

Traumatic abdominal wall herniation

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ABSTRACT

Most reported cases of traumatic abdominal wall herniation result from seatbelt or handlebar injuries. The diagnosis is often made on physical examination or abdominal computed tomography (CT). We report a 59-year-old man with traumatic herniation through the rectus muscle following low-velocity blunt abdominal trauma. This patient was initially thought to have a rectus sheath haematoma and initial CT showed a soft tissue haematoma over the left lower anterior abdominal wall but no herniation. The traumatic herniation was diagnosed four days later, and confirmed on CT. Intraoperatively, a segment of the sigmoid colon was found to have herniated through the rectus defect and was gangrenous with impending perforation. A left hemicolectomy followed by primary repair of the defect was done. This case highlights the need for a high index of suspicion for traumatic herniation in patients who sustain low-velocity blunt abdominal wall trauma even when initial CT scans are negative.

Keywords: abdominal hernia, abdominal wall trauma

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INTRODUCTION

Traumatic herniation is a rare occurrence following blunt abdominal trauma. There have been few reports in the literature of trans-rectus herniation.⁽¹⁾ Most herniations are diagnosed at presentation by physical examination or on abdominal computed tomography (CT), and most authors have advocated immediate laparotomy and repair because of the high incidence of associated intra-abdominal injury. We report a case of traumatic herniation through the rectus muscle that was initially thought to be a rectus haematoma, and was treated nonoperatively. The herniation became clinically apparent four days later and urgent laparotomy was performed.



Fig. 1 CT image of the abdomen shows a soft tissue haematoma over the rectus sheath. No herniation was seen.

CASE HISTORY

A 59-year-old man was admitted 12 hours after being sandwiched between a rubbish truck and a collection bin. On arrival at the emergency department, he was conscious and haemodynamically stable. Examination of the head, neck, chest, back and limbs were unremarkable. There was ecchymosis with a tender bulge over the left iliac fossa, but otherwise the abdomen was soft and non-tender. Haemoglobin level (Hb) was 14.8 g/dL. Initial CT of the abdomen and pelvis showed a soft tissue haematoma over the left lower anterior abdominal wall and lower back, as well as a left psoas and iliopsoas haematoma (Fig. 1). Multiple fractures of the left lumbar transverse processes (L1–L5) were noted. There was free fluid in the upper abdomen but no contrast extravasation or any free intraperitoneal air. Liver, spleen, pancreas and kidneys were unremarkable. In view of the haemodynamic stability and the absence of peritonism, the patient was managed nonoperatively. He remained haemodynamically stable, and the abdomen remained soft with localised tenderness over the haematoma.

On the fourth day, however, the patient developed persistent vomiting and a fever. The abdomen appeared more distended, and gurgling sounds were heard on palpation of the left iliac fossa haematoma. This raised the suspicion of a traumatic herniation through the left rectus muscle. At the same time, the Hb dropped to 8.1 g/dL and remained low despite transfusion.

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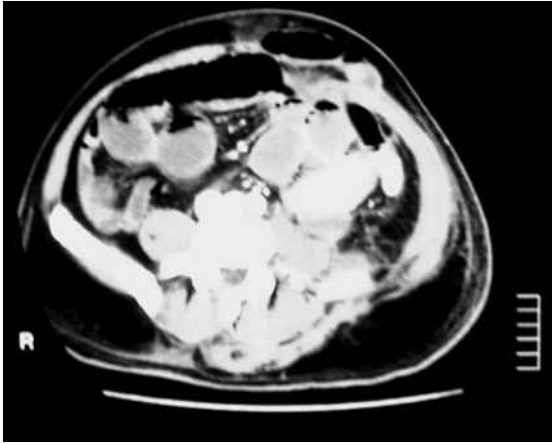


Fig. 2 Repeat CT image of the abdomen done four days later shows the obvious presence of a broad-based herniation of the bowel through a large defect in the anterior abdominal wall.

Differentials included an expanding retroperitoneal haematoma that was pushing the abdominal contents anteriorly. Repeat CT confirmed the presence of a broad-based herniation of the bowel through a large defect in the left lower anterior abdominal wall (Fig. 2). The proximal small and large bowel loops were grossly dilated.

