

## Case Report

# Traumatic hernia associated with Morel-Lavallé lesion in closed abdominal trauma: case report

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## ABSTRACT

The traumatic hernia, is an important cause of laparotomy exploration between all the trauma cases that the trauma surgeon is get used to it. In this case we review a patient case where a traumatic hernia was associated with a morel-Lavalle lesion, these two injuries are associated with an increase in the morbidity sometimes requiring a reconstruction of the abdominal wall with multiples surgeries between, this is a review of the actual guidelines and surgery treatments emphasizing the complex panorama and the even evolving treatments with this kind of injuries.

**Keywords:** Morel-Lavallee, Traumatic abdominal hernia, Traumatic hernia, Closed trauma, Closed abdominal trauma

## INTRODUCTION

Traumatic abdominal wall hernia is defined as myofascial rupture caused by blunt trauma, where there is no skin penetration and there is no history of previous injury in that area.<sup>1</sup> They are rare hernias with an incidence of 1% and the most common sites are iliac fossa in 31.4% and right in 30.7% being only 8.8% in the left upper abdominal quadrant.<sup>1,2</sup> In this type of hernia the cause is due to high or low speed blunt trauma associated with a sudden increase in intra-abdominal pressure, this force is distributed in an area where length does not allow penetration but within the same area is small enough to create a local defect where shear forces can be transferred to bony prominences, even causing intestinal disruption.<sup>3,4</sup> It is generally associated with concomitant lesions such as: gastrointestinal lesions (intestinal perforation), splenic or hepatic lesion, fractures or pelvic bone lesions, vascular lesions, among others.<sup>6</sup> The Morel-Lavallé lesion rarely occurs together with a traumatic hernia, which occurs when the skin or soft tissues separate from the underlying fascia caused by a shearing force altering the vasculature and the lymphatic vessels that perforate between the layers of tissue.<sup>7</sup>

This hernia was described for the first time by Selby, more than 100 years ago, with more than 250 cases reported in the literature and later Netto, Hickey and Gupta et al.<sup>5,6,8</sup> Previously there was controversy to make an adequate diagnosis from McWorther in 1939 to the present ones, where most of the requirements were not fulfilled to be able to prove the diagnosis in most of them.<sup>5,8</sup> Clinically, it can be found that it may not be evident in the exploration due to small trauma such as with a manubrium that at first sight does not result in a macroscopic defect, up to injuries of great energy where the sudden increase of intra-abdominal pressure may lead to damage of organs as well as adjacent structures.<sup>4,18</sup>

Due to discrepancies in diagnostic criteria, as well as traumatic mechanisms, tomographic criteria of "The Midwest Surgical Association" were unified so that in this way the degree of disruption is staged, being 6 degrees ranging from subcutaneous tissue contusion (grade I) to the most severe with complete disruption of the abdominal wall and evisceration (grade VI).<sup>9</sup> On the other hand, it can also be classified according to the type of mechanism and size of the defect; type 1 being small defects such as those caused by handlebars, type 2 as those resulting from motor

vehicle collisions and high energy, while type 3 involves intra-abdominal intestinal herniation.<sup>2,14</sup> The indication of surgical urgency is integral since it goes from the support by imaging methods in conjunction with physical exploration, which could result in an incarcerated hernia, as well as the risk of incarceration due to a small defect; in turn, in the presence of acute abdomen and free liquid with suspicion of perforation of the hollow viscera, laparotomy will always be imperative.<sup>4,8,18</sup> On the other hand, the use of prosthetic material does not yet have sufficient evidence against or in favor of it, being referred in the literature with sporadic cases the use of biological mesh for greater nobility with tissues and septic cavity, even being described in a case of obstetric population.<sup>13,15-17</sup> It should be taken into account the possibility that in patients with large defects and without clinical symptoms suggestive of acute abdomen, a late repair could be chosen, with the consequent retraction of fascia, atrophy and probably greater difficulty in future repair, raising the possibility of finding late complications with this posture, such as hematomas.<sup>11,19,20</sup> Small Morel-Lavallé lesions may be susceptible to non-surgical treatment such as compressive bandaging or focused percutaneous aspiration, while larger lesions should be approached with debridement and bleeding control.<sup>21</sup>

