

Morel-Lavallee Syndrome: A Rare Tumefactive Lesion

Mohamed Labied, Siham Salam, Salma Jabri, Dalal Laoudiyi, Kamilia Chbani, Lahcen Ouzidane
Pediatric Radiology Department, Ibn Rochd University Hospital, Faculty of Medicine and Pharmacy of Casablanca, Morocco

Doi: 10.12890/2020_001910 - European Journal of Case Reports in Internal Medicine - © EFIM 2020

Received: 23/07/2020

Accepted: 01/09/2020

Published: 06/10/2020

How to cite this article: Labied M, Salam S, Jabri S, Laoudiyi D, Chbani K, Ouzidane L. Morel-Lavallee syndrome: a rare tumefactive lesion. *EJCRIM* 2020;7: doi:10.12890/2020_001910.

Conflicts of Interests: The Authors declare that there are no competing interests.

This article is licensed under a [Commons Attribution Non-Commercial 4.0 License](https://creativecommons.org/licenses/by-nc/4.0/)

ABSTRACT

First described by the French surgeon Maurice Morel-Lavallee in 1853, Morel-Lavallee syndrome (MLS) is a serolympathic effusion resulting from tangential injury to richly vascularized tissues. The imaging characteristics may be variable over time due to lesion progression and the eventual organization of a fibrous capsule. We report a case of extensive MLS in the lower leg of a 12-year-old child. We discuss the ultrasound and magnetic resonance imaging findings and describe the differential diagnoses.

LEARNING POINTS

- The diagnosis of Morel-Lavallee syndrome is based on clinical examination and imaging techniques.
- The post-traumatic context is important for diagnosis.
- Morphological aspects depend on lesion progression and the eventual organization of a fibrous capsule.

KEYWORDS

Morel-Lavallee, ultrasound, magnetic resonance imaging

INTRODUCTION

Morel-Lavallee syndrome (MLS) is a progressive post-traumatic soft tissue lesion in which subcutaneous tissue is stripped from the subcutaneous fascia, producing a cavity containing blood and liquefied fat. The radiologist must be aware of this syndrome because early identification can facilitate conservative management. When it is overlooked, MLS can be a painful mass injury that grows slowly and may be misdiagnosed as a soft tissue tumour or haematoma, particularly in a traumatic context.

CASE DESCRIPTION

A 12-year-old child was brought to the radiology department because of post-traumatic localized tumefaction of the right lower leg. He had been involved in a motor vehicle accident 2 months previously. The patient had local pain at the site of tumefaction without inflammatory signs.

Ultrasound (US) using a high-frequency probe showed a superficial liquid collection, with well-defined margins and containing contiguous rounded formations with the same echogenicity as subcutaneous fat (Fig. 1). Magnetic resonance imaging (MRI) using the saturation pulse sequence confirmed the fatty content of the rounded formations seen on US (Fig. 2). The clinical and radiological characteristics suggested the diagnosis of MLS.

Percutaneous aspiration was performed successfully twice over 5 days and removed 75 ml and 40 ml of fluid from the collection, without complications. Compression bandages were applied for 14 days with a favourable outcome.

