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Morel-Lavallée lesion diagnosed 25 years after blunt trauma

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ABSTRACT

INTRODUCTION: Morel-Lavallée lesions are closed degloving injuries in which the skin and subcutaneous tissues separate from the underlying fascia secondary to a shearing force. These injuries are uncommon and can be misdiagnosed in acute settings. If treated incorrectly, they can recur, causing complications requiring multiple surgical interventions. Therefore, it is important to discuss the clinical presentation and imaging characteristics in order to improve their diagnosis and management.
PRESENTATION OF CASE: This is the case of a 44-year-old male patient with a Morel-Lavallée lesion of the left thigh that presented 25 years after trauma. He was successfully treated with open surgical excision. The patient underwent multiple surgical interventions before the lesion was accurately diagnosed and treated.
DISCUSSION: Morel-Lavallée injuries can lead to chronic symptoms, such as pain and swelling, affecting the patient's quality of life. Treatment options include minimally invasive procedures, such as compression bandages or percutaneous drainage. However, if diagnosed late, a fibrotic capsule can form, which may require surgical excision. Our patient was diagnosed more than 20 years after the trauma. Earlier noninvasive treatment options were unsuccessful.
CONCLUSION: The patient was treated with open surgical excision of the chronic lesion. There was no report of any recurrence up to 10 months after surgery. Such lesion treatments should be guided based on the chronicity of the injury and the patient's symptoms. To the best of our knowledge, this is the first case with such delayed presentation.

1. Introduction

Morel-Lavallée lesions (MLLs) are closed degloving injuries that occur when shearing forces cause subcutaneous tissues to separate from the underlying fascia [1]. This can result in the accumulation of blood and other fluid components from disrupted lymphatics and blood vessels in the space created superficial to the fascia. MLLs are usually located lateral to the greater trochanter or the proximal thigh, but their occurrence in other regions such as the knee and the lumbosacral spine have been reported [1]. Up to one-third of patients can have a lesion that does not get recognized at the time of the trauma [2]. This can result in untreated or misdiagnosed injuries that can become chronic. In acute settings, these lesions can resemble seromas or hematomas, which are more common following a trauma. However, magnetic resonance imaging (MRI) can identify the location of these lesions (in the interfascial plane) and differentiate them from similar pathologies [1]. There is no specific treatment for these lesions, and most patients do not require surgical intervention. Morel-Lavallée lesions can be treated with compression bandages or percutaneous drainage and injection of sclerosing agents depending on the size and the chronicity of the injury [1,3,4]. When the lesion is left untreated for a prolonged time, persistent tissue inflammation occurs, creating a fibrous capsule that requires surgical excision.

We present the case of a male patient with a Morel-Lavallée lesion diagnosed 25 years after blunt trauma. The identification of this lesion was crucial because it was misdiagnosed for more than 20 years. Thereafter, the patient underwent successful treatment. This case report is from a university hospital with a trauma center and was reported in line with the SCARE [6] criteria.

2. Presentation of case

This is the case of a 44-year-old Hispanic man with no medical history that suffered a blunt trauma while driving a four-track vehicle, when he was 19 years old. At that time, in an outside hospital, he was diagnosed with a hematoma on the left thigh, for which a drain was inserted and removed after 2 weeks. Twenty-five years later, he started complaining of pain and heaviness, as well as difficulty in

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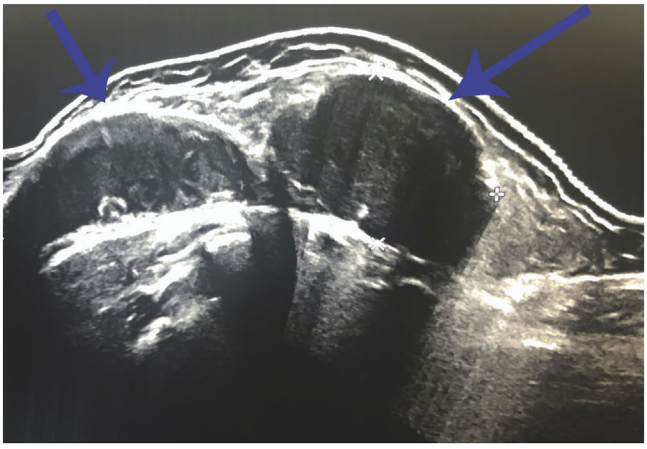

Fig. 1. Ultrasound showing a hypoechoic lobulated structure (blue arrows) at the left lateral thigh with wall thickening.

