Case Report

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Unusual Presentation of a Morel-Lavallée Lesion at a Skin Graft Donor Site in the Absence of Trauma

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Citation Moktali A, Shinde P, Surnar Sh, Mehta V. Unusual Presentation of a Morel-Lavallée Lesion at a Skin Graft Donor Site in the Absence of Trauma. Case Reports in Clinical Practice. 2026; 11(1): 21-26. DOI:10.18502/crcp.v11i1.22172

Running Title Morel-Lavallée Lesion at Skin Graft Donor Site

Article info:
Received: December 29, 2025
Revised: January 24, 2026
Accepted: February 18, 2026

Keywords:
Morel-lavellée lesion (MLL);
Degloving injury;
Chronic fluid collection;
Trauma;
Excision

ABSTRACT

A Morel-Lavallée lesion (MLL) is a closed internal degloving injury where the skin and subcutaneous tissue separate from the underlying fascia, creating a fluid-filled space. Typically linked to high-energy trauma, such as pelvic or thigh injuries, it can also occur in unusual contexts and have delayed presentations. This case describes a 60-year-old lady who developed a painless swelling at her right thigh split-thickness skin graft donor site six months after surgery for a humerus fracture and forearm degloving injury. Imaging confirmed an MLL, but conservative drainage failed. Surgical excision and histopathology confirmed the diagnosis. This case emphasises the diagnostic challenge of MLLs without overt trauma, especially in post-operative settings. Management options include imaging for diagnosis, percutaneous drainage, quilting sutures, and surgical excision for chronic lesions. Early recognition is critical to prevent complications and morbidity, underscoring that MLL should be considered in recurrent post-operative soft tissue swellings even without a history of trauma.

Introduction

First described by Victor-Auguste-François Morel-Lavallée in 1863, *'Décollements traumatiques* de la peau et des couches sous-jacentes' [1], a Morel-Lavallée lesion (MLL) is a closed degloving injury caused by shearing forces separating superficial tissues from the underlying fascia, disrupting perforators and lymphatics, and resulting in fluid accumulation, sometimes with a fibrous pseudocapsule over time [2,3]. While commonly associated with high-energy trauma and fractures of the pelvis, hip, or thigh, atypical and iatrogenic presentations, such as after abdominoplasty or liposuction, are increasingly recognised [4,5]. The greater trochanter is the most common site [2,6], involved in over 60% of cases, owing to its superficial cortical position, mobile overlying soft tissues, and the pull of the tensor fascia lata. In a review of 204 cases, Vanhegan et al. [7] noted the following distribution: hip (30.4%), thigh (20.1%), pelvis (18.6%), knee (15.7%), gluteal (6.4%), lumbosacral (3.4%), abdominal and calf (1.5% each), head (0.5%), and unspecified (2%). Female gender and a BMI of 25 or higher are additional risk factors [8].

Clinical features vary widely, from acute pain,

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swelling, and ecchymosis to delayed, painless fluctuance. They often coexist with fractures and appear as fluctuant contour deformities with mobile overlying skin; sensory loss is common due to cutaneous nerve injury, and complications such as skin necrosis, perianal sepsis, or deep vein thrombosis–like presentations have been reported [2,6]. One challenge is that up to a third of cases can present weeks to months later [2,4,8]. The differential diagnosis includes seroma, hematoma, abscess, fat necrosis, and neoplastic cysts. Imaging modalities play key roles in diagnosis. Ultrasound demonstrates fluid collections; CT scan maps the extent, while MRI best defines chronicity and capsule formation [8-10]. Management options include conservative care, aspiration, sclerotherapy, and surgical excision. Quilting sutures, either percutaneous or open, are effective in minimising recurrence by adhering tissue layers and obliterating dead space [11-13]. Chronic, encapsulated lesions often necessitate surgical excision [9,14]. This case has been reported using the CARE guidelines [15].

