

TRAUMATIC ABDOMINAL WALL HERNIA WITH INCIDENTAL MECKEL'S DIVERTICULUM AND MEGA APPENDIX: A CASE REPORT.

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ABSTRACT

Background:

Traumatic abdominal wall hernia is uncommon among Africans though the prevalence of both penetrating and blunt abdominal injuries is high. This condition which was first described by Selby in 1906 has paucity of reports in literature. Open and laparoscopic approaches have been reported to have been used in repair

Aim:

This is to report a case of traumatic abdominal wall hernia, incidental Meckel's diverticulum, mega appendix and review of approach to management.

Case Report:

A 27 year old male presented with a history of left sided anterior abdominal wall swelling and generalized abdominal pain, following a stab wound on the left lower chest wall. There was no abdominal distension. On examination, blood pressure was 110/70 mmHg, pulse was 90 beats per minute, and there was a soft, localized tender mass on the left lower part of the umbilical region, associated with visible peristalsis. Working diagnosis was penetrating abdominal injury with abdominal wall hernia.

He had emergency exploratory laparotomy following resuscitation. The findings were: Rectus abdominus facial defect with ileal herniation and multiple perforation, Meckel's diverticulum, mega appendix with fecolith and haemoperitoneum. Then a wedge resection and closure of the perforations, appendectomy, diverticulectomy and reduction and repair of hernia with interrupted non absorbable sutures were done. His out-patient follow-up has been uneventful.

Conclusion:

The diagnosis of traumatic abdominal wall hernia can be made clinically. The finding of Meckel's diverticulum and Mega-appendix is rare in our environment.

Key words: Abdominal wall hernia, trauma, open repair, laparoscopy? Meckel's and Mega-appendix.

INTRODUCTION.

Trauma is a known cause of abdominal injuries. Traumatic abdominal wall hernia (TAWHs) are extremely uncommon type of abdominal wall hernia. . Blunt traumatic abdominal hernia is defined as a herniation through disrupted musculature and fascia, without skin penetration with no evidence of a prior hernia defect at the site of injury.¹ Handlebar hernia is an example of traumatic abdominal hernia of anterior abdominal wall which was described by Dimyan *et al.* in 1980.² In worldwide literature, less than 50 cases of handlebar hernia have been reported with only three to five cases from India^{3,4}. Penetrating abdominal injuries can cause abdominal wall hernia especially when the site of injury is different from point of herniation or are wide apart. Rare of such case have been reported. The finding of additional pathology like Meckel's or mega appendix may be incidental.

Case Report:

A 27 year old male presented with a history of left sided anterior abdominal wall swelling and generalized abdominal pain, following a stab wound on the left lower chest wall. There was no abdominal distension. On examination, blood pressure was 110/70 mmHg, pulse was 90 beats per minute, and there was a soft, localized tender mass on the left lower part of the umbilical region, associated with visible peristalsis (Fig 1). Site of injury on the left chest wall sutured in a peripheral hospital prior to presentation (Fig 2 and 3). Working diagnosis was penetrating abdominal injury with abdominal wall hernia.

He had emergency exploratory laparotomy following resuscitation. The findings were: Rectus abdominus fascial defect with ileal herniation (Fig 4 and 5) and multiple perforation (Fig 6), meckel's diverticulum (Fig 7), mega appendix (Fig 8 and 9) with fecolith (Fig10) and haemoperitoneum. Then a wedge resection and closure of the perforations, appendectomy, diverticulectomy and reduction and repair of hernia with interrupted non absorbable sutures were done. His out-patient follow-up has been uneventful.



Hernia

Fig 1. Traumatic hernia



Hernia

Site of Injury

Fig 2. Site of injury and hernia



Fig 3. Same as above but control view.