ambulating secondary to left thigh swelling. Ultrasound of the area revealed a lobulated hypoechoic fluid collection with no vascularity on Doppler evaluation (Fig. 1). MRI showed a well-defined lateral lesion identified at the fascia between the muscles and the subcutaneous fat with proteinaceous fluid, heterogeneous signal nodular components, and a hypointense peripheral rim (Fig. 2). The patient underwent open biopsy and drainage of the lesion by one of the attending physicians of the Orthopedic Surgery Service. Analysis of the specimen revealed a pleomorphic coarse eosinophilic material with inflammatory cells and proteinaceous debris. Gram staining and culture results were negative. Approximately 1 month after surgery, he complained of erythema, swelling, and pain at the surgical site, despite prior drainage. The patient underwent surgery for the second time (by the same attending physician of the Orthopedic Surgery Service) due to what was thought to be an infected seroma that was evacuated from the area. He was administered with Zosyn (3.375 g/6 h) and Vancomycin (1 g/12 h) IV for 10 days after which he was discharged. Two months later, he was presented to the orthopedic surgery clinic complaining of left thigh pain and was referred to the plastic surgery clinic. Physical examination of the patient revealed a round, soft, yellowish mass of projection in his left lateral thigh. The projection was tender to palpation and involved serous drainage. The patient was anxious about these symptoms because despite multiple interventions, he was having recurrent troubles of ambulating secondary to pain. In view of the history and findings, it was postulated that this was a case of MLL recurrence due to failure to remove the fibrous capsule.

The patient underwent surgery by one of the attending physicians of the Plastic Surgery Service. The patient was placed in the right lateral decubitus position, and an elliptical longitudinal incision was made around the draining area, localized at the left lateral thigh. A long tuberous structure with a fibrotic capsule, located above the fascia of the tensor fasciae latae muscle, was dissected from the surrounding structures using electrocautery and blunt dissection. A 15-French Jackson Pratt drain was placed at the site to prevent fluid accumulation due to extensive tissue dissection. The subcutaneous tissues were closed with interrupted absorbable sutures, and the skin was approximated with interrupted non-absorbable sutures.

Pathological examination revealed necrotic and granulation tissues with fat necrosis, fibrosis, multinucleated giant cells, and eosinophilic material (Fig. 3). The patient was followed up at the plastic surgery clinics for 3 months after surgery. The drainage was left in place until output was less than 50 mL per day. The patient was administered prophylactic oral antibiotics (Keflex500 mg/6 h) for 4 weeks after surgery until the drain was removed. The patient

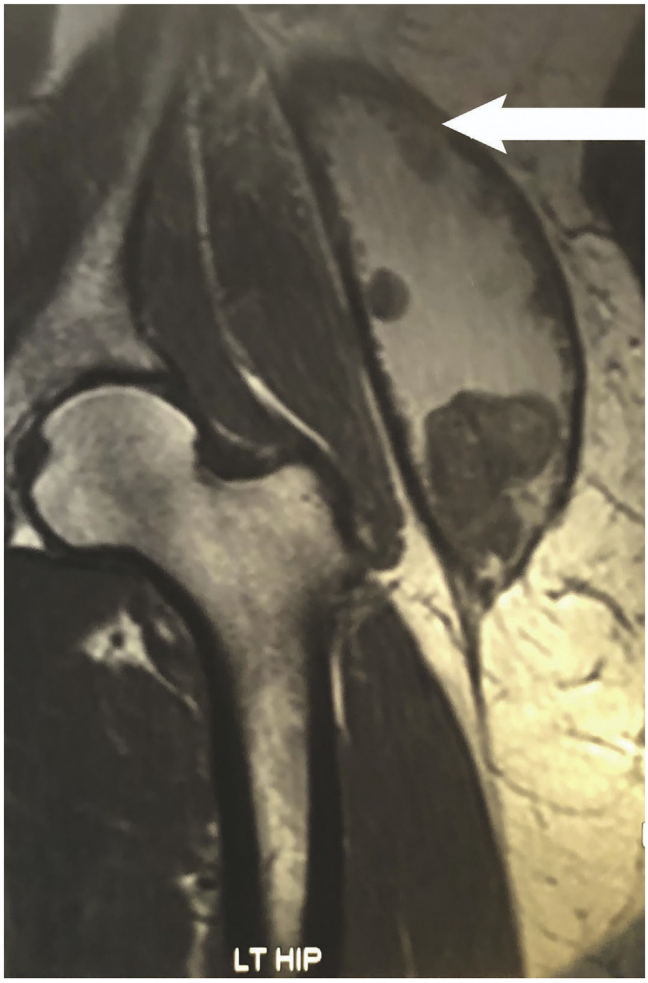

Fig. 2. MRI showing a large well defined left lateral thigh lesion centered at the fascia between the muscles and subcutaneous fat (white arrow). There is a peripheral rim of hypointense signal with centrally hyperintense signal compatible with proteinaceous fluid.