Case presentation

A 60-year-old woman, with no comorbidities, sustained a right humerus fracture with a degloving injury to the right forearm in August 2024 following a motor vehicle crash. The patient was managed under orthopaedic care. The fracture was reduced, and the wound was dressed in the casualty bay. During the same hospital admission, she underwent an open reduction and internal fixation (ORIF) for the humerus fracture, with a split-thickness skin graft (STSG) over the right forearm wound. The lateral aspect of her right thigh served as the STSG donor site. The postoperative course was uneventful, and the patient was discharged after a brief hospital stay.

Approximately six months later, she presented to the outpatient department (OPD) with a gradually enlarging, painless, fluctuant swelling at the donor site. On enquiry, she denied any history of trauma to the right lower limb, and prior hospital records confirmed no injury or incident at the donor area. On physical examination, the swelling started just above the right iliac crest, extending caudally along the lateral aspect of the right thigh to the lateral aspect of the right knee. The swelling was well-defined, cystic and fluctuant, non-tender, and without any inflammatory skin changes. No lymphadenopathy or neurological signs were noted.

Ultrasonography revealed a well-defined, anechoic, cystic collection in the subcutaneous plane of the right lateral thigh, extending superiorly into the right lumbar region. The collection had incomplete septations and tiny, mobile internal echoes. The approximate volume was 800–900 mL. These findings were consistent with a chronic fluid collection. A non-contrast CT scan demonstrated a well-defined, thick-walled hypodense collection between the

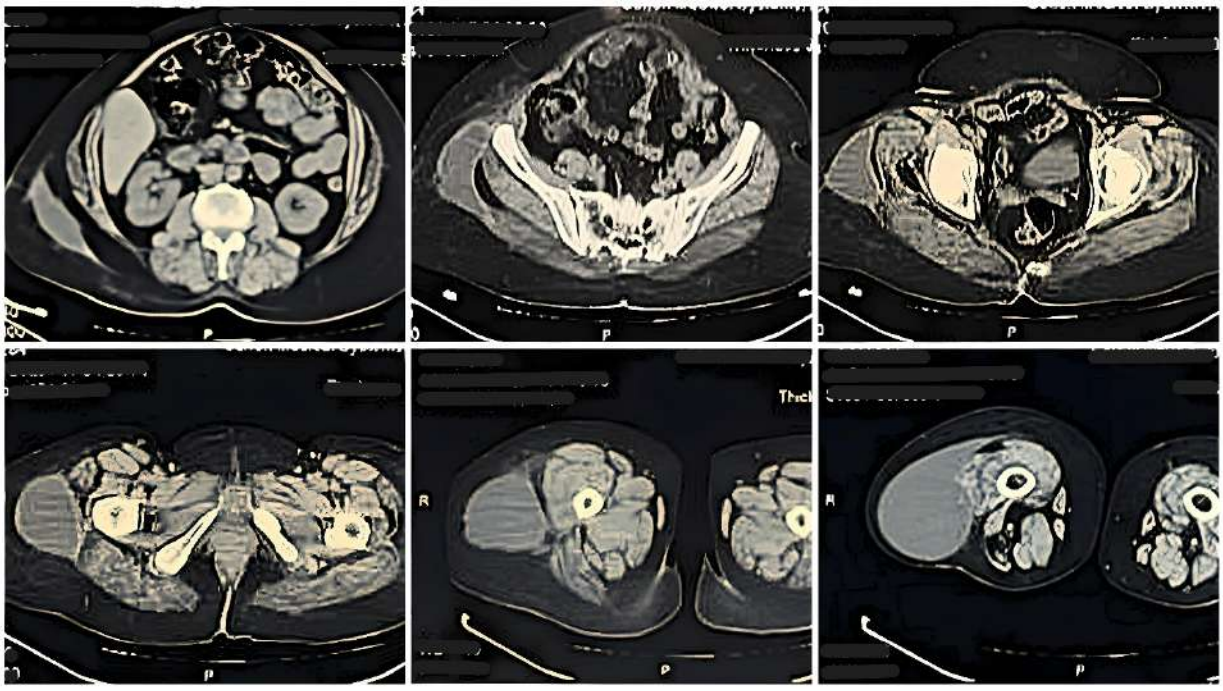

Fig. 1. Axial cuts of CT scan demonstrating the extent of the MLL – starting cephalad to the right iliac crest, extending caudally till the right knee joint

Fig. 2. Operative bed after excision of MLL – Exposed tensor fascia lata with insertion of gluteus maximus seen posteriorly.

subcutaneous fat and fascia lata, extending from the L2 level down to the right knee, with intact underlying muscle and no surrounding oedema or fat stranding – findings typical of MLL (Figure 1).

