

Gözden Kaçabilen Bir Posttravmatik Lezyon: Morel Lavallee**An Overlooked Posttraumatic Lesion: Morel Lavallee**¹ Nilüfer AYLANÇ, ² Mustafa AKYÜREK, ¹ Şenay Bengin ERTEM¹Çanakkale Onsekiz Mart University, Faculty of Medicine, Department of Radiology, Çanakkale, Turkey.²Çanakkale Onsekiz Mart University, Faculty of Medicine, Department of Plastic and Reconstructive Surgery, Çanakkale, TurkeyNilüfer Aylanç: <https://orcid.org/0000-0002-5889-9763>Mustafa Akyürek: <https://orcid.org/0000-0002-3302-0521>Şenay Bengin Ertem: <https://orcid.org/0000-0002-7237-6061>**ÖZ**

Morel-Lavallee lezyon, travma sonrası ortaya çıkan ve kas-iskelet sisteminde nadir görülen bir yumuşak doku lezyonudur. Olgular travma sonrası genellikle geç dönemde lezyon alanında ele gelen kitle ve bazen de ağrı şikayetleri ile kliniğe başvururlar. Bunun dışında travma sonrası farklı nedenlerle yapılan görüntülemeler sırasında rastlantısal olarak da lezyonlar saptanabilir. Radyolojik tanıda ultrasonografi ve manyetik rezonans görüntüleme öncelikle tercih edilir. Bu vaka sunumunda amacımız, nadir de olsa görülebilen bu posttravmatik lezyonların, travma öyküsü olup ağrı ve ele gelen kitle ile gelen olgularda, süreç kronik de olsa MLL'nin akılda tutulması ve ayırıcı tanıda mutlaka düşünülmesi gerektiğine dikkat çekmektir.

Anahtar Kelimeler: Morel-Lavallee lezyon, travma, ultrasonografi, manyetik rezonans görüntüleme .

ABSTRACT

Morel-Lavallee is a soft tissue lesion that occurs after trauma and is seen almost rare. The patients usually refer to the clinic with a palpable mass. In addition, lesions can be detected incidentally during imaging tests performed for different reasons after trauma. While examining the soft tissue lesions of the musculoskeletal system, especially in cases with a history of trauma, the Morel-Lavallee lesion should also be thought, and ultrasonography and magnetic resonance imaging methods that have superiority in soft tissue imaging should be used. In this case report, we aim to attract attention to the fact that MLL, which can be seen rarely, should be kept in mind in cases with pain, palpable mass and a trauma history, even if the process is chronic.

Keywords: Morel-Lavallee lesion, trauma, ultrasonography, magnetic resonance imaging.

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Yayın Bilgisi / Article Info:

Gönderi Tarihi/ Received: 04/02/2020

Kabul Tarihi/ Accepted: 02/07/2020

Online Yayın Tarihi/ Published: 30/09/2020

Atf/ Cited: Aylanç N, Akyürek M, Ertem ŞB. An overlooked posttraumatic lesion: Morel Lavallee. Online Türk Sağlık Bilimleri Dergisi 2020;5(3):541-547. doi: 10.26453/otjhs.684431

INTRODUCTION

Morel-Lavallee lesions (MLL) are one of the posttraumatic soft tissue masses become as a result of traumas. They are degloving injuries and first described by Maurice in 1853.¹ In the pathogenesis

they occur with separating of fascial superficial and deep layers and the mechanism is accumulation of haemolymph between these layers. By the time lesion gets fibrous capsule in its periphery, and blood products, necrotic fat tissue, fibrin and debris in cen-

trally.² They may be fluctuant masses, can cause pain and may appear years after trauma. Because of they are soft tissue masses, most frequently ultrasonography (US) can give data about these lesions. In large and complicated masses magnetic resonance imaging (MRI) is more useful and modality of choice for the exact location and lesion characterization.

