

# CASE REPORT

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## TRAUMATIC ABDOMINAL WALL HERNIA: A RARE CASE REPORT

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**ABSTRACT:** Traumatic abdominal wall hernia is an uncommon injury despite the high prevalence of blunt abdominal trauma. Traumatic abdominal hernia was first described by Selby in 1906. In worldwide literature, less than 50 cases of Traumatic abdominal wall hernia have been reported with only three to five cases from India.<sup>[1, 2]</sup> We are reporting a case of TAWH resulting from a blunt injury sustained by a quarry worker and discussion on the management of such injuries.

**KEYWORDS:** Traumatic abdominal wall hernia, blunt abdominal trauma, mesh repair.

**CASE REPORT:** A 56 year old male patient who is a quarry worker presented with pain abdomen and vomiting following blunt trauma abdomen to the emergency department. He sustained this injury by hitting to a drilling machine while working. His vitals were stable at the time of presentation except for tachycardia. Clinical examination revealed contusion of size 4x3 cm over left lumbar area with marked tenderness and a vague swelling in the left lumbar & left hypochondriac areas.

Routine blood investigations were in normal limits. X ray chest and abdomen were normal. USG abdomen revealed localised contusion and muscle tear involving anterior abdominal wall muscles in left hypochondriac and lumbar regions approx. defect measuring 8x6cm with herniation of small bowel loops. No other visceral injuries or free fluid noted in the abdomen.

Exploratory laparotomy was performed through an incision over the swelling and findings were a 10x8 -cm wide gap in the oblique muscles of the abdomen, with small bowel loops along transverse colon herniating into the defect. After reduction of herniated contents, and confirming that there are no other injuries, abdominal wall defect was repaired primarily with reinforcement by inlay 15x15cm prolene mesh. Patient was discharged in satisfactory condition. On follow-up after 6 months, patient is doing well and asymptomatic.

**DISCUSSION:** Blunt traumatic abdominal hernia is defined as a herniation through disrupted musculature and fascia, without skin penetration with no evidence of a prior hernial defect at the site of injury.<sup>[3]</sup> The criteria for traumatic abdominal wall hernia, as defined by both Cain and Damschen include immediate appearance of the hernia through disrupted muscle and fascia after blunt abdominal trauma, and failure of the injury to penetrate the skin.<sup>[3, 4]</sup>

The pathophysiology, as proposed by Gauchi, 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.<sup>[5]</sup> The skin is more elastic than the underlying structures and therefore remains intact.

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Categorization is generally based on either the defect size and location or the intensity and mechanism of injury force. Three types of TAWH were described by Wood et al. according to the mechanism and size of injury.<sup>[1, 6, 7]</sup> The first is caused by low-energy injuries such as bicycle handlebar impact. In this type of hernia, associated intra-abdominal injuries are relatively infrequent. The second type is sustained from a high-energy injury such as a motor vehicle accident or a fall from a height. The fascial defect is generally large. Coexisting intra-abdominal visceral injury is common and depends upon the location of the herniation. The third type is an intraabdominal herniation of the bowel with deceleration injuries. Gauchi et al. classified it into "focal" and "diffuse" types according to the mechanism of injury.<sup>[5]</sup> Focal TAWHs usually result in small hernias and are rarely associated with intra-abdominal injury. The diffuse type, however, results from pressure and shearing injuries and has a high association with significant intra-abdominal injuries (up to two-thirds).

The overall incidence of associated intra-abdominal injuries in TAWH has been reported to be as high as 30%.<sup>[5]</sup> Although supraumbilical and flank hernias have a higher risk of concomitant visceral injuries, infraumbilical lesions are less likely to be associated with intra-abdominal injury.

Prompt diagnosis, however, must start with a high index of suspicion and be based on the nature, mechanism, and force of the injury.<sup>[8, 9]</sup> Blunt traumatic hernias are sufficiently uncommon to preclude identification of specific anatomic patterns, except for the classically recognized pattern of acute diaphragmatic hernia.<sup>[10]</sup> TAWH as a rare entity has a confusing clinical picture. Such hernias, if missed, can result in high morbidity and may prove fatal.<sup>[11]</sup> 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.

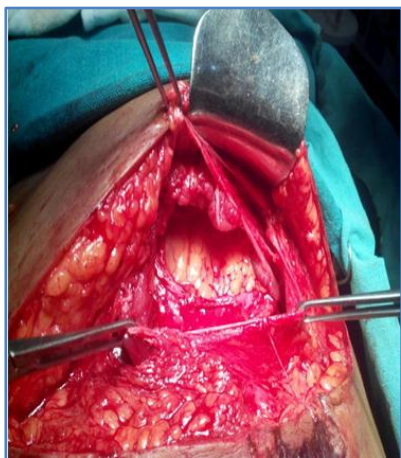
CT<sup>[12]</sup> and USG<sup>[3, 13]</sup> of the abdomen are the investigations of choice. CT scan can define the anatomy of disrupted abdominal wall, differentiates hernia from haematoma, can detect intraabdominal solid organ injury. It is, however, not reliable in cases where hollow viscus injury or mesenteric tears are suspected. Clinical findings and chest X-ray should be correlated with other investigations.

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 musculofacial 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.<sup>[7]</sup> 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.<sup>[10, 14]</sup> Primary approximation of the traumatic defect can be done by non-absorbable sutures with or without mesh, as most case reports indicate.<sup>[3, 5]</sup> 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.

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Diagnostic laparoscopy seems to be an excellent adjunct in the management of TAWHs. In the event of a negative diagnostic laparoscopy, one can repair the hernia by the local approach<sup>[15]</sup> and avoid unnecessary general abdominal exploration. Moreover, by using the laparoscopy to rule out any significant intra abdominal injury or strangulated bowel, the traumatic hernia can be repaired in a semi-elective setting if there are other injuries that need to be dealt with more urgently.



**Fig. 1: Intraoperative photo showing defect in abdominal wall**



**Fig. 2: Surgical repair by prolene mesh**

**CONCLUSION:** 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. Incisions directly over the defects, instead of midline incisions are preferred for proper repair of the defect.

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