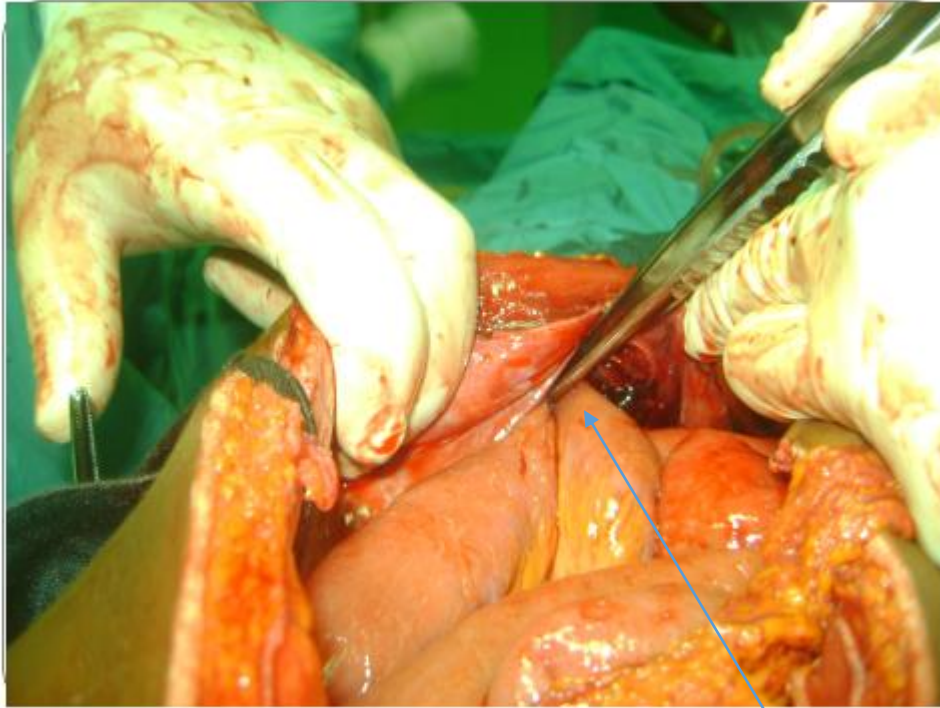


Fig 4. Bowel (ileum) entrapped in defect.

Ileum

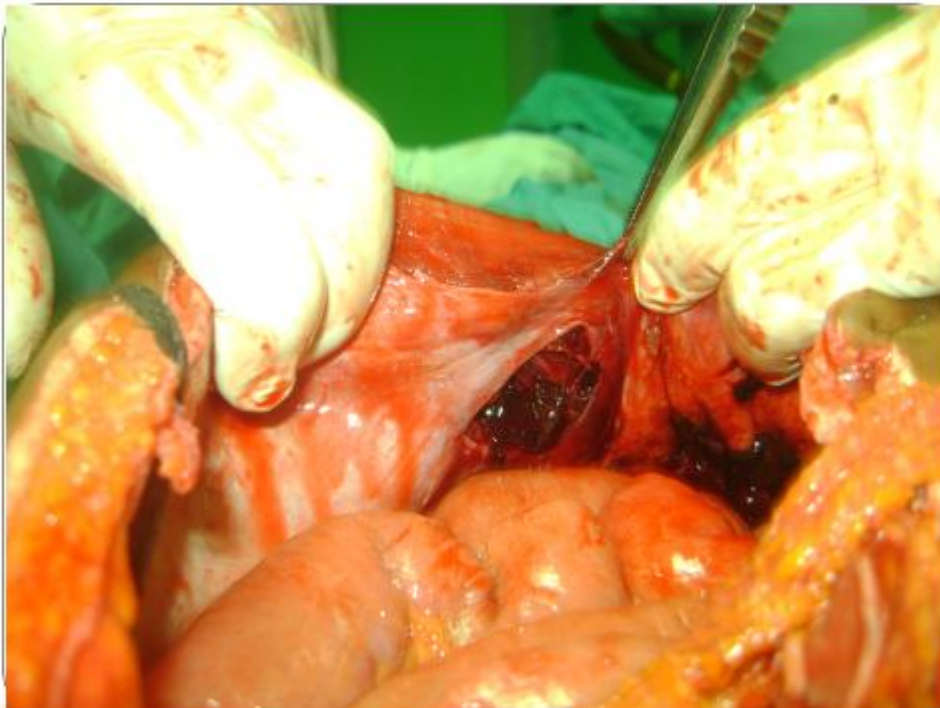


Fig 5. The defect on the anterior abdominal wall.

