CASE REPORT

Handlebar hernia—unusual complication from blunt trauma

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Abstract

Handlebar hernia is a rare entity, mainly resulting from blunt abdominal trauma with a sudden deceleration mechanism. Diagnosis of handlebar at admission may be difficult because the rupture of abdominal wall layers often is not clinically recognized in the emergency department, which requires a high degree of suspicion to identify these lesions. It is very important to rule out the presence of intra-abdominal injuries, and in adults, surgical repair is needed. Herein, the case of an adult man who presented to the emergency department with blunt abdominal trauma caused by a motorcycle handlebar is described.

INTRODUCTION

Traumatic injury is the leading cause of death in people younger than the age of 44 [1]. Abdominal trauma is a major determinant of morbidity and mortality in young individuals worldwide [2, 3]. The blunt impact of the handlebar into the abdomen from a bicycle, a motorcycle or a seat belt can result in significant underlying trauma with minimal external visible signs of injury [4]. Although possible and troublesome, the frequency of associated visceral injury within these hernias seems to be low [5–7]. According to the literature most reported cases are managed with surgical exploration and simple suture repair [8]. Nevertheless, despite minimal signs on clinical examination, the involved mechanism and history should raise the suspicion of significant underlying muscular disruption, and the eventual presence of intra-abdominal lesions.

CASE REPORT

A 41-year-old man presented to the emergency room soon after falling from his motorcycle and hitting his handlebars in the epigastric region. The patient’s vital signs and initial laboratory studies were normal. Physical examination showed a soft tissue bulge in the epigastric region with superficial ecchymosis and tenderness to palpation. The swelling was obvious on standing and less evident when lying supine (Fig. 1).

Focused Assessment with Sonography for Trauma (FAST) performed in the emergency room did not show free fluid in the abdominal cavity. Computed tomography (CT) scan showed intestinal loops protruding through a defect in the abdominal wall into the subcutaneous space (Figs 2 and 3). Therefore, a surgical approach for handlebar hernia treatment was decided on the first day of hospitalization. A defect throughout the entire abdominal wall, including the fascia, muscular layers and peritoneum, with bowel protruding into the subcutaneous space, was observed during surgery (Fig. 4). There was no blood or fecal contamination in the area immediately surrounding the lesion, and exploration of the bowel loops did not reveal signs of intra-abdominal injury. Based on this, hernia repair was performed with prosthetic material (Fig. 5). As there was no evidence of intra-abdominal injury, local wound exploration provided the best anatomic layered repair with subsequent minimal residual defect and improved long-term cosmesis. The defect was repaired in layers, and the patient postoperative course was uneventful.

DISCUSSION

Handlebar hernia is an example of traumatic abdominal wall hernia, which are defined as a herniation through disrupted muscles and fascia, without skin penetration and with no previous defect on the local of injury [9].
Despite its rarity, handlebar hernias should be suspected when significant blunt force is applied to the abdominal wall from a handlebar injury. In some cases, physical examination reveals abdominal wall tenderness and ecchymosis [9], as was the case here reported, but there may no obvious signs on physical examination. Thus, the diagnosis can be easily missed, or limited to that of a local hematoma [10]. Sometimes the Valsalva maneuver can give additional help in the differential diagnosis between hematoma and traumatic hernia [11]. Therefore, a high level of suspicious must be remembered due to the involve mechanism and kinetic energy. As consequence imaging methods, namely ultrasound and CT scan, are very important to achieve a correct diagnosis [1, 12–14].

Handlebar hernias are often under type I abdominal wall hernias according to Wood et al. proposed classification [15], and thus associated intra-abdominal injuries are rare. Although handlebar injury was the reason for our case, the presentation was typical of type III hernia. Indeed, the energy from the accident of a high-speed motorcycle may explain the extent of injury in our patient. However, even the high energy involved in the accident, the patient of this case suffered no intra-abdominal besides the abdominal wall rupture, which agrees with other reports [8, 16], but contrasts to other reports in which incarceration and eventually intra-abdominal ischemic lesions are present [5, 17–20], mainly in situations of such high energy involved.

In pediatric ages, as well as in selected adult cases, handlebar hernias can often successfully be managed conservatively [17, 21–23], but in most of adult cases, given the high kinetic energy involved, as was the case reported, the extent of the default usually mandates surgical correction. Definitive treatment includes surgical exploration with primary repair of all tissue layers of the abdominal wall. The choice between tissue repair or mesh repair is dependent on the extent of the abdominal wall defect as well as on the presence of other intra-abdominal lesions, namely bowel perforation and peritonitis [17, 24].

Summing up, in cases of traumatic abdominal wall defects, a high level of clinical suspicion is needed to rule out the diagnosis of traumatic abdominal wall hernia,
strongly considering the involved mechanism. Although not common the presence of intra-abdominal lesions may be considered on the patient management.

