

A Rare Cause of Septic Shock Secondary to Trauma: Morel Lavallée Lesion - Case Report

Mehmet Gunay (✉ mdgunay33@gmail.com)

Istanbul University Istanbul Faculty of Medicine: Istanbul Universitesi Istanbul Tip Fakultesi
<https://orcid.org/0000-0002-6364-4431>

Baran Mollavelioglu

Istanbul University Istanbul Faculty of Medicine: Istanbul Universitesi Istanbul Tip Fakultesi

Kaan Ali Fuat Gok

Istanbul University Istanbul Faculty of Medicine: Istanbul Universitesi Istanbul Tip Fakultesi

Mehmet Ilhan

Istanbul University Istanbul Faculty of Medicine: Istanbul Universitesi Istanbul Tip Fakultesi

Cemalettin Ertekin

Istanbul University Istanbul Faculty of Medicine: Istanbul Universitesi Istanbul Tip Fakultesi

Research Article

Keywords: Morel Lavallée, Degloving, Trauma, Septic shock, Case Report

Posted Date: December 9th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-718480/v1>

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Abstract

Introduction

Morel Lavallée lesion is a hemolymphatic collection in between muscular fascia that can be caused by the separation of soft tissue and muscular fascia in degloving fashion. Morel Lavallée lesion is an infrequent lesion but should be known for medico-legal reports Morel Lavallée is a rare presentation that can cause life-threatening septic and hemorrhagic shock.

Case Presentation

In this case report we are going present Morel Lavallée lesion which can present with septic shock and bleeding and can be mortal. Our patient, forty seven years old male, arrived at the emergency department with an ambulance 1 hour after an extravehicular traffic accident. Apart from a right hemopneumothorax with multiple rib fractures, grade 2 laceration in spleen and bilateral kidneys, zone 2 fracture of sacrum, computer tomography (CT) revealed a closed, degloving injury of the pelvis , also known as a Morel-Lavallée lesion. On CT, Morel Lavallée lesion appear as well-defined, encapsulated fluid collections that occasionally show fluid fluid levels .. Heavy fluid collection was detected in control CT which was actually a collection infected hematoma in the operative setting. Patient was diagnosed in the first 12 hours and necrotic tissues were debrided. Patient was considered deceased after 15 days without any improvement in his GCS score.

Conclusions

There is one report that describe mortality after Morel Lavallée lesion in the autopsy setting. Early diagnosis and treatment are essential to decrease severity of necrosis and sepsis though our patient has deceased due to complications of sepsis

Introduction

Morel Lavallée lesion is a hemolymphatic collection in between muscular fascia that can be caused by the separation of soft tissue and muscular fascia in degloving fashion. Commonly it presents on the greater trochanter although occasionally it can also be observed on femur, pelvis, knee or back. Morel Lavallée is a rare presentation that can cause life-threatening septic and hemorrhagic shock[[1,2]. In this case report we are going present Morel Lavallée lesion which can present with septic shock and bleeding and can be mortal.

Case Presentation

Our patient, forty seven years old male, arrived at the emergency department with an ambulance 1 hour after an extravehicular traffic accident. The patient was hemodynamically stable and had a Glasgow Coma Scale (GCS) of 13. Physical examination revealed a laceration of 3 cm in the occipital region.