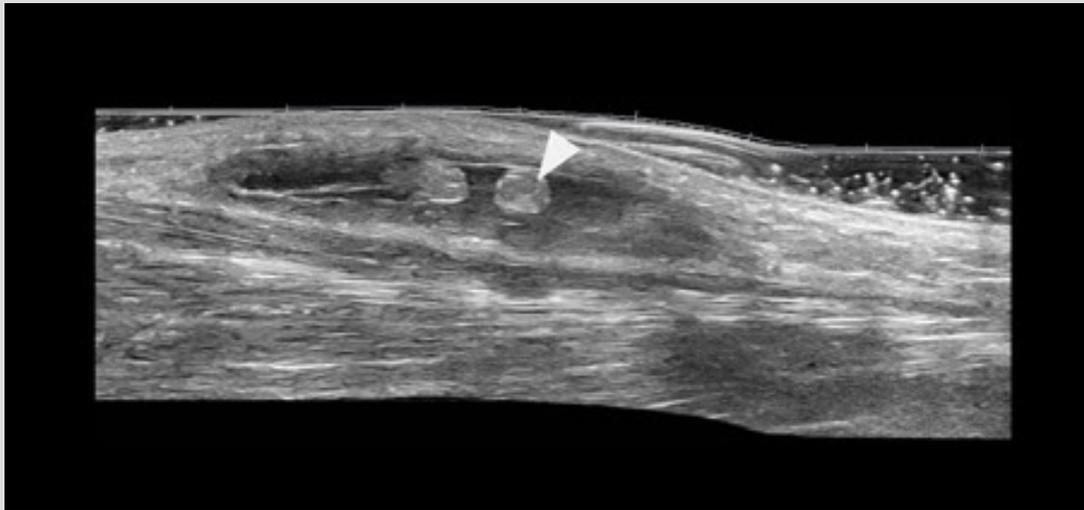


Figure 1. High-frequency ultrasound demonstrates an anechoic encapsulated fluid collection in the subdermal region, containing contiguous rounded formations with the same echogenicity as subcutaneous fat (arrowhead)

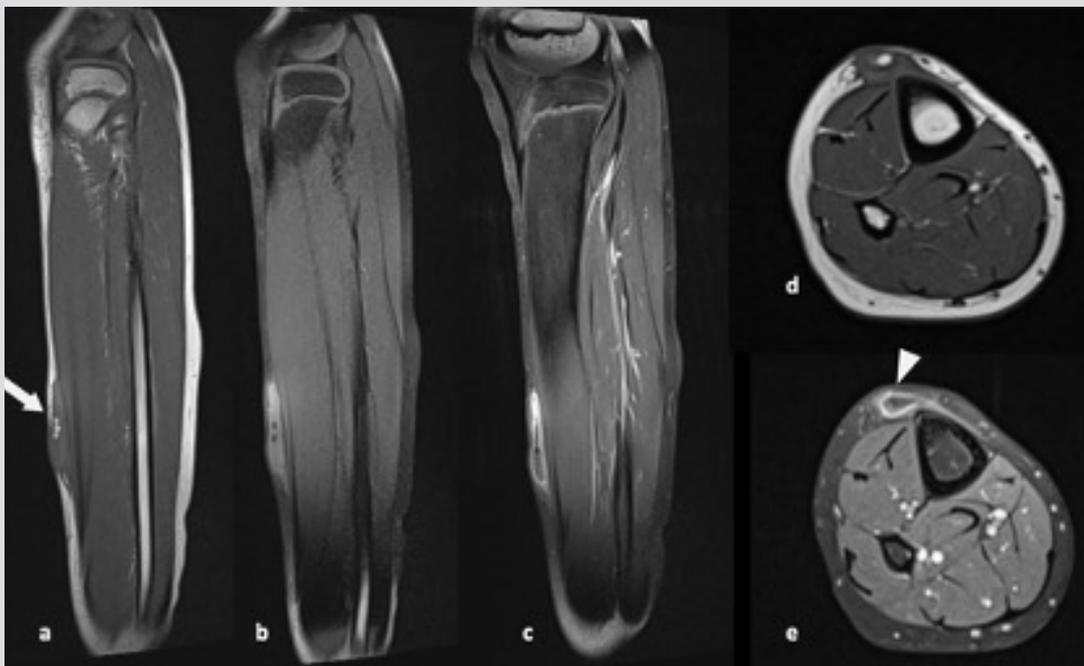


Figure 2. (a) Sagittal T1 and (d) axial T1 images at the level of the right lower leg demonstrate a high signal intensity elliptiform fluid collection in the superficial soft tissues (arrow), containing contiguous rounded formations, with suppressed signal on the fat-saturated T2-weighted sagittal image (b). Sagittal (c) and axial (e) T1-weighted fast spin echo (FSE) images, obtained following administration of gadolinium, demonstrate peripheral capsular enhancement (arrowhead)

DISCUSSION

Described in 1853 by Maurice Morel-Lavallee, MLS is often the result of tangential trauma to highly vascularized tissue^[1]. Transaponeurotic vessels can tear when pulled. As a result, a lymphocele or haematoma containing damaged or bruised tissue develops^[2]. Cases of MLS have also been reported in postoperative contexts^[3].