Percutaneous drainage was attempted with a pigtail catheter, yielding approximately 200 mL of serosanguinous fluid; however, the swelling failed to resolve completely. Given the persistence of the swelling, surgical excision was performed. Under general anaesthesia, via a lateral thigh incision, a well-encapsulated collection was excised en bloc from the subcutaneous plane. The capsule invaded the fascia lata about 5 cm below and lateral to the greater trochanter, and hence had to be excised along with a small portion of the fascia (Figure 2, Figure 3a and 3b). The fascial defect was sutured using a slowly resorbable suture. Two closed suction drains were placed, and the skin was closed with staples. The postoperative course was uneventful. The patient was mobilised about 4 hours after surgery. She was discharged on the 3rd postoperative day with the drains in situ. On outpatient follow-up on the 10th postoperative day, the drains and the skin staples were removed. The wound had healed well without any surgical site occurrences (SSO). Histopathology showed a fibrous pseudocapsule with chronic inflammatory changes, vascular thrombosis, and hemosiderin-laden macrophages, pathognomonic of a chronic MLL (Figure 4).

The patient was followed up three months later. There was no recurrence, no morbidity, and the patient had returned to her usual daily routine.

Discussion

This case highlights an exceptionally rare presentation of an MLL manifesting at the donor site of an STSG performed six months prior. MLLs are closed, post-traumatic, soft tissue degloving injuries resulting from shearing forces that separate the subcutaneous tissue from the underlying fascia, leading to the formation of a potential space that can fill with haemolymphatic fluid, serous exudate, or necrotic fat [2,3]. While the typical locations include the lateral thigh, pelvis, and hip, often following high-energy trauma, there is scant documentation of such lesions at post-operative sites and virtually none at donor sites following STSG [2].

The reported complications associated with STSG donor sites predominantly include pain, delayed epithelialization, bleeding, infection, and hypertrophic scarring, with seroma or appreciable fluid collection being exceedingly uncommon [16]. A recent systematic review of 77 studies (2009–2019) by Asuku et al. found that these issues are by far the most common in STSG donor-site morbidity, with no notable evidence of seroma or persistent appreciable fluid collection as a regular complication [16]. In contrast, seromas and hematomas have been consistently described at the donor sites of full-thickness skin grafts (FTSG), attributed to the greater extent of dead space and lymphatic disruption associated with the removal of the entire dermis [17].

