Abstract

Introduction: Traumatic Abdominal Wall Hernia (TAWH) with rupture of small bowel due to blunt traumas are extremely rare phenomena in our emergency department. In western medical literature, only few cases have been reported especially with intra-abdominal injuries. Traumatic Abdominal Wall Hernia is defined as herniation through disrupted musculature and fascia, associated with adequate trauma, without skin penetration and no evidence of a prior hernia defect at the site of injury. We described TAWH associated with intraabdominal injury.

Case Report: A 59-year-old male, was admitted to the emergency department with complaints of pain and a bulge at his left lumbal region after falling from a motor bike. We found a painful hematoma and a soft tissue bulge at the left lumbal region, but no guarding or rigidity over the abdomen at the initial examination. An Abdominal CT Scan showed a traumatic hernia of the left lateral abdomen, with protrusion of bowel and laceration of the bowel. The patient underwent exploratory laparotomy, and the herniated of small bowel rupture was found.

Conclusion: Surgical exploration is the definitive treatment in the TAWH case, especially hernia accompanied by rupture of the content of the hernia sac.

Keywords: Abdominal Wall Hernia, Blunt Trauma, Traumatic Hernia
CASE PRESENTATION

A 59-year-old male patient was brought to our emergency department soon after falling from a motor bike. The mechanism of injury, the patient was riding motor bike and then hit by a truck from behind with his abdomen bump to the asphalt.

The patient complained of pain and a bulge at his left side abdomen. He was hemodynamically stable on presentation, with Glasgow Coma Scale of 15/15. The physical examination of the abdomen revealed a large hematom and a soft tissue bulge at the left lumbal region. Palpation of the left abdominal wall was extremely painful. There was no guarding or rigidity over the abdomen on the initial examination.

The laboratory findings within normal limit. A computed tomography (CT) scan of abdomen showed a traumatic hernia of the left lateral abdomen, with protrusion of bowel and laceration of the bowel.

The exploration of the abdomen through a median incision revealed a defect at the left lateral abdomen about 6 cm in size, with a complete disruption of all muscular layers. The defect had expanded to the subcutaneous tissue and the herniated bowel loop was rupture. We found the omentum and total rupture of jejunum had herniated through this defect; however the skin was intact. The rupture about 120 cm from Treitz Ligament. We also identified mesenterial rupture about 5 cm from the jejunum rupture. This patient underwent Laparotomy and primary closure of the defect, with debridement of any surrounding devitalized tissue and resection of the jejunum and end to end anastomosis.

No complication was observed in the patient during postoperative follow up and he was discharged on postoperative day 6. After two months, we didn’t see any recurrence on the operation area.
Damschen et al. defined TAWH as a “herniation through disrupted musculature and fasciawhich is associated with a blunt trauma but withoutskin penetration or evidence of a prior defect at the site of injury”. Various criteria have been laid down from time to time to define TAWH, but of prime importance is the presence of intact skin at the site of herniation, and the absence of any hernia at the site prior to the trauma. TAWH usually occurs as result of a direct blow to the abdominal wall, which results in disruption of the muscle layers, but the skin remains intact since the force was not sufficient enough to penetrate the skin. A tangential shearing force associated with increase in abdominal pressure has also been hypothesized to be responsible for muscle or fascial disruption.

The first traumatic hernia was reported in 1906 with only a small number of presentations added to the literature prior to 1974. Following 1974, only 34 documented cases of blunt abdominal wall disruption had been reported with only an additional 6 cases added to the literature 9 years later. The isolated incidences of TAWH following blunt trauma are reported to be 0.9–17%, respectively. However, the true incidence may be underestimated because of under- or misdiagnosis. In western medical literature, only few cases have been reported especially with intra-abdominal injuries.

Wood et al, categorized traumatic abdominal hernias into 3 types, depending on the size of the rupture and the cause of the injury: 1) small defects caused by impact against the blunt objects, e.g. handle bars (also known as handle bar hernia); 2) larger defects sustained during motor vehicle crashes; and, rarely, 3) intra-abdominal bowel herniation that is seen associated with deceleration injury.

