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A TRAUMATIC SPIGELIAN HERNIA WITH LOW VELOCITY BLUNT TRAUMA: A CASE REPORT	KEY WORDS:

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ABSTRACT	Traumatic abdominal wall hernia (TAWH) is a rare unusual type of hernia resulting from blunt abdominal trauma. It develops following the inertia of sudden, high-energy blunt trauma or focused low-energy encounter. A 55-year-old cyclist presented to the emergency department following handle bar trauma. Clinical examination demonstrated a bulging mass at the right lower abdomen, resulting from impact with the bicycle handlebar. A ultrasonogram scan of the abdomen revealed a disruption of both rectus abdominis muscle and linea alba at the lower abdomen with loops of small bowels and omentum herniating through the defect. Exploratory laparotomy showed TAWH containing loops of small bowel and omentum , no associated bowel injury .Reposition of bowel with repair of the posterior abdominal wall defect using interrupted polydioxone sutures was performed. The patient recovered well postoperatively and was discharged twelve days later. A follow-up at 2 month showed no evidence of recurrence.
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<p>INTRODUCTION</p> <p>A spigelian hernia is a rare ventral hernia that is defined as herniation of abdominal contents or peritoneum through a defect, namely the Spigelian fascia which is comprised of the transversus abdominis and the internal oblique aponeuroses. Traumatic abdominal wall hernia after blunt trauma is a rare entity. Spigelian hernia typically results from underlying pathology which increases intra-abdominal pressures, abdominal wall trauma, or degeneration of the aponeurotic layers of the abdominal wall as happens with aging or disorders of collagen synthesis. In other cases, this hernia can be idiopathic and has previously been referred to as a “spontaneous lateral ventral hernia.”[1][2]</p> <p>Spigelian type hernias are exceedingly rare, with an incidence ranging from 0.12% to 2% of all abdominal wall hernias.[1][2] Incidence has been observed primarily in females and those over 60 years of age. As with other abdominal wall hernias, patients with certain comorbidities that lead to elevated intraabdominal pressures or weakening of abdominal fascial layers have an increased risk of herniation. These conditions include chronic obstructive pulmonary disease (COPD), which produces chronic cough, patients with cirrhosis who develop ascites, or pregnant women, or obese patients. Patients who suffer from collagen disorders are at elevated risk for herniation, including Ehlers Danlos syndrome or the elderly.[1][2][3] These hernias rarely occur in children, and when they are described, they may be associated with other anomalies such as undescended testes.</p>	<p>They can easily be overlooked in patients who have multiple trauma, as its signs and symptoms may be variable due to the presence of multiple injuries. Imaging with computed tomography or ultrasound confirms the diagnosis as well as identifying any associated injuries. Although surgery is the standard treatment for traumatic abdominal wall hernias, there is no consensus on the early or late repair of the defect. Some authors recommend early surgical intervention in order to avoid the risk of intra-abdominal organ injury, incarceration, and strangulation. In this study, we report management of a unique case, which did involved emergency surgery. Long-term outcome is successful. Elective hernia repair may be safe and feasible in stable patients.</p> <p>Case Presentation-</p> <p>A 55-year-old male was brought in by ambulance with alleged history of road traffic accident in the form of accidental blunt trauma abdomen due to hit by handle of bicycle while cycling came with complaint of abdominal pain and lump over right lower abdomen. During the primary trauma survey right paraumbilical region ring shaped contusion was discovered (Fig. 1). On per abdomen examination right paraumbilical lump of approx. 6x6 sqcm with positive cough reflex was found. The patient was neurologically normal with a Glasgow coma scale (GCS) of 15 and his initial vital signs were significant for tachycardia with a systolic blood pressure over 112/70mmhg. Focused assessment with sonography for trauma (FAST) was negative for any intraabdominal or intrathoracic bleeding.</p>
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Figure.1 Right Paraumbilical Contusion With Positive Cough Reflex In A Patient Of Blunt Trauma Of Abdomen

Investigations

The complete blood cell count (CBC) showed a leucocytosis of 14500/cumm, hemoglobin of 15.5 g/dL, and platelets of 231×10^6 /cumm. Basic metabolic panel was within normal limits. Coagulation tests showed a prothrombin time of 15.2, international normalized ratio of 1.08. Ultrasonogram was performed revealing 2.8 cm defect over anterior abdominal wall in right paramedian position and infraumbilical region through which bowel loops and omentum herniated. The patient was admitted to the surgical intensive care unit (SICU) for hemodynamic monitoring.

