

Morel-Lavallée lesion: A rare internal degloving injury in trauma patients

Sohil Pothiwala¹, Rhian Miranda², Prof. Ian Civil³

¹ Fellow, Trauma and Emergency Services, Auckland City Hospital

² Consultant Radiologist, Auckland City Hospital

³ Trauma Director, Trauma Service, Auckland City Hospital

Te Whatu Ora
Health New Zealand
Te Toka Tumai Auckland

Introduction

- Morel-Lavallée lesion is a rare type of traumatic closed internal degloving soft tissue injury in the subcutaneous plane
- Can present acutely after the trauma, or develop few days to weeks after the injury
- Often goes undiagnosed and can be missed in up to 44% of the cases, and exact incidence is unknown
- First described by the French physician Maurice Morel-Lavallée in year 1863
- Also known as Morel-Lavallée effusion or hematoma, organizing hematoma, chronic expanding hematoma or post-traumatic soft tissue cyst

Pathophysiology

- Shearing forces lead to separation of the skin and subcutaneous tissues from the fascia superficial to underlying muscles, creating a potential space
- Collection of serosanguinous or hemo-lymphatic fluid in this space from disruption of the perforating blood vessels and lymphatics
- If missed or untreated in the acute phase, the inflammatory reaction leads to formation of a fibrous capsule that leads to inability of the collected fluid to be absorbed and even recurrent fluid collection after drainage

Risk Factors

- High-energy mechanism of trauma in patients with a body mass index > 25, low-energy blunt trauma, falls, contact sports

Discussion

Anatomical location

- Usually forms adjacent to a bony protuberance
- Trochanteric area, lateral hip, thigh, lumbo-sacral area and the pelvis, and this lesion
- Rarely in the knee, calf/lower leg and head

Signs & symptoms

- Pain and swelling over the injured area
- A palpable fluctuant swelling
- Reduced sensation over the overlying skin, likely secondary to shearing of cutaneous nerves
- Hypermobility of skin over the injured area
- Bruising or ecchymosis, often delayed
- Lesions can sometimes develop few months to years after the initial injury
- Patients may not be able to recall the traumatic event
- It is often misdiagnosed as muscle contusion or hematoma secondary to trauma, abscess or neoplasm



Fig. 1: Transverse ultrasound view of lesion with anechoic fluid like echotexture collection with posterior acoustic enhancement bounded by fascial plain (arrow)

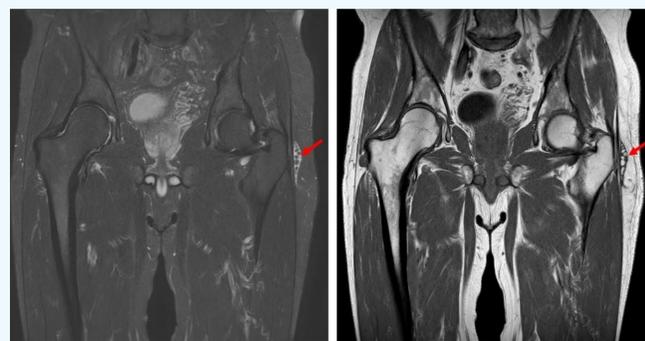


Fig. 2: Coronal T1 (A) and T2 fat-saturated (B) MRI images showing Morel-Lavallée lesion around the greater trochanter

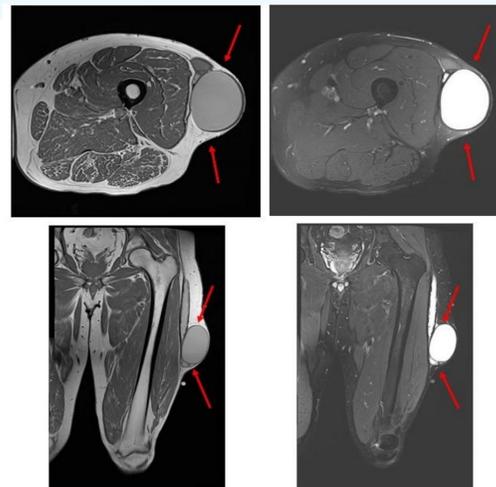


Fig. 3: Axial T1 (A), axial T2 (B), coronal T1 (C) & coronal T2 (D) showing an encapsulated Morel-Lavallée lesion of thigh

Diagnosis

- Bedside ultrasound (high frequency linear probe) shows a homogenous, lobular, hypoechoic or anechoic appearance in the subcutaneous tissue adjacent to a fascial plain
- Computed tomography (CT) scan is readily available but does not allow for accurate characterization
- Magnetic resonance imaging (MRI) is the imaging modality of choice. Mellado & Bencardino MRI classification is shown in Table 1

Management

- Initial management in ED includes application of a compression dressing and referral to the surgical team
- Conservative v/s surgical management depending on size and severity of the lesion, as well as presence or absence of a capsule
- Conservative treatment with compression dressing for small, acute lesions that do not have a capsule
- Surgical management includes percutaneous fluid aspiration, image-guided drainage, open debridement or sclerodesis with agents like doxycycline, talc or fibrin glue
- Prognosis ranges from spontaneous resolution to capsule formation and chronic persistent swelling with pain.
- Complications include deformity, chronic pain, pseudocyst, infection, recurrence, scar tissue



Fig. 4: Coronal T1 & T2 images of lumbo-sacral spine showing an encapsulated Morel-Lavallée lesion

Type of Morel- Lavallée lesion	MRI appearance
Type I	Laminar-shaped, like seroma, occasional capsule
Type II	Oval-shape, like subacute haematoma, thick capsule
Type III	Oval-shaped, like chronic organising haematoma, thick capsule
Type IV	Linear-shaped, like closed laceration, no capsule
Type V	Perifascial pseudonodular round-shaped, thin or thick capsule
Type VI	Infected lesion, variable sinus tract formation and septations, thick capsule

Table 1: Mellado- Bencardino MRI classification of Morel- Lavallée lesion

Conclusion

- Morel-Lavallée lesion is often undiagnosed during initial presentation of a trauma patient
- Mechanism of injury and presenting symptoms should raise suspicion regarding its presence
- Emergency physicians and trauma surgeons should maintain a high clinical suspicion for its diagnosis due to its occult presentation
- Detailed physical examination & appropriate investigations are the key for diagnosis
- MRI is the imaging modality of choice
- Presence or absence of a capsule is an important imaging finding that guides appropriate therapy
- Early diagnosis helps prevent long-term post-traumatic morbidity, complications and misdiagnosis