Diagnosis of a hernia may depend on careful clinical examination of the abdominal wall, and on detailed recording of the patient history. The primary point of
diagnosis is suspicion of TAWH, which should be considered in any patient with severe abdominal trauma, especially in the presence of a flank hematoma or pelvic fracture. Abdominal wall hematoma, abdominal wall tenderness, abrasion, or ecchymosis may be the only findings. An obvious fascial defect may exist with or without reducible hernia.\textsuperscript{1}

The most common locations are areas of relative anatomic weakness: the lumbar region and the lower abdomen or are lateral to the rectus sheath. In more severe cases, diaphragmatic rupture may occur, and herniation of abdominal contents into the chest may be seen.\textsuperscript{6} Clinical manifestation of this patient are hematom and a soft tissue bulge at the left lower abdomen, with local tenderness and no signs of peritonitis in the initial examination. Differential diagnosis includes rectus sheath hematoma, tumor or preexisting hernia, and may not be possible by physical examination at all.\textsuperscript{1}

As was in our case, in the hemodynamically stable patient, the advent of CT Scan has allowed delineation of abdominal wall defects as well as associated intra-abdominal injuries prior to surgery. The widespread use of CT in patients with acute trauma has facilitated early diagnosis. CT is also useful for differentiating hernia from hematoma, to define the anatomy of disrupted abdominal wall layers, and to evaluate associated injuries accurately.\textsuperscript{5,6}

Surgery is primary modality of treatment which can be emergent or delayed. Probability of intra-abdominal injuries plays the most important role in deciding the timing of operative intervention. Immediate exploration with hernia repair is generally accepted as favourable choice as it allows to rule out any intraabdominal injury and prevents strangulation of herniated bowel which may occur hours to days after injury.\textsuperscript{7}
The mortality associated with isolated TAWH is rare. It is usually the associated injury that can lead to mortality in such patients. All patients who are diagnosed with TAWH should be explored as early as possible because of chances of early as well as late incarceration of the bowel in the defect, leading to the subsequent perforation or strangulation.²

Such repair can be done with primary closure, if the condition of the surrounding tissue is good, or with prosthetic material if the defect is too large.⁵ In our case we performed resection of the jejunum and end to end anastomosis and debridement with primary closure of the defect. Though we did not require the use of a prosthetic mesh for the closure of the defect, it is to be considered only in those cases where there is no hollow viscus injury or where a tension-free repair of the tissue is not possible. For cases without solid organ and hollow viscus injuries, relatively large defects, and tension for direct closure, primary mesh repair should be considered.⁵,⁷ The advantages of mesh repair are less chance of recurrence and the ability to be used in large defects where native tissue cannot be approximated. Disadvantages are that the mesh frequently causes infectious complications and may cause intestinal adhesion and erosion in the trauma setting.⁸

Laparotomy is the common approach used in emergency treatment of TAWH, but if the requisite surgical expertise is available, a laparoscopic approach should be considered first.³ The use of laparoscopy has also been advocated by some, especially in hemodynamically stable patients and with equivocal CT scan.² A laparoscopic approach to traumatic abdominal wall hernia can aid in the delineation of the hernia and allow for a safe and effective repair.⁴ TAWHs are exceedingly rare, and the reporting of repairs in the literature is infrequent. Those reported show that open repairs are often complex, require large incisions that produce significant morbidity and have a high recurrence
rate. Kenneth, et al in 2012 had reported the laparoscopic approach using a tension-free repair, with prosthetic mesh in a delayed setting, was a safe and effective option for their patient. The laparoscopic approach versus laparotomy must be carefully dictated by the mechanism of injury, co-existing injuries, extent of injuries, and the skill base of the surgeons at each respective center. In our department is still no experience of the laparoscopy in trauma patients.

Complications due to herniation can appear early or late following injury. Early complications are bowel ischemia, perforation, strangulation, incarceration, and infection. A reported late complication is recurrent herniation. If the diagnosis and surgical repair are delayed, risk of infection, bowel obstruction, strangulation, and incarceration increases.
REFERENCES

Traumatic Abdominal Wall Hernia with Rupture Of Small Bowel – a case report

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Clinical Patient

Fig.1 Patient after blunt abdominal trauma with hematom at the left lumbal region.

CT Scan Abdomen with Contrast
Fig. 2 CT scan image showing a defect at left lateral wall abdomen with protrusion and laceration of the bowel.
Fig. 3a and 3b. Intra-operative photograph showing the omentum and rupture of jejunum had herniated through the hernia.

Fig. 4 intra-operative photograph showing the total rupture of jejunum and rupture of mesenterial