# TRAUMATIC MOREL-LAVALLEE INJURY TO THE ABDOMEN AFTER A SEATBELT INJURY; A RARELY DOCUMENTED CASE WITH A UNCOMMON SUBDERMAL MATRIX RECONSTRUCTION

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## Background

- The Morel-Lavallee lesion is classically described as a post traumatic de-gloving injury as result of traumatic avulsion between the muscular fascia and subcutaneous tissue causing fracture and extravasation of blood in a potential space creating a hematoma (1).
- Early diagnosis of the Morel-Lavallee lesion is paramount because missed or delayed diagnosis can result in skin necrosis and abscess.
- The phenomenon was first described in 1853 but is classically described as a soft tissue injury to the extremities (2).
- This patient had a compounded injury to the anterior abdominal wall with a traumatic Morel-Lavallee injury with possible extension into the iliopubic tract.

## Case Presentation

- 78 yo male presented to the trauma bay as a level 1 trauma after motor vehicle collision.
- The patient was taken to the operating room after his primary and secondary survey was completed in the trauma bay and found to have an open avulsion like injury along the iliopubic tract lateral to the external oblique fascia of the anterior-lateral abdominal wall in the left lower quadrant.
- Because of the penetrating appearance of the wound in the setting of abdominal trauma, the patient first had a diagnostic laparoscopy which was negative and the Morel-Lavallee was evacuated.
- The patient returned to the operating room 3 days later. The wound had a significant amount of potential space in the iliopubic tract and subcutaneous tissue plane. Because of the open defect and the propensity of this injury pattern to lead to hernia, a scaffolding dermal matrix graft was fashioned like a mesh in the iliopubic tract, secured with absorbable suture.
- A negative pressure wound dressing was also applied to collapse the potential space.

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## Pictures

Figure 1: Iliopubic tract exposed after hematoma evacuation

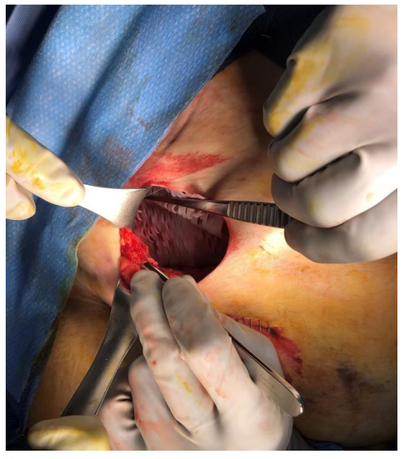

Figure 2: Placing matrix while closing potential space

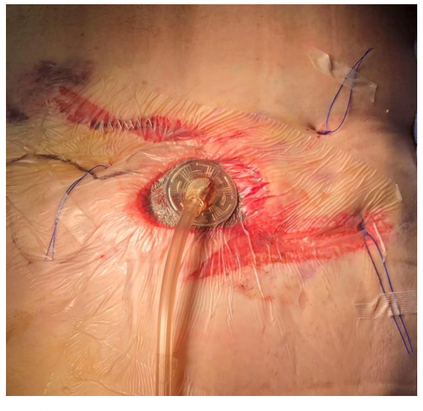

Figure 3: Combining with negative pressure therapy to secure matrix and close potential space

## Discussion

- An 8 x 8cm acellular, fetal bovine dermal scaffolding matrix was used as an adjunct to a primary tissue repair of potential space in the iliopubic tract.
- This type of bioprosthetic can be used in many applications to include superficial wounds and burns to tunneled wounds (9).
- The goal of repair is to
  1. Collapse potential space
  2. Reduce risk of post traumatic abdominal wall hernia
  3. Also prevent skin necrosis and abscess from forming because of the potential space

- In blunt penetrating abdominal wall injuries; traumatic abdominal wall hernias are rare, <1 % (2,5,6); however, in the case of penetrating abdominal wall trauma along the iliopubic tract, it seems prudent to prevent future risk of hernia.

## Conclusion

- Patients with ecchymosis or abrasions on the abdomen are at risk of many occult intra-abdominal injuries (7).
- De-gloving injuries also may occur as shearing forces in the subcutaneous tissue create a dead space called a Morel-Lavallee lesion (2)
- The risk of traumatic wall hernia in blunt abdominal trauma is rare and even more so when involving a traumatic Morel-Lavallee lesion, nonetheless, synesthetic mesh repair, or in this case a bio prosthetic repair is preferable to a simple tissue repair to prevent hernia and complications thereof (6).
- The iliopubic tract is a part of the transversalis fascia and inserts on the pubic tubercle, however, potential space exist between this and the transverse fascia and when weakened, a hernia can arise (8).
- When combined with negative pressure wound therapy, this type of dermal scaffolding can increase the tissue regeneration most classically described in wounds refractory to skin grafting and tissue flaps (9).

## References

1] Scolaro, John A. MD, MA; Chao, Tom MD; Zamorano, David P. MD The Morel-Lavallée Lesion: Diagnosis and Management, Journal of the American Academy of Orthopaedic Surgeons: October 2016 - Volume 24 - Issue 10 - p 667-672 doi: 10.5435/JAAOS-D-15-00181

2 Shaban, Y., Elkbuli, A., Ovakimyan, V., Hai, S., McKenney, M., & Boneva, D. (2019). The First Reported Case of Morel-Lavallée Lesion and Traumatic Abdominal Wall Hernia: A Case Report and Review of the Literature. *The American journal of case reports*, *20*, 1492–1496. https://doi.org/10.12659/AJCR.918223

3 Matalon, S. A., Askari, R., Gates, J. D., Patel, K., Sodickson, A. D., & Khurana, B. (2017). Don't Forget the Abdominal Wall: Imaging Spectrum of Abdominal Wall Injuries after Nonpenetrating Trauma. *Radiographics : a review publication of the Radiological Society of North America, Inc*, *37*(4), 1218–1235. https://doi.org/10.1148/rg.2017160098

4 Leach, S., Wotherspoon, M., & King, L. (2020). Retrosacral Morel-Lavallée lesion: resolution with ultrasound-guided drainage and sclerotherapy. *BJR case reports*, *6*(3), 20190120. https://doi.org/10.1259/bjrcr.20190120

5 Honaker, Drew MD; Green, John MD Blunt traumatic abdominal wall hernias, Journal of Trauma and Acute Care Surgery: November 2014 - Volume 77 - Issue 5 - p 701-704. doi: 10.1097/TA.0000000000000431

6 Coleman, Jamie J. MD; Fitz, Evan K. MD; Zarzaur, Ben L. MD, MPH; Steenburg, Scott D. MD; Brewer, Brian L. MD; Reed, R. Lawrence MD; Feliciano, David V. MD Traumatic abdominal wall hernias, Journal of Trauma and Acute Care Surgery: March 2016 - Volume 80 - Issue 3 - p 390-397 doi: 10.1097/TA.0000000000000946

7 Greenston, M., Wood, R. L., & Reinhart, L. (2019). Clinical Significance of the Seat Belt Sign as Evidence of a Compromised Occupant-Seat Belt Relationship. *The Journal of emergency medicine*, *56*(6), 624–632. https://doi.org/10.1016/j.jemermed.2019.01.035

8 Lichtenstein, I. L., Amid, P. K., & Shulman, A. G. (1990). The iliopubic tract. The key to inguinal herniorrhaphy?. *International surgery*, *75*(4), 244–246.

9 Hayn E. (2014). Successful treatment of complex traumatic and surgical wounds with a foetal bovine dermal matrix. *International wound journal*, *11*(6), 675–680. https://doi.org/10.1111/iwj.12028