Diminished breathing sounds in the right lung and abrasions on ventral abdominal wall were detected. Patient was tender to palpation bilaterally on upper abdominal quadrants without any distension. Pelvic examination revealed tenderness with compression. Ecchymosis was present in the bilateral perineum and continued on right greater trochanter for approximately 10 cm. Neurological examination did not reveal any pathologies. Patient went under full body CT scan (cranial, vertebral without contrast and thoracic, abdominal with IV contrast). No pathologies were observed in cranium. There were 4 rib fractures (9-12) on the right side with minimal hemopneumothorax. Grade 2 laceration in spleen and bilateral kidneys were also observed. In the sacrum, Zone-2 fracture was detected with avulsion fracture in acetabulum and fragmented fracture in coccyx. Additionally, in the sacral region free air was observed bilaterally between intermuscular space (Fig. 1). No fluids were detected in pericardium or intraperitoneally. Orthopedics Department was consulted for patients fractures. The patient was transferred to the intensive care unit (ICU) due to worsening conditions on monitorization. The patient was intubated after losing consciousness with a GCS of 3. The patient had an arrest after an episode of bradycardia and hypotension. The patient was resuscitated to sinus rhythm after 15 minutes of CPR (cardiopulmonary resuscitation). Inotropic agents were given. Subdermal fluid collections in the bilateral sacral and right femoral region increased. Pelvic bandage was applied for compression. Chest tube was inserted right hemithorax and 300 ml was draining serohemorrhagic fluid. Hemoglobin and hematocrit levels dropped to 7 and 21.4 respectively which was initially 15 and 44. The patient went under CT angiography to detect the source of bleeding, no extravasation was detected but increased free air in the sacral region was observed (Fig. 2) The patient was given erythrocyte suspension nonetheless the drop in hemoglobin levels and use of inotropic agents could not be prevented. After 12 hours patient was transferred to the operation room (Fig. 3). Transverse incision was made in right and left gluteal region. Copious amounts of infected hematoma and necrotic muscular tissue was seen. Hematoma was drained and necrotic tissues were debrided. Patient received sigmoid loop ileostomy under laparotomy to prevent fecal contamination. Injury in mesentery of sigmoid colon was detected. Due to high likelihood of bleeding, vacuum assisted closure of wound was not considered in the first session. Tissue culture revealed gram + cocci (*Streptococcus* sp.) and gram – rod (*Escherichia coli*) proliferation. Clindamycin, meropenem and vancomycin were immediately started. Overall, patient received 8 units of ES, 8 units of fresh frozen plasma (FFP) and 2 units of pooled thrombocytes. Patient went to the OR 3 days later. Necrotic skin and muscular planes were observed. Vacuum assisted closure was applied after second round of debridement and periodically changed every 72 hours. Patient had stable hemoglobin levels in the follow up. Patient received hemodialysis due to septic shock without any urine output. The patient still needed inotropic agents without any improvement in his clinical status. The granulation tissue was forming in the Morel Lavelle lesion. Patient was considered deceased after 15 days without any improvement in his GCS score.

Conclusion

The lesion was named after Maurice Morel Lavallée who described a patient who fell off a tram and had post-traumatic fluid collection in 1863 [3]. Most of the cases present after a high-energy impact trauma

with significant injury. In the literature, reported cases are usually injured after sport competitions or as post-operative complications [4,5]. Obesity was also reported as a risk factor to develop Morel Lavallée lesion due the increased fragility in the perforation arteries [1]. In the literature, there are cases of patients presenting with local pain and paresthesia in the lumbar region [6].

There was only one case report in which patient received heavy vasopressor agents and had gram negative proliferation in the tissue culture [1]. It is important to keep in mind that Morel Lavallée lesions can cause fulminant septic shock. In our case, although the patient was in the recovery phase, the patient deceased due to complications of septic shock therefore it is an important contribution to the literature.

Morel Lavallée lesion usually present following an injury after a few hours to days. Some lesions can present after several months in 30% of the lesions that went undiagnosed [7,8]. There are several imaging techniques that can help ups with the diagnosis of Morel Lavallée lesion such as CT scan or MRI. CT is fast and can be easily consulted in emergency setting. which was also the case in our patient [8,9]. MRI was not preferred due to hemodynamic instability. On CT, Morel Lavallée lesion appear as well-defined, encapsulated fluid collections that occasionally show fluid fluid levels [10]. In this case hematoma and free air in intermuscular planes were observed in right gluteal region and in the back, respectively. Heavy fluid collection was detected in control CT which was actually a collection infected hematoma in the operative setting.

Morel Lavallée lesion is an infrequent lesion but should be known for medico-legal reports [11]. In our case report, it is seen that Morel Lavallée lesion may be the cause of death, although it was initially diagnosed. There is one report that describe mortality after Morel Lavallée lesion in the autopsy setting [12].