CASE

Informed consent form was obtained from the patient and permission was obtained from the patient for use of the photographs. A 49-year-old male was admitted to the plastic surgery clinic with the complaint of pain and swelling on left anterior cruris. There was no redness or temperature increase in this area. Laboratory tests were normal. However, when questioned, he stated that about 2-2.5 months ago, he had hit this part of his leg with a hard object and had no obvious complaints other than pain at that time. However, he said, starting from 2-3 weeks ago, there was a painless and small swelling mass in this area at first and its size increased and pain complaints were added. The first requested examination from radiology was US. There was a hypoechoic lesion with dense internal structure and without posterior acoustic shadowing, but perilesional soft tissue heterogeneous echogenicity indicating mild edema on US (Figure 1). For further examination MRI was performed (Figure 2, Figure 3). On coronal T1, STIR and T1 fat saturated (FS) and axial T1, T2, T1 FS images and also coronal and axial T1 FS postcontrast images were obtained. On precontrast series there was a soft tissue lesion on pretibial side. On medial and lateral side of the lesion, there was continuity with the fascial planes of its external contours. Also, the wall of the lesion was bright on T1 weighted images (WI) suspicious for haemorrhage and heterogeneous internal structure, both hyper and hypointense areas on T1 WI and high signal intensities on T2 WI, indicating dense content. We used contrast material, in order to rule out any soft tissue tumour, considering the patient's age, or abscess here. Contrast enhancement on thick wall of the lesion continuing with neighbouring fascial planes and surrounding subcutaneous fat tissue was seen. These findings suggested mild soft tissue inflammation. He was also taking medication with antiaggregant because of preventing atherosclerotic disease, during trauma period and this might be facilitated soft tissue haemorrhage. Although we thought that there may be hematoma and other cystic soft tissue lesions in the

differential diagnosis, we agreed that the lesion may be MLL as a result of consultation with the clinician. When we communicated with the patient who did not come to control, he said his complaints regressed and the mass disappeared approximately 2-3 months after he came to the hospital. Also, in our examination, we found that the lesion was completely regressed.

DISCUSSION

Morel-Lavallee Lesions are soft tissue masses occurring as a result of traumas. They are closed degloving injuries, become with separating of skin and subcutaneous adipose tissue from underlying deep fascia and accumulation haemorrhagic and lymphatic material and may also debris between these structures.³

These lesions are more common on femoral trochanteric sides and proximal thigh. After trauma, rich dermal vascular plexus injury causes blood accumulation and also lymphomatous effusion in perifascial locations.⁴ If these lesions can be diagnosed in the early period, surgical intervention can be needed in order to prevent inflammatory processes.⁴ The lesions occasionally grow slowly with encapsulating and self-limitation with formation peripherally thick wall, due to inflammatory reaction.⁵ Because of these lesions' slow growing and clinically silent, they may be mistaken and could be diagnosed after long periods of trauma, until become painful and large mass.

In the study of Mellado et al, a classification was mentioned in which the lesions in acute and chronic periods were divided into 6 types according to the presence of capsule formation. Treatment options are determined according to the above classification, and the presence of capsules indicates that the lesion can be treated with a surgical approach for complete cure.

Type 1 lesions, also referred to as seroma, have a homogeneous appearance and encapsulated form. In MR features, they have low signal on T1WI and high signal on T2WI, give a cystic appearance.

In *type 2* lesions, like subacute hematoma, they are homogeneous and have high signal characteristics on T1 and T2 weighted MRI sequences depending on the content of methaemoglobin.

Type 3 lesions, like chronic organized hematoma, may contain capsule formation and internal septations. On MRI, contrast enhancement can be seen depending on granulation tissue and neovascularization, with T1 WI is low, T2 WI is heterogeneous low or

isointense signal feature.

It shows closed laceration appearance without any capsule formation in *type 4* lesions and has low signal on T1WI and high signal on T2WI conventional MR sequences.

Type 5 lesions are round, small, pseudonodular lesions and both T1 and T2 weighted MR images, have variable signals.

Finally, in *type 6* lesions they develop thick capsule formation complicated by infection and may accompany with sinus tract.⁶

The first step in imaging of the lesion should be US. Especially in superficial lesions, this non-invasive method can be used. Conventional MR sequences also can be used in the step of the detailed evaluation and in the classification process of the lesion. In complicated cases, diffusion-weighted imaging and series with contrast media can also be used as well as conventional sequences. Diffusion-weighted sequences are helpful in distinguishing these lesions and necrotic tumours from abscesses and infected MLLs. In complicated lesions, diffusion restriction is expected in the central of the lesion.^{7,8}