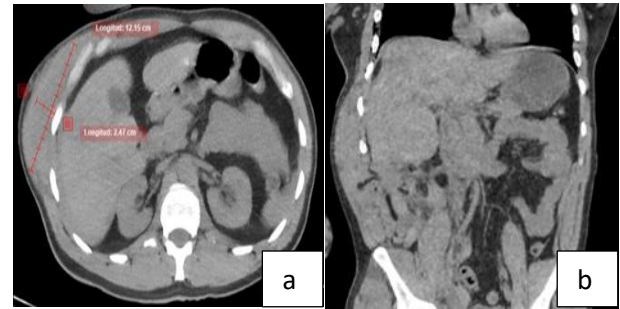
Laparoscopic repair of traumatic hernias is described in the literature, with very variable results, but currently no determinant position.<sup>12</sup> It also refers a series of 12 cases where it is concluded that this entity can be accompanied by multiple aggregate lesions, being tomography the method of choice in which the clinical characteristics evident of peritoneal irritation were not evident, advising not to underestimate laparotomization due to the false negatives that can result from the diagnostic approach in image.

## CASE REPORT

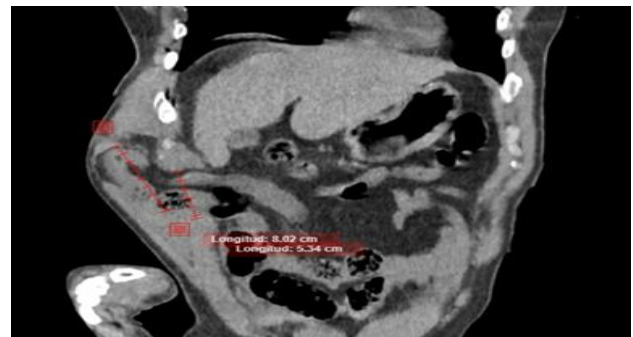
A 45-year-old male patient with a history of long-standing systemic hypertension treated with enalapril, untreated dyslipidemia and obesity. He denies previous surgeries.

His current condition began on 17 December 2024 when he was driving his motorcycle and suffered a right lateral impact with a truck, being projected out of his vehicle and without loss of alertness. He is assisted by paramedics, without neurological and hemodynamic deterioration, with dyspnea and pain in the right costal grill and oxygen supplementation is started. Upon arrival at the emergency area in UMAE unit No. 21, US FAST was performed with the presence of free fluid in the cavity. As the patient remained hemodynamically stable, a simple thoraco-abdominal-pelvic tomography was performed with the following findings: fracture of the 3rd to 7th right costal arch associated with ipsilateral pneumothorax, irregularity in the lower portion of the liver, free fluid and effacement of fatty planes, increased volume of the abdominal wall with muscle edema (Figure 1) and traumatic hernia of

intestinal and fatty contents (Figures 2 and 3), as well as perisplenic fluid.



**Figure 1 (a and b): Abdominal tomography in axial and coronal section with evidence of volume increase of dimensions 12.15×2.4 cm in the right lateral wall of the abdomen.**



**Figure 2: Abdominal CT scan in coronal section with evidence of a 5.3 cm long wall defect and an 8 cm long sac with intestinal contents.**



**Figure 3: Tomography of the abdomen and pelvis in axial section with evidence of a 12.5 cm long wall defect and a 6.9 cm anteroposterior diameter sac of intestinal contents.**

It was decided to urgently admit the patient to the operating room for exploratory laparotomy with the following trans-surgical findings: 500 ml of hemoperitoneum, liver injury grade V AAST in segment V and VI with presence of liver fragments in abdominal cavity, colon trauma grade V AAST devascularization from lower third of ascending colon with dissecting hematoma in Told's fascia to hepatic angle and transverse

colon, mesenteric injury with bowel trauma grade V AAST with devascularization of 70 cm of small intestine at 250 cm of treitz angle and perforation of 1.5 cm perforation in the antimesenteric border of the affected segment. Traumatic hernia with loss of continuity of the right anterolateral portion of the abdomen with dimensions of 12.5×4.5 cm with disinsertion of oblique muscles, rectus abdominis and serratus anterior of intestinal and hepatic content.

