

Traumatic abdominal wall hernia – a case of handlebar hernia

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SUMMARY

Traumatic abdominal wall hernia (TAWH) after blunt injury is uncommon. Diagnosis requires careful examination and high index of suspicion. We report a case of a 12-year-old boy who complained of painful abdominal swelling over the left iliac fossa after a bicycle-handlebar hit his abdomen. TAWH was diagnosed clinically and confirmed with ultrasound and computed tomography (CT) scan. He developed incarceration after 12 hours of admission and subsequently underwent primary repair without mesh. As TAWH is usually associated with other concomitant injuries, it is important that we are meticulous to rule out other serious concomitant injuries.

INTRODUCTION

Traumatic abdominal wall hernia (TAWH) is rare. Diagnosis is challenging in the acute setting and often delayed due to lack of awareness. When diagnosed, efforts should be made to look for other serious injuries as TAWH is usually associated with concomitant intra-abdominal injuries, spinal/pelvic fractures, or rarely major vascular injuries. Liasis et al., and Coleman et al., delineated systematic treatment algorithms which are useful for surgeons in managing TAWH.^{1,2} However, to date there are no published guidelines regarding its optimal management strategy. The usual challenges we faced are the timing and type of surgical repair. In this paper, we report a patient with handlebar hernia who developed incarceration and underwent primary repair without mesh.

CASE REPORT

A 12-year-old boy presented to the Emergency Department with a painful reducible swelling over the left lower abdomen after a bicycle-handlebar hit on his left lower abdomen. He was alert, orientated and vital signs recorded were normal. There was a 2x2cm swelling over the left iliac fossa which was mildly tender, reducible with positive cough impulse. Abrasions were seen on the overlying skin. The other abdominal quadrants were soft and non-tender.

Focused assessment with sonography in trauma (FAST) scans were negative. Patient was admitted for observation. Ultrasound revealed an anterior abdominal wall defect between the left rectus abdominis muscle and lateral abdominis muscle with herniation of the intra-abdominal

content. Computer tomography (CT) scan revealed a 2x2.6cm defect in between the left rectus muscle and left anterior abdominis muscles. Proximal part of sigmoid colon herniated through the defect into the subcutaneous area. There was hyperdensity between the posterior rectal wall and sacrum suggestive of presacral hematoma. There was no bowel ischemia, solid organs injury or free fluid/air noted in the CT scan.

Twelve hours after admission, he developed incarceration. He underwent primary repair under general anaesthesia. Local incision was made on the swelling. Herniated bowel was healthy. The defect was repaired with interrupted Vicryl sutures. No mesh was used in this operation. He recovered well and discharged on post-op day-1.

DISCUSSION

TAWH is an uncommon type of hernia which occurs after blunt abdominal injury. It is defined as bowel or abdominal organ herniation through a disruption of musculature and fascia following adequate trauma, either low- or high-velocity impact. Skin penetration is absent and there should be a no evidence of previous hernia before the injury.³ The trauma caused by seatbelt, handlebar or any other narrow unyielding object, blunt enough not to penetrate the skin, but they are small enough to cause sudden localised force which results in disruption of the muscle fibre. The skin is relative elastic as compare to the contracted abdominal wall muscle and hence remains intact.⁴ The incidence of TAWH in trauma is less than 1%. In a retrospective study conducted by Coleman et al., from January 2002 to December 2014, the incidence is approximately 0.24% of all blunt trauma admissions.² The first peak incidence is in 0 to 10 years old and is likely due to handlebar injuries. The second peak is from 20 to 50 years old which mostly due to motor vehicle accidents.¹ As TAWH in the paediatric population is commonly caused by bicycle-handlebar injuries so it is also commonly known as “handlebar hernia”.⁴

High index of suspicion and thorough physical examination is essential in diagnosing TAWH. Ultrasound abdomen and CT scan are the imaging modalities to diagnose and assess TAWH. CT scan is the diagnostic modality of choice especially in high-velocity injuries as it can assess other concomitant injuries such as spine/pelvic fractures and intra-