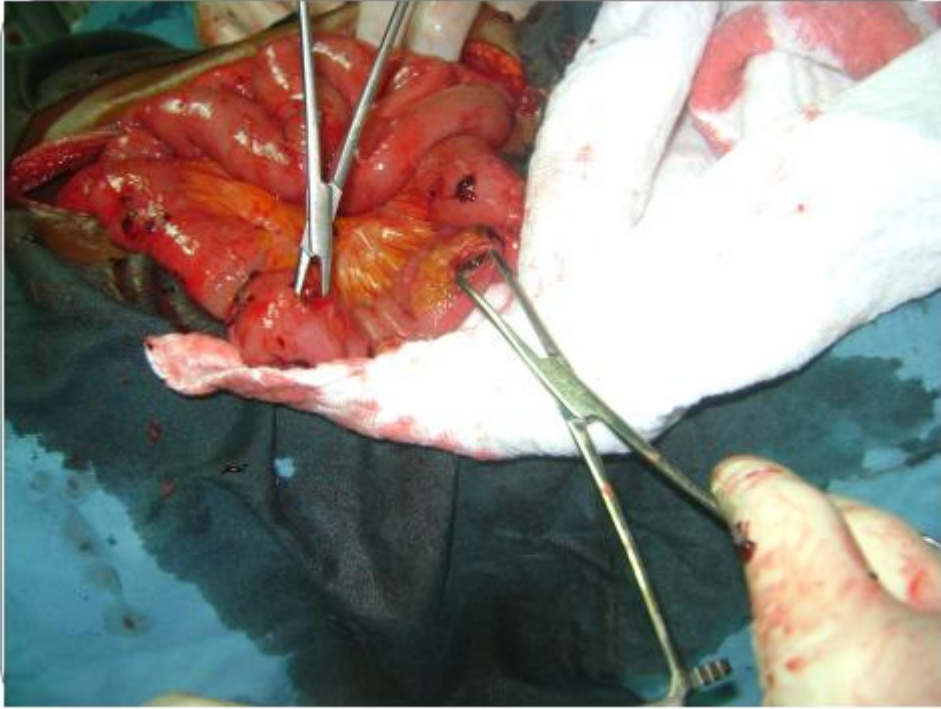


Fig 6. The perforated ileum

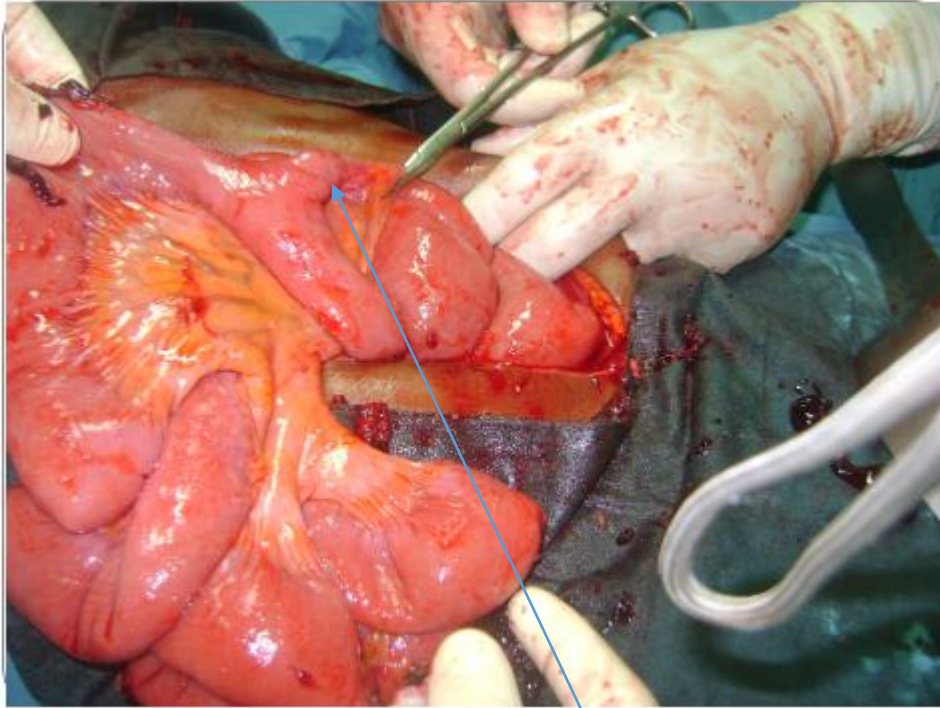


Fig 7. Meckel's Diverticulum.

diverticulum



Fig 8. Mega appendix



Fig 9. Mega appendix.



Fig 10. Mega appendix with a fecolith.

DISCUSSION

Herniation following blunt abdominal trauma is a rare occurrence. It is even rarer in penetrating injuries. This is because evisceration is common in penetrating injuries and hernia is rare. There have been few reports in the literature of traumatic abdominal wall hernia. Most herniation are diagnosed at presentation by physical examination or on abdominal contrast-enhanced computed tomogram (CECT), and most authors have advocated immediate laparotomy with repair of the defect because of the high incidence of associated intra-abdominal injury⁵ as seen in index patient. Traumatic abdominal hernia was first described by Selby in 1906.⁶ The criteria for TAWH include immediate appearance of the hernia through the disrupted muscle and fascia after blunt abdominal trauma, and failure of the injury to penetrate the skin, were defined by Clain⁷ and Damschen *et al.*¹ It can occur after blunt trauma abdomen which can be classified into low- or high-energy injuries. Low-energy injuries occur after the impact on a small blunt object. High-energy injuries are sustained during motor vehicle accidents or automobile versus pedestrian accidents.