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CASE REPORT

Degloving injury of the thigh: a case report

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ABSTRACT

Background: Morel-Lavallée lesions (MLLs), also known as degloving injuries, are uncommon traumatic soft tissue injuries resulting from the separation of the superficial fascia from the deep fascia, typically due to high-energy trauma or shear forces. This separation leads to fluid accumulation and disruption of skin vascularity, placing the overlying skin at risk for necrosis and infection. MLLs can mimic other soft tissue injuries, such as hematomas, and are often associated with delayed diagnosis and treatment.

Case Presentation: A 46-year-old man presented with left thigh swelling persisting for 3 weeks following a motorcycle crash. Initial imaging with X-rays revealed no fractures and point-of-care ultrasound identified a large encapsulated fluid collection consistent with MLL. Subsequent computed tomography (CT) angiography ruled out vascular injury and confirmed a subcutaneous fluid collection measuring 10.6 × 32.0 cm. Conservative management, including compression bandaging and prophylactic antibiotics, was initially recommended; however, after surgical review, ultrasound-guided drainage was performed to mitigate the risk of skin necrosis. The patient recovered uneventfully and was discharged 48 hours after the procedure.

Conclusion: This case highlights the importance of maintaining a high index of suspicion for MLLs in patients with post-traumatic swelling, even in the absence of fractures or significant injuries. Accurate diagnosis and timely intervention are essential to reduce the risk of complications. Point-of-care ultrasound and CT are valuable diagnostic tools in emergency settings, particularly for patients with contraindications to contrast agents. Future guidelines should emphasize clinical vigilance and the role of advanced imaging in managing MLLs effectively.

Keywords: Morel-Lavallée lesion, degloving injury, traumatic soft tissue injury, point-of-care ultrasound (POCUS), CT angiography.

Introduction

Morel-Lavallée lesions (MLLs), or degloving injuries, are uncommon closed traumatic soft tissue injuries characterized by separation of the superficial fascia from the deep fascia, typically caused by high-energy trauma or shear forces. This separation leads to a buildup of hemolymphatic fluid in the soft tissue and disruption of skin vascularity, placing the overlying skin at risk for necrosis and infection [1]. Although MLLs have a relatively low incidence, the exact rate remains unknown due to the subtle presentation and the lesion's ability to mimic other soft tissue injuries, like hematomas [2].

MLLs can occur anywhere on the body, but more than 70% of cases involve the hip and thigh [3]. These lesions range in severity from simple seromas to chronic, complex, infected fluid collections. Management approaches depend on the fluid collection size, the overlying skin's viability, associated fractures, and the overall clinical scenario [1]. Reporting MLL cases in emergency medicine literature is crucial to increase awareness of the condition and its complications among emergency physicians. This is particularly important because MLLs are frequently associated with delayed diagnosis and treatment.

Case Presentation

A 46-year-old man with no relevant medical or surgical history presented with left thigh swelling persisting for 3 weeks. The patient reported involvement in a motorcycle crash 2 weeks prior, during which he was ejected and landed on his left side. He was transported to a medical facility but left against medical advice after undergoing an X-ray, citing his ability to ambulate and

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pain resolution following analgesic administration. The emergency physician had recommended a computed tomography (CT) angiography of the lower limb to evaluate vascular integrity, but the patient declined due to concerns about the potential effects of contrast material on kidney function.

On examination, the patient had a tense, fluctuating swelling over the proximal lateral left thigh with posterior extension. The swelling spanned longitudinally from the iliac crest to the mid-thigh. Although the skin was intact, it exhibited extensive bruising and ecchymosis. The sensation was diminished in the distribution of the lateral femoral cutaneous nerve, but distal pulses were intact below the swelling.

