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Traumatic tear of the rectum penetrating the peritoneal cavity: a case report

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ABSTRACT
Anal and rectal injuries are rather uncommon in surgical practice. They are mainly caused at traffic accidents, sexual assaults, harmful voluntary, and eccentric sexual activities, or medical measures. Spectrum of these injuries is wide – from minor wounds of anodermy or rectal mucosa, until rectal tears penetrated the peritoneal cavity. A case of an accidental, intraperitoneal injury of the rectum caused by a wooden broomstick is presented. The range of trauma was diagnosed based on computed tomography imaging of the abdomen and treatment consisted in the resection of the damaged fragment of the rectum followed by end colostomy. The post-operative course was uneventful. The authors emphasize the necessity of a careful evaluation of these injuries, because any delay in the treatment may result in serious, even fatal complications.
Keywords: anorectal injury; peritonitis; end-colostomy; Hartmann's operation.

INTRODUCTION

Anal and rectal injuries are rather uncommon in surgical practice. They are mainly caused by penetrating trauma. They are encountered in traffic accidents, sexual assaults, harmful voluntary and eccentric sexual activities, or medical measures (iatrogenic). Some of them are self-inflicted or caused by criminal assault [1, 2, 3, 4]. The spectrum of these injuries is wide; from minor wounds of anodermy or rectal mucosa, to larger tears of these structures, anal sphincters injuries, perforation of the recto-vaginal membrane, perineum tear, urinary bladder tear, and rectal injury penetrating the peritoneal cavity. These injuries are classified into 4 groups according to the site of damage and the presence of sphincter tears:

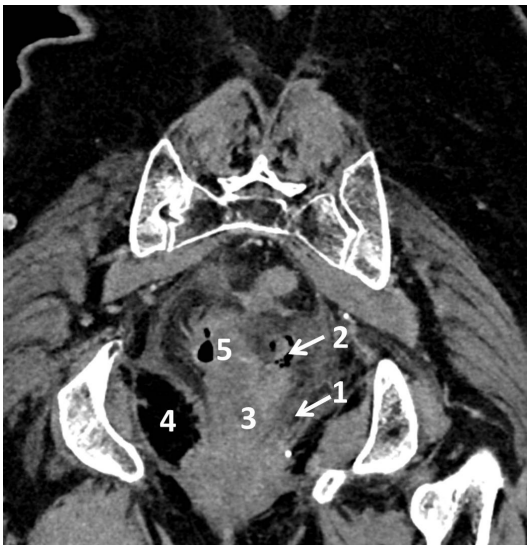
- intraperitoneal perforation without sphincter damage,
- intraperitoneal perforation with sphincter damage,
- extraperitoneal perforation without sphincter damage,
- extraperitoneal perforation with sphincter damage [2].

Anal impalement injuries may be also associated with the perforation of the urinary bladder. Rectal perforations and sphincter injuries are uncommon but may be caused by foreign objects (these cases are called "impalement injuries"). Typical symptoms and signs include rectal bleeding, pain around the anus or the perineum, and pain in the hypogastrium when the wound penetrates the peritoneal recesses. Intraperitoneal rectal injuries will cause peritonitis, sepsis, and even death if not diagnosed and treated promptly. Anorectal injuries caused by traffic accidents, and those that are incidental or iatrogenic, are usually early diagnosed, immediately after trauma. In contrast, the patients with self-inflicted injuries or caused by criminal assault frequently present with some delay (due to the patient's denial), with signs of wound infection or even peritonitis [3, 4, 5]. Early diagnosis and prompt management is essential for a favorable outcome.

This article presents a case of intraperitoneal impalement of the rectum by a wooden foreign object.

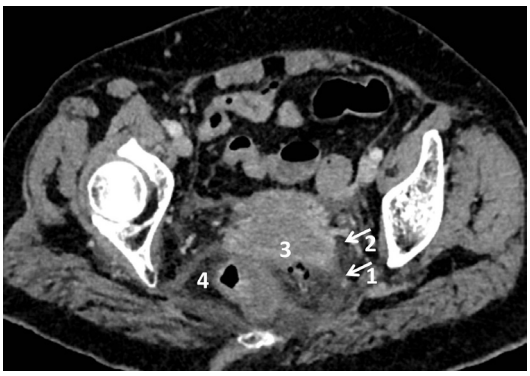
CASE REPORT

A 67-year-old woman was admitted to the internal medicine ward of the hospital in which the authors' work, owing to diagnostics of frequent faints. The day after admission she was found in the ward's lavatory laying on the floor and unconscious. After short and effective resuscitation she quickly recovered, but after lifting her from the floor, a toilet brush was found sticking out of her anus. She probably got stuck on it when falling from the lavatory pan. The brush was retrieved and the patient was on observation. Next morning, the patient defecated with a considerable amount of bloody clots. She also complained of pain in the hypogastrium, and diffuse tenderness over the abdomen and poor peristaltic movement were noticed during the physical examination. Her systemic blood pressure was 110/60 mmHg and pulse rate was 118/min. Due to suspicion of intraperitoneal perforation of the rectum the patient was given computed tomography (CT) scanning which confirmed the suspected injury (Fig. 1, 2). A decision on emergency surgery was made.



