Bullhorn Hernia: A Rare Traumatic Abdominal Wall Hernia

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Abstract

Traumatic abdominal wall hernia (TAWH) is rare despite the high prevalence of blunt abdominal trauma. Bullhorn hernia occurs as a result of a direct blow to the abdominal wall by the horn of a bull, which disrupts the muscles and fascia and leads to hernia formation. We report a rare case of bullhorn TAWH in a 70-year-old patient who presented with swelling at the left lumbar region. The patient was managed by immediate surgical intervention. A surgeon must have high index of suspicion for the diagnosis of this condition as missed hernias in this setting pose a high risk of strangulation and gangrene.

Keywords: Blunt abdominal trauma, colostomy, mesh repair, primary repair

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Access this article online	
Quick Response Code:	Website: www.nigerianjsurg.com
	DOI: ***

Introduction

Traumatic abdominal wall hernia (TAWH) is uncommonly encountered despite the high prevalence of blunt abdominal trauma.[1] Bullhorn hernia is a rare, TAWH caused by direct trauma by the horn of a bull. TAWH is described as herniation through disrupted musculature and fascia associated with adequate trauma, without necessarily involving skin penetration or evidence of a prior hernial defect at the site of the injury. Skin can be bruised, but normally remains intact. In the normal course of events after blunt abdominal trauma, the brunt of the injury is borne by intra-abdominal organs, and the musculature is spared. However, at times, the shearing forces sustained during trauma may be transmitted in such a way that it causes disruption of the abdominal musculature and fascia with subsequent herniation at the site. Traumatic bullhorn hernia is a type of hernia that occurs after blunt abdominal trauma with muscle disruption.[2] Here, we report a unique case of a 70-year-old man hit by a bull with subsequent formation of hernia at the impact site, which was managed successfully by surgery.

Case Report

A 70-year-old male was presented to the emergency department after being hit by a bull. He presented with a complaint of pain in the abdomen and swelling in the left lumbar region [Figure 1]. On presentation, his vital parameters (blood pressure: 120/80, pulse rate: 72/min, respiratory rate: 18/min, temperature: afebrile) were stable. On physical examination, his left abdomen was found to have a bulging mass, not reducible, without definite ecchymosis. There was mild tenderness and rebound tenderness over the protrusion, but there was no muscle guarding or generalized tenderness over the whole abdomen. We suspected the abdominal protrusion to be caused by a fascial disruption, although the demarcation could not be clearly delineated by physical examination. The bowel sounds were normal. The findings from the initial laboratory studies were normal. Chest and abdomen X-rays were normal. Abdominal ultrasound showed a small amount of free fluid in perihepatic space, pelvis, and in between gut loops and protrusion of omentum from lateral abdominal wall.

After preoperative work-up, decision was made to operate. An incision was made over the herniation site, and omentum was found to be herniated out of the defect that was reduced into the peritoneal cavity [Figure 2]. After looking out for any bleeding from the omental vessels, blood collected in the peritoneal cavity was aspirated, and clots were removed, still looking out for the cause of hemoperitoneum. The surgery was converted into a midline laparotomy, and a thorough evaluation of solid organs and gut was carried out. Spleen, liver and small bowel were found to be normal.

Intraoperatively, there was gangrene of a part of the transverse colon in its distal 1/3rd part near splenic flexure with a tear in the mesocolon [Figure 3]. The gangrenous portion of the transverse colon was resected and converted into colostomy. The tear in the mesocolon was repaired. Both abdominal

Figure 1: Swelling left lumbar region with echymosis

Figure 2: Intraoperative picture showing parietal wall defect with omental protrusion

