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Case Report

Traumatic Abdominal wall hernia with ileal perforation following blunt trauma abdomen: A rare case report and review of literature [☆]

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ARTICLE INFO

Article history:

Received 8 January 2024

Revised 18 January 2024

Accepted 27 January 2024

Keywords:

Blunt trauma

Herniation

Perforation

Exploration

Emergency

ABSTRACT

Blunt trauma abdomen with abdominal wall herniation with bowel perforation is an acute emergency condition. Road traffic accidents causing blunt trauma are common in a youngster like in our case. Once the patient is resuscitated, ultrasonography and Computed tomography must be done. Early surgical exploration with mesh or primary repair of the defect is the mainstay of management. We have a case of a 25-year-old male with blunt trauma abdomen and anterior wall hernia following a road traffic accident who was managed with emergency exploratory laparotomy as computed tomography suggested anterior abdominal wall herniation of bowel content.

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Introduction

Blunt abdominal trauma usually occurs as a result of road traffic accidents. They typically present to the emergency department with acute abdomen. One of the rarest conditions, as per our literature review, is abdominal wall hernia with bowel perforation secondary to Blunt trauma. We report the case of a 25-year-old male who presented to emergency with a history

of road traffic accident 8 hours back with impact over the left flank and right flank region. Following the accident, he developed a lacerated wound injury over the left flank region and tender swelling at the right flank region. There was no history of loss of consciousness, ENT bleeding, headache, shortness of breath, or seizure. There was no other external injury. The patient was under alcohol influence at the moment of the accident. On examination, the patient was hemodynamically stable, and systemic investigation revealed the presence of red-

[☆] Competing Interests: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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<https://doi.org/10.1016/j.radcr.2024.01.081>

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Fig 1 – CECT abdomen and pelvis followed by oral contrast axial (A) and sagittal (B) view show defect (green arrow) of size 3.0 cm x 2.6 cm (TRXCC) in the right anterolateral abdominal wall through which there is protrusion of opacified bowel loops, mesentery, and fluid (white arrow).

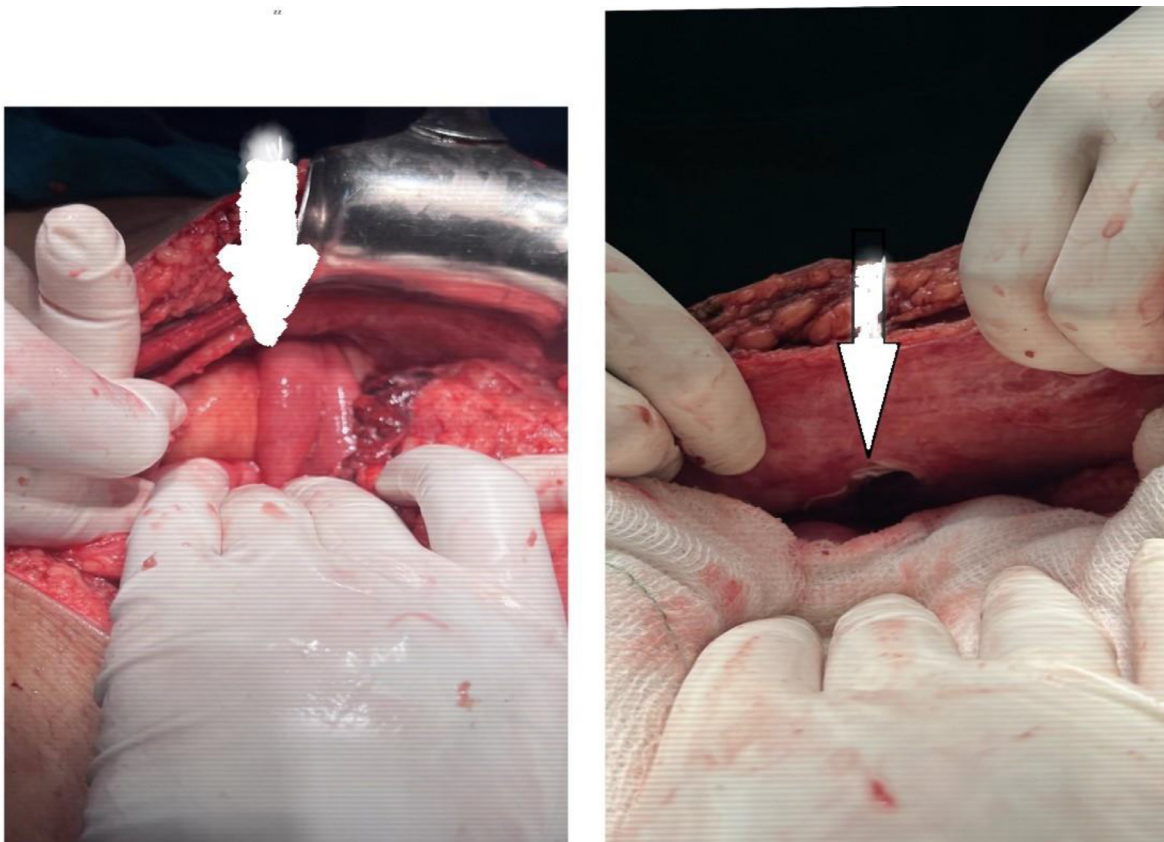


Fig 2 – picture showing defect at the anterior abdominal wall with herniation of bowel loops and mesentery.