It was decided to place a right endopleural tube without evidence of hemothorax, hepatorrhaphy with chromic no. 0, right hemicolectomy of the affected colon segment and intestinal resection of 70 cm with exteriorization of the proximal loop, closure of the wall defect with prolene no. 1 was performed, placing a drenovac type drainage in the subcutaneous space, Saratoga drainage was placed in the Morrison and Penrose space in the pelvic hollow. Finally, ileostomy maturation was performed with Brooke technique.

Subsequently, he was admitted to the intensive care unit and was discharged on the 5th day due to improvement to the floor/general surgery to continue with post-surgical surveillance, showing biliary characteristics in Saratoga from 400 ml to 50 ml in the last days with a decrease of biliary characteristics, high expenses above 500 ml for ileostomy in management with loperamide and dry diet with a reduction of expenses until control.

Endopleural catheter and drenovac were removed due to improvement on 27 December 2024 and he was discharged from the unit on 28 December 2024 due to improvement and continued follow up by the General Hospital of the area.

## DISCUSSION

As in this case, Morel-Lavalle in a trauma context is rarely.<sup>7</sup> The degloving lesion plus a traumatic hernia involves a lot a morbidity, so the quick response of the emergency services becomes essential.<sup>3,4,7</sup> In the OR, even the hemoperitoneum and devascularization colon trauma, the findings speaks about an early Morel-Lavalle, so it matches the grade VI of the The Midwest Surgical Association.<sup>9</sup> With that in mind the signs of muscular resistance and the high energy impact as part of the interrogatory results in a laparotomy. On the other hand the options of resolution comes as the disposition of prosthetics material as a biological mesh because of the benevolence with the remaining tissue even in septic context.<sup>16</sup>

The latter clinic case with the delayed surgery wall reconstruction was made because of all the lesions, hemodynamic unsteadiness and an important area absent tissue was the main reasons to give a full wall reconstruction in a second surgery time.<sup>11,15,16,19</sup> The Morel-Lavallee in the context of trauma surgery becomes a broad spectrum of time dependent decisions that impacts

in the clinical evolution of the patient, that fortunately In this case concludes with a hospital discharge with external follow-up.

## CONCLUSION

Traumatic hernia has many spectrums in its presentation, where despite having a low incidence, the possibility of masking intra-abdominal trauma that on physical examination does not seem to be of relevance should not be underestimated, since surgical conduct will depend on the presence of peritoneal irritation data as well as imaging data suggestive of perforation or significant damage in any part of the gastrointestinal tract. Blunt abdominal trauma in the context of traumatic abdominal hernia in conjunction with the ATLS protocol as well as emergency department ultrasound protocols are an excellent tool to categorize the patient and to profile him/her for surgical treatment practically from the moment of arrival in the emergency department.

The present case is a reflection of the magnitude to which a closed abdominal trauma can reach even without evidence of damage to the patient's skin as an indirect measure of the high-energy trauma to which he was exposed, leaving as an experience to always have the suspicion of aggregate injuries, even if they are not physically evident in the case of abdominal blunt trauma.

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## REFERENCES

1. Electronic Presentations in Radiology Exchange Platform. About the Poster System. Available at: <https://piper.espacio-seram.com/index.php/seram/index>. Accessed on 21 July 2025.
2. Chowdhury TK, Alam MA, Rahman MAM, Khastagir R, Khan R. Traumatic abdominal wall hernia. J Pediatric Surg Case Rep. 2020;59:101539.
3. Villascusa Marín, S, Andrés García, B, Pastor F, Aguayo Albasini, JL. Hernia abdominal traumática. Cirugía Española. 1999;67(1):115-6.
4. Al Beteddini OS, Abdulla S, Omari O. Traumatic abdominal wall hernia: A case report and literature review. Int J Surg Case Rep. 2016;24:57-9.
5. Lampros Liasis, Ioannis Tierris, Lazarioti FG, Clark CE, Papaconstantinou HT. Traumatic abdominal wall hernia. J Trauma Acute Care Surg. 2013;74(4):1156-62.
6. Selby CD. Direct abdominal hernia of traumatic origin. JAMA. 1906;XLVII(18):1485-5.
7. Le PB, Mayan D, Mujadzic T, Mujadzic MM. Traumatic Abdominal Wall Hernia Repair with Dermal Autograft within a Morel-Lavallée Lesion. Plastic Reconstructive Surg - Global Open. 2022;10(2):e4119.

