Perforation of the ileum after a stab wound of the gluteal region: a case report

Jakob van Oldenrijk, Çağdaş Ünlü, Bart A van Wagensveld

We present a case of a patient with a seemingly insignificant single gluteal stab wound which led to a solitary perforation of the ileum and delayed peritonitis. This case report illustrates that, despite the absence of any signs of bowel perforation on presentation, a patient may deteriorate gradually in the subsequent hours. This demonstrates the role of clinical observation in high risk gluteal stab wound patients.

Stab wounds in the buttock are common injuries. In the literature, cases with a solitary perforation of the small intestine are rare. Here we present a patient with a single gluteal stab wound leading to a solitary perforation of the ileum and delayed peritonitis.

CASE DETAILS

A 42-year-old man with a single stab wound at the medial side of the lower right buttocks presented at the emergency department of our hospital. There was no relevant medical history or any allergy, and he was not receiving any medication. The patient did not complain of abdominal pain and was haemodynamically stable. He could not recall any detail of the stabbing, including its trajectory, except that the knife used was approximately 15 cm long. On probing, the wound seemed superficial, and was closed with a single suture. The patient was discharged, but returned 5h later with severe lower abdominal pain with nausea and vomiting. He had no rectal blood loss or urogenital complaints.

On examination, his temperature was 37.2°C, pulse rate was 70/min, and blood pressure was 110/84 mm Hg. Abdominal examination revealed severe pain in the lower abdomen, with significant guarding. There was no palpable abdominal mass and a rectal examination was normal. Blood analysis showed no abnormalities apart from leucocytosis ($17.5 \times 10^9/l$). Erect chest x rays showed no free air under the diaphragm. Ultrasonography of the abdomen showed no signs of free fluid or visceral damage. The patient was admitted for observation. A few hours later, the abdominal pain increased and his temperature rose to 39.0°C. We decided to perform a median laparotomy which revealed a bowel perforation in the terminal ileum, 10 cm from the valve of Bauhin. A 5 cm ileum

resection was conducted with an end-to-end-anastomosis. Postoperatively, broad spectrum antibiotics were administered intravenously to cover the septic episode.

At day 3 post-operation, the stab wound became infected, followed by faecal leakage. An abdominal contrast study revealed an enterocutaneous fistula from the anastomotic area to the gluteal wound. Central feeding was initiated for 2 weeks, resulting in complete closure of the fistula. Thereafter, oral feeding was resumed. Another week later a painful perineal swelling developed. A computed tomographic (CT) scan revealed a perirectal abscess extending to the initial stab wound, for which incision and drainage was performed. Finally, 31 days after the stabbing, the patient was discharged in good condition. On follow up at 10 months, no further problems had occurred.

DISCUSSION

Penetrating stab wounds to the gluteal region have been shown to be associated with severe vascular and visceral damage. Major injury rates of 22–36% and mortality rates of 1.4–3.3% have been reported.^{1,2} In the series of Fallon *et al*, 17 out of 51 gluteal perforations resulted from stab wounds.³ This series illustrates the high potential for multi-system injury. They stress the importance of trajectory assessment and the benefits of rectal examination. Mercer *et al* describe a total of 81 patients, 28 of whom had stab wounds.¹

From these stab wound patients, five suffered from visceral damage. Susmallian *et al* presented a group of 39 patients who had penetrating stab wounds.⁴ In this group, 28 patients presented with one stab wound and 11 with multiple wounds. No mortality occurred. They describe two cases of ileum perforation, both of which,

however, were caused by multiple stab wounds.

Ivatury *et al* showed stab wounds to be as damaging as high velocity wounds, with a need for operative intervention in 26.7% in both groups.⁵ Fifteen out of 60 patients with gluteal perforation had stab wounds, four of whom suffered from severe vascular or visceral damage. Two were fatal, due to iliac artery laceration. No isolated small bowel injuries occurred.

Mercer *et al* claim the site of entry plays a critical role in determining the likelihood of serious vascular or visceral damage.¹ They divide the gluteal area into an upper and lower zone, by determining whether the point of entry is below or above the greater trochanters. They conclude a significant higher risk of visceral or vascular damage when the wound is above the greater trochanter with a cranial trajectory. The patient described in this study had a stab wound in the medial side of the right buttock, below the greater trochanter. The trajectory was unclear and we did not know the depth of the penetration. In such cases the patient should always be treated as a high risk patient. Even though a careful history with physical examination is important, peritoneal tenderness or signs of bleeding can be delayed. Therefore, even if physical and additional examinations prove negative, one should anticipate delayed morbidity.

Our patient sustained a perforation of the ileum due to a single stab wound of the gluteus. Initially, the patient did not complain of abdominal pain and was haemodynamically stable. The wound appeared to be mere superficial and there was no indication of visceral damage. Only after several hours, and despite negative ultrasonography, did the severity of the damage become clear. Clinical observation should always be considered for this type of injury.

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IMAGES IN EMERGENCY MEDICINE

Outlined psoas muscle shadow

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A 54-year-old man presented with low back discomfort, weakness and fever (38.2°C). He had a history of alcohol-related cirrhosis of the liver and poorly controlled type 2 diabetes mellitus. A plain abdominal radiograph showed a crescentic collection of air surrounding the right renal fossa, air in the urinary bladder, and the psoas muscles clearly outlined by the free retroperitoneal air (fig 1, arrows). Subsequent unenhanced computed tomography of the abdomen confirmed the diagnosis of emphysematous pyelonephritis (EPN) as well as massive gas in the bilateral retroperitoneal space and pelvis. He was treated conservatively with intravenous meropenem and percutaneous drainage. Cultures of blood and urine grew *Klebsiella pneumoniae*. The patient recovered uneventfully and was discharged on the 17th day after admission.

EPN represents a severe life-threatening infection of renal parenchyma

Figure 1 Plain abdominal radiograph showing a crescentic collection of air surrounding the right renal fossa, air in the urinary bladder, and the psoas muscles clearly outlined by the free retroperitoneal air (arrows).

with gas-forming bacteria.¹ Optimal treatments for EPN are controversial, but patients with a fulminant clinical course, unsuccessful drainage, or failed conservative therapy should undergo nephrectomy promptly to avoid a catastrophic outcome.

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