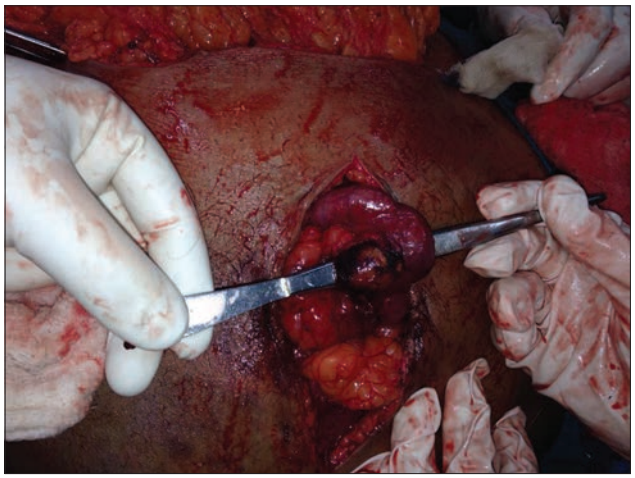

Figure 3: Perforated transverse colon with tear in transverse mesocolon

wounds were closed in layers. Patient felt well after the surgery and was discharged on the 7th postoperative day. Closure of colostomy and primary repair of the hernia were done 3 months after the initial injury.

Discussion

Acute, TAWH is rare. It is caused by direct trauma from an object without sufficient force to penetrate the skin, but with force sufficient enough to disrupt the underlying muscle and fascia. This is possible because the skin is more elastic than the underlying layers.[3] Several different mechanisms of a traumatic herniation of the abdominal wall have been described. One known mechanism is seen in patients involved in car crashes and wearing lap belts, so-called seatbelt hernia. Another known mechanism is a direct blow to the abdominal wall by a small object such as a handlebar or a hockey-stick, which disrupts the muscular fascia causing hernia.[4] Other mechanisms include herniation due to a fall, with an acute increase in intra-abdominal pressure,[5] or crush injuries causing tangential shearing stresses.[6] In our patient, the cause of hernia was bullhorn injury. It is stated that a direct blow to the abdominal wall by a bullhorn disrupts the muscular fascia, causing the hernia formation.

Wood *ds `k*.[7] classified these mechanisms into three types: (1) Small lower quadrant defects such as handlebar injuries; (2) larger abdominal wall defects such as motor accidents and (3) intra-abdominal herniation such as a deceleration injury. A retrospective study carried out by Netto *ds `k*.[8] in 34 patients with TAWH made three recommendations. First, they concluded that the mechanism of injury should be considered when deciding on operative intervention. Second, clinically apparent hernias often have associated injuries and warrant urgent laparotomy. Finally, occult hernias may be managed expectantly.

Traumatic abdominal wall hernia caused by bullhorn is commonly found in the lower abdomen such as inguinal region.[9] However, in our case the hernia was in the upper abdomen. Clinically, abdominal pain and locally bulging soft tissue at the ecchymotic area are the most common presentations in bullhorn hernia. Diagnosis of a hernia may depend on careful clinical examination of the abdominal wall and on detailed recording of the patient history; however, this is not always possible in a patient with acute trauma. Computed tomography (CT) scan is the most accurate diagnostic tool. It can define the anatomy of disrupted abdominal wall, differentiate hernia from hematoma and identify intra-abdominal injuries.[1]

Surgical intervention is the primary modality of treatment that can be emergent or delayed. Associated intra-abdominal injuries have the most important role in deciding the timing of operative intervention. Immediate exploration with hernia repair is generally accepted as a favorable choice as it allows us to rule out any intra-abdominal injury and prevents strangulation of herniated bowel that may occur hours to days after injury.[10]

For TAWH repair, the use of mesh has become the gold standard because of a significant reduction in recurrence rates compared to the primary suture repair. However, due to the potential for contamination in cases of high-energy TAWH repair, a primary suture repair technique has been recommended by some authors

because of the high (50%) wound infection rate even when mesh was not used.[11] In our case, we did not use any mesh as colostomy was made from the same wound at the abdominal hernia site.

Conclusion

Traumatic abdominal wall hernia, although rare, should be suspected in all cases of high-velocity blunt injuries with abdominal wall swellings, and CT should be used for accurate diagnosis. A surgeon must have high index of suspicion for the diagnosis of this condition as missed hernias in this setting pose a high risk of strangulation and gangrene. Apart from associated injuries, a delay in the diagnosis and intervention can significantly affect the outcome.

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How to cite this article: ????

Source of Support: Nil, **Conflicts of Interest:** None declared.