The patient underwent emergency exploratory laparotomy. A large defect in the left rectus muscle, through which a segment of the small bowel and sigmoid colon had herniated, was found. A 10 cm length of the sigmoid colon was gangrenous with impending perforation. A left hemicolectomy was performed, together with a defunctioning ileostomy. The defect in the left rectus muscle was repaired primarily. Postoperatively, the patient remained intubated and was nursed in the surgical intensive care unit overnight. Subsequent recovery was uneventful.

DISCUSSION

Traumatic abdominal wall herniation remains a rare occurrence. Most follow high velocity vehicle accidents, or seatbelt and handlebar injuries,⁽¹⁾ where a significantly large force is suddenly applied and distributed over a small area of the abdominal wall.^(1,2) Since traumatic herniation follows a relatively high impact injury, it is strongly associated with intra-abdominal injury, particularly bowel and mesenteric injuries.^(2,3) Damschen et al reported associated bowel injury in eight of 28 patients, and solid organ injuries in another three.⁽²⁾

It is now becoming increasingly common for patients, who are haemodynamically stable, to undergo abdominal CT for evaluation. Abdominal wall herniation and its contents are well demonstrated on CT, making it useful in diagnosis.^(4,5) There is no

mention in the literature of CT studies that recorded a failure to detect a traumatic abdominal wall herniation. In our patient, the herniation was obvious only on the repeat CT four days later. It is possible that muscle spasm from pain following the trauma had initially masked the defect. Subsequent muscle relaxation and increasing intra-abdominal pressure from bowel dilatation was likely to have aggravated the muscular defect and herniation. Delayed herniation, as a result of weakening of the abdominal wall from a haematoma or wound infection, have also been reported.⁽²⁾

The severity of impact often correlates with the extent of intra-abdominal injury. Although the injury resulted from a low velocity impact, it was significant, as can be deduced from the extent of injuries sustained. Herniation through the tough fascial sheath of the rectus muscle,⁽¹⁾ fractures of the lumbar transverse processes and moderate amounts of free intra-abdominal fluid on CT,⁽⁶⁾ all suggest a significant impact of injury. A high index of suspicion for any undiagnosed intra-abdominal injury should therefore be maintained, even though the patient may appear well and CT, especially one done on admission, is negative. These patients should be closely monitored and have a CT repeated at a later date, if nonoperative management is chosen. Once diagnosed, immediate laparotomy is essential to avoid complications of bowel strangulation, perforation and overwhelming intra-abdominal sepsis.^(1,2,7,8)

In conclusion, this case illustrates how a rectus sheath haematoma may mimic a traumatic abdominal wall herniation. It highlights the need for a high index of suspicion for a traumatic abdominal wall herniation in patients who sustain low velocity blunt abdominal trauma. CT taken soon after the injury may not show the herniation, and the patient should still be monitored closely and have a CT repeated, if necessary, as herniation may be delayed.

REFERENCES

1. Dreyfuss DC, Flancbaum L, Krasna IH, Tell B, Trooskin SZ. Acute trans-rectus traumatic hernia. *J Trauma* 1986; 26:1134-6.
2. Damschen DD, Landercasper J, Cogbill TH, Stolee RT. Acute traumatic abdominal hernia: case reports. *J Trauma* 1994; 36:273-6.
3. Hickey NA, Ryan MF, Hamilton PA, et al. Computed tomography of traumatic abdominal wall hernia and associated deceleration injuries. *Can Assoc Radiol J* 2002; 53:153-9.
4. Faro SH, Racette CD, Lally JF, Wills JS, Mansoori A. Traumatic lumbar hernia: CT diagnosis. *Am J Roentgenol* 1990; 154:757-9.
5. Killeen KL, Girard S, DeMeo JH, Shanmuganathan K, Mirvis SE. Using CT to diagnose traumatic lumbar hernia. *Am J Roentgenol* 2000; 174:1413-5.
6. Ng AK, Simons RK, Torreggiani WC, et al. Intra-abdominal free fluid without solid organ injury in blunt abdominal trauma: an indication for laparotomy. *J Trauma* 2002; 52:1134-40.
7. Malangoni MA, Condon RE. Traumatic abdominal wall hernia. *J Trauma* 1983; 23:356-7.
8. Wood RJ, Ney AL, Bubrick MP. Traumatic abdominal hernia: a case report and review of the literature. *Am Surg* 1988; 54:648-51.