CONFLICT OF INTEREST STATEMENT
The authors have no conflicts of interest to declare.

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ETHICS STATEMENT
This manuscript is in accordance with the rules of our Institutional Ethics Committee.

REFERENCES
1. García Sánchez P, Bote Gascón P, González Bertolín I, Bueno Barriocanal M, López López R, de Ceano-Vivas la Calle M. Handlebar hernia: an uncommon traumatic abdominal hernia. Pediatr Emerg Care 2021;37.e879–81.
2. Shukla A, Verma V, Lal Kapoor K, Gupta B, Chaudhary R. Handlebar hernia with triple herniation and perforation: a case report and literature review. Bull Emerg Trauma 2018;6:257–61.
3. Pelletti G, Cecchetto G, Viero A, de Matteis M, Viel G, Montisci M. Traumatic fatal aortic rupture in motorcycle drivers. Forensic Sci Int 2017;281:121–6.
4. So HF, Nabi H. Handlebar hernia - a rare complication from blunt trauma. Int J Surg Case Rep 2018;49:118–20.
5. Huang CW, Nee CH, Juan TK, Pan CK, Ker CG, Juan CC. Handlebar hernia with jejunal and duodenal injuries: a case report. Kaohsiung J Med Sci 2004;20:461–4.
6. Talwar N, Natrajam M, Kumar S, Dargan P. Traumatic handlebar hernia associated with hepatic herniation: a case report and review of the literature. Hernia 2007;11:365–7.
7. Chan KH, Subramaniam S, Hayati F. Traumatic abdominal wall hernia after impact from handlebar: a case report. Trauma Case Rep 2021;36:100557.
8. Yegane RA, Peyvandi H, Nowrouzi S, Mosaviani SA. Handlebar hernia: a rare type of abdominal wall hernia. Acta Med Iran 2010;48:351–2.
9. Damschen DD, Landercasper J, Cogbill TH, Stolee RT. Acute traumatic abdominal hernia: case reports. J Trauma 1994;36:273–6.
10. Fraser N, Milligan S, Arthur R, Crabbe D. Handlebar hernia masquerading as an inguinal haematoma. Hernia 2002;6:39–41.
11. Angel Buitrago L, Lugo-Vicente H. Handlebar hernia: case report and literature review. Bol Asoc Med P R 2015;107:58–61.
12. Rinaldi VE, Bertozzi M, Magrini E, Riccioni S, di Cara G, Appignani A. Traumatic abdominal wall hernia in children by handlebar injury: when to suspect, scan, and call the surgeon. Pediatr Emerg Care 2020;36:e534–7.
13. Okamoto D, Aibe H, Hasuo K, Shida Y, Edamoto Y. Handlebar hernia: a case report. Emerg Radiol 2007;13:213.
14. Chan TY, Chien LC, Hong MY, Ma YC. Handlebar hernia. QJM 2011;104:67.
15. Holmes JHT, Hall RA, Schaller RT Jr. Thoracic handlebar hernia: presentation and management. J Trauma 2002;52:165–6.
16. Mitchell PJ, Green M, Ramesh AN. Handlebar hernia in children. Emerg Med J 2011;28:439–40.
17. Schmidt MS, Rosenberg J, Tolver MA. Traumatic bicycle handlebar hernia in children: a systematic review. Dan Med J 2018;65:A5433.
18. Adakal O, Adamou H, Magagi IA, Koini M, Halidou M, Habou O. "Handlebar" hernia: a rare type of traumatic parietal hernia. Pan Afr Med J 2016;25:110.
19. Vincent K, Cheah SD. Traumatic abdominal wall hernia - a case of handlebar hernia. Med J Malaysia 2018;73:425–6.
20. Yaylaci S, Ercelik H, Seyit M, Kocyigit A, Serinken M. Handlebar trauma causing small bowel hernia with jejunal perforation. West J Emerg Med 2014;15:367–8.
21. Aggelidou M, Deftereos S, Foutzitzi S, Oikonomou P, Kambouri K. Handlebar hernia in children: a conservative approach. Case report and literature review. J Surg Case Rep 2018;2018:ryj075.
22. Matsuo S, Okada S, Matsumata T. Successful conservative treatment of a bicycle-handlebar hernia: report of a case. Surg Today 2007;37:349–51.
23. Hefny AF, Jagdish J, Salim ENA. A rare case of an adult traumatic bicycle handlebar hernia: a case report and review of the literature. Turk J Emerg Med 2018;18:179–81.
24. Schoofs N, Van der Speeten K. Handlebar hernia: an uncommon cause of intra-abdominal lesions. Acta Chir Belg 2013;113:293–7.