In the differential diagnosis of MLLs, benign or malignant soft tissue tumours should be considered.⁹ It can also be misdiagnosed with a simple subcutaneous hematoma in the early period. It may be difficult to differentiate the lesion in early period due to both lesion size and the lesion being silent. However, the history of the trauma and the fluid collection in the side of it should suggest MLL in fact. In cases where the lesion cannot be distinguished early, follow-up imaging should be done to see the chronicization process. In addition to US and conventional MRI sequences, MRI with contrast media also should be preferred to differentiate the lesion.¹⁰ Except for blood component, there is also lymphomatous and serosanguinous material or seroma in their content and this can explain the lesions' long life period. By the time haemorrhage is resolved, serosanguinous fluid replaces in such lesions surrounding fibrous capsule. One of the benign lesions that should be considered in the differential diagnosis is also bursitis.

Classification of the lesion is important especially for the treatment process, percutaneous drainage and surgical excision can be used. If there is no accompanying bone fracture in the acute period and small-size lesions, bandage compression, NSAID drugs, rest and physiotherapy can be useful.¹¹ In the early period, percutaneous drainage can be used in larger lesions. In chronic lesions, this method can be used

with sclerotherapy.¹²

Open debridement is preferred as the first treatment option in acute lesions or chronic lesions that have tissue necrosis as a result of local mass effect, accompanied by open bone fractures.¹⁰ Apart from this, open debridement may be considered as the last treatment option in cases resistant to percutaneous drainage together with sclerotherapy. In addition, surgical treatment can be preferred in chronic lesions with pseudocapsule and in cases resistant to percutaneous treatment.¹³

CONCLUSION

Morel Lavallee lesions are rare posttraumatic soft tissue lesions that can be overlooked, especially in chronic cases, and therefore the treatment process is delayed. Ultrasonography and mostly MRI is the prefer of choice for characterisation of lesions and for the differential diagnosis and so, help the choice of treatment. Patients trauma history, clinical examination and laboratory tests (for excluding inflammatory changes) are also helpful for the diagnosis. Especially in large lesions, tumoral lesions (sarcomas, ...etc.) must be excluded. As a result, Morel Lavallee lesions should be considered in the differential diagnosis in all posttraumatic soft tissue lesions and should be kept in mind by clinicians and radiologists while the case is being evaluated.

Ethics Committee Approval: The study was not approved. Because this is a case report. Informed consent form was obtained from the patient and permission was obtained from the patient for use of the photographs.

Conflict of Interest: No conflict of interest was declared by the author.

Author Contributions: Concept-NA; Supervision NA; Materials-MA,SBE; Data Collection and Processing-NA, MA; Analysis and Interpretation-NA, MA, SBE; Writing-NA,SBE; Editing-NA,MA,SBE

Peer-review: Externally peer-reviewed.

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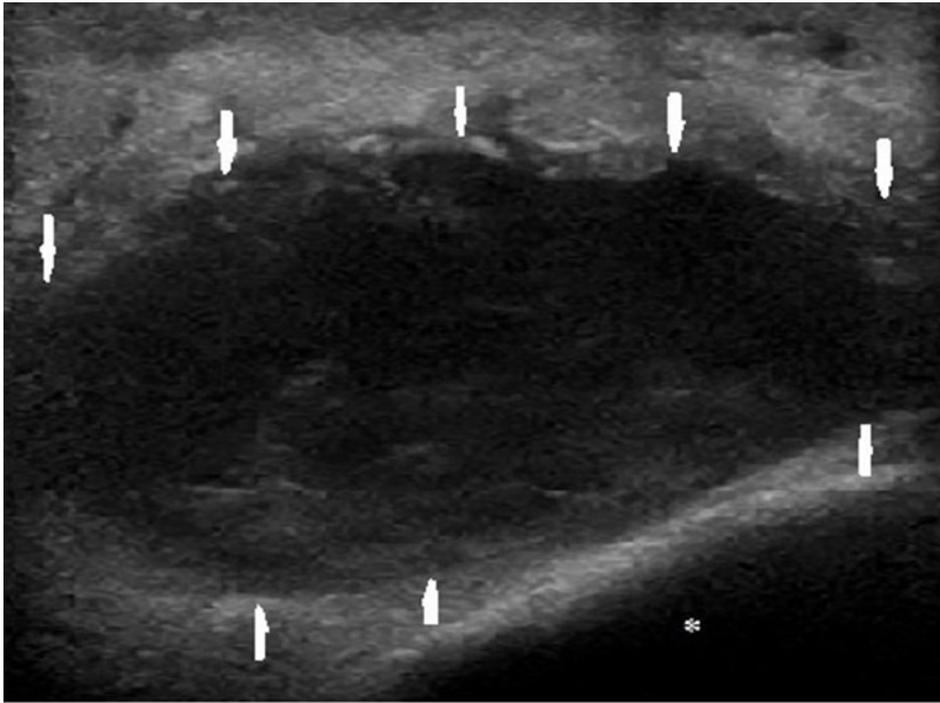