In our case, patient was diagnosed in the first 12 hours and necrotic tissues were debrided. Literature data supports the fact that early diagnosis and treatment are essential to decrease severity of necrosis and sepsis though our patient has deceased due to complications of sepsis. The source of septic shock is though to be closed injuries in degloving fashion in the necrotic tissues and bleeding of perforating arteries which resulted in rapid infection and heavy propagation of necrotizing soft tissue infection.

Declarations

Funding

Not applicable

Conflict of Interest

The authors declare no competing interests.

Ethics Approval

Not applicable.

Consent to Participate

Written informed consent to participate in this case report was obtained from the patient.

Consent for Publication

Written informed consent for publication of this case report was obtained from the patient.

Availability of data and material

Yes

Code availability

Not applicable

Authors' contributions

Collecting data: Mehmet Gunay; writing and editing: Mehmet Gunay, Baran Mollavelioglu, Ali Fuat Kaan Gok, Mehmet Ilhan, Cemalettin Ertekin

References

1. Phillips TJ, Jeffcote B, Collopy D. Bilateral Morel-Lavallée lesions after complex pelvic trauma: a case report. *J Trauma*. 2008 Sep;65(3):708-11
2. Claassen L, Franssen MA, de Loos ER. A Rare Case of Hemorrhagic Shock: Morel-Lavallée Lesion. *Clin Pract Cases Emerg Med*. 2019 Oct 21;3(4):417-420.
3. Morel-Lavallée M. Decollements traumatiques de la peau et des couches sous-jacentes. *Arch Gen Med* 1863;1:20–38, 172-200, 300-332.
4. Anakwenze OA, Trivedi V, Goodman AM, et al. Concealed degloving injury (the Morel-Lavallée lesion) in childhood sports: a case report. *J Bone Joint Surg Am*. 2011;93(24):e148.
5. Zairi F, Wang Z, Shedid D, et al. Lumbar Morel-Lavallée lesion: case report and review of the literature. *Orthop Traumatol Surg Res*. 2016;102(4):525-7.
6. Buyukkaya A, Güneş H, Özel MA, Buyukkaya R, Onbas Ö, Saritas A. Lumbar Morel-Lavallée lesion after trauma: a report of 2 cases. *Am J Emerg Med*. 2015 Aug;33(8):1116.e5-6.
7. Hudson DA, Knottenbelt JD, Krige JE. Closed degloving injuries: results following conservative surgery. *Plast Reconstr Surg*. 1992;89(5):853-5.
8. Van Vugt JLA, Beks SBJC, Borghans RAP, et al. The Morel-Lavallée-lesion: delayed symptoms after trauma [Dutch]. *Ned Tijdschr Geneesk*. 2013;157(23):A5914.

9. McKenzie GA, Niederhauser BD, Collins MS, Howe BM. CT characteristics of Morel-Lavallée lesions: an under-recognized but significant finding in acute trauma imaging. *Skeletal Radiol.* 2016 Aug;45(8):1053-60
10. Parra JA, Fernandez MA, Encinas B, et al. Morel-Lavallée effusions in the thigh. *Skeletal Radiol* 1997;26(4):239–41.
11. Scanvion Q, Le Garff E, Gosset D, Hédouin V, Mesli V. Medico-legal considerations for Morel-Lavallée lesions. *Forensic Sci Med Pathol.* 2019 Dec;15(4):612-615.
12. Rashid A, Singh MK, Feng SS, Yatim NM, Sahak MY, Mahmud R. Lethal Morel-Lavallée lesion: A forensic radiology-pathology correlation. *Radiol Case Rep.* 2020 Jun 18;15(8):1280-1284.