⁸ The pathophysiology of TAWH involves the application of a blunt force to the abdomen over an area large enough to prevent penetration of the skin; the tangential forces resulting in a pressure-induced disruption of the abdominal wall muscles and fascia, allowing subcutaneous herniation of abdominal viscera through the defect, as proposed by Ganchi.⁹ As the skin is more elastic than the other layers of the abdominal wall, it remains intact even though the underlying musculature and fascia are disrupted which gives rise to TAWH.^{8,10} In particular,

the forces directed tangentially to the abdominal wall can easily produce shearing stresses to the underlying muscles, fascia, and peritoneum. Penetrating injuries causing just herniation without evisceration is rare or penetrating injury with herniation in different part is rare in literature. Associated intra-abdominal injuries are infrequent. In blunt abdominal injury cases, Damschen *et al.*¹ found that 17 of 28 patients had no associated injury in their review. The other 11 patients had associated injuries, including five in the small intestine (45.5%), three in the colon (27.3%), two in the liver (18.2%), and one in the kidney (9.1%).¹¹ Stomach rupture, mesocolon, mesenteric hematoma, and cecal deserosation have been reported by other authors.¹¹ The apparent explanation for the infrequency of associated injury is the commonly observed resistance of hollow viscera to blunt injury and the fact that the trauma delivered in most reported cases is in areas removed from parenchymatous abdominal organs as reported by Yarbrough.¹¹ The index case had penetrating injuries affecting the small bowel..

