

Case Report

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Intestinal herniation through anterior abdominal wall-sequalae of coffee machine burst: a rare case report and review of literature

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ABSTRACT

Evisceration of gut loops following blunt trauma abdomen leading to abdominal wall disruption is a rare entity. These injuries come under umbrella term of traumatic abdominal wall hernia (TAWH). The most common mode of trauma has been road side accidents. Many case reports of bicycle handle injuries leading to evisceration have been reported. But, TAWH occurring after injury due to explosion of household accessories has not been reported. The present case describes such condition and the management that followed.

Keywords: Blunt trauma abdomen, Intestinal herniation, Traumatic abdominal wall hernia, TAWH

INTRODUCTION

Traumatic abdominal wall hernia (TAWH) comprises of herniation of abdominal contents through abdominal wall following trauma.¹ It is very rare with prevalence of 0.2-1% in reported series.² Abdominal evisceration associated with TAWH is rarer, with incidence of 1 in 40,000 trauma patients.³ The precise pathogenesis is incompletely understood, but they are thought to occur due to rise of intra-abdominal pressure and presence of synergistic shearing force that leads to abdominal wall musculature disruption and damage to fascial layers.⁴ Here, we present a case report of intestinal evisceration following blunt trauma abdomen due to blast in coffee machine.

CASE REPORT

A 25-year-old male presented to surgery casualty with alleged history of injury to anterior abdominal wall by explosion of a coffee maker while attending some marriage function. The vitals at the time of presentation were pulse rate of 86/min, blood pressure of 144/70 mm of Hg, respiratory rate of 22/min. On abdominal

examination, small bowel gut loops were seen herniating through a defect in right iliac fossa (Figure 1). There was generalized tenderness, guarding and rigidity all over the abdomen. The patient was immediately taken up for exploration in emergency. The herniated loops were assessed. They were congested and dilated, with no evidence of any ischemic or gangrenous changes (Figure 2). All other intra-abdominal organs were assessed and were found normal. Reduction of eviscerated gut was done along with primary closure of abdominal wall defect (Figure 3). The patient was discharged after uneventful post-operative recovery on 6th post-operative day.



Figure 1: Gut loops seen herniating from defect in anterior abdominal wall.



Figure 2: Intra-operative assessment of viability of gut loops. Small intestine seems healthy.



Figure 3: Abdominal wall defect after reduction of herniating contents, planned for primary repair.

DISCUSSION

The incidence of abdominal wall injuries after trauma is 6-10%.⁵ Blunt abdominal trauma leading to TAWHs are rare, approximately 1% incidence.⁶ They are linked to both high energy injuries, like traffic accidents, falls from height and low energy injuries, like bicycle handle injury.^{7,8} Trauma from household objects is very rare and this mode of trauma has not been reported yet. Our case report provides information about this rare mode of trauma. Diagnosis of TAWH can be obvious when there is complete evisceration of gut. But, most of the times, the diagnosis is difficult to make because the extent of involvement of deeper structures cannot be determined by examining the skin wound. So, in such cases, various radiological investigations like ultrasonography, multidetector computed tomography (MDCT) or magnetic resonance imaging (MRI) are required. So, a high index of suspicion is a must to reach to such diagnosis in a case of blunt trauma abdomen.⁹ The basic pathogenesis behind development of TAWH is incompletely understood. But, the most acceptable explanation is that it is a product of both sudden surge in intra-abdominal pressure and synergistic acting shearing force provided by the trauma mechanism. This results in disruption of abdominal wall fascial layers and musculature system.⁴

TAWHs are generally categorized into three major types: (a) a small abdominal wall defect caused by low-energy trauma with small instruments, e.g., bicycle handlebars, (b) a larger abdominal wall defect caused by high-energy injuries, e.g., road traffic accidents or falls, and (c) rarely,

intra-abdominal herniation of the bowel caused by deceleration injuries.¹⁰ Abdominal evisceration (AE) is an extreme form of TAWH. It tends to occur at points which are anatomically weak, e.g., the lateral rectus, lower abdomen and inguinal region. It occurs when greater amount of force is focally delivered to these anatomically weaker points. In a patient who has concomitant abdominal wall hernia with gut evisceration, additional investigations are required to rule out other associated intra- and extra-abdominal injuries. CECT Abdomen and Pelvis is the preferred modality in a patient of TAWH in which there is suspicion of intra- and extra-abdominal injuries. But it is only done if the patient is hemodynamically stable. A hemodynamically unstable patient warrants exploration. The incidence of associated intra-abdominal injuries in patients of TAWH is as high as 30%.¹

A CT scan based abdominal wall injury scale was described by Dennis et al, with overall injury severity graded on a scale from I to VI (Table 1).⁶ Of note, among the 140 patients with CT-diagnosed abdominal wall injuries in that study, only 3 had TAWH (grade V injury) and none of the patients had grade VI injury (i.e., complete abdominal wall disruption with evisceration). This case report describes grade VI injury, an extremely rare finding.

Table 1: Abdominal wall injury scale described by Dennis et al.⁵

Grade	Description
I	Subcutaneous tissue contusion
II	Abdominal wall muscle hematoma
III	Singular abdominal wall muscle disruption
IV	Complete abdominal wall muscle disruption
V	Complete abdominal wall muscle disruption with herniation of abdominal contents
VI	Complete abdominal wall muscle disruption with evisceration

The management of TAWH is surgical, regardless of presence of any associated injuries. Treatment includes surgical repair, done via laparotomy with a separate midline incision. The intra-abdominal organs are assessed for any associated injuries and closure of abdominal wall defect is done either primarily or using mesh. Many a times, immediate abdominal wall reconstruction is not possible and staged abdominal wall closure may be required. Long-term follow-up is needed to ensure that both cosmetic and functional outcomes are satisfactory. It is also important to monitor the patient for the possibility of a recurrent hernia at the injury site.¹¹

CONCLUSION

Traumatic abdominal wall herniation (TAWH) is a rare presentation following blunt trauma abdomen. They may or may not be associated with intestinal evisceration.

A high index of suspicion is required at the time of diagnosis. Imaging modalities like CECT are useful. Management consists of laparotomy with repair of abdominal wall defect either using mesh or primary closure. They are at risk of recurrent hernia in the future.

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