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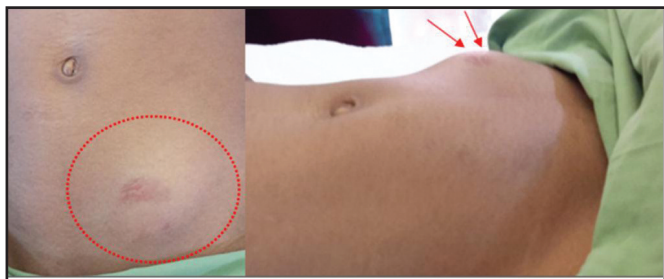


Fig. 1: Anterior view shows the abrasion and swelling on the left iliac fossa; lateral view shows the abdominal wall swelling.

abdominal injuries. However, CT scans are not easily available in Malaysian public hospitals. Hence, the decision for further imaging assessment should be based on careful history taking and thorough physical examination. If it is a high-impact injury with physical findings suggestive of concomitant injury, CT scan should always be performed. Our patient had presacral hematoma.

Initial management must always follow the ATLS protocols. The hernia can be repaired either early in the same setting or delayed as an elective procedure. Surgical approach can be open, laparoscopic or local exploration. Midline laparotomy is advocated for patients who have possible intra-abdominal injury. For patients without intra-abdominal injuries, they should be admitted for observation. If they develop complications like incarceration, repair can be done by local incision or laparoscopically. If they have no symptoms after a reasonable period of observation, they can be discharged and planned for delayed TAWH repair. Delayed TAWH repair is usually performed with a local incision. Liasis et al., review stated that the use of mesh repair is recommended for all delayed TAWH repair.¹ The use of mesh in the emergency TAWH repair is still a matter of controversy, requiring assessment of the benefit of lower recurrence rate against the risk of mesh infection. Absolute contraindication of mesh repair is hollow visceral injury with abdominal contamination although the use of biologic mesh is suggested as a good alternative in cases with large wall defects in a contaminated field. Honaker and Green

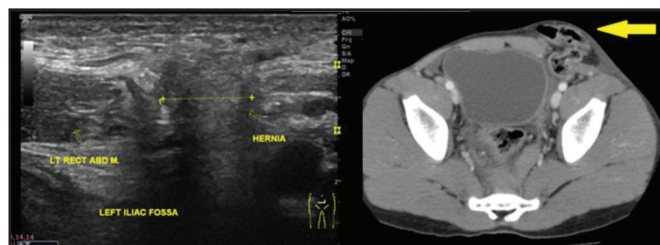


Fig. 2: Ultrasound and Abdominal CT scan showing the hernia.

recommended synthetic mesh as the preferred method of repair particularly in a delayed setting as there was no recurrence reported.⁵ In this case, we performed primary repair without mesh because muscle and fascial injury were not severe and good tissue approximation could be obtained without tension.

In conclusion, diagnosis of TAWH requires high level of suspicion. The optimal management of TAWH should be individualised based on the mechanism and severity of injury, presence of concomitant injuries, size of defect, and presence of incarceration. Treating physicians must diligently look for any concomitant injuries in all patients presented with TAWH.

REFERENCES

1. Liasis L, Tierris I, Lazarioti F, Clark CC, Papaconstantinou HT. Traumatic abdominal wall hernia: Is the treatment strategy a real problem? *J Trauma Acute Care Surg* 2013; 74(4): 1156-62.
2. Coleman JJ, Fitz EK, Zarzaur BL, Steenburg SD, Brewer BL, Reed RL et al. Traumatic abdominal wall hernias: location matters. *J Trauma Acute Care Surg* 2006; 80(3): 390-6.
3. Damschen DD, Landercasper J, Cogbill TH, Stolee RT. Acute traumatic abdominal hernia: case reports. *J Trauma* 1994; 36(2): 273-6.
4. Mancel B, Aslam A. Traumatic abdominal wall hernia: An unusual bicycle handlebar injury. *Pediatr Surg Int* 2003; 19(11): 746-7.
5. Honaker D, Green J. Blunt traumatic abdominal wall hernias: associated injuries and optimal timing and method of repair. *J Trauma Acute Care Surg* 2014; 77(5): 701-4.