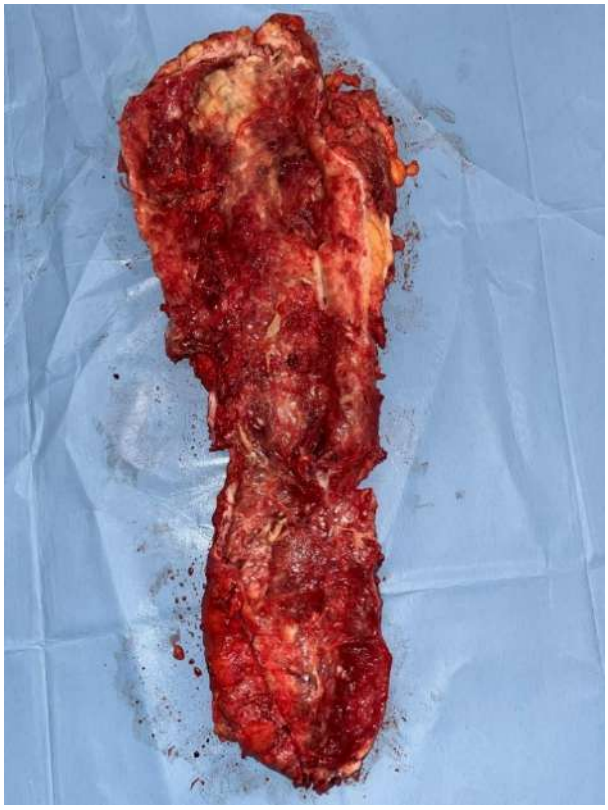

Fig. 3a. Resected specimen – gross

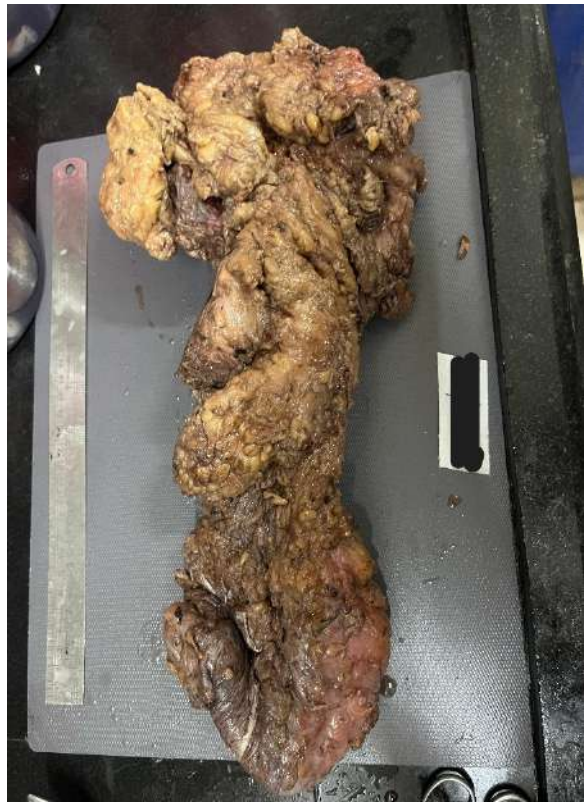

Fig. 3b. Resected specimen – formalin fixed

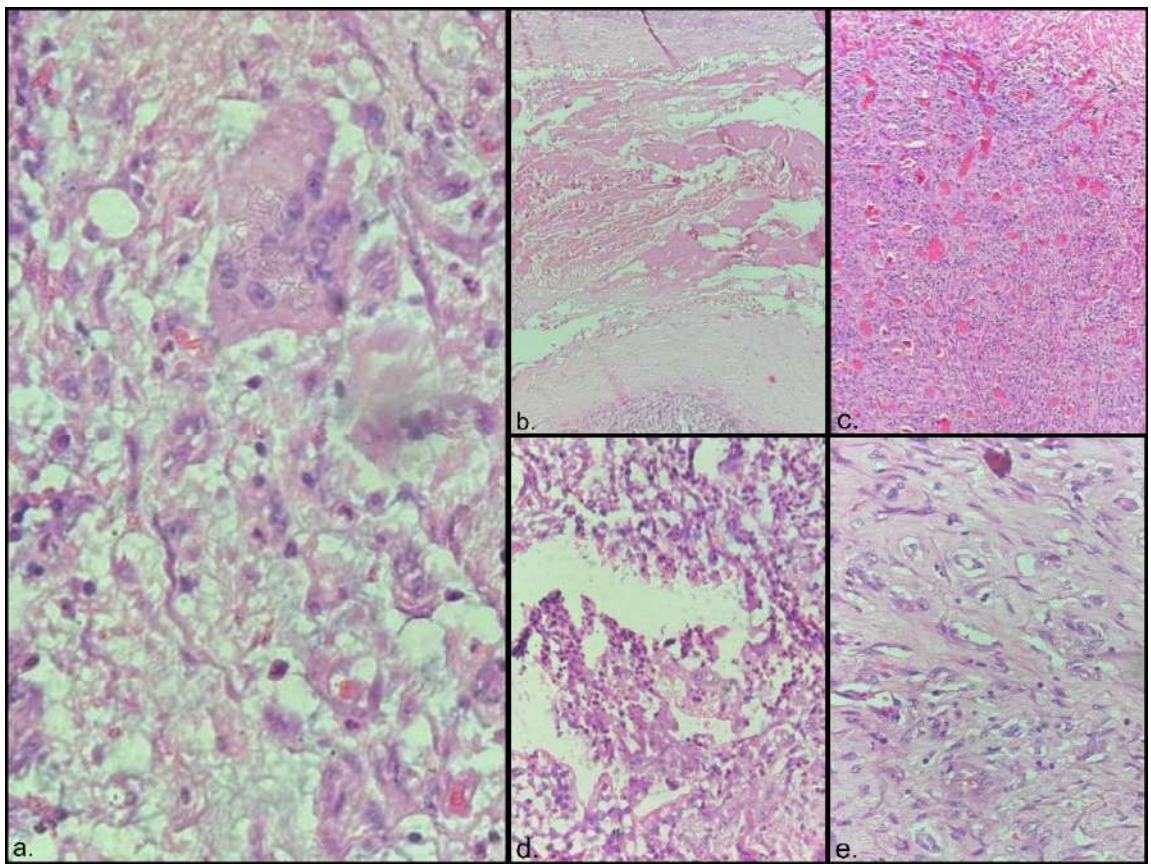

Fig. 4. Histopathology images of the resected specimen, a) Granulation tissue with foamy histiocytes, a giant cell, and amorphous debris. b) Area of vascular thrombosis showing occluded vessel lumen with organising thrombus. c) Granulation tissue composed of proliferating capillaries, fibroblasts, and chronic inflammatory infiltrate. d) Fat necrosis with fibrin deposition and organising thrombus. e) Dense collagenous tissue with spindle-shaped fibroblasts, typical of a mature fibrous pseudocapsule in chronic MLL.

In this context, the development of a large subcutaneous swelling with imaging features characteristic of MLL at the STSG donor site represents a highly unusual and diagnostically challenging scenario. The pathogenesis of MLL involves a shearing event that may be initially subclinical, eventually leading to chronic fluid accumulation [2]. It is conceivable, in this case, that the initial road traffic accident created a covert Morel-Lavallée plane that was unrecognised at the time of grafting and subsequently became symptomatic due to persistent fluid production and encapsulation over several months. Approximately one-third of MLLs are identified only after a considerable delay, sometimes several weeks, months, or even years following the initial trauma [2,4,8]. Alternatively, the harvesting of an STSG from traumatised tissue, or repetitive minor trauma to the thigh in the months following the accident, could have contributed to delayed lesion expansion or presentation. A review of the recent case literature on MLL suggests that delayed and atypical presentations can occur, often with diagnostic confusion [2,3,5,6]. Imaging with CT and MRI is critical for diagnosis, as MLL may mimic abscess, hematoma, or neoplasm, and can extend beyond the apparently involved