Treatment

On hospital day 0 itself, the patient underwent emergency laprotomy in which intraoperatively defect was noted in right paraumbilical region was noted, An incision was made in midline joining Xiphisternum and pubic symphysis and the external oblique was dissected lateral to the linea alba, then vertically and separated from the internal oblique. While providing adequate exposure, the team noted that there was defect of 4x4sqcm partial tearing of transversus abdominis along with posterior rectus sheath and peritoneum, bowel found to be herniating from the defect with normal texture and no changes of strangulation. The underlying bowel contents were examined and noted to be intact without any injury. The repair was done with approximating anatomical counterparts. A synthetic mesh was used over the repair of the peritoneum and posterior rectus sheath in Figure 2a. This was performed by fixing mesh over posterior rectus sheath with transversus abdominis muscle Figure 2b, c. Lastly, the internal oblique muscle and external oblique. The patient left the operating room in stable condition with an abdominal binder in place. Postoperatively, antibiotics were discontinued and his WBC was 10,800 /cumm.. He returned postoperatively to the SICU for close hemodynamic monitoring. The patient was shifted to the surgical ward on hospital day 2.

The patient was advanced to a regular diet by hospital day 4. On hospital day 14, the patient was discharged.



Fig. 2 A,b,c Exploratory Laprotomy{a} With Posterior Rectus Sheath Repair {b} With Synthetic Mesh Placement {c}

Follow Up And Outcomes

On hospital day 4 during daily dressing changes, serous fluid was noted to be draining from his hernia repair incision which also had tenderness. These findings were consistent with a seroma, and due to the absence of incision site warmth, erythema, edema, or purulence and a normalizing WBC, no additional antibiotics were initiated. By hospital day 8, drainage from the seroma site had ceased and by hospital day 14, the patient was discharged with removal of sutures. The patient was working with physical and occupational therapy with significant improvement. At departure, there were no documented complaints related to his abdominal surgical site and his seroma had resolved.

DISCUSSIONS

Development of traumatic abdominal wall hernia is an important consideration in blunt abdominal trauma. Blunt abdominal trauma transiently increases intra-abdominal pressures and allows for herniation through the spigelian fascia additionally disruption of abdominal wall musculature [4]. Diagnosis of such an injury can be difficult as some patients are asymptomatic while others complain of dull abdominal pain with a mild bulge [5]. Often, it is difficult to find physical evidence of TAWH on primary or secondary trauma survey. This highlights the importance of radiological imaging. Abdomen and pelvis ultrasonogram allows for visualization of abdominal wall defects and provides information on size, location, and the presence of any neighboring structural damage [6]. Our radiographic images demonstrate the partial defect of the abdominal wall musculature which confirmed the presence of TAWH versus other differential diagnoses related to the presence of contusion on examination.

In the setting of TAWH, open hernia repair is recommended, although laparoscopic repairs have been reported in literature [7]. Open repair is recommended due to the possibility of coexisting structural damage that requires prompt visualization and expeditious repair [7]. In our case, an open approach with incisions indirectly near the defect was necessary due to the mechanism of injury, partial and small disruption of left lateral abdominal musculature, and strong suspicion for concurrent intra-abdominal injuries. Upon opening the abdomen, we noted the extent of damage to the abdominal wall musculature. Primary repair with combination of anatomical repair and synthetic meshplasty was necessary. While mesh repair is recommended regardless of open or laparoscopic technique, the small abdominal disruption in our patient warranted combination of anatomical repair and synthetic meshplasty [8]. Synthetic meshes provide the benefit of bridging abdominal wall defects and are less prone to infection, enterocutaneous fistula formation, and adhesion formation; however, they confer more mechanical support than biological counterparts [9, 10]. In this case, we used a combination of both anatomical repair and synthetic mesh. The synthetic mesh provided a bridge between the avulsed transversus abdominis as well as a bolster for the overlying repaired internal oblique. The prolene soft mesh provided tensile strength to the repair to reduce the risk of future recurrence.

While our patient did not experience re-herniation during his acute hospital stay, he did develop a seroma over the incision site, without any clinical signs of infection. In future repairs, we would consider placement of a drain to prevent seroma formation. Aside from the seroma, our patient's postoperative course had no further complications related to the hernia repair.

A diagnosis of TAWH is difficult and often requires three-dimensional imaging to accurately visualize the underlying hernia. More importantly, repair of the hernia is warranted to prevent future bowel strangulation. From our isolated case, we recommend utilizing anatomical repair in small muscular

avulsions overlayed with a synthetic mesh for increased support as compared to the more common combination of biological and synthetic mesh approach.

Car accidents are the most common (49 %) cause of TAWH, followed by bicycle handlebar injuries in 25 % of cases. Motorcycle accidents represent 14 % of all cases. In the remaining 12 %, common mechanisms of injury such as falling from height and strike by an animal are described. Surgical repair and meshplasty is inevitable it prevents potential complications such as infection, strangulation , or compression of adjacent structures.

CONCLUSION

Early recognition and surgical management of traumatic abdominal wall hernia are crucial for preventing complications and ensuring favourable patient outcomes. Surgical repair and meshplasty inevitable it prevents potential complications such as infection, strangulation , or compression of adjacent structures. This case emphasizes the importance of imaging and early surgical intervention in the effective management of these conditions.

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