



(CASE REPORT)



Traumatic Abdominal Wall Hernia, often missed diagnosis in blunt trauma and delayed elective repair: A Case Report

Subramaniam Bakeerathan* and D M C Duminda Dissanayake

Teaching Hospital Badulla, Sri Lanka.

GSC Advanced Research and Reviews, 2024, 21(01), 385–389

Publication history: Received on 10 September 2024; revised on 20 October 2024; accepted on 23 October 2024

Article DOI: <https://doi.org/10.30574/gscarr.2024.21.1.0391>

Abstract

Background: Traumatic Abdominal Wall Hernia (TAWH) is a rare type of hernia following blunt abdominal trauma that can easily missed. Always have high clinical suspicion following blunt trauma. Ultrasound scans and CT scans are particularly useful investigation to diagnose TAWH and associated abdominal injuries. Surgical repair is the definitive management of TAWH.

Case description: This report presents a case of a 57-year-old male who presented abdominal wall hernia following blunt trauma to the abdomen and the diagnosis and management of TAWH.

Conclusion: The timing of surgery depends on the concomitant injury. Delayed elective repair may be safe and cause less postoperative complications in stable patients. Delayed repair carries the risk of bowel incarceration and strangulation.

Keywords: Abdominal Wall Hernia; Blunt trauma; Abdominal trauma; Case report

1. Introduction

Traumatic abdominal wall hernia (TAWH) is an uncommon type of hernia that occurs after low- or high-velocity blunt trauma to the abdominal wall. First described and reported in 1906 by Selby. [1] It is defined as bowel or abdominal organ herniate through a disruption of musculature and fascia following blunt trauma. Skin penetration is absent, and there should not be any hernia defect before the injury. [2] Skin that remains intact can be bruised. [3] The reported prevalence of TAWH among trauma patients is less than 1%. [4] TAWH is often missed because of its rarity and subtle presentation with other distracting injuries. [5] High in blunt trauma, a high index of suspicion and physical examination is key to diagnosing the TAWH. [6] The presence of abdominal wall hematoma, abdominal wall tenderness, abrasion and ecchymosis may be the only signs. [7] Ultrasound scan and Computed tomography(CT) are the radiological investigations for diagnosing TAWH. [6] CT scan is the gold standard in the diagnosis of TAWH, associated organ injury and definitive management. [8] [9] Surgical repair is the standard treatment for TAWH.

2. Case presentation

A 57-year-old male patient presented to ETU following a road traffic accident. He was the backseat passenger of a regular cab vehicle. The mechanism of injury was a blunt metal rod hit to the left upper abdomen. He was oriented, and his vital parameters were stable. There was 5cm × 5cm well defined soft swelling over the left subcostal region with skin abrasions and ecchymosis.

* Corresponding author: Subramaniam Bakeerathan

Extended Focused Assessment with Sonography in Trauma (E-FAST) scans were negative, and chest X-ray did not show fractures, hemothorax or pneumothorax. The patient was admitted for observation and discharged from the hospital the following day with the diagnosis of soft tissue hematoma. After two weeks, the patient was presented with persistent left upper abdominal pain and lump. There was 4cm×2cm swelling on his left subcostal region, which was non-tender, reducible with a visible and palpable cough impulse. (Figure 1)

Ultrasound revealed Herniation of omental tissue noted through a defect in the left upper abdomen lateral to left rectus muscle with defect diameter measuring 3.3cm. Hernial sac contents show reduction while in supine position. (Figure 2).



Figure 1 Left Subcostal region lump suggestive of hernia: arrows indicate.



Figure 2 Ultrasound scan of abdominal wall shows defect in the anterior abdominal wall: double red arrow shows the defect. Green arrow shows hernial content.

After four weeks, the patient was taken for open hernial repair electively, Subcostal incision was made, and the finding were 4cm×2cm muscular (external oblique muscle, internal oblique muscle and transversus abdominis muscle) and fascial defect (Figure 4) with omental herniation without any bowel involvement. (Figure 3) Hernia repaired with polypropylene mesh. He did not have any postoperative complications.



Figure 3 Omental herniation without bowel herniation.



Figure 4 Muscular defect arrows show the upper border of defect.