area [2,5,10]. In most reported MLLs, management options include drainage, compression, sclerotherapy, or operative debridement, with chronic lesions presenting additional challenges due to the development of a pseudocapsule that may hinder resolution [3,5,9,14]. Recently, reports of endoscopic debridement and quilting sutures have also been described [11-13].

Given the absence of prior reports linking MLL specifically to STSG donor sites, this case underscores the necessity for ongoing vigilance when evaluating subacute or chronic swelling at donor sites, particularly in patients with a history of significant trauma. A high index of suspicion and early intervention are vital to prevent infection, continued expansion, and tissue loss. Limitations of this singular report include the inability to establish incidence or causality; nonetheless, it serves to widen the differential diagnosis for persistent donor site swellings and suggests the need for further research and reporting to clarify the true risk profile.

Conclusions

MLL should be part of the differential for persistent, recurrent masses at post-operative sites, even when no trauma is reported. Imaging and histopathology guide diagnosis, and chronic lesions typically require surgical excision, with optional dead-space obliteration techniques. Awareness of such presentations can lead to timely treatment and improved patient outcomes.

Acknowledgments

We acknowledge the contribution of the Department of Pathology, King Edward Memorial Hospital, for providing the histopathology images for this case. We thank Dr. Sangeeta Ravat, Dean, and Dr. Varsha Kulkarni, Department Head, for allowing this manuscript to be submitted for publication.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this article.

Funding

No funding was received to assist with the preparation of this manuscript.

Conflict of Interests

The authors have no conflict of interest to declare.

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