1 – site of the perforation; 2 – gas in the mesorectum; 3 – the rectum; 4 – fat tissue around the rectum; 5 – gas inside the rectum

FIGURE 1. Computed tomography of the pelvis with the perforation site (coronal-oblique view)



1 – site of the perforation; 2 – gas in the mesorectum; 3 – the rectum; 4 – fat tissue around the rectum

FIGURE 2. Computed tomography of the pelvis with the perforation site (axial view)

INTRAOPERATIVE FINDINGS

The operation was performed under general anesthesia. The abdomen was open via midline incision in the hypogastrium. A turbid fluid was found in the abdominal cavity and taken for bacterial culture. The rectum and sigmoid colon were found inflamed and infiltrated which was difficult to separate. After the exposition of these structures, a 1.5 cm long tear was seen in the anterior wall of the rectum, approx. 5 cm from the sphincter level. The damaged fragment of the rectum was resected, distal rectal stump was closed with a stapler, followed by end-sigmoid colostomy (Hartmann's operation). Careful irrigation of the abdominal cavity was performed before its closure. Post-operative course was uneventful and the patient was released home after 8 days. Colostomy closure was planned in the next 2–3 months.

DISCUSSION

Injuries requiring repair of the anorectal area are uncommon. Most of them are due to straddle and impalement mechanisms, followed by sexual abuse or assault and motor vehicle accidents. Because of the rarity of these injuries they may be difficult to diagnose and treat appropriately. Clinical findings are sometimes innocuous or even absent, but can be life-threatening. Therefore, a careful evaluation of suspected impalement injury is mandatory, including a detailed history and thorough physical examination, even if there is no evidence of trauma to the perineum [1, 2, 5, 6].

The case presented in this article was caused by accidental rectal impalement on the toilet brush. The excess of the injury was not immediately discovered, but with a half-day delay. The patient showed typical symptoms and signs which prompted an emergency laparotomy. A half-day delay resulted in the development of diffuse peritonitis. An adequate treatment of traumatic rectal tear in an infected environment included the resection of the injured part of the rectum and terminal diverting colostomy, resulting in the uneventful recovery of the patient.

LITERATURE REVIEW

Lippert and Falkenberg reported about 28 cases of intraperitoneal injuries that were managed by means of terminal diverting colostomy and drainage. In 13 cases of extraperitoneal rectal injuries, distal washouts together with a prospective colostomy as well as drainage were performed. All patients who had undergone colostomy, received re-anastomosis of the bowel after 2–3 months, leading to satisfactory restitution of organ function [5].

Shatnawi and Bani-Hani, presented the results of the treatment of 23 patients at the mean age of 33 years, with an anorectal trauma. Of this number, 19 patients had extraperitoneal injuries while 4 had both, intra- and extraperitoneal injuries. In 11 patients the mechanism of injury was penetrating, blunt in 6, impalement in 3, and iatrogenic in 3. Diagnosis of the trauma was made based on clinical features and CT examination. All patients were operated on. In 17 cases the injuries were closed primarily, with variable combinations of adjunct procedures. Eight patients (47%) with extraperitoneal injuries were treated without colostomy. Complications occurred in 11 patients: 8 wound infections and 5 pelvic infections related to the rectal injury. Three patients (13%) died due to shock and pelvic septic complications, with at least 2 having associated-organ injuries and more than 6 h of delay in treatment [7].

Roche et al., reported about 11 patients, 7 males, and 4 females presenting anal and rectal trauma. All cases were intraperitoneal injuries. A terminal colostomy was performed in 5 patients with intraperitoneal injury and in 5 patients with combined extraperitoneal and anal sphincter injury. In 6 cases of sphincter lesions, a primary repair was performed. The authors conclude that treatment of anorectal trauma includes

a broad-spectrum antibiotic therapy, cleaning of the rectum, and sphincter repair, if necessary. A terminal end-colostomy must be achieved in case of intraperitoneal injury, large extraperitoneal lesion, and severe perineal laceration [2].

Boettcher et al. reported a case of rectum perforation after the transanal introduction of a broomstick in a 17-year-old patient, who presented with almost no clinical symptoms. The correct diagnosis was made based on CT scanning. The authors emphasize that impalement injuries are sometimes difficult to recognize, and severity may not be reflected by their external appearance. A well-organized workup is required to diagnose these injuries on time [8].

Anal impalement injuries may be associated with the perforation of the urinary bladder. There are several case-reports in the literature about this combination. Passarelli et al. reported a case of a 62-year-old male who presented with abdominal pain and haematuria after the introduction of a wooden stick to the rectum. At CT imaging showed air and fluid in the peritoneum. An emergency laparotomy was done showing an anterior rectal perforation and associated double bladder lacerations of the posterior wall and dome. The patient received end-colostomy and primary bladder repair. Post-operative course was uneventful and 4 months after the injury the patient underwent colostomy closure [9].

Reports of 2 cases of foreign bodies introduced into the sigmoid colon were found in Polish journals. In the first case, a 20 cm long wooden stick was diagnosed in the sigmoid colon of a young male. The patient presented to the hospital approx. 20 days after the event with non-specific complaints; the foreign object was successfully retrieved with a proctoscope [10]. In the second case, a plastic bottle containing shampoo (size 17 x 4 cm) was diagnosed in the sigmoid colon of a young male. This patient presented to the hospital 4 days after the event with symptoms of obstipation. In that case, an attempt of retrieval of the object using the proctoscope failed and the patient underwent laparotomy and removal of the bottle by an incision of the sigmoid colon [11]. In both cases, no injuries to the bowel were observed.

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