The diagnosis of MLS is based on clinical examination and imaging techniques. Physical examination demonstrates localized skin hyperaesthesia, focal swelling and loculation. US shows a hypo-, almost anechogenic collection, located between the hypodermis and the superficial fascia, and sometimes associated with the presence of echogenic fields consisting of sheared subcutaneous fat^[4]. US is also used to calculate volume and compressibility and to demonstrate the absence of flow through the collection using Doppler^[5].

Acute and subacute collections have a heterogeneous hypoechoic appearance and irregular margins, in contrast to chronic collections (more than 8 months old) which are homogeneous, fusiform, and have regular morphology^[6].

MRI, when available, usually shows a well-defined and fusiform collection, with signal intensity changes according to the content and chronicity of the lesion, and a surrounding pseudocapsule and hypointense ring of haemosiderin^[4,7]. There may be internal and peripheral enhancement, which is consistent with angiogenesis in the wall and the septae^[8]. The protocol must include multi-planar T1 or proton density

and fat-saturated T2-weighted sequences. Contrast analysis is required to rule out any solid portions suggestive of a malignant lesion^[9]. Shen et al. recommended the use a simplified binary classification of acute versus chronic (if a capsule is present) to determine appropriate treatment strategies and predict outcome^[10]. The differential diagnoses include subcutaneous haematoma, lymphocele and bursitis (especially in prepatellar locations). Finally, necrotic or cystic tumours can imitate MLS; however, the presence of marked enhancement, thickened walls and nodularity within the lesion are useful differentiating features^[9].

CONCLUSION

MLS is a rarely reported entity. The imaging appearance is variable, and non-pathognomonic. The presence of a pseudocapsule, internal fat and subcutaneous location are helpful for diagnosis in the context of trauma. Early diagnosis facilitates conservative management.

REFERENCES

1. Vico PG. Morel-Lavallee syndrome. *Eur J Plast Surg* 2000;**23**:45–48.
2. Hak DJ, Olson SA, Matta JM. Diagnosis and management of closed internal degloving injuries associated with pelvic and acetabular fractures: the Morel-Lavallée lesion. *J Trauma* 1997;**42**(6):1046–1051.
3. Scaranelo AM, Davanco RA. Pseudocyst formation after abdominal liposuction-extravasations of Morel-Lavallee on MR images. *Br J Plast Surg* 2005;**58**:849–851.
4. Mukherjee K, Perrin SM, Hughes PM. Morel-Lavallee lesion in an adolescent with ultrasound and MRI correlation. *Skeletal Radiol* 2007;**36**:S43–S45.
5. Bonilla-Yoon I, Masih S, Patel D. The Morel-Lavallée lesion: pathophysiology, clinical presentation, imaging features, and treatment options. *Emerg Radiol* 2014;**21**(1):35–43.
6. Neal C, Jacobson J, Brandon C, Kalume-Brigido M, Morag Y, Girish G. Sonography of Morel-Lavallee lesions. *J Ultrasound Med* 2008;**27**:1077–1081.
7. Nair A, Nazar P, Sekhar R, Ramachandran P, Moorthy S. Morel-Lavallée lesion: a closed degloving injury that requires real attention. *Indian J Radiol Imag* 2014;**24**(3):288–290.
8. Mellado J, Perez del Palomar L, Diaz L, Ramos A, Sauri A. Long-standing Morel-Lavallée lesions of the trochanteric region and proximal thigh: MRI features in five patients. *AJR Am J Roentgenol* 2004;**182**:1289–1294.
9. Spain JA, Rheinboldt M, Parrish D, Rinker E. Morel-Lavallée injuries: a multimodality approach to imaging characteristics. *Acad Radiol* 2017;**24**(2):220–225.
10. Shen C, Peng J, Chen X. Efficacy of treatment in peri-pelvic Morel-Lavallee lesion: a systematic review of the literature. *Arch Orthop Trauma Surg* 2013;**133**(5):635–640.