Without prior imaging, the hip and femur X-rays were repeated and revealed no fractures or dislocations. Point-of-care ultrasound (POCUS) of the soft tissue identified a large encapsulated fluid collection in the subcutaneous space, without septations or evidence of soft tissue edema. Based on the patient's history of shear force trauma and the ultrasound findings, a diagnosis of MLL was made. However, CT angiography of the lower extremity was performed to exclude vascular injury. This imaging revealed a large lateral subcutaneous fluid collection extending from the left gluteus muscle to the mid-thigh, measuring 10.6 × 32.0 cm in anteroposterior, transverse, and craniocaudal dimensions. The collection contained mixed-density hematoma and was associated with thickened lower limb fascia and surrounding fat stranding. No arterial blush was observed.

Management

The trauma team initially recommended conservative management, including compression bandaging and prophylactic antibiotics, reasoning that the well-formed hematoma posed a higher risk of infection if evacuated. However, during a surgical review, the team decided to proceed with percutaneous drainage followed by compression bandaging to mitigate the risk of skin necrosis, given the lesion's size and associated nerve damage.

Ultrasound-guided drainage was performed without complications. The patient had an uneventful recovery and was discharged home 48 hours later after the procedure.

Discussion

MLLs present diagnostic challenges due to their rare occurrence and delayed onset of nonspecific symptoms. These symptoms, including swelling, pain, or ecchymosis, may not manifest until days or weeks after the initial trauma. As a result, MLLs are often mistaken for simple bruising or contusions, particularly in patients who sustain high-energy trauma without fractures. Hudson noted that delayed symptom onset is common, complicating early diagnosis and timely intervention [2]. Similarly, this case emphasizes the importance of maintaining a high index of suspicion in patients presenting with post-traumatic swelling, even in the absence of fractures or other significant injuries.

Magnetic resonance imaging is considered the imaging modality of choice for diagnosing MLLs; however, its availability for emergent soft tissue evaluation is limited in many emergency departments. POCUS and CT are more widely accessible and serve as reliable diagnostic tools. POCUS is particularly advantageous in patients with renal impairment or those, like the patient in this case, who express concerns about the safety of contrast agents. It is also a time-saving and cost-effective modality. Gelber et al. [4] reported a case where MLL was diagnosed entirely based on clinical presentation and POCUS. Although sonographic diagnostic criteria for MLLs are not well-established, common findings include an anechoic or hypoechoic fluid collection that is fusiform or flat and located superficial to the deep fascia [5]. These findings help differentiate MLLs from other causes of limb swelling, such as deep vein thrombosis or compartment syndrome.

CT imaging is frequently employed as part of trauma evaluation and plays a critical role in confirming the diagnosis of MLLs while also identifying associated injuries, such as pelvic and acetabular fractures, which may complicate or take precedence over MLL management [6]. In this case, CT angiography was used to exclude subtle vascular injury.

Treatment of MLLs is broadly categorized into conservative and operative approaches. Conservative treatment typically involves needle aspiration or ultrasound-guided percutaneous drainage, followed by compression bandaging. Lin et al. [7] reported the successful use of this approach in managing a spinal degloving injury, with complete resolution over 10 months. Operative treatments include incision and drainage, excision of the pseudocapsule, and debridement of necrotized tissue.

In this case, the shift in management strategy highlights the complexity of treating MLLs. Although ultrasound-guided drainage followed by compression bandaging is a valid treatment option supported by literature, this approach is associated with a higher recurrence rate than operative management [8].

Conclusion

This report describes an internal degloving injury of the thigh in a young, otherwise healthy man involved in a high-speed motorcycle accident. Delayed presentation and treatment resulted from multiple factors, but the patient ultimately underwent percutaneous hematoma evacuation and experienced an uneventful recovery. This case highlights the importance of accurate diagnosis and timely intervention to reduce the risk of complications, a strategy well-supported in the existing literature on MLLs. Future guidelines should emphasize the importance of clinical vigilance and advanced imaging to improve outcomes in patients with internal degloving injuries.

List of Abbreviations

CT	Computed tomography
MLLs	Morel-Lavallée lesions
POCUS	Point-of-care ultrasound

Conflict of interests

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Consent to participate

The patient verbally consented to publish this case report.

Consent for publication

All authors consent to the publication of this manuscript.

Ethical approval

Ethical approval was granted by the Research Ethics Committee at King Abdulaziz University via reference number 107-24, dated: 30-09-2020.

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