8. Hamidian Jahromi A, Skweres J, Sangster G, Johnson L, Samra N. What We Know About Management of Traumatic Abdominal Wall Hernia: Review of the Literature and Case Report. *Int Surg.* 2015;100(2):233-9.
9. Dennis RW, Marshall A, Deshmukh H, Bender JS, Narong Kulvatunyou, Lees J, et al. Abdominal wall injuries occurring after blunt trauma: incidence and grading system. *Am J Surg.* 2009;197(3):413-7.
10. Rosen MJ, Krpata DM, Ermlich B, Blatnik JA. A 5-Year Clinical Experience With Single-Staged Repairs of Infected and Contaminated Abdominal Wall Defects Utilizing Biologic Mesh. *Annals Surg.* 2013;257(6):991-6.
11. Yadav S, Jain SK, Arora JK, Sharma P, Sharma A, Bhagwan J, et al. Traumatic abdominal wall hernia. *Int J Surg Case Rep.* 2013;4(1):36-9.
12. Wilson KL, Davis MK, Rosser JC. A Traumatic Abdominal Wall Hernia Repair: A Laparoscopic Approach. *J Soc Laparoendosc Surg.* 2012;16(2):287-91.
13. Chan KH, Subramaniam S, Hayati F. Traumatic abdominal wall hernia after impact from handlebar: A case report. *Trauma Case Rep.* 2021;36:100557.
14. Nishimura T, Nakao A, Okamoto A, Fujisaki N, Kotani J. A case of traumatic abdominal wall hernia with delayed bowel obstruction. *Surg Case Rep.* 2015;1(1).
15. Suhardja TS, Atalla MA, Rozen WM. Complete abdominal wall disruption with herniation following blunt injury: case report and review of the literature. *Int Surg.* 2015;100(3):531-9.
16. Bodda AK, Sasmal PK, Mishra S, Shettar A. Mesh hernioplasty in emergency repair of traumatic abdominal wall hernia following bull horn injury. *BMJ Case Rep.* 2021;14(7):e244384.
17. Makaranka S, Hever P, Cavale N. Traumatic abdominal wall hernia secondary to seatbelt injury: a case successfully managed by delayed surgical mesh repair and complicated by intervening pregnancy. *BMJ Case Rep.* 2018;bcr-224880.
18. Suraj KC, Gupta RK, Khanal B, Kumar A, Lamichhane S, Bhusal A, et al. Traumatic Abdominal wall hernia with ileal perforation following blunt trauma abdomen: A rare case report and review of literature. *Radiol Case Rep.* 2024;19(5):1819-22.
19. Jeong E, Jang H, Jo Y, Park Y, Lee N, Kim J. Traumatic abdominal wall hernia with hemoperitoneum caused by blunt injury: laparoscopic exploration with mini-laparotomy repair. A case report. *J Trauma Injury.* 2022;35(1):61-5.
20. Ajisaka H, Okura S, Wakasugi M. Traumatic Abdominal Wall Hernia: A Case Report of High-Energy Type without Surgical Repair. *Clin Med Insights Case Rep.* 2011;4:35-8.
21. Yang Y, Tang T. The Morel-Lavallée Lesion: Review and Update on Diagnosis and Management. *Orthopaedic Surg.* 2023;15(10):2485-91.
22. Alhadeedi O, Gruner L, Lasseur A, Olivier Monneuse. Traumatic Abdominal Wall Hernia—A Series of 12 Patients and a Review of the Literature. *World J Surg.* 2021;45(9):2742-6.

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