

CASE REPORT

An uncommon cause of Thigh swelling: Morel-Lavallee Lesion managed with percutaneous drainage and Doxycycline Sclerodesis: A Case Report

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ABSTRACT

Introduction: The Morel-Lavallée lesion (MLL) is a closed degloving injury in which shearing trauma separates the skin and subcutaneous tissue from the underlying fascia. The resulting potential space fills with blood, lymph and necrotic debris. Because the lesion is uncommon and often overshadowed by other injuries, diagnosis is frequently delayed, which can lead to infection of the collection or necrosis of the overlying skin.

Case presentation: A 58-year-old woman presented with a painful swelling and a wound over the right thigh 6 weeks after a fall from an overturning auto-rickshaw. Examination revealed an 18 × 7 cm cystic, fluctuant, transilluminant swelling on the anterolateral thigh with an overlying 3 × 3 cm scabbed laceration. Ultrasonography and computed tomography showed a fluid collection between the subcutaneous tissue and the deep fascia, consistent with an MLL. She was treated with percutaneous aspiration, local debridement of the laceration, doxycycline sclerodesis and compression bandaging. Ultrasonography on the third day after the procedure showed near-complete resolution of the collection.

Discussion: Treatment of MLL can be conservative, percutaneous or surgical, and the choice depends on the chronicity, size and contents of the lesion, the state of the overlying skin and any associated injuries.

Conclusion: MLL is an uncommon but clinically significant injury. A high index of suspicion, timely imaging and a treatment plan tailored to the individual lesion help prevent complications and recurrence.

Keywords: Morel-Lavallée lesion; closed degloving injury; doxycycline; sclerotherapy; thigh injuries; case report

INTRODUCTION

The Morel-Lavallée lesion (MLL), first described by the French surgeon Victor-Auguste-François Morel-Lavallée in 1863 [1], is a closed soft-tissue degloving injury caused by shearing trauma [2]. The shearing force separates the subcutaneous tissue from the underlying fascia and tears the perforating capillaries and lymphatics that cross this plane. Blood, lymph and serous fluid then collect in the space created, which may also contain liquefied fat and necrotic debris [3,4]. Over time, chronic inflammation leads to a fibrous capsule, turning the lesion into a persistent pseudocyst [5].

Clinically, MLL presents as a soft, fluctuant swelling after trauma, typically in regions where the skin is mobile and covers a broad, flat fascial surface. The greater trochanter and lateral thigh are the commonest sites [6,7]. The overlying skin may show contusion, altered sensation or necrosis, and the lesion may be associated with underlying fractures, particularly of the pelvis and acetabulum [3].

Diagnosis requires a high index of clinical suspicion and is confirmed by imaging. Because MLL is uncommon and often accompanies other injuries in polytrauma, the diagnosis is frequently delayed or missed [2,6]. Delay can lead to bacterial colonisation of the collection, necrosis of the overlying skin from impaired perfusion, and complications in the treatment of any associated fractures [3,4]. We report a case of a large, chronic MLL of the thigh managed with percutaneous aspiration, doxycycline sclerodesis and compression.

CASE PRESENTATION

A 58-year-old woman presented to the surgical outpatient department with a wound and swelling over the right thigh of 6 weeks' duration, associated with pain and a sensation of fullness. The symptoms had begun after an injury to the thigh when the auto-rickshaw in which she was travelling overturned. Patient was non-diabetic, non-hypertensive, without any known comorbidities. Patient had received oral analgesics at a local primary health centre but no further treatment was received before presentation.

On examination, a solitary swelling measuring 18×7 cm was present over the anterolateral aspect of the right thigh, with an overlying 3×3 cm laceration covered by a scab (Figure 1). The swelling was cystic, fluctuant and transilluminant, and was neither pulsatile nor expansile on coughing.



Figure 1. Clinical photographs of the right thigh at presentation. (a) Lateral and (b) anterolateral views showing an 18×7 cm fluctuant swelling (outlined) with an overlying 3×3 cm scabbed laceration.

Plain radiographs showed no underlying bony injury. Ultrasonography revealed a hypoechoic collection deep to the subcutaneous tissue over the anterolateral aspect of the right mid- and lower thigh, measuring $16 \times 6 \times 3$ cm and suggestive of an MLL. Non-contrast computed tomography (CT) confirmed a hypodense collection between the subcutaneous tissue and the deep fascia (Figure 2).

