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MOREL-LAVALEE LESION: A CASE REPORT

General Surgery

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ABSTRACT

The Morel-Lavallée lesion is a closed soft tissue degloving injury typically linked to high-velocity trauma. It predominantly occurs in the thigh, hip, and pelvis regions. Due to the propensity for missed or delayed diagnosis of such lesions, there exists a potential risk of infection at the fracture site as the condition advances. Timely identification and management of Morel-Lavallée lesions is essential. Furthermore, there are no applicable guidelines for the management of Morel-Lavallée lesions. Given the facts mentioned above, we reviewed the etiology, epidemiology, pathophysiology, clinical presentation, imaging features, treatment, prognosis, and complications associated with the Morel-Lavallée lesion. The objective is to provide a comprehensive overview of this injury, increase awareness among surgeons, and propose a management algorithm applicable to this condition.

KEYWORDS

Morel-Lavallée Lesion; Shearing Force: Closed degloving injury.

INTRODUCTION:

Epidemiology:

The Morel-Lavallée lesion is frequently associated with high-energy violence-induced fractures that occur concurrently, including proximal femoral, pelvic, and acetabular fractures. The incidence of this lesion in acetabular fractures was estimated to be approximately 8.3% by Letournel and Judet. Four, eleven, and sixteen. According to a comprehensive review, the incidence was twice as high in males as in females, a finding that may be associated with the predominance of males in polytrauma.[1][2]

Clinical Presentation:

The Morel-Lavallée lesion typically manifests within hours to days of the inciting trauma; however, up to one-third of cases manifest months to years later. The clinical presentation of this condition is influenced by a variety of factors, including the patient's body habitus and the degree and rate of intraluminal haem and lymphatic accumulation. The presentation of this condition is highly variable, ranging from the absence of any external indications to the presence of evident edema, ecchymosis, or abrasions. Pain, cutaneous ecchymosis, and soft tissue edema may be observed in patients during the acute phase.[3][4]

The physical examination indicates that the lesion site is fluctuating or that the epidermis is hypermobile. The discoloration of the skin surface may be delayed for several days, which may lead to an early diagnosis that is not recognized. At times, the lesion may accumulate a substantial amount of haemorrhage, resulting in hypovolemic shock. In severe cases, secondary skin compression necrosis may develop.

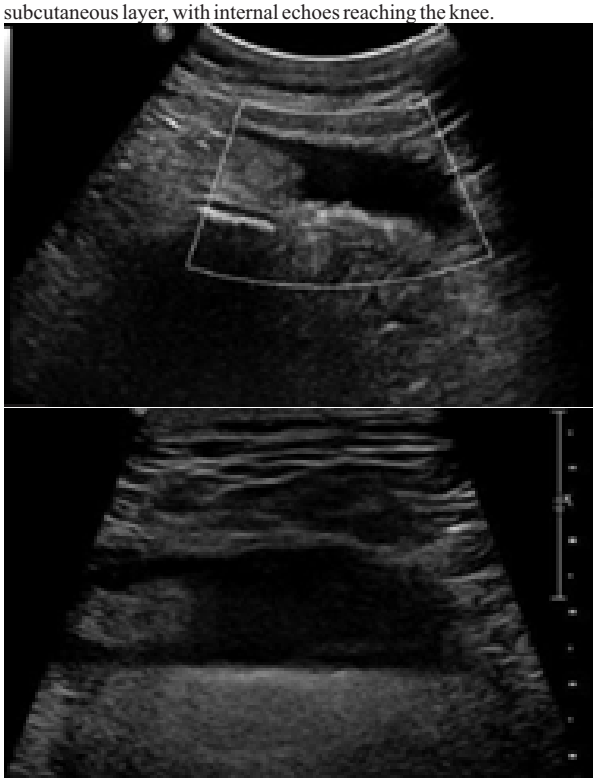
Patients may also experience a reduction in cutaneous sensation as a result of shearing trauma to the cutaneous nerves. Proximal femoral, pelvic, and acetabular fractures are frequently associated with this injury due to its high-energy nature. The greater trochanter of the femur is the site of the most prevalent lesion. The lesion is typically unilateral, although it may be bilateral.[5]