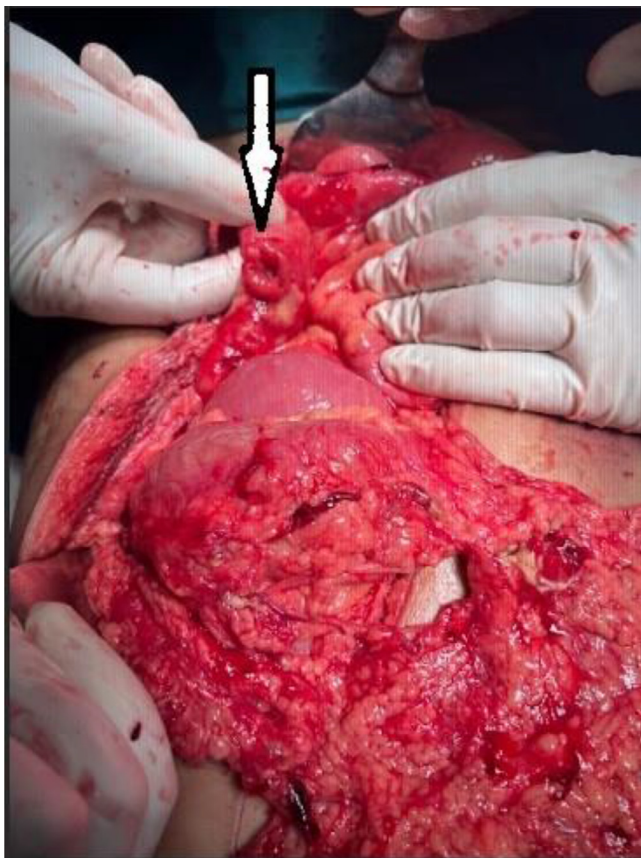


Fig 3 – Picture showing ileal perforation of size around 2 x 2 cm.

dish to blackish discoloration at the right paraumbilical region with tender swelling. The swelling was firm in consistency, and nonreducible without cough impulse. The rest of the examinations were within normal limits. Baseline investigations and renal and liver function tests were within normal limits. X-ray of the chest, abdomen, and pelvis showed no free air in the peritoneum. eFAST was done, which showed minimal fluid in the right paracolic gutter with no sizeable collection, likely hemoperitoneum. Contrast Enhanced Computed Tomography with oral contrast revealed a traumatic ventral wall hernia of size TR X CC 3.0 cm X 2.6 cm with mild hemoperitoneum and pneumoperitoneum (Fig. 1). Following the CT scan report, an emergency exploratory laparotomy was performed where there was gross hemoperitoneum of about 1 liter of blood and clots, defect of size 3 cm x 2.5 cm at the anterior abdominal wall of the right flank region with herniation of loops of ileum with necrosed mesentery (Fig. 2). There was a perforation of size 2 cm x 2 cm at the ileum about 100 cm above the ileocecal junction and another impending perforation of size 0.5 x 0.5 cm (Fig. 3). A longitudinal mesentery tear was present near the perforation site, and there was a large tear in the omentum. There was a breach in a peritoneal layer at the left flank region. Peritoneal lavage was done with warm saline. The ventral hernia and peritoneal breach was repaired by suture. The tear at repaired mesentery and omentum was repaired. Primary repair of ileal perforation was performed, and a pelvic

drain was placed. The abdominal wall was closed in layers. The patient was shifted to the intensive care unit for hemodynamic monitoring for 48 hours and shifted to the ward on the 2nd postoperative day. Feeding was started on the 3rd pod, the drain was removed on the 4th postoperative day, and the patient was discharged on the 6th postoperative day.

