

BRIEF ARTICLE

Pilates-Induced Morel-Lavallée Lesion in a Patient with Prior Spinal FusionKristy Tefft,¹ Nicole Edmonds,² R Hal Flowers²¹ New York Medical College, Valhalla, New York, USA² Department of Dermatology, University of Virginia, Charlottesville, Virginia, USA**ABSTRACT**

Morel-Lavallée lesions are rare degloving injuries usually caused by high-force trauma forcibly separating fascial planes, leading to accumulation of serosanguinous fluid within the potential space. Here we present a case of a chronic Morel-Lavallée lesion triggered by low-energy trauma during Pilates exercise presenting to dermatology. This case adds to the existing literature on this rare condition and emphasizes the need for awareness by dermatologists and other outpatient providers to ensure timely diagnosis and management.

INTRODUCTION

Morel-Lavallée lesions are trauma-induced degloving injuries caused by high-energy shearing forces introducing a potential space between the deep fascia and overlying soft tissues.¹ Disruption of the blood and lymph vessels allows accumulation of serosanguinous fluid within the space which in chronic lesions can instigate an inflammatory response and formation of a fibrous capsule.² They most commonly occur in the lower extremities and pelvic region^{1,2} but may rarely occur on the trunk.^{3,4} Given the traumatic nature, these lesions are often associated with other underlying injuries and may develop over hours to days.¹ Here we describe a case of a Morel-Lavallée lesion triggered by Pilates in a patient with a history of spinal surgery presenting to dermatology.

CASE REPORT

A 35-year-old Caucasian female presented to dermatology clinic with a painful mass on the mid back which expanded over ten months. Past medical history was notable for a spinal fusion for adolescent idiopathic scoliosis 24 years prior. Family history was not significant. One week prior to appearance of the mass, the patient experienced sudden onset of pain in the back associated with lightheadedness during Pilates exercise. The mass continued to grow over several weeks to months. Physical exam revealed a large 9 centimeter (cm) subcutaneous mass in the mid back with positive fluid wave and no evidence of punctum (**Figure 1**). Prior ultrasound demonstrated a butterfly shaped fluid collection contained between the subcutaneous soft tissue and the back musculature with a communicating channel between the left and right collections on the upper bilateral paramedian thoracic back (**Figure 2**). The right upper back collection measured 9.1 x 5.2 x 1.7 cm, with possible communication superiorly with the spinal hardware. The left collection measured 12.7

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x 7.2 x 2.4 cm. The mass was drained via ultrasound-guided aspiration three times, with approximately 100 milliliters of serosanguinous fluid removed during each procedure. Fluid reaccumulated within 2-8 weeks between each drainage. Cytopathology of aspirated material demonstrated blood and acute purulent inflammation with no evidence of malignancy. Culture of aspirated fluid grew few *Cutibacterium acnes* and was negative for fungus and acid-fast bacteria. Beta-2 transferrin was not identified, suggesting the fluid was not of cerebral spinal fluid (CSF) origin. Non-contrast CT of the thoracic and

lumbar spine confirmed spinal hardware was intact.

Based on clinical presentation and imaging, the patient was diagnosed with a Morel-Lavallée lesion. She was treated with cephalexin 500 milligrams three times daily for five days for *C. acnes* infection and referred to interventional radiology for further procedural management. The patient



Figure 1. Clinical image showing a large subcutaneous mass on the bilateral mid back.