Additional regions, including the lumbar, prepatellar, scapular, pelvis, and trunk, have also been documented. The average location of Morel-Lavallée lesions varies between infants and adults. Children are more likely to experience it in the knee and distal lower extremity, while adults are more likely to experience it in the hip and thigh.[6]

CASE REPORT:

A 52-year-old guy was admitted to the emergency department with a reported history of a Train traffic accident. He was found to have a Hemoglobin level of 5 mg/dL and received a transfusion of two pints of packed red blood cells (PRBC), resulting in stabilization. During clinical examination, the patient exhibited discomfort in the left abdominal region, contusion marks, and a fluctuant swelling on the left thigh, extending to left knee.

An ultrasound (USG) of the fluctuant swelling in the left thigh revealed a substantial complicated septated fluid accumulation inside the deep subcutaneous layer, with internal echoes reaching the knee.



Usg taken showing the collection in the deep fascial plane of the left thigh.

A computed tomography (CT) aortogram was performed to exclude vascular damage, revealing a hypodense collection in the deep subcutaneous plane with strands of intralesional fat density indicative of a Morel-Lavallée lesion. The patient underwent treatment by percutaneous drainage with continuous suction and the application of a compression bandage. The lesion resolved at the time of discharge.

Type	Shape	Description	T1W	T2W	Capsule	Enhancement
1	Laminar	Seroma like	Decreased	Increased	Occasional	Absent
2	Oval	Hematoma like	Increased	Increased	Thick	Variable
3	Oval	Chronic organizing	Heterogeneous	Heterogeneous	Thick	Internal and peripheral
4	Linear	Closed laceration	Hypointense	Hyperintense	Absent	Variable
5	Round	Pseudo-nodular	Variable	Variable	Thin or thick	Internal and peripheral
6	Variable	Infected +/- sinus tract	Variable	Variable	Thick	Internal and peripheral

DISCUSSION:

The differential diagnosis of the Morel-Lavallée lesion encompasses post-traumatic injuries such as fat necrosis, coagulopathy-related hematoma, and, less frequently, post-traumatic early-stage myositis ossificans accompanied by diffuse subcutaneous edema. The Morel-Lavallée lesion may clinically and radiographically resemble a malignant tumor; thus, a thorough assessment of any prior trauma history is essential for accurate diagnosis.[10]

Mellado and Bencardino established a categorization based on lesion morphology, signal characteristics, enhancement patterns, and the presence or absence of a capsule. Six categories of lesions were delineated:[7]

The characteristics of ultrasound imaging are determined by the age of the hematoma. The lesions present as a focal anechoic to isoechoic complex collection situated superficially to the muscle plane and deep to the hypodermis. The mass may include fat globules that present as hyperechoic nodules along its wall. [4]

CT imaging of a Morel-Lavallée lesion reveals a fluid-fluid level due to the sedimentation of blood components, and the presence of a surrounding capsule may vary. MRI is the preferred imaging modality for evaluating Morel-Lavallée lesions. The signal characteristics of the lesion are influenced by its chronicity and internal contents. The lesions typically exhibit homogeneous hypo intensity on T1-weighted sequences and hyperintensity on T2-weighted sequences, potentially resembling a simple fluid collection. The lesions may present as uniformly bright on both T1-weighted and T2-weighted sequences, indicating a high internal concentration of methaemoglobin.[6]

The signal intensities on T1-weighted and T2-weighted images fluctuate according to the age of the hematoma. Fat lobules may become entrapped within the lesion, and internal fluid-fluid levels may be observed. A T1-weighted and T2-weighted hypointense peripheral ring indicative of hemosiderin and fibrous tissue may be observed, contingent upon the chronicity of the lesion. Post-contrast images may demonstrate patchy enhancement both internally and peripherally to the lesion, indicative of an organizing hematoma.[8][9]

CONCLUSION:

Morel-Lavallée lesions are post-traumatic, closed degloving injuries occurring in the subcutaneous plane superficial to the muscle plane due to disruption of capillaries resulting in an effusion containing hemolymph and necrotic fat. MRI is the modality of choice in the evaluation of the Morel-Lavallée lesion. Early diagnosis and management are essential. The presence of a capsule indicates the choice of surgery over conservative management of the lesion.

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