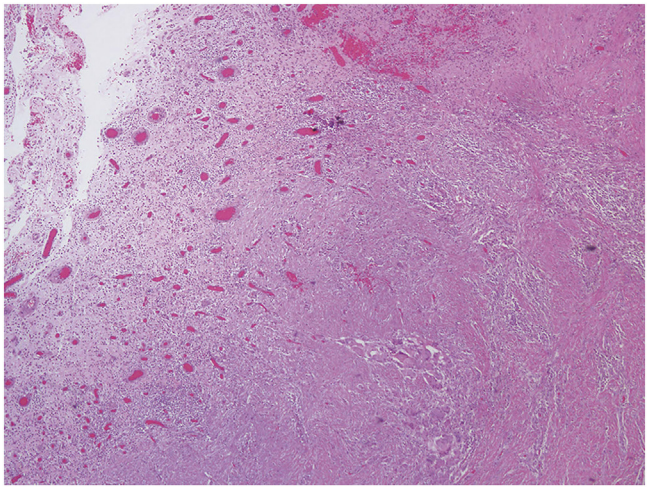

Fig. 3. Hematoxylin and eosin stain of chronic Morel-Lavallée lesion showing multinucleated giant cells, granulation tissue and fibrosis.

was followed up till 10 months post-surgery and did not show any symptoms of recurrence of the lesion.

3. Discussion

The diagnosis of MLL should be guided by the patient's history, physical examination, and imaging findings. History of trauma along with complaints of swelling, pain, and fluid accumulation between the fascia and subcutaneous tissues should raise concern for a possible occurrence of MLL. MRI is the preferred imaging modality for the diagnosis. During the acute period, it is difficult to distinguish a hematoma from an MLL [3] because both have similar characteristics on imaging and physical exam. As the lesion becomes chronic, it forms a capsule that makes it look homogeneous and smooth on MRI [7].

Differential diagnoses when evaluating these kinds of injuries include soft tissue malignancies, hematomas, seromas, and bursitis [1]. In this case, there were areas of patchy, solid enhancement components as observed using MRI that made it difficult to rule out the possibility of malignancy such as a sarcoma. Therefore, it is important to correlate clinically, the history of the disease with the physical examination.

In chronic MLL, there is a sustained inflammatory process that creates a fibrous capsule containing granulation tissue, hemosiderin deposits, necrotic debris, and fibrin [4]. It can also have areas of fat necrosis with dense fibrosis and multinucleated giant cells [5]. These histologic characteristics are congruent with those of our specimen (Fig. 3), confirming the diagnosis of MLL.

Available treatment options depend on the size of the lesion and time of diagnosis [1,3,4]. Large, recurrent lesions or those with a capsule may require open surgical excision [3], such as in this case. Even though noninvasive options are available, physicians must opt for the treatment modality, based on the characteristics of the MLL that will be more beneficial for the patient.

A limitation of this case report is that this is the first MLL that was diagnosed and treated by orthopedic and plastic surgeons at our institution. Therefore, knowledge about this condition and its treatment is limited. This demonstrates the importance of familiarization with uncommon diagnosis in order to prevent delays in patient care. The strength of this case report is that, this is by far the first case with the presentation of an MLL diagnosed more than 20 years after its occurrence. It is important to recognize that if untreated, these lesions can persist for decades, causing symptoms and affecting the quality of the patient's life.

4. Conclusion

MLLs are rare injuries that can be difficult to diagnose acutely after trauma. However, it is important to be aware of the clinical presentation and characteristics that distinguish it from other lesions on imaging. If recognized early, these lesions can be treated with noninvasive options, and the risk of recurrence can be diminished, sparing the patient from undergoing multiple procedures. Although there have been cases where MLLs were diagnosed years after the trauma, to the best of our knowledge, this is the case with the most delayed presentation.

Declaration of Competing Interest

The authors report no declarations of interest.

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Ethical Approval

No ethical approval was required for this case report. This case report was exempt from ethical approval in my institution.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Nelimar Cruz: Investigation, Writing-Original Draft, Writing - Review & Editing, Conceptualization.

Ricardo Jimenez: Resources, Writing - Review & Editing, Supervision.

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