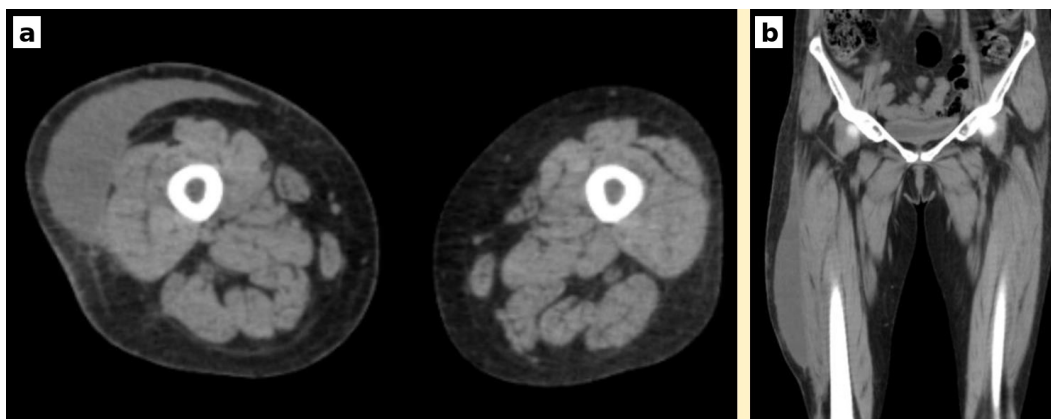


Figure 2. Non-contrast computed tomography of the thighs. (a) Axial image showing a hypodense collection between the subcutaneous tissue and the deep fascia over the anterolateral aspect of the right thigh; the left thigh is normal. (b) Coronal reformatted image showing the craniocaudal extent of the collection along the right lateral thigh.

The lesion was managed with a combination of percutaneous and conservative measures. Percutaneous aspiration yielded approximately 40 mL of serous fluid. Fluid analysis indicated an exudate, and culture showed no bacterial growth.

Under local anaesthesia, the overlying laceration was debrided, and doxycycline was instilled into the cavity to induce sclerodesis. Doxycycline reconstituted in sterile normal saline to the concentration of 10 mg/ml was administered under Ultrasonology guidance to fill the cavity. A total of 30 ml of reconstituted solution was required. The debrided wound was allowed to heal by secondary intention. Regular cleaning and dressing of the wound with pressure bandaging of the thigh using crepe bandage was performed. Ultrasonography on the third day after the procedure showed near-complete resolution of the collection, with organized debris and echogenic foci consistent with the sclerosant and no residual fluid component (Figure 3). The wound on day 7 is shown in Figure 4. The patient was discharged with a compression bandage and advised to attend follow-up after 2 weeks, however, the patient was lost to follow up.

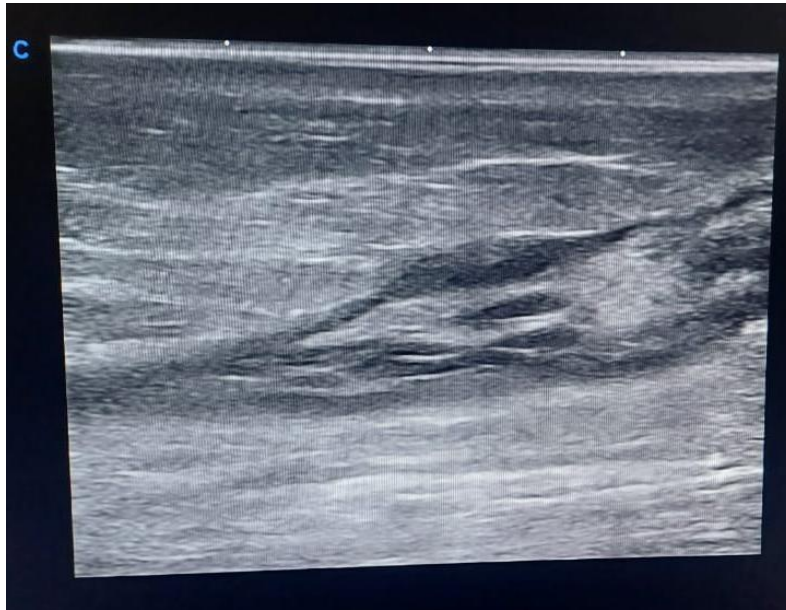


Figure 3. Ultrasonography on the third day after aspiration and doxycycline sclerodesis, showing near-complete resolution of the collection, with organized debris and echogenic foci consistent with the sclerosant and no residual fluid.

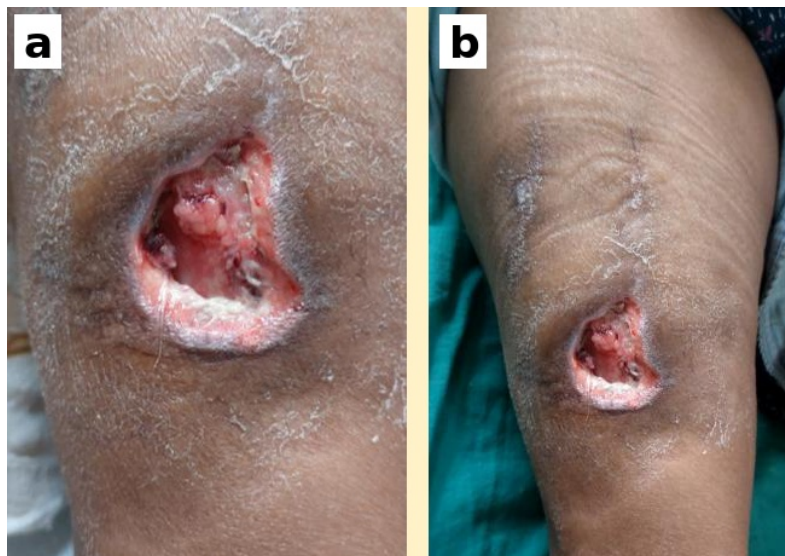


Figure 4. The wound on the seventh day after local debridement and doxycycline sclerodesis: (a) close-up and (b) wider view.