3. Discussion

Traumatic abdominal wall hernia following blunt trauma is a rare entity but should be suspected following blunt abdominal trauma, can easily missed in acute trauma settings due to associated distracting injuries. TAWH can presented with non-specific signs, such as localized tenderness, abrasions, ecchymosis and even normal appearing overlying skin. [4] Usually high risk of associated intra-abdominal organ injury. Our patient was presented with nonspecific signs without any associated intraabdominal organ injury. It was missing due to its nonspecific signs. Ultrasound scan abdomen and CT scan useful in diagnosing TAWH in acute trauma setting. CT scan gold standard of investigation to diagnose the TAWH, identifying the intrabdominal organ injury and planning the timing of surgery and procedure. Surgical repair of TAWH categorized as urgent or elective and early or delayed. The timing of surgical exploration and repair depends on the associated concomitant injury and patient stability. Patient with minimal abdominal injury and stable during operation TAWH repair can be performed at the same time, which may increase the surgical site infection and recurrence rate. [2] Delayed surgery is safely performed with mesh reinforcement patients who are high rate of wound problem associated single staged reconstruction in contaminated fields. [10] Recent studies show patients who have TAWH without any obvious abdominal injury that does not requires immediate laparotomy can safely wait for delayed repair. [11] Delayed diagnosis and repair can lead to bowel obstruction or strangulation risk. Bowel incarceration and strangulation risk vary from 10% to 25%. [12]

Abbreviations

- Traumatic Abdominal Wall Hernia (TAWH),
- Computed Tomography (CT)

4. Conclusion

TAWH is rare in blunt abdominal trauma and easily missed the diagnosis because of its rarity and concomitant other injuries. There is always a high index of clinical suspicion in blunt abdominal trauma, may be present without any specific sign. CT scan is gold standard investigation to diagnose the TAMH and abdominal organ injury, also useful in further surgical management. Surgical repair of TAWH is definitive management. The timing of surgical repair may be urgent or elective, and early or delayed depends on concomitant injury and the stability of patient.

Compliance with ethical standards

Disclosure of conflict of interest

The authors have no conflicts of interest to declare.

Statement of ethical approval

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

Statement of informed consent

Informed written consent was obtained from the patient for publication of this case report and accompanying images.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

References

- [1] C. D. SELBY, Direct abdominal hernia of traumatic origin., *Journal of the American Medical Association*, vol. 47, pp. 1485--1486, 1906.
- [2] D. D. Damschen, J. Landercasper, T. H. Cogbill and R. T. Stolee, ACUTE TRAUMATIC ABDOMINAL HERNIA, *The Journal of Trauma: Injury, Infection, and Critical Care*, vol. 36, no. 2, pp. 273-276, 2 1994.
- [3] Yadav, Siddharth; Sunil K. Jain, Jainendra K. Arora, Piyush Sharma, Abhinav Sharma, Jai Bhagwan, Kaushal Goyal, Bhabani S. Sahoo, Traumatic abdominal wall hernia: Delayed repair: Advantageous or taxing, *International Journal of Surgery Case Reports*, vol. 4, no. 1, pp. 36-39, 2013.
- [4] Netto, F. A., Hamilton, P., Rizoli, S. B., Nascimento, B., Jr, Brenneman, F. D., Tien, H., & Tremblay, L. N., Traumatic abdominal wall hernia: epidemiology and clinical implications, *The Journal of trauma*, vol. 61, no. 5, pp. 1058-1061, 11 2006.
- [5] Pothiawala S, Balasubramaniam S, Taib M, Bhagvan S, Traumatic abdominal wall hernia: a rare and often missed diagnosis in blunt trauma, *World Journal of Emergency medicine*, vol. 13, no. 6, p. 492, 2022.
- [6] Khor, Vincent and Dee, Cheah Sin, Traumatic abdominal wall hernia--a case of handlebar hernia, *Med J Malaysia*, vol. 73, p. 425, 2018.
- [7] Yucel, Neslihan and Ugras, Murat Yahya and Isik, Burak and Turtay,, Case report of a traumatic abdominal wall hernia resulting from falling onto a flat surface, *Ulus Travma Acil Cerrahi Derg*, vol. 16, pp. 571--4, 2010.
- [8] Hernandez Cervantes BY, Martínez Lopez D, Guzman Lambert R, Rodríguez Gonzalez M, Meah M, Acute traumatic abdominal wall hernia-value of the physical examination: case report, *Journal of Surgical Case Reports*, vol. 2021, no. 7, p. 7, 7 2021.
- [9] Akbaba S, Gündoğdu RH, Temel H, Oduncu M, Traumatic Abdominal Wall Hernia: Early or Delayed Repair?, *Indian Journal of Surgery*, vol. 77, no. S3, pp. 963-966, 2015.
- [10] Rosen, Michael J and Krpata, David M and Ermlich, Bridget and Blatnik, Jeffrey A, A 5-year clinical experience with single-staged repairs of infected and contaminated abdominal wall defects utilizing biologic mesh, *Annals of surgery*, vol. 257, pp. 991--996, 2013.

- [11] Bender, Jeffrey S and Dennis, Ryan W and Albrecht, Roxie M, Traumatic flank hernias: acute and chronic management, *The American journal of surgery*, vol. 195, pp. 414-417, 2008.
- [12] Mahajna, A and Ofer, A and Krausz, MM, Traumatic abdominal hernia associated with large bowel strangulation: case report and review of the literature, *Hernia*, vol. 8, pp. 80--82, 2004.