Discussion

The prevalence of traumatic abdominal hernia among trauma patients is less than 1%, as per literature reviews [1]. Traumatic anterior abdominal wall hernia was first reported in 1906 [2]. Many studies have been done to define the criteria for a traumatic hernia. In 1964, proposed criteria for determining criteria for a traumatic hernia as follows: 1) hernia appeared immediately after trauma and 2) the patient must have consulted a doctor soon enough for signs of the trauma to be identifiable [3] later in 1992 a new criterion of traumatic hernia was proposed as 1) no history of any hernia in past 2) the patient must have sustained an injury, 3) herniation can occur at a delayed stage after trauma, and 4) a hernia sac may or may not be present [4]. Our case does not have a hernia sac; however, it meets all the criteria as proposed by Sahdev. Tangential shearing force on the musculoaponeurotic layers secondary sudden increase in intra-abdominal pressure is supposed to be the primary proposed pathophysiology of herniation [5]. Hollow viscus injuries (HVI) occur in only 1% of all blunt trauma, and small bowels are most commonly affected [6]. A diaphragmatic herniation is more common than abdominal wall herniation following blunt trauma abdomen; however, they both may co-exist sometimes [7]. In our case, there was a diagnostic dilemma on the ultrasound report, so for better evaluation, we performed computed tomography (CT) as advised in different literature. Screening can be done by ultrasonography of the abdomen and pelvis. In hemodynamically stable patients CT imaging is the tool of choice for evaluation of blunt trauma abdomen [8]. CT scan clinical examination and surgical exploration with primary repair is the definitive treatment in hemodynamically stable patients with traumatic abdominal wall hernia [9]. Hematoma can be misleading to anterior wall hernia, so both should be kept as differentials [10]. Injuries that are liable to be missed on CT, such as mesenteric, omental, and bowel injuries, can also be managed well if surgical intervention is done earlier [11]. Despite the low incidence, velocity injuries are associated with a high mortality rate, and in patients with an isolated small bowel, perforation prognosis is better explained by early intervention [12]. As in our case, exploratory laparotomy through a midline incision is advocated in high-velocity injuries and blunt trauma abdomen as the prevalence of associated intra-abdominal injuries is high. for better evaluation and exploration [13] There has been debate whether doing simple repair versus mesh repair in hernia-associated abdominal trauma. Mesh repair should be considered in cases without hollow viscus injuries, relatively large defects, and tension for direct closure, primarily [14]. Minor defects without associated injury are likely to heal spontaneously [15]. TAWH has also been repaired successfully using a laparoscopic approach [8];

however, the process is entirely dependent upon the hospital settings, available resources, and expertise of the surgeon.

Conclusion

Blunt trauma abdomen with abdominal wall herniation and bowel injury is a rare presentation in the Emergency department. Adequate resuscitation of the patient should be done, followed by ultrasound and computed tomography for better evaluation. Early surgical intervention should be done for a better prognosis. Mesh repair and primary repair of hernia will be guided by the size of the defect and associated viscus perforation. The approach to surgery depends upon several factors, such as hospital settings, available resources, and the expertise of surgeons.

Patient consent

Written informed consent was obtained from patients for publication of this case report and accompanying images. A copy of the written consents is available for review by the Editor in chief of this journal on request.

REFERENCES

- [1] Netto FA, Hamilton P, Rizoli SB, Nascimento B Jr, Brenneman FD, Tien H. Traumatic abdominal wall hernia: epidemiology and clinical implications. *J Trauma* 2006;61:1058–61.
- [2] Selby CD. Direct abdominal hernia of traumatic origin. *JAMA* 1906;47:1485–6.
- [3] Clain A. Traumatic hernia. *Br J Surg* 1964;51:549–50. doi:10.1002/bjs.1800510722.
- [4] Sahdev P, Garramone RR, Desani B. Traumatic abdominal hernia. Report of three cases and review of the literature. *Am J Emer Med* 1992;10:237–41. doi:10.1016/0735-6757(92)90217-L.
- [5] Wood RJ, Ney AL, Bubrick MP. Traumatic abdominal hernia: a case report and review of the literature. *Am Surg* 1988;54:648–51.
- [6] Watts DD, Fakhry SM. Incidence of hollow viscus injury in blunt trauma: an analysis from 275,557 trauma admissions from the East multi-institutional trial. *J Trauma* 2003;54:289–94. doi:10.1097/01.TA.0000046261.06976.6A.
- [7] Dajee H, Nicholson DM. Traumatic abdominal hernia. *J Trauma* 1979;19:710–11.
- [8] Federle MP, Goldberg HI, Kaiser JA, Moss AA, Jeffrey RB, Mail JC. Evaluation of abdominal trauma by computed tomography. *Radiology* 1981;138:637–44.
- [9] Mitchiner JC. Handlebar hernia: diagnosis by abdominal computed tomography. *Ann Emerg Med* 1990;19:812–13.
- [10] Fraser N, Milligan S, Arthur RJ, Crabbe DC. Handlebar hernia masquerading as an inguinal haematoma. *Hernia* 2002;6:39–41.
- [11] Brenneman FD, Boulanger BR, Antonyshyn O. Surgical management of abdominal wall disruption after blunt trauma. *J Trauma* 1995;39:539–44.
- [12] Malinoski DJ, Patel MS, Yakar DO, Green D, Qureshi F, Inaba K, et al. A diagnostic delay of 5 hours increases the risk of death after blunt hollow viscus injury. *J Trauma Inj Infect Crit Care* 2010;69:84–7. doi:10.1097/TA.0b013e3181db37f5.
- [13] Lane CT, Cohen AJ, Cinat ME. Management of traumatic abdominal wall hernia. *Am Surg* 2003;69:73–6.
- [14] Yadav S, Jain SK, Arora JK, Sharma P, Sharma A, Bhagwan J, et al. Traumatic abdominal wall hernia: delayed repair: advantageous or taxing. *Int J Surg Case Rep* 2013;4:36–9.
- [15] Litton K, Izzidien AY, Hussien O, Vali A. Conservative management of a traumatic abdominal wall hernia after a bicycle handlebar injury (case report and literature review). *J Pediatr Surg* 2008;43:e31–2.