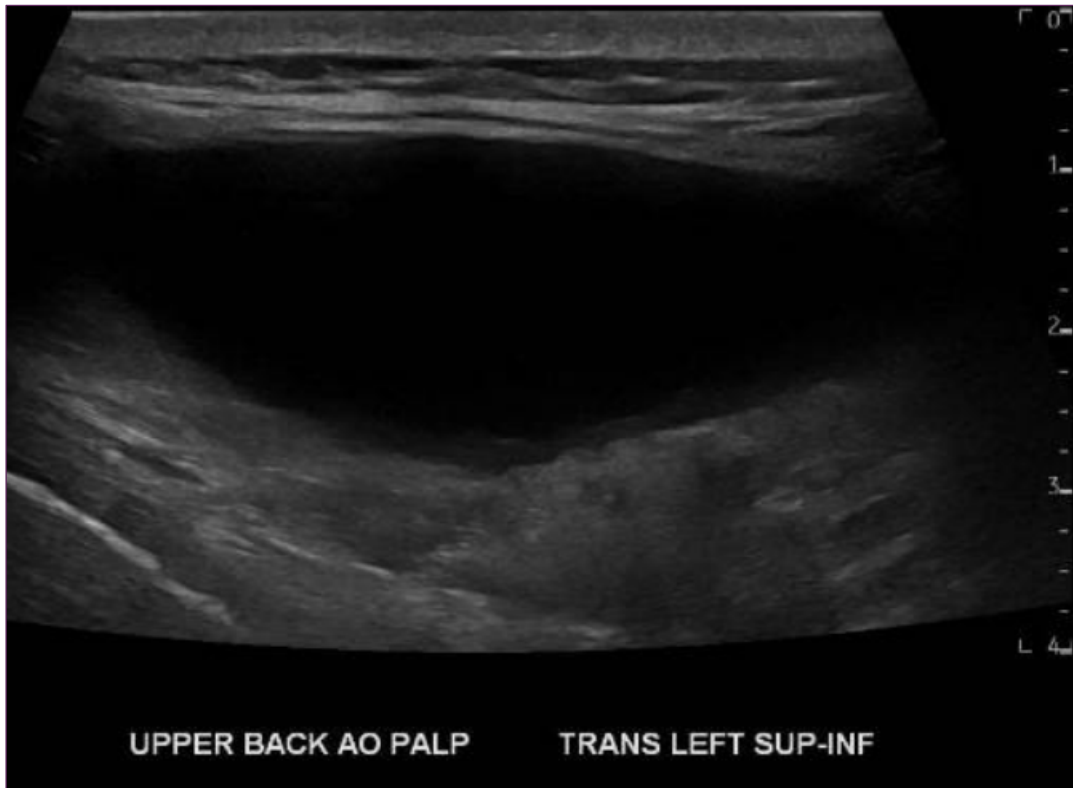


Figure 2. Ultrasound imaging demonstrates a large anechoic fluid collection contained between subcutaneous soft tissue and musculature of the bilateral upper back without evidence of loculation.

received one treatment of doxycycline sclerotherapy under local sedation. Unfortunately, at two week follow up the fluid had reaccumulated. The patient is currently undergoing alcohol sclerotherapy administered under intravenous sedation in 2-3 day intervals with concurrent drain placement.

DISCUSSION

Diagnosis of Morel-Lavallée lesions is usually made through history, physical exam, and imaging with ultrasound or MRI.¹ Patients usually present after a traumatic accident with fluctuant swelling that may be painful or asymptomatic, have overlying ecchymosis, or be associated with underlying orthopedic injuries.¹ However, in the absence of underlying fracture, these lesions may go

undetected, leading to a delay in diagnosis and treatment.⁵ MRI is the preferred modality for diagnosis;¹ however, in our patient the presence of spinal hardware made an MRI contraindicated.

Management is dependent on several variables, primarily size and chronicity of the lesion.² A conservative approach with compression bandaging may be appropriate for small acute lesions, while larger or recurrent lesions may require sclerodesis or surgical intervention. Percutaneous aspiration is often used in combination with other strategies, as it is often ineffective when used alone,⁵ as seen in our patient who experienced repeated recurrences after aspiration. A review of therapeutic approaches in peri-pelvic lesions reported sclerodesis to be an effective treatment with over 95% success rate.⁵

Differential diagnosis for a fluctuant mass of the back includes other subcutaneous fluid collections such as seroma, hematoma, and lymphocele. Hematomas and seromas may form after spinal surgery, but most often occur within the perioperative period and spontaneously resorb within a few months.⁶ Lymphoceles may rarely occur spontaneously⁷ or after trauma.⁸ Lymphoceles can be differentiated from Morel-Lavallée through imaging, which reveals a cystic mass, and through examination of aspirated material, which demonstrates milky chylous fluid.^{7,8} In contrast, Morel-Lavallée lesions have a pseudocystic appearance on imaging and typically contain serosanguinous fluid.¹ As our patient had a history of spinal surgery and imaging suggested a possible communication with spinal hardware, our differential also included CSF leak; however, Beta-2 transferrin was not detected in the aspirated fluid indicating the contents were not CSF.

CONCLUSION

This case demonstrates an unusual presentation of a Morel-Lavallée lesion presenting to dermatology clinic. Interestingly, our patient did not sustain a high-energy trauma that typically precedes Morel-Lavallée lesions. We hypothesize the prior history of spinal surgery introduced a weak point in the fascial planes which predisposed to separation during a Pilates exercise that in normal tissue may not otherwise be sufficient force to cause injury. While these rare entities usually present in a trauma setting, they may go undetected during acute evaluation and develop into chronic lesions, leading to delayed presentation to outpatient providers. Dermatologists should be aware of this rare

condition and consider Morel-Lavallée lesions in the differential diagnosis for subcutaneous masses. Furthermore, this case highlights the limited efficacy of percutaneous aspiration, and the need to combine with alternative treatment modalities such as sclerodesis for the treatment of Morel-Lavallée lesions, particularly when they are large.

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