DISCUSSION

MLL is uncommon and is easily overlooked, particularly when attention is directed to associated fractures or other injuries in polytrauma [2,6]. Our patient presented 6 weeks after a relatively low-energy injury, with a large swelling at a typical site, the lateral thigh [6,7]. This delay is typical of the condition and allowed time for a chronic collection to develop.

Imaging is central to diagnosis. Plain radiographs help to exclude associated fractures. Ultrasonography is usually the first-line investigation; it shows separation of the tissue planes and characterises the fluid collection beneath them, and it is also useful for follow-up [7]. CT defines the extent of the lesion and any associated bony injury. Magnetic resonance imaging (MRI) is the investigation of choice, because it defines the site and extent of the lesion and the nature of its contents, shows whether a capsule is present, and identifies infection or necrosis, all of which inform treatment planning [8]. In the present case, ultrasonography and CT were sufficient to establish the diagnosis and plan treatment, so MRI was not performed.

Mellado and Bencardino classified MLL into six types according to shape, signal characteristics on MRI, enhancement pattern and the presence or absence of a capsule [8]. Although this classification is useful descriptively, it offers limited guidance on the choice of treatment [8,9], and no universally accepted management protocol exists [2,9]. The choice of treatment depends on the chronicity and size of the lesion, the nature of its contents, the condition of the overlying skin, and the presence of associated fractures [9,10].

Small, acute lesions may resolve with compression bandaging and rest. Larger or persistent lesions generally require intervention [9]. Percutaneous aspiration and drainage are minimally invasive [11], but aspiration alone is associated with high recurrence rates. In a series of 79 patients with 87 lesions, recurrence after percutaneous aspiration was 56%, compared with 15% after operative management, and recurrence was more likely when more than 50 mL of fluid was aspirated [12]. On this basis, the authors recommended operative treatment when the aspirate exceeds 50 mL [12]. Bacterial colonisation is also a concern: in a systematic review of peri-pelvic lesions, 19% of the lesions cultured were colonised [10].

Sclerodesis has been developed to reduce recurrence after aspiration. Sclerosing agents induce an inflammatory reaction that promotes adhesion of the separated tissue planes. Doxycycline is the most widely used agent: Bansal et al. reported resolution in 15 of 16 persistent lesions after doxycycline sclerodesis [13], and it has also been used successfully for lesions of the knee [14]. Talc [15] and absolute alcohol [16] have also been reported as effective. In our patient, aspiration combined with doxycycline sclerodesis and compression produced near-complete resolution on early ultrasonography, without the need for open surgery.

Surgical management is indicated for chronic lesions with a well-formed pseudocapsule, lesions that recur after percutaneous treatment, infected or extensive necrotic collections, necrosis of the overlying skin, and lesions associated with fractures that require fixation [3,9]. In chronic lesions, the fibrous capsule must be excised to reduce the risk of recurrence [5,9]. Open debridement, or minimally invasive debridement through small incisions, may be followed by quilting sutures or drains to obliterate the dead space, with skin flaps reserved for extensive soft-tissue defects [3,9].

This report has limitations inherent to a single case. MRI was not performed, so the lesion could not be classified or the presence of a capsule assessed. The outcome is reported only over the short term.

CONCLUSION

MLL is an uncommon but clinically significant injury in which trauma separates the skin and subcutaneous tissue from the underlying fascia. It typically presents as a fluctuant swelling, sometimes with contusion of the overlying skin, after a shearing injury. Diagnosis relies on a careful history and examination supported by ultrasonography, CT or MRI. Early recognition matters, because delayed diagnosis increases the risk of infection, skin necrosis and recurrence, and complicates the management of associated fractures. Treatment should be tailored to the lesion's chronicity, size and contents, the state of the overlying skin and any associated injuries. Options range from compression and percutaneous aspiration with sclerodesis to minimally invasive or open debridement. As this case illustrates, percutaneous drainage combined with doxycycline sclerodesis and compression can be an effective, minimally invasive option for a large, uncomplicated lesion of the thigh.

DECLARATIONS

Patient consent: Patient consented for utilization of images and documentation of procedure for academic purposes.

Source of funding: None

Conflicts of interest: None

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