Three types of TAWH were described by Wood *et al.* according to the mechanism and size of injury.^{3,12,13} Type I are small defects caused by blunt trauma. In Type II, larger defects occurring during motor vehicle crashes. In Type III, there are abdominal wall defects with bowel loop herniation following deceleration injuries, which are extremely rare.^{12,13} Our cases did not really fulfil the criteria of any type I- III, this then provides additional rare entity where penetration occurs in another site and injury on opposite or wide apart with bowel herniation occurring. It still qualifies as traumatic though penetrating type reported by some authors like H Tiong *et al.*¹⁴

The etiology of hernia is usually attributed to congenital, mechanical, and degenerative factors. Blunt traumatic hernias are sufficiently uncommon to preclude identification of specific anatomic patterns, except for the classically recognized pattern of acute diaphragmatic hernia^{15,16}. A tender subcutaneous swelling in the abdominal wall is the most common clinical finding with bruising and ecchymosis of the skin. On physical examination, a reducible hernia or swelling with underlying defect may be detected.

CECT and USG (ultrasonography) of the abdomen are the investigations of choice.^{1,11,17} However, CECT is not a reliable investigation to diagnose hollow viscous injury and mesenteric tear. In our second case, CECT diagnosed abdominal wall hernia following blunt trauma but missed associated intestinal perforation, which was found on laparotomy. Once the diagnosis of TAWH is made, some authors advocate early repair both to assess the associated intra-abdominal injuries and to shorten the period of hospitalization and disability. Early repair is considered technically easier. Simple debridement and layered closure of the disrupted musculo-facial layers usually have excellent results.

Prompt surgery is required to avoid the complications such as incarceration or strangulation and subsequent morbidity. The incision should be given directly over the traumatic swelling for proper enforcement of the herniated contents and defect.^{13,15} The repair of small defects with clear borders is straightforward. In contrast, more prominent disruptions require a variety of factors to be considered, such as the patient's overall condition, associated intra-abdominal injuries, the defect's size and site, and available surgical expertise.^{15,16,18-20} Primary approximation of the traumatic defect can be done by non-absorbable sutures with or without mesh, as most case reports indicate^{1,9}. Mesh repair is contraindicated in the contaminated wall

defects, because of the high risk of mesh infection. TAWHs are uncommon, and it remains controversial whether such patients require urgent laparotomy. Some cases have been reportedly done by laparoscopy¹⁴. The index patient had exploration and primary repair of the affected defect with non-absorbable sutures.

Netto *et al.*²¹ carried out a retrospective review of 34 patients with TAWH, and made three recommendations. First, the mechanism of injury should be a deciding factor, whether a patient with TAWH needs an urgent laparotomy or not. Second, clinically apparent anterior abdominal hernias appear to have a high rate of associated injuries and need urgent laparotomy as in one of our cases. Third, occult TAWHs diagnosed only by computed tomography may not require urgent laparotomy or hernia repair as reported.²¹ CECT scan is the modality of choice in evaluation of blunt trauma abdomen cases.^{22,23,24} It is also useful for identification of the associated injuries. However, we recommend that clinical findings and chest X-ray should be correlated with other investigations. A high index of clinical suspicion is essential, as an accompanying hematoma often confounds the diagnosis.²²

CONCLUSION

TAWH as a rare entity has a confusing clinical picture and requires a high index of suspicion for prompt diagnosis and the management. TAWH should be suspected in a patient with tender, localized swellings of the abdominal wall following blunt trauma. USG and computed tomography of the abdominal are the helpful investigations to diagnose the hernia and associated intra-abdominal injuries. In all cases of wall defects with bowel herniation, one must take up urgent surgical measures to prevent further bowel injury and to avoid complications. Early surgical repair is necessary for definitive treatment. Such hernias, if missed, can result in high morbidity and may prove fatal.

Laparotomies or midline incisions rather than incisions directly over the defects, are preferred for proper assessment of injury state and incidental pathologies. Mesh repair may be desirable in the elderly with weak anterior abdominal wall so as to prevent the long-term complications of recurrences.

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PREVIOUS SCIENTIFIC PRESENTATION:

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Authors declare no conflict of interest

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