioma and liposarcoma. Appearances of these fat-containing masses on MRI are often characteristic to suggest a specific diagnosis.<sup>3</sup> However, the most frequent diagnostic dilemma is between a lipoma and a well-differentiated liposarcoma.<sup>4</sup>

A lipoma is a benign mesenchymal tumour with an appearance indistinguishable from fat.<sup>3</sup> It consists of mature adipocytes with uniform nuclei, which are identical to those seen in normal adult fat. A thin fibrous capsule normally separates it from the surrounding tissue. Although it has a rich vascular network, the blood vessels are often compressed by the distended adipocytes, hence are not readily discernible.<sup>5</sup> Sometimes, other additional mesenchymal



**Fig. 2:** (a) Axial T1, (b) Sagittal, (c) Axial STIR and (d) Axial T1-weighted fat saturated, post contrast, MRI showing a fat containing lesion (white arrowhead) with no enhancement located in the popliteal fossa and extending through the superficial fascia to the skin surface (white arrow) forming a pedunculated nodule (asterisk) of similar signal characteristics. Note the nodule was squashed by surface coil.

elements such as bone or cartilage may be present as well. However, the most common non-lipomatous component is fibrous connective tissue predominantly found within the septa.

A well-differentiated liposarcoma often resembles a lipoma, but tends to be larger, with adipocytes showing greater size variation and contains atypical hyperchromatic cells with angular nuclei and lipoblasts. Liposarcomas also often have internal gelatinous areas and are traversed by dense collagen bands.<sup>4</sup>

When internal non-septa fibrous connective tissue is present, the fat-containing mass is then called a fibrolipoma.<sup>5</sup> Fibrolipomas are one of the giant lipomatous tumours and have been reportedly identified in the oesophagus, pancreas, intestinal mesentery, parapharyngeal region and abdominal wall. They may have a broad base or may be pedunculated and are characterised by presence of adipose tissue and large amounts of fibrous tissues.

In our patient, the main differential diagnosis for the left popliteal mass included a lipoma, fibrolipoma and liposarcoma. The typical characteristic appearances of these three fat-containing masses on MRI may help suggest a specific diagnosis.

The MRI appearance of a lipoma typically reveals a soft tissue mass isointense to subcutaneous fat on all sequences, and the presence of intrinsic, non-enhancing thin septa is virtually diagnostic.<sup>5</sup> Sometimes, a thin low-signal intensity capsule may be difficult to identify on MRI either because it is too thin to resolve, it is incomplete or the imaging plane or section thickness used was not optimal.<sup>5</sup> However, it has been suggested that approximately 54% of subcutaneous lipomas

are non-encapsulated. Imaging features that suggest malignancy include large lesion size, presence of thick and enhancing septa, presence of nodular and/or globular non-adipose areas and decreased percentage of fat.<sup>4</sup>

The MRI appearance of a fibrolipoma is that of a well-circumscribed, large, soft tissue mass which is hyperintense on T1-weighted and T2-weighted sequences, similar to that of subcutaneous fat. It does not show enhancement and contains hypointense, non-septa fibrous connective tissue.

Interestingly, unlike most described lipomas which frequently localised to the subcutaneous layer, this case is atypical, as it extends through the superficial fascia located just deep to the dermal layer.

Another interesting observation of this case was that of an isolated plaque of scaly, erythematous patch inferior to the pedunculated lipoma. This is likely the result of primary irritant dermatitis. Eczema is characterised by red, papulovesicular, oozing and crusted lesions at the early stage. Over time, these lesions develop into raised scaly plaques. This condition can be classified into a few categories namely allergic contact dermatitis, atopic dermatitis, drug-related eczematous dermatitis, photoeczematous dermatitis and primary irritant dermatitis. In our patient, the clinical features of raised non-pruritic, dry, scaly erythematous plaques were in keeping with a late stage of eczema. It is most likely that he had developed a localised primary irritant dermatitis secondary to repeated trauma from rubbing between the pedunculated soft tissue lipoma and the knee flexor surface. This form of irritant contact dermatitis is non-specific and can occur in anyone.

## CONCLUSION

Lipomas are the most common soft tissue masses and most commonly found localised to the subcutaneous layer. There is a wide spectrum of fat-containing soft tissue masses in the extremities and often MRI appearances are helpful in suggesting a specific diagnosis. However, there are times when histopathological correlation is necessary in certain diagnostic dilemmas such as the differentiation between a soft tissue lipoma, well-differentiated liposarcoma and a fibrolipoma.

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