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CASE REPORT

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Morel-Lavallée lesion of the lumbosacral region: A rare case report and comprehensive review of the literature

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Key Clinical Message

The presentation of a Morel-Lavallée lesion in the lumbosacral region following a road traffic accident is an uncommon clinical entity. Knowledge of this rare site of occurrence can help in early diagnosis and proper management.

Abstract

With the increasing incidence of road traffic accidents, degloving injuries are a common presentation at the emergency department. Morel-Lavallée lesions in the lumbosacral region are an uncommon presentation following road traffic accidents. The presentation is usually within hours of the accident; however, up to one-third may present many years after the insult. The lumbosacral region is an uncommon location for this pathology to develop, with the majority of cases occurring in the greater trochanter, pelvis, thigh, knee, and gluteal region. Distinguishing this entity can be challenging due to similar presentations of other conditions like diffuse subcutaneous edema, hematoma, and seroma. Magnetic resonance imaging remains the gold standard investigation. Complications of Morel-Lavallée lesions include necrosis of overlying skin caused by the pressure exerted by larger lesions and secondary infection. Conservative management versus surgery is directed by the size and content of the lesion, associated secondary infection, and response to expectant management. This case report adds to the limited knowledge by showcasing a successful noninvasive approach to a lumbosacral Morel-Lavallée lesion, emphasizing the potential of conservative methods in managing this complex yet treatable complication of road accidents.

KEYWORDS

degloving, lumbosacral region, Morel-Lavallée, Morel-Lavallée lesion of lumbosacral region, road traffic accidents

1 | INTRODUCTION

Degloving injuries are commonly seen during road traffic accidents. With such injuries, there is always some kind of injury to smaller blood vessels, nerves, and lymphatic vessels, which usually manifest as swelling at the site of impact.[1–3] The swelling may present acutely or may present after many days following the accident. This

Samiksha Lamichhane and Shritik Devkota are co-first authors in recognition of their equivalent contributions to this work.

type of swelling was first described by a French surgeon, Maurice Morel-Lavallee, and named the Morel-Lavallée lesion.[1] The common sites of this lesion are the greater trochanter, pelvis, thigh, knee, and gluteal region.[1–4] Lumbosacral region is a rare site of occurrence of this pathology. Accurately diagnosing this entity can be a complex endeavor, as various other pathologies, including diffuse subcutaneous edema, localized hematoma, and post-operative seroma, can mimic its clinical and imaging features, potentially leading to misdiagnosis and delay in appropriate treatment.[3] Morel-Lavallée lesions carry risks of complications including skin necrosis due to pressure from larger lesions, as well as the potential for secondary infection.[1–3] Management can be conservative, minimally invasive, or surgical intervention depending on the size of the collection, whether it's infected or not, recurrence, or the response to conservative management.[1,2] We hereby present a case of a 35-year-old male who developed a similar type of lesion diagnosed by Magnetic Resonance Imaging (MRI). The lesion regressed conservatively and was managed conservatively. We are reporting this case as the lumbosacral region is usually a rare site of Morel-Lavallée lesion.

2 | CASE REPORT

2.1 | Case presentation

A 35-year-old gentleman presented after a road traffic accident with severe pain in the lumbar region. The individual sustained a fall onto his back following a high speed vehicle collision, with the initial impact occurring in the lower back region. There was no loss of consciousness, headache, external cuts, or injuries. He was not under the influence of alcohol, and there were no other comorbidities in his past medical history. The Glasgow Coma Scale was 14 (motor 6, verbal 5, and eyes 3) with a patent airway, breathing, and circulation. Physical examination revealed normal vital signs with a respiratory rate of 18 breaths per minute, 99% oxygen saturation on room air, a heart rate of 75 beats per minute, a blood pressure of 130/80 mmHg, and a temperature of 37.2°C with no evidence of neurological deficit. The patient was in severe pain and was unable to move his body. Full body inspection was done for areas of injury, and all necessary precautions were taken to roll the patient considering cervical injury. On inspection of the lumbar region, diffuse swelling with superficial abrasions was noted. There was no evidence of injury elsewhere in the body. The abdomen was soft and nontender with no guarding and rigidity. On auscultation of the chest, there was equal air entry in the bilateral lungs.

