Penetrating injury of rectum caused by fall in shower

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INTRODUCTION

Impalement perforation of the rectum with penetration of the peritoneal cavity is a rare injury which may cause serious complications, although it can appear at first to be a relatively minor injury. The case of a 15-year-old girl who sustained lacerations of both buttocks and life-threatening internal injuries from broken glass is reported.

CASE REPORT

A 15-year-old girl slipped at home while having a shower and fell through a glass panel. On admission to Craigavon Area Hospital, she was found to be shocked with a blood pressure of 100/60 mmHg but she improved quickly with intravenous fluids. There were large lacerations of both buttocks and it was thought that these were the cause of shock. She had multiple other lacerations. Her abdomen was soft and was not tender with no guarding or rebound. As she had eaten 2 hours previously, surgery was postponed for a further 2 hours. Just before surgery, she became profoundly shocked with a blood pressure of 80/50 mmHg, and said that she felt glass in her abdomen and vagina. Her abdomen was found to be rigid. She was resuscitated and then anaesthetized before operation by a surgeon and a gynaecologist.

A small amount of blood was noted to be coming from her vagina. Two large pieces of glass were removed from her vagina and another piece was removed from her left buttock. Each piece of glass was removed very carefully and none of these pieces were found to be occluding a major blood vessel. At this stage it was felt that the glass had entered the peritoneal cavity. Palpation of the abdomen under general anaesthetic revealed a mass arising from the right iliac fossa.

At laparotomy, a large amount of free blood and clot was encountered, and her blood pressure fell to an unrecordable level. After manual compression of her abdominal aorta and rapid transfusion she regained a blood pressure of 100/60 mmHg. Her abdomen was cleared of blood and a piece of glass measuring 5 cm in length was removed. This glass had lacerated the right common iliac vein, which was repaired. Perforations in the terminal ileum and bladder, and a laceration involving the right broad ligament,

fallopian tube and ovary were also repaired. A transverse loop colostomy was formed and the abdomen closed.

A laceration of the posterior vaginal wall, and lacerations of the left lateral and anterior rectal walls were repaired. The laceration in the left buttock was packed, since this was in continuity with the rectum, and delayed primary suture was carried out 6 days later. The patient was covered with Metronidazole and Cefuroxime. In retrospect, the piece of glass was only visible as a vague shadow on abdominal X-ray.

Three weeks after admission the patient was discharged. Three months later the colostomy was closed and she made a good recovery.

Fig. 1. The triangular piece of glass which penetrated a 15-year-old girl's left buttock (shown to scale).

Fig. 2 Diagram of the injuries caused by the fragment from a glass shower panel.

DISCUSSION

Injuries of the perineum and anal canal may be caused by penetrating missile wounds, sharpened stakes, picket fences, the horns of animals, tree branches, iron bars, chair legs and many other sharp objects (Fox, 1951; Kaufer *et al.*, 1967). The traditional cause of this injury is the farm worker falling off a hay-rick onto a pitchfork.

The main lesson to be learned by casualty officers from this case is that, in a penetrating injury involving the buttocks, the peritoneal cavity may be perforated. In this case an intra-abdominal injury was not suspected until 2 hours after admission to hospital. Signs of peritonitis are not usually apparent in the period immediately following injury (Jones, 1974) even if a viscus has been perforated and, therefore, may not be detected in the accident and emergency department when the patient is first examined. Any patient who is seen in the casualty department and who is believed to have suffered impalement, no matter how mild the clinical manifestations are when first examined, should be admitted to hospital and closely observed. If perforation of the peritoneal cavity occurs, the results are serious and often fatal.

Full examination is necessary to determine the exact nature of the injury and this may include a rectal examination or, as in this case, a vaginal examination. It is worth noting that, in this case, the abdomen was normal when examined in casualty and that the patient developed a rigid abdomen 2 hours after admission to hospital. It is also interesting to note that the patient only complained of feeling glass in her abdomen and vagina 2 hours later.

Radiography may show intra-peritoneal gas or evidence of the perforating object. The photograph shows the triangular piece of glass (the apex of which is missing) which penetrated her left buttock (Fig. 1). The injuries which it caused are clearly illustrated in the diagram (Fig. 2). The glass was found to have broken into a number of pieces. The apical piece (which is missing from the photograph) was removed at laparotomy and was responsible for the intra-abdominal injuries.

Early treatment is essential in limiting infection. Colostomy is advised in most cases, even though it prolongs the period spent in hospital and entails a further operation for its closure (Thomas, 1953). In this case, with perforation of the rectum through the buttock, it was essential to prevent the spread of sepsis and the later formation of fistulae. The wound involving the rectum and buttock was best managed by open drainage without suture, followed by delayed primary closure at 6 days. It healed rapidly without infection.

There are strict safety standards for glass enclosures for domestic showers (British Standards Institution, 1981, 1983). This patient's life-threatening injuries might have been prevented if the glass in her shower had conformed with these regulations.

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