Figure 1: In left anterior cruris, *US* imaging shows pretibial subcutaneous soft tissue area with a hypoechoic mass extending in front of tibia proximal shaft.

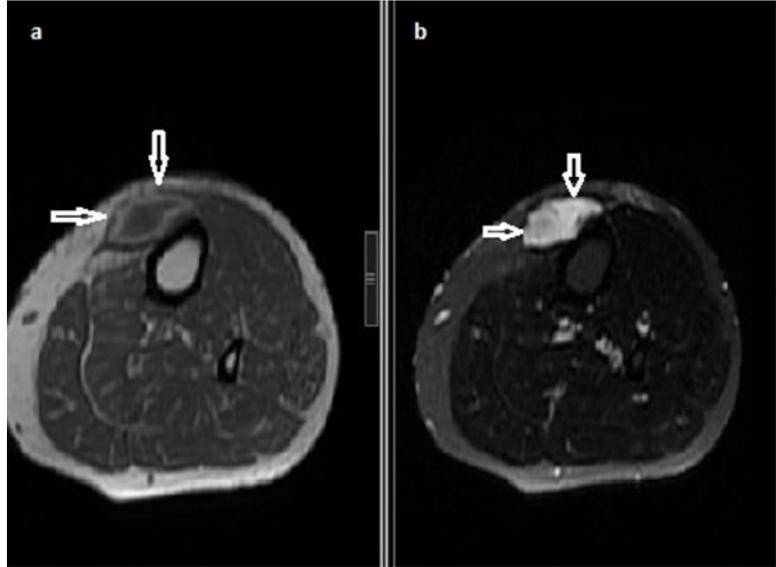


Figure 2: *MR images;* On axial T1 WI (a) and axial T2 FS (b) images, lesion (open arrows) places on pretibial subcutaneous tissue with a thick capsule formation and heterogenous high signal on image b in it.

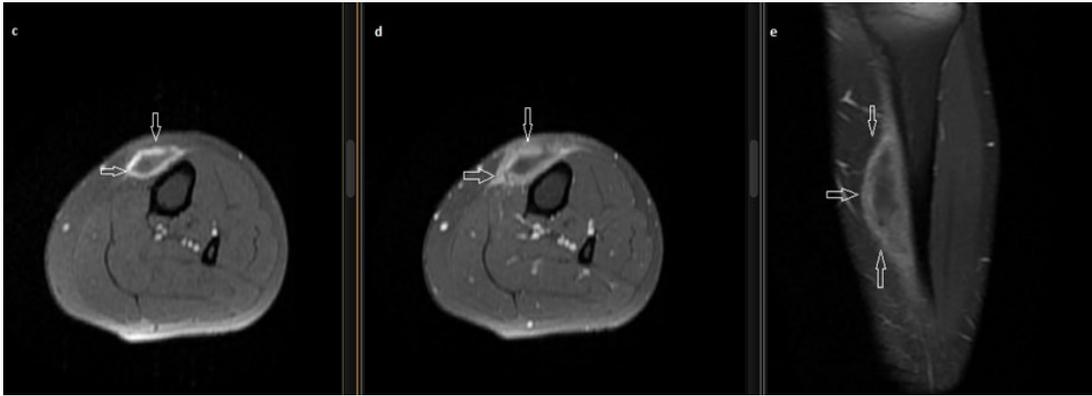


Figure 3: MR images; precontrast (c) and postcontrast (d) fat saturated axial T1 weighted images and post-contrast coronal T1 weighted image. On (d) and (e), lesion shows peripherally enhancement of it's thick wall and also there is soft tissue edema including fascial planes.