Figures



Figure 1

First CT scan of the pelvic region(* : free air bilaterally between intermuscular space)

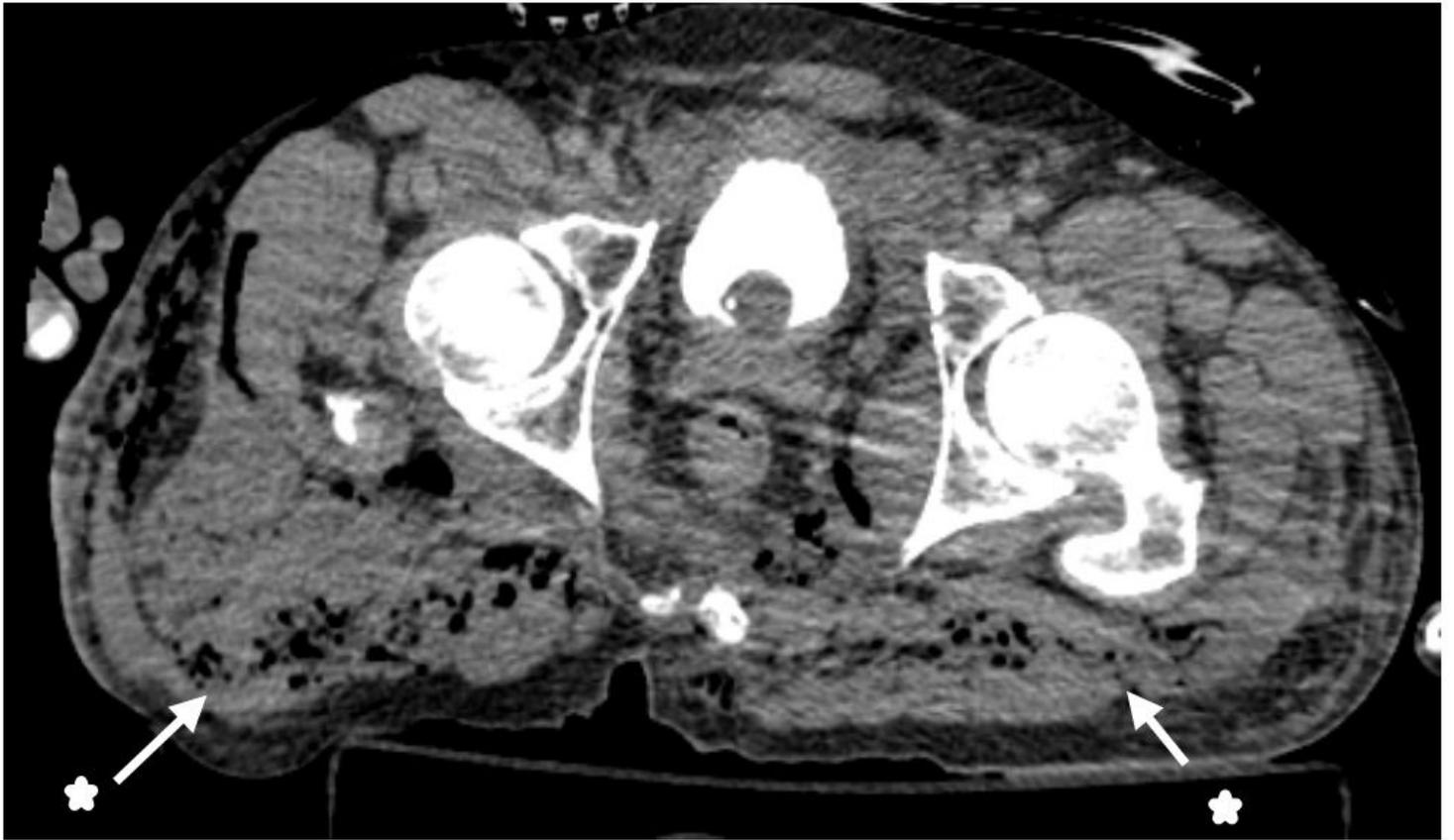


Figure 2

Pelvic region in the control CT scan(* : increased free air bilaterally between intermuscular space)



Figure 3

The patient and the injury can be seen in the preoperative setting.

Supplementary Files

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