



Traumatic Abdominal Wall Hernia - A Case Report

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Abstract : Traumatic abdominal wall hernia is a rare entity in adults and it usually occurs following road traffic accidents with blunt injury abdomen. It is more common in children and presents as handle bar hernias. Here I present a case of adult TAWH for which emergency laparotomy with mesh repair was done. TAWH needs a high degree of suspicion to be diagnosed and emergent surgical intervention is mandatory in cases with intra-abdominal injuries.

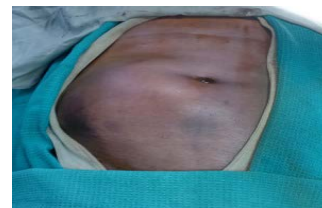
Keyword : TAWH-Traumatic Abdominal Wall Hernia, RIF-Right Iliac Fossa

INTRODUCTION

Traumatic abdominal wall hernia (TAWH) in adults is caused by blunt injury abdomen mostly after road traffic accidents. In worldwide literature, fewer than 100 cases of traumatic hernia have been reported. Traumatic hernia with unstable vitals and signs of generalised peritonitis usually require emergency laparotomy. TAWH 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".² Skin can be bruised but normally remains normal. Most of the surgeons advocate immediate surgery due to the high incidence of intra-abdominal injuries. Prevalence of TAWH is approximately 1%.

CLINICAL PRESENTATION

A 57 year old male patient with history of road traffic accident (bus toppling over, patient sustained abdominal blunt trauma) presented to the emergency room with mild abdominal wall swelling over RIF with minimal contusion and pain abdomen. On examination, patient was dyspnoeic, respiratory rate 24 per minute, pulse - 124 per minute, BP - 140/90mm Hg., tender diffuse mass palpable in the RIF with resonant note on percussion, guarding and rigidity of the abdomen noted and bowel sounds were heard over the swelling. Patient was resuscitated with intravenous fluids and supportive management. CT scan done on an emergency basis and it showed bowel herniating through a 15 cm irregular defect in anterolateral abdominal wall musculature on the right with haemoperitoneum. The bowel loops were seen in the subcutaneous plane.

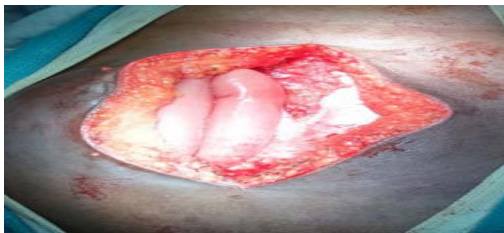


MILD SWELLING ANTEROLATERAL ABDOMINAL WALL



CT SHOWING HERNIATED BOWEL LOOPS

In view of intra-abdominal injury being suspected, it was decided to take the patient for emergency laparotomy. Patient was put in the supine position and abdomen was opened by midline laparotomy incision. About 500 ml of haemoperitoneum was noted. From inside the abdomen an irregular defect was seen in the right lateral abdominal wall involving all the muscles extending about 5 cm below the right costal margin to 3 cm above the right inguinal ligament vertically and 3 cm from the midline to the right to the right anterior line horizontally. About 50 cm of small bowel was seen herniating this defect to lie in the subcutaneous plane. A 2 cm jejunal serosal tear with no other bowel injury was noted.² mesenteric rents and contusion of the bowel was also noted. Bowel was viable. There was no solid organ injury.



BOWEL IN THE SUBCUTANEOUS PLANE



DEFECT IN THE RECTUS



MESENTERIC RENTS

Primary repair of the serosal tear and mesenteric rents done using 2-0 mersilk. Primary repair of defect done by non absorbable suture material, polypropylene, in two layers followed by mesh repair using 20cmx20cm polypropylene mesh. The subcutaneous tissue was healthy and viable. Suction drain was kept in place and abdomen closed in layers after complete haemostasis and mop and instrument count. Post operatively, patient was put on intravenous antibiotics and early chest physiotherapy. There was no wound infection or mesh infection and drain was removed on the 3rd post operative day. Sutures were removed on the 12th post operative day and patient discharged on the 15th post operative day. On follow up at 1 month and 6 months, patient had no complaints and no recurrence.

DISCUSSION

Traumatic abdominal wall hernia was first described by Selby in 1906(1). The criteria for TAWH was defined by Clain(2) and Damschen et al(3) and it includes immediate appearance of the hernia through the disrupted muscle and fascia after blunt abdominal trauma and failure of the injury to penetrate the skin due to its elasticity. The pathophysiology was proposed by Ganchi(4) and it involves the application of a blunt force to the abdomen over an area large enough to prevent penetration of the skin but 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. Damschen et al also reported that associated intra abdominal injuries are infrequent. The apparent explanation for the infrequency of associated injury is the commonly observed resistance of hollow viscera to blunt injury. The fact is that the trauma delivered in most cases is in areas away from the parenchymal abdominal as reported by Yarbrough. Prevalence of TAWH is approximately 1% . Wood et al identified three categories based on the size of the rupture and the cause of the injury(6) (1) The lower quadrant abdominal defects and hernias

caused by blunt trauma most commonly from a handlebar, (2) Larger defect hernias that follow motor vehicular crashes, (3) Intra abdominal bowel herniation into rents in the retro-peritoneum. Lane et al divided TAWH into two types(7), (1) Low energy injuries following impact on small blunt objects, (2) High energy injuries usually from automobile and pedestrian collisions. High- energy injuries have been reported with significant intra abdominal injury. The most commonly reported injuries were mesenteric tears, serosal tears and bowel injury. There are two possible mechanisms of blunt mesenteric injuries: (1) a crushing force applied to the bowel against the spine and (2) shearing forces of the bowel and mesentery along the lines of attachment . Netto et al carried out a retrospective review of 34 patients with TAWH, and made three recommendations(9). (1) The mechanism of injury should be a deciding factor; whether a patient with TAWH needs an urgent laparotomy or not. (2)Clinically apparent anterior abdominal hernias appear to have a high rate of associated injuries and need urgent laparotomy as in one of our cases. (3) Occult TAWHs diagnosed only by computed tomography may not require urgent laparotomy or hernia repair as reported. TAWH with bowel injuries or transections is a real surgical emergency(5). It needs high index of suspicion and low threshold for surgery. It is better to get CECT abdomen to know exact details of associated injuries in abdomen.

Immediate exploration with hernia repair is generally accepted as a favourable choice as it allows to rule out any intra-abdominal injury as well and prevents strangulation of the herniated bowel which may occur hours to days after the injury. Choice of suture material depends on Surgeon's preference and most authors advocate use of non absorbable monofilament for repair of the defect. Mesh repair is contraindicated in contaminated wall defects, because of the high risk of mesh infection. Most authors have reported immediate exploration with layer-by-layer closure of defect with or without mesh as the preferred procedure. In patients who are haemodynamically stable and with equivocal CT scans findings, laparoscopy can be used as a safe method for assessing patients with both blunt and penetrating abdominal trauma, thus reducing the number of negative or non-therapeutic laparotomies.

CONCLUSION

Traumatic hernia is rare and challenging. It requires a high index of suspicion for prompt diagnosis and low threshold for intervention. TAWH, although rare, should be suspected in all cases of high velocity injuries with abdominal wall swellings and CECT should be used for accurate diagnosis. Emergency midline exploration with examination of abdominal contents and repair of hernia with non absorbable sutures with or without use of mesh is favoured. Delayed repair may be considered in selected cases but the hernia may enlarge and defect may widen over time, making repair technically demanding and exhaustive. Thus, TAWH are best managed on a case by case basis.

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