3 | METHODS

As a preliminary investigation, an extended-focused assessment for trauma (eFAST) performed in the emergency room was negative. X-ray of the lumbo-sacral spine anteroposterior and lateral showed no abnormalities. Subsequently, the patient underwent a non-contrast CT scan of the lumbo-sacral vertebra, which revealed an isodense collection along deep subcutaneous compartment of lumbosacral region [Size measuring approximately 13 cm ×2.1 cm ×8.7 cm (Craniocaudal × Anteroposterior × Transverse dimensions)] (Figure 1). In addition, communicated and minimally displaced fracture of the right-sided ala of the S1–S3 vertebra was noted. An hour following admission, the patient started experiencing numbness in the left lower limb and underwent an MRI of the lumbosacral region. The MRI showed an ill-defined T1 hypointense and T2 intermediate-hyperintense signal intensity area in the deep subcutaneous plane of the lumbosacral region, measuring approximately 13.2 cm in craniocaudal dimension, 2.1 cm in anteroposterior dimension and 8.7 cm in transverse dimension. It was seen extending from the L2-S2 level with no evidence of suppression on STIR sequence (Figure 2) which is consistent with Morel-Lavallée lesion. While, the patient was

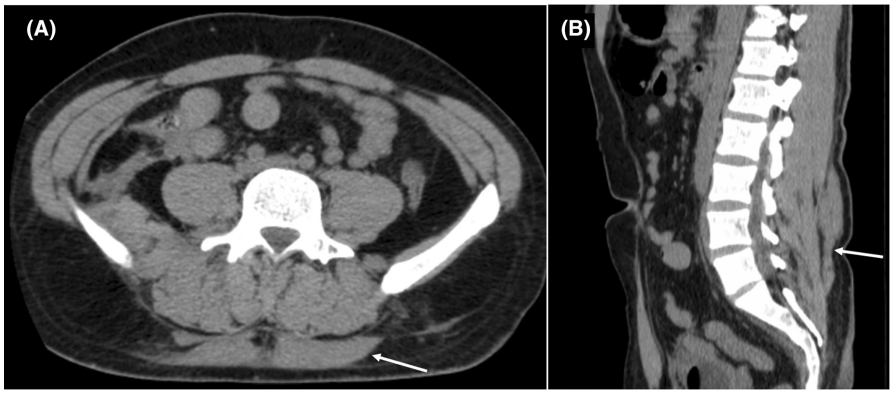

FIGURE 1 Axial (A) and sagittal reconstructed (B) sections of non-contrast CT showing oblong shaped isodense (to paraspinal muscles) collection along deep subcutaneous compartment of lumbosacral region.

FIGURE 2 Sagittal T1W (A) T2W (B) and STIR (C) sequences showing T1 hypointense (black arrows), T2 heterogeneously hyperintense (black arrows) and STIR hyperintense (white arrows) collection along deep subcutaneous compartment extending along lumbosacral region.

electively posted for surgical fixation of sacral fracture, conservative management was opted for Morel-Lavallée lesion.

4 | CONCLUSION AND RESULTS

The patient was admitted at ward and conservatively managed by giving antibiotics, analgesics, anti-inflammatory and complete bed rest for the initial few days. Later on, 6th day of admission he was discharged and kept under regular surveillance. On regular follow up, the size lesion was resolving with no signs of infection and patient was recovering well.

5 | DISCUSSION

Morel-Lavallée lesions, named after their discoverer Dr. Maurice Morel-Lavallée, represent a unique type of injury categorized as "closed degloving."[1,2] This trauma detaches the skin and underlying superficial fascia, creating a potential space for fluid accumulation within the soft tissues.[1–4] While commonly affecting the greater trochanter, pelvis, thigh, knee, and gluteal region,[5] our case sheds light on the uncommon presentation in the lumbosacral area, highlighting the diverse anatomical locations these lesions can involve.

While typically arising from traumatic events, Morel-Lavallée lesions are rare occurrences, with the hip (30.4%), thigh (20.1%), pelvis (18.6%), knee (15.7%), and gluteal region (6.4%) being the most frequently affected areas.[5] Notably, the lumbosacral region presents an even greater rarity, accounting for only 3.4% of reported cases, highlighting the uncommon nature of this specific manifestation.[5] There are a few case reports of Morel-Lavallée lesions occurring at lumbar spine.[6–10] High-speed motor vehicle accidents and direct crush injuries are frequent culprits behind Morel-Lavallée lesions.[1,11,12] The underlying mechanism involves forceful shearing forces that cause a literal separation between deep and superficial tissue layers.[1,2,12] This disrupts the integrity of blood vessels and lymphatics, leading to an initial accumulation of sterile fluid within the newly formed space called seroma. Over time, this collection can become infected, presenting a potential complication as infected seroma or abscess.[1,2]

In our case, the initial impact to the lower lumbar region during the fall generated tangential shearing forces across the thoracolumbar and sacral fascia. This force ultimately led to the separation of skin and subcutaneous tissue from the underlying fascia, creating the potential

space where fluid and blood accumulated. The initial presentation of a Morel-Lavallée lesion typically involves acute swelling, tenderness, and ecchymosis at the injury site which was concordant with the findings in our case.[1–3,13] As the collection evolves, it may transform into a chronic soft tissue mass or fluctuant swelling, mimicking other pathologies. Chronic presentations are usually soft tissue swelling after an inciting trauma that does not resolve clinically or capsule formation on imaging.[1,2,13] Based on the duration from the time of injury, the lesion can be classified as acute if it is less than 3 weeks, and those more than 3 weeks are considered chronic.[1–3,13,14].

While this entity has distinct characteristics, it can occasionally pose a diagnostic challenge due to the possibility of confusion with other pathologies. These include diffuse subcutaneous edema, localized hematoma, and post-operative seroma, which can exhibit similar clinical presentations, potentially leading to misdiagnosis and delaying crucial interventions.[1–3]

Diagnosis relies on a combination of clinical suspicion, imaging techniques, and potentially fluid aspiration with analysis. While radiography and ultrasound provide initial clues, MRI reigns supreme in accurately characterizing the size, location, and chronicity (acute vs. chronic) of the lesion.[1,2,13,14]

Management of Morel-Lavallée lesions adopts a tailored approach based on individual characteristics and potential complications.[1–3,13] Conservative options include compression therapy to control the fluid space and aspiration for acute, low-volume collections.[1–3,13] In cases of persistent fluid collections or recurrence, sclerosing agents like doxycycline can be injected to encourage closure of the space.[1–3,13,14] Other sclerosing agents such as erythromycin, bleomycin, absolute alcohol, vancomycin, tetracycline, and talc can also be used.[1–3,12–14] When conservative measures fail, or in large, recurrent, or problematic lesions, surgical intervention becomes necessary. This may involve debridement of devitalized tissue to prevent infection and facilitate healing.[1–3,13]

In a nutshell, Morel-Lavallée lesion in the lumbosacral region is an uncommon presentation following road traffic accidents. It can present as diagnostic and therapeutic challenge due to their diverse presentations and potential complications. By understanding the complex interplay of anatomy, etiology, clinical features, and management options, healthcare professionals can effectively identify and manage these unique injuries, ultimately leading to optimal patient outcomes.

AUTHOR CONTRIBUTIONS

Samiksha Lamichhane: Conceptualization; investigation; project administration; supervision; validation; visualization; writing – original draft; writing – review and editing. **Shritik Devkota:** Conceptualization; investigation; project administration; supervision; validation; visualization; writing – original draft; writing – review and editing. **K.C. Suraj:** Methodology; supervision; writing – original draft; writing – review and editing. **Arif Hussain Sarmast:** Conceptualization; visualization; writing – original draft; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors have declared that no competing interests exist.

DATA AVAILABILITY STATEMENT

The datasets analyzed during the current study are available from the corresponding author upon reasonable request. Additionally, comprehensive literature sources used for the literature review are cited appropriately within the manuscript.

ETHICS STATEMENT

The authors declare that the procedures were followed according to the regulations established by Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in 2013.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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